THE FAUNA OF AN ISLAND IN THE CHILKA LAKE.[1]

ON TWO MYRMECOPHILOUS ISOPODS FROM BARKUDA.

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Though many Isopods are known to live with termites, the number of those dwelling in ants' nests is not, so far as I am aware, large. Wasmann[2] in his excellent book on myrmecophilous and termitophilous Arthropoda gives a list of nine Isopods that live with ants. These belong to four genera, *Metoponorthus*, *Leptotrichus*, *Porcellio* and *Platyarthrus*, the last two being represented by three and four species respectively. Besides these and three or four other species chiefly belonging to *Platyarthrus*,[3] I do not know of any Isopods that are associated with ants. From India, moreover, no myrmecophilous Isopod has hitherto been recorded.

The late Dr. N. Annandale recently brought back from Barkuda Island in the Chilka Lake the two interesting myrmecophilous Isopods that form the subject of the present paper. Of the two one is a *Platyarthrus*, a genus members of which are already known to exhibit myrmecophilous tendencies.[4] The other, *Cubaris granulatus* Collinge,[5] belongs to a genus, which, to my knowledge, is not known to be associated with ants. The species occurs apparently not uncommonly along the shores of the Chilka Lake,[6] and its presence in ants' nests at Barkuda does not seem to show any close association between the ant and the woodlouse. The body is deeply pigmented, the eyes are well formed and in fact there does not appear to be any modification in correlation with myrmecophilous existence. The species is perhaps only a casual visitor in ants' nests or may have taken to this mode of life but recently.

Platyarthrus acropyga, sp. nov., on the other hand, appears to be a true myrmecophil in so far as it shows adaptations indicative of a subterranean existence. It is almost perfectly white in colour, having only scanty pigmentation on the exterior, and is totally blind. The integument also, as in many other myrmecophilous and termitophilous animals, is very brittle.

Both the Isopods were collected in the nests of rather common species of ants at Barkuda. *Platyarthrus acropyga* lives with *Acropyga acuti-*

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[1] For previous papers in this series see *Rec. Ind. Mus.* XXII, pp. 313-422 (1921); XXIV, pp. 289-311 (1922); XXV, pp. 221-263 (1923); XXVI, pp. 165-191 (1924); XXVI, pp. 415-422 (1924).

[2] Wasmann, *Kritisches Verzeichniss der Myrmekophilen und Termitophilen Arthropoden. Mit Angabe der Lebensweise und Beschreibung neuer Arten*, pp. 201, 202 (Berlin : 1894).

[3] For a complete account of this genus see Arcangeli, *Atti Soc. Ital. Sci. Nat. Milano* LX, pp. 189-210, pl. vii (1921).

[4] Among others see Bate and Westword, *Brit. Sessile-Eyed Crust.* II, pp. 464, 465 (1868); Sars, *Crust. Norway* II, p. 175 (1899); and Arcangeli, *op. cit.*

[5] Collinge, *Rec. Ind. Mus.* XI, p. 151, pl. xii (1915).

[6] See Collinge, *op. cit.*, and Chilton, *Mem. Ind. Mus.* V, pp. 479, 480 (1916).

ventris Roger, the common little yellow ant of Barkuda, while *Cubaris granulatus* was captured in nests of *Bothroponera tesserinoda* Mayr.

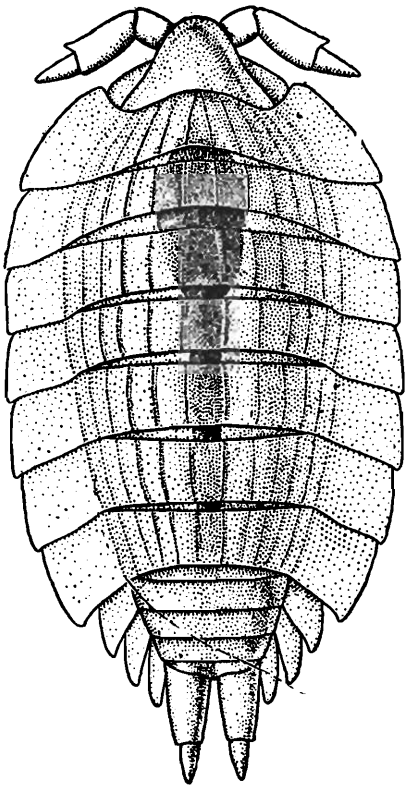
From the same nests of *Acropyga acutiventris* in which specimens of *Platyarthus acropyga* were collected was also found a curious coccid looking very much like an aphid. Prof. Silvestri finds the coccid to represent a new genus and has described it under the name of *Xenococcus annandalei*.[1]

Similarly in nests of *Bothroponera tesserinoda* a number of Scarabaeid beetles were found along with the Isopod. Prof. Silvestri, to whom they were sent for examination, is of opinion that the beetles represent an undescribed genus coming close to *Cyclotrogus*, and proposes describing them under the name of *Ponerotrogus annandalei*, gen. et sp. nov.

It is difficult to say what relation the Isopods have with their ant-hosts, but it is not improbable that they come in the category of "tolerated guests" as understood by Wheeler.[2]

Platyarthrus acropyga, sp. nov.

Body oval, with its greatest breadth somewhat more than half the length. Dorsal surface fairly convex, but apparently non-contractile; almost smooth, with only extremely minute granules scattered on the thorax, but with a number of rather indistinct longitudinal carinae



TEXT-FIG. 1.—*Platyarthrus acropyga*, sp. nov. Dorsal view: × 33.

running from end to end of the thorax. Carinae better developed in older specimens, and a median and two submedian ones more distinct than the rest.

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[1] Silvestri, *Rec. Ind. Mus.* XXVI, pp. 311—315 (1924).

[2] Wheeler, *Ants*, 663 pp. (New York: 1913); also *Social Life among Insects*, 375 pp. New York: 1923)

Head subtriangular, roundly produced in front between the antennae, distinctly separated from the first thoracic somite, and partly surrounded laterally by its forwardly projecting lateral parts. Lateral lobes large and very broadly rounded at their margins. Eyes totally wanting externally.

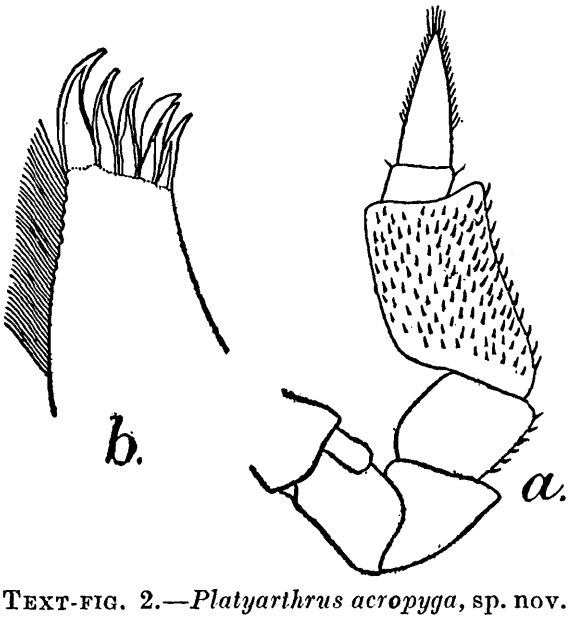
Thoracic somites large, subequal, markedly convex from side to side, their lateral parts well developed, lamellar and subcontiguous, those of the first segment anteriorly produced so as to surround a part of the head on sides and extending as far forwards as the anterior margin of the lateral lobes. Lateral parts of all the segments, except the last, terminating behind somewhat bluntly, those of the last subacutely.

Abdomen very short, considerably less than a third of the total length of the body, and not particularly abruptly narrower than the thorax. First segment not visible externally, being totally concealed under the 7th thoracic somite; second also very short, its lateral parts hidden under the last thoracic. Lateral parts of the next three somites large, directed posteriorly and bluntly pointed at the tips, those of the fifth extending considerably beyond the terminal segment. Last segment small, bluntly pointed posteriorly and scarcely drawn out into a projecting process.

Head appendages and mouth parts very small, insignificant, all except antennae, hardly visible with naked eye.

Antennules extremely reduced.

Antennae short and stumpy, hardly reaching up to the posterior margin of the first thoracic somite when fully turned backwards. Basal peduncular segments slightly grooved, first four short, third subtriangular, first, second and fourth squarish; fifth peduncular segment largest, about as long as the preceding two put together, more or less rectangular in shape, with the outer side longer than the inner, and the anterior margin slightly bent in to receive the flagellum. Latter rather short



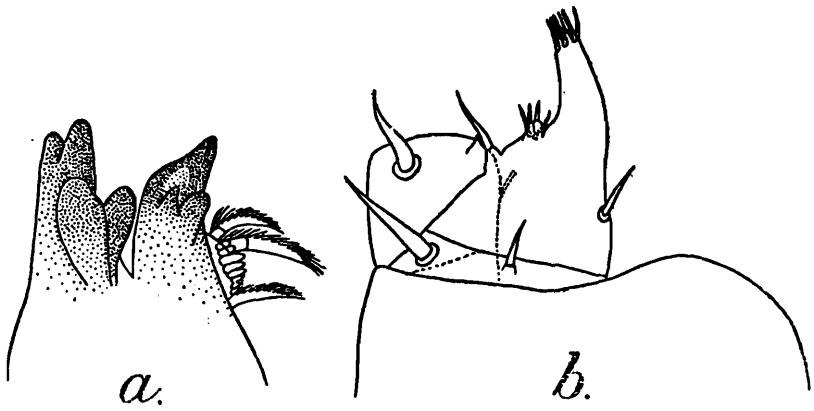
TEXT-FIG. 2.—*Platyarthrus acropyga*, sp. nov.
a. Antenna: × 300. *b*. Terminal portion of outer lobe of first maxilla: × 75.

and pyramid-shaped, scarcely as long as the last peduncular segment; formed of two unequal segments, basal short, rectangular, less than

a third as long as the terminal, latter long and conically tapering and crowned with setae at its distal extremity. Surface of flagellum covered with fine granules and its margins beset with setae. The last peduncular segment, as also partly the preceding one, beset on its surface, as also along the margins, with spinules interspersed with minute granules.

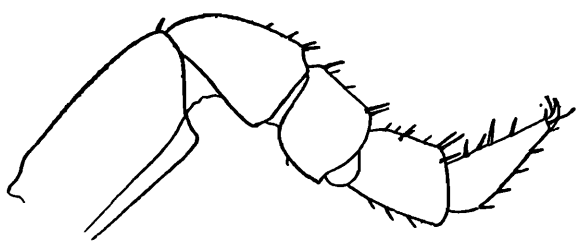
Outer lobe of first maxilla terminating in about six spines, the outer three or four being larger than the rest and more strongly curved. The outermost spine largest and margin of maxilla behind it deeply setose.

Mandibles well developed, provided with a double row of strong chitinous teeth—divided in some specimens in two separate groups—a membranous hairy lappet, with two "penicils" arising from it, and followed at some distance by another large "penicil."



TEXT-FIG. 3.—*Platyarthrus acropyga*, sp. nov.
a. Terminal portion of mandible : × 300.
b. Terminal portion of maxilliped : × 300.

Maxilliped with the outer palp terminating in a large multispinous process, and having a spine near the base of the outer margin, and four small ones along the inner arising in a cluster and another large one a little further down. Inner palp more or less rounded distally with a large spine arising near the inner angle of the outer margin, and another small one near the outer; another small spine arising about the middle of the lateral margin. Two spines at the base of the outer palp, a large one near the inner margin and a small one about the middle.

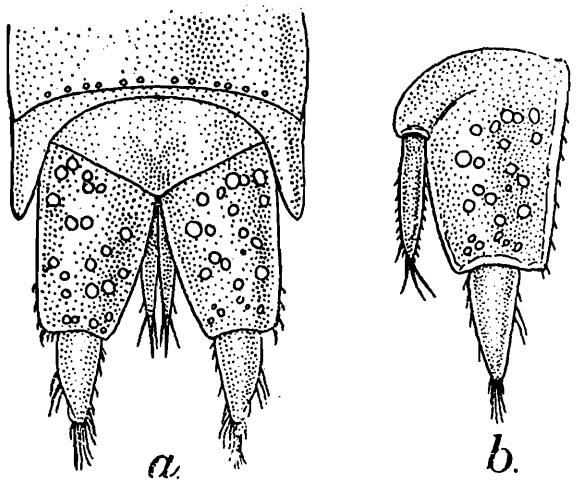


TEXT-FIG. 4.—*Platyarthrus acropyga*, sp. nov.
Thoracic leg : × 85.

Legs somewhat increasing in size antero-posteriorly and having the usual shape. Some of the basal segments grooved.

Pleopods very small, their opercular rami more or less rectangular in shape and apparently devoid of air cavities. First and second pleopods of male not studied in detail.

Uropoda extending a great deal beyond the telson, and the inner rami not visible when viewed from dorsal surface, being covered over by the remaining parts. Basal segment flattened dorsoventrally, considerably narrower posteriorly than at its anterior extremity. Inner ramus narrow, linear arising far in advance of the outer on the lower surface of the inner anterior angle of the basal segment, shorter than the latter, and not extending up to its distal extremity. Outer ramus short, triangular,



TEXT-FIG. 5.—*Platyarthrus acropyga*, sp. nov.
a. Uropoda *in situ* with two terminal abdominal somites: × 85.
b. One uropod dissected: × 85.

conically tapering posteriorly and more or less acutely pointed at the apex, articulated at the distal extremity of the basal plate, narrower than the latter even at the articulation and less than half its length. All parts of uropoda setaceous and both the rami terminating in tufts of long setae.

Colour almost totally white with some dark pigment about the mid-dorsal region.

Length of body reaching up to 2·5 mm.

Type-specimens.—C 905/1, Zoological Survey of India (*Ind. Mus.*).

The species lives in nests of the little yellow ant, *Acropyga acutiventris* Roger, which is quite common at Barkuda. The ant lives on the rootlets of various trees of the genus *Ficus* and in cold and dry weather retires deep into the ground, but so long as the soil is damp and warm they remain under stones just below the surface. The workers of the ants are entirely subterranean in habit and the males and females apparently stay for some time in the nests after hatching from their cocoons before leaving it to form a new colony. In nests of this ant a curious little coccid[1] is also always found. When the nest is disturbed the females, as well as the workers, carry off the coccids, each female carrying in her jaws a female of the coccid as a kind of dowery. This accounts for the universal distribution of the coccid in the nests of the ant. The Isopod is not quite so commonly found in nests of the ant as the coccid.[2]

[1] Prof. F. Silvestri has described this coccid under the name of *Xenococcus annandalei*, gen. et sp. nov. *Vide Rec. Ind. Mus.* XXVI, pp. 311-315 (1924)

[2] The information regarding the biology of *Acropyga acutiventris* has been taken from Dr. Annandale's manuscript notes on the habits of this ant.

The specimens in our collection were obtained by the late Dr. N. Annandale in the months of June and September of 1923 and 1924 respectively.

Cubaris granulatus Collinge.

1915. *Cubaris granulatus*, Collinge, *Rec. Ind. Mus.* XI, p. 151, pl. xii.
1916. *Cubaris granulatus*, Chilton, *Mem. Ind. Mus.* V, pp. 479, 480.
1924. *Cubaris granulatus*, Chilton, *Mem. Ind. Mus.* V, p. 893.

I have very carefully examined the specimens that I refer to Collinge's species and have little doubt of their identity. The general shape and colouration of the body as also the structure of the various appendages resemble almost exactly even in such details as the disposition of hairs and spines with the description and figures given by Collinge. I have not, however, been able to examine Collinge's type-specimens as they have not yet been returned to the Museum.

I have examined the two specimens referred by Chilton to this species and find them to differ greatly in size and colour from Collinge's account, as also from my specimens. The larger of the two specimens is as much as 11·5 mm. long, while Collinge gives 5·5 mm. as the length of the species, My specimens also are of about that size. The colour of the species. as seen from Collinge's description and in the Barkuda specimens (in spirit) is dark olive-brown with the usual light patches near the median line. Chilton's specimens are much lighter and are now light grayish-olive, with the whitish patches more marked than those in the Barkuda specimens. I have not carefully examined the appendages of Chilton's specimens, but from what I have seen I find that there are small differences in this respect also.

Collinge described the species from Rambha on the shores of the Chilka Lake, while Chilton's specimens were obtained at Patsahanipur Hill off Balugaon on the shores of the same lake. My specimens were collected by the late Dr. N. Annandale in October, 1923 at Barkuda close to the first locality, but are particularly interesting in so far as they were found living in ants' nests. The host *Bothroponera tesserinoda* Mayr is rather a common species at Barkuda. Associated with this species of ant is also often found an interesting small brown Scarabaeid beetle of the sub-family Troginae. Prof. Silvestri, who has examined the beetle, proposes describing it as a new genus.

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