

introduced into India at the beginning of the nineteenth century (see Burkill, *Rec. Bot. Surv. India* IV, No. 6, p. 297; 1911) and there is no plant with similarly arranged thorns indigenous in Orissa. I failed to find a single individual of the fly on walls near the cactus hedge on which it was common, and it was absent even from stems of the (imported) cactus *Cereus* and of an indigenous thorny Euphorbiaceous plant; the bunches of thorns on these plants being arranged in vertical lines on a polygonal stem instead of being scattered on a flattened and expanded one.

N. ANNANDALE.

INDIAN BLOOD-SUCKING MIDGES.—If we restrict the term “midge,” as seems legitimate, to the subfamily Culicoidinae or Ceratopogoninae of the family Chironomidae or Tendipedidae, the number of blood-sucking midges for which the habit has been authenticated in India is extremely small, and all that have been proved to exercise it in this country belong to the genus *Culicoides*, Latr., in which the mouth parts are similarly developed in the two sexes. Dr. Kieffer has recently described a considerable number of Indian and Ceylonese representatives of the genus in the *Memoirs* (vol. ii; 1910) and *Records of the Indian Museum* (vols. vi; 1911 and ix; 1913) and in vol. viii of *Spolia Zeylanica* (1912). Of these species only the following are actually known to suck mammalian blood:—

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| 1. <i>Culicoides molestus</i> , ¹ | 3. <i>Culicoides himalayae</i> , ³ |
| 2. <i>Culicoides oxystoma</i> , ² | 4. <i>Culicoides peregrinus</i> . ⁴ |

Of these the first two species were found sucking that of cattle and deer in the Calcutta Zoological Garden in March, 1908.

C. himalayae was originally described from Kurseong (June, 1910) and other specimens have recently been sent to the Museum by Mr. H. Stevens, who took them at Kaliponni on the Nepal-Sikkim frontier at an altitude of about 9000 feet. He refers to them as “blood-sucking flies of a particularly venomous nature.”

The type-specimens of *C. peregrinus* were taken at Puri on the coast of Orissa in March. I recently (July, 1913) found the species very abundant in a bungalow near Balugaon in the same district. One individual was killed in the act of biting my wrist, and I had reason to think that many others were attacking my ankles. The irritation was considerable but not lasting and very little swelling followed the bite. Both sexes swarmed at night in the corners of rooms, particularly in the neighbourhood of a lighted lamp; females were much commoner than males.

Mr. F. H. Gravely, to whom I am indebted for the identification, by comparison with the types, of Mr. Stevens' examples of *C. himalayae*, has recorded a curious habit of an undetermined

¹ Kieffer, *Mem. Ind. Mus.* ii, p. 193, pl. viii, fig. 9.

² *Id.*, *ibid.*, p. 193, pl. ix, fig. 1.

³ *Id.*, *Rec. Ind. Mus.* vi, p. 326.

⁴ *Id.*, *Mem. Ind. Mus.* ii, p. 191, pl. viii, fig. 1.

species of *Culicoides*,¹ viz. that of sucking the abdomen of mosquitoes of the genus *Anopheles* (s.l.), probably in order to obtain mammalian blood ingested by the larger fly. The actual species attacked was *A. rossii* and the observation was made at Port Canning in the Ganges delta.

The same habit has been attributed to a Burmese species of "*Ceratopogon*" by Major N. P. O'G. Lalor,² I.M.S., who found it sucking blood from *Anopheles fuliginosus*, *A. karwari* and *A. ludlowi*. He reports that species of this genus are abundant at Kyaukpyu on the coast of Burma in August and bite human beings.

N. ANNANDALE.

COELENTERATA.

FURTHER NOTES ON THE HABITS AND DISTRIBUTION OF *Limnocoñida indica*.—In the *Records of the Indian Museum*, vol. vii, pp. 399-403, Mr. Gravely and I published some notes on the habits and distribution of *Limnocoñida indica*, Annandale, based on our observations last year. I wish to include in this note further observations on the same subject which I made this year. We then expressed the conclusion "that in the life cycle of *Limnocoñida indica* there is probably an asexual hydroid stage which lives attached to rocks at the bottom of deep pools, and that this hydroid produces Medusae by budding from February till April or May, when it ceases to do so whether the pool in which it lives is flooded or not, and very possibly dies." It has been my effort during the current year to find out this supposed hydroid stage.

I began my work in October, 1912, when the rains had nearly ceased. I selected Medha as the place of observation owing to its being easily accessible from Bombay. It was thought that it would be possible to induce the hydroid to grow on stones placed at different depths below the surface of the water in the pool and left undisturbed for a sufficiently long time. I, therefore, visited Medha towards the end of October, 1912, and arranged to have four slabs of the same kind of trap as that which forms the bottom and sides of the pool immersed 5, 10, 15 and 21 feet below the surface of the water. The last was resting on the bottom of the pool. The stones were secured by means of strong coir ropes to other bigger stones which were placed on a not easily accessible part of the rock in the middle of the pool. This precaution was necessary to prevent meddlesome persons from taking out the stones and preventing the growth of the hydroid. The place was also watched continually by a peon, whom I engaged for the purpose. I visited the locality again towards the middle of January, February and April, 1913, i.e. after 3, 4 and 6 months respectively. During none of these visits was I able to see on the stones any organism which could be the hydroid stage of *Limnocoñida indica*. On one occasion I found a few Rotifers

¹ Gravely, *Rec. Ind. Mus.* vi, p. 45.

² *Paludism*, Sept., 1912, p. 42.