

Anisops nivea, *Micronecta punctata*, *M. albifrons*, *M. ludibunda*, *M. issa* and *M. thyesta*. All these species of *Micronecta* are also new records for Malaya. A single badly damaged specimen of *Nychia* sp. is interesting because it is the first record of this genus at light.

The Dytiscidae and Noteridae on the one hand and the Hydrophilidae on the other are represented by about equal numbers as regards species. In total number of individuals however, the former greatly exceed the latter. This is unusual for light trap catches but probably reflects the faunal composition of southern Malaya.

Of the aquatic Hemiptera, only the Corixidae were taken in numbers. Of these *Micronecta quadristrigata* was by far the commonest. This species is the most frequently recorded species of *Micronecta* at light besides being the most widely distributed in South East Asia. ——— C. H. FERNANDO, *Department of Zoology, University of Singapore*, 3rd January, 1962.

The occurrence of *Simocephalus latirostris* Stingelin (Crustacea: Cladocera) in South-East Asia. ——— On 27th March, 1962, I collected several small specimens of a *Simocephalus* from an unpolluted, weedy ditch at mile 17, Jurong Road, Singapore. On examination these proved to be the rare species *Simocephalus latirostris* Stingelin. First described from Paraguay by Stingelin (1906, *Ann. Biol. Lacustre*, **1**: 181-192), this species was for long believed to be confined to South America. It thus formed one of the comparatively few apparent exceptions to the generalization that tropical Cladocera tend to be pan-tropical in distribution, rather than confined to definite geographical regions. Recently Fryer (1957, *Arch. Hydrobiol. Plankt.*, **53**: 223-239), reported it from three localities in Nyasaland. In this report Fryer adds some details to our knowledge of its structure. The present occurrence in Singapore thus indicates that it is a truly pan-tropical species.

The Singapore specimens agree very well with Fryer's re-description and agree with this description in the points on which it departs from Stingelin's original account. In particular it may be noticed that, although the carapace markings are best described as reticulate, the reticulation has clearly been developed on the basis of the more usual sculpture of oblique parallel lines found in this genus. In *S. latirostris* these lines are further apart than is usual and moreover are somewhat wavy, especially near the ventral carapace margin. The occasional cross-bars are more numerous as are also anastomoses between the oblique lines. The result is that in some regions the oblique sculpturing is almost completely obscured, whilst everywhere there are pronounced reticulate tendencies. In my specimens the ocellus has the same general form as in the specimens figured by Fryer, rather than the lozenge shape shown by Stingelin. However, my specimens have the ocellus longer than in Fryer's figures, approaching the conditions shown in *Simocephalus vetulus* (O. F. Muller). Most of my specimens are young so that the carapace is more nearly rectangular than in previously figured specimens. The so-called 'spine' is thus situated more dorsally. These are the sort of changes in form with age which are well-known in females of the family Daphniidae.

The problem remains as to why this species has been so rarely reported. Undoubtedly it could be confused with *S. vetulus*. For instance, Brehm (1933, *Arch. Hydrobiol. Plankt., suppl.*, **11**: 631-771), suggested that it was a merely a monstrous form of that species, though he changed this opinion in later works. Nonetheless it is

difficult to avoid the conclusion that it is really a rare species. Fryer's records are the only ones from Africa. It did not occur in the extensive collections of the Deutschen Limnologischen Sunda-Expedition; and I have not previously encountered it in Malaya or Sumatra. One would therefore suspect that it requires rather well-defined and unusual conditions. Fryer suggests, on the basis of its distribution in Nyasaland, that it is a stenothermal form requiring high temperature. This may well be true but it does not explain its rarity in countries such as Malaya. The Singapore habitat had a noon-day temperature of 27.8° C, well within the normal temperature range for freshwater habitats in Singapore.

This locality has abundant *Utricularia* together with a fair quantity of floating vegetation consisting of *Nymphaea* and *Jussiaea*. The water is clean and clear, though slightly peaty. The oxygen content at this visit was 20% saturation. On a previous visit it was 93%+. These low values agree with the presence of air-breathing fish in abundance, though the presence of a flourishing population of the blackwater cyprinid, *Rasbora einthovenii* (Bleeker), suggests that the oxygen must seldom fall lower than the lowest of these values. The pH of 5.6 is low, but not exceptionally low for a Singapore habitat. The alkalinity using B.D.H. 4.5 indicator corresponded to a value of only 9.8 parts of bicarbonate ion per million. This value is low; like the low pH it represents conditions often encountered in forest and tree-country streams in S. Malaya but somewhat unusual in open country habitats. There was a fairly rich fauna of associated Cladocera including: *Ilyocryptus spinifer* Herick, *Macrothrix sumatrensis* (Brehm), *Kurzia longirostris* (Daday), *Alona affinis* (Leydig), *Chydorus eurynotus* Sars, and *Dadaya macrops* (Daday). Of these only *I. spinifer* and *A. affinis* can be considered as well-known species. *Macrothrix sumatrensis*, and *K. longirostris* had not previously been found in Malaya.

Fryer gives the habitat in Nyasaland as amongst dense submerged vegetation near the margin, a description which indicates conditions similar in this respect to the Singapore habitat. He notes that in two of the three habitats it was associated with *Simocephalus serrulatus*. The latter species is normally found in acid waters. Fryer also records *Kurzia longirostris* from one of these habitats. From two of these habitats Fryer records the conchostracan, *Cyclestheria hislopi* (Baird). This species is usually found in habitats which periodically dry out in whole or in part. The Singapore habitat had partially dried out during a recent drought.

An attempted synthesis of this information suggests that *Simocephalus latirostris* requires the following conditions: a moderately high and reasonably constant temperature; a small, shallow water-body with abundant submerged vegetation; acid water; and possibly in addition the liability of the habitat to dry out, at least in part. The Singapore record shows that it can flourish in conditions of low oxygen; but this cannot as yet be established as a necessary factor. In addition it seems probable that the habitat should have clear water and be unpolluted. This combination of conditions is sufficiently uncommon in the tropics to account for the apparent rarity of the species. ———
D. S. JOHNSON, *Department of Zoology, University of Singapore*, 31st March, 1962.