

CHIRONOMIDAE FROM THE BATU CAVES, MALAYA (Diptera: Nematocera)

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The material described below is part of a collection made in 1959 by Dr. H. E. McClure in the Batu Caves near Kuala Lumpur, Malaya. The specimens were sent to me by Dr. Laurence W. Quate of the Bishop Museum, Hawaii, to whom the types and the bulk of the collection have been returned. Paratypes of all the new species have been retained in the British Museum (Natural History).

The collections were in spirit and there were about 60 tubes, some containing large numbers of specimens. Most of the material was taken at light in Cavern C, but there were also a few tubes from Caverns A, B, D and F.

The Chironomidae fell into only three species, two belonging to the genera *Pentaneura* and *Paratendipes*, the third I have placed in a new genus of the *Parakiefferiella* group of the Orthoclaadiinae. Previously I would have placed the last species in *Smittia*, but Brundin (1956) has given a revision of the genera of the subfamily and has shown that this course is no longer permissible. There is a second species of this new genus from Africa, but it is not associated with caves.

Pentaneura batuensis Freeman, n. sp.

A small pale species belonging to *Pentaneura* in its strictest sense; general body color very pale, yellowish, wings and legs quite unmarked; pulvilli and tarsal beard absent. In general appearance extremely similar to the Palaearctic species *P. binotata* (Wiedemann), but separable by the female antenna having only 12 segments instead of 13.

Wing length: 1.4–1.6 mm.

Head: pale yellow, mouthparts well formed, ratio of apical elongated segments of ♂ antenna to basal short ones (AR) about 1, antenna of ♀ with only 12 segments. *Thorax*: pale yellow; mesonotal stripes, postnotum and sternopleuron brownish but not strongly darkened in spirit specimens. *Wings*: quite unmarked, costa slightly produced, ending beyond level of apex of M_{3+4} ; R_{2+3} faint, not clearly forked at apex. *Legs*: pale and unmarked, anterior tarsal beard not developed, pulvilli absent, ratios of basitarsi to tibiae of all three legs 0.8. *Abdomen*: pale and unmarked, ♂ hypopygium simple, styles narrow and tapered.

Holotype ♂ (BISHOP 3148), 8 ♂♂, 17 ♀♀ paratypes, Malaya, Batu Caves, Cavern C, 11–VIII–1959. Numerous additional paratypes from Cavern C at various dates from VII to XII–1959 and single specimens from Caverns B and D.

Eusmittia Freeman, n. gen.

Antennae of ♀ longer than usual, each of segments 3–5 flask-shaped, stem as long as

basal bulb; apex of antenna lacking thicker bristle; eyes bare, lacking dorsal narrow portions. Prothorax more reduced than in allied genera, in lateral aspect not reaching to front of mesonotum, dorso-central bristles uniserial, acrostichals absent. Radial cell wide (fig. 1), R_{2+3} ending about midway between apices of R_1 and R_{4+5} , costa strongly produced, although rather indistinct in male of *guineensis* (Kieffer), Cu bent, anal lobe reduced, squama bare, no macrotrichia or distinguishable microtrichia on wing membrane. Anal point of ♂ broad and obtuse, with only a few hairs (fig. 2).

Type species of the genus *Eusmittia cavernae* n. sp.

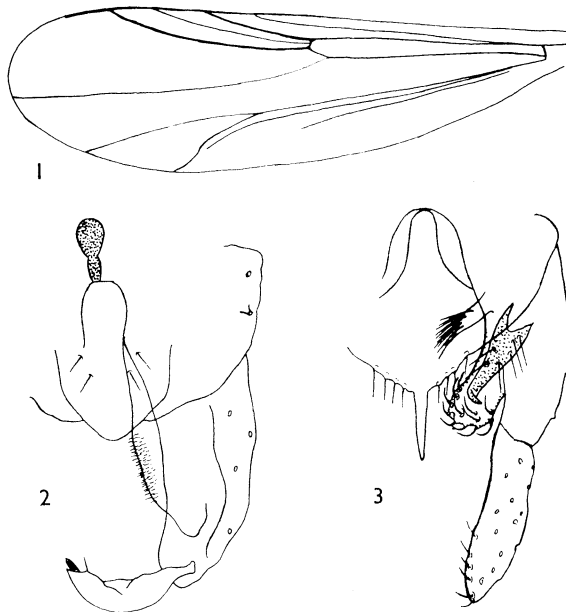
Using the key given by Brundin (1956, Inst. Freshw. Res. Drottningholm, Rpt. 37: 52-59), *Eusmittia* belongs to the *Parakiefferiella* group of genera, but the prothorax is more reduced than in the others, also the ♀ antenna is longer and the radial cell much wider. A second species to be placed here is the African species *Camptocladius guineensis* Kieffer, which I placed in *Smittia* in 1956 (Brit. Mus. (Nat. Hist.) Entom., Bull. 4: 353).

***Eusmittia cavernae* Freeman, n. sp. Figs. 1-2.**

A pale brownish species, distinguished from the only other known species of the genus by the more definitely produced costa in the ♂, which also has a more reduced anal lobe to the wing; it is also much paler and has separate thoracic stripes, although this may be partly caused by the spirit.

Wing length: 0.8-1.0 mm.

Head: mouthparts and antennae yellowish brown, antennal ratio about 0.5. *Thorax*: yellowish; stripes, postnotum and sternopleuron pale brownish, stripes separate; small



Figs. 1-3. Chironomidae from Batu Caves. 1, wing of ♂ of *Eusmittia cavernae* n. sp.; 2, ♂ hypopygium of *E. cavernae*; 3, ♂ hypopygium of *Paratendipes inarmatus* n. sp.

central tubercle present. *Legs*: pale, ratio of anterior basitarsus to tibia about 0.5, pulvilli absent. *Wings*: (fig. 1) rather glassy in appearance and yellow tinged. *Male hypopygium*: (fig 2) with broad, obtuse anal point, carrying very few hairs, coxite lobe long and almost free, very similar to *guineensis*, style also curved in a similar way to that species, ejaculatory pump rather obvious, as indicated in figure.

Holotype ♂ (BISHOP 3149), Malaya, Batu Caves, Cavern C, 8-XII-1959. Numerous paratypes of both sexes, same locality, VII to X-1959; Cavern A, 3 ♂♂, 1-IX-1959, a few from Cavern B and 1 ♀ from Cavern D.

Paratendipes inarmatus Freeman, n. sp. Fig. 3.

A fairly small brown species; antennal ratio about 1, anterior tibia without spur, legs and wings unmarked, squama bare, male hypopygium similar to the Palaearctic species *P. albimanus* (Meigen) and the African species *P. crosskeyi* Freeman, from both of which it may be distinguished by the plain legs and unarmed front tibiae.

In all its main features, this appears to be a perfectly normal species of the genus, but it differs from most of them by the absence of the front tibial spur. Even though the presence of this spur is an important character of the genus, *inarmatus* resembles other species so closely in hypopygial and thoracic structure that I have not thought it wise to place it in a new genus. The African *P. seydeli* Freeman also lacks this spur, but that is not such an otherwise typical species as *inarmatus*.

Wing length: 1.5 mm.

Head: yellowish brown, frontal tubercles absent, antennae of ♂ 14-segmented, of ♀ 6-segmented, antennal ratio about 1, mouthparts of normal development. *Thorax*: brownish with dark mesonotal stripes; sternopleuron and postnotum also dark; dorso-central bristles uniserial, pits rather large, acrostichals present but not very numerous; prothorax nearly reaching up to front of mesonotum. *Wings*: with normal venation, unmarked, squama bare. *Legs*: pale brown, without darker or pale markings, pulvilli absent, ratio of anterior basitarsus to tibia about 1.25, front tibia only slightly shorter than the femur; anterior tibial spur absent, other legs carrying fused combs, each pair with two short spurs. *Abdomen*: uniformly brown, segment 8 not constricted basally in the ♂; male hypopygium (fig. 3) very similar to other species such as *crosskeyi* Freeman; styles slightly curved, appendage 1 curved outwards, appendage 2 short, 2a present.

Holotype ♂, (BISHOP 3150), Malaya, Batu Caves, Cavern C, 27-X-1959. There are several hundred paratypes of both sexes, mainly from Cavern C, but a few from Caverns B, D and F at dates from VII to XII-1959.

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DIPTERA

(Continued from page 128)

- Otsuru, M. and Y. Ohmori. 1960. Malaria studies in Japan after World War II. Part II. The research for *Anopheles sinensis* sibling species group. Japan. Jour. Exp. Med. 30 (1): 33-65, 13 figs.
- Paik, Y. H. 1960. On the sexual difference of susceptibility of the Korean housefly *Musca*