

Occurrence of Trombiculid Mites on Arthropods

MITES of the family Trombiculidae include the European harvest-mites and many other notorious scrub-itch mites, as well as the vector of scrub typhus. A closely related group, the Leeuwenhoeekiidae, has also been given familial status¹, both these families having been split off from the Trombidiidae. Trombidiid and leeuwenhoeekiid adults are superficially alike; but adult trombiculids are easily distinguished by being constricted to a figure of eight. The nymphal and adult stages of all three groups are non-parasitic, so far as is known; but the larvæ collectively appear to be the most numerous of all acarine ectoparasites in the tropics. Larval trombidiids are common parasites of insects, while leeuwenhoeekiid larvæ have been found parasitizing mammals, birds, reptiles, amphibia, and, more recently, arthropods². That the trombiculid larvæ ('chiggers') parasitize only vertebrate hosts is, however, generally accepted as part of the definition of that family³. The following records of three species of trombiculids parasitizing arthropods in Malaya are therefore of considerable interest, and it is hoped that this note may stimulate more attention to this unexpected source.

Trombicula rara Walch. A few specimens of *T. rara* have been recorded: on man in Sumatra⁴, possibly once in Batavia⁵, and on a lizard and on man in New Guinea⁶. It has appeared occasionally on rats in recent collections in Malaya, but its principal host here appears to be a giant forest pill-millipede, provisionally identified as *Zephronia* sp. Large numbers of larvæ may be found attached in colonies to the soft integument near the anus, in a well-protected pocket. About a third of all pill-millipedes from two forest reserves near Kuala Lumpur have been found infested, occasionally with fifty to one hundred larvæ of *T. rara*. A number of nymphs have been bred by Mr. K. L. Cockings from larvæ which have fed on millipedes. An interesting point is that the specimens of *T. rara* from rats and man have been dark red, but those from the millipedes are pale ochre or yellowish in colour.

Euschöngastia [*Ascoschöngastia*] species. A single specimen of another chigger, *Euschöngastia* sp. near *E. indica* (Hirst), has also been found, together with a few *T. rara*, on this millipede.

Trombicula (or ? *Tragardhula*) sp. indet. A number of specimens of an undescribed *Trombicula* with a pentagonal scutum have been found on the common giant black Malayan scorpion, *Heterometrus longimanus* (Herbst), mostly attached under the pectens. A number of nymphs have been bred from these larvæ by Mr. Cockings. This scorpion is commonly parasitized by a few individuals of a leeuwenhoeekiid, *Womersleyia* sp., while several other leeuwenhoeekiid larvæ of undetermined genus have been found on a psocid, a ceratopogonid, and on two lamellicorn beetles.

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¹ Womersley, H., *Trans. Roy. Soc. S. Austral.*, 69, 96 (1945).

² Radford, C. D., *Parasitology*, 37, 46 (1946).

³ Ewing, H. E., *J. Parasitol.*, 30, 339 (1944).

⁴ Walch, E. W., *Trans. Fifth Cong. Far East Asian Trop. Med.*, 1923, 593 (1924).

⁵ Womersley, H., and Heaslip, W. G., *Trans. Roy. Soc. S. Austral.*, 67, 91 (1943).

⁶ Kohls, G. M., Armbrust, C. A., Irons, E. N., and Philip, C. B., *Amer. J. Hyg.*, 41, 381 (1945).

Records of the Globefish and Filefish

IN view of the paucity of records of the globefish, *Lagocephalus lagocephalus* (L.), around British coasts, it seems worth while recording the recent occurrence of a specimen at Tenby, Pembrokeshire. According to information supplied by Mr. A. L. Leach, it was found alive on September 6 in a pool on the South Sands, Tenby; its length from snout to fork of caudal fin is 14½ in. The colours of the dead specimen are as described by Day in "The Fishes of Great Britain and Ireland", but Mr. Leach states that the skin of the expansible ventral surface of the living fish appeared distinctly pinkish. Of the thirteen or fourteen British specimens of this tropical species listed by Day, nearly all were taken on the south coast; though there is one Welsh record from Amroth near Tenby, and two records from the Orkneys.

The first British example recorded—from Penzance—was described by the Welsh zoologist Thomas Pennant, who may have been responsible for the Welsh name (very appropriate to the fish when in the round, distended condition) quoted by Day—*Heulbyg crothog*, or swollen sunfish. The Tenby specimen, presented by Messrs. Lillycrop of Tenby, is now in the Zoology Department of the National Museum of Wales, its accession number being 49.373.

This seems a suitable occasion to put on record another plectognath fish very rare in British waters, *Balistes capriscus* Gmelin, the filefish or triggerfish, a specimen of which, 13¼ in. in length, was caught in a net on the foreshore at Splott, Cardiff, on October 26, 1946, and presented to the National Museum of Wales by Mr. F. Newman (accession number 45.352).

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Seismic Experiments in the Atlantic

EXPERIMENTS were carried out during August 1949 by this Department to determine, primarily, whether a method of seismic refraction shooting at sea developed during the last three years was applicable to deep water. Facilities were provided by the Air Ministry for this work to be undertaken in the Ocean Weather Ship *Weather Explorer* on one of her routine voyages. The area in which the work was undertaken lay within thirty miles of the meteorological position at lat. 53° 50' N., long. 18° 40' W., and in this area the depth of water was approximately 1,300 fathoms.

Depth-charges, set to fire at 900 ft. deep, were used as sources of the shock waves. These waves were detected by quartz hydrophones suspended approximately 150 ft. below sono-radio buoys which transmitted the information to the recording instruments in the ship. The charges were fired at distances up to twenty miles from the buoys, four of which were in use simultaneously spread over a line approximately three miles long.

Preliminary calculation of results from these experiments showed the presence of two interfaces below the sea-bed at depths of 7,700 ft. and 16,800 ft. In the surface layer of the bottom three determinations of the velocity of the compressional waves gave