

reproductively isolated from the ancestral all-acrocentric ( $2n=40$ ) forms.<sup>3</sup> Consequently, reproductive isolation is not related to cladistic affinity and the problem of specific status for these populations is unresolved.

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- 13 It is necessary to stress that using a within-population matrix to adjust for size in the above way is not the same as using co-ordinate scores derived from a between taxa matrix for computing Wagner networks as discussed by Farris<sup>12</sup>.

## Site attachment of a protelean parasite (Erythraeidae: *Leptus* sp.)

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**Summary.** *Leptus* sp. showed no site preference when they attached to an insect host. After the chelicera penetrated the host's cuticle a substance was secreted to cement the mite to its host.

The genus *Leptus* (Acarina: Erythraeidae) is a complex group of mites that are protelean parasites<sup>1</sup>. This cosmopolitan group of mites has a wide range of host species and various species members are parasitic on several orders of insects and other arthropods<sup>1-3</sup>. Several experiments on the rearing and behavior of *Leptus* spp. have provided valuable insight on the life history of this parasite<sup>1,4,5</sup>. This paper describes the attachment of *Leptus* sp. to its host.

**Materials and methods.** Specimens were fixed in 10% formalin, then cleaned in an ultrasonic cleaner. The mites were dehydrated in a graded series of ethanol and critical point dried. After mounting the specimens on SEM stubs, they were coated with carbon and gold. The mites were examined with an AMR scanning electron microscope at 20 kV.

**Results and discussion.** The mites were attached to several areas on 3 passalid beetles. There were 4 attached to the

head, 6 on the thorax, 8 on the elytra, 6 on the legs and 4 on the ventral area of the abdomen (figs 1,3). *Leptus* sp. showed no preference for site attachment and a similar occurrence was observed in other species of *Leptus*<sup>5</sup>.

After a host is encountered, the mites climbed onto the body and ran quickly over the surface, pausing several times to probe the host's integument. This searching activity lasted several min before an attachment site was chosen. The long, slender chelicera are capable of penetrating heavily sclerotized cuticle such as the elytra. Once the penetration of the host cuticle is completed, the mites extended their legs toward the posterior portion of their body and the legs made no contact with the host's cuticle (figs 1,3). Then a viscous substance was secreted around the junction of the host's cuticle and the mite's mouthparts (figs 2,4). This material hardened and secured the mite to the host and then feeding was initiated.

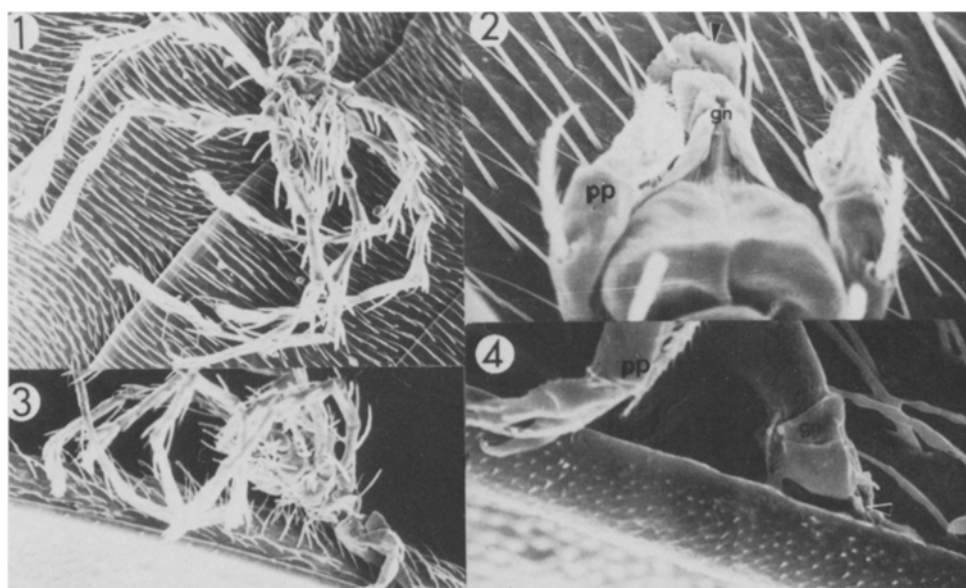


Figure 1. *Leptus* sp. attached to the venter of the abdomen.  $\times 400$ . Figure 2. Higher magnification of fig. 1 showing the secreted attachment substance indicated by the arrow, gn, gnathosoma; pp, palp.  $\times 1200$ . Figure 3. Larval parasite attached to the elytra.  $\times 425$ . Figure 4. Higher magnification of fig. 3, the arrow indicated the attachment exudate.  $\times 1500$ .

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