side up, and in relating the lengthy couplet to the line drawings. But even when one knows the perspective, it is difficult to position a caterpillar in the same view under a dissecting microscope and still keep it submerged in alcohol.

The purpose of our paper is to clarify this couplet by rewording it and offering light and SEM photographs of the appropriate structures. Hopefully, the overall utility of Crumb's publication will be enhanced. In all due respect, it should be noted that Crumb's publication was completed during a period of the author's failing eyesight in his retirement years (Clarke, pers. comm.). Otherwise, we are quite certain that it would have been more clearly illustrated and keyed.

Thus, our suggested alternative for the first couplet is:

1. Venter of abdominal segment 10 not grooved posteriorly, the posterior margin (subanal region) truncate or convex (Figs. 1, 2) **2**
   Venter of abdominal segment 10 grooved posteriorly, the posterior margin (subanal region) medially impressed (Figs. 3, 4) **9**

These differences show reasonably well in the accompanying illustrations of *Alypia octomaculata* Fabricius (eight-spotted forester) and *Papaipema nebris* (Guenée) (common stalk borer). However, proceed with caution, because as Crumb noted, the actual condition is sometimes very difficult to interpret if the specimen has been inflated or has had its rectum everted.

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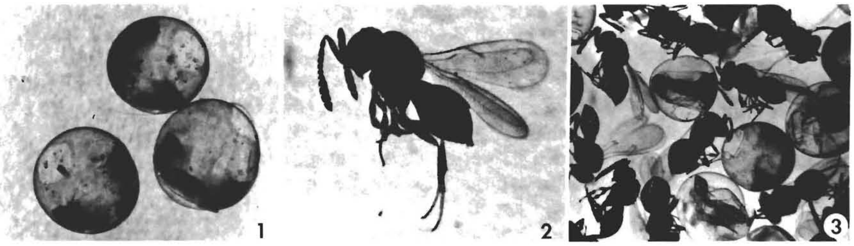
EGG PARASITISM OF *APANTESIS PARTHENICE* (ARCTIIDAE) THROUGH APPARENT PHORESY BY THE WASP *TELENOMUS* SP. (SCELIONIDAE)

On 8 Aug. 1982 while hiking along the north fork of Rock Creek near Saddlestring (Johnson Co.), Wyoming at the HF Bar Ranch (elev. 5400 ft) at 1400 h, I collected a nearly fresh female specimen of an arctiid moth, *Apantesis parthenice* Kirby. The insect was resting on sagebrush a few inches above the ground and was hand-caught. I pinched its thorax lightly and placed it in a folded glassine envelope (size 3.5 × 2 in) which then was quickly transferred into my enclosed leather collecting pouch. Upon returning to the ranch after several hours of hiking, all of the envelopes containing specimens taken that afternoon were dated and put into a plastic bag with a card containing collection data. This bag in turn was tightly folded, sealed with masking tape, and placed in a closed cigar box in a dresser drawer in my cabin at the ranch.

Upon returning to Maryland later in the month, the cigar box was opened and unpacked in my laboratory at U.M.B.C. on 27 Aug. At this time I discovered 71 small dark



FIGS. 1–3. Arctiid moth egg shells (*Apantesis parthenice* and scelionid phoretic egg parasites, *Telenomus* sp.). **1,** moth egg shells, showing wasp emergence holes and single shed puparium within each egg; **2,** lateral view of wasp specimen; **3,** general microscopic view of wasps and eggs.

eggs which had been laid by the moth. Six first instar larvae had emerged. One of them was dead, but the others were crawling around inside the glassine envelope. Also found within the envelope were four live minute wasps (later identified as Proctotrupoidea, Scelionidae, *Telenomus* sp.). These wasps and the moth eggs are shown in Figs. 1–3. Further examination of all of the remaining darkened eggs using a stereo-microscope revealed that each contained a single fully matured wasp inside of the transparent egg chorion. The small wasps were living, and their wings had fully expanded within the eggs. The arctiid eggs all were placed into a covered plastic petri dish with a small square of moistened filter paper. Several wasps were watched as they emerged through the egg shells after chewing small holes (Fig. 1). The wasps were about 1 mm long, had yellowish legs and antennae, and had nearly veinless transparent round-margined wings (Fig. 2). By Monday 30 Aug., 52 additional wasps representing both sexes had emerged from 53 remaining eggs (Fig. 3). Evidently, all but six of the eggs had been parasitized.

The maternal parasitic wasp must have been introduced into the glassine envelope at the same time the specimen of *Apantesis* was placed there. There was little (if any) opportunity for the wasp to have found her way into the closed envelope at a later time, although no wasp was seen at the time of collection, and none has been found clinging to the pinned moth despite thorough observation through the stereo-microscope. Most likely the maternal wasp was clinging to the resting moth (perhaps hiding beneath her wings or within the thick carpet of abdominal or thoracic scales) and was inadvertently introduced by me into the glassine envelope in this way.

A number of arthropods including chalcid, trichogrammatid, and scelionid wasps are known to exhibit phoresy, the phenomenon of attaching themselves to another insect for purposes of transportation (Borrer, DeLong & Triplehorn, 1964, An introduction to the study of insects, 4th ed., Holt, Rinehart and Winston, N.Y., 852 pp.; Comstock, 1964, An introduction to entomology, 9th rev. ed., Comstock Publ. Assoc., Ithaca, N.Y., 1064 pp.; Frost, 1959, Insect life and insect natural history, 2nd rev. ed., Dover Publ., Inc., N.Y. 526 pp.). This behavior has been particularly well-documented for wasp species attacking the eggs of spiders, Hemiptera, Orthoptera, and mantids (Askew, 1971, Parasitic insects, Amer. Elsevier Publ. Co., Inc., N.Y. 316 pp.; Muesebeck, 1972, Nearctic species of Scelionidae (Hymenoptera: Proctotrupoidea) that parasitize the eggs of grasshoppers, Smiths. Contribs. Zool. No. 122, Smiths. Instit. Press, Wash., D.C. 33 pp.; and Rabaud, 1922, Note sur la comportement de *Rielia manticida* Kieff., Proctotrupide parasite des ootheques de Mantes, Bull. Soc. Zool. Fr. 47:10–15). L. Van Vuuren (1935, Waarnemingen omtrent *Phanurus beneficiens* (Zehnt.) (Hym. Scelionidae) op *Schoenobius bipunctifer* Walker, Ent. Meded. Ned.-Indië 1:29–33) describes the phoretic behavior of an Oriental scelionid which is a common parasite of pyralid moth eggs. The female wasps cling to the female host (either beneath her wings or to her body) until she lays eggs, at which time the parasite quickly detaches herself from the host and parasitizes the freshly laid eggs. This relationship is not an obligatory one, however.

TABLE 1. Records of (A) *Telenomus* wasps (Scelionidae) known to attack arctiids (with known localities of occurrence) and (B) parasitoids having *Apantesis* moth hosts, based on Muesebeck et al., 1951 and Krombein et al., 1979 (information courtesy of R. T. Mitchell).

Moth hosts	Wasp parasites
A) *Telenomus* species known to attack arctiids:	
Hyphantria cunea (Drury)	*Telenomus bifidis* Riley, D.C., Mo.
Diacrisia virginica (Fabr.)	*T. nigriscapus* Ashm., Mich., Ill.
Diacrisia virginica (Fabr.)	*T. spilosomatus* Ashm., D.C., Va., Kans.
B) Parasitoids having *Apantesis* moth hosts:	
Apantesis mais (Drury)	*Coelopisthia forbesii* (D.T.) Pteromalidae
A. virgo (L.)	*Casinaria genuina* (Nort.) Ichneumonidae
Apantesis sp.	*Hyposoter rivalis* (Cress.) Ichneumonidae
Apantesis sp.	*Apanteles phobetri* Rohwer, Brachonidae

Since the *A. parthenice* moth's thorax had been pinched, she probably oviposited over the next day or two only following collection (9–10 Aug. 1982). The wasp parasite in turn must have laid her own eggs at that time (or shortly thereafter) as well. Both moth egg-laying and wasp egg location and parasitization within the confines of the glassine envelope must have occurred in totally dark conditions inside the closed cigar box and closed dresser drawer. Development time of the *Apantesis* larvae and the full maturation of the proctotrupoid wasps both required between 17–19 days, basically at room temperature (i.e., indoors).

Whether or not these tiny egg parasites of Lepidoptera often search for, locate, and remain with females of their hosts, as these observations suggest, needs to be verified in the field. Such an egg-locating strategy would seem to be a very efficient one, especially, if fresh soft eggs are required for successful parasite oviposition. The overall frequency of moth egg parasitism was 65/71 eggs (or 91.5%) within the cramped confines of the glassine envelope. Such phoretic behavior would seem to convey a tremendous selective advantage to those individuals which practice it, as compared to the alternative strategy of directly seeking out individual eggs (or egg masses in the case of *A. parthenice*). Since only a single wasp parasite emerged from each moth egg, it is likely the maternal wasp was capable of distinguishing unparasitized (e.g., newly laid eggs) from those she had previously parasitized. Such chemosensory capabilities are widely known among parasitic Hymenoptera.

Although numerous parasitoids of the arctiidae are known, neither Muesebeck et al. (1951, Hymenoptera of America north of Mexico. Synoptic Catalogue, U.S. Govt. Print. Off., Wash., D.C. 1420 pp.) nor Krombein et al. (1979, Catalogue of Hymenoptera in America north of Mexico, Smiths. Inst. Press, Wash., D.C. Vols. 1 and 2, 275 pp.) list any parasitoids for *A. parthenice*. Only six wasp genera are included for the entire moth genus, as shown in Table 1. Fifty-three species of *Telenomus* wasps have been described from North America, but only three of them (as listed in the Table) are known to attack arctiid moths. The species of *Telenomus* here described may possibly be a new one, since this host record is new, and those previously reported are either eastern or midwestern. Also, only about one quarter of the total telenomid species in North America have so far been described (P. M. March, pers. comm.). This possibility presently is being investigated further. Scelionid wasps in some cases have been successfully used as biological control agents for insect pests.

I am grateful to Dr. P. M. Marsh for identifying the wasps, and to Dr. D. C. Ferguson for confirming the moth species. Both persons are from the Systematic Entomology Laboratory, U.S.D.A., U.S. Natural History Museum, Wash., D.C. 20560. I thank R. T. Mitchell of Silver Spring, Maryland for providing the information contained in Table 1, and for comments on the manuscript.

Covell, Jr. (1984. A field guide to the moths of eastern North America. Houghton Mifflin Co., Boston. 496 pp.) places this tiger moth in genus *Grammia*. Dr. Norman Johnson, Department of Entomology, Ohio State University, presently is revising the taxonomy of Scelionid wasps. He recently informed me (pers. comm.) that most of the early type specimens of *Telenomus* are females but that the male genitalia possess important diagnostic features for determining species status. This wasp species in his opinion may be undescribed and no specific designation can be given at this time.

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NOTES ON THE HABITAT AND FOODPLANT OF *INCISALIA HENRICI* (LYCAENIDAE) AND *PYGRUS CENTAUREAE* (HESPERIIDAE) IN MICHIGAN

The foodplant of *Incisalia henrici* (Grote and Robinson) in Michigan was unknown until 1981, when it was confirmed that maple-leaf viburnum, *Viburnum acerifolium* L. (Caprifoliaceae) is an acceptable foodplant. According to Tietz (1972, An index to the described life histories, early stages, and hosts of the Macrolepidoptera of the Continental United States and Canada, Allyn Mus. Entomol., Sarasota, FL) and Pyle (1981, The Audubon Society field guide to North American butterflies, A. Knopf, Inc., NY), viburnum is not listed as a known foodplant for *I. henrici*.

I first became acquainted with Henry's Elfin in 1953, when a series was collected in the Langston State Game Area, Montcalm County, on 15 and 23 May. Since that time, *I. henrici* has been collected and observed in the same area in close proximity to second growth aspen (*Populus grandidentata* Michx. and *tremuloides* Michx.), white oak (*Quercus alba* L.) and red maple (*Acer rubrum* L.), with scattered white pine (*Pinus strobus* L.) on sandy soil. Most of the adults have been taken (before full leaf development along sandy trails and narrow wooded sunny openings) while perched on small shrubs, on dried leaves and twigs or on bare sand. At this site, adults could easily be overlooked because of their small size and dark color. Only once was an adult observed nectaring on choke cherry, *Prunus virginiana* L., along the trail. During this period, the elfin gave no clues to the preferred larval foodplant despite the presence in the Game Area of *Prunus* sp. and *Vaccinium* sp., two previously recorded foodplants for *I. henrici*.

It wasn't until 3 June 1979, that Harry King and I discovered several Lycaenidae larvae feeding on the flower cymes of *V. acerifolium* in a similar aspen-oak woods, located one and one-half miles north of the original site. The greenish slug-shaped larvae, with pale lateral stripes, appeared to resemble *I. henrici*, based on the brief description in Klots (1951, Field guide to the butterflies, Houghton Mifflin Co., MA). The larvae were removed and kept in captivity until the following spring when (to my disappointment) *Celastrina ladon* (Cramer) emerged. Then during 1980–1982, I examined flower cymes of *V. acerifolium* at both Game Area locations and found numerous larvae of various instars representing *C. ladon* and what was believed to be *I. henrici*. Subsequent emergence of *I. henrici* in 1981 and 1983 from over-wintering pupae finally confirmed the use of *Viburnum acerifolium* as the preferred foodplant in this location.

In 1974, Larry West, noted nature photographer, observed a female *Pygrus centaureae wyandot* (Edwards) oviposit an egg on the underside of a wild strawberry leaf, *Fragaria virginiana* Duchesne, on 22 May in Otsego County, Michigan. Since 1958, the grizzled skipper has been collected from 15 May to 3 June on a pine barren in an area of short