PLATE 15

Figure 3. Nodule 3686 containing mayfly and eggs. Size of nodule, 44 × 34 × 22 mm. Photograph by George Brauer.

Order EPHEMERIDA Leach 1817.

Superfamily BAETIDOIDEA n.nom.
(BAETOIDEA Ulmer 1920)

Family BAETIDIDAE n.nom.
(BAETIDAE Ulmer 1920)

Subfamily BAETIDINAE Handlirsch 1929, or
BAETISCINAE Handlirsch 1929.

(Figures 3, 4, 5)

An interesting find, specimen 3686, was made in a very irregular, unpromising brown and gray-colored nodule, No. 28957, collected by Mrs. Laura Rouse, in Section 19, R.2.E., T.10.N., Yermo Quadrangle, when she broke the nodule in two. Here were disclosed in the two pieces, a female mayfly and her cluster of eggs, loosely placed in a mass which probably was originally foamy or gelatinous. The nodule weighs 34.7 gram, and measures 44 x 34 x 22 mm.

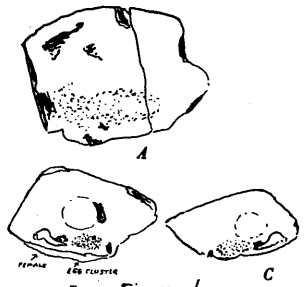

Figure 4

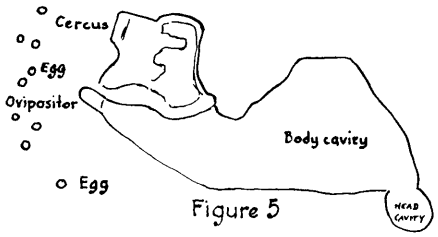

Figure 5

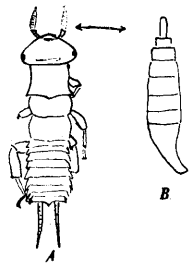

Figure 6

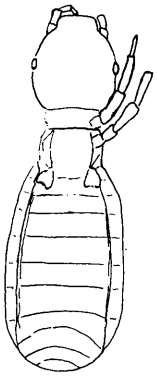

Figure 7

PLATE 16

Figure 4. Drawings of nodule 3686. *a*. Outside of nodule. *b*. Face of larger piece showing female mayfly and cluster of eggs. *c*. Face of smaller piece showing eggs and cavity occupied by female.

Figure 5. Mayfly from nodule 3686: sketch of female cavity, and proximity of eggs.

Figure 6. Stone fly, specimen 2597: *a*. First larva, length 1.8 mm.; *b*. Enlargement of antenna.

Figure 7. *Miotroctes rousei,* new species, type. Size 0.9 mm.

Robert W. Pennak (1953, Fresh Water Invertebrates of the United States. Ephemeroptera (Mayflies). pp. 509-521) states: "In some species the female actually crawls below the surface and deposits on submerged objects. . . . The eggs are produced in great numbers . . . exceedingly small . . . sometimes imbedded in a gelatinous material." He further says that mayfly nymphs browse in the substrate, feeding with a grinding action of the mandibles, on algae, or the tissues of higher aquatic plants.

Mayflies, after emergence as adults, seldom live over a day (in which they mate and oviposit). The finding of the female and her egg cluster presents the event of one day perpetuated by the catastrophe that involved the lake.

The female is chalky, cream color, not crystallized, and contains many orange brown spherical bodies, but her cavity proves her identity as mayfly. The body measures 7.44 mm., height 2.80 mm. Her egg cluster is 14 x 6 mm. in cross section. The individual eggs measure 0.19 to 0.23 mm. in diameter. They are spherical, unornamented, without filaments. James G. Needham, Jay R. Traver, and Yin-Chi-Hsu (1935, The Biology of Mayflies) limit the known spherical eggs with smooth chorion to the genera *Baetisca* and *Callibaetis*.

The *Callibaetis* species are pond dwellers, and the eggs measure about 0.12 mm. in diameter. The *Baetisca* species are stream dwellers and the eggs measure about 0.18 mm. in diameter. The fossil eggs measure 0.19 to 0.23 mm. in diameter.

The size of the adult fossil (7.44 mm.) ranks her with the smallest of *Baetisca* and *Callibaetis*. The sketch of the cavity (Figure 5) shows the lowered head, the high thorax, the ovipositor tube extending to a point opposite the base of the cerci. The eggs lie just beyond the ovipositor. But their distribution in the nodule shows that she moved quite a distance during the oviposition.

Order PLECOPTERA Burmeister 1839.
(Figure 6).

While stone flies can be expected in the lake fauna, the only specimen so far found is a crystallized first larva, extracted by formic acid from Nodule 17212, and numbered specimen 2597; found by Ruth Kirkby at her site 10, which is not far from our site 10, the Rouse anticline, at the switchback in NE ¼ Section 19, R.2.E.,T.10.N., Yermo Quadrangle.

This tiny larva is crystal clear, measuring 1.8 mm. in length; antennae 0.4 mm., cerci 0.5 mm. Figure 6a shows the general form, and Figure 6b an enlargement of the left antenna. The antenna has a large curved basal segment; segments 2 to 7 transverse, segment 8 elongate, slender.

So little is known of the early stages of this order that further placement is not yet possible.

Superorder CORRODENTIA Burmeister 1839.
Order COPEOGNATHA Enderlein 1903.

It is with great pleasure that a fossil bark louse is now added to the nodule series of fossils.

A total of 18 species in 10 genera of Copeognatha are known from amber (Handlirsch, 1906. Die Fossilen Insekten Lief. 5:702-704). One fossil of this order is known from North America,—*Parapsocus disjunctus* Scudder, from the Oligocene of Fossil Cañon, White River, Utah (Scudder, 1890. Tertiary Insects of North America. p. 119; pl. 5, fig. 51).

Suborder TROCTOMORPHA Borror and Delong 1954.
Family LIPOSCELIDAE (Troctidae)

Until 1907 only one species of fossil Liposcelidae (Troctidae) had been recorded. The specimen here described resembles our common household pest *Liposcelis divinatorius* (Müller 1776) (*Troctes*).

Genus MIOTROCTES, new genus.

The genus is separated from *Liposcelis* by the fact that the anterior and middle femora are not enlarged. The posterior femors are missing in the specimen.

Miotroctes rousei, new species.
(Figure 7).

Named in honor of the late John H. Rouse, who with Mrs. Rouse independently discovered this interesting field of fossil insects.

HOLOTYPE. A beautiful, clear crystalline specimen, No. 3633 (L.A.Co.Mus.Invert.Paleontology No.S 9103), separated by the author by use of formic acid from Nodule 26624, collected at Site 10 (Rouse anticline) (LACMIP 357), in Lot 313, from NE ¼ Section 19, R.2.E., T.10.N., Yermo Quadrangle, by Mrs. Laura Rouse.

DESCRIPTION. Length 0.903 mm. Head broadly rounded, with single eyes slightly in front of the middle of the head. Clypeus quadrate, one-half as wide as head, and about one-seventh as long as head. (In this it differs strongly from the common *Liposcelis divinatorius.*) Maxillary palpi 4-jointed.

Prothorax short, transverse; mesothorax and metathorax with common sternal plate. Anterior and middle legs with femur and tibia of equal length, not swollen. Posterior legs missing in specimen.

Abdomen 10-segmented, with pleural folds ventral.

Order COLEOPTERA Linnaeus 1758.
Family DERMESTIDAE Leach 1817.
Subfamily ANTHRENINAE.
Tribe MEGATOMINI.
Subtribe CRYPTORHOPALINA.
Genus MIOCRYPTORHOPALUM, new genus.

Characters based on larva only; ocelli probably 6; antennae short and stout; mandibles toothed, but without retinaculum; hastisetal hairs on meso- and methathorax, and seventh abdominal segment. The following table shows the position of this genus with respect to others in the family.

TABLE OF CHARACTERS OF DERMESTID LARVAE

DERMESTIDAE	Ocelli on each side	Hastisetal hairs on segments	Antennae	MANDIBLES		Caudal brush	Distribution
				with tooth	with retinaculum		
Thylodriinae							
Thylodrius	3	none	short	absent	absent	absent	Europe America
Attageninae							
Novelsis	4	none	long	absent	present	present	America
Attagenus	5	none	long	absent	present	present	America
Dermestinae							
Dermestes	6	none	long	tridentate	present	absent	America
Trinodinae							
Aspectus	6	none	short	present	absent	sparse long hairs	America
Anthreninae							
Anthrenini							
Anthrenus	6	5-7	long	absent	with or without	dense brushes	America
Megatomini							
Megatomina							
Perimegatoma	6	5-8	long	absent	present		America
Thaumaglossa	6	5-8	short	absent	absent		America
Trogoderma	6	5-8	short	absent	present	present	cosmopolitan
Cryptorhopalina							
Labrocerus	6	7, 8	short	present	present	hastisetal	
Globicornis	6	7, 8	short	present	present	hastisetal	
Miocryptorhopalum	prob. 6	mesothorax metathorax 7	short	present	absent	absent	fossil
Cryptorhopalum	6	7 only	short	present	present	hastisetal	arid America
Ctesiini							
Ctesias	6	4-7	long	present	absent	present	Europe

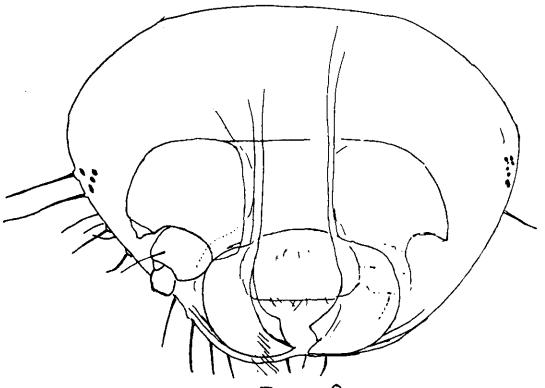

Figure 8

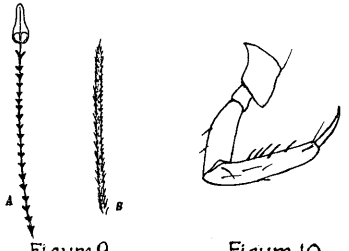

Figure 9 Figure 10

PLATE 17

Figure 8. *Miocryptorhopalum kirkbyae*, new species, type, larval head, Instar I.
Figure 9. *Miocryptorhopalum kirkbyae, a.* Hastiseta: *b.* Barbed seta.
Figure 10. *Miocryptorhopalum kirkbyae.* Hind leg of larva I.

There is a desert species *Cryptorhopalum aridum* Casey, from the Inyo Mts., of which the larva is undescribed. All of the species of Cryptorhopalum in the United States are from arid regions.

Miocryptorhopalum kirkbyae, new species.
(Figures 8, 9, 10).

Named in honor of my friend and co-worker, Mrs. Ruth Kirkby.

HOLOTYPE No. S-776, in Kirkby Private Museum, Riverside, Calif. Crystallized larva extracted by formic acid from a Calico Mountain nodule, collected by Ruth Kirkby at her site 10, NE ¼ Section 19, Upper Switchback Cañon, R.2.E., T.10.N., Yermo Quadrangle.

DESCRIPTION. Instar I larva: length 1.44 mm.; width of head 0.203 mm.

Head (Figure 8) transverse, ovoid, with mandibles ventral. The mandibles are outwardly rounded, medianly about in contact, with abductor muscles just within the margin of the head; and the adductor muscles parallel, directed posteriorly. The armature of the mandibles consists only of the incisor and a molar tooth. The three-jointed robust antennae are postero-lateral to the mandibles, and the third segment barely surpasses the anterior margin of the head. A tiny lobe on second segment beside the third segment is characteristic of Dermestid larvae. The specimen is so clear that the maxillae and epipharynx are barely discernible. There are probably 6 pigmented ocelli in clumps at each side of head.

Body simply segmented, with 8 abdominal segments. The surface is armed with many barbed setae (Figure 9b), and a few hastisetae (Figure 9a) on mesothorax, metathorax, and seventh segment. The hastisetae are close in form to those of *Trogoderma ornatum* Say. There is no terminal brush.

Legs alike, four-jointed, with broad coxa, short trochanter, more robust femur, longer tibia, and a long acute tarsungulus (Figure 10).

The finding of this larva, usually associated with dry, dead material is unexpected. It was probably blown into the water with the dry material in which it was feeding.

This species has been studied by checking the following publications:

BÖVING, Adam G., and F. L. CRAIGHEAD.
1931. An illustrated synopsis of the principal larval forms of the Order Coleoptera. Brooklyn Ent. Soc. p. 55, plates 89, 90.

PETERSON, Alvah
1951. Larvae of Insects. An Introduction to nearctic species. Part II. pp. 42, 80, 174, plates 89, 90.

REES, Bryant E.
1943. Classification of the Dermestidae (larder, hide, and carpet beetles) based on larval characters, with a key to the North American genera. U.S. Dept. Agr., Misc. Publ. 511, pp. 1-18, 5 figs.