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New Mites, mostly Economic (Arach., Acar.).

By NATHAN BANKS.

(Plates XIV, XV).

The following new species are part of the great amount of material sent to the United States Bureau of Entomology for determination. The species of definite economic value I have described, and also a few that represent peculiar genera, new to the collections. A new arrangement of the genera of red spiders is also proposed, including three new genera.

EUPODIDAE.

Notophallus viridis n. sp. (Pl. XIV, fig. 4; Pl. XV, fig. 14).

Dark greenish, legs reddish, a red spot on dorsum near tip, and one on venter also near tip; mouth parts red. Body about one and one-third times longer than broad, almost globose, high and broadly rounded behind, above with scattered, fine, short, simple hairs. Legs slender; legs I and IV as long as, or a little longer than body; tarsi I about as long as the preceding joint, tarsus IV plainly a little shorter than

- Mosillus tibialis* Cress. Wildwood, July 18, 1908. (E. T. Cresson, Jr.). (Ent. News, vol. 27, p. 149).
- Drosophila affinis* Sturt. New Jersey. (Ann. Ent. Soc. Amer. vol. 9, p. 334).
- Drosophila putrida* Sturt. New Jersey. (Ann. Ent. Soc. Amer. vol. 9, p. 339).
- Drosophila dimidiata* Loew. Alpine, July 25; Riverton, September 8. (E. L. Dickerson).
- Phytomyza affinis* Fall. Springfield, Orange, Nutley, Rutherford, Elizabeth, Riverton, June. Larva mines leaves of clematis. (H. B. Weiss).
- Phytomyza ilicicola* Loew. Pemberton. Mined leaves of inkberry collected February 23 and adults issued in late April and May. (H. B. Scammell).
- Phytomyza aquilegiae* Hardy. Rutherford, Springfield, Riverton, Elizabeth, June to September. Larva mines leaves of columbine. (H. B. Weiss).
- Aulacigaster rufitarsis* Macq. Morristown, June 17. (E. L. Dickerson).

Studies in the Tenebrionid Tribe Eleodiini, No. 2 (Coleop.).*

By F. E. BLAISDELL, SR., San Francisco, California.

The following descriptions of new species and races have been in manuscript for a number of years. Nearly all of them have been distributed under the manuscript names, and it now becomes very imperative that they be published without delay.

Eleodes manni n. sp.

Elongate oblong-oval to ovate (some ♀♀), subasperate and moderately convex, surface feebly shining.

Head twice as wide as long, scarcely convex, feebly impressed just within the prominent frontal margins; frontal suture more or less evident as a glabrous line, sometimes impressed; surface rather coarsely and more or less irregularly punctate, punctures denser laterally and on the epistoma, vertex more finely punctured; antennae long, reaching slightly beyond the pronotal base, outer four joints moderately compressed and feebly dilated, third joint quite equal in length to the fourth and fifth combined, fourth, fifth, sixth and seventh joints subequal in length and obconical, eighth obconico-triangular, ninth and tenth suborbicular in outline, eleventh obovate and obliquely truncate at tip.

*Studies No. 1 was published in the NEWS for February, 1910, vol. xxi, pp. 60-67.

Pronotum widest at the middle, about one-fourth wider than long, about twice as wide as the head in the female, and less than twice as wide in the male; disk very moderately and evenly convex, somewhat densely and irregularly punctate, punctures rather coarse, somewhat denser laterally and not noticeably granulate nor with the surface depressed, not declivous at the angles; apex very feebly emarginate in circular arc, very finely to sub-obsolete margined; sides broadly, evenly and moderately arcuate to the basal twelfth, there briefly sinuate with the sides parallel to the basal angles, margin entire and finely beaded; base quite truncate and distinctly margined, slightly wider than the apex; apical angles not in the least prominent and very feebly rounded; basal angles small and rectangular.

Propleurae very sparsely muricato-granulate and obsolete rugulose.

Elytra oval, widest at the middle; base truncate and not in the least adapted to the pronotal base, equal in width to the same; humeri obsolete; sides evenly arcuate, apex somewhat narrowed and rather broadly rounded; disk feebly convex on the dorsum, rather broadly and quite evenly rounded laterally, obliquely declivous posteriorly; surface rather closely and moderately coarsely punctate, punctures somewhat corroded and scarcely asperate centrally along the suture, there subserially arranged, the interstitial punctures more distantly spaced than the closely-placed striae punctures; laterally and apically the punctures are more confused and distinctly muricate.

Epipleurae moderately narrow, gradually narrowing from base to apex, superior margin very slightly curving upward at the base; surface dull, concave in basal one-half and sparsely subasperately punctate.

Sterna finely and densely punctate, punctures setigerous and the surface not noticeably rugulose.

Parapleurae rather coarsely punctate.

Abdomen horizontal, somewhat shining, moderately finely punctate and obsolete rugulose.

Legs moderate in length, not stout. Profemora mutic; tibial spurs similar and the tarsi dissimilar in the sexes. Plantar spinules ferruginous.

♂. Elongate, narrow, three times as long as wide. Antennae extending about three joints beyond the pronotal base. Elytra as a rule scarcely wider than the pronotum, moderately convex. First two abdominal segments flattened at the middle, the intercoxal process more or less concave. First two joints of the protarsi not noticeably thickened beneath, but clothed with large pads of yellow silken pubescence; surfaces of the pads flat and subpatellate; the marginal and apico-marginal spinules rather long, silky, the latter longer and acute; plantar grooves distinct on the third and fourth joints. First two joints of the mesotarsi with silken pubescence on the apical half of

each, plantar grooves nearly obliterated, especially on the first joint.

♂. Oval to ovate, more robust, about twice as long as wide. Antennae extending about one joint beyond the pronotal base, the latter one-twelfth of its width wider than the apex. Abdomen rather strongly convex. First joint of the protarsi slightly thicker beneath than the second, plantar grooves entire.

Measurements.—Males: Length 15.0-15.2 mm.; width 5.0-6.5 mm. Females: Length 13.5-16.0 mm.; width 6.8-7.0 mm.

Habitat.—Washington (Wawawai, March 20th, April 24th and May 1st, 1909; Ellensburg, March 13th, 1909; Almota, May 17th).

Manni belongs to the subgenus *Blaphylis*.

Types (♂ and ♀) in my own collection. Paratypes in Mr. Wm. Mann's collection, to whom the species is dedicated.

Eleodes variolosa n. var. (A new race of *manni*.)

Oblong, elongate, more or less shining, subglabrous. Elytra very coarsely punctate on the disk, the punctures coalescing transversely; laterally and on the apex muricato-rugose, the small muricate tubercles coalescing transversely; intervals somewhat convex; humeri obtuse to obsolete.

Head coarsely, sparsely and irregularly punctate, the punctures crowded laterally and on the epistoma, very feebly convex, impressed laterally and along the pronotal suture. Antennae reaching a little beyond the pronotal base, moderately stout, slightly compressed in the outer four joints and not dilated, third joint a little longer than the fourth and fifth taken together; joints 4-7 inclusive subequal in length and thickness, scarcely obconical, subcylindrical; eighth triangulo-obconical, ninth subtriangular, tenth and eleventh subtrapezoidal, about as long as wide, the latter truncately obovate.

Pronotum widest at the middle and wider than long; disk moderately convex coarsely, irregularly and rather densely punctate, more densely and subgranulately so along the margins at the sides, punctures subequal in size, intervals flat and forming small impunctate areas here and there; apex very feebly emarginate and obsoletely margined; sides evenly arcuate, feebly and not suddenly sinuate in basal seventh, scarcely parallel before the angles; base truncate and finely margined; apical angles obtuse and not at all prominent; basal angles subrectangular and not in the least prominent.

Propleurae opaque, sparsely and very irregularly punctato-granulate, subrugulose about the acetabula.

Elytra oblong-oval to ovate, widest at the middle, base wider than the contiguous pronotal base; humeri obtuse to obsolete; sides evenly arcuate from base to apex, the latter broadly rounded; disk moderately

convex and broadly arcuately rounded laterally, arcuately declivous posteriorly; surface rather coarsely and not densely sculptured, centrally the punctures are coarse, shallow and somewhat eroded, tending to coalesce transversely, laterally and apically muricato-granulate, the rather large granules coalescing transversely so as to appear rugose.

Epipleuræ opaque, finely, sparsely and subasperately punctulate, gradually narrowing from base to apex; superior margin scarcely sinuate beneath the humeri.

Sterna and *parapleuræ* finely and not densely punctate nor asperate.

Abdomen rather finely and sparsely punctate, more coarsely and rugosely so on the first segment, fourth segment with comparatively few punctures.

Legs rather stout, moderate in length. Profemora mutic. Tarsi dissimilar in the sexes.

♂. Somewhat narrow. Elytra oblong; abdomen less convex, somewhat flattened on the first two segments, and feebly oblique to the sterna.

Protarsi with a blunt tuft of golden pubescence on the first joint at apex beneath; mesotarsi without tufts of pubescence.

♀. Somewhat stout. Elytra less oblong and more oval. Abdomen moderately convex and horizontal, i. e. on the same plane with the sterna. First joint of the protarsi thickened beneath.

Measurements. Male.—Length, 12.0 mm.; width 5.0 mm. Female.—Length, 11.5 mm.; width, 6.0 mm.

Habitat.—Washington (Wenatchee, May 8th: Ellensburg, March 13th) collected by Wm. Mann. Number of specimens studied, 3 (2 ♂♂, 1 ♀).

Types (♂ and ♀) in my own collection. *Paratype* (♂) in Mr. Mann's collection.

***Eleodes adulterina* n. var.** (A race of *cordata* Esch.)

Syn. *forma intermedia*. See Bull. 63, U. S. Nat. Mus., p. 381.)

The name *intermedia* is preoccupied. This race of *cordata* Esch. was briefly defined as *E. cordata forma intermedia* in the above monograph of the Eleodiini as follows: "Sculpturing more strongly muricato-tuberculate, with the intervals between the punctures less convex and consequently less rugose, approaching *pimelioides* Mann." On the central area of the elytral disk along the suture the punctures become less muricate and simpler.

A series of 209 specimens collected by Mr. F. W. Nunen-

macher, in Eldorado, Plumas, Del Norte, Humboldt, Placer, Monterey, Shasta and Lake Counties, California, demonstrates very clearly that *adulterina* is the prevailing race of *cordata*. The specimens collected in Del Norte County are on the average smaller than those collected elsewhere, otherwise they are true *adulterina*. The above series is augmented by 156 specimens taken in Tuolumne and Mariposa Counties.

Eleodes hybrida n. var. (A race of *cordata* Esch.)

Prothorax as in *cordata*, except that the pronotal intervals are flat and more or less alutaceous. The punctures are rather abruptly defined, more or less coalescent and irregularly placed, leaving small and impunctate areas on the central part of the disk. The moderately deep punctures give the intervals the appearance of being raised, although not in the least rugose.

Measurements. Males—Length, 12.5-13.0 mm.; width 5.5 mm. Female—Length, 12.5-13.0 mm.; width, 6.0-6.5 mm.

Types in my own collection. Type locality, Plumas County.

Habitat.—Plumas and Lake Counties. F. W. Nunenmacher, collector. Number of specimens studied, 55.

In *adulterina* the prothoracic intervals are rugose as in *cordata* and the punctures finer. The first two joints of the pro-tarsi at tips beneath, bear moderate tufts of piceo-flavate pubescence, and the first joint of the mesotarsi has a small transverse submarginal tuft at tip (δ).

Eleodes trita n. var. (A race of *parvicollis* Esch.)

Opaque, sculpturing eroded, oblong-ovate. Thorax somewhat transverse. Elytra depressed, humeri prominent and obtusely rounded.

Head and antennae as in *producta* Mann. *Pronotum* less transverse and less arcuate behind the middle than in *producta*; disk moderately convex, more or less slightly impressed laterally, rather coarsely and somewhat densely punctate, punctures shallow and eroded, denser and finely granulate along the lateral margin, the summits of the granules bright and shining; apex, sides, base and angles as in *producta*. *Propleurae* sparsely granulato-punctate and more or less rugulose.

Elytra about twice as long as wide, less elongate than in *producta*; base truncate, distinctly wider than the base of the pronotum; sides more or less arcuate and subparallel, becoming arcuately and somewhat convergent in apical third, apex rather broadly rounded; disk distinctly flattened at base, thence more or less evenly convex, rather obliquely and somewhat rapidly declivous posteriorly, arcuately rounded

at the sides; surface scarcely densely punctate, punctures rather coarse and eroded, irregular but exhibiting a feeble lineate arrangement, subequal in size throughout, about the humeri and along the arcuately declivous sides granulate, granules distinct, bright and shining.

Epiplurae obsolete and very sparsely punctate.

Sterna.—Prosternum densely punctate, more or less longitudinally grooved between the coxae, feebly mucronate at tip. Meso- and metasterna densely punctate.

Abdomen densely and not very finely punctate on segments 1 and 2, third and fourth less so at middle and along the base, fifth more or less impunctate; glabrous and shining at middle to base.

Legs less stout than in *producta*.

♂. Slightly more oblong, scarcely more depressed than the female. Abdomen slightly flattened at middle of the first two segments and feebly oblique. First two joints of the protarsi moderately thickened at tip beneath and there clothed with rather long flavate pubescence; tuft of the first joint larger than that of the second, both obliterating the plantar groove; third joint without evidence of increased pubescence, spinose on the margins of the groove, the latter smooth and shining. First joint of the mesotarsi also has a small tuft at tip.

♀. More or less oblong-ovate, somewhat broader. Abdomen more convex at base.

Measurements. Males.—Length, 11.0-16.0 mm.; width 5.0-6.4 mm. Females.—Length, 12.0-13.0 mm.; width, 5.5-6.0 mm.

Habitat.—Oregon (Josephine County, June 8th). California (Humboldt County, Del Norte County).

Described from a series of 23 specimens.

Types in my own collection. Collected by Mr. F. W. Nunenmacher, who possesses paratypes.

Type locality.—Del Norte County, California.

Trita may have been distributed as *forma opaca*. Compared with a newly collected series of 42 specimens of *producta* Mann., and 280 specimens of *constricta* LeC., all collected by Mr. Nunenmacher on the same trip.

Eleodes papillosa n. sp.

Syn. *granulata forma tuberculata*.

During the summer of 1913, Dr. E. C. Van Dyke and Mr. L. R. Reynolds collected typical *Eleodes granulata* LeC. at Carville, Trinity County, California. When the monograph of the Eleodiini (Bull. 63, U. S. Nat. Mus.) was written no specimens of typical *granulata* had been seen, and the author was

doubtful as to the status of the present species, which was defined as follows: "Thorax as in *aspera* LeC., elytra with the humeri subacute; *disk sculptured with distinct tubercles*, which usually show a serial arrangement, alternate series larger and not at all rugose."

Habital.—California (Siskiyou County, collections U. S. National Museum).

Papillosa is larger and more robust than *granulata*, and usually of an intense black and feebly shining. The pronotal punctuation is like that of *Upis ceramboides*, only that the punctures are distinctly separated and not coalescent. The elytral tuberculation is almost like that observed in *granosa*. (See p. 131, Bull. 63, U. S. Nat. Mus.)

Key to the Nearctic Species of *Gargaphia* with the Description of a New Species (Hem., Heter.)

By CARL J. DRAKE, Ohio State University, Columbus, Ohio.

The genus *Gargaphia* Stål is represented by five described Nearctic species and a new one is added herein. The genus can readily be separated from the other genera of the Tingidae by the transverse, sinuous carina which interrupts the rostral sulcus between the meso- and metasternum.

Key to the Nearctic Species of Gargaphia.

- 1—Elytra broad, costal area with four or more rows of areolae at its widest part2
 Elytra narrower, costal area with not more than three rows of areolae at its widest part4
- 2—Lateral membraneous pronotal margins widely expanded, with five or more rows of areolae at its widest part; first segment of the antennae blackish*G. solani* Heid.
 Lateral membraneous pronotal margins narrower, with not more than four rows of areolae at its widest part; first segment of the antennae testaceous3
- 3—Size small (less than 3.5 mm.); membraneous pronotal margins angularly expanded about the middle*G. angulata* Heid.
 Size larger (more than 4 mm.); membraneous pronotal margins rounded*G. tiliae* Walsh.
- 4—Costal area of the elytra narrow, with not more than two rows of areolae at its widest part; membraneous pronotal margins very narrow, strongly reflected, and forming an acute angle with the thorax*G. opacula* Uhler.

- Costal area of the elytra with three rows of areolae at its widest part; membranous pronotal margins broader, not so strongly reflected and forming an obtuse angle with the thorax.....3
- 5—Costal area of the elytra with two complete and a partial series of areolae; nervures of elytra and membranous pronotal margins not of a uniform color, the areolae more or less iridescent,

G. iridescens Champ.

- Costal area of the elytra with three complete series of areolae; nervures of the elytra and membranous pronotal margins concolorous, the areolae hyaline.....*G. albescens* n. sp.
- Gargaphia albescens** spec. nov.

Head armed with five rather short spines. Antennae slender, moderately long, beset with a few short hairs; first segment rather short, about twice the length of the second; fourth segment longer than the first and second conjoined.

Lateral membranous pronotal margins moderately broad, angularly dilated about the middle, composed of two quite regular rows of areolae and in some specimens with two or three extra cells at the angle. Hood moderately large. Pronotum punctate, tricarinate; carinae moderately hairy, composed of a single series of areolae. Rostral sulcus deep, the rostrum almost reaching the transverse, sinuous carina. Hood, membranous pronotal margins, and elytra beset with a few short, very fine hairs.

Elytra moderately broad, reaching considerably beyond the apex of the abdomen; costal area composed of three quite regular series of areolae. Wings a little longer than the abdomen.

Claspers in the male large and strongly curved.

Length (♂ and ♀), 3 mm.; width, 1.3 mm.

Color. General color white. Head, thorax and abdomen black (in one specimen the thorax and abdomen beneath are brownish-black). Antennae: first segment black, second and fourth (except base) segments blackish, third segment and base of fourth dirty white. Legs dirty white, the tips of tarsi and nails embrowned. Nervures of hood, membranous pronotal margins, posterior triangular process of pronotum, and elytra white; areolae hyaline. Nervures of carinae white, except a few of the transverse nervures embrowned. Wings iridescent. Bucculae, rostral sulcus, and transverse carina broadly margined with white. Claspers in the male embrowned.

Four specimens, taken at Sacramento, California, by Mr. D. J. Condit. *Type* in my collection: *paratype* in the collection of Prof. J. G. Sanders. This species can readily be separated from allied forms by the characters given in the key. It is most closely related to *angulata* and *iridescens*.