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ON THE ORTHOPTERA OF NORTHERN ONTARIO.

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The few published records in Orthoptera from Northern Ontario are based on odd captures made by a number of collectors in various localities, no local lists having been published from any point north of Algonquin Park, where the writer collected in 1902 and 1903, and listed the species taken there in the 36th Ann. Rep. Ent. Soc. Ont. (1905). As Algonquin Park lies at the extreme southern limit of the Canadian Zone, its biota containing many Austral elements, we have still only a very fragmentary knowledge of the Orthopterous fauna of the strictly Boreal parts of the Province.

Since the Algonquin Park list appeared, the writer has collected Orthoptera in three localities in Northern Ontario, all situated well within the limits of the Canadian Zone. These are Fort William and Nipigon, Thunder Bay District, and the Temagami Forest Reserve, Nipissing District. Only a few days at the end of August, 1907, were spent at Fort William and Nipigon, and this brief time was occupied chiefly in collecting the species of the Odonate genus *Aeshna*; nevertheless, it is believed that nearly all the species of Orthoptera resident there were taken, though none in large series. In the Temagami District a fortnight's canoe-trip was made in the first half of September, 1908, and good opportunities for collecting were afforded.

To make the list as complete as possible the names have been added of a few other species previously known from Northern Ontario, which were not taken at the localities mentioned. A few others, not included in the list, have been taken at North Bay, Lake Nipissing, but probably do not range much further north, and are, perhaps, better excluded from the fauna of the Canadian Zone.

The combined result of these various records is, on the whole, what one would expect, judging from our knowledge of the Orthoptera of Northern Michigan as embodied in the following papers :

- 1898.—Blatchley, W. S. Two *Melanopli* from Les Cheneaux Islands, Michigan. *Psyche*, VIII, pp. 195-197.
- 1904.—Rehn, J. A. G. The Orthoptera of Keeweenaw Bay, Michigan. *Ent. News*, XV, pp. 229-237 and 263-269.
- 1906.—Morse, A. P. The Ecological Relations of the Orthoptera of the Porcupine Mountains, Mich. From "An Ecological Survey of Northern Michigan." C. C. Adams, in *Rep. Geol. Surv. Mich.*, 1905. (Includes also two species from Isle Royale, Mich.)
- 1909.—Hebard, Morgan. Additional Notes on the Orthoptera of the Keeweenaw Bay Region of Baraga Co., Mich. *Ent. News*, XX, pp. 155-158.

The Keeweenaw Bay list corresponds closely to that of the Thunder Bay District, Ont., the only species in the former not included in the latter being the introduced *Periplaneta Americana* and *Tetrix Luggeri*, whose claim to specific rank is questionable. Only four species from the Thunder Bay District are not reported from Keeweenaw Bay. The list from the Porcupine Mountains and Isle Royale is also of a similar character so far as it goes, but contains the additional species, *Melanoplus amplectens*, Scudd.; *Atlanticus pachymerus*, Burm., and *Ceuthophilus seclusus*, Scudd., all of which are Austral forms, whose occurrence in this northern locality is somewhat surprising.

In comparing the present list with that of Algonquin Park, we again find a considerable correspondence, but in the latter locality there are a number of Austral or Transitional forms, namely: *Tettigidea parvipennis*, Harr.; *Chortophaga viridifasciata*, De Geer; *Spharagemon Bolli*, Scudd.; *Scudderia furcata*, Brunn.; *Orchelimum vulgare*, Harr.; *Xiphidion brevipenne*, Scudd.; *Nemobius palustris*, Blatchley, and *Æcanthus fasciatus*, Fitch. Of the several western types in the other lists mentioned, only two were taken here, *Melanoplus Bruneri* and *Tetrix Brunneri*, both of which were quite local in occurrence. It may be mentioned, however, that another of the western forms, *Chloëaltis abdominalis*, has been recorded from the Severn River, about 40 miles south-west of Algonquin Park.

While the general characteristics of the Orthopterous fauna of Northern Ontario are thus quite in accord with what we should naturally expect, there are certain peculiarities worthy of special notice when we come to consider the various localities separately.

At Fort William the collecting was all done on the west side of the Kaministiquia River. We crossed the river in a skiff and followed a road

about a mile and a half over a stretch of level country to the foot of Mt. McKay. This flat area is open and prairie-like for a distance of several hundred yards west of the river, beyond which it is a dense spruce swamp, broken only by the clearings of an Indian village, which are scattered along each side of the roadway. At the foot of Mt. McKay we left the road and followed a footpath up the mountain.

Mt. McKay is a bold basaltic cliff rising suddenly out of the level spruce swamp around it to a height of about 1,000 feet, its sides very steep, and in many places quite perpendicular. The summit is about 1,600 feet above sea level.

Following the path up a steep slope wooded with a mixed growth of small spruce, canoe birch, aspen and a few scattered white pine, we reached, when about half way to the summit, a small treeless plateau, some seventy-five square yards in area, and covered with short grass and small herbaceous plants. This proved an interesting spot for Orthoptera, and will be referred to again in discussing the fauna of this region.

Above the plateau the sides of the mountain are for the most part almost vertical, but we followed a level pathway for some distance through the woods, and then completed the ascent by scrambling over the slabs of a talus slope, finding ourselves at the summit in a scrubby wood of Banksian pine, poplar, birch, etc., with small scattered openings, which yielded good results in Orthoptera.

The prairie-like area adjoining the river would have repaid a longer visit than the few minutes we were able to spend there. The most noteworthy capture made here was that of the interesting northern Dectician, *Idionotus brevipes*, Caud., which is not uncommon on the prairies of Manitoba and ranges westward to Calgary, Alta., and northward into Arctic America. *Mecostethus gracilis* was common here, and, in fact, in open places everywhere in this locality. *Chlœoaltis abdominalis*, *Stenobothrus curtipennis*, *Melanoplus femur-rubrum*, *extremus* and *bivittatus* were also quite common.

The road through the spruce swamp was drained on each side by ditches, which were full of water, and along which certain dragon-flies were skimming back and forth in considerable numbers. The rank growth of bushes and weeds along these did not yield much of interest in Orthoptera, the chief species found here being *Scudderia pistillata*, *Mel. bivittatus*, *Mel. extremus* and *Stenobothrus curtipennis*. From openings in the

spruce swamp *Podisma glacialis Canadensis*, *Mel. islandicus* and *Tetrix granulatus* were taken.

At the foot of the mountain is an area of exposed rock, on which *Circotettix verruculatus*, *Camnula pellucida*, *Mel. atlantis*, etc., were very abundant. On the shady path up the mountain-side the only Orthopteran met with was *Mel. islandicus*, which was not uncommon, but when we reached the plateau referred to above, we found *Chlœaltis conspersa*, *C. abdominalis* and *Sten. curtipennis*, long- and short-winged forms of each; *Mel. extremus* and *fasciatus*, long-winged; *Circotettix verruculatus*, *Camnula pellucida*, *Melanoplus atlantis* and *Tetrix acadicus*. On the top of the mountain both forms of *Mel. fasciatus* and of the two species of *Chlœaltis* were common, especially the long-winged form of the first-named and that of *C. abdominalis*. A few females of *Mel. altitudinum* and many specimens of *Mel. islandicus* were also taken here.

The country about Nipigon is rugged and picturesque, and wooded with heavier timber than grows in the vicinity of Ft. William. We saw many large white spruce, aspen, balsam poplar and canoe birch, and the vegetation is, generally speaking, more luxuriant than in most parts of Northern Ontario along the Canadian Pacific Railway. The Nipigon River above the Railway Bridge flows swiftly between steep clay banks over a hundred feet high, but a little below it there is a waterfall, after which it flows placidly out to Lake Superior, the banks sloping gently to the water's edge, which is bordered by low bushy pastures and damp woods. Here and there open reedy marshes jut out into the river, and, not far below the fall, there is an island consisting of a narrow strip of tamarack swamp surrounded by a broad belt of open, partly submerged, marsh. This marsh yielded the only species of Orthoptera, *Mecostethus lineatus*, not found at Fort William, and was a wonderful locality for dragon-flies.

The Orthoptera here are practically the same as those found at Fort William. The most noticeable feature was the abundance of *Mel. Bruneri*, which, with *Camnula pellucida*, was the common campestral species, especially on dry soil. *Mel. atlantis* was quite local, and *M. femurrubrum* does not seem to have been observed at all. The same tendency towards the development of macropterous or long-winged individuals in species usually regarded as normally brachypterous or short-winged was observed here, though apparently not in such a marked degree as upon Mt. McKay.

This development of macropterism in so many species usually regarded as normally brachypterous is the most interesting feature in the Orthoptera of the Thunder Bay District. We find the same tendency in less degree in Northern Michigan, as given in the papers cited above, but farther south long-winged examples of some of these same species are unknown, or of such rare occurrence that they are usually considered somewhat abnormal and as representing cases of reversion to an ancestral type. Such species are, e. g., *Chlœaltis conspersa*, *C. abdominalis*, *Melanoplus fasciatus* and *M. extremus*, though in the last named species the macropterous form is relatively common. The question arises: Why is the proportion of macropterous to brachypterous individuals so much greater in these northern regions than it is farther south?

In the first place, where dimorphism in wing-length occurs the fully-winged type is of course the more primitive one, the flightless type the more recently evolved. The species is tending to become wingless, and the short-winged individuals are therefore better adapted to their environment, while the long-winged individuals are gradually becoming eliminated. Where this process has been most completely carried out only the flightless type remains, and in such cases the species may be apterous, as in *Podisma glacialis*, or extremely brachypterous, the wings remaining as mere vestiges, as in *Melanoplus islandicus*.

Now, where the environment is least favourable to the needs of the species, or where favourable conditions are localized, the elimination of the unfit will proceed more rapidly than it will under favourable conditions, so that we might, *a priori*, expect to find that where the trend of evolution is towards brachypterism this condition will become established most rapidly where favourable conditions of environment are localized, e. g., towards the limits of the geographical range of the species.

It will be noted that all the dimorphic species in question are boreal forms, and are more abundant and generally distributed in the north, where the long-winged forms are plentiful, than towards the southern limits of their geographical range, where this form occurs only sporadically or not at all. Hence it may be concluded that the elimination of the less fit macropterous forms at the south, where the environment is least suited to the species, has been more complete than in the north, where the conditions are more favourable.

There is possibly another factor entering into this question. It is well known that differences in wing-length are correlated with differences

in habitat, and that the habitat of a given species may vary somewhat in different parts of its geographical range. Morse has pointed out that, generally speaking, species inhabiting thickets, edges of woods, etc., are flightless, and either brachypterous or apterous, while those frequenting open places, such as fields, deserts, or exposed rocky surfaces are macropterous, and capable of more or less sustained flight. The dimorphic species in question are restricted in the south to thicket habitats, but in the north, where they are more generally distributed, they occur also, to a greater or less extent, on campestral stations. Hence the macropterous type may be here preserved in adaptation to the campestral habitat.

To what extent this campestral habit actually exists and whether it is a real factor in preserving the macropterous type in these species we are not in a position to say. We have not enough knowledge of the ecology of these species in the north to make any positive statements on the subject. A few facts may be given, however, which seem to lend some support to this view.

Chlœaltis conspersa, which Rehn has recorded from the cool bogs of the pine barrens of northern New Jersey (Ent. News, 1902, p. 310), in the Upper Austral Zone, occurs about the edges of woods and in thickets in the Transition Zone; and Hebard found it at Pequaming, Northern Michigan, "about brush heaps and stumps in *open fields and pastures*" (Rehn, Ent. News, 1904, p. 233). I have also taken it in similar places in the Canadian Zone in Ontario. On account of its egg-laying habits, however, this species probably never strays far from the borders of woods.

At Fort William, where it is dimorphic, *Chlœaltis abdominalis* was heard stridulating in the open grassy plain on the west side of the Kaministiquia River, and specimens were taken on the plateau, half-way to the top of Mt. Mackay. The conditions here were truly campestral, but the plateau was nearly surrounded by woods, and was so small that not much importance can be attached to the presence of the locusts here.

Melanoplus fasciatus and *extremus*, both dimorphic at Fort William, are certainly more generally distributed here than they are farther south; e. g., in the Georgian Bay region. Long-winged males of the former were found flying about the bare talus slope on the side of Mt. McKay, a type of habitat which this species does not frequent in the Transition Zone, where macropterous individuals are very rare. The long-winged male of

M. extremus is said to be the prevailing, if not the exclusive form at high altitudes and latitudes, and the same form of the European locust, *Chrysochraon brachyptera*, a relative of our *Chlœaltis*, is likewise said to be common in damp alpine meadows at considerable heights.

Another feature of interest in the fauna of Fort William and Nipigon is the total absence of Gryllidæ. Low, grassy, partly wooded pastures on the Nipigon River, in every way resembling the favourite haunts in the more southern parts of Ontario of *Nemobius fasciatus* and *N. carolinus* (= *N. angusticollis*, Walk.), were searched for these crickets in vain; nor could the chirping of any Gryllid be heard either by day or night. In fact, the only Orthopteroous sound which was heard at night in this district was the occasional "zeep, zeep, zeep, zeep" of the Northern Katydid (*Scudderia pistillata*). During the day, however, the chorus of Orthoptera rivals that of more southern latitudes in the volume of sound produced, though considerably different in quality. Instead of the chirp of *Gryllus*, and the low undertones of *Nemobius*, and the familiar "ze-e-e . . . jip, jip, jip" of *Orchelimum vulgare*, we hear on every side the loud, but not especially harsh, "shklip—shklip, shklip, shklip" of *Mecostethus gracilis*, the lower-toned but more rapid and harsher "z-z-z-t, z-z-z-t, z-z-z-t" of *Chlœaltis abdominalis*, and the similar, but more subdued, notes of its congener, *C. conspersa*, varied by the still softer tones of *Stenobothrus curtipennis*. An occasional "tsip!" the day note of *Scudderia pistillata*, and the feeble little trill of *Xiphidium fasciatum*, which is only audible at close range, complete the orchestra of this northern region, except in the open bare rocky or sandy places, where *Circotettix verruculatus* keeps up its incessant clatter, and in the open grassy plains at Fort William, where a new and unfamiliar note was heard, leading to the discovery of the Dectician *Idionotus brevipes*. This note is a continuous and monotonous trill, resembling that of *Orchelimum vulgare*, with the "jips" omitted.

Turning now to the Temagami District, we find quite different conditions as regards the Orthoptera. The chief interest possessed by this district in this regard lies in the fact that it is still largely covered with primeval forests, and thus represents entomologically the conditions which once obtained over a large part of the country.

Even Nipigon, though well wooded, has apparently been sufficiently cleared to have brought about an immense increase in the number of individuals of almost all the species native there. In the virgin forests

of Temagami the paucity of insect life, and notably of Orthoptera, was somewhat surprising to one who had never been in a large tract of such country before. One does not expect to find many Orthoptera in a dense northern forest, but not only were the deep woods utterly devoid of them, but even the clearings and open bushy hillsides, such as support multitudes of locusts in a more open country, would generally yield only a few *Mel. atlans*, *femur-rubrum* and *islandicus*, and *Camnula pellucida*.

The only stations on our route where the common campestral species were found in abundance were the fields and pastures about the village on Bear Island, and in a less degree the clearing on Temagami Island, where the Temagami Inn stands. On Bear Island, for instance, *Mel. bivittatus*, *femur-rubrum* and *atlans*, *Dissosteira Carolina*, *Camnula pellucida*, *Gryllus Pennsylvanicus* and *Nemobius fasciatus* were all found in their usual abundance, but, strange to say, *Stenobothrus curtipennis*, *Mecostethus gracilis* and *Mel. extremus* were not taken here nor anywhere in the district. The absence of the first-named abundant and widespread species is particularly surprising.

Even the open marshes were extremely unproductive of Orthoptera, for they usually support a growth composed largely of horse-tails (*Equisetum fluviatile*), and sedges, especially the coarse species, *Dulichium arundinaceum*, with but very few grasses. A few *Mecostethus lineatus* in favourable spots, *Scudderia pistillata* and an occasional *Mel. bivittatus*, *femur rubrum* or *Xiphidion fasciatum* seem to be about the only species which inhabit these swamps.

The Sphagnum bogs are likewise almost barren of Orthoptera, and when covered with Ericaceous shrubs, such as Dwarf Cassandra, Andromeda, Sheep-laurel, etc., the only species likely to be met with is *Scudderia pistillata*.

In general it may be said that the Temagami fauna, in addition to its striking poverty in both species and individuals, differs from that of Fort William and Nipigon chiefly in the absence of most of the western types and certain other species which are common there, and in the presence of the three common ground-cricket, *Gryllus Pennsylvanicus*, *Nemobius fasciatus* and *N. Carolinus*.

(To be continued.)

NOTES ON TENTHREDINOIDEA, WITH DESCRIPTIONS OF
NEW SPECIES.

BY S. A. ROHWER, BOULDER, COLO.

Paper V.

(New Western Species.)

Erythraspides Tuckeri, n. sp.—Female: Length, 5 mm. Habitus normal for members of this genus. Anterior margin of the clypeus dullish by irregular patches of punctures. Middle fovea well defined, rounded above, open below. Ocellar basin not well defined, represented by two channels meeting above the anterior ocellus. Lateral furrows reduced to two distinct rounded fovea. Third antennal joint as long as four plus five. Mesothorax shining, the anterior part of the anterior lobe of the mesonotum with some close punctures. Scutellum more or less punctured, the sides smooth and shining. Claws with a distinct inner tooth almost bifid. Stigma very large, broadest at the base, tapering to an acute apex. Sheath large, straight above, rounded below. Colour black; tegulæ, tips of the femora (the four anterior ones more broadly so), tibiæ except the apices white. Tarsi dusky. Sparsely clothed with white pubescence. Wings hyaline; venation brown.

Type locality: Lawrence, Kansas. One specimen collected by Mr. E. S. Tucker in April.

This species differs from *Ashmeadi*, Kincaid (Alaska), in not having the scutellum granular, the stigma is angled at the base below, etc. It has some general resemblance to *Blennocampa adusa*, Macg., but the posterior femora are black.

Tenthredo sectiliformis, n. sp.—Female: Length, 9 mm. Clypeus semicircularly emarginate, the lobes broad, rounded. Occiput with a weak but distinct margin; lateral ocellar furrows strong; frons strong; interocellar furrow well defined. Antennal joint three longer than four, but not quite as long as four plus five; joints three to seven spined at the tip beneath; apical joint about the same length as the preceding one. Head shining, not strongly sculptured. Dorsulum opaque, rather closely granular; scutellum granular, as is also the postscutellum; postscutellum with a middle carina. Claws deeply cleft, the inner tooth the shorter. Stigma not strongly beneath; venation normal. Sheath broad, straight above, rounded beneath, with an apical fringe of hair. Colour black; most of the clypeus, labrum and mandibles (except the tips), and

a small spot above the posterior coxæ, *yellowish-white*. Legs (including the coxæ), except the apex of the posterior tibiæ and all of their tarsi, and the abdomen, except the apical segment, *clear rufous*. Wings hyaline, with a faint yellowish tinge; venation brown.

Type locality: Florissant, Colo. One female collected on the foliage of *Salix brachycarpa*, July 7, 1907, by S. A. Rohwer.

This species is close to *T. secilis*, Cresson, but differs in having the coxæ and the trochanters rufous, the legs are not pale beneath, and the tegulæ are black.

Tenthredo alpestris, n. sp.—Male: Length, 7 mm. Clypeus semicircularly emarginate, the lobes broad, rounded. Antennal frons strong; occiput margined; lateral ocellar furrows strong; interocellar furrow wanting. Third antennal joint about as long as four plus five; the joints not spined beneath; the apical joint equal with the preceding. Anterior lobe of the mesonotum granular, dullish; the lateral lobes shining, sparsely punctured. Scutellum with rather close, large punctures, and a middle carina. Inner claw tooth stouter and a little shorter than the outer. Stigma rounded beneath; venation normal. Black, yellow and rufous. Head below the antennæ, two small spots above each antenna, inner orbits to the summit of the eyes, outer orbits to about the middle of the eye, most of the prothorax, tegulæ, anterior part of the scutellum, mesopleura and pectus, two large spots above the posterior coxæ, and a spot on the basal plates, *yellow*. Abdomen beyond the basal plates clear rufous. Legs: coxæ (a black line above on the posterior pair), trochanters, except a black line above, four anterior femora, except a black line above, anterior tibiæ and tarsi, except a line above, *yellow*; the posterior legs below the coxæ, except a line above on the femora above at the base, and the intermediate legs below the femora, *rufous*. Wings hyaline, iridescent; venation brown.

Type locality: Florissant, Colo. One male collected on foliage of *Salix brachycarpa*, June 16, 1907, by S. A. Rohwer.

This species is perhaps closest to *T. suavis*, Cresson, but it is much smaller, and the postscutellum and most of the scutellum is black, and the abdomen is not "yellowish-white." It may be known from *frigida*, Macg., by the eyes slightly converging below, the longer third antennal joint, etc.

Tenthredo hypoleuca, n. sp.—Male: Length, 9 mm. Clypeus semi-circularly emarginate, the lobes broad, rounded. Eyes distinctly converging below, yet not strongly so. Occiput margined; frons strong; lateral ocellar furrows distinct, opposite the lateral ocelli they broaden slightly, then narrow again, interocellar furrow faint. Antennal joint somewhat nodose at the apex; joint three not quite as long as joint four plus five. Head shining; dorsulum and scutellum shining, with separate distinct punctures; postscutellum rough, slightly carinated. Inner claw tooth about the same length as the outer. Lower margin of the stigma almost straight; venation normal. Black, white and rufous. Clypeus, labrum, mandibles (the apices piceous), spot at lower corner of eyes, palpi, posterior angles of the pronotum, tegulae, the lower half of the pleura and pectus, a spot on the basal plates, *white*. Abdomen beyond the first segment rufous, the venter somewhat whitish. Legs: coxae, trochanters, four anterior femora, tibiae and tarsi, except a black line above, *white*; posterior femora and the posterior tibiae beneath *rufous*; the rest of the legs black. Wings hyaline, iridescent; venation dark brown.

Type locality: Florissant, Colo. The type collected July 11, 1907, at flowers of *Heracleum lanatum*, and a paratype swept from the meadow, July 7, 1907, by S. A. Rohwer.

This species resembles *T. Slossoni*, Macg., but the clypeus is semi-circularly emarginate, the intermediate femora are not rufous, the markings white, etc. It is also related to *T. signatus*, Nort., but the antennae are not pale beneath, the white of the pleurae and the pectus are confluent, etc.

Tenthredo messicaformis, n. sp.—Male: Length, 9 mm. Clypeus semicircularly emarginate, the lobes rather narrow, rounded. The occiput margined; frons strong; lateral ocellar furrows well defined; interocellar furrow present but faint. Antennae simple, tapering to the apex; joint not as long as joints four plus five; apical joint a little shorter than the preceding one. Head shining; dorsulum and the scutellum rather coarsely granular; postscutellum granular and carinated. Teeth of the claws about equal. Stigma almost straight on the lower margin; venation normal, Black, yellow and rufous. Clypeus, labrum, mandibles (the apices piceous), spot between the antennae beneath, a small spot above each antenna, cheeks below the middle of the eyes, posterior angle of the pronotum, tegulae, lower angle of the prothorax, a broad line on the

pleura, pectus, two lines above the posterior coxæ, and a spot on the basal plates, *yellow*; abdomen rufous. Legs, except a black line above, *yellow*, the posterior tibiæ are slightly reddish. Wings hyaline, iridescent; venation dark brown.

Paratypes differ in having the spot between the antennæ wanting, and the yellow of the posterior tibiæ replaced by rufous.

Type locality: Florissant, Colo. Two females collected July 11, 1907, at flowers of *Heracleum lanatum*, by S. A. Rohwer. Other specimens from: Four males, top of Las Vegas Range, N. M., alt. about 11,000 ft., June 28 (T. D. A. Cockerell); thirteen males, Ute Creek, Costilla Co., Colo., alt. 9,000 ft., July, 1907 (L. Bruner and R. W. Dawson); one male, Sierra Blanca, Costilla Co., Colo., alt. 10,000 to 11,500 ft., July 20, 1907 (L. Bruner); one male, Pike's Peak, Colo., alt. 10,000 ft., July 20, 1906 (L. Bruner).

This species is close to *T. messica*, Macg., but differs in having the third antennal joint not twice as long as the fourth, and there is a spot above the anterior coxæ, and a vertical line below the posterior wing.

Tenthredo semirubra, Norton.—What I take to be the male of this species has the following characters worth noting: Length, 10 mm. Clypeus almost squarely emarginate; the lobes broad, rounded. Frons rather strong; lateral ocellar furrows strong; occiput faintly margined; interocellar furrow wanting. Third antennal joint not as long as four plus five; apical antennal joint equal in length with the preceding. Dorsulum and scutellum dullish, with rather close, distinct punctures; the scutellum posteriorly with a faint carina. Stigma a little wider at the base. Inner claw tooth much shorter than the outer. Black; clypeus, labrum, mandibles (apices piceous), four anterior tibiæ and tarsi, *yellowish white*; abdomen beyond the second segment rufous. Wings dusky hyaline; venation dark brown.

I have six males of the above from Florissant, Colo., July 7 to 14, 1907, at flowers of *Heracleum lanatum* (S. A. Rohwer). This species was known previously from Canada and Massachusetts.

Allantus subnigriceps, n. sp.—Female: Length, 11.5 mm. Habitus in general much like *nigriceps*, Cresson. Clypeus subsemicircularly emarginate, the lobes broad, rounded at the apex; labrum long, rounded at the apex; the clypeus and labrum shining, with a very few punctures. Interocellar furrow almost wanting; lateral ocellar furrows obsolete below

the lateral ocelli. Head very closely, coarsely punctured, the area behind the superior orbits somewhat more sparsely so, the vertex with the punctures larger. Antennæ nine-jointed, the apical joint very short and almost wanting; the antennæ clavate, the club, which is flattened and concave below, begins with the fifth joint. The thorax closely, coarsely punctured, the anterior lobe a little more sparsely so; the posterior part of the scutellum with a median carina. Venation normal. Claws with an inner tooth near the apex. Sheath subparallel margined, obliquely truncate at the apex. Black; clypeus, labrum, mandibles (apices piceous), posterior margin of the pronotum, propleura, anterior part of the scutellum, a spot above the posterior coxæ, apical margin of the basal plates, apical margin of the dorsal and ventral abdominal segments (the band on the first dorsal is interrupted in the middle), *straw-yellow*. Legs black; anterior femora beneath and at the apex, intermediate femora beneath, all the tibiæ and tarsi, *straw-yellow*; the apex of the posterior tibiæ and their tarsi dusky. Wings yellowish; venation luteous and brown, the stigma luteous.

Type locality: Ormsby Co., Nevada (C. F. Baker).

This species is close to *nigriceps*, Cresson, but when compared with specimens collected in the same locality by Prof. Baker, the following differences are to be noted:

nigriceps, Cress.

subnigriceps, Roh.

- | | |
|---|---|
| 1. Lateral ocellar furrows extending beyond the lateral ocelli. | 1. Lateral ocellar furrows extending to the lateral ocelli. |
| 2. Cheeks and vertex shining, rather finely sculptured. | 2. Cheeks and vertex dulled by the coarse sculpture. |
| 3. Labrum broader and more curved at the sides. | 3. Labrum narrow and at the sides nearly straight. |
| 4. Antennæ not clavate, not concave beneath, nine joints. | 4. Antennæ clavate, the club flattened and concave beneath, the ninth joint very small. |
| 5. Postscutellum with a median carina. | 5. Postscutellum and the posterior part of the scutellum with a median carina. |
| 6. Teeth of the hind tarsal claw about equal. | 6. The inner teeth of the hind tarsal claw shorter and stouter than the outer. |

A NEW COCCID FROM NICARAGUA.

BY T. D. A. COCKERELL AND W. W. ROBBINS, BOULDER, COLO.

The Coccidæ of Nicaragua are practically unknown; it is therefore not at all surprising that a species collected there, kindly transmitted to us by Prof. C. F. Baker, proves to be undescribed.

Mesolecanium perditulum, n. sp.

♀.—Scale, $2\frac{1}{2}$ – $2\frac{3}{4}$ mm. long, $2\frac{1}{4}$ or a little less broad, about $\frac{1}{2}$ to $\frac{3}{4}$ mm. high; subcircular, flattish, very dark reddish brown, almost black, moderately shiny, rough but not pitted, marginal plications few and obscure. Immature and parasitised scales are often light ferruginous. (The parasite is a Chalcidid.) Skin with scattered minute circular glands; submarginal area with moderately large gland-pits; stigmatal spines very short, not projecting beyond margin; caudal slit evanescent (the sides coalescing) in mature specimens. The measurements of the antennæ, legs, etc., are all in micromillimeters. Anal plates with the inner side about 132, anterior outer side 117, posterior outer side 87, the lateral corners obtusely rounded; distance from tips of plates to hind end 460 to 545; digitules of tarsus slender, about 27 long; claw-digitules curved, about 27 long, not very stout; claws ordinary. Middle leg with coxa about 119, femur + trochanter 136, tibia 102, tarsus 59. Antennæ 7-jointed, with joint 3 very long; joints measuring (1) 45, (2) 33–37, (3) 102–105, (4) 20–25, (5) 25, (6) 18, (7) 30.

Hab.—Quesalquaque, Nicaragua, Jan., 1902, on bark of small branches of tree No. 2122 (*C. F. Baker*). The bark is very pale reddish.

Closely related to *M. perditum* (Ckll.) from Yucatan, but smaller and flatter, and differing in various minor details.

A NEW GALL-GNAT ON ARTEMISIA.

BY T. D. A. COCKERELL, UNIVERSITY OF COLORADO.

A short time ago I received from Mr. E. Bethel a large number of galls collected on *Artemisia frigida* in the vicinity of Denver, where he tells me they are very common. During the last days of March the flies emerged in quantities, and prove to belong to a new species.

Rhopalomyia Betheliana, n. sp.

Galls about 3 mm. long and 2 broad, pyriform, with the large end basal and the apex truncate; pale ochreous, with some white tomentum. They are deformed fruits.

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Pupa bright orange-scarlet, with a pair of prominent anterior projections.

Female 2280 μ long, of which 500 μ is ovipositor; antennæ 16-jointed, the joints practically sessile; length of antennæ about 730 μ ; wing 1530 μ long (but the ♀ varies in size, a small one having the wing only 1360, a large one as much as 1785); thorax small, only 425 μ long. Thorax black or almost; legs and antennæ pale; abdomen in life bright scarlet. Wings normal; angle formed by third vein, and margin above scarcely short of a right angle; distal part of third vein faint. Fringe very long, some of the hairs exceeding 170 μ .

Male.—Differs by the longer legs and the cylindrical brown abdomen; claspers stout, obtuse. The femora measure in μ : anterior, 830; middle, 800; hind, 1000. Antennæ 16-jointed; middle joints with bulb about 60 μ , and pedicel 40; the hairs on bulb about 140. Scutellum prominent in both sexes.

In Dr. Felt's table (N. Y. State Mus. Bull. 124) it runs to the group of *R. antennariæ* and *R. alticola*, but is distinct from these. *R. alticola* is common in Colorado, making a quite different sort of gall, on *Artemisia Canadensis*.

Another new species of *Rhopalomyia*, collected at Boulder, will be described by Dr. Felt.

TWO NEW BEES OF THE GENUS PERDITA, VISITING BAILEYA IN NEW MEXICO.

BY T. D. A. COCKERELL, BOULDER, COLORADO.

Perdita baileyæ, n. sp.

♂.—Length, about 6½ mm.; head and thorax shining dark bluish-green (vertex dull and yellow green), with copious white hair; eyes dull pea-green; cheeks unarmed; mandibles (except tips), labrum, clypeus (except the usual dots, and more or less of the upper edge) and lateral marks all *creamy-white*; lateral marks filling the space between clypeus and eye below, but ending abruptly just below level of upper edge of clypeus, except for a very fine streak which runs a short distance up the orbital margin; antennæ pale yellow basally and orange apically, the scape black above, and the first few flagellar joints more or less ringed with blackish above; upper edge of prothorax, tubercles, and spot on the hyaline tegulæ, *cream-colour*; pleura without light markings; wings milky hyaline, stigma light yellow, nervures white; marginal cell with the poststigmatal portion

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much the longest; second recurrent nervure evanescent; legs with much white hair; femora black (anterior ones metallic behind), with the apices yellow, and a broad light yellow band in front on anterior and middle pair; anterior and middle tibiae yellow, with a large dark patch behind; hind tibiae dark, with the base and the inner side light yellow; tarsi yellowish-white, hind ones more or less darkened and reddened; abdomen black, with white bands, which are partly or wholly interrupted sublaterally; band on first segment twice as broad at sides as in middle, but sublaterally reduced to a hardly visible line by a rounded invasion of the black; bands on second and third excavated in the middle anteriorly, and with a large black spot on each side sublaterally; bands on fourth and fifth deeply emarginate, almost interrupted, sublaterally; that on sixth reduced to a hardly visible marginal line; venter black, with obscure linear white bands. In my table in Proc. Phila. Acad., 1896, this runs to 64, and runs out because of the conspicuous white abdominal bands. It is considerably larger than *P. albovittata*, Ckll., and *P. callicerata*, Ckll., which also visit the *Baileya*, but is related to them, and combines some of their characters. There is some resemblance to *P. perpulchra*, Ckll., but in that insect the male has the face all light.

Hab.—Mesilla, New Mexico, at flowers of *Baileya multiradiata*, June 30, 1897 (*Cockerell*). Two males.

Perdita callicerata, var. *leucura*, n. var.

♀.—Length slightly over 5 mm.; head and thorax very hairy; clypeus white, with the usual dots; lateral marks white, tapering above, to end in sharp points on orbital margin near lower ends of facial foveae (a little above level of antennae); antennae coloured as usual, the flagellum largely orange; abdomen cream-colour, with sepia-brown markings, consisting of a brown basal area and (separated only by a fine line, and not reaching the lateral margins) a transverse band on first segment, three spots on second segment, usually two on third, and fine basal lines on second to fourth; venter pale. Wings and legs as in *P. callicerata*, Ckll.

This might be described as a *P. callicerata*, with the abdomen and lateral face-marks of *P. pallidior*, Ckll. The broad face and the hairiness are entirely as in *P. callicerata*, and readily distinguish it from *P. pallidior* and *P. mentzeliarum*. Is the insect perhaps a hybrid?

Hab.—Mesilla, New Mexico, at flowers of *Baileya multiradiata*, June 30, 1897 (*Cockerell*). Three females, flying with *P. baileyæ* and *P. callicerata*.

SOME NEW SPECIES OF NORTH AMERICAN GEOMETRIDÆ.

BY JOHN A. GROSSBECK, NEW BRUNSWICK, N. J.

The constant receipt of apparently undescribed species of Geometridæ for determination, makes it desirable that a few be now and then given names. The following species from Southern California and Arizona represent well-marked forms not very easily confounded with anything hitherto described :

Hydriomena densata, new species.—Expanse, 25 mm. Head, thorax and abdomen clothed with mixed brown and grayish scales, the gray ones predominating except on the front and on the palpi, where they are largely brown. The abdomen has also two brown dorsal spots, separated by a whitish spot, on the posterior margin of each segment. Primaries grayish, heavily overlaid with dark brown, the cross-lines composed of the ground colour. Basal line geminate, irregular, the interspace filled in with brown. Intradiscal line geminate, begins on costa one-third out from base, and extends, inwardly scalloped, to inner margin; as a whole, the line curves outward, but the large scallop between the cubital and anal veins gives the appearance of an inward curve. Extradiscal line geminate and much waved; begins on costa one-third in from apex, extends outward to radial vein, then curves inward to cubital vein, and outward again before reaching the inner margin. The space between the intra- and extradiscal lines is dark brown, sometimes with darker wavy lines running through it. Subterminal line wavy, whitish in colour, and runs parallel with outer margin throughout its course. Terminal line broken up into black spots arranged one on each side of the veins. Fringe gray, blackish at the veins. Discal spot black, scarcely to be differentiated from the dark band in which it is situated. Two black dashes are between veins M_1 and M_2 , and M_2 and M_3 , external to the extradiscal line; sometimes these extend beyond the subterminal line, and sometimes the two are more or less fused together, forming a single large spot. Secondaries smoky, the terminal line and fringe as in primaries. Beneath whitish, washed with pale brownish, which, external to the extradiscal line, becomes distinctly brown on both wings, especially at the apex of the primaries. Extradiscal line on both wings present as whitish bands. Discal spots rather small. Spots composing terminal line almost connected. Fringe as on upper surface.

Types: Two males in the collection of Dr. Wm. Barnes and in that of the author.

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Habitat: Baboquivaria Mts., Pima Co., Ariz., and Santa Catalina Mts., Ariz., in September (Barnes).

This species has the general aspect of a *Rheumaptera*, and is rather nearly allied to *Hydriomena basaliata*, Walk., from which it differs principally in the course of the extradiscal line and the smoky hind wings.

Cænocalpe elegans, new species.—Expanse, 29–30 mm. Head brown, with a few whitish scales; front rather yellowish; palpi with mixed white and brown scales. Thorax brown, the central portion and patagia with many white scales. Abdomen cinereous, the posterior edge of the segments dark brown. Primaries whitish-gray, with about seventeen slightly wavy, brown cross-lines running approximately parallel to the outer margin of the wing. The first four of these are more or less fused together, and occupy the whole of the basal area. The following two lines are fine, and have a rather broad margin of ground colour between and on each side of them. The median space has nine lines, the middle one of which is broader and less defined than the others, and represents the median shade; the two bounding lines are darker than those within, and gradually fuse with them, so that in one specimen the lines are scarcely visible at the inner margin, and altogether obliterated at the costa. Following this group of lines are two narrow ones; again bordered on all sides by bands of ground colour; then comes a broad subterminal shade, through which an irregular line of ground colour passes. The terminal line is dark brown, broken at the veins. Fringe grayish, with a brown line running through the centre. Discal spot brown, sometimes surrounded by a ring of ground colour. Secondaries whitish-gray, with four extradiscal lines, most prominent at the inner edge, running parallel to the outer margin of the wing, but turning outward at inner edge. Terminal line and fringe as in primaries. Beneath whitish-gray, finely speckled with brown scales on costal area of primaries and over the whole of the secondaries. One extradiscal line on fore wings and two on hind wings are faintly reflected. Discal spots on all wings.

Types: Female in the author's collection; co-type with Dr. Wm. Barnes.

Habitat: Redington, Arizona (Barnes).

The co-type is by far the handsomest specimen, and I believe is a varietal form of what I take to be the common type described above. In this specimen the lines of the basal and median areas are quite fused together, and the fine lines which just precede and follow the median area are almost absent, leaving broad whitish bands. On the secondaries two of the four lines are lost, and the remaining two are much intensified.

The species is nearest to *C. polygrammaria*, Hulst, but differs in its larger size, darker brown colour, and the comparative evenness of the cross-lines.

Tornos erectarius, new species.—♂. Expanse, 23–24.5 mm. Palpi dark brown, with or without a few yellowish scales; front uniformly dark brown; posterior part of vertex yellowish. Thorax yellowish, more or less mottled with dark brown. Abdomen brown, occasionally with yellow mottlings, and the posterior part of the segments are sometimes whitish. Wings mottled with brown over a gray or ochreous-gray ground. Two rather narrow, blackish lines cross the primaries. The intradiscal line is somewhat obscured in the brown mottlings which overlay the wing; it begins on the costa between the discal spot and the base of the wing, curves broadly outward, and then sweeps inward to inner margin. The extradiscal line begins on the costa, between the discal spot and the apex, slightly nearer the former, curves outward around the discal dot, from which it retains an even distance to vein Cu_2 , then extends far inward to the inner margin; at each of the veins there is a slight thickening to the line. Outward of this line is a band of ochreous, sometimes separated from it by a very narrow line of white. A broken zig-zag subterminal line of white traverses the outer area, and the terminal line is represented by a series of black triangular marks between the veins. Fringes checkered brown and yellowish. Discal spot a large, round tuft of blackish scales. Secondaries with a denticulate, blackish extradiscal line extending continuously from the costa to the middle of the inner margin, and running subparallel to the outer edge of the wing. An intradiscal line is indicated on the inner margin of the wing, but this extends only a short distance into the wing. Subterminal line white, discontinuous and obsolete toward costa. Between this and the extradiscal line is an ochreous shade, but this also disappears before the costa is reached. Fringe as in primaries. Discal spot not large, linear. Beneath light gray, dusted with brown scales, especially on the primaries, and particularly along the costa and near the apex. Extradiscal line vaguely indicated on both wings, and marked rather strongly at the veins by a black spot. Discal spots rather large, dusky.

♀.—Expanse, 26–27.5 mm. Palpi, front and vertex as in male; thorax and abdomen almost entirely ochreous. Ground colour of wings rather even pale ochreous throughout, intensified outward of the extradiscal line. On the primaries there is a sparse scattering of brown scales over the basal and median areas, and a more dense overlaying of similar scales

between the whitish, broken subterminal line and the outer margin from below the apex to the anal angle. Intra- and extradiscal lines and discal spots as in the male, but, on a lighter background, are more prominent and contrasting. Beneath much as in the male, but the dusting of scales is more even.

Types : Two males and three females in the collections of Dr. Wm. Barnes and the author.

Habitat : Santa Catalina Mts., Pinal Co., Ariz., July 24-31, Aug. 1-7, Sept. (Barnes); Baboquivaria Mts., Pima Co., Ariz., July 15-30 (Barnes, Poling).

This species is most nearly allied to *Tornos scolopacinaris*, Gn., but is readily distinguished therefrom by the continuous cross-lines which in *scolopacinaris* are represented by inconspicuous spots, or are absent altogether. The male of *erectarius* is further distinguished from the male of *scolopacinaris* by its peculiar brown mottlings, which in the latter species is a very even chocolate-brown, tending in some cases to ochreous.

Selidosema pulchella, new species.—Expanse, 31-34 mm. Head, thorax, abdomen and ground colour of wings deep flesh colour, the more prominent veins of the latter yellowish-buff. Antennæ, palpi, front (except inferior margin), and two dorsal spots at the apex of each abdominal segment, light brown. Intradiscal, median and extradiscal lines of primaries incomplete, brown, originating on the costa in three equidistant squarish or triangular spots. The first is traceable across the wing as a rather broad, diffuse line curving outward and angled inwardly below the cell. The second is broad, becoming diffuse in the cell, below which it does not extend, except that it is indicated near the fork of the cubital vein by two dots, the dots sometimes meeting at the junction of the fork. The third curves strongly outward and inward, meeting the inner margin a little outward of the middle, and is marked on all the veins by a moderate-sized spot, those on the last median and first cubital veins being connected by an inwardly curved line. From the anal vein to the inner margin there is also an inwardly curved line, and a vague indication that all the spots are connected by a scalloped line is present on one specimen. At the inner margin, and in the middle of the wing just external to the extradiscal line, are diffuse patches of scales. Subterminal line present on the anterior part of the wing as intervenular patches of brown scales. Terminal line brown, outwardly scalloped and marked at the acute angles by a distinct spot; in slightly flown specimens these spots only are present to represent

the terminal line. Discal spot large, ringed, and oval in shape. Secondaries with two distinct cross-lines, between which is located the large discal spot similar to that on the primaries. Intradiscal line obsolete on the costa, and with a deep inward angle at the cubital vein. Extradiscal line inwardly scalloped, bending around the discal spot, below which it sweeps inward, and with an outward angle reaches the middle of the inner margin. At all the angles this line is marked with prominent spots, which extend slightly along the veins. Running parallel to this line externally is a diffuse line best marked at the middle and at the inner margin. Subterminal line showing as patches of scales between the veins except in the central portion, where they are absent. Terminal line as in primaries. Beneath rather even pinkish, the fore wings with a faint wash of pale fuscous, and with a large diffuse subapical spot of the same colour. Large discal spots on both wings almost solid. Extradiscal line showing only at costa. Terminal line indicated by intervenular spots.

Types: Three males in the collections of Dr. Barnes, Rutgers College, and the author.

Habitat: Santa Catalina Mts., Pinal Co., Ariz., Aug. 1-7 (Barnes); Yuma Co., Ariz., March.

Distinguished at once from all described species of the genus by the deep flesh-coloured tint of the body and wings.

(To be continued.)

GALLS FOUND IN THE VICINITY OF TORONTO. — NO. 3.

BY DR. WM. BRODIE, TORONTO.

On Stems of Solidago ceasia.

Aug. 20, 1890, collected two galls from upper third of stems of *Solidago ceasia*; these galls appear like swellings of the stem, cylindrical in form, and in structure resembling the galls of *Gnorimoschema asterella*, on stems of *S. latifolia*, and at the upper ends there were prepared and plugged exits, like the two *Gnorimoschema* galls.

Parasites resembling those from galls of *G. asterella* emerged the following spring.

Sept. 23, 1893, collected five galls from upper third of *S. ceasia* stems; galls spindle-form, 8 x 25 mm. long diameter in axis of stem, and the gall of the same colour; in two of these galls there were open exits, and the producers had emerged. Some of these galls were seen July 16, when they appeared to be mature, but were not collected.

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Sept. 25, 1893, collected on wooded hill in St. James's cemetery, four galls from upper third of *S. ceasia* stems, immediately below flowering panicle, some galls leaf bearing.

The largest of the four was 9 x 27 mm., and this one had a prepared and plugged exit, from which there emerged next day a badly-deformed little moth, suspiciously like *G. asterella*, the only producer from this gall I have seen. Parasites the following spring.

Sept. 18, 1896, collected on wooded hill, north of Toronto, from stems of *S. ceasia* growing where galls of *G. asterella* were common, on stems of *S. latifolia*. These galls had not prepared exits; were parasitized, parasites emerging the following spring. These galls are very rare about Toronto; in structure they resemble galls of *G. asterella*, but are less in size and not so inflated in form, and as I have always found them where galls of *G. asterella* were common, and as the solitary deformed specimen I had somewhat resembled *G. asterella*, there is a suspicion that the *S. ceasia* gall is produced by *G. asterella*. I regret I have not been able to determine this. It is for some other worker to do. However, in my notes I have entered as a provisional name *Pedisca ceasiella*. These four, *Gnorimoschema gallasolidaginis*, Riley; *G. asterella*, Kell.; *Eucosma Scudderiana*, Clem.; *Stagmotophora ceanothiella*, Cosens; with two doubtful, one on *S. ceasia*, the other on *A. corymbosus*, are the lepidopterous gall producers I have found in the vicinity of Toronto. But there are at least five species of inquiline moths, more or less common, three from *Diplosis* galls and two from *Cynipid* galls.

Stagmotophora ceanothiella, Cosens.—The *Ceanothus* gall.

In the autumn of 1880 I enjoyed holidays in the township of Carden, Victoria County, where I found the shrub, *Ceanothus Americana* (New Jersey Tea) common. I also found the galls common; they appeared to be from a deformed terminal bud, having some resemblance to a gall terminal on twigs of *Rosa blanda*. I collected a number of the galls, kept them outside during the winter, and on May 20, 1881, the gall producers began to emerge, exquisitely beautiful little plume moths, probably the first time human eyes ever looked upon these lovely little gems.

In September, 1887, a collection of galls was made from the tips of stems and branches of *Ceanothus*, some distance east of Toronto; the producers emerged the following spring, May 25, 1888, and two species of parasites a few days later.

Sept., 1890, the galls were on rank growth of *Ceanothus* in the township of Whitchurch; found also at Grimsby and Essex. From this

collection producers and parasites emerged the following season, June, 1891. The galls were all at the top of branches, as if from a deformed terminal bud; rarely overtopped by a growth of stem a little above the gall, with a few leaves.

Collected in Casci ravine, April 23, 1893, and north of Howard Park, May 8, 1893, where the galls were numerous, a large series of specimens. From May 21 to June 27, 1893, numerous producers emerged, and from May 8 to May 29, 1893, two species of small parasites emerged. July 17, 1893, specimens of the moth were sent to Dr. Riley, and of the parasites to Dr. Ashmead.

July 29, 1893, reply from Riley: "Unknown to me"; "Should be described"; and from Ashmead a few days later: "Doubtless new species"; "Will describe."

August 1, 1893, three specimens of mature moth taken while sweeping with hand net in Howard Park.

August 11, 1893, specimens again taken while collecting in Rosedale.

Collected from March 3 to April 10, 1897, at Grimsby, Mount Dennis and Scarboro heights, 57 *Ceanothus* galls. From May 24 to June 12, 1897, numerous producers emerged.

This shrub, *C. Americana*, and the rather peculiar galls very common this year, 1897, on the ridges of King and Whitchurch townships, from Yonge St. to Uxbridge. Mr. Cosens has described the gall, the larva and mature moth in THE CANADIAN ENTOMOLOGIST, Vol. 40, p. 107.

Diplosis punicea.

Cecidomyiid galls are found on leaves and stems of herbaceous plants, on leaves and twigs of shrubs and trees, and deformed buds and flowers. The Cecidomyiid galls are morphologically as destructive as the producers; this may be said of galls generally, so that a description of the gall may be even more specific than a description of the producer as expressive of the biological relations between the "animal and the plant."

From 1887 to 1902 I found these galls common on *Aster puniceus*, one of our fine vigorous flowers which is very common, growing in wet ravines everywhere around Toronto. From 1890 to 1898 I made annual collections of galls in the spring and in the fall. The galls are on branches of the flowering panicle; they are spindle-form swellings of the branches, and in size range from 5 x 10 mm., diameter of stem below gall $2\frac{1}{2}$ to 5 x 15 mm. The galls are one-celled, the larvæ of a pale straw

colour; the producers are of the *Diplosis* type, and very similar to the producers of a similar gall on branches of flowering panicle of *Aster diplopappus*. The following is one of the nine annual entries in my note book: "April 9, 1893, collected in Greenwood and Casciavines, East of Toronto, a lot of over 50 galls from flowering branches of *Aster puniceus*. Galls spindle-form, 5 x 15 mm., diameter below gall 3 mm; another smaller lot measured 4 x 8 mm., diameter of branch below gall 2½ mm. From May 30 to June 5, 1893, *Diplosis* producers emerged. From June 1 to June 11, 1893, two species of parasites emerged.

"June 11, 1893, specimens of gall producers and parasites mailed to Dr. Riley.

"July 29, 1893, note from Dr. Riley: 'Unknown to me.'"

I have found this gall common in Whitchurch, Owen Sound, Fitzwilliam Island, North Bruce, Grimsby, and no doubt they are more or less common wherever this stately host *Aster* is found.

INDEX OF ORTHOPTERA.

The undersigned has undertaken the task of fully indexing the literature of the Orthoptera of the World subsequent to the year 1900. The task is not a light one, but will, it is hoped, ultimately prove well worth the labour involved. Publication is not contemplated for many years, but in the meantime the index should be of much use in various ways. By the constant use of guide cards indicating reductions to synonymy, or the resurrection therefrom, and the transfer of species from one genus to another, it is hoped to make this more than a mere list of names.

In conjunction with the above undertaking, an exhaustive bibliography has been attempted, and geographical and systematic indexes are kept, listing articles treating of the fauna of different places, and citing tables and important discussions of genera and higher groups.

To facilitate the above work, the writer earnestly requests separates of articles from authors writing on the Orthoptera. The importance of this request is considerable, and its maker hopes that it will be favourably considered by all Orthopterists. The writer will be glad to exchange separates so far as possible, and will be ready at all times to transmit facts and data from the index to any one desiring such information. The index is now complete to date so far as it has been possible to secure the literature.—A. N. CAUDELL, U. S. National Museum, Washington, D. C.

NEW COLEOPTERA FROM THE SOUTH-WEST.—IV.

BY H. C. FALL, PASADENA, CALIF.

The greater number of species made known in this, the fourth paper* of miscellaneous descriptions of Coleoptera from the South-west, are from the Peninsula of Lower California. These descriptions were written some eight or nine years ago, and are based upon material received through Mr. Chas. Fuchs, from the California Academy of Sciences. It was the intention, when sufficient material had been obtained, to publish a third supplement to the "Coleoptera of Baja California," by Dr. Horn, but the source of supply gave out very soon after the receipt of the first installment. One of the species described at that time—*Saxinis Hornii*—was shortly after received from San Diego, Cal., and this name appears in my List of the Coleoptera of Southern California, the description, however, being accidentally omitted. It is high time that this *Nomen nudum* was made good, and it is thought best to present also the description of the other new species written at the same time. The opportunity is taken to add a few other new species collected by Mr. Beyer in the same region, together with two or three more from various sources.

Canthyrus levis, n. sp.—Rather broadly oval, more narrowed behind, colour yellowish-testaceous, elytra darker, upper surface polished throughout. Head impunctate, thorax subimpunctate, except for a line of rather fine punctures along the front margin, and a somewhat numerous group of coarser but feebly impressed punctures irregularly placed in the median basal region. Elytra with intermixed fine and somewhat coarser, feebly impressed punctures, which are slightly better defined in two discal lines bearing fine short hairs. Beneath almost impunctate, except the sternal plates, which are strongly, rather coarsely punctate, each puncture bearing a posteriorly-directed bristle-like hair. The prosternum is broadly rounded anteriorly, and bears at the middle, on either side of the central line, one long and several much shorter spiniform bristles, set subtransversely. The transverse lines of punctures of the abdominal segments are almost wanting.

Length, 2 mm. One example, San Jose del Cabo. Type in the collection of the California Academy.

This species is very easily distinguishable from any previously described from our fauna, and I am unable to identify it with any of the Mexican forms mentioned in Sharp's Monograph.

*The third paper of this series was published in the CAN. ENT., Vol. XXXIX (1907), page 235.

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As compared with our other species, it is decidedly smoother than any, and less elongate than all except possibly *puncticollis*, the form of which I do not now recall. In *bicolor* and *gibbula*, the only other species now before me, there are three or four elongate spiniform bristles on either side of the prosternum in front, in place of the single long and one or two shorter ones in the present species; perhaps an individual variation.

Scymnus bijugus, n. sp.—Broadly oval, outline nearly continuous, black; head, anterior part of the side margins of the prothorax and two large transverse connected spots on each elytron, yellow; under surface brownish, legs entirely pale. Upper surface very finely punctulate and moderately shining; prosternum without elevated lines, sides of mesosternum and abdomen sparsely but more distinctly punctate than the elytra; metacoxal line incomplete, parallel with the first ventral suture; abdomen with six segments.

Length, 1.5 mm. One example, San Jose del Cabo. Type in the collection of the California Academy of Sciences.

Belongs to Horn's Group B, and must be associated with *amabilis* and *guttulatus*, from both of which it differs by its more broadly oval form and the elytral markings. The elytral spots are nearly equal in size, and are rather narrowly connected at the middle.

Bostrichus fasciculatus, n. sp.—Blackish-brown, moderately shining. Head closely punctate, front feebly margined at sides. Prothorax as wide as long, front margin sinuate, with two slender unciform processes; hind angles prominent, dentiform; entire upper surface strongly though not very densely tuberculate, and clothed thinly with moderately long, recumbent, subinterlacing yellowish-brown hairs, with numerous erect pointed tufts of blackish hairs. Elytra coarsely, deeply, subcubricately punctate, without costæ; vestiture similar to that of the prothorax, the interspersed pointed tufts of blackish hairs longer and very conspicuous.

Length, 7 mm.; width, 2.4 mm. Santa Rosa, Lower California (Beyer). A most singular insect, totally different in its vestiture from any species previously known to us.

The elytral fasciculæ are approximately as follows: a subsutural series of three prominent tufts, exterior to which are three or four others less regularly placed; a sutural series of much smaller tufts, and a number of similar ones toward the side margin.

Atenius confertus, n. sp.—Oblong, moderately robust and convex, piceous-brown, surface dull; beneath red-brown, legs not paler. Head

densely, coarsely punctate throughout, granulate in front; clypeus broadly, feebly emarginate, with a distinct denticle each side the emargination; genæ prominent, the angle scarcely rounded and nearly right. Thorax nearly one-half wider than long, sides broadly arcuate and a little narrowed posteriorly, hind angle obtuse as viewed from above, the sides and base forming a continuous curve when viewed from the side. Surface densely, coarsely punctate throughout, the punctures nearly or quite in contact at all points, basal marginal line entire. Elytra as wide as the thorax, humeri dentate, side a little arcuate, nearly parallel, striæ moderate, distinctly punctulate, intervals moderately convex, the sutural with a single row, the others with two rows of unusually coarse punctures, which are not well defined toward the margin. The punctures occupy about one-third the width of the interval, and are a little closer in the outer than in the inner series of each; those of the inner series being so close to the striæ as to render the inner margin of the interval somewhat crenate. Under surface and legs very coarsely but not very closely punctate; mesosternum not distinctly carinate between the coxæ. Front tibiæ tridentate, feebly crenulate above the upper tooth; hind femora with short marginal line near the knee, hind tibiæ without accessory spinule, the first tarsal joint barely as long as the long spur.

Length, 4.3 mm. One example, San Jose del Cabo. Type in the collection of the California Academy.

This species must stand next to *abditus* by Horn's table, but differs very markedly by the larger, stouter form, and very coarse and dense sculpture. *Abditus* has not yet been reported from the Peninsula, but may reasonably be expected to occur there.

Eburia semipubescentis, n. sp.—Dark brown, head and prothorax nearly glabrous, elytra uniformly but not densely clothed with a single system of very short suberect hairs, beneath sparsely pubescent. Antennæ (♂) longer than the body, basal joint stouter and distinctly sulcate on its anterior face, outer joints very slender, the 11th about one-half longer than the 10th. Prothorax as in *Ulkei*, sides with a moderately prominent subapical tubercle and a median slender acute spine; disk uneven, with sparse, rather coarse but vague punctures. Elytra finely, moderately, closely punctate, each with two small elongate basal and two similar median ivory spots; apex squarely truncate with sutural spine, the outer angle distinct but not prominent.

Length, 19 mm.—Colorado River, California. A single male.

This species is closely allied structurally to *Ulkei*, and should follow it in our lists. In *Ulkei* the upper surface is virtually glabrous throughout, and the etytra are very finely or indistinctly punctate. In *Ulkei, stigmatica* and *semipubescens* there is a longitudinally sulcate interocular flattened carina, which is not obvious in the other species of the genus. In the two first-named species this carina is nearly parallel and more deeply grooved; in *semipubescens* it is broader behind and less prominent, with a finer median groove, and is more deeply, transversely impressed behind the antennal tubercles. In *semipubescens* the elytral pubescence consists of a single system of erect hairs, which are almost perfectly uniform in length except for some irregularity near the apex. In all our other species except *Ulkei (distincta* is not before me) the elytral vestiture is dual, consisting of recumbent pubescence, with intermixed longer erect hairs.

Metaleptus gracilior, n. sp.—Slender, parallel; red, pronotum with two discal spots, elytra with a small umbonal spot, and the apical third or half black; knees, tibiae and tarsi black. Pubescence rather sparse, fine, short, erect, longer on the disk of the pronotum and the base of the elytra. Antennae (♂) very slender, nearly twice as long as the body; (♀) less slender, not reaching the elytral apex, outer joints shorter, wider and subserrate. Prothorax a little wider than long, sides with a prominent tubercle just behind the middle, disk densely punctate. Elytra slightly wider than the prothorax, and about $2\frac{1}{3}$ times as long as wide, densely but not coarsely punctate, the punctures becoming finer apically, each with two fine but evident subcostiform lines; apices broadly, separately rounded or feebly truncate. Prosternal process strongly convex; metasternum protuberant between the coxae. Legs very slender; the hind thighs sublinear, longer in the male, but passing the elytral apex in both sexes.

Length, $9\frac{3}{4}$ –14 mm.

This species was taken in some numbers in the Baboquivaria Mts. in Southern Arizona by Prof. Snow.

There is some variation in the extent of the black markings; the thoracic spots may unite, the humeral spot is sometimes lacking, the elytral apical area extends farther forward at the suture than at the sides, and in one example unites with the humeral spot, leaving the base narrowly and a portion of the side margin pale.

Gracilior is very distinct from *Batesii*, the latter being a broader insect, the body black throughout except narrow basal and lateral margins

of the elytra; elytra conjointly rounded at apex, more rugose and without trace of costæ; the lateral thoracic tubercle at the posterior third or fourth; the recumbent pubescence denser and more conspicuous both above and beneath; prosternum flat, metasternum not at all protuberant between the coxæ; hind thighs not reaching the elytral apex. In *angulatus* the form is said to be the same as in *Batesii*, the elytra lack the costiform lines, and are sinuously truncate at apex.

In his description of the genus *Metaleptus*, Bates states that the antennæ are 11-jointed, with the terminal joint appendiculate. Horn, however, finds a distinct articulation in the last joint of the male in *Batesii*, and pronounces the male antennæ 12-jointed. In *gracilior* this pseudo-articulation is distinct in some specimens, but almost totally absent in others, and I am convinced that the antennæ are properly described by Bates.

Saxinis Hornii, sp. nov.—Deep blue, feebly shining, head punctulate and slightly rugulose; thorax moderately, coarsely, rather closely punctate on the disk, more densely at the sides; elytra densely sculptured, the striæ distinct, but more or less irregular, the punctures of the intervals about equally coarse; humeral spot confined to the umbone, and involving less than half the epipleural lobe. Beneath finely punctured and densely cinereous pubescent.

Two examples, San Jose del Cabo.

Most closely related to *Sonorensis*, from which it differs in its somewhat coarser sculpture, and very small humeral spot and more parallel form. By Horn's table it would be associated with *saucia* and *politula*, from both of which the denser thoracic punctuation at once separate it. A specimen in my collection from San Diego Co., Cal., differs only in the colour being almost black, and there can scarcely be a doubt that it is identical with the Lower California form.

In Mr. Schæffer's recent table *Hornii* should be inserted just after *Sonorensis*.

Statira colorata, n. sp.—Head, thorax, scutellum and legs rufotestaceous, elytra and abdomen piceous. Antennæ half the length of the body, piceous, basal joints paler, terminal joint (♂) equal to the three preceding. Head finely, rather densely punctulate, feebly shining. Eyes separated on the front by a distance equal to their own width. Prothorax longer than wide, sides broadly arcuate, surface densely, minutely punctulate, rugulose and dull. Elytra finely alutaceous, dull,

striate as usual, interspaces 1, 3 and 5 with respectively 3-4, 7-9, 6-7, setigerous punctures. The seventh and ninth intervals also have each one or two punctures. Tibiæ sulcate on the outer edge.

Length, 7.5 mm. Lower California, San Jose del Cabo.

Described from a single ♂ specimen given me by Mr. Fuchs. I have seen several others from the same source. *Colorata* resembles *subnitida*, the only previously described species from the same region, in its dull surface and sulcate tibiæ, but differs much in colour, in the somewhat more numerous setigerous punctures of the elytra, and in the much less approximate eyes.

Macrobasis excors, n. sp.—Black, densely cinereous pubescent, the tips of the femora, outer edge of front and middle tibiæ and the tarsal joints in great part, black. Antennæ black; first and second joints elongate in the male, the first about reaching the hind margin of the head, but little longer than the second, and a little shorter than the second and third united; second joint fully three times as long as the third and longer than the next two; third about three-fifths as long as the fourth; fourth and following joints linear, about four times as long as wide, slightly decreasing outwardly, both in length and width. In the female the basal joints are much shorter than in the male, the third reaching the back of the head, the second scarcely longer than the fourth. Head less broad posteriorly than in *unicolor*, the tempora less prominent than the eyes. Prothorax longer than wide. Anterior tibiæ with two spurs in both sexes.

Length, 16-17 mm.

Described from a single pair kindly given me by Mr. Beyer, who collected them at El Taste, Lower California.

This species is very similar to *unicolor*, both in structure and general appearance; the latter, however, is smaller, the head a little broader posteriorly than across the eyes, the prothorax as wide as long, and the antennal joints somewhat differently proportioned, the second being relatively shorter as compared with the first, the third scarcely shorter than the fourth, and the outer joints only about twice as long as wide.

Cantharis Blaisdelli, n. sp.—Length, 13-16 mm. Intense black throughout, except for the minute reddish frontal spot, which is often indistinct. Head and prothorax polished and sparsely punctate, elytra finely scabrous and dull. Prothorax about one-tenth wider than long, narrowed behind, sides moderately, strongly rounded at anterior third, nearly straight posteriorly. Tibial spurs slender, subequal.

Male.—Antennæ with joints 5-7 thickened, obovate, evidently longer than wide; 8-10 smaller, mutually similar, slightly elongate, and subequal to, though slightly thicker than, the fourth. Pygidium rounded at apex, the tip feebly subsinuate; last ventral broadly, rather deeply impresso-emarginate, the limiting angles prominent and somewhat deflexed.

Female.—Antennæ shorter, not passing the base of the elytra, gradually incrassate, last ventral not emarginate.

Described from a series of 9 ♂'s and 2 ♀'s, taken at an elevation of 2,750 feet in Siskiyou Co., California, by Dr. F. E. Blaisdell, to whom it gives me pleasure to dedicate the species.

The present species is closely allied to *lugubris*, Ulke (*Ulkei*, Beaugreg), differing in the strongly shining head and thorax, and in the genitalia. In *lugubris* the thorax is relatively smaller, and it and the head are as dull in lustre as the elytra.

Anthonomus tridens, sp. nov.—Short, oblong, rufous, beak in great part, and legs, except anterior thighs, testaceous; vestiture moderately dense, consisting of small elongate scales varying in colour from whitish through ochreous-brown to fuscous. Beak as long as the head and thorax, sparsely pubescent, feebly punctate, striate, tip nearly smooth. Antennæ slender, pale throughout, inserted one-third from the tip, scape nearly reaching the eye, joints all elongate, second equal to the two following, third slightly longer than the fourth. Head coarsely punctate and scaly, front a little concave, somewhat narrower than the width of the beak, eyes prominent, convex. Prothorax scarcely one-half wider than long, sides parallel and broadly rounded in basal half, strongly rounded and moderately constricted in front; apex half as wide as base, surface densely, strongly punctate, with dorsal and infero-lateral vitæ of broader whitish scales, between which the scales are narrower, sparser and ochreous in colour. Elytra nearly one-half wider than the prothorax, sides parallel to apical third, tip conjointly rounded, concealing the pygidium; scales smaller and denser than on the prothorax, generally pale in colour; each elytron with three somewhat broken bands, consisting of spots of fuscous scales more prominent on alternate intervals, the first running inward from the humerus to the suture, the other two converging from the sides so as to enclose that area, which is subdenuded in *signatus* and other allied species; striæ well impressed, intervals moderately convex and feebly tuberculate beneath the dark spots in the basal region. Beneath clothed with yellowish-white scales, abdomen pubescent, second segment longer than the third, which is very slightly longer than the fourth

and subequal to the fifth. Anterior thighs very stout, armed with one long and two shorter acute teeth; middle and posterior thighs unidentate, front tibiæ strongly curved; front claws with a long tooth, which is parallel to and nearly as long as the claw; middle and hind claws toothed as usual.

Length, $2\frac{1}{2}$ mm. One example, San Jose del Cabo. Type in the collection of the Cal. Academy.

This species seems most closely allied to *nebulosus*, agreeing with it and with no other so far as I have observed in the unguis peculiarity above mentioned.

I have more recently received several examples of this species from Mr. Beyer, who took it at Santa Rosa and San Felipe, in the Cape region.

Cryptorhynchus lucanus, n. sp.—Oblong, elongate, clothed with rather broad, pale yellowish-brown scales, which are suberect on the head and beak, pronotum, legs and abdomen; recumbent and mixed with erect bristles on the elytra. Beak a little shorter than the prothorax, stout, regularly arcuate. Antennæ inserted near the middle, pale throughout, scape reaching the eye; first and second joints of funicle subequal, the latter more slender and about equal to the two following; club elongate, oval, rather bluntly pointed, the first joint comprising less than one-half its mass. Prothorax a little wider than long, feebly constricted at apex, sides nearly parallel and slightly arcuate in basal half, not carinate; deeply, moderately, punctate, each puncture bearing a suberect scale, which is inclined forward. Elytra parallel to, or a little beyond, the middle, then gradually narrowed, apex obtusely rounded, surface concealed by closely appressed scaly vestiture, which is nearly uniform in colour, except for a common transverse fascia of paler scales at the summit of the declivity, which extends to the fifth interval. Striæ moderate, punctate, each puncture bearing a small recumbent scale, each interval with a row of erect setæ. Under surface with coarse, well separated punctures, each bearing a broad scale. Thighs all with a small acute tooth, tibiæ feebly sinuate at intervals, the outer margin not angulate near the knee.

Length, $3-3\frac{1}{2}$ mm. Two examples, San Jose del Cabo. Type in the collection of the California Academy.

In one specimen the scales are as described in colour, in the other much darker brown, rendering the transverse subapical pale fascia much more prominent. Seems most nearly related to *lutosus*, but much smaller, and with decidedly longer and more slender elytral setæ.

Madarellus punctatus, sp. nov.—A little shorter and more robust than *undulatus*, black, polished, beak dark rufous. Head finely, sparsely punctulate above the eyes, front more coarsely and closely punctate. Beak strongly, evenly arcuate, feebly tapering, sparsely, finely punctured at apex, more strongly toward the base. Antennæ inserted near the middle, first joint of funicle about as long as the three following, club equal to the four preceding joints. Prothorax about one-third wider than long, parallel in basal three-fourths, strongly rounded in front and but feebly constricted at apex, coarsely, closely punctate except along the median line behind the middle, punctures becoming confluent laterally. Elytra about one-fourth longer than the prothorax, and very slightly wider at the humeri; sides gradually convergent behind, disk feebly undulated; striæ deep, finely punctate, intervals scarcely more than twice as wide as the striæ, each with a single series of not very fine punctures, separated on an average by about four times their own diameters. Beneath strongly, closely punctate. Femora all armed with a small acute tooth.

Length, 2.8 mm. One example, San Jose del Cabo. Type in the collection of the California Academy.

Very distinct from *undulatus* and *cuneatus* by the coarser, closer sculpture of the upper surface. Each puncture of the thorax and of the elytral interspaces bears a very short, fine, whitish hair.

Cossonus sulcirostris, n. sp.—Moderately convex, piceous, legs rufous. Beak shorter than half the thorax, flattened cylindrical, feebly dilated apically, very finely, sparsely punctate, with a long distinct sulcus extending from the interocular puncture two-thirds the distance to the apex. Scrobes beginning near the tip, not distinctly visible from the front. Head, above the eyes, subimpunctate. Antennæ about as usual, the club nearly uniformly pubescent throughout. Prothorax longer than wide, feebly constricted at apex, a little narrowed at base, sides broadly arcuate, surface very coarsely punctate, closely at sides, more sparsely on the disk, with a nearly smooth area on either side of the middle toward the base, base not distinctly cariniform before the scutellum. Elytra parallel, very slightly wider than the thorax, striæ of coarse punctures, which are separated by about half their longitudinal diameters, intervals nearly flat, very finely, uniseriately punctulate. Beneath coarsely, rather closely punctate, except the abdomen and middle portion of metasternum, where the punctures are finer and sparser.

Length, 4.3 mm. One example, San Jose del Cabo. Type in collection of California Academy.

Resembles *corticola* and *impressifrons* most closely, but may be distinguished from all our described species by the very finely punctate and sulcate beak. The elytral striæ, except the sutural, are scarcely at all impressed. The basal joint of the antennal club is usually very sparsely hairy and shining, but is here about as densely clothed as the remainder.

PROFESSOR M. V. SLINGERLAND.

Economic Entomologists throughout North America have experienced a grievous shock owing to the unexpected death of Mark Vernon Slingerland, Assistant Professor of Economic Entomology in Cornell University, which took place at Ithaca, N. Y., on the 10th of March. Carried off in the prime of life by an attack of Bright's disease, his loss is deeply deplored by his associates and students at the University and a wide circle of friends.

From a sympathetic notice by Prof. Comstock in the *Journal of Economic Entomology*, we learn that Mr. Slingerland was born at Otto, N. Y., on October 3, 1864. At the age of 23 he entered Cornell University, and in 1892 received the degree of Bachelor of Science in Agriculture; he was specially commended for proficiency in Entomology during the last two years of his course; in 1899 he was appointed Assistant Professor. He soon became widely known from his contributions to periodical literature (many of his articles appeared in this magazine) and the many Bulletins which he wrote; the publication of his last work, "Insects Injurious to Fruit," has just been announced by MacMillans in their Rural Science Series.

To quote Prof. Comstock: "He was recognized as being one of the foremost workers in economic entomology, and had attained an international reputation. . . . This position was reached by untiring industry and a devotion to truth. His work was characterized by painstaking thoroughness and an absence of anything sensational. His constant aim was to determine the exact and complete truth, and to present what he discovered in a clear manner. In this he was very successful, both in the class-room and as a writer. . . . As a teacher he was clear, direct and painstaking, and he had the keenest interest in the needs of each individual student."

His wife and one daughter survive him; to them we desire to extend our deepest sympathy in their sad bereavement.

C. J. S. B.

BOOK NOTICES.

O. M. REUTER, Bemerkungen über nearktische CAPSIDEN nebst Beschreibung neuer Arten. (Acta Societatis Scientiarum Fennicæ XXXVI, No. 2, 89 pp: in 4:0, Helsingfors, 1909).

This is the most important work thus far published on the numerous North American forms of this exceedingly difficult family of Hemiptera. Since Prof. Reuter published his first paper on Nearctic Capsidæ (1875) the systematization of this family has made considerable progress, and this is almost entirely due to his own work on this family, which he has made his special study for nearly forty years. The author's recent views about the subdivisions of the family are laid down in his "Klassifikation der Capsiden," published a few years ago. In the present paper we find two important improvements on this system. The Division *Garganaria* had been founded on examination of old and ill-preserved specimens, and is now united with the *Capsaria*. On the other hand, the Division *Pilophoraria* has proved to include heterophyletic forms. To this Division the author now refers only *Pilophorus* and a new genus, all other genera being transferred to a new Division, *Cremnocephalaria*, which is placed rather far from the former Division. (The Divisions in which Reuter subdivides the Capsidæ are not systematically equivalent to the subfamilies in other families, and their names ought not to end in *-ini* or *-inæ*, as proposed by Kirkaldy). The systematic place of numerous species chiefly described or named by Uhler has been corrected, little known species are redescribed, and 10 genera and 59 species are described as new. Of great value is the generic key to the 23 nearctic genera of the Division *Capsaria*, four of which are new. A monographic synopsis is given of the genera *Phytocoris*, Fall. (25 species, of which 17 are new); *Lygidea*, Reut. (3 species, 2 new); *Tropidosteptes*, Uhl. (5 species, 4 new); *Camp-tobrochis*, Fieb. (11 species, 4 new); *Cyrtopeltis*, Fieb. (3 species, 2 new), and the new genus, *Euryopiella*, Reut. (4 species, 2 new). The generic synopsis of the *Capsaria* and the descriptions of the new genera and species are in Latin, the other descriptions and remarks mostly in German. As the author lost his eyesight before the manuscript was finished, the descriptions of two genera and ten species have been drawn up by Dr. B. Poppius, under the author's direction and supervision. Of these Reuter and Poppius are to be cited jointly as authors. The printer's errors are, unfortunately, rather numerous, and few of them are corrected. The genus *Caulotops*, Bergr. (previously known only from Argentina), is

through and through called *Caulatops*. Some incidental remarks may find their place here. The genus *Dacerla*, Sign., is placed in the Division *Myrmecocoraria*, but the author was unable to examine the arolia in the only specimen he has seen. The arolia in *Dacerla* are quite rudimental and fused with the claws, whereas they are large and free in the *Myrmecocoraria*. I think this genus must be placed in the *Cremnocephalaria*. *Horcias affinis*, Reut., is, according to Distant, identical with *limbatellus*, Walk., which has priority. The author states that *Rinacloa citri*, Ashm., is identical with *Halticus Uhleri*, Giard, but he has overlooked that the specific name *citri* has priority by several years.—E. BERGROTH, Fitchburg, Mass.

FLORIDIAN HEMIPTERA TAKEN BY MR. E. P. VAN DUZEE.

In his "Observations on Some Hemiptera taken in Florida,"* Mr. E. P. Van Duzee has once more rendered a service to American Hemipterists especially, and in a less degree to those of other lands. As the title implies, he has not presented a mere dry-as-dust list, but a very interesting and helpful recital of observations in the field, synonymic notes, rectifications of current misapprehensions, together with a study of the Floridian Hemiptera far more thorough than anything that has been heretofore done for this neglected group and for that region. He enumerates 168 Heteroptera, among them eight new species, and 186 Homoptera, 21 of them new, with two new genera. Mistakes are few, and I have noted only two worthy of being pointed out. *Benacus* and *Amorgius*, by some inadvertence, have been placed in the family "*Nepidae*" (of which, by-the-by, none was taken). The other is mainly a matter of critical interpretation. *Cymus breviceps*, Stal, is listed on p. 166. Mr. Van Duzee, with great kindness, presented me with specimens of this catch. To my eye the insect is not a *Cymus* at all, but belongs in the closely-related genus *Cymodema*, and is possibly *Cymodema exiguum*, Horváth, but, from a cursory examination, I should not be surprised if it turned out to be undescribed. Look again, please, Mr. Van Duzee!

But as a whole, this list merits nothing but praise. It is characterized by this author's well-known desire to be accurate, and is most certainly painstaking and reliable to a high degree. Would that his kind abounded! Then we poor Hemipterists would not be compelled to be forever criticizing, correcting and readjusting.—J. R. DE LA TORRE BUENO, New York.

*1909 Bull. Buff. Soc. Nat. Sci., IX, pp. 149-230.