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NOTES ON THE HETEROPTERA OF EASTERN NORTH AMERICA WITH DESCRIPTIONS OF NEW SPECIES, I

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This is the first of a series of supplements to my "Heteroptera of Eastern North America" which was issued October 18, 1926. During the year which has elapsed I have collected at Gainesville, Dunedin and Royal Palm Park, Florida, and at various points in Indiana, and have found several species which are evidently undescribed, and have identified others which were not included in that work. The known range of a number of species has also been extended by the published papers of several authors which have appeared during the year as well as by my own investigations. I also make brief mention of the new species of Heteroptera which have been described by others during the year from the territory covered by my work. From these "Notes and Descriptions," and from others which I hope to publish from time to time in the future, the student may keep informed as to the status of this interesting group of insects in eastern North America, and may the more readily identify his specimens and keep his collection up to date.

In the notes which follow the first number before each species mentioned is the serial number of that species in the "Heterop-

tera," and the one in parenthesis is the serial number of the species in Van Duzee's "Catalogue of the Hemiptera of America North of Mexico." A dash instead of a number denotes that the species was not included in one or the other or both of these works.

Family PODOPIDÆ

18 (——). PODOPS PENINSULARIS Blatchley.—A single male of this little turtle bug was taken February 21, 1927, at Gainesville, Fla., while sweeping along the margins of a pond. It was known before only from Dunedin and Royal Palm Park, that state.

Family CORIMELÆNIDÆ

31 (37). CORIMELÆNA PULICARIA (Germar).—This common northern negro bug is apparently very scarce in Florida. It was confused by both Van Duzee (1909) and Barber (1914) with *C. marginella* Dallas, the common species in that state. During sixteen years collecting in Florida I have taken not over half a dozen examples of *pulicaria* and these only at Dunedin and Royal Palm Park.

Family PENTATOMIDÆ

95 (143). HYMENARCYS NERVOSA (Say).—A single example of this species was taken by A. N. Tissot at Gainesville, Fla., November 29, by passing "Reindeer moss" through a Berlese funnel. Known in that state heretofore only from Sarasota and Ft. Myers.

96 (155). MENECLES INSERTUS (Say).—This bug has recently been taken at Gainesville, Fla. It was not known from that state when the "Heteroptera" was written, the most southern station therein given being Raleigh, North Carolina.

115 (187). BANASA PACKARDI Stal.—Both this species and *B. euchlora* were beaten in numbers from red cedar near Dunedin during the winter of 1926–'27. Adults and nymphs in various stages occurred throughout the winter.

125b (207d). STIRETRUS ANCHORAGO VIOLACEUS (Say).—A single example was taken at Royal Palm Park, Fla., February 26, by F. M. Jones.

128 (210). ALCÆORRHYNCHUS GRANDIS (Dallas).—This large pentatomid was also taken at the Park, February 28, by Mr. Jones.

Family COREIDÆ

157 (249). LEPTOGLOSSUS FULVICORNIS (Westwood).—Two specimens were taken at Gainesville, Fla., February 21, 1927, while beating holly in low open oak woods. Known definitely heretofore from that state only from Dunedin.

163 (258). PHTHIA PICTA (Drury).—Until February, 1927, I had not taken this species personally. I then began to find it on squash vines in my garden at Dunedin. Both young and adults occurred in small numbers until April. It is also in the Experiment Station collection at Gainesville, from Ft. Lauderdale and Gainesville.

—— (280). SEPHINA GUNDLACHI (Guerin), 1857, 377.—This large and handsome coreid differs from *S. grayi* Van D., as described on page 237 of the "Heteroptera," in having the apex of hind pronotal angles and a large spot on middle of corium velvety black. It was described from the West Indies and was recorded by Banks (1910, 81) from "Fla." As no definite record of its occurrence in Florida could be found it was not included in the "Heteroptera." On March 28, 1927, I took at Royal Palm Park, Fla., several large nymphs, and, on April 15, a half dozen adults of *gundlachi.* These were all beaten from a large mass of slender stems of the climbing milkweed, *Metastelma scoparium* Nutt., on the margin of the hammock on Paradise Key. This milkweed is also the host plant of *S. grayi* Van D., and, aside from the difference in coloration above stated, the only appreciable difference between the two forms is that the scutellum is almost flat in *grayi* while in *gundlachi* there is a distinct transverse ridge with a furrow behind it; the punctures of both pronotum and elytra are also somewhat deeper and more numerous in the latter species. It is possible that a large series will show that *grayi* is only a race or color variety of *gundlachi.* Dr. Carl J. Drake informs me that a single specimen of *gundlachi* from Gulfport, Fla., is in his collection.

Family CORISCIDÆ

189 (——). PROTENOR AUSTRALIS Hussey.—An adult and a last instar nymph of this recently described species were taken at Royal Palm Park, April 18, while sweeping herbage in a swale of the Caribbean pinelands. Like the northern *P. belfragei* Hagl., it is probably an inhabitant mainly of the marshlands.

Family CORIZIDÆ

Mr. W. E. China has called my attention to the fact that *Corizus hyalinus* Fabr. differs from our other species in possessing "scent glands," and therefore osteolar openings. The first phrase of *aa* in the Key to Families of Coreoideæ on page 208 of the "Heteroptera" should therefore be changed to read: "Osteolar openings usually absent; *when present*, placed between the middle and hind coxæ near the median line and provided with two short, diverging furrows;" and in the 14th line on page 270 the words "except in *Corizus hyalinus* Fabr." should be placed after the word "obsolete."

Family ARADIDÆ

268 (417). ANEURUS FISKEI Heidemann. My second specimen was taken June 9, in Marion Co., Ind., by sweeping herbage along a pathway in dense woodlands.

Family TINGIDIDÆ

—— (644¼). CORYTHUCHA MORRILLI Osborn & Drake, 1917, 298.—This southwestern species has been recently taken at Dunedin and Royal Palm Park, in February and March by sifting grass roots and sweeping low herbage along the margins of swales. It is about 3 mm. in length and belongs under *b* of the key in Group C, page 460, of the "Heteroptera." From *marmorata*, which it closely resembles in markings, it is distinguished by having the marginal ciliae of paranota and elytra much shorter and more crowded, lateral carinae of pronotum longer and higher, curved outward, each with six or seven areolæ; elytra longer, narrower, with sides visibly concave and hyaline cells between the two dark apical cross-bars, larger. This

is the first record from east of the Mississippi. It is said to be common in Colorado and Arizona.

433 (——). CORYTHAICA FLORIDANA Blatch.—The second known example of this little tingid has been received from Messrs. Watson and Tissot of Gainesville. It was taken from moss collected from logs and stumps, November 2, 1926, at Citra, Fla., and afterwards put through a Berlese funnel. The unique type was from Dunedin, Fla.

465 (——). HESPEROTINGIS ANTENNATA Parshley.—Several examples of the brachypterous form of this tingid were beaten on each of three occasions in January, 1927, from bunches of Spanish moss hanging from the lower limbs of red oak, *Quercus rubra* L., growing in open pine woods near Dunedin, Fla. These oaks were several miles apart and, though the dense clumps of moss attached to nearby pines and other trees were thoroughly beaten, it was only on those attached to the oaks that the bug was found. It has not before been recorded south of Washington, D. C.

468 (677). ATHEAS EXIGUUS Heidemann.—The types of this minute tingid were from Sevenoaks, Fla., only five miles from my winter home at Dunedin. I have tried unsuccessfully for ten years to find it. After returning to Indianapolis in May, 1927, I found a single example of the tingid in a capsule containing specimens of the little lygæid, *Cymus bellus* Van D., which I had swept in April from low herbage about the margins of a pond near Dunedin. It has heretofore been definitely recorded only from the type locality.

476 (——). LEPTOYPHA ILICIS Drake.—One example of this species was taken at Gainesville, Fla., February 23, by beating *Vaccininum*. It is much darker, with hind portion of hind lobe of pronotum and discoidal areas distinctly more coarsely punctate, than in the one from Lake Wales, mentioned in the "Heteroptera."

Family PLOIARIIDÆ

491 (698). EMPICORIS TUBERCULATUS (Banks.)—My first Indiana example of this well-marked species was beaten, August 27, 1927, from the foliage of bur oak, *Quercus macrocarpa*

Michx., in Marion Co., Ind. The species of *Empicoris* are apparently scarce in this state, but three having so far been taken.

504 (——). PLOIARIA SETULIFERA McAtee & Malloch.—In the key of McAtee and Malloch, as well as in my work, the relative lengths of the antennal segments of this species are wrongly stated. In their key (1925, 50) they state—"apical antennal segment shorter than subapical, equal to it only in *setulifera.*" In fact, the relative lengths of the last three segments are: segment 2 one-fourth longer than 3, segment 4 two-fifths the length of 3.

Family REDUVIIDÆ

522 (725). GNATHOBLEDA TUMIDULA Stal.—One adult and two nymphs were taken April 5 at Royal Palm Park, Fla., from beneath masses of water purslane growing on the rocks along the sides of ditches. It has been recorded elsewhere in Florida only from Dunedin.

545 (——). ZELUS ANGUSTATUS Hussey.—I was much pleased at taking, on January 6, my first specimen of this recently described species. It was beaten from a bunch of Spanish moss near Dunedin and was known heretofore only from Gainesville, Fla.

558 (800). SINEA DIADEMA (Fabricius).—This common northern species is very scarce in Florida. One was swept from roadside herbage at Royal Palm Park on April 17. It was previously known from that state only from Dunedin and Biscayne Bay.

Family NABIDÆ

580 (833). NABIS KALMII Reuter.—The specimens recorded under this name from Marion Co., Ind., are probably only pale examples of the common *N. ferus* Linn. and it is very doubtful whether *kalmii* is more than a color variety of that species. The distinctions given by Reuter relate mainly to color and are quoted in the "Heteroptera."

Family NÆOGEIDÆ

588 (——). MERRAGATA SLOSSONI Van Duzee.—In the spring of 1927 this little velvet water-bug was taken by scores at Royal

Palm Park, by pulling masses of living *Chara* from the water on to the sides of a roadside limestone ditch, and then waiting for the bugs to crawl about over the bare rock. It was known heretofore only from Moore Haven and Biscayne Bay, that state.

Family ANTHOCORIDÆ

598 (842). LYCTOCORIS ELONGATUS (Reuter).—Dr. C. J. Drake has informed me that the specimen recorded on page 625 of the "Heteroptera" from Spring Hill, Alabama, should be referred to *L. stalii* Reut.

—— (——). LASIOCHILUS DIVISUS Champion.—Drake and Harris record[1] this subtropical species from Canal Point, on Lake Okeechobee, Fla. They also record *L. fusculus* Reut. from Charleston, Miss., and Dechard, Tenn.

601 (——). LASIOCHILUS GERHARDI Blatchley.—Dr. Drake informs me that this minute brachypterous species is in the Parshley collection from Tyngsboro, Mass. It has been hitherto known only from Dunedin, Fla., the type locality.

606 (852). ASTHENIDEA TEMNOSTETHOIDES Reuter.—The known range of this species has been greatly extended by the records of Drake and Harris (loc. cit. p. 37). They record it from Miami, Marathon and Paradise Key, Fla., and Kerryville, Texas.

618 (——). PHYSOPLEURELLA FLORIDANA Blatchley.—Examples of this species are in the U. S. National Museum collection from Jamaica. It has been heretofore known only from Dunedin, Fla., the type locality.

619 (867). CARDIASTETHUS ASSIMILIS (Reuter).—Examples of this species are in the U. S. National Museum collection from as far north as Norfolk, Va., where it was bred from a corn ear. It is very common in Florida.

623 (871). DUFOURIELLUS ATER Dufour.—This European species is now know from Los Angeles, Cal. I have also seen a specimen from Henderson, Ky.

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Messrs. Carl J. Drake and Halbert M. Harris, of Ames, Iowa, are at present engaged in preparing a much needed revision of

[1] Proc. Biol. Soc. of Washington, Vol. 39, 1926, 35.

the North American species of this family. They issued, July 30, 1926, a preliminary paper which appeared in Proc. Biol. Soc. of Washington, Vol. 39, pp. 33–45, entitled "Notes on American Anthocoridæ with Descriptions of New Forms." Of the nineteen forms described as new, eight were from the territory covered by the "Heteroptera," but their paper appeared too late for the inclusion of these in my work. They were as follows:

—— (——). LASIOCHILUS HIRTELLUS D. and H. loc. cit., p. 33. —This form they described from Alabama, Gainesville, Fla. and numerous stations in the southwestern states. It is the same species as that included by me as *Lasiochilus pallidulus* Reuter, one of the most common Anthocorids in southern Florida, and the name of Drake and Harris is probably only a synonym of that of Reuter.

—— (——). LASIOCHILUS COMITIALIS D. & H., loc. cit., p. 34.— Described from specimens in the U. S. National Museum taken on *Hicoria* at Hendersonville and Tryon, North Carolina. A species 2.8 mm. in length, the head pronotum and base of scutellum shining rufo-piceous.

—— (——). XYLOCORIS BETULINUS D. & H., loc. cit., p. 37.— Described from a single male, taken June 23, at Cranberry Lake, New York, from a worm burrow in a fallen yellow birch. "Closely related to *X. galactinus* Fieb., but distinguished by the much broader pronotum which has the posterior lobe distinctly depressed." (*D. & H.*)

—— (——). MACROTRACHELIELLA LÆVIS FLORIDANA D. & H., loc. cit., p. 37.—Described from U. S. National Museum specimens taken by Schwarz and Knab at Key West, Fla., from galls of thrips on *Ficus indica*. "Differs from typical *lævis* Champ. in having the entire third antennal segment flavous and the clavus, except margins, whitish." (*D. & H.*)

Drake and Harris (loc. cit., p. 38), founded the genus *Xenotracheliella* allied to *Macrotrachelia* Reut. and *Macrotracheliella* Champ., but having the anteocular portion, of head longer than post-ocular one; pronotum with a deep transverse furrow at middle, truncate in front, emarginate behind, narrowly margined; antennae stout, joint 1 reaching apex of head, 2 subequal in length to head; 3 and 4 united slightly longer than 2; osteolar

canal sloping obliquely forward, slightly curved. They included three species, two from the eastern states.

—— (——). XENOTRACHELIELLA INIMICA D. & H., loc. cit., p. 38.—Dark brown to fuscous, the middle of clavus and a transverse fascia at apex of corium white; joint 2 of beak reaching middle of mesosternum; length 2.85 mm. Described from a single female taken, July 2, at Ithaca, N. Y.

—— (——). XENOTRACHELIELLA VICARIA D. & H., loc. cit., p. 39.—Differs from *inimica* in having the body less flattened, ocelli less widely separated, side margins of pronotum wider; joint 2 of beak reaching base of mesosternum; clavus pale testaceous, its inner margin piceous; length 2.87 mm. Described from a male taken, August 28, at Marquette, Mich.

—— (——). TETRAPHLEPS EDACIS D. & H., loc. cit., p. 43.—Length 3.66 mm. "Resembles *T. osborni* Drake, but hemelytra darker; beak shorter, scarcely reaching intermediate coxæ; osteolar canal nearly straight." (*D. & H.*). Described from a single female, taken by Drake, August 3, at Wanakena, N. Y., from *Larix laricina* (DuRoi).

—— (——). SCOLOPOSCELIS MISSISSIPPIENSIS D. & H., loc. cit., p. 43.—"Differs from *S. flavicornis* Reut. in having the pronotum broader anteriorly, elytra much shorter, anterior and posterior femora greatly and equally incrassate. Length 2.76–3 mm." (*D. & H.*). Types taken at Ft. Gibson, Mississippi, July 22, from burrows of bark-beetles (*Ips.* sp?) in long-leaf pine.

Family CRYPTOSTEMMATIDÆ

626 (——). SCHIZOPTERA BISPINA McAtee & Malloch.—A fourth example of this little bug is at hand. It was taken at Ft. Myers, Fla., March 5, while sifting debris from the bottom of an extinct wet-weather pond. Taken before in this country only at Dunedin, Fla.

Family MIRIDÆ

674 (——). EIONEUS GUTTICORNIS Blatchley.—Knight,[2] following Poppius (1912), has pointed out that the genus *Eioneus*

[2] Bull. Brooklyn Ent. Soc., XXII, 1927, 98.

Distant (1893) is a synonym of *Dolichomiris* Reut. (1882), and that the species I named *E. gutticornis* is probably the same as the genotype *Dolichomiris linearis* Reut. The genotype was from Addah, West Africa. It is also recorded by Reuter (1912) from Palma, the Madeira and Canary Islands, the Alps-Maritimes of France, and Venezuela. From the latter country it was redescribed by Reuter as *D. tibialis* and from the Canary Islands by Noualhier as *Notostira longula;* these names, as probably that of mine, being synonyms of *D. linearis* Reut.

On December 22 and 27, 1926, I found this mirid in numbers on flowers of the Natal grass, *Tricholœna rosea* Nees, growing in open sandy woodland about one-fourth mile back of the bay front near Dunedin, Fla. Prof. Paul Weatherwax informs me that the original home of this introduced grass was in South Africa, but that it is now widely distributed in tropical and semi-tropical regions. It has been known in Florida since 1884. There is, therefore, little doubt but that this grass is the true and original host plant of the mirid and that together they have journeyed far and wide across the seas.

652 (——). TRIGONOTYLUS LONGICORNIS Blatchley.—Additional examples of this species were taken in December, 1926, from the tall grasses of tide-water marshes near the bay front at Dunedin. Both this and the preceding probably occur only in the immediate vicinity of salt-water.

673 (920). NEUROCOLPUS NUBILUS (Say).—My first and only Florida example of this common northern mirid was taken at Royal Palm Park, March 25, 1927, while beating the foliage of white bay. It is a female, 11.8 mm. in length, a uniform pale dull yellow throughout, the only deviation from this color being in the antennæ, joint 1 being sprinkled with reddish dots, 2 with apical third dull red, 3 and 4 pale yellow. The tibiæ lack the fuscous rings of typical *nubilus,* and the upper surface is much more densely, coarsely, and conspicuously pubescent, the tufts of hairs on basal half of pronotum being especially notable. The larger size and other characters mentioned are believed sufficient to justify the varietal name *flavescens,* which I therefore give it.

682 (971). GARGANUS FUSIFORMIS (Say).—A single example was taken at Dunedin, Fla., on April 27. Recorded elsewhere in that State only from Jacksonville and Crescent City.

716 (934). PHYTOCORIS EXIMIUS Reuter.—On Sept. 5, 1927, this widely distributed phytocorid was beaten by scores from the foliage of a hedge-row of *Spirea van-houttei* Zabel, on the banks of White River, eight miles north of Indianapolis.

—— (——). **Phytocoris radicola** new species.

Elongate, slender, sides subparallel. Pale brownish-yellow, thinly clothed with suberect yellowish hairs; basal half of pronotum faintly tinged with fuscous; scutellum lemon-yellow; corium with an oblique brown dash in front of middle and a shorter one near inner apical angle; cuneus with extreme tip and two small dots on inner margin, piceous; membrane pale fuscous, the veins yellowish; hind femora dull yellow with a very faint darker ring at apical fourth. Beak reaching first ventral, its tip piceous. Joint 1 of antennæ dull yellow, one-sixth longer than width of head across eyes; 2 yellow, its apex fuscous, two and a third times as long as 1; 3 and 4 fuscous, 3 one-half the length of 2, 4 two-fifths as long as 3. Sides of elytra straight and parallel to apical fifth, thence broadly curved into the rounded tips. Length 4.2 mm.

Crawford Co., Ind., August 30; swept from roadside herbage. Belongs in Group IV, p. 724 of the "Heteroptera," but differs from other members by its nearly uniform pale color and arrangement of piceous markings of upper surface.

743 (961). CREONTIADES FILICORNIS (Walker).—As shown in the footnote to page 884 of the "Heteroptera," this is a *Eustictus* and is the same as *Eustictus grossus* (Uhler), Walker's name having priority. This information was not received from W. E. China until after the page treating of the species of *Creontiades* had been printed. Not having Walker's unique type for examination, I followed Distant and Van Duzee in treating it as a *Creontiades*.

835 (919). PARAXENETUS GUTTULATUS (Uhler).—Twenty or more examples of this usually scarce species were taken, August 27—September 1, by beating foliage of dogwood and wild grape growing in a fence row along the river lowland in Marion Co., Ind.

839 (1186). SEMIUM HIRTUM Reuter.—Posey County, Ind., Sept. 22, is a new station record for this species, hitherto recorded from that state only from Marion Co.

849 (——). PILOPHORUS BRIMLEYI Blatchley.—This species was described before I had opportunity to study the generic de-

scription of *Barberiella* Poppius, his paper not being available to me until July 19, 1926. Knight, in his description of *Barberiella apicalis* (Hemiptera of Connecticut, p. 657), gave no characterization whatever of the genus *Barberiella* except three lines of a brief key. In a letter received from C. S. Brimley dated Sept. 8, 1926, he wrote: "Dr. Knight has been here and examined the type specimen of your *Pilophorus brimleyi*. He said it belonged to the genus *Barberiella* and was apparently new." Later,[3] Dr. Knight reversed this opinion and made *brimleyi* a synonym of his *apicalis*. Until the types of the two specific names can be compared I prefer to call the specimen I described *Barberiella brimleyi* (Blatch.).

856 (1131). PILOPHORUS AMŒNUS Uhler.—According to Knight[4] my Fig. 179 represents *P. strobicola* Kngt and not *P. amœnus*. Dr. Drake informs me that this error was due to Knight having erroneously determined for him the species taken at Cranberry Lake, N. Y., and mentioned in my text as *amœnus*. No mention of this error was on record at the time my text was prepared. Knight, loc. cit., states that *P. amœnus* breeds only on the Jersey or scrub pine, *Pinus virginiana* Mill.

— (——). **Ceratocapsus insperatus** new species.

Elongate, slender, sides parallel. Black, feebly shining, basal fifth of pronotum and basal half of clavus sometimes slightly paler; membrane dusky translucent, distinctly iridescent; femora piceous-brown, antennæ and legs a paler brown. Eyes of male very large and very coarsely granulated, distinctly wider than interocular area. Beak reaching hind coxae. Joint 1 of antennæ as long as width of vertex; 2 visibly thickened from base to apex, three and a half times as long as 1; 3 and 4 subequal in length, united three-fourths the length of 2, 4 fusiform, slightly stouter than 3. Upper surface not visibly punctate or alutaceous, the elytra only very sparsely pubescent with fine scattered erect black hairs. Length 5 mm.

Described from two males taken at Dunedin, Fla., March 18–20, at porch light. Belongs under *e.* of the key to Group I, p. 821. Allied to *C. modestus* (Uhler) but longer, more parallel, with much larger eyes, narrower vertex and different relative

[3] Bull. Brooklyn Ent. Soc., XXII, 1927, 102.
[4] Bull. Brooklyn Ent. Soc., XXII, 1927, 103.

lengths of antennal segments. One of the males was recorded as *modestus* on p. 823 of the "Heteroptera." The Florida record of that species is therefore to be eliminated.

951 (1073). HALTICOTOMA VALIDA Reut.— Knight has recently recorded[5] this species from South Carolina, Tennessee, Mississippi and Gainesville, Fla. It occurs in the east on the flowers of Spanish bayonet and other cultivated species of *Yucca*.

HEMISPHÆRODELLA Reuter, 1908, 297.

Small semiglobose black species possessing in great part the characters of the subfamily Bryocorinæ, as given on page 866 of the "Heteroptera," and having the head strongly transverse, but slightly narrower than base of pronotum, its front almost vertical; antennæ slightly longer than body, joint 1 as long as width of vertex, 3 and 4 subequal, each one-third longer than 2; pronotum transverse, convex, without a collar, calli prominent, almost reaching the side margins, the disk impressed in front and behind them; scutellum very large, as long as pronotum, equilateral; elytra wholly coriaceous, as long as and closely embracing the sides of abdomen, clavus, cuneus and membrane not differentiated but merged with the corium, the latter with inner margin strongly angulate at middle, serrate in front of the angle, concave behind it, thus surrounding and leaving exposed a lanceolate middle piece (the "metadorsum" of Reuter). This, in reality, is composed of the heavily chitinized sutural margin of each of the inner wings which are thus elevated to form what Reuter mistook for a longitudinal median carina; legs very long and slender, tibiae without spines, finely pilose. But one species is known.

—— (——). HEMISPHAERODELLA MIRABILIS Reuter, Wiener Ent. Zeit., XXVII, 1908, 298.

Black, glabrous, shining; beak, cheeks, antennæ and legs a uniform whitish yellow; under surface pale brown. Head and pronotum in front of calli almost smooth; pronotum behind the calli, scutellum, metathorax and elytra rather coarsely and closely punctate; basal half of elytra (corium) each with three vague, smooth, obtuse diverging ridges. Length 1.5—2 mm.

[5] Can. Ent., LIX, 1927, 37.

This very aberrant little mirid, here for the first time recorded from this country, was described by Reuter from specimens taken at Cayanos, Cuba, by E. A. Schwarz, and at St. Domingo by Aug. Busck. On April 3, 1925, I took a number of specimens by beating the foliage of moonvine, *Ipomœa bona-nox L.,* at Royal Palm Park, Fla. Some of them, as No. 35, were sent H. H. Knight for naming. He returned them as "nymphs of *Halticus.*" While they were apparently far different in form of body and long pale legs from any *Halticus* known to me, I accepted his determination and did not include them in my "Heteroptera." In December, 1926, after that work was published, I again swept the little bug in numbers from the foliage of sweet potato, *Ipomœa batatis* Lam., growing in low moist mucky soil near Dunedin, Fla. All stages were taken and the adults were quickly recognized as such. Not having the necessary literature for their identification, I, this time, sent specimens to E. P. Van Duzee who, after some time, found the description of Reuter as cited above. The insect probably occurs on various species of *Ipomœa* to which genus of plants it is apparently confined. In its form of body, peculiar elytra and presence of the so-called "metadorsum" it differs widely from any of our eastern Miridæ, and the genus should probably be given subfamily rank.

971 (1092). FULVIUS IMBECILIS Knight.—The known eastern range of this species has been extended by records of Knight (1927, 37) to include Virginia, Illinois, Tennessee, Alabama and Gainesville, Fla.

1015 (1116). MACROLOPHUS SEPARATUS (Uhler).—A single example of this species was taken in Marion Co., Ind., Sept. 11, 1926, while sweeping herbage in dense woodland. Recorded in that State only from Lake County.

Knight has recently published a Key to the North American Species of *Macrolophus*[6] and described two new species, one of which, *longicornis,* is a synonym of my *C. tenuicornis,* page 913 of the "Heteroptera." He gives its distribution as Branford, Conn., Cranberry Lake and Wanakena, N. Y., and Muskoka Lake District, Ontario.

[6] Ent. News, XXXVII, Dec., 1926, 313–316.

—— (——). MACROLOPHUS BREVICORNIS Knight, loc. cit., p. 315.—Length 3.6 mm. "Differs from *separatus* Uhler in having a fuscous stripe behind dorsal margin of eye; antennal segment II with apical one-fourth blackish; basal two-thirds of corium without fuscous points at base of hairs except one row bordering claval suture." (*Knight*).

Ranges from New Jersey and Maryland, west to Iowa and Kansas.

AMBLYTYLUS Fieber, 1858, 325.[7]

This genus of the subfamily Phylinæ and tribe Oncotylini compromises small elongate mirids having the head pentagonal or subconical, almost horizontal; tylus very prominent, projecting beyond the blunt tips of cheeks; loræ long, pointed, narrow; antennæ inserted between the eyes and base of cheeks; eyes small, subglobose, widely separated, contiguous with front margin of pronotum; beak reaching or surpassing hind coxae; xyphus triangular, arched, its edges carinate; pronotum transverse, subtrapezoidal; scutellum triangular, equilateral; mesoscutum narrowly exposed. Elytra reaching apex of abdomen, female, slightly surpassing it, male; joint 2 of hind tarsi slightly longer than either 1 or 3, tarsal claws divaricate, pseudarolia attached to the claws along their full length but not projecting beyond their tips.

The genus belongs under *aa* of the key, page 918 of the "Heteroptera," and differs from *Lopus* in the longer subporrect head, prominent tylus, short blunt cheeks, less broadly exposed mesoscutum and shorter pseudarolia. A half dozen or so species are known from southern Europe, and the first one taken in this country is herewith described.

—— (——). **Amblytylus vanduzeei** new species.

Elongate or elongate-oval. Dull greenish-yellow, fading to straw-yellow with a greenish tinge, thinly clothed with short suberect bristle-like hairs; membrane pale dusky translucent. Joints 1 and 2 of antennæ yellow, 1 slightly passing tip of tylus, one-fifth shorter than width of vertex; 2 slender, cylindrical, three times the length of 1; 3 and 4 more slender, fuscous; 3 but slightly shorter than 2, 4 one-third as long as 3. Beak

[7] Critirien zur Generischen Theilung der Phytocoriden (Capsini Aut.) Wiener Ent. Monats, II, No. 10, 1858, 289–327; No. 11, 328–347.

reaching second ventral. Thorax one-half wider at base than apex, sides straight, gradually converging from base to apex, their margins narrowly explanate, feebly reflexed, hind angles rounded; disk shallowly, almost invisibly, punctate, transversely impressed in front of middle; calli small, well separated, placed obliquely in the depression. Elytra elongate-oval, not wider at base than thorax, sides very feebly but visibly curved from base to apex; disk punctate as the thorax, each minute puncture, as there, bearing a short blackish hair. Length 5 mm.

Described from one male taken in Marion Co., Ind., June 9, 1927, by sweeping herbage along a pathway in upland woods, and two females taken June 15 in Brown Co., Ind., in a similar habitat. Named in honor of the eminent North American hemipterist, E. P. Van Duzee, of San Francisco., Cal., who cited me to the literature descriptive of the genus.

1090 (1244). PSALLUS VARIABILIS (Fallen).—My inclusion of this European species in the "Heteroptera" was based on the records of Van Duzee (1889, 4; 1894, 179). Knight (1927, 104) states that the Van Duzee specimens were wrongly determined and that *variabilis* probably does not occur in this country.

— (—). **Psallus conspurcatus** new species.

Elongate-oval. Head, thorax and scutellum pale lemon yellow without reddish or darker markings; elytra pale yellow, everywhere thickly flecked with very small brownish spots, from which arise suberect blackish hairs; inner margin of cuneus with two oblong fuscous dashes; membrane pale yellow, thickly mottled with small fuscous vermiculate marks, the outer half with a pale spot opposite apex of cuneus, this followed by two wedge-shaped fuscous spots; femora pale yellow, flecked with very minute brownish dots; tibiæ yellow with conspicuous black dots at base of each spine. Antennæ very slender, wholly pale yellow, joint 1, one-half as long as width of vertex; 2 five times as long as 1; 3 one-half the length of 2, 4 two-fifths as long as 3. Length 3 mm.

Type a male taken at Royal Palm Park, Fla., April 18, 1927, by sweeping grasses in a swale of the Caribbean pine woodland. Allied to *P. seriatus* (Reut.) but head and pronotum without dark spots, membrane with different markings and second antennal much longer and more slender.

— (—). PSALLUS BALLI Knight, Can. Ent., LVIII, 1926, 253.—"Distinguished from the known eastern species by the

pale yellow to orange color and conspurcate character of the membrane; more strongly red on pronotum, scutellum and cuneus; apical half of clavus infuscated; length 3.5 mm." (*Knight*).

Described from Sanford, Fla., and Charleston, Miss.

1098 (1268). CYLLOCEPS PELLICIA Uhler.—Knight states[8] that the type of this species in the U. S. National Museum shows it to belong to the genus *Cyrtorhinus*. Its name should therefore be *Cyrtorhinus pellicius* (Uhl.).

1100 (——). EXCENTRICUS MEXICANUS Van Duzee.—Another example of this little western species was taken at Dunedin, January 4, 1927, by beating juniper.

—— (1272). RHINACLOA FORTICORNIS Reuter, 1876, 89.—Differs from *R. subpallicornis* Knight in the smaller size (1.8 mm.), darker color, the elytra being fuscous, paler at base of corium and on clavus; membrane blackish with veins testaceous; second antennal wholly dark.

This species was described from Texas and recorded by Barber (1914, 500) from Lake Worth and Biscayne Bay, Fla. I did not include it in the "Heteroptera" as I supposed that Barber's records referred to *subpallicornis*. Knight (1927, 36) has recorded *forticornis* from Urbana, Ill., and many points west of the Mississippi.

* * * * *

Since those pages of the Heteroptera embracing the family Miridæ were in type, Dr. H. H. Knight has issued 11 papers which include descriptions of a number of new species and records of others from the territory covered by my work. It is not feasible in this paper to include descriptions of his new species, but the title of each of his papers in the order in which they appeared, and the names and distribution of those eastern species not previously mentioned in this paper, is given. The student interested can thereby keep trace of the eastern species and, if he so desires, refer to the descriptions in the papers cited.

I. "Descriptions of Eleven New Species of *Phytocoris* from Eastern North America." (Bull. Brooklyn Ent. Soc., XXI, Oct. 6, 1926, pp. 158–168.)

[8] Bull. Brooklyn Ent. Soc., XXII, 1927, 105.

Describes *Phytocoris borealis* from Gull Lake, Ontario and Jamestown, N. Y.; *P. albifacies* from Agricultural College, Miss.; *P. oppositus* from Aberdeen, Miss.; *P. schotti* from Bound Brook, N. J.; *P. albitylus* (No. 712 of the Heteroptera) from Dunedin, Fla.; *P. exemplus* from Colyell, Louisiana; *P. angustifrons* (No. 731 of the Heteroptera) from Dunedin, Fla., Colyell, La., and Aberdeen, Miss.; *P. signatipes* from Silver Springs, Fla.; *P. taxodii* from Colyell and Sheriden, La., Okefenokee Swamp, Ga. and Durant, Natchez and Vicksburg, Miss.; *P. rubellus* (No. 738 of the "Heteroptera") from Laporte Co., Ind., and various stations west of the Mississippi, and *P. balli* from St. Augustine, Fla.

II. "*Capsus externus* Herrich-Schæffer is a *Paracalocoris*." (Ent. News, XXXVII, Oct. 15, 1926, pp. 258–262.)

Describes from Florida and Georgia vars. *solutus, scissus, totus* and *notatus,* all "spotted-dog" color varieties of *Paracalocoris externus* (H. S.), the species I treat as No. 675, *P. incisus* (Walk.), p. 695 of the Heteroptera.

III. "Descriptions of Six New Miridæ from Eastern North America." (Can. Ent. LVIII, Oct. 30, 1926, pp. 252–256.)

Describes *Plagiognathus tiliae* from District of Columbia, Washtenaw Co., Mich., and St. Paul, Minn.; *Psallus balli* from Sanford, Fla., and Charleston, Miss.; *Teleorhinus floridanus*[9] (No. 1017 of the Heteroptera) from Dunedin, Fla.; *Strongylocoris pallipes* from Beaufort, North Carolina and North Beach, Maryland; *Platytylellus zonatus* from Cheboygan Co., Mich., Wisconsin and other points west of the Mississippi, and *Platytylellus confraternus collaris*[9] (No. 660, var. of the "Heteroptera") from Ormond and Gainesville, Fla.

IV. "On the Miridæ in Blatchley's 'Heteroptera of Eastern North America,'" (Bull. Brooklyn Ent. Soc., XXII, April 28, 1927, pp. 98–105.)

No new species were described in this paper, but the names and range of some were changed or extended as noted on the foregoing pages.

V. "Notes on the Distribution and Host Plants of some North American Miridæ." (Can. Ent., LIX, 1927, 34–44.)

[9] Since this paper did not appear until after the "Heteroptera" was issued, these two forms will probably have to be accredited to me.

This paper gives records extending the former known range of a number of species of Miridæ treated in the Heteroptera. Some of these extensions are noted on the preceeding pages. Four species are recorded from east of the Mississippi, which were not included in my work. These are:

Platytylellus atripennis Reuter, formerly known only from Texas and Colorado, recorded from Florida and Coal Creek, Tenn.; *Phytocoris breviusculus* Reut., a Texan species, recorded from Eufaula, Alabama and District of Columbia; *Cyrtopeltocoris* (*Sericophanes*) *albofasciatus* Reut., also a Texan species, now known from Eufaula, Alabama, and *Lopidea minor* Knight, a northwestern species, recorded from Ithaca, N. Y.

VI. "Descriptions of Nine New Species of Melanotrichis Reuter from North America." (Can. Ent., LIX, 1927, 142–147.)

The Genus *Melanotrichus* comprises the *flavosparsus* group of Orthotylus and is distinguished by having two types of pubescence, viz., simple hairs intermixed with recumbent scale-like pubescence, and by the left genital claspr of male being a simple curved hook, not bifurcate into two equal parts as in typical Orthotylus. According to Knight it includes the following species treated in the "Rhynchophora"; *O. althææ* Hussey, *catulus* Van D., *concolor* Kirsch. and *flavosparsus* Sahlb. The types of *M. leviculus,* one of the nine species described by Knight in the paper cited, were from Sea Cliff, N. Y., the other species being from the western states and British Columbia.

VII. "Megalopsallus, a New Genus of Miridæ with Five New Species from North America." (Annals Entom. Soc. of Amer., XX, 1927, pp. 224–228.)

The Genus *Megalopsallus* differs from *Psallus* in having the head larger, shaped much as in *Lygus* Hahn; pseudarolia absent and characteristic male genitalia. Of the five species described in the paper, one variety, *M. latifrons diversipes,* is recorded from Biloxi, Miss., and one species, *M. brittoni,* from Westville, Conn., the other four species being from the western states.

VIII. "New Species and a New Genus of *Derœocorinæ* from North America." (Bull. Brooklyn Entom. Soc., XXII, 1927, pp. 136–143.)

In this paper Knight describes *Derœocoris triannulipes flavisignatus* from Marquette, Mich., and *Eurychilopterella brunneata* from Clay City, Ill.

IX. "Descriptions of Seven New Species of the Genus Orthotylus Fieber." (Can. Ent., LIX, pp. 176–181.)

Describes *O. ramus* from Mercer Co., Ohio, Berrien Co., Mich., and Ithaca, N. Y.; *O. ulmi* from Batavia, Ithaca and Wanakena, N. Y., and Ottawa, Ontario, and *O. nyctalis* from Cranberry Lake, N. Y. He also records *O. lateralis* Van D., formerly known only from Kansas and Colorado, from Willow Springs, Ill., where it was taken on poplar by Gerhard.

X. "Descriptions of Fifteen New Species of *Ceratocapsus*." (Ohio Journal of Science, XXVII, 1927, pp. 143–154.)

Describes *Ceratocapsus taxodii* from various points in Illinois, Tennessee, Mississippi and Florida; *C. bifurcus* from Miami and Cocoa, Fla.; *C. rubricornis* from Agricultural College, Miss.; *C. divaricatus* from Sanford, Fla.; *C. balli* from Sanford and Gainesville, Fla.; *C. uniformis* from various points between Virginia and Missouri; *C. quadrispiculus* from Maryland and Louisiana; *C. complicatus* from Maryland, Florida, Missouri and Mississippi; *C. fuscosignatus* from Florida and southwestern states; *C. barbatus* from Virginia and Maryland and *C. mcateei* from Maryland.[10]

XI. "Descriptions of Twelve New Species of *Miridæ* from the District of Columbia and Vicinity." (Proc. Biol. Society of Washington, XL, 1927, pp. 9–18.)

Describes *Sthenarus mcateei, Microphylellus minuendus, Plagiognathus carneolus, P. albifacies, P. crocinus, Psallus clavicornis, Diaphnidia heidemanni, Xenoborus chionanthi, Dichrooscytus tinctipennis, Phytocoris junipericola, P. purvus* and *P. difficilis*, all from the District of Columbia or states adjoining. The *Sthenarus* is recorded also from Mississippi, the *Plagiognathus albifacies* from Illinois and the *Dichrooscytus* from Georgia and Minnesota.

[10] In many of the descriptions in this paper the characters are compared with other species previously described by Reuter and Knight, and unless correctly determined examples of these older species are at hand, such parts of the descriptions are worthless. See my paper on "Passing the Buck in Insect Descriptions," Ent. News, XXXIX.

Family HYDROMETRIDÆ

— (——). HYDROMETRA MYRÆ Torre-Bueno.—This species has been recently described from Billy's Island, Okefenokee Swamp, Ga. Bueno states[11] that it differs from *H. martini* Kirk. in its more slender body, different relative length of antennal segments (2 being 2½ times the length of 1 and subequal to 4, whereas in *martini* it is only twice as long as 1 and about four-fifths as long as 4), and in having the terminal abdominal segment of male suddenly widened and with a long black spine.

Family VELIIDÆ

1125 (1303). MICROVELIA BOREALIS Bueno.—Numerous examples of the wingless form of this species have recently been taken from small ponds and ditches near Dunedin, Fla., in March and April. It has not before been recorded south of New Jersey and Kansas. The Fig. 198, page 990 of the "Heteroptera," reproduced from Hungerford as representing *borealis,* is in reality that of *hinei,* the species having been wrongly identified by that author.

1126 (1306½). MICROVELIA ATRATA Bueno.—A single wingless example of this little dark species was taken at Dunedin on January 19, while sifting weed debris some distance from water. Hitherto known only from Billy's Island, Ga., and Royal Palm Park, Fla.

1129 (1304). MICROVELIA ALBONOTATA Champion.—Taken by scores from the water of a boxed-in hillside spring near Dunedin, Fla., February 8, 1927. But one macropterous example was among the lot. This is the first definite station record for Florida, though both Van Duzee and Bueno mention the State as within its range.

Family SALDIDÆ

— (1326). SALDULA EXPLANATA Uhler, (Proc. Ent. Soc. Wash., II, 1893, 383.)

Broadly oval or subelliptical, finely and sparsely pubescent. Head, thorax and scutellum black, rather strongly shining, with-

[11] Entomologica Americana, VII (N. S.), Dec., 1926, 110.

out pale markings, elytra black, subopaque, a small whitish spot near apex of clavus, four on discoidal area and two behind middle of costal area; membrane dull yellow with an oblong median black spot in each cell. Pronotum with sides feebly curved, their margins flattened, but little reflexed. Costal area of elytra with basal half wide, the margins strongly reflexed. Length 4–5 mm.

A single specimen is at hand, taken on the top of Whiteface Mountain, New York. It is a northwestern species described from Utah and recorded from California, Idaho and British Columbia, but not before from the eastern states. Resembles *S. orbiculata* (Uhl.) in size and shape but costal area wider, more reflexed and wholly black except two postmedian pale spots.

—— (——). **Micranthia pumpila** new species.

Oblong-oval. Head pronotum and scutellum black, shining; clavus and inner half of corium black, opaque, without white marks except a minute dot each side of middle of commissure; embolium and costal area of corium dull white, with a small black triangular projection from corium just behind middle and usually another in front of middle; membrane dull white, the veins and one or two vague spots in each cell fuscous, legs pale dull yellow, the knees, tips of tibiæ and apex of tarsi usually darker; under surface black, thickly clothed with fine short prostrate hairs, the last ventral paler; upper surface more thinly clothed with similar metallic yellow hairs. Antennæ fuscous-brown, joint 1 scarcely longer than width of vertex, 2 twice as long as 1, 3 and 4 subequal, each stouter and slightly longer than 2. Beak reaching base of mesosternum. Eyes very large, wider than interocular area. Length 2.2–2.5 mm.

Type a male taken at Royal Palm Park, Fla., April 6, 1927. Paratypes from Dunedin and Ft. Myers, Fla., February 19—April 26. Frequent at both the latter stations on the mucky borders of dry wet-weather ponds in open pine woods. Distinguished from the northern *M. humilis* (Say) by its much smaller and narrower form, lack of white spots on corium, larger eyes and different relative length of antennal segments.

Family NERTHRIDÆ

1168 (——). GELASTOCORIS SUBSIMILIS Blatch.—Examples of this species taken near Plant City, Florida, have been received from C. H. Martin, Lawrence, Kans.

Family CORIXIDÆ

1208 (1437). ARCTOCORIXA INTERRUPTA (Say).—Numerous examples of this widely distributed species, taken near Gainesville, Fla., are in the collection of the Agricultural Experiment Station at Gainesville. This is the first record from Florida, and probably the most southern one for the eastern United States.

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ERRATA IN THE TEXT OF THE HETEROPTERA OF EASTERN NORTH AMERICA

Page

35. Second line of *b* of key, "dorsal" should be "ventral."

498 and 500. Nos. 472 and 476, change "Leptophya" to "Leptoypha."

736. No. 747. Replace dash in parenthesis with "992."

911. Fifth line. "Wods" should be "woods."

1087. In the last two columns of the table, after Family XXVI. Isometopidae, "4" should be "5."