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GEORGE WILLIS KIRKALDY.

1873–1910.

The fulfilment of sad duties is the lot of man. To me has come that of making known the death, in the flower of his manhood, of George Willis Kirkaldy, my good friend.

After a separation of some months from his wife and little one, whom he worshipped, he went to San Francisco, where they were, to spend the Christmas holidays with them. While there he was induced to submit to a fifth operation on an old fracture of the leg, and although it was successful, he grew gradually weaker and weaker, and less than a week later, on the 2nd of February, he breathed his last. That acute intellect, that ceaseless, untiring worker was at rest. His course was run, and he fell ere he grasped the bays that were to crown his achievement.

George Willis Kirkaldy was born at Clapham, near London, England, in 1873, and was therefore in his 37th year. From his youth he evinced a great love for natural history, but after finishing his studies in the City of London School, he went into the city, where he remained until 1903, when he accepted a position in Honolulu, with the Hawaiian Department of Forestry and Agriculture. Then began the happiest and most productive period of his life, and there also he met with the accident that eventually was to deprive the world of the most promising of the younger generation of scientific hemipterologists. Shortly after his arrival in Honolulu, while out riding, he forgot the American rule of the road, and turned his horse, after the English fashion, to the left as he came to a turn in the road, and crashed into a carriage coming in the opposite direction. His horse fell on him and crushed his leg. This was badly set, and after the bones had knit, it had to be broken again and reset. This operation was repeated at intervals no less than four times, the last with fatal results. There, too, he met the lady who became his wife; there his little ones were born, and his little son, George, the first and best beloved, died in infancy.

Freed from the sordid details of clerical work, in his new position he was in his element. He did not, indeed, care greatly to work on other

groups of insects, and at times the daily routine of the economic entomologist was irksome, but nevertheless, whatever he did was done well, and he found time to dedicate to his researches in the Hemiptera, although nearly all the work he did was done at home in the evenings, after the day's task was over. Yet, in spite of the limited time at his command, he was able to produce enormous quantities of work of the highest character. At some time in the near future I hope to be able to give at greater length an account of his work. For the present, I shall merely mention his great work on the Jassidæ in connection with the Sugar Planters' Association work on the parasites of the sugar cane, and the general Catalogue of the Hemiptera, now in course of publication, both of which mark epochs in Hemipterology. Like every earnest worker in the Hemiptera, the nomenclatorial chaos into which the order had fallen soon forced itself upon his notice, and much as he disliked to neglect the biological phases of the group, he was impelled to endeavour to place this important branch of the subject on a stable basis. In the pursuit of this laudable object, he was forced by the sheer logic of circumstances to take radical and iconoclastic measures, but he regretted just as keenly as any of his opponents and critics the necessity of doing away with many a name hallowed, as it were, by long usage.

Kirkaldy had all the vivacity and ardour of the Celt, which may at times have led him to accept perhaps too quickly and maintain too enthusiastically views which a more mature judgment showed to be untenable. Joined to this was a relentless Scotch logical temperament, which drove him inexorably and unswervingly to conclusions which at times were opposed to his natural inclination, yet which his passion for truth compelled him to accept and battle for. Above all things he hated sham; he loathed that spirit of pompous and self-sufficient importance which curses some small men. A constant and tireless worker, a minute, patient, resourceful student, he ever looked singly to the advancement of the knowledge of the Heteroptera, that group so sadly and shamefully neglected in comparison to other orders. In that bright galaxy where shine the illustrious names of Fabricius, Burmeister, Dufour, Amyot, Fieber, Stal, and in our days, most happily still with us, of Reuter, Horvath, Montadon, Bergroth, his is not the dimmest, and had Azrael held his hand, he had shone among the most brilliant.

As for me, I have lost a leal friend, an inspiration and a lode-star; one who encouraged me when I was faint, who helped me when I fell; to

whose constant words of cheer I owe what little success I may have achieved. Our minds moved in harmonious accord; our gifts were complementary to each other, and in so far as one so insignificant might, I helped my friend in my small way, a feeble return for his many kindnesses.

Better than any, perhaps, I can gauge the loss to science by his untimely death. His work planned, outlined in many a letter, carried out with his enthusiasm, his thoroughness, his energy, was destined to place him on the same lofty, still eminence where sits Stal alone, beyond the reach of the petty bickerings and disputes of the pseudo-great.

"And so the grim reaper reapeth among the flowers."—J. R. DE LA TORRE BUENO, New York.

A DECENNIAL CONFESSION.

BY J. M. ALDRICH, MOSCOW, IDAHO.

In Entomological News, XI, 531, 1900, I published a list of corrections to my work on Diptera up to that time; the decade since then has, I regret to say, furnished me with materials for a similar list at the present time. With due humility I make the following confession:

In the February, 1909, number of the CANADIAN ENTOMOLOGIST I published a paper on *Rhagoletis*, describing a new species, *intrudens*, which had injured cherries in British Columbia and presumably in Idaho. Immediately after the publication of the article, Mr. Coquillett informed me that my new species was the same as Osten Sacken's *fausta*, of which he had material from the type locality. Since then I received a pair of *fausta* from M. C. Van Duzee, collected at Kearney, Ont. There is no doubt that I misunderstood a statement of Osten Sacken's, where, after mentioning the basal cross-band of the wing, he goes on to say, "The black colour begins exactly where it does in fig. 10, and encloses a hyaline triangle reaching from the costa to the interval between the third and fourth veins." Eastern specimens prove that this statement refers to the black colour in general, not to the basal cross-vein.

In the same article I should have included in the table *Rhagoletis grindeliæ* Coquillett, (Proc. Ent. Soc. Wash., IX, 146,) reared from flower-heads of *Grindelia squarrosa* at Clarendon, Texas; it is readily distinguished from all the species in my table by having the scutellum wholly black. The life-history of *Rhagoletis suavis* Loew, was already known, having been published by Babb, (Ent. News, XIII, 242); the larva lives in the outer hull of growing walnuts at Amherst, Mass. So there are six species with larval habits known, instead of four.

April, 1910

In Transactions of the American Ent. Soc., XXXIV, 67-100, 1908, I published in conjunction with one of my students, P. S. Darlington, a revision of the Helomyzidæ. The *Eccoptomera americana* Darl., therein described is a synonym of *E. simplex*, described four years earlier by Coquillett from Nevada, and overlooked by us. The genus *Siligo*, Ald., in the same paper is a synonym of *Zagonia*, Coq., (Invert. Pacif., 27), and belongs to the Geomyzidæ, as correctly placed by Coquillett. My species *oregona* appears to be distinct from his *flava*; my *litorea*, however, is a *Geomyza*, differing in the dark body colour and bristles, and narrower cheeks. The genus *Geomyza* has not heretofore been reported from North America, but I have three species from the California region and a single specimen of a fourth species from Lawrence, Kans. Named European specimens of *Geomyza* in Professor Melander's collection put me right on this genus. My ignorance of the family Geomyzidæ was responsible for my mistake; there is really a close relation between Helomyzidæ and Geomyzidæ, some of the latter having setules on the costa. The main difference is in the auxiliary vein, distinct in Helomyzidæ, not so in Geomyzidæ. I drew the wing of *Siligo* from a specimen mounted in balsam, wherein the pressure of the cover-glass had separated the auxiliary and first veins to an abnormal extent. It was a consolation to read since the discovery of my error that Loew once described a *Geomyza lurida*, which on examination of the type turns out to be a *Leria* (Czerny, Wien. Ent. Zeit., XXII, 126)!

In Biologia Centrali-americana, Diptera, I, 342, I described a genus of Dolichopodidæ under the name *Phylarchus*. Not having the current numbers of the Zoological Record at hand, I did not know that Simon had used the name for a spider in 1888. My fly of course cannot maintain her ground before a spider, hence I propose the genus PROARCHUS to replace *Phylarchus* for the fly.

In some notes on *Scellus* (Ent. News, XVIII, 135), I stated that I had collected *Scellus vigil* on trunks of trees. The statement was made from memory, and I now believe that I never collected it except on walls of the University buildings at Moscow, *filiferus* being the one that frequents pine trunks in this region. Thus my observations correspond entirely with Osten Sacken's.

In CANADIAN ENTOMOLOGIST, XXXVI, 46, I undertook to determine what name should be used in the place of *Psilopus* of authors, which has

been asserted for a generation or two to be preoccupied. I am glad, indeed, to learn (Sherborn's Index Animalium, quoted by Bezzi, Wien. Ent. Zeit., XXVI, 53), that the use of the term *Psilopus* by Poli in Mollusca in 1795 was not in a nomenclatural sense, and hence does not constitute a pre-occupation of the name, which should therefore stand for the dipterous genus.

WISCONSIN BEES — NEW AND LITTLE-KNOWN SPECIES.

BY S. GRÆNICHER, PUBLIC MUSEUM, MILWAUKEE.

Perdita F. Smith.

In the eastern part of Wisconsin this genus is poorly represented. In the region around Milwaukee only two species have been met with so far, one of these *P. maura* Ckll., and the other a new species described below. Along the St. Croix River, in the north-western corner of the State, three species were obtained (Milw. Publ. Mus. coll. exped.), two of which are new, while the third, *P. Bruneri* Ckll., had up to the present time not been found farther east than Nebraska. It is more than probable that careful collecting along the western border of Wisconsin will add some more species of *Perdita* to the bee fauna of our State.

Perdita pallidipennis, n. sp.

Female.—Length about 8 mm. This is a third member of the *albipennis-lacteipennis* group. Head and thorax blue-green. Front and vertex dull, face, thorax and abdomen shining. Mandibles curved as in *albipennis*, with reddish tips. On the clypeus a yellow spot on each side in addition to the cuneate-yellow median line. Adjoining the clypeus a yellow mark on each side of the face. Scape in front, a line on prothorax, and tubercles yellow. Flagellum black, a trace of reddish near the tip. Legs dark, with no yellow markings, except on the knees of front and middle legs. Tegulæ yellowish on the upper half, brown below. Wings white, nervures and stigma pale. Abdomen black, usually lighter on the apical depressions of the segments. On the first segment a small yellow dot on each side, situated on the margin. A subbasal yellow band, narrowed medially, on each of the four succeeding segments, interrupted on segments 2, 3 and 4, or at least on 2 and 3. Pygidium dark brown, shining. Pubescence of vertex and mesonotum yellowish and erect, long on the vertex, short on the mesonotum. On cheeks and pleuræ the hairs are white and long, those on the legs of a dirty-yellow colour.

Male.—Slightly smaller than the female. Pubescence white all over. No median yellow line on the clypeus, and the lateral marks are smaller than in the female. These are connected with each other by a yellow line along the apical border of the clypeus. The lateral face marks are small, the yellow line on the scape is inconspicuous or nearly absent, and the same is true of the yellow line on the prothorax. No yellow on tubercles. Legs coloured as in the female. Yellow of the abdomen confined to a small lateral spot on each side of the second segment, situated on the margin, and similar, exceedingly small spots on the margins of the third segment, and rarely of the first as well. Pygidium reddish yellow.

Types: Mouth of Yellow River, Burnett Co., Wis., July 28–31. 1909. (Nos. 31730 and 31731.)

Paratypes: One male, mouth of Yellow River, July 28–31, 1909; four males and two females, Kettle River Rapids, Aug. 4, 1909, and one male, Randall, Aug. 5, 1909, all of these localties in Burnett Co. along the St. Croix River. Specimens in the collection of the Milw. Publ. Museum. They were taken on the flowers of *Rudbeckia hirta* and *Helianthus occidentalis*. This species is distinct from *P. albipennis* Cr., and *P. lacteipennis* Swenk & Cockerell, one of its main characters being dark legs with a trace of yellow around the knees only.

Perdita maculipennis, n. sp.

Female.—Length 6 to 7 mm. Head and thorax dark green, legs and abdomen brownish-black with yellow markings. Body clothed with white pubescence, longest on legs and tip of abdomen. Wings white, with a conspicuous black dot in the stigma.

Head broader than long. Flagellum black above, reddish-yellow below. Scape light yellow in front. Clypeus yellow with two longitudinal black bars, not reaching the apex. Lateral yellow face-marks triangular, running half way up the face. Apex of triangle rounded or truncate, the base often emarginate. These face-marks are very variable; in one specimen on one side of the face a division into two small spots is noticeable. Mandibles yellow, with reddish tips. Tubercles, tegulæ and two spots on prothorax yellow. The metathorax has a more bluish tinge than the rest of the thorax. Abdomen with two yellow spots on the first and interrupted yellow cross bands on the anterior half of the second, third, and fourth segments. The spots on the first segment may be absent, and the bands on the remaining segments may be so widely interrupted as to form small spots only. Pygidium reddish. In front and middle legs, tips of femora,

anterior surfaces of tibiæ and metatarsi yellow. Hind legs without distinct yellow markings. Wings milky-white, with pale veins and stigma. An oval black spot in the stigma takes up the greater part of its area, leaving only a portion of the base, and a narrow strip along the costa unoccupied.

Type taken August 13, 1905, at Milwaukee, Wis., flying around its nest in sandy soil. (No. 31740.)

Fourteen paratypes, Aug. 6 and 13, 1905, and June 30, 1906, from the same locality, all of them obtained in the vicinity of their nests.

This species is easily recognized on account of the black spot in the stigma, a character which it has in common with *P. maculigera* Ckll., but the latter is a yellow insect with dark markings, while in *maculipennis* the dark predominates.

Perdita citrinel'a, n. sp.

Female.—Length about 6 mm. Pale lemon-yellow with a greenish tinge in the metathoracic region, and black marks which are distributed as follows: Ocelli, a spot, usually diamond-shaped on each side of the front, situated half-way between the upper ocellus and the base of the antennæ; between this spot and the eye a narrow line extending to a point opposite the base of the antennæ; a large spot on the thorax underneath, occupying the area between the anterior and middle coxæ (mesosternum) and a smaller spot in front of this (prosternum), both spots reaching the pleural region; on the margin of the second abdominal segment a short slender line; on the anterior surface of each femur a conspicuous shining longitudinal band. These markings are more or less developed in all of the specimens, and in addition to these some specimens show a dark coloration of the sutures of the face and thorax, a black spot on the hind surfaces of the hind tibiæ near the tip, black hind tarsi, and narrow black apical bands across the abdominal segments, dorsally as also ventrally. In the latter case the bands are more in the basal region of the segments. There may be also two or more minute black dots on the clypeus. Antennæ reddish below, black above. Mandibles yellow, with reddish or brownish tips. Pygidium reddish-brown. Wings white, with light veins and stigma. Soft white pubescence on legs, lower part of thorax and apex of abdomen, moderately close on legs, otherwise sparse.

Type: August 13, 1909, North Hudson, St. Croix Co., Wis. (No. 30389.)

Six paratypes, Aug. 13 and 14, 1909, at the same locality. Type and paratypes in the collection of the Milw. Publ. Museum.

This bee collects pollen from the flowers of *Petalostemum villosum (Leguminosæ)*. There are two western species, *P. perpallida* Ckll., and *P. wootonæ* Ckll., which are evidently extremely close to *P. citrinella*, but which collect pollen from different plants. The three seem to be very unstable in their colour characters, they have probably originated from the same ancestral form within comparatively recent times, and the fact that they visit different flowers in the regions where they have been observed, so far, does not exclude the possibility of their belonging to one species only. *Halictoides Novæ-angliæ* for example obtains pollen at Waldoboro, Maine, from the flowers of *Pontederia cordata* only, as reported by Mr. John H. Lovell (Psyche XIII, p. 112), at Milwaukee and at Cedar Lake, Washington Co., Wis. (about 30 miles north-west of Milwaukee). I have never seen it collecting pollen from the flowers of any other plant but *Monarda fistulosa*, and in Burnett Co. in the north-western part of Wisconsin I repeatedly saw it visiting the flowers of *Agastache fœniculum* for the same purpose.

(To be continued.)

A CORRECTION.

In the January number of the CANADIAN ENTOMOLOGIST, p. 8, the late Mr. G. W. Kirkaldy corrected some preoccupied generic names in insects. Among these he proposed *Americides* for *Dryope* Ch., the latter name being preoccupied in Diptera and Crustacea. However, Mr. Karl R. Coolidge had already proposed *Dryoperia* for Dryope Chamb. See Entomological News, Vol. XX, p. 112.—W. G. DIETZ.

Esperanto, the international language, if it has not done so before, has at last invaded the entomological field. Mr. Tor Helliesen, of the Museum in Stavanger, Norway, has just published a list of Coleoptera new to that country, and has added a resumé in Esperanto.—H. S. SAUNDERS.

SYNONYMICAL AND OTHER NOTES ON COLEOPTERA.

BY THOS L. CASEY, WASHINGTON, D. C.

The fact that some important catalogues of the Coleoptera of the world are about to be published, renders it desirable to afford all the aid possible to the compilers of these lists, by making known such apparent synonymy relating to published species, as may have come to light since their appearance in the literature of the subject. The writer has therefore endeavoured to do his part, as far as the course now seems clear and evident to him, in the following notes.

The recent catalogue of the Staphylinid genera by Dr. Eichelbaum (Mem. Soc. Ent. Belg., XVII) is a very welcome summary, although personally, my position is undesirably conspicuous in regard to the number of generic names proposed, and I had hoped to be overshadowed in this respect by some other specialists in the family. A reduction of the number ascribed to the writer is therefore in order, although some already reduced to synonymy, such as *Eumitocerus* Csy., which is a synonym of *Trichophya*, are restored by Dr. Eichelbaum inadvertently, and one, at least, reduced by the compiler, i.e. *Myrmobiota*, will have to be restored to full generic rank, as it has very little to do with *Homœusa*. Dr. Eichelbaum would also have done well to place *Liparocephalus* in the Aleocharinæ near *Phytosus*, which is its true systematic position.

In regard to emendations, the author has been very liberal; but, in my opinion, no generic word should be emended at all. Generic words are not a part of language to any greater extent than the x, y, z of algebra. They are merely pronounceable symbols formed by combinations of letters, although in many cases their derivation, or intended derivation, from certain words, either of classic or barbaric origin, is sufficiently evident. Not being strictly a part of language however, they should be withdrawn from rules of etymology, in order to protect them from possible emendators of diverging views;—that is if stability in the fundaments of nomenclature is to be maintained. It is highly desirable, and ought to be compulsory, that the generic symbol should have an ending conforming to the Latin language, in order to determine gender in the specific word; but just how such a rule could be enforced is rather difficult to imagine. In the fixing of gender for species names the general Latin rule should be applied, but without those exceptions which always occur in actual

language. The word *Venus*, for example, when used as a generic symbol is merely a combination of letters without meaning, and the species names should be given the masculine ending. So, genera ending in *soma* or *derma* should have the feminine ending in the specific names, without regard to the gender of such words in the Greek. Generic symbols, even if considered a part of language, could not be Greek, but, as soon as taken into the nomenclatorial scheme, become Latin, which should be the sole source of specific words. These species names always have a meaning and therefore assume a different status from generic symbols; they can and should be altered if necessary to give the meaning intended by their author.

Looking through the pages of this catalogue I would propose the following changes:

Hyptioma Csy., p. 162, is a synonym of *Holisus* Erichs.; the species *Cubensis* seems however to be valid. This error in the generic name indicates one of the disadvantages of working without full literature at hand, as the writer has been forced to do on many occasions; but, in this case, although resulting in a synonym, there is a certain advantage in having a perfectly independent estimate of the systematic position of the genus, which seemed to be a Xantholinid and not closely related to the *Cafius* series.

The genera *Terasota* and *Taphrodota*, p. 242, are subdivisions of *Aloconota*.

Euromota, p. 242, and *Anepsiota*, p. 236, are valid subgenera of *Atheta*, as this genus is supposed to be constituted by recent authors. I do not agree with those who place so many heterogeneous elements under the genus *Atheta*, and believe that the ideas expressed in the older catalogue of Heyden, Reitter and Weise are far nearer to the truth. There such names as *Acrotona*, *Liogluta*, *Aloconota*, *Amischa* and some others, stand for genera in the full sense of the word, each with numerous subgenera.

Macroterma, p. 242, is a valid subgenus of *Atheta* in its comprehensive sense. The species *dentata*, of Bernhauer *(Atheta)*, is smaller and narrower than *alutacea* Csy., and the two are not very closely related.

Homalotusa, p. 242, is also a subgenus of *Atheta*, near *Liogluta*.

Elytrusa, p. 235, may or may not be the same as *Megista*, for I am by no means certain that the type is identical with the type of *Megista* Rey; it however is at best a subgenus, very closely allied to *Megista*.

Achromota, p. 254, does not belong to the Aleocharini but to the Myrmedoniini and is a synonym of *Acrotona*.

Eurypronota, p. 235, is a valid subgenus of *Atheta* near *Acrotona*. If the present *Atheta* were properly divided generically, it would be a subgenus of *Acrotona*.

Colposura, p. 236, and *Valenusa*, p. 242, are valid gubgenera of *Atheta* near *Amischa*. *Amischa* is really a valid genus, of which the two mentioned might be regarded as subgenera.

Athetota, p. 236, is a synonym of *Anepsiota*.

Platyusa, p. 223, is a synonym of *Myrmedonia*. This synonym was announced many years ago, but was overlooked by Dr. Eichelbaum. (See Ann. N. Y. Acad. Sci., VII, p. 322).

Nototaphra, p. 222, has dorsal sexual tuberosities of the male abdomen similar to those of *Myrmæcia;* but it differs in the formation of the sterna between the middle coxæ, in the very fine close punctures of the upper surface and in the smaller basal joint of the antennæ. If *Myrmæcia* be regarded as a subgenus of *Myrmedonia*, *Nototaphra* would be another subgenus; if, however, *Myrmæcia* is a distinct genus, as I hold to be true, then *Nototaphra* is also distinct.

Myrmobiota, p. 250, is a genus wholly distinct from *Homæusa*, and has a markedly different habitus. The specimen sent to Dr. Wasmann by Mr. Wickham under that generic name, and upon which the former gained his opinion of *Myrmobiota*, was certainly *Homœusa* and not *Myrmobiota*. I have never seen this specimen. *Soliusa*, p. 250, might be regarded as a subgenus of *Homæusa*, but its type, *crinitula*, bears not the slightest resemblance to *Myrmobiota*, and has only a general similarity with the type of *Homœusa*. Dr. Eichelbaum should certainly make these corrections in the interest of truth.

The above notes will determine certain points which could not very well be settled, because of the isolated nature of the descriptions. There are, however, many names which I have published as genera in systematic work, such as those under the comprehensive genus *Aleochara* and under *Falagria*, the weight of which as genera or subgenera can be determined very well from the context. Very recent writers will probably be disposed to hold them for the most part as subgenera, but I am sure that more painstaking study would convince them that they are in great part true genera. It can only be said that for the present their systematic weight is a subject of disagreement.

Some years ago, in the CANADIAN ENTOMOLOGIST, I explained that the generic name *Delius* Fauv., p. 194 (Rev. d'Ent., 1899, p. 11), is preoccupied by *Delius* Csy., in the Scydmænidæ (Ann. N. Y. Acad. Sci., 1897, p. 497); as no substitution has been made for the Fauvelian name, I would propose *Deliodes* (nom. nov.) for the *Delius* of Fauvel.

The following are some additional synonymic notes on the Staphylinidæ:

The *Ocyusa asperula* Csy., (Ann. N. Y. Acad. Sci., 1893, p. 305) appears to have been redescribed by Dr. Bernhauer under the name *brevipennis*.

Aleochara Kansana Csy., (Tr. Acad. Sci., St. Louis, 1906, p. 141) is a synonym of *ellipsicollis* Csy. (l.c., p. 142).

After *Baryodma castaneipennis* (l.c., p. 152) read Mann., instead of "Esch."

The name *Baryodma densiventris* Csy., (l.c., p. 158) is preoccupied by Bernhauer, and I would therefore substitute for it the name *Humboldti* (nom. nov.).

Eucharina rugosa Csy., (l.c., p. 166) may be regarded as a synonym of *sulcicollis* Mann.

Echochara lucifuga Csy., (l.c., p. 177) originally placed in *Rheochara* (Ann. N. Y. Acad. Sci, 1893, p. 288) was redescribed by Garman (Psyche, 1894, p. 81) under the name *Calodera cavicola*.

The subgeneric name *Tachyusilla* Csy., (l.c., p. 213) is a synonym of *Caliusa* Rey.

Lissagria minuscula Csy., (l.c., p. 254) is a subspecies of *robusta* Csy.

Falagriota lucida Csy., (l.c., p. 257) is a synonym of *occidua* Csy.

After *Gyrophæna flavicornis*, (l.c., p. 291) for "n. sp." read Mels.

Homalotusa pallida (l.c., p. 342) is a synonym of *fuscula* Csy.

In the latest European catalogue of Heyden, Reitter and Weise, the genus which I called *Eulissus* Mann., (l.c., p. 379), is named *Gauropterus* Thoms.; but in the catalogue of Dr. Eichelbaum this decision is reversed, *Gauropterus* being given as a synonym of *Eulissus*. There is some obscure point to be cleared up here, it would seem.

Leptacinus rubricollis Csy., (l.c., p. 400) is preoccupied by Reitter (1899); but, as these names may possibly apply to what might be regarded as a single species, I hesitate to substitute another name at the present time.

Diaulota insolita Csy., (Ann. N. Y. Acad. Sci., VII, 1893, p. 355) is a synonym of *densissima* Csy.

After *Lathrobium amplipenne* (Tr. Acad. St. Louis, XV, p. 81) insert "n. sp."

The substitution of *Astenus* Steph., for *Sunius* Erichs., is one of those rigorous applications of the laws of priority which it is very difficult to adopt with any degree of complacency, because, throughout almost the entire literature of the subject, the genus has been known under the name *Sunius*, and, in this special case, because the word *Astenus* is very misleading if we look at it etymologically. There are some other iconoclastic changes of names, especially in the Pselaphidæ, which seem to be equally unnecessary. I believe fully in the law of priority, but do not think it can be made quite so rigid as the law of gravitation; and, that when a name has become established through very long and extensive usage, in fact universally employed, it should not be changed unless there can be no shadow of doubt as to the necessity for doing so, and of this we should be made aware by the publication, coincidentally with the proposed change, of all the facts and original descriptions which apparently compel it, so that everyone may be enabled to form his own opinion.

The following notes synonymic and otherwise are appended:

SCYDMÆNIDÆ.

Eumicrus cruralis Csy., (Ann. N. Y. Acad., IX, p. 534) is a synonym of *ochreatus* Csy.

COCCINELLIDÆ.

In a paper published recently by the writer (Can. Ent., XL, p. 393) a few errors and misprints occur which require correction as follows:

On pp. 397, 400 for "*liliputana*" read *lilliputana*.

On p. 399, 19 l. from bottom, for "met-episterna" read met-epimera.

On p. 400, 4 l. from top, for "*parenthesis*" read *apicalis*.

On p. 409, 3 l. from top, for "*cacti*" read *plagiatum*.

On p. 413. The species described under the name *Brachyacantha metator* does not belong to that genus, but is a member of the genus *Hyperaspis*, belonging near *jocosa* and *Levrati*, which have a habitus so nearly that of *Brachyacantha* that it did not occur to me to examine the anterior legs.

Scymnus subsimilis Csy., (Journ. N. Y. Ent. Soc., VII, p. 150) is a synonym or slight variety of *aridus* (l.c., p. 146).

Scymnus Calaveras Csy., (l.c., p. 150) may be regarded as a synonym of *tenuivestis* (l.c., p. 151).

BUPRESTIDÆ.

In my recent paper (Proc. Wash. Acad. Sci., XI) on p. 49, line 22 from top, and again on p. 115, line 15 from top, for "*ornata*" read *decora*.

TENEBRIONIDÆ.

Metoponium laticolle and *faustum* Csy., (Proc. Wash. Acad. Sci., IX, pp. 291, 292) are subspecies of *abnorme* Lec.

Metoponium congruens and *anceps* Csy., (l.c., pp. 293, 294) may be regarded as subspecies of *perforatum* Csy.

Metoponium subsimile Csy., (l c, p. 295) is a subspecies of *socium* Csy.

Steriphanus alutaceus and *peropacus* Csy., (l.c., pp. 348, 349) are probably slight varietal or racial forms of *subopacus* Horn.

Steriphanus unicolor Csy., (l.c., p. 346) is not more than a subspecies of *convexus* Lec.

In describing the elytra of *Bothrotes pertinax* Csy., (l.c., p. 405) it is stated that the impressed lines are wanting except apically; this is a mistake, due probably to inadvertently observing some other specimen, for, in the type of *pertinax*, the impressed lines are very well developed.

Metopoloba contaminans Csy., (l.c., p. 418) is a synonym of *sublæviceps* Csy.

On p. 463 (l.c.), it is stated that my description of *Zopherus Haldemani* is apparently the first full diagnosis to be published, but this is an error, as the species had been satisfactorily described by Horn many years before, under the name *Z. nodulosus*, Sol.

Phlœodes latipennis Csy, (CAN. ENT., 1907) is a synonym of *pustulosus*, Lec.

Additional specimens of *Nesostes robustus* Lec., (Proc. Wash. Acad. Sci., X, p. 59), recently received, show that the elytra are not polished on the apical declivity in all examples, but in some are opaque throughout; evidence seems to indicate that the entirely opaque individuals are males.

The recent paper on *Diplotaxis*, by Mr. Fall (Tr. Am. Ent. Soc.), answers a want long felt in a genus which has been almost as much of an enigma as *Brachynus*, so far as the identification of species is concerned.

The annoyance caused by the numerous, and at times rather obtrusive, misprints, which have come to be somewhat characteristic of its medium of publication, is offset to some extent by the more satisfactory typographic form, the new dress being more becoming than the old. I notice that Mr. Fall makes use of a word *umbone*, to express a protuberanee of the surface; this word also occurs frequently in the writings of Dr. Horn and others. On consulting the dictionaries, I find that the word *umbo*, which has been adopted by the English language directly from the Latin, has, for a French equivalent, *umbon* and Italian *umbone;* but it is not quite apparent why we should use the Italian word in preference to the Anglo Latin *umbo*, which is shorter, more rational and less liable to be mistaken for an English singular of the Latin plural *umbones*, if perchance construed as forming two syllables instead of three.

It is also impossible to confirm the correctness of the geographic name "Baboquivaria" used by Mr. Fall and others. The atlases give either Baboquivari or Babuquivari, the latter form in Steiler's Handatlas. The form "Baboquivaria" is only quotable from the pin-labels of our genial and old-time friend Prof. Snow, and was presumably so printed under misapprehension.

It would seem to be almost time that the true value of the synonymical list of my early species published by Dr. Horn, and embodied in the Henshaw List, should have become known to systematists. I drew attention to the unreliability of this list in one of my papers published in the Bulletin of the California Academy, and it would be scarcely worth while to allude to it again, were it not necessary to remark that in blindly following the synonymy indicated by Dr. Horn, the author of the work on *Diplotaxis* has fallen into an error, which he might have avoided had he read my description of *D. levicula*, and not taken it for granted that it was, as stated by Dr. Horn, identical with the *punctata*, of LeConte, inhabiting a different region: for Mr. Fall does not admit that *punctata* occurs in Arizona, and yet places *levicula*, from Arizona, as a synonym of that Texan species. On comparing my type with LeConte's material many years ago, I made up my mind that it was closely related to *carbonata*. A perusal of Mr. Fall's paper indicates that he has redescribed it under the name *rufiola*. This name is therefore in all probability a synonym of *levicula*.

In Mr. Fall's Revision of the Ptinidæ (Tr. Am. Ent. Soc, XXXI, p. 274), the author has apparently strained pretty hard to make a synonym

of my *Cænocara occidens*, and it is almost needless to say that he is in error. *Occidens* is one of the smallest known species of *Cænocara* and is always pale brownish-testaceous in colour. I compared it carefully with the actual type of *Californica* Lec., and the two have no mutual resemblance whatever, *Californica* being much larger and black in colour, as stated by LeConte. The pubescence may have given it a brownish tinge to Mr. Blanchard, but the integuments are black.

In his treatment of my *Ptilinus flavipennis*, in this paper (p. 281), Mr. Fall also displays a decided lack of liberality in the absence of positive knowledge, for it is true beyond any legitimate question, that *Ptilinus flavipennis* is not a synonym of *basalis* Lec., but is a separate and distinct species.

It is seldom that I have attempted to assume the role of critic of the work of my fellows in the field of morphological classification, although frequently being forced to defend my own work from attack, when the motive therefor seemed unjust or the reason ill-founded. Having done so much work himself in this field, the writer feels only too acutely the uncertainty of the results of our labours and of our helplessness in the presence of the undecipherable; for we know not a whit of the meaning or origin of it all. The recent work of Dr. F. E. Blaisdell on the genus *Eleodes* tempts me, however, to make a few observations, which I trust will be taken in good part, as they are given in a spirit wholly friendly to the author and in no way as captious criticism.

This work stands alone in the minute and careful study bestowed upon the subject and in its remarkable array of detail. Its degree of departure from the actual truth, so far as indicating the total number of species and subspecies which the author had before him is concerned, is of course a part of his own individual perceptiveness and methods of reasoning and would be viewed differently by every investigator; no two would probably agree, but I think it can be truly said that Dr. Blaisdell has tried to steer an ultra-conservative course, and that in his inner conscience he really felt that there were many more forms that should be given places in the taxonomic scheme than he quite dared to make known. This can be inferred, at least, from the fact that so many species or subspecies are presented to us under the term "*forma*," which he modestly states are not to be perpetuated in the catalogue but are only intended as convenient

references ; but if he did not think that many of them would be perforce adopted, he could much more simply have stated *forma A*, *forma B* and so on. As a matter of fact, it is these *formas* that have prompted me to write this notice, for it is very difficult to understand how some of them can fail to find their way into the catalogue as legitimate taxonomic units, such for instance as *Farallonicus* under *parvicollis*, *Catalinæ* under *omissus*, *interstitialis* under *carbonarius*, *annectans* under *obsoletus*, *ordinatus* under *pilosus* and in many other similar cases. Indeed it becomes evident that these *formas*, which in many instances have been given perfectly distinctive and proper names, may produce much trouble and confusion, and I would strongly advise the author to issue a supplement in which he definitely states which of them he would have perpetuated as subspecies and which are to be conclusively dropped ; for that they all have the status at least of subspecies cannot for a moment be held in dispute, when we view such conservatism as prompted him to write *porcatus* as a variety of *obsoletus*, or *brunnipes* as a variety of *pimelioides*, instead of giving them their evidently proper status as distinct species.

In this connection it should be stated that *compositus* Csy., is by no means a form of *hispilabris*, as was in fact admitted by the author himself when he viewed the type in my collection, though unfortunately not until after his monograph had appeared in print. It is a wholly distinct and isolated species, not closely related in any way to *hispilabris*, and this remark can be repeated in regard to *elegans* Csy., an isolated species referred by Dr. Blaisdell to *dentipes*, which it does not in the least resemble.

The amount of conscientious work made obvious by the extremely detailed account of the sexual characters, is most unusual in systematic studies of this kind; but, although a very interesting contribution to morphology, it must be held to be of comparatively little practical utility in determining species ; to even thoroughly understand it, one would be compelled to devote almost as much time to painstaking dissection as that expended by the author himself.

In conclusion there are but two other points which might be alluded to in reluctantly criticising this voluminous monograph, the first relating to the title, which is so lengthy as to be objectionable to the bibliographers ; it is a mistake to try to describe the scope of a paper so minutely in the title itself. The second relates to the gender given the specific names,

which, to follow the general rule for genera ending in *odes*, should be masculine and not feminine.*

ON SOME NEW SPECIES OF BALANININI, TYCHIINI AND RELATED TRIBES.

BY THOS. L. CASEY, WASHINGTON, D. C.

A recent rearrangement of my somewhat extensive material in the genus *Balaninus*, shows that we have been misinterpreting the species described by Say under the name *rectus*, which, as identified in most cabinets, is of slender form, with a thin and strongly arcuate rostrum, very abundant in Arizona, and, as represented by closely allied species, extending as far to the eastward as the Atlantic seaboard. The description of Say shows that the true *rectus* has a long and almost perfectly straight rostrum, bent downward only at tip. Two specimens from West Virginia before me undoubtedly represent this species, which is not at all closely related to the form which we have been calling *rectus*, but is more nearly allied to *quercus*. A desire to rectify this very radical error is the principal reason for publishing the following short study, in which quite a number of other species, hitherto undescribed, are also made known. A few Tychiini and related forms, believed to be new, are appended, in addition. Measurements exclude the rostrum, the length of the latter being the distance from the tip to the eyes in a straight line, or a chord of the arc.

Tribe BALANININI.

Balaninus Germ.

A—*Rostrum* (♀) *much longer than the body.*

**First funicular joint shorter than the second.*

B. hariolus n. sp.—Body slender, dark rufo-piceous throughout, the prothorax blackish; vestiture tawny-yellow, more hair-like and sparser at each side of the median line and on the flanks of the prothorax, rather

*Since this was written Dr. Blaisdell has published (Ent. News, 1910, p. 60) some additional notes on *Eleodes*, in which my suggestion given above has been carried out to some extent, four of his *formas* being given permanent rank as varieties. He seems however to be just a little hazy in his ideas concerning priority, stating that *nitidus* Csy., published many years ago, is a variety of *amplus* Blaisd., published in his monograph of 1909. The species name is of course *nitidus*, *amplus* becoming a variety of *nitidus* and not a species, if that be the true relationship between them. I may also add that there is no close relationship whatever between *dentipes* and *subcylindricus*, and the latter is clearly a distinct species.

faintly mottled with pale brown on the elytra; beak (♂) curved downward beyond the middle, rather stout, gradually thicker basally; prothorax rather longer than wide, moderately narrowed at apex, finely, very densely punctate throughout; scutellum narrow, densely pubescent, pale brown; elytra three-fifths longer than wide, somewhat strongly narrowed from the moderately prominent humeri to the apex, the apices individually rounded; striæ but little more than a fourth as wide as the flat intervals, strongly and very closely punctate at the bottom, the intervals finely, closely punctate; fifth male ventral feebly impressed, with the apex moderately sinuate and briefly, sinuately beveled. Length, ♂, 8.0–8.5 mm.; width, 3.2–3.8 mm.; Length of rostrum, ♂, 5.4 mm. Types without locality-label, but probably from Indiana.

Resembles *caryatrypes* Boh., as usually identified in our collections, but smaller, less stout and more acuminate, with slightly coarser elytral striæ, much shorter legs and shorter beak; in the species mentioned the fifth ventral of the male is truncate medially at tip.

B. cylindricollis n. sp.—Moderately slender, piceous-black throughout the body and beak, the legs slightly paler; vestiture dense, almost uniform in colour and pale gray; beak (♀) rather thick but almost filiform, but little thickened basally, straight, becoming very gradually and extremely feebly bent beyond the middle; prothorax much longer than wide, scarcely three-fourths as wide as the elytra, parallel, very moderately narrowed apically, densely punctate; scutellum concolorous; elytra one-half longer than wide, the oblique sides arcuate; apices each rounded, the humeri well exposed, rounded; striæ about a fourth as wide as the intervals, with the punctures moderate, each bearing a pale scale, the intervals not quite flat, very finely, not very densely punctate. Length, ♀, 7.5 mm.; width, 3.0 mm.; length of rostrum, ♀, 9.4 mm. Tennessee.

Differs from the female of *caryatrypes* in its much smaller size, more slender form, uniform vestiture, shorter and nearly straight beak, apically unconstricted prothorax and in general facies to a very striking degree.

***First funicular joint longer than the second except in cuneatus.*

†*Beak extremely slender, filiform, not at all enlarged basally, the antennæ (♂) inserted behind the middle; pygidium (♂) excavated.*

B. cuneatus n. sp.—Form moderately stout, piceous-black, the beak and legs dark testaceous; antennæ long and very slender, the first and second funicular joints long and as nearly as discernible perfectly equal in length, each a little shorter than the third and fourth combined;

prothorax fully two-fifths wider than long, parallel basally, strongly and obliquely narrowed in apical half, densely, rather finely punctate throughout, the yellowish-brown vestiture somewhat close but in great part coarsely hair-like; elytra about one-half longer than wide, cuneiform, with arcuate sides, rather prominent humeri, somewhat fine, punctured striæ and wide, flat and closely but not deeply punctate intervals, the vestiture of elongate scales dense, yellowish gray, with irregular mottling of pale brown, more distinct than in *quercus*, wholly concealing the surface. Length, ♂, 8.8 mm.; width, 3.8 mm. West Virginia.

A little stouter than *quercus*, to which it is allied, and with the beak about similar in length and curvature, but differing in the very long and perfectly equal first two funicular joints, and in the denser and more squamiform vestiture of the elytra.

The following is a subspecies of *quercus*:

B. sparsellus n. subsp.—Nearly similar throughout to *quercus*, but with the elytra more cuneiform, more elongate and more gradually acute behind, and with the second funicular joint (♂) but little shorter than the first. Length, ♂, 8.5 mm.; width, 3.6 mm. New Jersey.

In *quercus* the elytra are less elongate, more rounded at the sides, more obtuse at apex and with the first funicular joint in both sexes very much longer than the second. The elytral vestiture does not fully conceal the surface. *Quercus* is abundant from Massachusetts to West Virginia.

B. rectus Say.—Somewhat larger and more elongate than *quercus*, blackish, the elytra, legs and beak red-brown; vestiture pale brownish-yellow, in the form of very stout subsquamiform hairs but much more elongate than in *quercus*, similarly in condensed patches on the elytra, elsewhere darker and sparse, not concealing the surface; beak (♀) very long, slender, perfectly straight to within a short distance of the apex where it is bent downward; antennæ very slender, the first funicular joint much longer than the second; prothorax about a third wider than long, the sides subangulate at the middle, thence slightly diverging (not parallel as in *quercus*) to the base and strongly sinuately converging to the apex; punctures dense, deep and rather coarse, the median line narrowly impunctate; elytra as in *quercus* but with less fine and more coarsely punctured striæ, and less closely, asperulately punctulate intervals. Length, ♀, 9.2–9.4 mm.; width, 3.9 mm; length of rostrum, ♀, 10.5–11.0 mm. West Virginia.

Differs from *quercus* in its relatively longer, in great part perfectly straight, beak, longer pubescence, form of the prothorax and in other characters; from *orthorhynchus* Chit, it may be known at once by its very much larger size, being of three or four times the bulk. One of the two specimens before me has the singular thread-like ovipositor, with its biungulate clasping extremity, protruded as described by Dr. Horn (Proc. Ann. Phil. Soc., XIII, p. 457).

††*Beak very slender though slightly thicker basally; antennæ* (♂) *inserted at or slightly beyond the middle; pygidium* (♂) *not excavated.*

The following species have a narrow elongate fusiform outline, with the prothorax less markedly narrower than the elytra than usual, and are all much smaller and more slender than *caryæ* Horn, which belongs to the same section as defined above.

B. auriger n. sp.—Moderately slender, convex, piceous-black to dark testaceous, densely clothed with narrow pale golden scales, denser in two pronotal vittæ and having a bright lustre in the condensed subtransverse elytral maculæ, of which one, especially conspicuous, is generally well-defined behind the middle, the darker areas clothed sparsely with dark hair-like vestiture; antennæ (♂) inserted at about the middle of the beak, (♀) at just behind basal third, the first funicular joint much longer than the second; prothorax nearly as long as wide, parallel, moderately narrowed apically, strongly, densely punctate; scutellum small, with the elongate central elevation solidly squamose; elytra about one-half longer than wide, rather acuminate, the humeri broadly rounded and not prominent, the striæ moderately coarse and coarsely punctate, the intervals strongly, rugosely punctate. Male with the third ventral at base much below (viewed ventrally) the level of the second,—a very frequent character not generally referred to, the fifth subconcavely flattened, sparsely clothed, the apex broadly and feebly sinuate. Length, ♂, ♀, 5.6–7.0 mm.; width, 2.5–3.0 mm; length of rostrum, ♂, 3.0–3.4 mm.; ♀, 6.0–8.0 mm. Arizona.

This species typifies a group, no one of which has as yet been described, most of them having been referred to *rectus* Say. The strongly arcuate beak in both sexes, becoming straight only in about basal half, will however alone prevent them from coming under that designation; the femora are strongly toothed beneath in the female but much more feebly in the male. The following seems to be a subspecies of *auriger:*

B. mollis n. subsp.—Smaller than the smallest of a very large series of the preceding, resembling it in general characters, but with the antennæ inserted evidently beyond the middle of the very short beak, the second funicular joint relatively shorter and only a little longer than the third, the prothorax smaller, shorter and more finely punctate and the elytral striæ very coarse, fully half as wide as the intervals. Length, ♀, 4.9 mm.; width, 1.9 mm.; length of rostrum, 2.4 mm.

The single type is without locality label, but is probably from Arizona.

B. strigosus, n. sp.—Form and coloration nearly as in *auriger* but rather shorter, the vestiture nearly similar; beak (♀) shorter, similarly arcuate, not very evidently longer than the body, the antennæ shorter, with stouter club; prothorax nearly as long as wide, more gradually though slightly narrowing anteriorly, with the basal angles more obtuse, the punctures a little smaller and less densely placed, and with a strikingly broad smooth impunctate median line, which is two or three times as wide as the fine impunctate line of *auriger*, though likewise not extending much before the middle; elytra more abbreviated than in *auriger* but similar in general form and sculpture, not about twice as long as the prothorax as in that species, but much less. Length, ♀, 5.2 mm.; width, 2.2 mm.; length of rostrum, ♀, 4.8 mm. Arizona.

The legs are shorter than in *auriger*, especially the femoral peduncle.

B. algonquinus n. sp.—Form somewhat as in *auriger* but shorter and stouter, the type pale brownish-testaceous in colour throughout; beak (♂) stout, strongly arcuate, the antennæ inserted at the middle, the first three funicular joints decreasing uniformly and rapidly in length; prothorax of the same general form as in *auriger*, not quite as long as wide, the parallel sides gradually rounding and converging before the middle, the punctures smaller, close but not crowded, the pale vittæ narrow; scutellum short, solidly squamose on the elevated part; elytra rapidly cuneiform, with arcuate sides and distinct humeri, much less than one-half longer than wide and not twice as long as the prothorax, the condensations of pale fulvous scales numerous and indefinite, the striæ less than half as wide as the intervals, the latter finely and sparsely punctate, only slightly rugulose. Length, ♂, 6.0 mm.; width, 2.7 mm.; length of rostrum, ♂, 3.0 mm. Indiana.

The fifth ventral of the male is feebly impressed and scantily clad, gradually feebly deflexed apically, the apex feebly sinuate, the cleft between

the second and third segments very large. This species may be distinguished from any other of the eastern forms of this group by its shorter and relatively stouter form.

B. acuminatus n. sp.—General form, sculpture and vestiture nearly as in *auriger* but larger and rather more elongate, black, the elytra, legs and beak but little paler; beak (♀) much longer, similarly strongly arcuate, becoming straight in about basal half, the antennæ inserted at basal fourth, the first funicular joint longer than in *auriger*, fully as long as the next two combined; prothorax more elongate, apparently a little longer than wide, slightly but very gradually narrowed anteriorly, closely, strongly and deeply but not confluently punctate, the smooth median line narrow; scutellum similar; elytra with the humeri more prominent and the sides thence more rapidly converging and very feebly arcuate to the rather more acuminate tip, similarly punctato-striate but with the broad intervals much more finely, sparsely and less rugosely punctate, the condensed subtransverse maculæ of pale tawny scales having the metallic glint of *auriger* much less evident; fifth ventral more obtuse and more concave than in the female of that form. Length, ♀, 7.5 mm.; width, 3.2 mm.; length of rostrum, ♀, 9.8 mm.

A single female probably taken in Arizona or Colorado, readily distinguishable from *auriger* by its much longer beak, more elongate prothorax and different fifth ventral of the female.

B. setosicornis n. sp.—Form and vestiture nearly as in *auriger* though slightly less elongate, black or blackish in colour, the beak a little paler, arcuate as in that species, the antennæ (♂) inserted at the middle, (♀) at or slightly behind basal fourth, slender, similar in structure, the bristling black setæ at the apical part of the funicular joints unusually conspicuous; prothorax nearly as long as wide, gradually narrowed anteriorly from slightly behind the middle (♀), or more prominently rounded at the sides and narrowed from before the middle (♂), closely, deeply punctured but much less coarsely than in *auriger*, the smooth median line very narrow; scutellum similar; elytra nearly similar in form, sculpture and vestiture. Length, ♂, ♀, 6.2–6.5 mm.; width, 2.6 mm.; length of rostrum, ♂, 3.0 mm.; ♀, 7.0 mm. West Virginia.

The fifth ventral in the male is flattened medially, subglabrous posteriorly, where there is, on each side of the apex, a dense tuft of hairs, the two patches nearly contiguous medially; in the female the fifth ventral

is feebly, transversely concave and sparsely clothed throughout the length and not scarcely at all modified, as it is in *auriger*.

B. macilentus n. sp.—Form nearly as in *setosicornis* and *auriger* but more slender, rufo-piceous to blackish, the beak a little paler, the integuments rather more shining, the vestiture similar in distribution but whitish and not yellow; beak similarly arcuate; antennæ nearly similar and inserted at the middle (♂), but in the ♀ inserted further forward than in *setosicornis*, at a little beyond basal fourth, the funicular setæ not so conspicuous; prothorax sculptured as in the preceding species but differing more sexually, apparently longer than wide and very gradually narrowed anteriorly from the middle (♀), or more abruptly from before the middle and shorter than wide (♂); elytra with slightly more prominent humeri and more rapidly, obliquely narrowed thence to the tip, with feebly arcuate sides, the apex very acute, especially in the female, the sculpture sparser and feebler, more exposed by the scantier vestiture, the strongly punctate striæ similarly nearly half as wide as the intervals. Length, ♂, ♀, 6.0–6.5 mm.; width, 2.3–2.4 mm.; length of rostrum, ♂, 3.0 mm.; ♀, 6.9 mm. West Virginia.

The fifth ventral is more scantily clothed throughout than in the preceding and does not have such conspicuous apical tufts of hair, and, in the female, the scantily-clad feeble concavity is a little narrower. It may be distinguished from *setosicornis* by its much narrower form, looser vestiture and point of antennal insertion in the female.

B. perexilis n. sp.—Similar in general form and vestiture to most of the preceding species but very small and slender, dark in colour, some of the pale yellowish elytral condensations of the vestiture with feeble metallic glint; beak slender, the antennæ inserted a little beyond the middle (♂), or at basal fourth (♀), the funicular joints shorter throughout than in *macilentus;* prothorax similar in the sexes, notably shorter than wide, gradually rounding at the sides and narrowing anteriorly from near the middle, more strongly in the male, the punctures strong and dense; elytra nearly as in *macilentus* but with rather finer striæ; legs notably more slender, the femora less clavate. Length, ♂, ♀, 4.5–4.8 mm.; width, 1.8–2.0 mm.; length of rostrum, ♂, 2.5 mm.; ♀, 4.6 mm. New Jersey.

The fifth ventral of the male is pubescent at tip, with the surface vestiture finer and sparser but not much modified otherwise; on the fifth ventral of the female there is a deep rounded concavity in about apical

half, thus differing from any of the preceding, and the entire abdomen is much more scantily clad than in the male. This is the smallest, or at least by far the slightest, species that we have. The female is the smaller and more slender of the two specimens at hand.

B—*Rostrum* (♀) *not longer, and generally much shorter, than the body.*

a—*Prothorax relatively large in size.*

B. proprius n. sp.—Body short, stout and convex in form, piceous-black, the antennæ paler; vestiture pale gray, variegated on the elytra with large feeble brownish clouds, almost uniform, not very dense and somewhat hair-like on the pronotum and without condensed vittæ, in the form of elongate, moderately dense scales on the elytra, those of the strial punctures pale cinereous and distinct; beak (♀) not longer than the elytra, moderately arcuate throughout, the antennæ inserted scarcely beyond basal fourth, slender, the scape short, the first funicular joint almost as long as the next two combined; prothorax about a fourth wider than long, parallel, the sides becoming strongly oblique in about apical two-fifths, the punctures strong, deep, very densely crowded; scutellum very narrow, elongate, the dense vestiture divided narrowly along the middle; elytra short, not a third longer than wide, not twice as long as the prothorax and two-fifths wider, the humeri well exposed, the sides strongly arcuate; apex obtuse; striæ not quite a third as wide as the intervals, the latter shining, not very densely, subrugosely punctate; fifth ventral twice as wide as long, with a small feeble indentation medially toward tip, not differently clothed; femoral teeth strong. Length, ♀, 6.2 mm.; width, 3.0 mm.; length of rostrum, ♀, 3.8 mm.

The type represents a species not at all closely allied to any of our other species; it is without locality label but was probably taken in Indiana.

B. timidus n. sp.—Form stout, small in size, convex, piceous, the legs and beak dark testaceous; vestiture elongate-squamiform, very coarsely hair-like on the pronotum, pale brownish-cinereous, rather dense but only feebly and sparsely, subtransversely variegated with pale brown on the elytra; beak (♂) stout, the antennæ inserted just behind the middle, the first funicular joint nearly as long as the next two, the club rather stout; prothorax slightly wider than long, parallel, the sides obliquely, subsinuously converging in apical two-fifths, the punctures strong and close-set; scutellum elongate, densely clothed, the elevated part with

tumescent polished sides; elytra short, a fourth longer than wide, less than twice as long as the prothorax and a third wider, the humeri less than usually exposed, the converging sides arcuate; apex rather obtuse; striæ somewhat more than a third as wide as the intervals, with the squamæ rather narrow; femoral teeth rather strong, acute; fifth ventral flat, trapezoidal, truncate at tip, glabrous at the middle of the tip and with long but not dense hairs laterally at apex. Length, ♂, 4.7 mm.; width, 2.15 mm.; length of rostrum, ♂, 2.5 mm. Texas (Alpine), Wickham.

To be readily known by its short plump form, unusually small size, short legs and other characters mentioned in the description; it is not closely allied to any other of our species.

b—*Prothorax relatively smaller in size.*

This group includes most of the species having short beaks. *Obtusus* Bl., *Caseyi* Chit. (=*brevirostris* ‖ Csy.), and *monticola* constitute a peculiar section of the group, having the rostrum very short in both sexes, stout and only a little longer in the female than in the male, the antennæ inserted slightly behind the middle in the former and correspondingly but little beyond the middle in the latter sex. The group contains, besides the *obtusus* section, two other minor sections, one having the male beak very short, in fact scarcely half as long as body and having as representative species *confusor* Ham., *baculi* Chit., and the following:

B. Iowensis n. sp.—Body (♂) larger and a little stouter than in *confusor*, similar in colour, sculpture and vestiture, except that the medial scales of the pronotum are less hair-like and the elytral striæ notably finer, the beak (♂) much stouter, with many longitudinal grooves behind the point of antennal insertion, and, as usual, slightly narrowed before that point, very feebly enlarged toward tip; antennæ inserted well beyond the middle, stouter than in *confusor*, the funicular joints two to four diminishing very gradually in length, the second but little longer than the third and much more notably shorter than the first than in *confusor*; prothorax as in that species, a third wider than long and sinuously narrowed anteriorly but relatively a little larger; elytra more obtuse posteriorly; legs longer, the femora strongly and acutely toothed; fifth ventral feebly and not very definitely impressed and not more sparsely clothed medially; pygidial pubescence abruptly limited superiorly. Length, ♂, 7.3 mm.; width, 3.3 mm.; length of rostrum, ♂, 2.6 mm. Iowa (Keokuk).

The elytral maculation of darker pale brown scales is very feebly defined; there is evidence however of the transverse pale band at apical

two-fifths, so generally noticeable in *confusor* and others of this group, and especially conspicuous in *nasicus* Say. The male beak is less arcuate than in *confusor*.

The second of the two minor sections mentioned above is by far the larger; it has the male beak short though always distinctly longer than in the preceding, being apparently more than half as long as the body, though perhaps not so if we measure the chord of the arc; it is exemplified by such species as *uniformis* Lec., and *orthorhynchus* and *Victoriensis*, of Chittenden.

B. Virginicus n. sp.—Form rather stout, convex, dark, the elytra, beak and legs paler and dark testaceous; vestiture dense, squamiform, brown, with two pale pronotal vittæ, the brown patches of the elytra large and irregular to small and tessellatiform; beak in both sexes notably slender, arcuate, moderately except toward base (♀) or strongly, evenly arcuate throughout (♂), not perceptibly enlarged basally, except very feebly at base and not enlarged apically or with larger mandibles in the male; antennæ (♂) inserted just behind the middle, or (♀), just beyond basal fourth, slender, the first funicular joint much longer than the second, the latter much longer than the third (♀), or only just visibly so (♂); prothorax transverse, fully two-fifths wider than long, the sides rather arcuate, becoming gradually oblique but only feebly sinuate anteriorly, the punctures strong and dense, the impunctate median line virtually obsolete; scutellar vestiture finely, longitudinally parted; elytra of the usual cuneate form, with arcuate sides and exposed humeri, the striæ moderate, rather coarser in the male; legs long, the femoral peduncle long and slender, the teeth large and acute; fifth ventral (♂) but feebly modified, scarcely visibly and indefinitely impressed medially but not more glabrous, trapezoidal, the pygidial pubescence not abruptly delimited superiorly; fifth ventral (♀) broadly ogival. Length, ♂, ♀, 7.2–7.6 mm.; width, 3.2–3.75 mm.; length of rostrum, ♂, 3.6–3.8 mm.; ♀, 5.6–6.1 mm. West Virginia.

It is barely possible that Mr. Chittenden may have included this species with his series representing *pardalis* (Proc. Ent. Soc. Wash., X, p. 24); but it differs from *pardalis* in three important particulars, judging from the description: the legs are longer, the beak in the female is relatively much longer and it is not sensibly enlarged at tip in either sex. There are some palpable misprints in Mr. Chittenden's description, viz.: Page 25, line 4, for apical read basal, and, line 5, for "longer than wide," read wider than long.

B. auctus n. sp.—More elongate than the two preceding, the body deep black, the beak blackish, gradually testaceous apically; vestiture brown and coarsely hair-like on the pronotum, the entire flanks squamose, the scales pale yellowish; elytra with moderately dense and very slender brown hair-like scales, sparsely variegated with small and feebly defined condensations of pale yellowish scales; beak (♂) moderately stout, arcuate beyond the middle, thinner beyond the antennæ, the first four funicular joints decreasing almost uniformly and rather rapidly in length; prothorax fully a fifth wider than long, parallel, obliquely and rapidly narrowed before the middle, strongly, deeply and very closely punctate, the smooth median line extremely narrow; scutellum with the dense vestiture finely parted along the middle; elytra more elongate, cuneiform, one-half longer than wide, rather accuminate at tip, the sides slightly arcuate, fully twice as long as the prothorax and a third wider, the humeri well exposed; striæ fine, scarcely more than a fourth as wide as the intervals, the latter finely, asperulately punctate but not very closely; legs rather long, the femoral teeth large and very acute. Length, ♂, 7.0 mm.; width, 3.0 mm.; length of rostrum, ♂, 3.6 mm. New York (Buffalo).

The trapezoidal fifth ventral segment is not notably modified. This species does not seem to have any very close allies; the prothorax is less constricted apically than in the male of *confusor* or *Iowensis*, which also have much shorter beaks; and the body is narrower and more elongate, with much less transverse prothorax than in the male of *Virginicus*.

The three following species are allied more or less closely to *strictus*; they have the male rostrum shorter than in *Virginicus*, but longer and generally more slender than in *confusor* and *Iowensis*, being similar to *auctus* in this respect, but with the prothorax shorter and more transverse and having anteriorly the oblique sides longer and much more sinuate:

B. ordinatus n. sp.—Rather stout (♂) but only moderately convex, almost black throughout, the beak nearly black, strongly, evenly arcuate, moderately stout, with the antennæ inserted exactly at the middle, slender, the first four funicular joints decreasing uniformly and rather rapidly in length; vestiture elongate-squamiform, rather dense throughout, pale tawny and not definitely variegated with darker tint, as usual rather more hair-like on the pronotum, except laterally; prothorax rather small, somewhat less transverse than in the two following, about a third wider than long, the sides in anterior half strongly converging and sinuate, the punctures strong, very dense, the median line very fine; scutellar crust of scales parted medially; elytra with much exposed and prominent humeri,

cuneiform, less than one-half longer than wide, with arcuate sides, the striæ moderately coarse, the intervals with asperulate and rather coarse but separated punctures; fifth ventral but feebly impressed, not much modified; legs moderately long, the peduncle of the anterior femora not very long and rather thick, though longer than in the next species, the teeth large and acute. Length, ♂, 7.2 mm; width, 3.3 mm.; length of rostrum, ♂, 3.3 mm. Tennessee.

Separable from the next two species by the rather stouter and more arcuate beak, having the antennæ inserted exactly at the middle; the beak is gradually feebly tapering and is not sensibly enlarged apically. The length of the rostrum in the male of *confusor* is only about 2.5 mm.

B. Appalachius n. sp.—Not quite so stout as *ordinatus*, but with the prothorax relatively a little larger and more transverse, the colour paler, the beak testaceous, proportionately somewhat longer and more slender and evenly, though somewhat less strongly, arcuate, not enlarged apically, the antennæ (♂) inserted evidently beyond the middle, the first four funicular joints decreasing; vestiture slender but squamiform, dense, pale tawny-yellow, variegated with brown on the elytra, pale brown and less squamiform on the median parts of the prothorax, which is rather more than a third wider than long, densely punctate, with the sides before the middle rapidly converging and strongly sinuate, the apex almost subtubulate; dense scutellar scales parted narrowly along the middle; elytra nearly as in *ordinatus* but with rather less prominent humeri, the legs similarly rather long and with strong, acute dentition, but with the peduncle of the anterior femora notably short and thick, even shorter than in the preceding; fifth ventral (♂) with median half rather abruptly though feebly impressed and clothed with finer, more transverse hairs. Length, ♂, 6.7-6.8 mm.; width, 3.15 mm.; length of rostrum, ♂, 3.4 mm. West Virginia.

The characters relating to the beak, fifth ventral segment and anterior femora will very readily distinguish this species from *ordinatus*. One of the two types has the brown tint on the elytra greatly predominating, and, in fact, almost uniform throughout.

B. parvicollis n. sp.—Form rather stout, rufo-piceous, the legs and beak dark testaceous; vestiture elongate-squamiform, pale tawny and rather dense, more hair-like and sparser in the brownish irregularly transverse maculations of the elytra; beak (♂) slender, evenly and moderately arcuate, not enlarged apically, the antennæ slender, inserted slightly behind

the middle, the second funicular joint shorter than the first, but both proportionately more elongate than in the two preceding species; prothorax small, short, two-fifths to nearly one-half wider than long, the sides rounded medially, subconstricted toward base, strongly, sinuately converging apically; densely punctate; scutellum densely, apparently solidly incrusted with scales; elytra of the same form as in the two preceding, the humeri rather prominent; striæ scarcely more than a fourth as wide as the intervals; fifth ventral (♂) not modified, except that the tip is distinctly sinuate; legs rather long, the peduncle of the anterior femora long and slender, the teeth moderately large, very acute, Length, ♂, 5.7–6.2 mm; width, 2.6–3.0 mm.; length of rostrum, ♂, 3.0–3.5 mm. New Jersey.

This species resembles the New Mexican *strictus* very much but is stouter, and the brown areas of the elytra are more pronounced and clothed more evidently with finer, sparser hair-like scales. *Strictus* is represented by two females.

The two following species belong to the fauna of the western slopes of the Rocky Mountains:

B. Utensis n. sp.—Body stout, rufo-piceous, the legs and beak dark testaceous; vestiture narrowly squamiform, dense, pale brownish-yellow, variegated on the elytra with irregularly transverse dark brown maculation; beak (♂) rather stout, arcuate, straighter basally, not enlarged apically, the antennæ slender, inserted slightly beyond the middle, the second funicular joint only just visibly shorter than the first, much longer than the third; prothorax small, fully a third wider than long, the sides straight and parallel, rounding and becoming strongly oblique but not sinuate in apical half, strongly and closely punctate; scutellum narrow, the dense scaly crust finely parted along the middle; elytra large, cuneiform, with arcuate sides, not one-half longer than wide, the humeri prominent and much exposed; striæ a third or more as wide as the intervals, which are finely, not densely and simply punctate; fifth ventral (♂) feebly impressed and subglabrous medially toward tip, the sides of the impression notably hairy; legs rather short, the femora stout, strongly toothed, the peduncle of the anterior rather short and thick. Length, ♂, 6.5 mm.; width, 3.15 mm.; length of rostrum, ♂, 3.1 mm. Utah (Provo).

Well distinguished by the rather short stout legs and male sexual characters.

B. tubulatus n. sp.—Form still stouter, more nearly black, the legs and beak testaceous; vestiture dense, of the usual form, yellowish-

cinereous, scarcely at all variegated with darker tint on the elytra; beak (♀) rather slender, perfectly filiform throughout, not enlarged apically, evenly and strongly arcuate throughout, the antennæ inserted slightly behind basal third, slender, the first funicular joint distinctly shorter than the next two combined; prothorax very short and transverse, rather more than one-half wider than long, the sides evenly arcuate, gradually and strongly converging and sinuate before the middle, the apex subtubulate, dull in lustre, the punctures strong and extremely dense; scutellum densely squamose, with a tendency to fine parting along the median line; elytra unusually short, not over a third longer than wide, rather obtusely cuneiform, with arcuate sides, the humeri prominent and much exposed; striæ fine, not more than a fourth as wide as the intervals, which are closely but not coarsely punctate; fifth ventral unmodified, broadly ogival; legs long, the peduncle of the anterior femora rather long and moderately slender. Length, ♀, 7.0 mm.; width, 3.4 mm.; length of rostrum, ♀, 5.0 mm. Utah (Stockton).

While belonging to the *strictus* type, this species differs greatly in its stouter form, relatively shorter elytra, more transverse prothorax and in numerous other features.

Mr. Chittenden (Proc. Ent. Soc. Wash., X, p. 22) definitely states as a fact that the form described by me under the name *occidentis*, is the true *uniformis*, and gives to that which I identified as *uniformis*, the name *baculi*. There is some confusion here; my specimens were identified directly from LeConte's material, and, if memory serves, the type in that collection was labelled "Texas," and was of the *baculi* form, more truly fitting the name *uniformis* than the California variegated specimens. A perfectly similar Texas example has been marked "exactly typical" in my cabinet from the date of this actual comparison. However, I discovered about a year after my description of *occidentis* was published, that *uniformis* was originally recorded by LeConte as Californian, and came to the conclusion at that time that my *occidentis* was perhaps that species, or closely allied thereto, but neglected to publish anything concerning it.* Dr. Horn (Pr. Am. Phil. Soc., 1873, p. 459) confused a number of species under the

*There are several allied species in the Pacific coast region of California; one, represented by the male type of *occidentis*, from Sonoma, being smaller, with shorter, stouter beak and especially much shorter joints of the antennal funicle; the other larger and relatively stouter, from Sta. Clara Co., with longer male beak and antennæ, which might be regarded as the true *uniformis*. There is another closely-allied form, labelled "Colorado," in my cabinet, and still another from Siskiyou, Cal.

name *uniformis*, and the length of the male and female rostra is very erroneously stated as far as *baculi* or *uniformis* Lec. (Chit.) are concerned. The interrelationships of the numerous forms or subspecies of *baculi* have not been worked out as yet; it would be an interesting study for those possessing carefully-selected and abundant material; the same remark can be repeated in regard to forms allied to *Victoriensis*, of which there are several.

Tribe PRIONOMERINI.

Piazorrhinus, Sch.

The markings of *pictus* Lec., are very variable, there being sometimes a large elytral blackish spot, and from this to wholly clear, with three irregular dark bands, each ending laterally in a small whitish spot. The following is allied to *pictus*:

P. thoracicus n. sp.—General form, coloration and vestiture as in *pictus* but slightly narrower, the beak still wider, barely longer than wide, broad and flat; eyes but feebly convex, separated on the front by fully half their own width; prothorax relatively much larger and less transverse, nearly half as long and four-fifths as wide as the elytra, the converging sides from base to apex more arcuate; elytra nearly similar in ornamentation but with the striæ much finer. Length, 2.4 mm.; width, 1.3 mm. Florida (Palm Beach).

The eyes in the male of *pictus* are more convex than in the female and very narrowly separated; the conformation in *thoracicus* shows that the type is a female. There is a large patch of loose scaly decumbent pubescence above each eye, the two areas separated along the middle; in *pictus* the front above the eyes is evenly and sparsely clothed throughout. *Pictus* was originally described from a unique taken in Georgia; my examples are from New Jersey and Wisconsin.

Tribe TYCHIINI.

Thysanocnemis, Lec.

There are a considerable number of species in this genus allied to *fraxini* Lec. *Horridula* does not occur in California, the type having been erroneously labelled; it was collected in some numbers by Levette in Indiana, and I have before me three males and one female; the elytra are more elongate than in *fraxini*, and have a V-shaped whitish band at the suture behind apical fourth; the prothorax is relatively smaller, less transverse and less rounded at the sides, and the beak in the female is much shorter; in *fraxini* the female beak is as long as the head and

prothorax; *horridula* is therefore a valid species. There are a number of other forms, notably three from Iowa and Nebraska, in my collection, which seem to represent species different from *fraxini* and *helvola;* they may be briefly outlined as follows:

T. ocularis n. sp.—Form somewhat as in *horridula* but much smaller and not so stout, testaceous in colour throughout, the elytra paler basally but not definitely clouded or banded, the vestiture ochreous, elongate-squamiform, the intervals with single series of longer suberect squamules; beak (♂) short and thick, the eyes, as in *horridula*, very large, convex and coarsely faceted; prothorax only three-fifths as wide as the elytra, one-half wider than long, arcuately narrowed anteriorly; scutellum longer than wide, acute; elytra two-fifths longer than wide, obtusely rounded behind, the humeri widely exposed, the striæ shallow, moderately coarsely punctate; legs with long sparse hairs within, the anterior tibiæ broadly sinuate within in about apical half; fifth ventral not so large as in *horridula* and not impressed; pygidium rather large, semicircular. Length, ♂, 3.2 mm.; width, 1.4 mm. Nebraska.

Readily distinguishable from *horridula* by the vestiture of the legs and the sexual characters, the fifth ventral in that species being very large and feebly impressed medially.

T. punctata n. sp.—Body somewhat similar in form to *ocularis* but still smaller and more slender, pale ochreo-testaceous throughout, the vestiture similar but sparser; beak (♀) slender, arcuate, nearly as in *horridula*, the eyes smaller than in the male and less convex; prothorax notably small, rather more than one-half wider than long, less parallel than in *ocularis*, trapezoidal, with arcuate sides and having a fine entire impunctate median line; scutellum large, longer than wide, acute; elytra more parallel, obtusely rounded behind, with well-exposed humeri, the striæ more impressed and coarser, with very coarse, deep and close-set punctures. Length, ♀, 2.5 mm; width, 1.2 mm. Iowa.

Distinguishable by its small size, slender form, small prothorax, very coarse strial punctures and the fine entire impunctate pronotal line, the latter being broader and only visible behind the middle in *ocularis*.

T. brevis n. sp.—General form somewhat as in *helvola* but shorter and relatively stouter, obscure testaceous throughout, with rather dense short decumbent vestiture of ochreous scale-like hairs, with only a

moderate number of more erect paler scales posteriorly ; beak (♀) rather long, very slender, arcuate ; prothorax shorter, twice as wide as long, parallel, with arcuate sides, arcuately narrowed and subconstricted apically; scutellum as wide as long, ogival ; elytra shorter than in any other species, barely visibly longer than wide, parallel, very obtusely rounded behind, with widely-exposed humeri, a third wider than the prothorax ; alternate intervals of slightly greater convexity posteriorly, but only very faintly so anteriorly, the striæ fine and rather finely punctate. Length, ♀, 2.85 mm.; width, 1.3 mm. Nebraska (West Point).

Resembles *helvola* somewhat but shorter, with much more abbreviated elytra and with the alternate intervals not distinctly more convex throughout the length, but only noticeably so posteriorly and less markedly even there; also with the striæ more finely punctate. In the male of *helvola* the beak appears to be radically different from that of the male of the *horridula* type, where it is thick, being very slender, almost as in the female and with the antennæ less anterior ; but the fifth ventral is rather deeply impressed medially and the pygidium remarkably large and conspicuous.

Loceptes n. gen.

Body somewhat as in *Thysanocnemis*, the beak stout, separated from the head by a very feeble transverse impression, squamose, the antennal scape extending to the eyes, which are moderate in size and coarsely faceted, the funicle as in *Thysanocnemis*, the club but little shorter, with the sutures fine; abdominal sutures straight, deep and distinct, the first very feebly angulate medially ; femora with a moderate acute tooth beneath, the tarsal claws strongly, very acutely toothed internally near the base ; scutellum narrowly elevated, parallel and glabrous.

This genus resembles *Thysanocnemis* in appearance very strongly but may be distinguished readily from it, as well as *Elocetes*, by the characters given. The type is the following :

L. recessus n. sp.—Body somewhat as in *Thysanocnemis graphica*, dark, densely clothed with short and rather broad decumbent pale scales, feebly and irregularly variegated with small blackish areas on the elytra and mingled, on the prothorax and along the elytral intervals, with a few short recurved cinereous setæ ; beak (♂) stout, moderate in length, squamose, the eyes separated on the front by the full width of the beak ; prothorax rather small, wider than long, subparallel and rounded at the sides, constricted apically, strongly, closely but not densely punctate, the scales more hair-like

medially; elytra slightly longer than wide, parallel, obtusely rounded at tip, the humeri greatly exposed at base; striæ feebly impressed and coarsely, deeply punctate; legs short, dark testaceous, the femora feebly banded with sparse whitish slender scales just beyond the middle. Length, 2.5 mm; width, 1.2 mm. Oklahoma (Atoka), Wickham.

In all the species of *Thysanocnemis* and *Plocetes* the scutellum is triangular, flat and densely squamose; it is here elevated, narrower and coarsely sculptured but virtually glabrous.

Hamaba n. gen.

The species of this genus have the general structure and facies of *Thysanocnemis*, but are minute in size and have the antennal funicle 6-jointed, though with the basal joint similarly large and stout; the club shorter, being about as long as the first five funicular joints, 3-jointed, with the sutures all distinct. The scutellum is flat, densely squamose and triangular, the tarsal claws deeply and widely cleft and the femora unarmed. The following is the type:

H. Bahamensis n. sp.—Rather stout, dark, the humeri not paler; legs and beak more or less pale flavo-testaceous; beak (♀) not longer than the prothorax, rather stout, tapering beyond the point of antennal insertion, the latter at about the middle; eyes large, convex, coarsely faceted, narrowly separated on the front; prothorax small, wider than long, parallel, the sides straight, rounding and converging anteriorly, strongly and densely punctured, the scales whitish at the sides, along the median line and in a tranverse medial fascia; scutellum small, flat, acutely pointed; elytra slightly longer than wide, parallel, obtusely rounded at apex, the humeri well exposed at base, the striæ not much impressed, strongly, closely punctate, the pale scales forming a wide loose irregular subbasal fascia, produced on the suture toward the scutellum, and, at each side, enclosing a darker spot, also a transverse, strongly trisinuate fascia behind the middle, the larger scales along the intervals, on the areas of paler vestiture, narrow and elongate. Length, 1.2–1.5 mm.; width, 0.5–0.65 mm. Bahama Islands (Eleuthera and Egg Island), Wickham.

The following is allied rather closely but appears to be distinct:

H. dispersa n. sp.—Similar in general coloration and structure to the preceding but relatively stouter, the elytra only just visibly longer than wide, blackish, the much-exposed humeri rufescent, the beak rather longer and very much stouter, with the antennæ inserted much beyond the

middle; prothorax still smaller and much less transverse, the small slender sparse pale scales whitish at the sides and along the median line; elytra with coarser, deeper striæ, the fine pale sparse scales forming a large solid subbasal blotch, and, behind the middle, a much straighter narrow fascia, the dispersed scales of the intervals large, broad and much more conspicuous. Length, 1.4 mm.; width, 0.65 mm. Bahama Islands (Eleuthera).

It does not seem at all probable that the type of *dispersa* can be the male of *Bahamensis;* the beak does not seem to differ much sexually in my ample series of the latter.

Tychius Sch.

The Californian species allied to *lineellus* Lec., are rather numerous and well defined; those in my cabinet at present may be distinguished as follows:

Elytral intervals clothed alternately with cinereous-white and pale brown slender decumbent squamiform hairs, without erect setæ of any kind; body stouter than in any other allied species, the elytra but little longer than wide, with notably coarse striæ; prothorax with the strong apical constriction and apical tabulation characterizing all the other species of this group; beak (♀) only moderately slender, not longer than the head and prothorax. Length, ♀, 4.5–4.7 mm.; width, 1.8–2.1 mm. California (exact locality unrecorded) . . . *lineellus* Lec.

Elytral intervals not alternately paler and darker in vestiture; body less obese as a rule 2

2—Elytral striæ as coarse and deep as in *lineellus*, not at all obliterated by the vestiture, which is hair-like, depressed, only moderately dense and cinereous throughout, denser on the sutural interval throughout and on the alternate intervals posteriorly, the umbones rather more prominent than in *lineellus* and the body more elongate in form, the elytra much longer than wide; beak (♀) a little longer and more slender, nearly straight, with the antennæ inserted at the middle; shorter and stouter (♂), with the antennæ at apical two-fifths. Length, ♂, ♀, 3.7–4.5 mm.; width, 1.6–1.9 mm. California (without more definite statement of locality) . . . . . *tacitus* n. sp.

Elytral striæ less coarse, partially concealed by the vestiture 3

3—Body black throughout 4

Body black, the elytra testaceous 6

4—Legs rufescent distally, the antennæ and about apical half of the beak testaceous, the antennal club infuscate; decumbent vestiture moderately

dense, cinereous, nearly even throughout and composed of very slender cinereous parallel scales; beak (♀) rather short and stout, not longer than the prothorax, the latter slightly wider than long, rounded at the sides, strongly and densely punctate; elytra about a fifth longer than wide, the umbones feeble, the humeri moderately exposed basally, rounded. Length, ♀, 3.7 mm.; width, 1.7 mm. Siskiyou Co. ..... *hesperis* n. sp.

Legs feebly rufescent toward and including the tarsi, the beak black or piceous-black almost throughout; antennæ testaceous, with the club dark 5

5—Form stouter than in *hesperis*, as obese as in *lineellus* but much smaller in size, with shorter prothorax, more ovally-rounded elytral apex, obsolete umbones and less exposed humeri; vestiture nearly as in *hesperis*, uniform throughout, pale cinereous, decidedly dense only on the sutural interval and, as usual, on the scutellum; beak (♀) rather longer than the prothorax, black, with the extreme tip rufescent; prothorax wider than long, parallel, with moderately arcuate sides, convex as usual, with the separate and evenly-distributed scales streaming radially outward from a small spot near the middle of each side, and thence pointing obliquely backward to the median line throughout; elytra only slightly longer than wide. Length, ♀, 3.8 mm; width, 1.8 mm. San Diego ..... *radians* n. sp.

Form less stout but with much denser vestiture than in any other of this group, the elytral striæ almost obliterated; beak (♂) almost as long as in the female, distinctly longer than the prothorax, not at all pale at tip; prothorax almost as long as wide, the vestiture much denser and more squamiform than in any other of the group, without trace of the lateral abnormality of the preceding; elytra distinctly longer than wide, the vestiture dense and whitish along the suture and more feebly on the fifth and seventh intervals at base and near the feeble umbones, elsewhere yellowish; antennæ unusually long and slender. Length, ♂, ♀, 4.0–4.1 mm.; width, 1.8–1.9 mm. San Francisco Co., Mr. Soltau ..... *dilectus* n. sp.

6—Body unusually narrow, elongate-oval, convex; scales very slender, sparse throughout, not very dense even along the suture; beak (♀) black throughout, slender, slightly longer than the prothorax, the latter wider than long, narrowing anteriorly from only a little before the middle, closely and strongly punctate, the vestiture fine; elytra two-fifths longer than wide, narrowing apically from only slightly

behind the middle, evenly oval posteriorly, the intervals coarsely, rugosely punctured; fifth ventral with a rounded feeble impression medially. Length, ♀, 3.7 mm.; width, 1.5 mm. Near San Francisco, Mr. Dunn..... .....*probus* n. sp.

The *sordidus* type differs greatly from the preceding in the form of the prothorax, obese body and form of the beak in the female, this being much stouter, differing but little from the male beak and having the antennæ inserted far beyond the middle.

T. nimius n. sp.—Larger and stouter than *sordidus*, the dense vestiture of elongate, decumbent and strongly strigose scales similar, not brownish however but cinereous in colour; beak (♂) longer, being as long as the prothorax; punctures of the latter not so densely or polygonally crowded as in *sordidus*, the converging sides less rounded; scutellum larger; elytra nearly similar but broader; pygidium of the male very much larger. Length, ♂, 4.8 mm.; width, 2.4 mm. Iowa.

Much larger and stouter than *sordidus* and with a notably greater development of the pygidium. In all the species of this *sordidus* group, the slender strigose scales of the general surface become very different on and near the scutellum, being there broad, pointed and minutely, densely pubescent or plumulose.

T. Texanus n. sp.—Form more obese than in *sordidus*, the vestiture differing, not only in its cinereous colour, but in being less dense, the scales of the elytra shorter and parallel, not more or less tapering toward their apices as in *sordidus;* scutellum larger, the humeri more broadly exposed basally, though very obliquely rounded; legs deep black, not dark testaceous as they are in *sordidus*, the tibiæ more scaly and less hairy; beak (♀) stout, tapering and feebly arcuate throughout, rather longer than the prothorax. Length, ♀, 4.0 mm.; width, 2.1 mm. Texas (Haw Creek).

Rather smaller and decidedly stouter than *sordidus* and differing in the sparser and shorter vestiture of different colour.

T. Carolinæ n. sp.—Nearly similar to *sordidus* but with the prothorax notably smaller, the sides less rounded and more rapidly converging from the base; vestiture similar, dense, pale ochreous, whiter and more broadly squamiform beneath; scutellum broader, less densely incrusted with scales; elytra relatively more elongate, a fourth longer than wide, the vestiture uniform, not so evidently mingled with isolated glittering scales; dense

hair-like scales of the tibiæ coarser. Length, ♀, 4.0 mm.; width, 2.0 mm. North Carolina (Southern Pines), Manee.

It is of course quite possible that these may be considered subspecies of *sordidus*, but the structural characters involved seem to give them higher value.

The following species is allied to *tectus* Lec., but appears to be amply distinct :

T. languidus n. sp.—Small and slender, convex, extremely densely clothed with rather broad parallel cinereous-white scales, which, on the elytra, virtually conceal the striæ ; beak, antennæ and legs testaceous, the first (♂) rather arcuate, thick and nearly as long as the prothorax, the latter narrow, nearly as long as wide, subparallel basally, the sides obliquely converging anteriorly from rather behind the middle ; elytra almost one-half longer than wide, much wider than the prothorax, hemi-elliptical, the humeri well exposed and rapidly oblique at base ; legs short ; pygidium (♂) well developed. Length, ♂, 2.4 mm.; width, 0.9 mm. Colorado.

Differs from the male of *tectus* in its much smaller size, narrower form, white and not ochreous vestiture, which is composed of broader and even denser scales, relatively much narrower prothorax, with less arcuate sides, and notably shorter and more slender legs.

Paratychius n. subgen.

The type of this subgenus of the genus *Tychius*, is *Tychius prolixus* Csy. The body is moderately large in size, elongate, with the thick squamose beak rapidly tapering beyond the point of antennal insertion, which is far beyond the middle and with the antennal funicle 6-jointed. The tarsi are large, stout and densely squamose. The following is another species of the subgenus :

T. (Paratychius) imbricatus n. sp.—Larger than *prolixus*, elongate, convex, black, the apical smooth part of the beak rufous ; vestiture of the prothorax dense, consisting of narrow lanceolate strigose brown scales, giving place along the median line and on the flanks to broad rounded overlapping whitish scales, of which a few are also scattered among the slender brown squamules, the elytra very densely clothed throughout with large rounded or subquadrate overlapping scales, brown in colour, broadly whitish sublaterally, two rows to each interval, with a single series of slender, closely recurved brown lanceolate squamules along the middle of each interval and a slender hair-like white scale from each strial puncture ;

prothorax about as long as wide, narrower than the elytra, parallel, arcuately narrowed anteriorly, the apex only extremely briefly subtubulate; elytra three-fifths longer than wide, the humeri exposed, laterally prominent and rounded; apex obtuse; striæ represented by fine clefts separating the indument. Length, 3.75 mm.; width, 1.4 mm. California (San Diego).

The large scales are of peculiar structure, being thick and apparently excessively minutely and densely puberulent, the hairs so disposed as to give sometimes a minutely and extremely closely strigilate effect.

Microtychius, n. subgen.

In this subgenus of *Tychius*, the structure throughout is nearly as in the preceding, including the 6-jointed antennal funicle, but the body is very much smaller, generally minute in size and the tarsi are small and slender, this being the chief distinctive structural feature. The femora are not denticulate beneath. The type is *Tychius setosus* Lec. A considerable number of new forms have come to light since my revision of them (Ann. N. Y. Acad. Sci., VI, 1892, p. 420—under subgenus IV), and I have arranged these new species in the form of a table as follows:

Species of the *setosus* and *subfasciatus* type, the elytra, except in *erraticus*, having patches of large pale scales, separated by subglabrous areas having only decumbent recurved stout hairs sparsely placed, the elytra, especially posteriorly, bristling with very stiff erect pale spines, generally lanceolate, flattened and frequently with their edges minutely setulose or serrulate.....2

Species of the *variegatus*, *simplex*, *sulcatulus* type, without erect bristles. 11

2—Elytra without trace of large rounded scales at any point. Body pale testaceo-ferruginous in colour throughout, rather shining; basal part of the beak and front densely punctate and clothed sparsely with short fine hairs, the occiput scaly, the dorsal surface of the beak with a median glabrous line basally; prothorax nearly as long as wide, slightly narrowed apically, densely, not very coarsely punctate, each puncture with a scale-like decumbent hair, without large scales; elytra much wider than the prothorax, with unimpressed series of coarse punctures, each bearing a slender decumbent pale scale-like hair, with others similar, sparsely placed on the intervals, a single series of moderate suberect recurved spiniform scales also along each of the latter; under surface with broad white scales. Length, 1.3 mm.; width, 0.75 mm. Texas (Alpine), Wickham.....*erraticus* n. sp.

Elytra and pronotum with patches of large rounded or oval scales.....3

3—Prothorax relatively small in size in both sexes, but little more than half as wide as the elytra, very coarsely, closely and polygonally punctate 4

Prothorax relatively larger, about two-thirds as wide as the elytra or very nearly 7

4.—Prothorax shorter, decidedly transverse, gradually broadening or inflated basally and widest at or very near the base. Body very small and moderately narrow, the elytra parallel; head and beak, except apically, clothed densely with large rounded scales, the antennal club small, slender and without sutures, evenly clothed with closely decumbent pubescence; prothorax much narrower than the elytra, with a dense crust of large rounded pale scales, replaced by slender brown scales at each side of the middle basally; elytra obtusely rounded at apex, two-fifths longer than wide, blackish, very deeply, moderately coarsely sulcate, the humeri well exposed and subtransverse basally; large whitish scales denser laterally and in a rounded ring before the middle; erect setæ long and straight, unusually slender and only moderately numerous. Length, 1.2 mm.; width, 0.6 mm. Texas (Alpine), Wickham ..... *puellus*, n. sp.

Prothorax parallel and broadly rounded at the sides as usual, narrowed and constricted at apex 5

5—Elytra unusually abbreviated, about a third longer than wide, the erect setæ less numerous and shorter than usual. Beak with a mixture of short and lanceolate and broad scales laterally; the scales broad, dense and uniform on the head and median parts of the beak; prothorax slightly shorter than wide, with a mixture of large, rounded and whitish and slender brown lanceolate scales, the former predominating medially and laterally; elytra parallel, obtusely rounded at apex, with rather widely exposed transverse humeri, the striæ unusually fine, moderately deep, the large pale scales dense along the suture and rather close broadly before the middle; dense scales of the under surface large and white, uniform. Length, 1.05 mm.; width, 0.48 mm. Southern California (without further indication of locality) ..... *atomus* n. sp.

Elytra less abbreviated, two-fifths to nearly one-half longer than wide, the erect setæ long and very numerous, conspicuous 6

6—Elytra about two-fifths longer than wide; very small in size, piceo-rufous, the erect setæ moderately long, finely pointed, not very broad,

the sulci deep and moderately coarse, the large scales rather scattered, but, in more perfect examples, forming a large rounded blotch very slightly before the middle. Length, 1.0–1.2 mm.; width, 0.4–0.55 mm. Arizona and California (Yuma)..... *setosus* Lec.

Elytra about one-half longer than wide, the pale erect setæ still more numerous and very conspicuous, long, flattened, squamiform, gradually very sharply pointed or lanceolate, the sulci more concealed by the large, more or less pale scales, which have no very definite pattern of arrangement; pronotal punctures moderately coarse, dense; large scales of the femora very broad in form; eyes moderately coarsely faceted. Length, 1.3 mm.; width, 0.6 mm. Arizona (Tuçson)..... *echinus* n. sp.

Elytra almost similar in form, though not quite so elongate, the setæ long, white, very numerous and conspicuous, but differing very markedly from those of *echinus* in being more slender, parallel-sided, truncate at their apices and with their side-margins more strongly microserrulate, the large pale scales sparser, irregularly more numerous suturally, tending to form a more rounded aggregation submedially as in many other allied species; pronotal punctures very coarse, much larger even than in *echinus*, the eyes more coarsely faceted and the large scales of the femora narrower and more elongate-oval. Length, 1.25 mm.; width, 0.5 mm. Arizona (Tuçson). *hystrix* n. sp.

7—Upper surface with large, irregularly distributed pale scales as in the three preceding..... 8

Upper surface without an admixture of large pale scales..... 10

8—Pronotal punctures rather large and deep but less crowded than usual, preserving their circular outline; elytral sulci very coarse, deep and conspicuous. Body somewhat as in *subfasciatus* but shorter, the pale scales of the elytra less numerous, narrower and more elongate, more closely aggregated near the humeri and umbones and in a large annulus, which is more evidently before the middle than the large spot in *subfasciatus*, the erect setæ long and rather slender, not so short and stout as in that species; humeri well exposed at base. Length, 1.4–1.5 mm.; width, 0.6–0.65 mm. Arizona (near Benson), Dunn..... *vernilis* n. sp.

Pronotal punctures coarse, more crowded and polygonally distorted than in *vernilis*, the elytral sulci much finer and shallower..... 9

9—Body unusually stout in form, piceo-rufous, the large pale scales dense almost throughout on the prothorax, large and somewhat elongate, isolated and rather close but subuniform in distribution on the elytra, not aggregated into a large central spot on the latter, though smaller and dense along the suture; erect setæ rather long but only moderately numerous; prothorax two-thirds as wide as the elytra, the humeri moderately exposed at base; antennal club dusky, rather larger than usual, as long as the preceding four joints combined, gradually and very acutely pointed. Length, 1.4 mm.; width, 0.65 mm. Arizona..... *fatuus* n. sp.

Body less stout, convex, similar in colour but with the vestiture wholly cinereous, the pronotum densely clothed with large scales, the shorter and more slender ones not only cinereous, and not as usual dark, but broader than usual; large oval scales of the elytra isolated, denser near the humeri, also closely imbricated and smaller in a single line at each side of the suture, the small slender scales cinereous, broader than usual, the erect setæ not so long or so numerous as in the two preceding; prothorax nearly as long as wide, parallel, with rounded sides, constricted at apex, three-fifths as wide as the elytra; antennal club smaller than in *fatuus*, more slender, pale in colour. Length, 1.35 mm.; width, 0.58 mm. Arizona (Tucson).... *fraterculus* n. sp.

10—Form stout, convex, deep black in colour throughout, the beak distally and legs slightly rufescent; vestiture cinereous throughout, consisting of short and narrow, uniformly distributed and not very close-set scales, which are generally not very closely decumbent, and, along the middle of each strial interval, becoming nearly erect, especially behind, though notably short; beak moderate in length, much more and evenly arcuate, the eyes lenticular but larger than usual, elevated above the general surface at their hind margin and with the facets gradually coarser posteriorly; antennal club moderate; prothorax large, shorter than wide, gradually narrowing anteriorly from about the middle, deeply, closely, punctate; elytra about a fourth longer than wide, rounding behind and obtuse from near the middle, the humeri rounding and moderately exposed; striæ fine and shallow; under surface densely clothed with large whitish scales. Length, 1.45 mm.; width, 0.6 mm. Mexico (Rio Balsas, Guerrero), Wickham..... *grypus* n. sp.

11—Species of the *sulcatulus* type, the dorsal surface with large rounded pale to brownish scales, intermingled with the slender hair-like scales.

Body much smaller than in *sulcatulus*, the elytral sulci much less coarse and not so deep, piceous-brown in colour; beak well developed, densely squamose except apically, evidently arcuate; prothorax coarsely, closely punctate, not so long as wide, three-fifths as wide as the elytra, parallel, with rounded sides, constricted and narrowed apically, the large pale scales dense, nearly wanting at each side of the middle basally; elytra two-fifths longer than wide, feebly, arcuately narrowing behind the middle, the apex obtuse; humeri rounded, moderately exposed; pale rounded scales more abundant sublaterally, in a large, feebly marked, subcentral annulus or solid spot, and along the suture, where they are variegated with brown; narrow white scales of the strial punctures more evident than in *sulcatulus*. Length, 1.25–1.3 mm.; width, 0.5–0.55 mm. Utah (St. George), Wickham.....*dulcis* n. sp.

Species of the *simplex* type, having virtually no large rounded scales on the dorsal surface.....12

12—Elytral striæ very coarse.....13

Elytral striæ fine and feeble.....14

13—Form stout, notably convex, piceo-rufous, the prothorax darker; beak (♀) rather long, much longer than the head and prothorax, clothed basally, as well as the head, densely with rather wide decumbent brown strigose scales, with a few similar white ones interspersed; antennal club small and slender; prothorax almost as long as wide, parallel and nearly straight at the sides, narrowing and constricted apically, convex, coarsely, deeply cribrate, clothed with narrow, dark brown scales, having a few large oval ones intermingled laterally and along the base; elytra fully two-fifths wider than the prothorax, a fourth longer than wide, parallel, obliquely narrowing in apical third, the apex broadly obtuse; humeri rounded; striæ coarse and very coarsely punctate, rather deep suturally, becoming wholly unimpressed and consisting simply of series of large punctures laterally, very much coarser than in *simplex*, the slender scales from the strial punctures much finer; slender brown scales predominating but sparse, with some a little wider and whitish at the scutellum and also on the fifth interval toward the umbo. Length, 1.68 mm.; width, 0.72 mm. Arizona (near Benson), Dunn.....*imbellis* n. sp.

Form nearly similar but smaller in size and nearly black, the legs and beak distally rufescent; head and basal parts of beak densely clothed

with dirty white, stout and strigose scales, the antennal club rather small, with distinct sutures; prothorax relatively larger than in *imbellis*, shorter than wide, narrowing anteriorly though scarcely constricted at apex, convex, coarsely, densely cribrate and with small whitish strigose scales throughout; elytra less than a fourth longer than wide, a third wider than the prothorax, evenly rounded in apical two-fifths, the sulci very coarse, deep and coarsely, deeply punctate throughout, the narrow cinereous scales subevenly distributed throughout, isolated, forming even series on the intervals, becoming recurved and not closely decumbent apically; under surface with the usual crust of large whitish scales. Length, 1.58 mm.; width, 0.62 mm. Arizona (Sta. Rita Mts.), Wickham .....*porcatus* n. sp.

Form nearly as in *imbellis* but much more abbreviated, blackish-brown; antennal club small; prothorax narrow, nearly as long as wide, strongly constricted at apex, very densely cribrate and clothed densely with closely decumbent but curved strigose scales, intermingled with a good many larger oval scales laterally and basally; elytra shorter than in any other species, only just visibly longer than wide, rounded in apical half, the scales brown, parallel, strigose, close-set in single lines on the intervals but very inconspicuous, intermingled with a few widely scattered white scales, which are however not rounded but parallel and strigose like the others; sulci very coarse and deep, strongly punctured, the intervals convex. Length, 1.65 mm.; width, 0.62 mm. Texas (Del Rio), Wickham. *curtipennis* n. sp.

14—Body moderately stout, convex, piceous-brown; beak well developed, clothed densely above basally with narrow strigose whitish scales, which, on the head, become sparser, brown and hair-like; scape not attaining the base, the club moderate, as long as the four preceding joints; eyes lenticular but larger than usual and slightly elevated posteriorly, the facets, however, not becoming noticeable coarser; prothorax convex, not quite as long as wide, the sides parallel and rounded basally, rounding and strongly converging apically from near the middle, the punctures not very coarse, deep, polygonally crowded, each with a narrow strigose brown scale; elytra nearly a third longer than wide, one-half wider than the prothorax, obtuse behind, plentifully clothed with narrow scales which are brown and whitish intermingled, with a patch of oval whitish scales of different character at

the scutellum. Length, 1.5 mm.; width, 0.6 mm. Mexico (Saltillo and Monterey), Wickham.....*errans* n. sp.

The eyes in many of the Mexican species, and particularly in *grypus*, are somewhat larger than in the American, and differ notably in having their surface raised above the general surface posteriorly and in having their facets gradually smaller anteriorly; there seems to be no other very marked structural difference however. *Sibinioides*, *hispidulus*, *transversus*, *mica* and *inermis* are more or less isolated species, not closely related to anything described above. *Simplex*, from El Paso, Texas, is represented at Tucson, Arizona, by a form which is almost identical but materially smaller in size and with the pronotal punctures less densely crowded, each bearing a slender strigose scale, which is narrower than in the more typical form and more isolated.*

Tribe CIONINI.

Miarus Sch.

The species of this tribe are very abundant in Europe; but thus far the only genera recognized as occurring in America are represented by single species, which are importations in *Nanophyes*, *Cionus* and *Gymnetron*, but indigenous in *Miarus*. *Gymnetron teter* Fab., as written by LeConte, or *tetrum*, as given in the recent European catalogue, is abundant and rather widely diffused in our eastern States; it varies enormously in size. In contradistinction to the other genera of the group, *Miarus* is well represented in America, and our species, as far as known to me, may be described as follows:

Prothorax with the erect sparse hairs extremely long. bristling and conspicuous. Body stout, oblong, convex, deep black throughout, the sparse vestiture hairy and cinereous; beak slender, slightly arcuate, similar in the sexes though a little shorter in the male, longer than the head and prothorax in the female; eyes widely separated; prothorax nearly as wide as the elytra, very strongly narrowed from base to apex, with

*The species described by Mr. Schæffer (Journ. N. Y. Ent. Soc., 1908, p. 219) under the name *albidus*, evidently belongs to the *sulcatulus-dulcis* type, but is much larger than *dulcis*, and with a different elytral pattern of large scales. Of *T. suturalis* Schf., (l.c., p. 218), I have a small specimen from Alpine, Texas; it would appear to be rather a *Sibinia* than a *Tychius*, though these two genera are not definable very well in the American fauna. It has the outline of the European *Sibinia* and of our own *S. fulva*, and should undoubtedly be associated with the latter species wheresoever they may ultimately be assigned.

arcuate sides, the punctures coarse and separated ; scutellum as usual with an elevated median part, which is clothed densely with short decumbent hair-like scales ; elytra barely a fifth longer than wide, very broadly, obtusely rounded behind, the striæ rather coarse, moderately deep, with coarse and separated punctures, the intervals flat, finely, sparsely punctate and with long erect hairs ; under surface with erect sparse cinereous hairs, shorter, denser and more decumbent on the mesosternal side-pieces. Length, 2.4–2.8 mm.; width, 1.3–1.55 mm. Mexico (near Colonia Garcia, Sierra Madre Mts., Chihuahua ; elev. 7,300 feet), C. H. T. Townsend. *erebus* n. sp.

Prothorax with the erect hairs short, bristling but not very conspicuous . 2

2—Surface lustre feebly bronzed ; sides of the prothorax as usual converging from base to apex but only feebly arcuate. Body ovate, convex, black, clothed with grayish erect hairs ; beak long ; pronotum densely and finely punctate ; elytra shining, with deep and slightly punctured striæ, the intervals nearly flat, rugose and punctulate. Length, 2.0 mm. Texas..... *hispidulus* Lec.

Surface lustre not at all bronzed, the body throughout deep black as usual, the sides of the prothorax converging from base to apex but always strongly arcuate, except in *nanus*.....3

3—Prothorax strongly transverse, but little less than twice as wide as long ; erect sparse hairs almost pure white, forming single series on the elytral intervals. Body short, stout, oblong-oval, convex ; beak slender, arcuate, moderately long ; prothorax slightly though distinctly narrower than the elytra, closely, moderately coarsely punctate, the sparse white hairs much shorter than those of the elytra and subdecumbent ; scutellum densely albido-squamulose ; elytra but very little longer than wide, broadly, obtusely rounded behind, the sides parallel and arcuate ; striæ rather coarse, deep, strongly and closely but only moderately coarsely punctate, the intervals shining, feebly and sparsely punctato-rugose, the erect white hairs stiff and very conspicuous ; under surface densely albido-squamose laterally, except on the abdomen, the scales deeply multifurcate. Length, 1.7–2.0 mm.; width, 1.0–1.25 mm. Kansas..... *consuetus* n. sp.

Prothorax much less transverse, notably less than twice as wide as long, the sparse erect hairs cinereous, less conspicuous on the elytra than in *consuetus* 4

4—Form stout, oval, convex, deep black, without metallic lustre of any kind, the hairs cinereous-gray, short but erect and abundant on the

pronotum, moderately long, sparser, bristling and a little paler on the elytra, interlacing across the suture posteriorly; sparse scales at the sides of the body beneath plumose; prothorax two-thirds wider than long, the sides very strongly converging from base to apex and notably arcuate, the punctures rather coarse, very dense; elytra oblong-oval, slightly longer than wide, much wider than the prothorax, the striæ not very coarse and rather shallow, distinctly but not coarsely punctured, the intervals wide, flat, feebly punctato-rugulose. Length, 2.3 mm.; width, 1.4 mm. Massachusetts .....*puritanus* n. sp.

Form narrower, more elongate-oval, the prothorax less evidently narrower than the elytra, shorter, nearly three-fourths wider than long, the sides strongly converging throughout and only feebly arcuate, the punctures coarse but rather less crowded, the erect short hairs less abundant; elytra nearly similar but narrower and with the sparse erect hairs longer, more fulvo-cinereous and less abundant, the striæ much deeper and strongly, though not coarsely, punctate, the intervals narrower, less flat, shining, very finely and rather sparsely punctulate; vestiture at the sides of the body beneath nearly similar. Length, 1.8 mm; width, 1.1 mm. Massachusetts (the locality different from that of *puritanus* but unrecorded).....*nanus* n. sp.

Form much more elongate-oval than in any other here recorded, convex, black; beak long and slender, feebly arcuate, much longer than the head and prothorax, with the antennæ inserted but little beyond basal third; prothorax scarcely one-half wider than long, the converging sides strongly arcuate; punctures moderately small, dense, the vestiture abundant, dusky-cinereous, short and somewhat inclined; elytra elongate-oval, nearly a fifth wider than the prothorax, a fifth or sixth longer than wide, the humeral callus moderately prominent, the striæ unusually fine, moderately deep, finely, not closely punctate, the intervals flat, between three and four times as wide as the striæ, shining, sparsely punctate and subrugulose, the erect sparse hairs very stiff but shorter than usual and more dusky cinereous; sides of the sterna densely squamose, the scales closely decumbent as usual, brownish-cinereous and finely, closely plumulose; pygidium large, vertical, deeply punctate. Length, 2.35 mm; width, 1.2 mm. Illinois.....*Illini* n. sp.

The name *Miarus hispidulus* has been used by Reitter, according to the recent European catalogue, but is preoccupied by LeConte for the above American species.

NOTES ON THE LARVA OF *THYMELICUS GARITA* REAKIRT.

BY ARTHUR GIBSON, OTTAWA, ONT.

A female of this interesting little butterfly was received from Mr. T. N. Willing, of Regina, Sask. The specimen was captured on July 10th, 1901, and was enclosed in an envelope. It arrived at Ottawa on July 16th, and in the envelope was found one egg, which hatched on the following day, the 17th.

The egg when received was of a creamy-white colour and reticulated; in shape hemispherical; head of larva plainly distinguishable.

The following notes were taken by me on the larva:

Stage I.—Length when hatched, 1.75 mm., at first creamy-white; after feeding the dorsum is a pale sea-green, the venter a pale whitish-green. Head large, round, flat in front, very slightly bilobed; minutely pitted; mouth-parts reddish; ocelli small and black; down the front of the face there is a triangular blackish irregular indefinite band, somewhat like those of *Smerinthus*, but not nearly so distinct. Body cylindrical, tapering slightly towards anal extremity, which is paler than the rest of the body. A faint whitish subdorsal band is present, also an upper lateral, and another between this and the stigmatal fold; this latter afterwards becomes indistinct. Body bears short, stout, blunt bristles, which turn over somewhat at the tip. All the feet are concolorous with venter.

On July 23rd there were noticed a thin whitish medio-dorsal line, and also six distinct whitish bands of equal width on either side of the medio-dorsal line. The spiracles are small and brownish; at this time the body is plump, somewhat arched, falling off rapidly at anal extremity; the segments are transversely wrinkled. The anal flap bears some whitish bristles of varying lengths.

At the above date the larva stopped feeding, and on the 24th the front segments were swollen. On the morning of the 25th it passed the first moult.

Stage II.—Length, 3.4 mm. Head round in outline, flat in front, pale greenish-white; a little larger than segment 2; slight furrow down centre of face to clypeus; hairs, or bristles, on face numerous, short and black; mouth-parts pale brownish; ocelli small and black. Body cylindrical, plump, tapering to anal extremity. The dorsum falls off abruptly from segment 9 to anal end, giving an arched appearance to the body. Whole body green, almost same shade as grass upon which it is feeding,

viz.: Kentucky Blue Grass (*Poa pratensis* L.), the venter being paler than the dorsum. Bristles on body black and very short. Anal and 2nd segments paler than rest of the body. Segments transversely wrinkled as before, but not so conspicuously. The medio-dorsal line and the six lateral stripes are the same as in the end of last stage, all white. There are in all seven stripes on either side of the medio-dorsal line, including the stigmatal stripe. The space between the medio-dorsal line and the first stripe on either side is wider than the space between the other stripes, and unless examined with a lens this space appears as a wide dorsal band, on account of the medio-dorsal line being inconspicuous, and the white of the stripes on sides giving a whitish appearance to the whole larva. Stigmatal band very wide, with a yellowish tinge. Thoracic feet semi-translucent; prolegs concolorous with venter.

The second moult was passed on August 2nd.

Stage III.—Length, 5.5 mm. The larva in this stage is much the same as it was in Stage II. Head a little paler green than body; ocelli small, black, on a whitish prominence; mouth-parts yellowish; whole surface of head has a roughened appearance and bears minute short black bristles; around the mouth-parts are some slender pale hairs. The stripes on the body on either side of the medio-dorsal line are not so regular in width as in last stage. The 1st and 2nd from medio-dorsal line are much wider than the 3rd, 4th and 5th, (the 2nd being wider than the 1st,) and appear as bands. The 6th and 7th are wide, of about equal width, but the 6th is rather inconspicuous, the 7th, the most conspicuous of all, being of a bright whitish colour. The others are more or less tinged with yellow. The sixth stripe is the stigmatal stripe. Spiracles small, yellowish, ringed with brown and situated in the centre of the 6th, or stigmatal stripe. On segment 12 the spiracle is in the centre of the 5th stripe; on segment 2 on lower edge of the 6th, or stigmatal stripe. The whole body bears short black bristles, as on head. All the feet concolorous with venter; lower half of thoracic feet semi-translucent.

On August 14th the larva moulted for the third time.

Stage IV.—Length, 7 mm. The larva in this stage is about the same as it was in the two previous stages. Head, 1 mm. wide, rounded, uniformly punctate, slightly larger than segment 2, and paler green than skin of body; short bristles as before. The body is shaped as before, the medio-dorsal line and the markings on either side are the same as in last stage, the 2nd stripe being much wider than the 1st, 3rd, 4th and 5th, and

nearly as wide as the stigmatal and 7th band. Spiracles yellowish, ringed with brown. The 7th band is the most conspicuous mark on the body, being distinctly whitish in colour, with a bluish tint. The extremity of the anal flap has a few pale blunt bristles, which protrude straight outwards. All the feet concolorous with the venter, as before.

Unfortunately, on Sept. 13th the larva died. At this date it was only a little longer than the above measurement, viz., 8 mm. long. In view of this it would seem possible that the larva hibernates in this stage. During the above stages it was fed only on Kentucky Blue Grass, (*Poa pratensis* L.)

I have delayed the publication of the above notes, hoping that further material would turn up for study, but this I have not been able to obtain.

SOME HETEROPTERA FROM VIRGINIA AND NORTH CAROLINA.

BY J. R. DE LA TORRE BUENO AND G. P. ENGELHARDT.

In July and August of this year the junior author made a collecting trip in Virginia and North Carolina, and he took with other things a small number of Heteroptera, among them some of great interest.

In general, the little collection is striking on account of the number of characteristically Southern forms in it. These number 14, out of a total of 39 species taken. The majority, as may be seen, is made up of species familar to us in this region.

Pentatomidæ.

Mormidea lugens Fab.

Virginia Beach, Va., July 20, two specimens; Linville Falls, N. C., Aug. 15, one specimen. This is common everywhere.

Solubea pugnax Fab.

Wilkesboro, N. C., Aug. 9, one specimen; Virginia Beach, Va., July 20, one specimen. Fairly common in meadows and open woods.

A species sometimes found about New York. Previously recorded from North Carolina, but seemingly not from Virginia.

Euschistus ictericus Linn.

Elizabeth City, North Carolina, July 24. A specimen with very prominent pronotal angles. This is presumably a Northern form, but has already been recorded from North Carolina. A number were observed along the swampy margin of a bayou running through a cypress swamp, where they were resting on the leaves of water-lilies and other plants, some mating.

E. servus Say.

Dismal Swamp, Va., July 22, one specimen. Of interest mainly on account of the locality. Taken sweeping along the canal.

E. servus Say ? var. ?

Virginia Beach, Va., July 20, one specimen.

E. fissilis Uhl.

Wilkesboro, N. C., Aug. 9, one specimen. Apparently not heretofore recorded from North Carolina. Taken in pastures by sweeping.

Thyanta custator Fab.

Three specimens, one each from Blowing R., N. C., Aug. 13; Smith's Island, Aug. 3, and Wilmington, Aug. 1. This is widely distributed throughout the United States.

Murgantia histrionica Hahn.

Virginia Beach, Va., July 20, one specimen. A purely Southern bug, although at times it has been noted in New Jersey under exceptional conditions. This, the only specimen taken, was swept near the seashore.

Nezara hilaris Say.

Dismal Swamp, Va., July 22, one specimen. This is larger than the usual run in this locality. This was found dead in a spider-web.

Dendrocoris fructicicola Bergr.

Wilmington, N. C., Aug. 1, two specimens. Not previously recorded from the State. Beaten from young oaks.

Banasa Packardii Stal.

Smith's Island, N. C., Aug. 3. A long series. This species was described from North Carolina, and has been recorded from Florida, Georgia and New Jersey, the last possibly erroneously. It is presumably a somewhat rare and local form.

This species was observed only on Smith's Island and only on one cedar tree. Close inspection showed this tree to be literally covered, the insects clinging to the twigs and small branches, many in copulation. In spite of the great numbers, they were rather inconspicuous, their colour and markings, especially those of the abdomen, bearing a striking resemblance to the small cedar twigs. On the slightest disturbance they dropped, taking to wing, however, before reaching the ground. A small vial, holding about 50 specimens, was filled from a single twig. A vigorous kick at the trunk dislodged so many as to obscure the air, but after a

short flight all returned and alighted again. As no injury whatsoever could be detected to the tree, which was a splendid specimen, and in the absence of other insects, which might have been the attraction, the visitation evidently was not due to feeding, but more probably a gregarious habit while mating. This conclusion was strengthened by further observations, including the examination of many cedars, as well as other trees, which failed to reveal the presence of the bug elsewhere on the Island.

Orsilochus guttatus.

Wilmington, N. C., Aug. 1, one specimen. This appears to be the first record for the State, and seems to be the most Northern habitat for the species. It is known from Georgia and Florida. Beaten from scrub-oak.

Coreidæ.

Chariesterus antennator Fabr.

Virginia Beach, Va, July 20, one specimen. Under bark.

Corynocoris typhæus Fab.

Virginia Beach, Va., July 20, one specimen; Wilmington, N. C., Aug. 1, one specimen. Swept in a meadow.

Corynocoris distinctus Dallas.

Wilmington, N. C., Aug. 20, one specimen. Both the above apparently are new records. Swept along border of moist meadow.

Acanthocerus galeator Fab.

Roanoke Id., N. C., July 25, one specimen. Under bark of pine.

Leptoglossus phyllopus Linn.

Dismal Swamp, Va., July 22, one specimen. Common on rank vegetation and generally distributed through coastal regions.

Alydus eurinus Say.

Dismal Swamp, July 22, two specimens; Linville Falls, N. C., Aug. 15, one specimen. Taken sweeping and under stones.

A. pilosulus H. S.

Virginia Beach, Va., July 20. Beating.

A. quinquespinosus Say.

Linville Falls, N. C., Aug. 15. Beating.

Lygæidæ.

Cnemodus mavortius, Say.

Wilmington, N. C., Aug. 20, two specimens. Sweeping.

Eremocoris ferus? Say.

Roanoke Id., N. C., July 22, a doubtful specimen. Sweeping.

Phlegyas abbreviatus Uhl.

Virginia Beach, Va., July 20, one long-winged example. Sweeping.

Melanocoryphus bicrucis Say.

Wilkesboro, N. C., Aug. 9, two specimens; Linville Falls, N. C., Aug. 15, three specimens. Common in meadows and pasture lands.

Lygæus lineola Dallas.

Dismal Swamp, Va., July 22, one specimen. Sweeping.

Aradidæ.

Neuroctenus elongatus Osb.

Wilmington, N. C., Aug. 1. Described by Osborn from Ohio, and recorded by Heidemann from North Carolina and Pennsylvania. Under bark of pine.

Gerridæ.

Gerris marginatus Say.

Montezuma, N. C., Aug. 6, four specimens. Very common, as usual.

Reduviidæ.

Sinea diadema Fab.

Virginia Beach, Va., July 20, one specimen. Sweeping.

Arilus cristatus Linn.

Smith's Id., N. C., Aug. 3, and Wilmington, Aug. 1.

Zelus bilobus Say.

Wilmington, N. C., Aug. 1, three specimens; Smith's Id., N. C., Aug. 3, one specimen.

Z. cervicalis Stal.

Virginia Beach, Va., July 20, one specimen; Roanoke Id., N. C., July 25, one specimen; Wilmington, N. C., Aug. 1, one specimen. This and the preceding are distinctly Southern.

Z. luridus Stal.

Roanoke Id., N. C., July 25, one specimen. This is common all through the Atlantic States. These three species common in moist situations.

Hygromystes n. sp.

Roanoke Id., Aug. 1, two specimens. Swept from sedges back of beach.

Melanolestes picipes H. S.

Dismal Swamp, Va., July 20, one specimen.

M. abdominalis H. S.

Wilmington, N. C., Aug. 1, one specimen. Very common under stones and logs.

Conorhinus sanguisugus Lec.

Virginia Beach, Va., July 20; Smith's Id., N. C., Aug. 3. This is the "Big Bedbug," a common Southern Reduviid, who at times performs functions similar to his humbler and more malodorous domesticated namesake. Taken under bark or logs.

Phymatidæ.

Phymata erosa Linn.

Virginia Beach, Va., July 20, one specimen; Roanoke Id., N. C., July 25, one specimen; Wilmington, N. C., Aug. 1, two specimens. Very common.

Gelastocoridæ.

Gelastocoris n. sp.

Roanoke Id., N. C., July 25, two specimens of an undescribed form. Taken near beach.

Corixidæ.

Corixa sp.

Dismal Swamp, Va., July 22, four specimens of a small form. Attracted to light.

Notonectidæ.

Notonecta undulata Say.

Johnston City, N. C., Aug. 17.

BOOK NOTICE.

EXPERIMENTS ON THE GENERATION OF INSECTS: by Francis Redi, of Arezzo. Translated from the Italian edition of 1688 by Mab Bigelow. Open Court Publishing Co., Chicago.

The average entomologist of to-day is apt, perhaps, to give little thought to the work of the pioneers of biological science in pre-Linnæan times, partly no doubt because the records of such work are not easily accessible to many. Such a book as this excellent English translation of Redi's famous work is therefore to be welcomed by all who would be acquainted with the work and character of the great Italian naturalist,

In the time of Redi belief in the origin of insects and most of the lower animals by spontaneous generation was almost universal, but he proved by a series of experiments recorded here that flies, bees and other insects are hatched as larvæ from fertilized eggs, and that the larvæ develop into the mature insects. After discussing the beliefs of the ancient Greek philosophers and others whose authority held weight in his time, Redi describes a number of experiments, by which he demonstrates that the maggots which appear in decaying meat change into pupæ ("eggs"), and that from these pupæ flies emerge. He also discovered the hatching of maggots from true eggs, and determined that these eggs were deposited by flies. The proof that the maggots and flies were not generated from the meat, but always from eggs deposited by flies of the same kind, was furnished by the discovery that meat placed in closed vessels or underground did not become wormy. By using the flesh of many kinds of animals in his experiments, he also showed that the species of flies obtained were independent of the kind of meat in which they were bred. Cheese-flies and fruit-flies were also proved to develop from larvæ hatched from eggs.

The habits and life-histories of many other animals are discussed, and the absurdity of the current beliefs concerning their origin exposed. The widespread beliefs in the origin of bees from the decayed flesh of bulls, wasps and hornets from horses, scorpions from the dead bodies of their own kind, spiders from flying seeds, and filth, etc., are all shown to be myths and old wives' tales.

Special attention is given to the consideration of gall insects and parasites of various kinds. Unfortunately, although Redi attempted to disprove the generation of these forms from the tissues of their hosts, his investigations were not complete enough to demonstrate his idea, and only led him back to his former trust in the teachings of Aristotle.

The translation is written in a clear, simple style, and includes in the introduction a short life of Redi and a bibliography. The illustrations, most of which represent various species of Mallophaga and parasitic Hemiptera, are reproductions of those in the Italian edition, and exhibit a considerable degree of accuracy.

One error may be noticed here. The insect called by Redi "Cavallucci" is not a Mantis but a Phasmid, probably *Bacillus Rossii* Fab. This is evident from the illustrations.

Mailed April 12th, 1910.