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THE HEART OF A WOOD-PILE.

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The pity of it is that when you make a new find and are inwardly executing a war-dance, leaping and whooping with triumph, so often Nature conspires to produce on all sides of you the very rarity you are pirouetting over, till your prize is cheap to nastiness. I remember so well the first few spikes of the Adder's Tongue Fern that I found; what miles and miles, what months and months of search with never a sign; but as soon as the secret postern-gate had been surprised, Nature seemed in a pet to withdraw every guard and unmask her positions, so that Adder's Tongue fairly bristled about my path from that day on. The same thing happened with the famous Moonwort from the hour that I found one solitary plant on the top of the Grampians near Killin. And I could cap these experiences with a score of others, *faunal* as well as *floral*.

Last year (1916) on June 29th, I discovered on a leaf of wild grape-vine a tiny, light-grey longicorn covered with round black spots. I had never seen it before, though I recognized its kinship with the few other *Lamiinids* I had surprised at rare intervals. For an hour or more I hunted vainly over grape-foliage, and at last to my delight captured a second specimen. I was in Trenton, Ont. a few days later, and spent most of my time searching over vine leaves; a third specimen thus captured threw me into ecstasies, and when finally a fourth suddenly settled on my thumb-knuckle as I approached a grape-vine, I was in the seventh heaven. The next two days from dawn to dusk were passed in feverish search over hundreds of vines, but all to no purpose.

However, an old dog, you may have observed, will be checked or thrown off the scent a hundred times for once that it's absolutely baffled. On July 6th, having returned to Peterborough, I

determined to give the grape-vines one more scouring, before I gave up my quest as a bad job. I had three rich collecting-grounds that season, of recent windfalls that I was keeping close tab on; but one day, I thought, of the glorious July heat might go in a last effort at these *Lamiinids* even if it did prove a wild-goose chase.

Recalling that I had seen some luxuriant thickets of vine west of Jackson's Park, I made my way out to the place and spent over two hours working slowly round the sides of a clover field whose fences were festooned with the wild grape. For about 10 days within the last week of June and the first week of July, grape-vine is one of the glories of the wayside; its leaves among the most beautiful in all Nature, the tender, slightly bronzed growing shoots, the delicate tendrils, and the flood of perfume wafted from its racemes, fairly capture the senses as nothing else can. All this I revelled in, but of Longhorns, big or little, not a trace could I see.

It was after 4 o'clock when I slung myself over the fence for a short cut down the river valley in the direction of home. By the fence, near where a heap of old rails and some brush had lain, I saw two newly stacked piles of fresh-cut billets of wood. They were short cylinders of cordwood with the bark still on, ranging in diameter from 3 or 4 inches to 7 or 8. My way from the fence led between the two stacks, and as I rounded the corner of the pile on my left, I spied on the top layer one of these little grey *Lamiinids* moving rapidly along the surface of one of the billets. "Moving" sounds tame, but I use the word advisedly: the insect's progress had the speed of running, but the manner of crawling; the creature is flat, not convex, and lies almost as close on the surface it is moving over as those peculiar, flat, crab-like scorpions or wood-spiders found on stumps and under bark.

It was a piece of birch that the insect was crawling on, and casting a hasty glance around, I noticed that the wood-pile on my right was almost entirely birch, while that on my left—except for a sprinkling of birch at the corner—was poplar. However, when I came to look over the birch pile more closely, I could find nothing on it; so I turned once more to the rival stack, and almost im-

mediately spied another specimen, this time on a poplar billet; then I found 2 more, and by the time I had made the round of the pile I had captured 10; before I returned home I had taken 29 specimens, all from the top layer of billets.

Generally the insects kept perfectly still and submitted to capture rather than allow themselves to be disturbed, simply crouching as flat as they could lie in the form where they were resting. If, however, they decided, like a startled hare, to make a sudden dash for it, they very rarely released their hold at the edge of a billet. Occasionally one's attempt to pinch them up from the billet between finger and thumb was a failure; and usually if you thought to drop them into the killing-bottle by simply opening finger and thumb, they declined to humour you, but would run rapidly up your finger in a spiral and elude pursuit. I found it best, whether using a pair of forceps or just the naked hand, to jar them quite sharply in the instant of opening the jaws that held them, so that they fell into the bottle. The insect proved to be *Hyperplatys aspersa* and apparently was emerging from the bark of the poplar; I thought at first the wood was the American aspen, but later I found the stumps from which it had been cut and they were all balsam poplar or balm-of-Gilead. I have since found the beetle very abundant on newly cut poplar of this species, and occasionally on living trees; it is also fairly abundant on staghorn sumach. No doubt the few specimens I had found on grape-vine were really waifs and strays from one of these two trees.

This being the first time I had ever seen *Hyperplatys* at home (so to say), I determined to take all I could get in case the find should prove a lucky haul unlikely to recur. On the 9th and 11th, I secured 22 and 33 specimens respectively; and it was on this latter date that I tried turning over every billet in the 2nd and 3rd layers as well as the top. Had the result been merely to increase the total of captures, the experiment would not have been worth repeating. But on taking a billet from the 3rd layer, I discovered nestling snugly up against one of the blackened furrows in the area of a branch-axil, a dusky grey insect that at first I took for a crouching spider. So well had it chosen its station, that but for a certain symmetry about the little patch of grey and

black that it made there, I should never have detected it; as it was, my eye was arrested by a sense of design, and, focusing on the patch, at once unmasked the live insect; a moment more, and the longicorn was betrayed by its antennæ; these were thrown back over the creature's body and lowered almost to the space between its elytra and the up-gathered legs, in an attitude I soon came to know as entirely characteristic.

The insect was about the size of *Graphisurus fasciatus* or *Hoplosia nubila*, robust and somewhat convex, but tapering towards the tip (being both narrowed at the sides and declivous above); it reminded me considerably of *Leptostylus sex-guttatus*, but was larger and quite strongly armed at the sides of the thorax; when tested by LeConte and Horn, but for one important point, it seemed to be undoubtedly *Liopus*; and in that genus it could only be *variegatus*, for all the other species were too small. None of the authorities described my form of the insect in detail, though reference was made to a variety *obscurus* which seemed to correspond; I had some specimens in my cabinet from New Jersey and New York labeled *L. variegatus*, and they were all yellowish-brown mottled, while mine was grey-black mottled; but what troubled me most was the point in LeConte and Horn: *Liopus* should have no trace of ciliate hairs beneath the antennæ, and this beetle—especially on the 3rd joint—showed a fringe of from 3 to 6 hairs. On examining my specimens from New Jersey I found them without trace of ciliæ, but on the New York specimens I found one or two such hairs. I have captured nearly a dozen since then, and all show traces of ciliæ, some quite as strongly as *Hyperplatys*, nor can I place my insect in any other genus. I, therefore, infer that the rule-of-thumb distinction between ciliate and non-ciliate genera does not apply to the *fauna* of our northerly latitudes*.

I was so much encouraged by this find that I determined in future to turn over every billet in the 3 rows that made the wood-pile. I went there the very next morning, July 12th, and proceeded to do my chore. From the top to the bottom was fully 8 layers deep and it took just about 2½ hours to turn over every

*I find this inference corroborated by specimens of *Liopus cinereus* and *L. alpha* captured near Peterborough, F. M.

billet; I suppose I had never handled so much cordwood in my life before, but it was well worth the trouble, and I was still crying for more as greedily as Oliver Twist, when I laid down the last billet after running my eye over all the bark of its surface. My catch included 46 specimens of *Hyperplatys*, 2 of *Liopus variegatus*, and 3 of a grey-looking *Liopus* said to be a variety of *alpha* known as *cinereus*; I have since learned to associate this ashy-grey form with the poplar, and the yellow-grey form of *L. alpha* with staghorn sumach. Besides these I captured a light-grey longicorn as large as *Graphisurus*, but with very strongly clavate antennal scapes, and having (besides the lateral spines of the thorax) 4 tubercles, a pair on the thoracic disc and a pair on the elytral base. It is unquestionably *Acanthoderes*, probably *decipiens* but I am not sure; this was indeed a rich haul.

On July 10th I turned over my billets of cordwood once more, and besides seeing a great many specimens of *Hyperplatys*, captured 2 more specimens of *L. variegatus* and a single specimen of *Pogonochærus*. In making an examination of this last, I could not find it to differ in any respect from the insect I had occasionally taken on white pine; but I am told that an American authority has distinguished a form he calls *P. salicola* (*sic!*) from the normal *P. mixtus*. I suppose one may be over-sensitive about mere language, but the desire to clip words down by a syllable or two often combines very disastrously with our modern neglect of the Classics. This variety of *Pogonochærus mixtus* feeds on willow and should, of course, (as any of Macaulay's schoolboys would gladly tell you) be *salicicola*; the telescoping of the middle pair of syllables unfortunately condemns the insect to durance vile in a salt-mine! There is an even more terrible example of what grammarians call "solecism" in the science of botany; I recall the delicious piece of irony that even gentle Asa Gray was goaded into over this barbarism: it appears that the man who discovered a kind of holly with blossoms set on long, thread-like stalks, wishing to name and describe his find in a single breath, christened it "*Nemopanthe*" under the fond delusion that this would mean "thread-stalk blossom;" he should, however, have called it "*Nemato-pod-anthe*," and the portmanteau word that he perpetrated was too much even for the sweet-tempered father of American botany. The vein of irony is

so rare in a technical book of science that it has a surprisingly refreshing, even exhilarating effect, like the sarcastic definitions Dr. Johnson inserted in the original edition of his great dictionary.

On the 17th, I took two more *L. variegatus*; one *Pogonochærus mixtus*; a beautifully coloured *Chariessa pilosa*; a little clerid of peculiar form, the elytra being narrower at the base and slightly dilated towards the tip; and three specimens of the pretty little *Endomychus biguttatus*; besides several species of *Curculio* and *Staphylinid*. I was under stern surveillance to pack for our annual trip to the Algonquin Park next day, but by secret calculations of a most intricate sort I proved to my own satisfaction that there was plenty of time to visit the wood-pile as well as to pack; besides, as I philosophised, the weather was far too hot for packing, and simply ideal for handling a cord or two of wood. Accordingly about 4 a.m., all unknown to Xanthippe, Socrates and the sun rose in concert over the brow of the hill and were soon absorbed in contemplation of the wood-pile.

I was somewhat embarrassed once or twice by the operations of a farmer going round and round the adjoining clover field on one of those primitive scythe-bearing machines called mowers that have presumably descended from the ancestral British war-chariots. He did not say anything, but his manner was distinctly unpleasant and spoke volumes of mingled suspicion, curiosity and contempt. To my relief, however, he appeared to decide that I was harmless and he need not interfere. This last day's experience proved both rich and varied. I took 5 specimens of *L. variegatus*; 1 *Parandra brunnea*; 1 *Saperda calcarata* (dead); 1 *Lepturges*; 1 *Leptostylus sex-guttatus*; and 1 *Acanthoderes*. In addition I saw many *Hyperplatys*, and received striking proof of "Nature red in tooth and claw," even in this peaceful, sunlit dwelling in Arcady.

My suspicions had often been roused by the number of large, black assassin-bugs in the dark recesses of the wood-pile; but the whole aspect of the place as one approached it—like Macbeth's castle to the gentle fancy of King Duncan—was peaceful and sunny; if there were no martlets flitting about it, there were butterflies galore that sailed and settled. And all the time it was the abode of murder: on the daggers of those assassin-bugs were goutts of blood. I captured one of these black marauders with a fair

specimen of *Hyperplatys* impaled on its proboscis; it had thrust the deadly stiletto through the suture of the elytra, and found the soft, defenceless body between the joints of the harness.

Nor was this all. In "The Toilers of the Sea," Hugo's famous romance of the Channel Islands, you will remember how the hero Gilliat entered the sunny sea-cavern only to find himself caught in the toils of the giant cuttle-fish. In the hollow of this wood-cave, too, lurked a monstrous Octopus. As I neared the end of the pile, I saw a huge, grey and black spider, with great hairy legs and massive obtuse forepart (the thick end of the wedge being forward and a pair of glittering little eyes projecting out of the black mass) plunge out of sight between two piles of billets, and I fancied, in the flash of its dive, that it had a big blue-bottle in its jaws. I got my forceps ready and kept careful watch as I turned over the billets; and presently I drove him from cover and seized one shaggy thigh in the relentless grip of my steel vice. Cheek by jowl in my cabinet, staring stark and stiff, are set the killer and his prey, *Phidippus audax* and a last specimen of *Liopus variegatus*, for that was what the blue-bottle proved to be. The spider had not attempted to wedge his huge jaws in at the suture of the wing-covers, but had dug them in on the under side between chest and body, and sucked his victim so viciously that the ligaments between thorax and abdomen were wrenched apart and the elytra disjoined and loose.

NOTES ON BARNES' AND McDUNNOUGH'S "CHECK LIST OF LEPIDOPTERA OF BOREAL AMERICA."

BY F. H. WOLLEY DOD (ON ACTIVE SERVICE).

(Continued from page 16.)

Cirphis Walk., *Roseola* (1937) is probably a variety of *farcta* (1938), and *calgariana* (1945) of *anteroclara* (1942). *Anteroclara* and *farcta* are too nearly allied to be separated, as here, by *imperfecta* and *insueta*. *Heterodoxa*, *dia* and *megadia* stand as varieties of *insueta*, and this is very likely correct, except that the first two named are questionably distinguishable forms. The type of *dia* in the British Museum differs in negligible detail from some Calgary *heterodoxa* in the same collection.

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- Borolia* Moore. *Amygdalina* is correctly separated from *linita* to which Hampson refers it. The former occurs at Winnipeg, and specimens are in the Museum from Maine (type) and New Jersey. *Linita* is a longer and narrower winged species with more concave outer margins, occurring in Florida. Hampson's figure under *linita* is of type *scirpicola*, which is now correctly referred to *Cirphis* with *calpota* Sm. as a synonym. It is a close ally of *phragmatidicola*.
- Neleucania* Sm. The reference to *albilinea* of *obscurior*, *neptis* and *limitata*, three of Smith's names, is in accord with my diagnosis, though I can scarcely consider *obscurior* as a variety. I am inclined to agree with Hampson in adding *tetera* Wm., which the authors keep distinct.
- Leucania* Ochs. As in Hampson's catalogue, *minorata* stands as distinct from *luteopallens*. I can see nothing to warrant the separation. *Rubripallens* is probably only a red variety of the species, though I have nothing compared with the type. *Pertracta* Morr. is included in the genus. When I saw the type of this it impressed me as probably of foreign origin, but as it apparently has not been so far identified as any other known species, it is correct that the name should be retained in our lists. Unless memory fails me, the species would be better referred to *Cirphis*. *Yukonensis* Hamps. (Ann. and Mag. Nat. Hist., VIII, p. 425, 1911) has been inadvertently omitted. *Suavis* B. & McD., judging from a co-type in the British Museum, is quite unlike any of the others now referred to this genus, and does not seem to belong here at all.
- Copicucullia* Sm. I told Smith that, after examining the types, I believed *bistriga* and *mala* to be, as the authors have described, identical with *eulepis*, but he would not accept that view.
- Oncocnemis* Led. *Poliochroa* Hampson stands as a synonym of *chandleri* Grt. (2069), whilst *chandleri* Hampson is referred to *colorado* Smith (2070). The latter reference is almost certainly correct, and I had long suspected it. The reference of *poliochroa* to *chandleri* is based on the claim that Grote's original figure is the strongly marked form with contrasting

border to secondaries described as new by Hampson, and that, therefore, the supposed type of *chandleri* in the British Museum can only be the variety mentioned by Grote in his description. I cannot agree as to Grote's figure. There are two Colorado (Mead), specimens in the Museum, very much alike, one of them bearing Grote's type label. Grote's figure might very well be of the other, though the secondaries are represented too dark, it is true, but they are not dark enough for *poliochroa*. I am not satisfied that the *chandleri* of Hampson is not Grote's species.

- O. riparia* Morr. (2046) described, by the way, as a variety of *chandleri*, seems to be too close an ally of *colorado* to stand so far apart from it. *Cibalis* (2048) belongs in the same group.
- O. atrifasciata* Morr. *Piffardi* Walk. is entered amongst the additions as a prior name to Morrison's. The description of *Phornacisa piffardi* (Trans. Ent. Soc. Lond. 3rd series, I, p. 312, 1864) which was recently accidentally discovered by Sir George Hampson, has been previously overlooked by everyone. It most obviously applies to the species subsequently described by Morrison, and Walker's name label has been found beneath the Nova Scotian specimen in the British Museum, which, that being the locality mentioned by Walker, is, by assumption, the type.
- O. æqualis* Grote stands as a synonym of *major*, following Smith and Hampson. Types of both names are in the Museum, and I find it hard to believe that they are the same species. A pair of *æqualis* from Eureka, Utah, agree with the type, and I have a series of that in my own collection, but nothing like *major*, which is figured by Hampson. I understand that there is a type of *major* in the Neumoegen collection.
- Dunbari* Harvey makes its first appearance in *Oncocnemis*. It was redescribed as *definita* by the authors under *Oxycnemis*, but later they referred the name to Harvey's species. I recognized the type in the Henry Edwards' collection in 1910 as a species I had previously seen in one or two collections, but did not then possess, but I overlooked the fore tibial claw. I now have a specimen from Vancouver Island. The form

described and figured by Hampson as *dunbari* is probably a strongly marked form of *Lithalomia napæa*.

Momophana Grt. *Columbiana* Sm. stands as a variety of *comstocki* Grt. I am by no means convinced that they are the same species.

Graptolitha Hbn. *Winnipeg* immediately follows *laticinerea*. I consider them synonymous. *Merceda* (2159), should be referred to *unimoda* (2150). I compared Smith's type some years ago, and came to this conclusion. There is a co-type of *merceda* in the British Museum from Cartwright, Man. This specimen has the maculation clearer than eastern specimens, and being rather small, is undeniably *tepida*-like in appearance, but I am satisfied that it is really *unimoda*. *Atincta* stands as a variety of *tepida*. It seems to me an exact synonym. Heath used to send me *tepida* as both *atincta* and *merceda*.

The six names referred to *georgii* are correct, but questionably recognizable as standing for varieties.

Conistra Hbn. *Walkeri* is treated as a synonym of *sidus*, and *colorado* as a variety. The latter reference is new to me, but very likely correct. *Walkeri* I have never succeeded in recognizing as distinct, and am satisfied to accept the reference.

Parasichtis Hbn. is used for *Amathes* of Hampson, and *Orthosia*, part, of Smith. I strongly object to *verberata* being treated as a variety of *bicolorago*. I have pointed out the differences in my Alberta notes, and have since found that the genitalia differ. Nor do I believe that *acta* is distinct from *decipiens*. My tentative reference of *insipida* Strk. to *inops* Grt., made after seeing Strecker's type in 1910, has been confirmed by the authors. *Americana*, which Smith considered a probable foreigner, has been retained, and so has *immaculata* Morr., a species still unrecognized, I believe.

Trachea Ochs. *Ferida* Smith stands here, as per Hampson. I believe it to be a *Eumichtis*, and associate it very closely with *miniota* Smith. *Purpurissata* B. & McD., described from Vancouver Island, which happens to be the "auranticolor

ab. I" of Hampson, is referred as a var. of *antennata* Smith. I have nothing identified as the latter. *Separans* Grt. (2288) is best placed next to *indocilis* (2285), and *enigra* (2312) placed in the list between *commoda* and *illustra* should probably come next. I am of opinion that the first three named will ultimately prove to be forms of one species. The genitalia do not differ. *Obscura* Haw. (*gemina* Hbn.) of Europe has an almost exactly similar range of variation. *Illustra* is a black, almost immaculate var. of *commoda*.

Probata B. & McD. is correctly referred as a synonym of *fumeola* Hampson, and the re-description was explained by the authors in their "Contributions," Hampson's figure representing a different species from his type. I recognized the latter fact when I saw the British Museum series about ten years ago. Of the species figured by Hampson I had then a duplicate, but lacking other specimens, long held it under a mss. name. All the specimens mentioned in the catalogue except the type of *fumeola* are this species, and there is one in the collection from Fraser River, B.C., (Mrs. Nicholl). A few years ago I received it in some numbers from Miss McGlashan, from Truckee, Calif. Sir George Hampson intends to name it *perfumosa*. *Luteocinerea*, (2305), by my comparison with the type is a form of *characta* (2303). *Jocasta*, standing between these names, seems to me a very close ally of *claudens*, which is referred by Hampson and the authors to *Eremobia* Steph. I agree with the authors in considering *mixta* Grt. a good species. The resemblance of Grote's type is so very close that I had formerly passed it, and one other in the British Museum with it, as worn examples of *impulsa*. I have a specimen from Winnipeg from Mr. Wallis.

Perigea Gn. No. 2323 should read *xanthioides*, not *xanthoides*.

Oligia Hbn. *Modiola* Grt., with *mactatoides* B. & McD. as a synonym, stands as a variety of *fractilinea*, possibly as a result of the writer's suggestion in litt. *Misera* Grt. is very likely the same species. European *secalis* Linn. (*oculea* Linn.), of which *fractilinea* is the North American counterpart, has a

wide range of variation which practically covers all these forms.

Agroperina obliviosa Walk. is kept distinct from *lateritia*. I suggested this in Can. Ent. XLIII. p. 231, and Dr. McDunnough came to the same conclusion after examination of the type. I have examined it on several occasions since the publication of my note, and my opinion has weakened. It may be a sub-alpine form. *Satina* Walk. stands next. Though I have not seen the type a second time, I hold firmly to my original contention that this is *commoda* Walk. That *commoda* can sometimes resemble *lateritia* rather closely I have admitted in the course of my notes upon the Heath collection, but am quite satisfied as to the identity of Strecker's type. *Morna* Strk. is placed in the *conradi* group, where Hampson places it, and to which I have stated that it does not belong. I considered it a *Luperina*, and Smith a *Sidemia*. I assume that Messrs. B. & McD. have specimens compared with the type, or at least have recognized it, and as I have very rarely met with anything which I have suspected of being *morna*, and have nothing under the name in my collection, I must accept their word as to its associates. But the *morna* of Hampson is *indela* Smith.

The authors list *conradi*, *citima*, *pendina*, *lineosa*, *indela* and *inficita* as six species. *Pendina* is a red variety of *lineosa*. The more I study the others, the less am I able to separate them. My identification of *conradi* is possibly wrong.

Eremobia Steph. *Alticola* Sm. stands next to *maillardi* (*exulis*). If the British Museum specimen standing under Smith's name is correct, the close association seems fully justified.

Sidemia Staud. The writer's reference of *speciosa* Morr. to *de-vastatrix* is here confirmed. (Cf. Can. Ent. XXIV, p. 359).

Luperina Bdv. *Ona* Smith is placed next *burgessi*. They resemble one another closely, but *ona* appears to be a longer and narrower winged species, with heavier thoracic tufting, better placed in *Septis* Hbn. Hampson has it in the collection under *Parastichtis*, for which the authors substitute Hübner's name.

Phuphena Walk. All the specimens of *u-album* which I have so far had an opportunity of examining, and which have possessed hind tibiae, have had a spine between the pair of spurs, and the species is, therefore, probably an Agrotid.

Acronycta Ochs. I had hoped to see fewer species here. I have found it difficult to get hold of much material in many groups of this genus, and so closely do some of the species approximate one another, that opinions formed from examination of too limited material of doubtful forms, are rather risky. The authors have seen far more than the writer, and the benefit of the doubt has probably favoured numbers. I am glad to see *modica* next *exilis*, but should like to see *clarescens* (2442) next *hesitata* (2437), and *increta* (2452) next *inclara* (2444). The identity of *hamamelis* has again been under dispute. *Minella* I believe to be a variety of *fragilis*.

Lepusculina cinderella, *canadensis*, *populi* and *chionochroa* are certainly well placed very close together, but are very doubtfully five species. If *vulpina* Grt. and *sancta* Hy. Edw. are really forms of *leporina*, that may be North American after all, though I had decided that it was not. I still claim that *mæsta* is a variety of *cretata*, though it is here listed as distinct. *Eldora* Sm. stands as a variety of *americana*, probably correctly. *Distans* and *impressa* stand apart for future judgment. *Dolorosa* stands as a var. of *distans*, in accordance with its author's description, and *emaculata* as var. of *impressa*. I see no reason for separating *dolorosa* from *impressa*.

Andropolia Grt. *Illepida* seems correctly referred to *diversilineata*. The type material of *resoluta*, similarly referred, included an almost white variety.

Hyppa Dup. *Rectilinea* is on the "omitted" list, as not North American. *Xylinoides* replaces it in our fauna, but I find them more nearly related than I once thought.

Pyrrhia Hbn. The name *cilisca* is omitted, and *exprimens* and *stilla* are referred as varieties of *umbra*, with *angulata* a synonym of *exprimens*. The distinctness of *umbra* and *cilisca* is perhaps doubtful, but I think the omission of the latter

name was an oversight, even if *umbra* was to be retained. The genitalia of *exprimens* and *cilisca* differ, which supports my view as to their being two species. The treatment of *stilla* is new. I have only one specimen, from Dr. Barnes, and had suspected that it might quite possibly be a variety of *exprimens*, and have seen Vancouver Island specimens of the latter coming very near *stilla*.

Ipimorpha Hbn. I believe that *subvexa* (2726) is very likely a variety of *pleonectusa* (2724). I long ago suggested that *nanaimo* (2725) might be *subvexa*, but the authors keep the three distinct. I possess nothing named *nanaimo*, and am content to accept it as it stands for the present.

Energia Hbn. *Infumata* Grt., with *punctirena* as a synonym, is listed as a form of *decolor* Walk. This is in accordance with Hampson. Had I not seen the two in nature side by side, and found one sometimes present in certain seasons without the other, I should probably have held the same opinion, and the male genitalia being alike would lend support to that view. As it is, I hold to my former opinion that they are two very closely allied species.

Eutricopis Morr. *Elaborata* Hy. Edw. is a form with the dark markings rather thickly irrorate with yellow scales. The placing of the name by the authors as a synonym of *nexilis* Morr. seems to indicate that the latter is of this form also. If that is so, then the much darker form with purplish or vinous red shades, found at a high altitude in the Rockies, deserves a varietal name.

Catocala beaniana Grt. This stands as a form of *unijuga*. The form was unknown to me until quite recently when I examined the type. It is very difficult for me to believe that the reference is correct. Dr. McDunnough has doubtless seen it, and confirmed Hulst's reference, which was followed by Smith.

Cænurgia Walk. *Sobria* Walk. appears, as in Hampson, as a synonym of *crassiuscula*. Grote referred it to *erectea*, and

that reference was followed by Smith. I refer *sobria* to *convalescens*. The type is a female, and agrees with the male type of *purgata* Walk. in maculation, though not in colour.

Autographa Hbn. The first twenty species here listed have mid and hind tibiae spined, and are referred to *Syngrapha* by Hampson. *Ou* has all the tibia spined, a character which was somewhat overlooked by Hampson, or he would have placed it, with *pedalis*, in *Rachiplusia*. I agree with the authors of the new list in considering *pedalis* Grt. an aberration of *ou*.

Russea Hy. Edw. which Hampson followed Ottolengui in referring as a variety of *californica*, the present authors treat as a variety of *pseudogamma*, which I cannot believe to be correct. *Microgamma* Hbn. makes its first appearance in our lists, the only North American records, so far as I know, being from Alberta. In Europe it occurs in Austria, North-eastern Germany, Scandinavia, Lapland, Finland and Russia. *Sansoni* Dod is placed between *pasiphæa* and *metallica*. I consider its nearest ally to be *rubidus*. Its yellow underwings, however, dissociate it somewhat from others of the genus having smooth tibiae.

Drasteria Hbn. *Capitcola* Walk. (3327), misspelt *capticola*, appears to the writer to be a synonym of *graphica* Hbn., and not distinct as listed.

Syneda Gn. The nearest ally of *petricola* Walk. (3331) is *athabasca* Neum. (3336), and I am by no means assured that they are not forms of one species.

Pheosia dimidiata H.-S. This is one of the familiar names which is included in a list of those omitted as not referring to North American species. It has long stood as prior to *rimosa* Pack., but the merest glance at Herrich-Schäffer's figure leads one to wonder who was responsible for the mis-identification. According to the British Museum collection the name refers to a South American species described latterly as *Rhuda endymion* Schaus., from Rio Janiero.

ON SOME NEW OR NOTEWORTHY COLEOPTERA FROM
THE WEST COAST OF FLORIDA.—IV.

BY W. S. BLATCHLEY, INDIANAPOLIS, INDIANA.

A further study of the Coleoptera collected by myself during the winter season of 1916-17, and those taken at porch light and sent me in June and July, 1917, has revealed the following species worthy of note or apparently undescribed. Unless otherwise mentioned, all the species were taken at or near Dunedin, a town on Clearwater Bay, 21 miles north of St. Petersburg, Florida.

Platynus octopunctatus Fab.—A single example of this handsome and easily recognized Carabid was taken February 13 from beneath rubbish on the site of a recently drained pond. Schwarz records one specimen from Tampa, and Leng has one or two from "Fla." In Western Indiana it occurs frequently in winter beneath cover on the slopes of sparsely wooded hills.

Bidessus floridanus Fall.—Of this species, which bears a close general resemblance of *B. pulicarius* Aube, a dozen or more specimens have been taken at Dunedin, and one or two at Sarasota and Kissimmee. Fall's types are from Jacksonville, and it probably occurs throughout the State.

Celina grossula Lec.—One specimen was taken at Gainesville on February 7. Schwarz records it as very rare at Enterprise and Jacksonville.

Hydræna marginicollis Kies.—This minute Hydrophilid occurs in small numbers beneath immersed boards in the ponds about Dunedin. Like *Notomicrus nanulus* Lec. it only becomes visible when it moves. Schwarz lists it as rare, but mentions no definite locality.

Tropisternus sublævis Lec.—No previous record of the occurrence of this species in Florida can be found. It was described from Nebraska and Georgia. Single specimens were taken at Dunedin on January 30 and February 23, and another at porch light on June 20.

Ditoma carinata Lec.—A single specimen was taken beneath the bark of a magnolia log at Gainesville on February 7. Recorded from Tampa and Enterprise by Schwarz.

February, 1918

Bothrideres geminatus Say.—A dozen or more taken on December 16 and January 6 from beneath the close-fitting bark of a dead water-oak. Crescent City (Schwarz in Mss.).

Lathropus pictus Sz.—One specimen taken March 6, while beating in a wet hammock. The types were found at Haulover beneath bark of a dead oak. Known also from Key West and Biscayne Bay.

Loberus subglaber Casey.—Occurs in numbers on the sea-blite, *Batis maritima* L., on Hog Island. Casey described it* from New Jersey, and this is the first published record for Florida.

Hesperobænus rufipes Lec.—Described† from the "Southern States," as "rare," and said by Horn** to occur in Missouri, Georgia and Louisiana. A dozen or more specimens were secured on December 24 from beneath the bark of an oak log.

Tenebroides bimaculata Melsh.—Though Horn says‡ that this species is common in the Southern States I can find no record of its occurrence in Florida. A single specimen was beaten from dead vines on March 6.

Monocrepidius debilis Lec.—This species was described¹ as an *Athous* from a single specimen taken at Lake Harney, Florida, in May. Three have been secured at Dunedin, two by beating in a wet hammock on March 22 and April 6, the other at porch light on July 10. The third joint of antennæ is at least one-fourth longer than the second, not equal to it as stated by LeConte. Tampa (Schwarz in Mss.).

Monocrepidius aversus Lec.—Two specimens at porch light, June 20—July 5. Described from Georgia as rare. No previous Florida record.

Elater sturmii Germ.—A single example was taken at porch light on June 12. Schwarz records one from Enterprise. It is known only from Florida.

Ozognathus floridanus Lec.—This species ranges from New Jersey to Texas. As pointed out by Fall, the head and thorax are

*Journ. N. Y. Ent. Soc., VIII, 1900, 83.

†Smithson. Misc. Coll., 167, 1863, 65.

**Trans. Am. Ent. Soc., VII, 263.

‡Proc. Phil. Acad. Nat. Sci., 1862, 87.

1. Proc. Am. Phil. Soc., XVII, 405.

often rufous, two of the four specimens at hand from Dunedin being thus bicolored. All were beaten from oak along the margins of ponds.

Eutylistus tristriatus Lec.—While ranging from Pennsylvania to Texas, this species is recorded from Florida only from Key Largo. Single specimens have been sifted from dead leaves at Dunedin on January 16 and March 21.

Cis impressa Casey.—A single male of this well marked form was taken at porch light on June 10. Chas. Dury, of Cincinnati, Ohio, who has in press a monograph of the family Cioidæ, has verified the determination. Casey's types were from California and Washington. Other members of the family taken at Dunedin are *Cis hirsuta* Casey, described from Lake Worth, common; *C. ursulina* Casey, described from Alabama, *Ennearthron pullulum* and *Ceracis punctulata* Casey, scarce. Several new species, descriptions of which by Dury will soon appear, have also been taken.

Canthon perplexus Lec.—One specimen taken at light on July 10. While it is said by Blanchard* to range from Illinois to California and Yucatan, no other Florida record can be found.

Canthon probus Germ.—One specimen was taken from a bucket of water on February 10. Schwarz records one only from Enterprise. Known also from Crescent City and St. Augustine.

Copris inemarginatus sp. nov.—Form of the common *C. anaglypticus* Say, but usually smaller. Clypeus shorter, its front margin entire and less reflexed, its surface punctures less distinct, more granulate. Thorax more shining with sides behind the front angles much less sinuate than in *anaglypticus*, the angles themselves not in the form of a small, obtuse tooth as there; sculpture much the same, but the punctures, especially those on sides, more distinct and ocellate; elytra with intervals more shining, less convex and wholly smooth instead of closely and minutely punctate as in *anaglypticus*. Front margin of prosternum without the small, obtuse tooth seen in that species. Both sexes with a very short, obtuse horn or tubercle at middle of head; front half of thorax wholly unmodified and much less declivous than in *anaglypticus*. Length 11.5–15 mm.

*Trans. Amer. Ent. Soc., XII, 1885, 167.

Described from 14 specimens taken at Dunedin, two beneath dead turtle on January 20, the others at porch light in June and July. In the Fall and Dury collections and in that of the American Museum of Natural History, this stands as *C. mæchus* Lec., a Texas species 19 mm. in length, with clypeus obtusely notched at middle, thorax sparsely and irregularly punctured and horns more strongly developed than in *anaglypticus*. Dury writes that his single specimen from Port Orange, Florida, was so named for him by Horn and Ulke, but that "it varies widely from LeConte's brief description of *mæchus*, and it cannot be *anaglypticus*." Fall states that "I have had this with the label '*mæchus*' for many years, but don't know on whose authority the identification rests. On looking at it now with the table in hand it does not seem possible that it can be *mæchus*. It certainly is not *anaglypticus*." Mutchler writes that the three specimens labeled "Fla." in the American Museum collection, agree with the description of *mæchus* only in having the thorax not opaque. Specimens in the U. S. National Museum from Enterprise, Fla., are labeled *anaglypticus* and H. S. Barber writes that both he and Mr. Schwarz believe that the species is "merely a depauperate form, due to biological conditions of which we are now ignorant, but which is not specifically distinct from *C. anaglypticus*. It is certainly not *C. mæchus* Lec."

As these most eminent living American Coleopterists cannot agree upon the name for this species, I have decided to give it that of *inemarginatus*. The "biological conditions" mentioned by Barber are doubtless prevalent throughout the peninsula of Florida, as the beetle seems to be widely distributed over that State. If they are sufficient to put the shine on its surface, take the notch out of its clypeus and put the punctures in its elytral intervals, it is certainly worthy of a distinctive name. If it be a mere form of *anaglypticus*, as Schwarz and Barber believe, then our conceptions of that species are wholly wrong, and all our tables of the genus *Copris* will have to be greatly modified.

Trox erinaceus Lec.—Numerous specimens at carrion traps, February 5-24. The first published Florida record. Horn gives its range as New Jersey to Georgia and Indian Territory.

Lachnosterna boops Horn.—Frequent at porch light in June and July. Described from Northern Georgia; known also from Tampa, Crescent City and Indian River (Schwarz Mss.).

Ecyrus dasycerus Say.—A single specimen taken by beating dead vines in a wet hammock.

Ataxia crypta Say.—Two specimens in December by beating oak, one April 26, at porch light. Recorded by Schwarz as rare at Ft. Capron. Known also from St. Augustine, Crescent City and Key West.

Monocesta coryli Say.—Two specimens of this large Chrysomelid were recently sent me by Dr. E. W. Berger of Gainesville. They were taken at Palmetto, Fla., on July 3, where they were found feeding on elm. Horn* states that the beetle occurs in Virginia, Illinois and Kansas. It is also recorded from Missouri, but no reference to its occurrence south of that state can be found.

Disonycha mellicollis Say.—This species, known from Indiana to Louisiana and Texas, has been found about Dunedin only beneath boards near the edge of high tide along the beach of Clearwater Bay, where it occurs in small numbers throughout the winter. Known also from Ft. Capron.

Epitrix fasciata sp. nov.—Oval, moderately convex. Head and thorax dull reddish brown; elytra dull yellow with a broad median blackish cross-bar, this interrupted on the second and third intervals, thus forming an oblong sutural spot which is slightly prolonged forwards, and a large spot on each elytron; antennæ, legs and prosternum dull yellow, abdomen piceous. Head very minutely and sparsely punctate. Thorax two-thirds wider than long, sides feebly curved, front angles obliquely truncate, hind ones rounded; disc rather coarsely, deeply and closely, not densely, punctate, the ante-basal impression deep. Elytra at base but slightly wider than thorax, widest at middle, sides broadly rounded, umbone small, oblong; striæ with rows of large, rounded punctures separated by one-half their own diameters; intervals narrow, con-

*Trans. Am. Ent. Soc., XX, 61.

vex, each with a row of prominent semi-erect, yellowish hairs. Abdomen very sparsely and finely punctate. Length 1.6 mm.

Two specimens were swept from low herbage on Hog Island, opposite Dunedin, on April 2, one of which escaped from the net and avoided recapture. The type is unique in coloration and smaller than any species except *brevis*, from which, aside from colour, it differs in its much less convex form and deep, ante-basal impression.

Hapladrus ater Lec.—Two specimens were taken on January 6 from beneath the bark of a water-oak. Schwarz records it as rare at Tampa in decaying pine logs.

Hymenorus elbertæ sp. nov.—Elongate-oblong, moderately convex, shining, thinly clothed with semiprostrate, yellowish hairs. Head, thorax, antennæ, legs and prosternum uniform dull red; elytra fuscous-brown; under surface, except prosternum, dark reddish brown. Head rather finely and closely punctate; eyes large, separated by two-thirds their width; antennæ much more slender than in *densus*, third joint one-half longer than fourth. Thorax but slightly wider than long, sides parallel from base to middle, thence broadly curved and rounded into the apex, hind angles rectangular; disc with a faint, broad, longitudinal median impression, the punctures fine, ocellate, separated by about one-half their own diameters, their intervals minutely alutaceous. Elytra but slightly wider at base than thorax, sides parallel to apical third, then feebly curved to apex; striæ fine, their punctures small, close set; intervals feebly convex, each with three or four rows of minute, hair-bearing punctures. Under surface finely and sparsely punctate, the hairs of the punctures much shorter than those of elytra. Length 4.8–5.5 mm.

Described from seven specimens taken at porch light, June 12–July 11. Allied to *H. densus* Lec. but readily separated by its more slender subparallel form, wholly pale and more filiform antennæ, more shining surface and much finer sculpture of thorax and elytra. Named in honour of my daughter-in-law, Elberta H. Blatchley, of Dunedin, Fla., who has kindly collected for me this and many other interesting beetles during the summer months.

Pseudariotus amicus Casey.—One specimen, April 6. Casey described it from two specimens taken at Biscayne Bay, Fla., by Hubbard and Schwarz.

Vanonus sagax Casey.—A single example, April 6. Both this and the preceding, as well as a number of other interesting forms, as *Emelinus** *ashmeadi*, *Zonantes schwarzi*, *Sandytes ptinoides* and *Toxotropis floridanus*, have been taken only by sweeping ferns and other vegetation in Skinner's Hammock, a densely wooded, wet tract of several hundred acres located one mile north-east of Dunedin. Casey's types of *V. sagax* were from Indian River, Fla. It is known also from Crescent City.

Epicauta watsoni, sp. nov.—Elongate, subcylindrical. Black, above uniformly and densely clothed with grayish-yellow pubescence; antennæ black, legs piceous. Head with a narrow and deep median groove, its sculpture concealed; eyes large, rather coarsely granulated, not emarginate; antennæ with joints cylindrical, of equal thickness throughout, closely united, the second one-third the length of third. Thorax distinctly wider than long, sides straight, at apical third strongly obliquely convergent, hind angles obtuse; disc apparently smooth, but with punctures so minute as to be visible only under high power, and with a wide, deep, entire median groove which expands near base and apex. Elytra with sculpture concealed, their tips separately rounded. Under surface finely granulate-punctate, the pubescence less dense than that above. Length 9.5 mm.

One specimen taken on Compositæ near Gainesville, September 17, by Prof. J. R. Watson, the able entomologist of the Florida Agricultural Experiment Station, in whose honour I have given the name. Differs from all other known species of Section A of Horn in the form and sculpture of thorax. Messrs. Schwarz and Barber report that it is unlike anything in the National Museum collection and entirely unknown to them. In a manuscript "List of Coleoptera named for Mr. Chas. Johnson by John Hamilton and said to have been taken in the vicinity of St. Augustine,

*This was wrongly printed *Emelinus* on page 277 of the August No. of the Can. Entom.

Florida," which list has been loaned me by Mr. Schwarz, I find the following: "*Epicauta strigosa* and a n. sp., the female of which has the thorax smooth, impunctate, polished." It is very probable that the new species thus briefly mentioned by Dr. Hamilton is the one I have above described as *Epicauta watsoni*.

Anthonomus scutellaris Lec.—Two specimens on March 9, by beating plum. In the "Rhynchophora of N. E. America," its southern range is given as Georgia and Texas. Bred from wild plum taken at Brookville, Fla., by P. H. Dorsett. (Schwarz Mss.)

Anthonomus elegans Lec.—On February 27 a single example of this handsome weevil was swept from the foliage of the mangrove, *Rhizophora mangle* L., on Hog Island. Known heretofore only from Haulover, Jupiter and Biscayne Bay on the east coast of Florida.

Conotrachelus serpentinus Boh.—One specimen taken March 6, by beating in the Skinner Hammock. Recorded only from Enterprise and Biscayne Bay.

Acalles granosus Lec.—Two specimens of this rare species were taken February 17 in company with *Anthonomus duryi* and *Conotrachelus maritimus* beneath chunks of saw palmetto stems along the beach of Clearwater Bay; also recorded only from near the east coast.

Cryptorhynchus helvus Lec.—Of this rare species, known heretofore only by the unique type from Enterprise, Fla., I possess a single specimen kindly given me by H. L. Dozier. It was taken near Gainesville on June 26, 1916.

Sphenophorus chittendeni Blatch.—A fourth specimen of this distinct "bill-bug" was picked up December 21 from the sidewalk along the bay front at Dunedin. It evidently occurs only along or close to the sea coast.

In order to be enabled to devote all of his time to closely allied economic work in the Agricultural Department of the University of Minnesota, Professor F. L. Washburn, for fifteen years State Entomologist, has asked and obtained the consent of the Board of Regents of the University to drop the State Entomologist work, with its attendant police and quarantine duties, this change to be effective February 6th, 1918.

NEW NEARCTIC CRANE-FLIES (TIPULIDÆ, DIPTERA).
PART IV.

BY CHARLES P. ALEXANDER, LAWRENCE, KANSAS.

Family *Tipulidæ*.Sub-family *Limnobiinæ*.Tribe *Eriopterini*.**Erioptera (Erioptera) megophthalma**, sp. n.

Allied to *E. macrophthalma* Loew, *E. vespertina* O.S., etc.; coloration reddish yellow throughout; antennæ with the scape dark brown, the flagellum pale basally, passing into darker toward the tip; inner margins of the eyes broadly margined with silvery.

Male.—Length 5.5. mm.; wing 4.5–5.2 mm.

Rostrum and palpi dark brown. Antennæ with the scape dark brown, the basal flagellar segments light yellow, passing into dark brown toward the tip. Head with the front and the vertex adjoining the inner margin of the eye silvery white; remainder of head yellowish buff with an indistinct brown median line. Eyes of the male very large, contiguous across the ventral portion of the head, purplish black.

Thorax clear reddish yellow, including the pleura, not brightened on the humeral angles of the mesonotal præscutum (as in *vespertina*). Halteres pale. Legs golden yellow, the apical tarsal segments darkened. Wings with a pale grayish tinge, the veins pale, the costal region yellow.

Abdomen light reddish yellow with long, pale hairs; male hypopygium with the ninth tergite quadrangular, the apex squarely truncated, pleurites long, the dorsal appendage straight, pale, tipped with darker.

Habitat.—Northeastern United States.

Holotype.—♂, Bools Hillside, Ithaca, N. Y., reared from larva, June 3, 1917.

Allotopotype.—♀.

Paratopotypes.—25 ♂s ♀s; paratypes, ♂, Westchester Co., Tarrytown, June 9, 1914 (Frost); Fulton Co., Sacandaga Park, June 18, 1916 (Alexander); Herkimer Co., Indian Castle, June 9–13, 1915, (Alexander).

February, 1918

Type in the collection of the author.

Related to *E. macrophthalma* Loew (Europe). In our fauna closest to *E. vespertina* O.S. in the enlarged eyes of the male sex but differing in the clear, reddish brown coloration of the body, lacking the yellow humeral angles to the præscutum and the bright yellow knobs to the halteres. The male hypopygia are differently constructed in the two species.

E. vespertina is an inhabitant of open swamps and meadows, while *E. megophthalma* is characteristic of cool woods and boggy, shaded hillsides. I reared this new species from numerous larvæ, occurring in mud and beneath rotting leaves, associated with other crane-fly larvæ (as *Dicranomyia stulta*, *Molophilus hirtipennis*, *Ormosia innocens*, *Limnophila fuscovaria*, *Rhaphidolabis flaveola*, *Tipula oropezoides*, *T. collaris*, *T. cayuga*, *Bittacomorphella*, *jonesi*, etc.) in the *Symplocarpus* association on Bools Hillside. The larva is curious in the chalky white colour due to the contents of the food-canal showing through the skin; the head-capsule and spiracular-disk are very small.

Tribe *Limnophilini*.

***Lasiomastix subtenuicornis*, sp. n.**

Allied to *L. tenuicornis* O.S.; antennæ of the male elongated; apical cells of the wings pubescent; cell M_1 of the wings lacking.

Male.—Length 7 mm.; wing 7.4 mm.

Female.—Length 8.8–9 mm.; wing 8.8 mm.

Rostrum and palpi black, the former slightly pruinose. Antennæ of the male elongated, black, the flagellar segments elongate-cylindrical with a dense, whitish pubescence. Head light gray.

Præscutum brownish gray with three broad, dark brown stripes, the median one not attaining the suture; scutum, scutellum and postnotum blackish gray pruinose. Pleura dark with a clear, blue-gray pruinosity. Halteres yellow, the knobs a little darker. Legs with the coxæ dull yellowish, the two anterior pairs a little pruinose basally on the outer faces; trochanters yellow; femora yellow, passing into brown on the outer third; tibiæ and tarsi dark brown. Wings dusky gray; stigma brownish; veins dark brown; a sparse pubescence in the apical cells of the wings. Ven-

ation: cell R_2 sessile or very short-petiolate; cell M_1 lacking by the fusion together of veins M_1 and M_2 .

Abdomen dark brown, the sternites paler; female ovipositor long, brownish yellow.

Habitat.—Northeastern United States.

Holotype.—♂, Bools Hillside, Ithaca, N.Y., June 4, 1917, (Alexander).

Allotopotype.—♀.

Paratopotypes.—3 ♂s, 2 ♀s, June 4-13, 1917.

Paratype.—♂, McLean, N.Y., May 31, 1913.

Type in the collection of the author.

Readily distinguished from *L. tenuicornis* O.S., its closest ally, by the lack of cell M_1 of the wings. The usual flight-period of the species is presumably in late May and the first week of June. The season of 1917 was very cold and backward, at least two weeks late by mid-June.

Sub-family *Tipulinae*.

Tribe *Tipulini*.

Tipula aperta, n. n. for *T. imperfecta* Alexander.

(Proc. Acad. Nat. Sci. Phila., Sept., 1915, p. 484-485) not *T. imperfecta* Brunetti (Rec. Indian Museum, vol. 9, 1913, p. 260).

Tipula sackeniana, sp. n.

Tricolor group; close to *T. tricolor* Fabr.; coloration reddish brown; male hypopygium without a pencil of reddish hairs on the sides of the caudal margin of the ninth tergite.

Male.—Length 16.8-17.5 mm.; wing 15.5 mm.

Female.—Length about 18 mm.; wing 17.5 mm.

Frontal prolongation of the head with the dorsal half pale brownish yellow, the ventral portion darker, with a dark, lateral line; palpi dark brown. Antennæ with the scape dark brown; flagellar segments light yellow, the basal enlargement brown. Vertex light gray in front and very narrowly along the inner margin of the eyes; remainder of the vertex brownish gray with a narrow, brown line; an orange spot on the sides of the vertex at the narrowest part; occiput similar in colour.

Mesonotal præscutum light gray laterally, the stripes reddish brown, narrowly margined with brown, median stripe narrowly bisected by a dark brown vitta, the interspaces dark; scutum reddish brown; scutellum and postnotum yellowish brown. Pleura brownish yellow, the posterior half, including the coxæ of the middle and hind legs, white pruinose. Halteres light brown, the knobs brown. Legs with the trochanters yellow, the fore coxæ darker; femora dark brown, the basal portion brighter, tibiæ and tarsi dark brown. Wings like those of *T. tricolor*; reddish gray, the costal region darker, a broad, pale streak in cell *M* and the anal angle paler; hyaline oblitative streak interrupted before the stigma.

Abdomen reddish yellow, the sides of the basal segments more yellowish, the terminal segments a little darker, the caudal margins of the segments very narrowly silvery. Male hypopygium with the ninth tergite produced caudally into an elongate median lobe, rounded across its tip which is darkened; no pencil of reddish bristles near the base of this lobe as in *tricolor*.

Habitat.—Eastern United States.

Holotype.—♂, Difficult Run, Virginia, July 25, 1915, (Alexander).

Allotype.—♀, Falls Church, Virginia, Sept. 26, 1915, (McAtee).

Paratopotypes.—2 ♂s; *paratype*.—♂, Beltsville, Maryland, Aug. 8, 1915, (McAtee); ♂, Stone Mt., Georgia, Aug. 3, 1913, (J. Chester Bradley); ♂, Ithaca, New York, Aug. 26, 1914, (Alexander).

Type in the collection of the author.

Similar to *T. tricolor*, but the entire body much more yellow, the thoracic stripes more reddish, the abdomen reddish yellow with the terminal tergites scarcely darkened; ninth tergite of the male without a pencil of hairs on either side of the median lobe. *T. fraterna* is smaller, the thoracic stripes brownish gray, sides of the abdominal segments broadly infuscated and the femoral tips brown.

Tipula aprilina, sp. n.

Dejecta group; closely resembling *T. dejecta* Walker, except in the male hypopygium.

Male.—Length 11–11.2 mm.; wing 11.5 mm.

Region of the ninth tergite large, the caudal margin with the lateral angles produced caudad into prominent, blunt lobes that are blackened and furnished with small tubercles, the caudal margin truncated; between the lateral lobes two parallel, usually longer and slightly pointed lobes that are directed slightly ventrad, one situated on either side of the median line; outer pleural appendage very small, inconspicuous, elongate-cylindrical, yellowish; inner pleural appendage elongate, narrow; margins of the ninth sternite not widely separated beneath, carinated with a narrow, V-shaped caudal notch; at the point of the notch a pair of small, elongate, fleshy lobes.

Habitat.—Eastern United States.

Holotype—♂, Mount Vernon, Virginia; Apr. 16, 1916, (W. L. McAtee).

Paratopotypes.—2 ♂s.

Types in the collection of the U. S. Biological Survey.

In *T. dejecta* Walker, the caudal margin of the ninth tergite bears a broad median lobe that has its posterior portion produced into two flattened, divergent horns; outer pleural appendage prominent, elongate, curved; inner pleural appendage short and broad, the ninth sternite with a broad V-shaped notch.

***Tipula helderbergensis*, sp. n.**

Hebes group; related to *latipennis* Loew.; general colour very dark; antennal flagellum uniformly brown; male hypopygium with the eighth sternite with a dense fringe of long, golden hairs.

Male.—Length 12–13 mm.; wing 13.8–14 mm.

Female.—Length 14.5 mm.; wing 14.4 mm.

Antennæ elongated, the flagellar segments dark brown throughout. Vertex behind dark gray with a diffuse, blackish median stripe.

Præscutum light gray with three darker gray stripes, the lateral stripes margined inwardly and anteriorly with darker; median stripe broadest, margined laterally with darker, the anterior portion likewise darker, somewhat blackish; scutum grayish, more brown medially, each lobe with two dark confluent blotches; scutellum brownish yellow, a little darker medially; postnotum

brownish, the anterior half most intense. Pleura silvery white, the mesosternum and mesopleura brownish. Halteres dark brown, the knobs and extreme bases of the stems pale. Legs with the coxæ yellow, the posterior coxæ dusted with white pollen; femora dull yellow, the tips dark brown; tibiæ and tarsi yellowish brown. Wings with the usual *hebes* pattern but this very heavy.

Abdomen brownish yellow, the tergites broadly margined with paler, and submargined with a narrow brown line, palest on the basal segments, on the fourth and succeeding tergites darker and suffusing the dorsum of the segments; on the five basal tergites with a dark brown, dorso-median line that is interrupted only by the pale, caudal margins of the segments; sternites brownish yellow, margined caudally with silvery, the eighth sternite dark brown, the lateral lobes margined inwardly with a dense brush of long, golden hairs. Male hypopygium with the eighth sternite with the caudal margin deeply incised, tripartite, the lobes fringed as described above. Blade-like process not of the elongate, spiral, horn-like structure of *latipennis* but flattened, the acute tips curved strongly downwards, the ventral carina obliquely and parallelly grooved or fluted; lower process longer, straight and more pointed, the expanded basal inner portion evenly rounded, suffused with brown, not rectangular or toothed, (as in *latipennis*) upper process a prominent flatted lobe, rounded apically, the whole lobe intensely chitinized, black, not at all hatchet-shaped as in *latipennis*. In *T. hebes* the lower process is very massive and with the basal inner portion produced proximad as an acute, chitinized spine; the blade-like processes very narrow toward the tip which is feebly expanded into a spatula; the upper process bifurcate, with two chitinized arms, the outer more pointed, the inner flattened and with the apex rounded.

Habitat.—Northeastern United States.

Holotype.—♂, Indian Ladder, Helderberg Mts., Albany Co., N.Y., July 3, 1916, (Alexander).

Allotopotype.—♀.

Paratopotype.—♂; *paratype*.—♂, Wells, Hamilton Co., N.Y., July 31, 1914, (Young); in the N. Y. State Museum.

Type in the collection of the author.

Tipula huron, sp. n.

Related to *T. submaculata* Loew.; wings with a heavy brown pattern.

Male.—Length 14 mm.; wing 15.6 mm.

Frontal prolongation of the head light yellow dorsally, more infuscated on the sides below, palpi light brown, the apical segments somewhat darker. Antennæ bicolorous, the flagellar segments beyond the first with the basal enlargement black, the remainder of each segment dull yellow. Anterior part of the vertex with three linear down dashes, the median one on the frontal tubercle. Vertex dusky gray with a brown more or less interrupted median line; occiput paler.

Præscutum pale gray with three broad, dark brown stripes, the median one broadly bisected by a reddish brown line; thoracic interspaces dull, infuscated; scutum light gray, the lobes brown, scutellum and postnotum dull brownish yellow. Pleura clear, light gray, the dorso-pleural membranes more yellow. Halteres brownish, paler basally. Legs with the coxæ whitish pollinose, the anterior coxæ more pink; femora dull yellow, the tips darkened; tibiæ dull yellow, the tips very narrowly darkened; tarsi brown. Wings hyaline or sub-hyaline with the costal region more yellow; a heavy brown and gray pattern arranged about as in *T. angulata*, *T. subfasciata*, etc. The brown areas including a large basal area, a blotch at the origin of the sector, along the cord and the wing-apex, all of these marks passing into gray on the caudal cells of the wing; a broad, white fascia beyond the cord extending entirely across the wing except the extreme apex of cell *M*₄. Venation: vein *R*₂ persists for its whole length.

Abdomen dull yellow above, the tergites indistinctly ringed caudally with silvery; tergites seven and eight, and the caudal portion of six, infuscated; an interrupted sub-lateral brown line extending from the middle of tergite two to the base of tergite five; sternites dull yellow. Male hypopygium very similar to *T. submaculata*, but the lateral points of the ninth tergites in the latter species are usually shorter and less acute.

Habitat.—Nothern United States.

Holotype.—♂, Dodge Co., Wisconsin, June 5, 1910.

Type in the collection of the author.

The species is closest to *T. submaculata* Loew., but in the heavy wing pattern bears a superficial resemblance to the *angulata* and *subfasciata* groups, from both of which the structure of the hypopygium will readily distinguish it. The thoracic pattern of *submaculata* is quite different, the median stripe being dissected by a very broad, pale line.

***Tipula fultonensis*, sp. n.**

Arctica group; related to *T. longiventris* Loew., but the abdomen of the female is about half an inch shorter than in the same sex of that species (abdomen, *fultonensis*, 16 mm.; *longiventris* 26-27 mm.).

Female.—Length 22 mm.; wing 18.5 mm.; abdomen 16 mm.

Antennæ with the apical flagellar segments indistinctly bicolorous. Head dull gray, the vertex with a narrow, brown line.

Præscutum buffy with three broad, grayish brown stripes that are broadly margined with dark brown; thoracic interspaces without brown setigerous punctures; each lobe of the scutum with a small, anterior gray spot and a larger brownish area behind; postnotum gray with a narrow, brown median line. Pleura whitish gray pruinose. Legs with the coxæ grayish; femora dull yellow, the tips very pale brown; tibiae similar; tarsi brown. Wings with a brownish, gray pattern.

Abdominal tergites dull brownish yellow, broadly trivittate with dark brown, the lateral margins of the abdominal segments dark brown basally, gray apically, the brown sublateral stripe being very sensitive on the basal portion of each segment, sternites grayish brown; valves of the ovipositor and the dorsal shield chestnut brown, the lateral margins of the valves with about ten acute teeth; extreme tips not divergent.

Habitat.—Northeastern United States.

Holotype.—♀, Mt. Buell, Sacandaga Park, Fulton Co., N.Y., altitude 1,500 ft., June 15, 1916, (C. P. Alexander).

Type in the collection of the author.

Compared with females of *longiventris*, the present species offers the following differences: thoracic dorsum buffy brown, rather than gray; wing pattern more brown, heavier; abdomen short; ovipositor and dorsal shield chestnut brown instead of almost black, and the tips are scarcely elongate and slightly divergent.

***Tipula bergrothiana*, sp. n.**

Arctica group; related to *centralis* Loew., but smaller and the male hypopygium different; wings of female atrophied.

Male.—Length 10.5 mm.; wing 12.2 mm.

Female.—Length 17 mm.; wing about 2 m.

Frontal prolongation of the head grayish basally, more brownish apically; palpi brown. Antennæ with the scape rather bright yellow; flagellar segments rather uniformly brown, the basal enlargement a little darker than the rest of the segments and only slightly enlarged. Head with the vertex light gray, more suffused with brown behind and on the occiput.

Mesonotal præscutum gray, the median thoracic stripe almost obliterated, lateral stripes indicated only by the narrow, bright brown margins; remainder of mesonotum gray. Pleura dull gray. Legs with the coxæ brownish gray; trochanters and femora yellowish brown, the latter a little darkened outwardly; tibiæ and tarsi slightly darker. Halteres dirty pale brown, the knobs dark brown. Wings of the male elongate, in the type crumpled and this possibly the normal condition although the venation is not distorted. Wings brown and gray with hyaline areas as in *septentrionalis* Loew., etc.

Abdomen with the first tergite and the extreme base of the second gray, the remainder of the abdominal tergites brown; a dark brown median stripe; pleural membrane distinct dark brown, simulating a lateral stripe; sternites brown, the caudal margins narrowly pale. Male hypopygium small, simple, with the ninth tergite as in *centralis*, a shiny, heavily chitinized saucer, the caudal margin feebly concave medially to receive the inner pleural appendages; each caudal lateral angle produced into an acute tooth and the margin of the saucer on either side with a smaller similar tooth beyond mid-length. Ninth pleurite complete but small; outer pleural lobe moderate in size, flattened, the inner face somewhat convex, the outer face pale brown with abundant appressed hairs; a caudal inner angle of each pleurite produced dorsad in a somewhat similar flattened lobe whose outer face is shiny and abundantly provided with erect hairs; this lobe bends dorsad and somewhat cephalad inside the outer pleural appendage; ninth sternite with a deep, V-shaped median notch, beneath the point of

which the sclerite is elevated into a transverse ridge. Eighth sternite unarmed.

The female is similar to the male but the wings are greatly atrophied, the legs, especially the femora, incrassated and the tibiae and tarsi shortened. The abdominal tergites are brown with a broad, basal median area of black on each segment, the caudal margins brighter; lateral margins of the segments pale yellowish, sublaterally with a blackish band. Ovipositor of the *arctica* type, the ends of the valves rather blunt, the dorsal edge with four or five sharp teeth, the lateral margin with seven or eight similar but larger teeth.

Habitat.—Alaska.

Holotype.—♂, Koyukuk R., Alaska; Lat. 67–69 N.; Long. 151 W. (W. J. Peters). Summer of 1901.

Allotopotype.—♀.

Types in the collection of the U. S. National Museum.

***Tipula macrolaboides*, sp. n.**

Macrolabis group; related to *T. macrolabis* Loew of North-eastern North America but differing in the male hypopygium, the pleural lobes unarmed at their tips; the ninth tergite with an acute median lobe, the broad, lateral lobes deeply notched to form two smaller lobes.

Male.—Length 17–17 mm.; wing 17–18.6 mm.

Close to *macrolabis* except as follows:

Antennæ of the type light brown throughout, the paratype uniform pale throughout.

Præscutum light gray with four narrow, chestnut brown stripes, the median one divided by a very broad ground vitta, pointed anteriorly; lateral stripes shorter, continued back on to the scutal lobes.

Male hypopygium with the ninth tergite extensive, with a broad and deep dorsal depression; produced caudad into a compressed median blade with a sharp dorsal edge or carina; the broad lateral lobes are deeply notched by a rounded incision to form two smaller lobules on either side, the proximal lobule longest, shiny, the lateral one with a sharp edge that is provided with a few stout bristles. Ninth pleurite complete, the caudal ventral angle produced caudad and slightly dorsad and proximad as a promi-

ment slender arm (as in *macrolabis*) this expanded on its apical half into a flattened, paddle-like blade that is unarmed.

Habitat.—Western Arctic America, south along the mountains into New Mexico.

Holotype.—♂, White Mts., N. Mex.; highest summit (11,092 ft.) Aug. 14, (C. H. T. Townsend).

Paratopotype.—♂, South Fork of Eagle Creek, Alt. 8,000 ft. Aug. 13, (C. H. T. Townsend).

Paratypes.—♂, Saldovia, Alaska, July 21, 1899, (Trevor Kincaid) Harriman Exped., 1899. Previously reported by Coquillett as *T. macrolabis* Loew.; ♂, Hudson Bay Territory (Loew). Collection in the M. C. Z., part of the type-material of *macrolabis*.

Type in the collection of the U. S. National Museum.

***Tipula coracina*, sp. n.**

Coloration black and yellow; wings whitish subhyaline; male hypopygium simple in structure.

Male.—Length 9.8 mm.; wing 11.4 mm.

Frontal prolongation of the head short; black; nasus stout. Palpi dark brownish black. Antennæ blackish brown, the flagellar segments cylindrical, not incised; verticils very short, first flagellar segment with these bristles scattered, the remaining segments having them basal in position. Head black, finely punctured. Eyes with rather coarse ommatidia.

Pronotal scutum black; scutellum bright yellow on either side of the infuscated dorso-median depression. Mesonotal præscutum black, the interspaces with a few scattered paler hairs; scutum black, except on the sides behind the wing-root where it is obscure yellowish; scutellum and postnotum black. Pleura dark brownish black, the extensive dorso-pleural membranes yellowish. Halteres brownish yellow. Legs with the coxæ and trochanters black; femora yellowish basally, the remainder of the legs dark brown. Wings whitish with a pale brownish tinge; stigma ill-defined, brownish; veins dark brown. Venation: R_2 short, straight; R_{2+3} longer than R_2 alone; cell M_1 open in both wings by the partial atrophy of vein M_1 ; cross vein M very long and prominent, inserted just beyond the fork of M on M_{3+4} .

Abdominal tergites and sternites dark brownish black, the segments broadly margined laterally and caudally with yellowish. Hypopygium simple, small; ninth tergite moderate in size; ninth

pleurite complete, elongate extending back to the eighth segment; outer pleural appendage an elongate fleshy lobe that is narrowed apically, clothed with long hairs that are directed backward; inner pleural appendage of somewhat similar structure, elongate, bearing on the inner face a small, sub-apical tooth; the surface is densely clothed with a short pubescence. Ninth sternite with a deep, V-shaped notch; eighth sternite unarmed.

Habitat.—Alaska.

Holotype.—♂, Point Barrow, Alaska, July 8, 1882 (John Murdock).

Type in the collection of the U. S. National Museum.

OBITUARY NOTICE.

WILLIAM D. KEARFOTT.

Canadian students of Lepidoptera will regret to record the death of William D. Kearfott, of Montclair, N.J., which occurred on November 12th, 1917, following an attack of apoplexy. Born in Berkeley County, West Virginia, on January 12th, 1864, he was thus, comparatively, a young man. We learn from Entomological News, January, 1918, that he was educated in primary schools in Richmond and Philadelphia. In his earlier years he was connected with the Morton Poole Company, of Wilmington, Delaware, and the International Navigation Company, of Philadelphia. He was associated also with the Worthington Steam Pump Company. Two years ago he formed the Kearfott Engineering Company. He was considered an authority on his branch of engineering.

Kearfott was a keen student of the Micro-lepidoptera, particularly of the family Tortricidæ, and was specially interested in Canadian species. During the years 1903 to 1908 he built up a large correspondence with collectors throughout Canada and, as a result, brought together a most important collection, particularly of the family mentioned. He was an exceedingly bright correspondent and ever ready to help us in the determination of specimens in the groups in which he specialized. Of late years, however, his eyes gave him considerable trouble, and he found it necessary to give up the study of the small moths he loved so well. His collection of Tortricidæ, which was particularly rich in Canadian material, is now in the American Museum of Natural History. His Pyralidæ is in the Barnes' collection.

Among the important papers which he published, those which relate to Canadian species are the following:

- New North American Tortricidæ: Trans. Amer. Ent. Soc. XXXIII, 1—Twenty species from Canada described.
- New Tortricids from Kasko, B.C., and the Northwest: Can. Ent., XXXVI, 109, 137—Six species from Canada described.
- A New Proteopteryx: Can. Ent. XXXVI, 306—Description of *P. willingana*, from Regina, Sask.
- Coleophora tiliaefoliella* Clem.: Can. Ent. XXXVI, 324—Description of adult found at Ottawa.
- New Tortricids: Can. Ent. XXXVII, 9—Three Canadian species described.
- A New Gelechid from Ontario: Can. Ent. XXXVII, 15—Description of *Aristotelia youngella* from Ottawa.
- Assiniboia Micro-lepidoptera, Collected by Mr. T. N. Willing: Can. Ent. XXXVII, 41, 89, 119—Seven new species described.
- Maritoba Micro-lepidoptera: Can. Ent. XXXVII, 205, 253, 293—A list of species taken chiefly at Aweme, Cartwright and Rounthwaite.
- New Micro-lepidoptera: Can. Ent. XXXIX, 1, 53, 77, 121, 153, 211—Thirty species from Canada described.
- New North American Tortricidæ and Tineina: Jour. N.Y. Ent. Soc. XVI, 167—Six species from Canada described.

In the above papers it will be seen that 69 new species from Canada are described. In these articles, in many instances, valuable larval notes are also included. His last paper published in this journal, entitled "A New Species of Japanese Micro-lepidoptera," appeared in October, 1910.

His business life was an exceedingly busy one, and it is remarkable that he was able to accomplish so much valuable systematic work. In one of his letters he told the writer that his business required nearly eleven hours' work a day.

In June, 1907, Mr. Kearfott paid a week's visit to Ottawa, and during that period the writer, Dr. Fletcher and Mr. C. H. Young, had many happy hours together at Meach Lake, Que., the Mer Bleue, and other attractive collecting spots near Ottawa. We all enjoyed Kearfott's bright, jovial company during this visit, and Mr. Young and the writer, the remaining two of the above quartette, will long remember the pleasant outings we had together.

Mr. Kearfott is survived by his wife, one son and one daughter.

ARTHUR GIBSON.

Mailed February 8th, 1918.