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ENTOMOLOGICAL EXHIBITS AT THE NEW ORLEANS EXPOSITION.

BY THE EDITOR.

The United States Government exhibit, and those of several of the States, at the New Orleans Exposition, included many features of interest to the Entomologist. The Entomological Bureau of the Department of Agriculture had a very fine display illustrating Economic Entomology, which was brought together and arranged under the direction of Prof. Riley, and was not only interesting, but very instructive.

The first thing that caught the eye of the visitor on entering this section was a series of large diagrams on cotton, illustrating the life history of a number of injurious insects, such as the Plum Curculio, *Conotrachelus nenuphar*, and its parasites; the Chinch Bug, *Micropus leucopterus*; the Jumping Sumach Beetle, *Blepharida rhois*; the Boll Worm, *Heliothis armigera*; the Round-headed and Flat-headed Apple-tree Borers, *Saperda candida* and *Chrysobothris femorata*; the Codling Moth, *Carpocapsa pomonella*; the Peach Borer, *Aegeria exitiosa*; the Grape Phylloxera, *Phylloxera vastatrix*, and a large number of other well-known injurious species. The insects themselves were arranged in cases near by, and grouped so as to show those injurious to the apple, pear, peach, orange, strawberry, raspberry, currant, gooseberry, melon, cranberry, persimmon, grape, sugar cane, hop, rice, Indian corn, small grains, cotton, grass, clover, pea, bean, cabbage, potato, tomato, tobacco, asparagus and onion. Many of these groups were very complete, having along with the perfect insects the pupæ and blown larvæ, with specimens of the articles injured, also the friendly insects which aid in subduing those which are injurious.

There was a very interesting section relating to bees and bee-culture, including all sorts of hives and apparatus, specimens of the different races of bees, with dried specimens of the plants and flowers from which honey is chiefly extracted.

A large department was filled with every kind of spray apparatus for

applying liquid poisons to growing crops for the purpose of destroying injurious insects.

The silk exhibit was also very instructive, showing this substance in all stages of manufacture from various species of silk worms, including some of our natives.

A very complete catalogue of the exhibit had been prepared, covering 95 pages 8vo., which was freely distributed to those specially interested in the subject.

In the Florida exhibit there was one case of insects containing a number of butterflies and beetles, including some beautiful *Papilios*, the only familiar species being *crephontes*. There were no names to the specimens, and nothing to indicate who they were collected by.

North Carolina shows four cases of insects without names, including some very handsome species of Lepidoptera, Coleoptera and Neuroptera.

In the Texas department there was a gorgeous display, the collection of L. Heiligbrodt, of Bastrop, Bastrop Co., Texas, consisting of twelve cases of Coleoptera and twelve of Lepidoptera, classified and named, including some of the most brilliant and perfect specimens ever seen by the writer, with wonderful metallic lustre. Mr. H. also exhibited forty-three cases of European insects.

The State of Mississippi shows one case of insects fancifully arranged, collected by Miss P. Crump, including all orders, among them some rare and interesting butterflies.

In the Maryland exhibit, Mr. E. Louis Graf, of Baltimore, has a very singular looking display consisting of several cases of insects with the specimens arranged in fanciful designs and representing objects such as the American eagle, etc.

In the woman's department there was a collection of galls by Miss Cora H. Clarke, of Boston, in eight cases; also a series of excellent drawings of insects and parts of insects by Mrs. A. B. Comstock.

Among the exhibits from Japan there were quite a number of insects shown by the educational department, consisting of four cases of Lepidoptera, including some very beautiful diurnals and handsome moths. The only familiar butterfly here was that cosmopolitan species, the Painted Lady, *Pyrameis cardui*. There were two cases also of Coleoptera, containing some handsome longicorns, one case each of Neuroptera, Hemiptera and Orthoptera, and one of mixed Hymenoptera and Diptera.

In addition to these there were two large cases where the specimens

were grouped so as to show those injurious and those beneficial to agriculture.

There were probably other collections of insects in the buildings, but there being no official catalogue to guide the visitor, there was great difficulty in finding them.

REMARKS ON SOME SPECIES OF COLEOPTERA, WITH SUPPLEMENTARY DESCRIPTIONS.

BY JOHN HAMILTON, M. D., ALLEGHENY, PA.

Many of the species of Coleoptera have been described from single, or, at the most, two or three specimens; these often imperfect, immature, or with individual peculiarities. Owing to this, those who undertake to determine their insects by descriptions, even allowing a wide latitude of interpretation, are frequently in doubt and uncertainty. Where families and genera have passed through recent monographic review, the re-description of the species from better preserved or more abundant material usually obviates the difficulty, but enough still remain to give trouble.

Among these, the ones here introduced seem deserving of notice, as a some further description is necessary for their identification without having recourse to friendly aid.

Toxotus Schaumii Lec. The first difficulty is the feebleness of an important generic character; to be a *Toxotus* the eyes must be emarginate, and they are so obsoletely so in the few individuals of this species that have come under my observation as to make this character opinionative. There are two forms of this species so unlike in color, that unless taken in close relation, they would scarcely be recognized as belonging to the same species.

When Dr. LeConte described this species (Jour. Acad. Nat. Sci., Phil., 2d series, vol. 1, p. 320), he seems to have only known one of these forms, characterizing it as "black, with whitish pubescence, legs black, femora yellowish, with base and tip black." This seems to apply to both sexes. And if the specimen in hand is of this color and recognized as a *Toxotus*, there is no further trouble. But should the specimen be reddish yellow, with black elytra so closely clothed with whitish grey pubescence as to conceal the color, antennæ black, with yellow basal joint, and tarsi piceous,

the diagnosis might be incorrect and induce the collector, were he ambitious in that direction, to add another synonym.

It is true, Dr. LeConte mentions, in a two-line notice, that this is a male form (Proc. Acad. Nat. Sci., 1862, p. 41); but, as the volume is not indexed, unless stumbled on accidentally the reference would escape notice. This appears to be a rare Cerambyan, and among the choicer. The specimen taken here was of the last mentioned form, being in length 1.20 inch. Heretofore it seems to have occurred only in Ohio, (LeConte, Dury).

Leptura vibex Newm. A color variety of this caused me some trouble, notice of which, if any, has escaped my attention. Dr. Horn described the species under the name *nitidicollis*, giving a fine colored figure (Proc. Acad. Nat. Sci., Phil., 1860, p. 570 and plate 8). Normally it is black, with the mouth parts and a narrow marginal and medium stripe (subject to variation) yellowish; legs rufous; femora with the distal end black, or not. This describes the form found here. The other form previously alluded to corresponds also with this description, except that the thorax is entirely yellow. I took it in Ohio, forty miles westward from here, but did not find the other form there, so that perhaps it is a local race. The species appears to be distributed from Northern Michigan through Canada and southward to Virginia. The variation in the extent of the elytral stripes is considerable; in some individuals the marginal one is obsolete and the dorsal reduced to a mere line; in others they are dilated so as to leave only a narrow sutural and lateral stripe black; and some may possibly be found with the elytra entirely black, or entirely yellow.

Rhinoncus longulus Lec. is common and very abundant, occurring from Florida to Michigan, and also in California (LeConte.) Here it feeds exclusively on *Polygonum virginicum* Lin., a plant growing in open woodlands, the leaves of which it perforates. Its season of greatest abundance is late in June, but it may be found sparingly till September. Though so common, it does not seem to be well recognized, no insect being oftener given in exchange. This is probably because the description (Rhynchoph. N. A., p. 284) only applies to rubbed or alcoholic specimens, omitting much of the vestiture as met with in life. In addition to Dr. LeConte's description—"thinly clothed with small white scales; more dense, forming a short posterior-dorsal line on the prothorax, and an elongate sutural spot at the base of the elytra"—there is also an elon-

gate sutural spot extending from the middle till near the apex, the anterior and posterior extremities of which are more or less connected with arcuate transverse lines extending to the margin, enclosing on each elytron a black spot nearly destitute of white scales; the humeri are also similarly encircled; the sides of the thorax and abdomen are likewise moderately densely clothed with white scales; the striæ are deep, wide and coarsely punctured, with narrow rugose intervals. When first taken the insect has a very pruinose appearance, but rough handling or immersion in alcohol removes nearly all the scales, except the basal spot.

Piazorhinus pictus Lec. is not very common. I have taken three specimens and have seen three others. It probably lives on *Ostrya Virginica* (known here as Iron-wood). It is excessively variable in the color and ornamentation of its vestiture, no two of the six examples being alike, and only one of them approximating that of the type. Dr. LeConte described the species (Monograph Rhyncoph.) from a single insect taken in Georgia, as "Testaceous, clothed with pale yellowish pubescence; head and beak dusky. Elytra with a large, rounded, common, dusky spot, extending from the base to the middle, paler within; and a dusky, oblique band more or less interrupted on the seventh interspace, which attains the suture about one-fourth from the tip." Of those I have seen, one has the beak and head leonine yellow, like the thorax; the elytra being of the same color, mottled uniformly with brown; another has the beak, head and thorax typical, but the elytra are dusky brown with a streak along the external margins and an irregular fascia near the apex, tawny yellow; another has the beak and head typical, but the thorax has a dark spot in front of the scutellum and there is a small dark spot on each elytron near the middle. The others are still differently ornamented and need not be described, as the above shows sufficiently the variableness of the species in this respect. This species is likely to prove difficult for the collector to determine so long as he has the description of only one insect to refer to, and perhaps only about one in ten of his insects agreeing with it. This is one of the many cases that goes to show that, unless to meet urgent systematic requirements, it would give better results and prevent much confusion to await the accumulation of several specimens before attempting to describe a species.

Among the errors that have become widespread in exchanges it may be of advantage to notice the following:

Microclytus gazellula Hald. has lately appeared on several exchange

lists, but in every instance (four) the specimens sent me were *Cyrtophorus verrucosus* Oliv. The descriptions of *C. gazellula* Hald. and of *Cyrtophorus gibbulus* Lec. (Lake Sup. p. 234 now united with it), show the color and markings to vary greatly individually, and to so closely approximate *C. verrucosus* as to be doubtfully distinguishable, and the separation must be made by reference to generic characters. In *Microclytus* the second joint of the antennæ is as long as the fourth; while in *Cyrtophorus* the second joint is short, and the third is longer than the fourth, (Class. Coleopt.) No weight should be attached to color or markings for the separation of these two species.

Anthonomus cratægi Walsh, which is common and abundant on many kinds of blossoms, especially wild cherry and laurel, is always sent me for *A. rubidus* Lec., which species I have not yet obtained. There should not be much trouble in distinguishing them, as *cratægi* has only six joints in the funicle of the antenna, while *rubidus* has seven—a matter readily determined by counting them under a microscope.

Elater protervus Lec. has been united with *semicinctus* Rand. and *Cryptobium latebricola* Nord. with *pallipes* Grav., both of which have always been troublesome to collectors.

There are many other names on the list that deserve the same treatment, and will, no doubt, eventually be united as the variations in color, size and sculpture within specific limits become better known.

SEASIDE CAPTURES.

BY FREDERICK CLARKSON, NEW YORK CITY.

I visited Fire Island, Rockaway Beach, Long Beach and Coney Island during the seasons of 1883 and 1884. Found myriads of *Cicindela hirticollis* and *dorsalis*, Say. The beaches were fairly alive with these beetles. The *hirticollis* were most abundant in the latter part of June and early part of July, and *dorsalis* at the end of July and beginning of August. These beetles may be found throughout the length of these beaches. They have a singular habit of collecting in great numbers at certain points, where in spaces of about fifty feet square they are as numerous as flies about a stable. This was frequently observed, and so far as the general character of the beach and the surroundings were con-

cerned there was nothing to favor the particular locality. My activity and success in taking these interesting hexapods at the seaside excited on many occasions the curiosity of some equally interesting bipeds, who, barefooted and wading through the surf, doubtless ridiculed my energy and thought me mad.

“ Let Hercules himself do what he may,
The cat will mew, the dog will have his day.”

At the last of spring and in the early summer, *Calosoma scrutator* Fabr. can be found at these beaches. The past seasons, however, gave me but few specimens. *Doryphora decem-lineata* lined the shore during both summers, having been developed in great numbers in the many potato fields of this island-garden of New York. *Cotalpa lanigera* Linn. and *P. humeralis* Fabr. were found during the month of June among the sea weed; the former readily discovered by its brilliant coloring of green and yellow, and the latter by its scarlet spot in a setting of dull blue. A wrecked bark furnished me with good specimens of *Necrophorus Americanus* Oliv. and other genera of the Silphidæ family, together with an occasional unpleasant reminder of the dog that had had his day. Of the tribe Cetoniini only a few specimens were obtained; *Euryomia fulgida* in June, *Allhorina nitida* in July, and *E. inda* at the last of summer. *Harpalus caliginosus* Say was captured in September hid away in the drift at the tide mark. Of this species I would note here the suddenness of its appearance in Columbia county, this State, in the autumn of 1882. In the early part of September I found a single specimen under a stone. On the 13th, a dark and misty day, I captured twenty, and could have taken hundreds feeding upon the seed tops of a common weed, *Ambrosia artemisiæfolia*. The day before and for several days thereafter until the 27th, when I returned to town, only an occasional one was seen. Among the treasures of the beach I collected several shells, perforated in every part by the young of one of the lower order of Crustaceans, and rendered immaculate by the washings of the tide and the sun's rays. The minute winding galleries, not larger than pin holes, displayed exquisite workmanship, resembling the most delicate lace. The mouth parts of these Sea Worms, or Barnacles, are strong and corneous, and are capable of excavating galleries in the hardest substances. I have in my collection a portion of a slab of white Italian marble, recovered in 1878 from the wreck of the ship Grecian, from Leghorn, that foundered off the coast of Long Island

twenty years previous. The specimen measures four by six inches, has a thickness of one inch, and is so thoroughly honeycombed by these Crustaceans as to have reduced its original weight nearly one-half.

MISCELLANEOUS NOTES ON BUTTERFLIES, HABITS OF LARVÆ, ETC.

BY W. H. EDWARDS, COALBURGH, W. VA.

MELITÆA HARRISII, Scud.

I described the stages of this species in CAN. ENT., ix., 165, 1877. In fall of 1883, I received several larvæ from Mr. Chas. Fish, of Brunswick, Me., which were carried through the winter in ice house. They were brought into a warm room 29th April, 1884, and 1st May, began to feed, the plant being wild Aster. On 4th May, some were passing the fourth moult, and these reached fifth moult 10th May. The first larva suspended 17th, pupated 18th, and the imago appeared eight days thereafter, or on 26th May. All the larval stages, however, were irregular. One larva passed fifth moult 19th May, but did not pupate till 1st June. On 7th June, '84, I received from Mr. Fish about 20 larvæ in last two stages, and on 9th about 50 more. Some were in third stage from pupa, or between 2nd and 3rd moult. The species evidently hibernates after both 2nd and 3rd moult, as *M. Phaeton* does. Mr. Fish wrote that all were taken on *Dipoplappus*, and says: "I found them sometimes 4 or 5 on a plant, always on the upper side of the leaf in the most conspicuous position. I have never found them making any attempt at concealment." Prof. Fernald also says, But. Maine, that they make no web over their food-plant.

MELITÆA PHAETON, Drury.

I related in *Papilio*, iv., 69, 1884, how *Phaeton* had come to be exterminated in this region, by reason of a flood in the Kanawha River, in 1878, which covered the river bottoms to a depth of several feet in many places, and especially in the swamp where I formerly used to find the larvæ, as related in But. N. A., Vol. II. The swamp was under ten feet of water for two days after the larvæ had closed their webs for hibernation, in August. For several years I had seen neither larva nor butterfly. I had near my house, on high ground, a plant of *Chelone glabra*, which

years before had been brought from this swamp in order to have food convenient when I might have larvæ of *Phaeton*, and 25th June, 1883, a knot of twisted leaf enclosing eggs of *Phaeton* was found on this plant. Some straying butterfly had found the plant and laid a large cluster of eggs on it. The larvæ from these were carried through the winter, about 60 of them, and I determined to re-people the swamp. On 29th April, '84, I had searched it for larvæ, but found none. On 22nd May thereafter, I turned loose 2 ♂ 6 ♀, and 1st June, 12 ♂ 3 ♀. On 17th July, I visited the swamp again and soon found five webs, with hundreds of caterpillars. Mr. C. Troxley, of Louisville, Ky., wrote me that he had taken *Phaeton* feeding on *Mimulus ringens*, a plant not before recorded. Miss E. L. Morton, of Newburgh, N. Y., has fed the larvæ in confinement on the narrow-leaved Plantain. The other plants known are *Chelone glabra*, *Gerardia pediculata*, *Lonicera ciliata* and *Viburnum dentatum*.

COLIAS EURYDICE, Bois.

I raised a brood of larvæ of this species in 1884, from eggs sent by Mr. W. G. Wright, San Bernardino, on *Amorpha Californica*. I have several of these plants growing in my garden, sent by Mr. Wright, and by covering them in winter, or moving them to the cellar, they do well here. I described the stages of *Eurydice* in CAN. ENT., xv., 224, 1883, and then stated that there was no generic difference between the larva, eggs or chrysalis of this species and *Philodice*, belonging to Group 2. There seemed however to be a difference in the food-plants of the two groups, *Philodice* and *Eurythema* feeding on Clover and Astragalus, the other on a shrub. But I separated part of the *Eurydice* larvæ in '84, giving them white clover, and though they at first seemed unwilling to eat it, they did become used to it and went to pupation on it.

The *Eurydice* butterflies that I have had or have received from Southern California are nearly all quite different from those taken about San Francisco, inasmuch as the disk to base of fore wing is not violet-pink, but yellow. Some have a little changeable lustre, but most have simple yellow.

VICTORINA STELENES, Linn.

I have recently received a fine male of this species, taken March, 1885, at Indian River, Fla., by Dr. W. Wittfeld. A few weeks later another was seen, but flying high, and out of reach. These are the only

examples Dr. Wittfeld has seen since he has collected butterflies, that is, in course of five or six years. *Stelenes* is Cuban, according to Gundlach's list, *Papilio*, vol. i., p. 112. It is also credited to Jamaica by Chenu—perhaps on authority of Doubleday's *Genera*, which I have not at hand to refer to; though Gosse in his *Naturalist in Jamaica* does not mention it. It is found on the Continent from Mexico to Brazil. In my *Synopsis*, 1872, I credited this species to New Mexico, but on what authority I quite forget. At any rate, it was erroneous. Nor has it been taken in S. W. Texas, as Strecker's *Cat.*, 1878, says. In my *Cat.*, 1877, I rejected the species for want of authentication. Its capture in Florida is the first instance known to me of its having been taken in the U. S. The species is very showy, expanding nearly 4 inches. Color pale brown, or blackish-brown, with a broad belt common to both wings of yellow green, and with submarginal green spots. *Victorina* ranks between the genera *Timetes* and *Diadema*. Dr. Wittfeld has at Indian River, at one time or other, taken three species of Cuban butterflies in single instances, viz., *Papilio Polydamas*, *Diadema Misippus*, and *V. Stelenes*.

LYCAENA PSEUDARGIOLUS Bois.

Spring form, PSEUDARGIOLUS.

In *But. N. A.*, vol. 2, I stated that this form of the species must reproduce itself in May of the next year; the chrysalids "probably produce butterflies in small numbers in July and later, but most of them hibernate, and give *Pseudargiolus* (form) the following May, or earlier"; and I said that I had never yet succeeded in getting a chrysalis completely through the winter. Some time in the winter, when the butterflies (in the house) were ready to emerge, the shell of the chrysalis proved too hard for them to force it open, and they died prisoners, but with full color and markings of *Pseudargiolus* in the wings. Observations in the field, as I related at length, supported the view I had taken as to this form of the species.

In May and June, 1884, I had got together 28 chrysalids of form *Pseudargiolus*. In July, I buried them under rocks in the forest, in a shallow box filled with leaf mould—first scalded to kill eggs or larvæ of depredating insects—the upper and under side of the box being covered with fine wire gauze. This seemed to be as near as possible to the natural conditions, consistent with protection against marauders, as I could get. On 27th October, I opened the box, and found 26 chrysalids apparently alive (as they had on trial perceptible weight), and two

crumpled butterflies, form *Neglecta*. The box was then returned to its hiding place. On 26th March, '85, I brought the box to the house, the day being warm and spring-like. In ordinary years spring is fully opened by end of March—fruit trees in blossom. I found several of the chrysalids dead, changed in color to yellowish-brown, and light in weight. But others had weight and were of good color. There were no indications of the wing markings through the shells. Lest the warmth of the house should dry the chrysalids, they were placed on a shelf outside, shaded from the sun. For several days thereafter cold weather, frequently with snow, prevailed, but about middle of April pleasant days came again. On 18th, I saw the first *L. Violacea* on the wing, and I then looked at the chrysalids. Several showed the black margins of female through the wing covers, and I expected the butterflies to emerge forthwith. But as none came, two days later I brought in the box and examined the chrysalids one by one. None of them now had any perceptible weight. On opening the shells, one after another, the butterfly was dead, but with full color of form *Pseudargiolus*, wherever there was any color at all. The bodies were exhausted of fluids and flattened, but were flexible, and the wings were not dry, but could be readily separated. One live butterfly only appeared, and on removal of the shell, it crawled up a bit of cloth on side of the box. But the wings did not expand and the insect soon died. Its body was as thin as the others, and plainly it would have quickly died in the chrysalis. It had not the strength to break out, and the shell, and all the shells, were hard. There was no example in these butterflies of form *Violacea*. The experiment was satisfactory, though I would have been glad of the perfect butterflies. As stated in But. N. A., *Violacea*, the earliest of these forms, originates *Neglecta* of July, and the late *Neglecta* hibernate in chrysalis and give *Violacea* in March and April the next year. But the bulk of the *Violacea* chrysalids must hibernate, though the actual proof by the chrysalids is yet wanting. I have had the same difficulty in carrying them through the winter as with those of *Pseudargiolus*. The singularity of this complicated species is that the form *Pseudargiolus* is stuck in between *Violacea* and *Neglecta*, in the spring, with no direct relation to either. This form perpetuates itself, but gives rise to some *Neglecta* in the late summer, and these last produce *Violacea* the next spring. If this late connection were severed, as is conceivable, *Pseudargiolus* would stand alone, separated entirely from the other forms of the species, and there would be nothing

to show how it originated. No doubt that is one way in which species come to exist.

NEONYMPHA CANTHUS, Bois.-Lec.

CHRYSLIS.—Length .62 inch ; breadth across mesonotum, .16, across abdomen, .17 inch ; cylindrical, slender ; the edges of wing cases prominent on the dorsal side ; head case more produced than in *Debis Portlandia* (which species this chrysalis otherwise much resembles), bevelled transversely to a sharp edge, excavated roundly and shallowly at the sides, the top a little incurved, the corners sharp ; mesonotum prominent, carinated, the sides flat and sloping, the apex almost angular, being rounded but slightly ; color green ; the top of head case and dorsal edges of wing cases buff ; a buff mid-dorsal stripe, and one on either side of this (sub-dorsal) ; also a faint lateral stripe of same color.

In CAN. ENT., xv., p. 64, 1883, I described all the preparatory stages of *Canthus*, except the chrysalis, which I had been unable to obtain, larvæ which I had had at one time or other dying before pupation. I received the chrysalis described Aug. 22, 1884, from Mr. James Fletcher, at Ottawa. Mr. Fletcher writes : "The larvæ were quite common this spring in beating the high lake and swamp grasses." It is probably because the natural food of *Canthus* is swamp grass that I have always had so much difficulty in rearing the larvæ on meadow or lawn grass. The larva is in shape, and in most respects, closely like that of *Gemma*. Both are very slender and both carry on head a pair of conical horns, and the chrysalis of *Gemma* shows two long conical processes at end of head case. But in the chrysalis *Canthus* is like *Portlandia*, and of the *Satyrus* type (as in *S. Alope*), stout bodied, with truncated head case. With this chrysalis we now know every stage of the several species of *Neonympha* which live east of the Mississippi River.

Experiments with larvæ as to food plants.

The larvæ of *P. Rutulus* feed on willow, and this seems to be the food they prefer, just as *Turnus* prefers the Tulip tree where there is a choice. *Rutulus* was observed by Mr. Behrens, in 1884, on species of *Populus*. I received larvæ just hatched from Mr. Wright, and lost one brood by giving them Tulip leaves. After two or three days the last one had died, with symptoms of poisoning. Having heard that apple and cherry were food plants of the species, I offered these and willow to the next lot of

larvæ, and found all gathered to the willow. Henceforth I had no difficulty, and found these larvæ as easy to rear as larvæ of *Turnus*.

This suggested an experiment on *Turnus*. There are several lists of food plants of this species, two of them by Mr. Scudder, and nowhere is willow mentioned. I was feeding a brood of these larvæ last year, and on 20th August, immediately after 4th moult, separated part of them and gave willow only. They nibbled a little now and then, but in effect eat nothing, did not grow, were flabby to the touch and empty, and all died of starvation by 2nd Sept. The remaining larvæ, on Tulip, reached pupæ 30th Aug. and 1st Sept.

On relaxing dried butterflies.

I notice, ENT. xvi., 220, something on modes of relaxing insects. For butterflies, I formerly used an earthen jar, with cover, in which were a few inches damp sand, the insects being laid on the sand. But if the sand was at all too wet, the insects were liable to be saturated and much damaged, and if left too long, to mould. For many years I have used a towel, first dipped in water and wrung out, folded twice, and laid on a board. In the folds the papers are laid, or if the butterflies are removed from the papers, they are placed between layers of newspapers. Small species, as *Lycaenæ*, relax perfectly in 5 or 6 hours; most *Hesperians* over night; *Colias* and *Argynnis* within 24 hours; and *Papilios* in from 24 to 48 hours, according to size of body. It may be necessary, and certainly will be in warm weather, to wet the towel again, and perhaps with *Papilios* more than once. On removal, when about to spread, if moisture shows on the under surfaces, remove it by blotting paper. The advantage of this mode is its convenience, and the fact that the insects will not become too wet, nor can they mould, as the towel becomes dry too soon for that.

Butterflies on pins I float on cork in covered tin pails—two quart is a good size. In this case no moisture collects, and the relaxation is about as rapid as in the towel. Small species I often float in a tin-capped glass. If one has not the pail at hand, the floating may be done in anything, a bowl or a pitcher, but a wet cloth should then be laid over the top.

On carrying hibernating larvæ through the winter.

I have sometimes so carried larvæ in ice boxes, or in ice houses, or in snow banks, by aid of friends in the Northern States mostly, but last fall I heard of a large room called a "cooler" at the Sanitarium at Clifton

Springs, New York, in which meat and vegetables are kept, the temperature averaging 40° all the year, and my application for a little space was kindly received. In October, I sent on two boxes by express, in which were a large number of larvæ, some of them very rare. Of these were *Argynnis Halcyone*, just from egg; *Satyrus Charon*, also just out of egg. These small larvæ were in paper pill boxes, inside tin. There were also a few larvæ of *Chionobas Chryxus*, Hip. *Ridingsii*, *Colias Alexandra*, *Phyciodes Picta*, in stages from second to fourth; and several *Melitæa Rubicunda*, past third moult, from Vancouver's Island, and *Phaeton* at same stage. Early in March I received the larvæ per express. On opening the boxes nearly every one of the young larvæ first named were alive, and in a few moments were moving. The larger part of *Rubicunda* and *Phaeton* were in good condition. One *Alexandra* out of two was healthy, and one *Picta* out of three. The *Chryxus*, past third moult (one), and the *Ridingsii*, past first (one) were dead. On the whole, there was scarcely any loss from the four months seclusion. The *Chionobas*, I am disposed to think, died in transit to me, from rolling about in its box, as it was stout and healthy looking when I received it. Probably all the Satyrid larvæ would have done better if they had not been allowed to feed in the fall, but had on hatching been subjected to the cold. I had no plants ready for these larvæ on their arrival except grass, and on this I placed part of the *Charon*, who very soon began to eat along the edges of the leaves. The remainder of all species I put on ice, or under rocks in the woods, to stay till I could force food-plants for them.

ADDITIONS TO NORTH AMERICAN HYMENOPTERA.

BY L. PROVANCHER, CAP ROUGE, QUEBEC.

ICHNEUMONIDÆ.

In a lot of Hymenoptera captured in Vancouver Island, and sent me by Mr. Brodie from Toronto, I found the following new species:—

Ichneumon Vancouveriensis, nov. sp.

♂—Length, .62 inch. Black; face with four dots white, one on each side near the clypeus and one under each antenna. These entirely black

and sub-moniliform. One dot on the alar scales with a line before and another one under, the collar, and scutellum, white. Wings slightly infuscated; the areolet pentagonal, the nervures black. Metathorax with the angles projecting, sub-spinose, the ventral area transverse, its anterior angles rounded. Legs black, the four anterior tibiae with a white line exteriorly, the posterior with a smaller one near the base. Abdomen elongate, with the peduncle slender and punctured, entirely black. Vancouver.

Allied to *Ich. subcyaneus* Cress., but of a larger size, with crura entirely black, and white markings also different.

PLATYSOMA, NOV. GEN.

(From *platys*, depressed, and *soma*, body.)

Head large, much produced behind the eyes, these somewhat small. Antennae half the length of the body, setaceous, thick, with short articles sub-moniliform. Thorax long and depressed, the prothorax produced anteriorly in the form of a neck, narrower than the head; the mesothorax with its median lobe advanced and elevated upon the prothorax; scutellum depressed, with a fossula before; the metathorax elongate, bearing four longitudinal carinae. Wings short, areolet wanting, the nervule dividing the two cubitals short. Legs with crura swelled, inermous, the tibiae cylindrical at the base, thence enlarged and slightly compressed, the intermediate ones much compressed in the middle of their enlarged portion. Abdomen elongate, shortly pedunculate, the first segment depressed, bearing a carina on the lateral edges, the extremity slightly compressed and cleft under side for the reception of the terebra, which is as long as the body.

Allied to *Xylonomus* and *Odontomerus*, but differing from both by the shorter and thicker antennae, by the inermous crura, and by the form of the tibiae.

Platysoma tibialis, nov. sp.

♀—Length .45 inch, length of the terebra .45 inch. Black, with legs rufous and abdomen brownish rufous. The head and prothorax strongly punctulate, the fossula before the scutellum striate. The metathorax transversely striated at the base between the carinae. The first abdominal segment finely aciculate between the lateral carinae. Valves of the terebra brown ferruginous. Vancouver.

Limmeria compacta, nov. sp.

♀—Length .23 inch. Black, with the legs and abdomen rufous. Mandibles, palpi, and alar scales, white. Antennæ filiform. Thorax short and thick, the mesothorax gibbous, the metathorax declivous. Wings slightly infuscated, with a triangular sessile areolet. Legs rufous, the posterior coxæ black at the base inside. Abdomen forming a small elongate club with a slender and elongate peduncle, black at the base and extremity. Terebra about one fourth the length of the abdomen, recurved upwards. Vancouver.

Closely allied to *L. ruficoxa* Prov., but differing by the sessile areolet, the legs entirely rufous, etc.

Mesoleptus fasciatus, nov. sp.

♂—Length .20 inch. Black, the face under the antennæ, an orbital patch above their insertion, the palpi, the alar scales, the lateral inferior edges of the prothorax, with the four anterior coxæ and their trochanters, white. Antennæ shorter than the body, setaceous, black, the scape obscurely whitish underneath. Metathorax large, with distinct elevated lines. Wings hyaline, without areolet, the stigma pale. Legs pale rufous, the posterior with the coxæ, and the extremity of their tibiæ and tarsi, brown, more or less obscure. Abdomen rather stout, linear, black, obscurely white on the sides, the segments with a polished fascia at their posterior edge. Vancouver.

Differs from *M. decens* Cress. by its white markings and the sculpture of its metathorax.

Echthrus Provancheri, Brodie.

(Mr. Brodie having kindly dedicated to me this beautiful new species, and not having seen its description published, I submit it here below.)

♀—Length .48 inch. Black, abdomen partly rufous; head and thorax entirely black, very finely punctured; the face with a small tubercle in the middle under the antennæ; mandibles, palpi and antennæ, all black. The mesothorax trilobed, the metathorax rugulose on the sides and posteriorly. Wings slightly infuscated, the nervures and stigma black, the areolet large, subquadrate. Legs rufous, the anterior coxæ, the crura and tibiæ of the posterior pair at their extremity, black, the posterior tarsi with the first and last article black, the median ones white. Abdomen pedunculate, its peduncle polished and shining, the other segments punctulate;

segments 1, 2 and 3 bright rufous, the rest black with the penultimate white. Terebra black, thick, very nearly as long as the body.

♂—With palpi and four anterior coxæ and trochanters pale, no white patch on the penultimate segment of abdomen. Vancouver.

This species is easily distinguished by its coloration.

BRACONIDÆ.

— *Phylax pacificus*, nov. sp.

♀—Length, .35 inch; terebra about the same length. Brown ferruginous; the head, the pro and mesothorax with the last segments of the abdomen, black. Antennæ black, long, setaceous. Head large, produced behind the eyes; vertex convex. Metathorax ferruginous, punctured. Wings infuscated. Legs ferruginous, all the tibiæ with a small pale ring near the base. Abdomen finely aciculate on the first segment and the basal half of the second, the other ones polished, shining. Terebra black, of the same length as the abdomen. Vancouver.

— *Phylax niger*, nov. sp.

♂—Length .23 inch. Black, with a whitish pubescence. The head much produced behind the eyes. Antennæ long, slender, setaceous. Wings slightly infuscated, the nervures black. Legs rufous, coxæ, tibiæ and the extremity of crura black. Abdomen elongate, black, the first segment with the basal half of the second aciculated. Vancouver.

ENTOMOLOGY BY THE ELECTRIC LAMP.

BY PROF. E. W. CLAYPOLE, AKRON, O.

During the past winter an installation of about 100 arc-lamps was established at Akron, O. They hang as usual over the middle of the street. Early in the summer it was evident that they would afford a fine hunting-ground for the entomologist, and accordingly several members of the Natural History Society of Akron resolved to turn the opportunity to account by making collections of the insects attracted by the light and comparing and noting the results.

I have not yet ascertained what others have done, but the following notes of my own observations may interest some readers of the ENTOMOLOGIST :

At the opening of the season the Cockchafer (*L. fusca*) was almost the only visitant, but in such numbers that specimens might be collected by the quart for a few evenings. Gradually other species appeared. *Belostoma americanum* and *Calosoma calidum* were conspicuous, the former for its size, and the latter for its beauty. The former has obtained the popular name of the "electric light bug." It is supposed to have appeared with the lamps, and is oftenest brought to me for identification. The grave-digger beetles, *Necrophorus*, *Silpha* and *Hister*, were not infrequent. Why they come to the light is not easy to say. Possibly the carbon which they usually seek is slightly phosphorescent, and attracts them by its glow, and they are deceived by the brilliancy of the electric arc. Several small Carabids were abundant about the same time, but have not yet been identified.

As June advanced moths became more abundant than beetles, not because the latter fell off, but because the former largely increased. On warm evenings a perfect swarm played round the lamps, hour after hour. Every now and then one and another dashed into the globe, struck the glowing carbons, dimmed the light and was killed or consumed with a hissing noise. By morning a handful, sometimes a half pint, of dead insects was accumulated at the bottom of the lamp-glass, mostly scorched and burnt. In this way immense numbers are destroyed, but no apparent diminution ensued. One morning in June I obtained about a hundred specimens of the very abundant little grass moth (*Crambus mutabilis* Clem.) from every lamp examined. This means a destruction of above ten thousand individuals nightly of this one species. As the process has been going on for at least a fortnight, the 102 lamps in this city have killed about 1,500,000 individuals. Yet still they come, and in undiminished numbers.

Since then Dart-moths (Cut-worms) of various species have begun to appear. About the middle of June I collected above 50 specimens from three lamps. It was apparently *A. subgothica* Haworth, though Riley (Entomolog. Rep. of Mo., 1868, p. 82) says this species does not appear till September. Positive identification of these moths is often difficult. This implies the destruction of about 1,500 nightly. Other species of Dart-moths not yet identified were equally numerous. One would think such wholesale slaughter must diminish their numbers, and perhaps the

results will be seen in future years. If the eggs were laid previously no such result could be expected. But the frequent occurrence of eggs in the collecting boxes shows that this is not the case.

The Tiger Moths (*Arctia*, etc.) have been equally abundant, especially *A. virgo*. Were all that I have collected identified, as I hope they soon will be, the list would be long.

The white-lined Hawk Moth (*D. lineata*) with others of the same family, is a frequent visitor. The Water Tiger, *D. marginalis*, with two or three smaller Dytiscids, are often taken. These and most of the heavy fliers strike the globe and fall stunned to the ground, but soon recover unless boxed at once.

The Stag Beetle (*L. dama*) and Fire fly (*P. pensylvanica*) appeared later and less frequently with the great Lebia (*L. grandis*) and *Dichelonycha elongatula*, the latter for a few evenings in great abundance. A single specimen of the Codling Moth was captured.

About the end of June a new fauna began to appear. The Cockchafers had nearly disappeared. But the great Ground Beetle (*H. caliginosus*) supplied the place, and in so great numbers that one evening I filled a four-ounce bottle in fifteen minutes. With it came two, to me, unexpected visitants, the Blister Beetles (*L. vittata* and *atrata*).

This is but a partial list of the species already collected. Several of the large and conspicuous moths have been met with, and I hope later to send a longer catalogue.

But we are not the only insect-hunters about the electric lamp. Every evening the toads congregate until the ground is alive with them, and food is so plentiful that they are sometimes almost unable to return to their holes and often past hopping. Several times also I have suspected the presence of skunks, but have never yet seen a frog. Small boys, too, flock to the lights for the sake of stamping on the cockchafers and other insects that lie disabled on the ground. Between the toads, the skunks and the small boys, the entomologist is sometimes hard put to it, and must work late at nights or betimes in the morning, or both. Could he only in addition to the real insects make a collection of the huge phantasmagoric spectres that fly and creep about the roadway projected by the intense light, he would have an array of "bugges" that might fairly be called "terrors by night."

CORRESPONDENCE.

Dear Sir: The following insects have lately been determined for me by Dr. H. A. Hagen, of Cambridge. As they are not included in the Society's published lists, I send them just as received for publication in the ENTOMOLOGIST.

J. ALSTON MOFFAT.

1. *Dicosmoerus (Stenophylax) argus* ♂ Harris. Desc. and fig. in Harris's Ent. Correspond.; also by Provancher.
2. *Pteronarcys proteus* Newm., ♂. Also in N. Y.
3. *Leptotenus nobilis* Hag. Nearly destroyed, but I think surely, though there exist related species.
4. *Ctenophora frontalis* Sacken, ♀. In pieces.
5. *Mallota posticata* Fabr. }
6. *Epeolus*, probably; in six or seven pieces.
7. *Archasia galeata* Fabr.

For determination of the four non-Neuroptera, I have taken the names out of our collection. The *Mantispa*—not *Mantis*—is a Hemerobid, and is *M. brunnea* Say; also described by Provancher as very common at St. Hyacinthe. His specimen, *M. Burquei* Prov., was a variety.

H. A. HAGEN.

ROCKY MOUNTAIN BUTTERFLIES.

Dear Sir: Please add the following species to the list of diurnals collected by me in Rocky Mts., beginning at No. 123:

123. *Papilio indra* Reak. Seen but not taken at Koutanai Pass, afterwards identified from specimens received from the Pass.
124. *Pieris vernalis* Edw. Crow's Nest Pass.
125. *Colias elis*, nov. spec., Strecker, (Discovered 1884.) Kicking Horse Pass summit.
126. *Colias chrysomelas* Hy. Edw. 1 ♂ only taken. Calgary.

GAMBLE GEDDES, Toronto, Ont.