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The Canadian Entomologist.

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THE LARVÆ OF DEPRESSARIA DUBITELLA AND GELECHIA RUBENSELLA.

BY MARY E. MURTFELDT, KIRKWOOD, MO.

Being much interested in the 'Tineidæ, Mr. Chambers' articles on this family of moths are the first to receive attention as the successive numbers of your magazine come to hand.

I have had the satisfaction of rearing from their larvæ many of the winged gems described in your pages, among others the two species named above. Now, as Mr. C. seems to have been in some doubt as to his own determination of these species, of which he has as yet—as he informs me—seen only the imagines, it occurs to me that a description of their larval characteristics might afford some aid in deciding the doubtful points.

The larva of *Depressaria (Gelechia) dubitella* Cham. is very characteristic and beautiful. It may be found during the months of July and August on *Ambrosia artemisiæfolia*, concealed in a fusiform case, which it constructs by drawing together the pinnatifid divisions of the leaf. I think it forms but a single case, which at first consists of but two divisions of the leaf drawn together with silken threads. As it increases in size, its domicile is enlarged by the incorporation of other lobes of the leaf. It is always to be found in its case in the daytime, and probably emerges only at night to feed.

This larva is rather more than half an inch in length, elongate and slightly flattened. Head horizontal, semi-elliptical, highly polished jet black. First segment horny, black and polished like the head. Second segment, anterior half *velvety* black, posterior half ivory white, ornamented above with five linear black marks, extending longitudinally backward; the dorsal and sub-dorsal ones do not reach to the posterior edge of the segment, while the lateral lines, above the stigmata, do. The remaining segments are of a translucent white color, varying from pearly to yellowish. They are marked with three faint, longitudinal, brown lines and with a few

minute, black, piliferous spots, each of which gives rise to a single, short, fine hair. Venter of the thoracic segments and thoracic legs black; prolegs and under surface of abdominal segments whitish. The change to pupa usually takes place within the larval case. Chrysalis slender, smooth, bright reddish brown, except the head and wing sheaths, which are much darker. Mr. Riley once brought me a leaf-folding larva on Hackberry, which resembled these Ambrosia case-makers in every respect, but as I did not succeed in obtaining the imago from it, I am unable to say whether or not the insects were identical.

In my specimens of *dubitella* the purple-brown of the anterior wings is marked with *four* ochreous spots, instead of *three*, as in Mr. Chambers' description, and the hind wings are more nearly gray than fuscous.

There is another leaf-folding larva of the same size and habit of *D. dubitella*, which also feeds on *Ambrosia artemisiæfolia*, and which is even more elegantly marked in black and white than the latter. This insect, which I take to be a true but undescribed Gelechia, I may, perhaps, describe in a future paper. I would respectfully propose for it the name of *Chambersella*.

The larva of *G. rubensella* is an external feeder on Oak. It inhabits a thin web at the base or near the tip of the leaf, and skeletonizes the upper surface of the latter. Its length is rather more than $\frac{3}{8}$ of an inch. In form it is elongate and sub-cylindrical, tapering anteriorly and posteriorly from the middle, and has the sutures deep. The color is grass green, striped with numerous very fine longitudinal lines of purple, and ornamented with two sub-dorsal rows of conspicuous purple spots, situated at the sutures. Head horizontal, pale brown, pointed toward the jaws with two irregular whitish dashes on each side. Legs and prolegs pale green—the latter very narrow. This pretty larva is as characteristic in its habits as in its appearance. It does not touch the leaf except when feeding, but remains suspended in a sort of gallery of delicate web-work, through which it moves with surprising rapidity. It changes to pupa within a frail cocoon, on the surface of the ground. The chrysalis is pale brown, slender and chiefly characterized by long, free wing sheaths. The moth issues in about ten days. In its perfect state this insect bears so close a resemblance to *G. roseosuffusella* Clem., that it is difficult to distinguish it from the latter. It is, however, as a rule, smaller, darker and more roseate, while the larva is entirely different, that of *G. roseosuffusella* mining the leaves of Clover, and being much less strikingly marked.

ON ENTOMOLOGICAL NOMENCLATURE.

BY JOHN L. LECONTE, M. D., PHILADELPHIA.

Part II.—On Generic Types.

“Ignorato genere proprio, nulla descriptio, quamvis accurate tradita certum demonstret; sed plerumque fallat.”—CÆSALP. apud Linn., Syst-Nat., xii, 1, 13.

In the first part of this essay I endeavored to show the confusion which resulted from the application of the law of priority to the names employed in the early development of our science by persons who had no idea corresponding to the law which has since been formulated. We will now attempt to discuss the second great fallacy in the exegesis of the writings of the founders of the science; the selection on principles, more or less arbitrary, but always opinionative, of generic types, when these *have not been explicitly* mentioned by the author.

With the more minute observation of differences in structure, and the consequent multiplication of genera, has arisen an idea that all classification, generic and otherwise, is simply a human contrivance for the purpose of expressing degrees of resemblance between the organic forms which we collect and recognize as distinct.

In short, that our best efforts to ascertain the relations of organic beings has resulted, not in a system, but in a dictionary.

This was not the idea of the fathers in science—nor is it the idea of many respectable students of the present day.

The language of Linnæus is clear upon this subject. ‘Genus et species nature opus;’ to him and to his followers there was no generic type. Each species comprised in the genus was equally typical, unless, as in rare cases, it was mentioned as aberrant, with a suspicion expressed in some instances that it would be subsequently separated as a distinct genus. When dissections were made, as in the fuller definitions in the foot notes in the works of Fabricius, it was not because the dissected species were selected peculiarly as the type of the genus (for in many instances the dissections are not part of the generic formula), but merely that the most common and available species was chosen for the purpose of giving more information than was conveyed by the condensed generic diagnosis.

In the gradual progress of science, and with the multiplication of genera, it came to be considered that the person who recognized the necessity of subdividing an ancient genus, should exercise his judgment regarding the part to which the old name should adhere; and in most instances this was attended with no inconvenience.

Rarely, as in the case of *TEMNOCCHILA* *Ww.*, the name of the original genus *TRUGOSSITA* was retained for a group which did not accord with the original definition; the new name was imposed upon the set of species which should have kept the original name. These instances are but few in number, and the exposure of the error committed is sufficient to cause its immediate correction.

I would therefore infer that the practice of some students in recent times, of applying the older generic names in a different sense from that in which they were restricted by the persons first making the divisions, is founded upon an incorrect interpretation of what was formerly meant by a genus; and that these old authors, were they now alive, would strongly resist the limitation of their generic idea to a single type-species.

When the describer of a genus establishes the genus upon a single species, either because it is the only one known to him, or because, as is sometimes the case, he does not choose to enumerate the others, then of course, from the accident of the case, that particular species becomes typical of the genus, and must remain so as long as the present system of nomenclature is adopted. But when, on the other hand, several species are included in the genus, and they all agree accurately in the possession of the *characters mentioned* as defining the genus, they must in my opinion be regarded as *equally typical*. It would save much confusion in interpreting the modern use made of these restricted older names, if in all instances in systematic works the restricting authority was added in parenthesis.

A more difficult source of confusion is that resulting from the erroneous position ascribed to a genus, which renders it, with the ordinary usages of interpretation, absolutely irrecognizable; as when, for instance, the Byrrhidae genus *AMPHYCYRTA* was described by Mannerheim as a Tenebrionide, under the name *Eucyphus*, and the genus *AMPHIZOA* also as a Tenebrionide (*Dysmathes*). In these two cases Mannerheim's names fail from want of priority, but had this not been the case, I still maintain that the names of erroneous position should be suppressed in favor of later names which may have been independently given, and correctly

defined. The genus being erroneously described, of course fails to represent any idea realized in nature, and the specific name must therefore fall with it, and the whole name be quoted in synonymy, with the error mark (§) appended.

While I fully recognize the importance of having the same object always spoken of by the same name, I must frankly say that the forced uniformity aimed at by somewhat arbitrary processes, in a few familiar instances, seems to be capable of producing still greater confusion. To take an example: our common tumble-bug is equally known to most students of entomology as *CANTHON* or *COPROBIUS*, and specifically as *lævis* or *volvans*, the first generic and specific names having priority. Recently, however, on the authority of Gemminger and Harold, and of Mr. Crotch, the specific name *hudsonias* has been resurrected from Forster's *Centuria Insectorum*. The priority of this last name is not borne out by any evidence in the books containing the descriptions, and if it be valid, can only be demonstrated by careful bibliographical investigation of a collateral kind. It is unreasonable to expect that our familiar names for common objects, for it is only among them that such changes are likely to be suggested, should thus be altered where there can be any excuse for resisting the innovation. But I will go farther and say, that where two names have become from peculiar circumstances equally known, there can be no serious objection to the writer using that one for which he has preference. If I had occasion to write concerning the great Aristotle, it is certain that all those persons capable of understanding what I would desire to say about him, whether I mentioned him by his name or spoke of him as the Stagyrite, or even as the Preceptor of Alexander, would know who was meant.

When the different names which have been applied to the most common species, have been recognized by competent authorities as synonyms, and have been thus collated in accessible registers, catalogues or systematic works, it is not a subject worth contention which of these equally known names may be used by individual writers. Certainly it is wrong for a person, without a careful study of bibliography, to change his habit in the use of a name, because the latest authority advocates a subversion. It is by no means true in natural history that the latest is the best, and those who are not critical students in these subjects will do well to follow the advice given in the first part of this essay, to *resist innovation*,* until they find

* *Confusis enim nominibus omnia confundi necesse est.*—CÆSALP. apud Linn., *Syst. Nat.* xii, i, 13..

that the later views are adopted by those to whom they have a right to look for instruction upon these technical points. Let them, at any rate, be clear in their minds that the changes are in accordance with the existing laws, or let them agitate for such alteration in the current code as will produce legally the modifications they desire.

Other special cases may arise of still greater difficulty than those I have here discussed. For the proper solution of these, I think the suggestion of Mr. Alfred Wallace* is most valuable. It is that all disputed points in nomenclature should be referred for investigation and decision to a committee of experts. Such a committee could be readily formed in the Entomological Club of the American Association for the Advancement of Science, which would dispassionately determine all questions relating to the progress of the science in North America, and announce their decisions each year. These decisions would, I am convinced, be cheerfully adopted by most, if not all of those who are occupied in the study of the insects of this continent.

One more suggestion in conclusion. It is this: That in proportion as the objects become well known, and especially in those species which fortunately possess no synonymy, all reference to authorities should be dropped, except when *bibliographical reference* to a full description or figure is necessary. If, however, a synonym must be mentioned, let the author of this supplementary name be quoted.

Should this suggestion be adopted, it will result that the name of the describer will not be unnecessarily connected with the valid name of the species, and one strong support of the small personal vanity which I have criticized in the first part of this essay will be destroyed. Another important result will be that the maker of a synonym will know that his name will be inseparably connected with that synonym, whenever it is mentioned; and that, therefore, so far from being an honor, or a recognition of good work, the use of an authority will come to be known as an indication of bad or imperfect work, and the makers of species on hasty study or on defective materials will be discountenanced.

* Address of the President, *Trans. Ent. Soc. London*, 1871, lxviii.

ON SOME OF OUR COMMON INSECT...

No. 15. THE IO MOTH—*Saturnia (Hyperchiria) Io*, Fabr.

BY E. B. REED, LONDON, ONT.

This lovely moth is well worthy a place in the cabinet of the collector, and is always sure to attract notice and admiration. The larva, of which fig. 27 represents a full-grown specimen, is of a most delicate apple or pea green colour, with a broad, dusky white stripe at each side, bordered with lilac on the lower edge. The body is covered with clusters of green bristles, tipped with black.

These bristles are exceedingly sharp, and when the insect is handled, will produce a very irritating sting, similar to, but much sharper than that of the nettle, and the effect of which causes a reddening of the flesh and the immediate appearance of raised white blotches, which last for a considerable time.



Fig. 27.

Fig. 28 shows the appearance of these bristles, some of them, as

♂, being stouter and more acute than the others, and able to inflict a sharper and more penetrating sting. According to Mr. Riley, the irritating property belongs to the substance of which the spines are formed, and his opinion was strengthened by the fact that the spines of a cast off skin, which had been in his cabinet for years, still retained the irritating power.

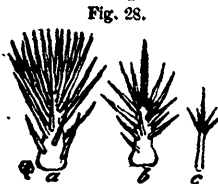


Fig. 28.

In the earlier stages the caterpillars are gregarious, feeding together side by side, and in going to and returning from their place of shelter, moving in regular files, like the processionary caterpillars of Europe (*Lasiocampa processionea*). When about half grown they

disperse, each seeking a location for itself. They moult five times, devouring their cast off spinous skins. After being in the larval state about eight weeks, they arrive at maturity, and are then about two inches and a half long.

Their food plants are numerous. They have been found on Black Locust, Indian Corn, Willows, Sassafras, Wild Cherry, Elm, Hop-vine, Balsam, Balm of Gilead, Dogwood, Choke Cherry, Currant, Cotton and Clover. I, myself, this year found it on the English Filbert, and raised it to maturity on that plant. I have, however, more commonly found it on the Choke Cherry. The larva, when full grown, crawls to the ground, where, amid the loose leaves and rubbish, it forms a rough covering, within which it makes a slight cocoon of tough, gummy, brown silk. In this retreat a change is soon effected to the pupal or chrysalis state, and having remained therein during the winter and spring months, the moth emerges in the perfect winged state about June. The moths are especially remarkable for the difference between the sexes, both in size and colour.

The male, fig. 29, which is much the smallest, is of a deep Indian or maize yellow ; on the fore wings are two oblique, wavy lines, near the hind

Fig. 29.



margin, and a zigzag line near the base. There is also a large, dark, reddish, central reniform spot or blotch. The hind wings are broadly shaded with purple, next to the body ; on the hinder margin is a purplish curved band, and within this again is a smaller one of a dark

purple or violet colour. In the centre of this last band and the middle of the wing is a large, round, blue spot, with a whitish centre and a broad border almost black ; the under side of the wings is of the same deep yellow ; the fore wings showing the same dark ocellated spot, as on the other side, and having the inner margin broadly shaded with purple. The hinder wings are more uniform in color, with a transverse purple line and a very small, distinct white spot representing the centre of the large spot on the upper side.

The body is also deep yellow.

The female, fig. 30, is considerably larger; the specimens vary very much in color, from a dark purplish brown to a warm ochreous red. The fore wings have similar wavy, zigzag lines; the reniform blotch being less distinct than in the male; the inner margin is of a deeper colour, and is

Fig. 30.



thickly coated with short hair, like the head and thorax. The hind wings are similar to those of the male; the under side has the same uniform colour, and the markings and spots as in the male.

The body is the same shade as the wings, the abdomen being a little lighter in colour, and each segment being bordered with a narrow reddish band.

The moths vary in size from two and a half inches in the male to three and a half in the female.

The eggs are deposited on the under side of the leaf, and are described by Mr. Riley as being compressed on both sides and flattened at the apex, the attached end smallest, in colour cream white, with a small black spot on the apical end and a larger orange one on the sides.

TINEINA FROM TEXAS.

BY V. T. CHAMBERS, COVINGTON, KENTUCKY.

A collection of *Tineina* received from Mr. Belfrage, of Waco, Texas, presents some points worthy of mention apart from the descriptions of the new species.

The collection consists of about two hundred and fifty specimens in tolerably good condition, referable to seventy-six species and twenty-seven genera. Such a number of genera and species is evidently typical of the

Tineina of the locality where they were collected. Twenty-nine of these species belong to the genus *Gelechia*, and twenty-five others belong in the same family. Fifty-three of these species thus belong to the *Gelechidae*, and only twenty three to other genera. The *Gelechidae* are numerous everywhere, and a preponderance of species belonging to this family is to be expected in almost any collection, but I have not known any other collection in which it was so great as in this one.

The collection contains seven species of *Laverna*, and another species which I have made the type of a new genus very nearly allied to *Laverna*. These seven species differ from each other somewhat as to the neuration, and also as to the raised tufts on the wings, but perhaps not to any greater degree than do well recognized species of *Laverna*, as e. g. *L. Staintoni* and *L. langiella* of Europe. Mr. Stainton (*Nat. Hist. Tin.*, vii) enumerates only twenty species belonging to this genus, and three others are also known from this country. This collection then contains nearly one-third as many species of this genus as were heretofore known altogether. Of the species heretofore known, but one (if I rightly understand Mr. Stainton) is fairly described as white, that being the prevailing or ground color, though some others have more or less white markings. But of these seven, five may fairly be placed in the white section; and the other two are also strongly marked with white.

The collection contains five species which I have placed in *Butalis*, though with great doubt as to two of them, which are totally unlike all other species of the genus in color, though I have not been able to discover any structural differences whatever.

But it is, perhaps, more remarkable for what it does not than for what it does contain. As before stated, such a collection is typical of the Tineina of the locality where it was collected. Yet it contains no specimen of *Lithocolletis*, which, both in the collections of Dr. Clemens and myself, is the genus next most numerous in species and individuals after *Gelechia*. *Tinea*, *Coleophora*, *Gracilaria*, *Bucculatrix*, *Tischeria* and *Nepticula* are also genera usually numerous in species and individuals. Yet this collection contains only one *Tinea*, two *Coleophora*, no *Gracilaria* (unless a single species of *Coriscum* be held to represent it), and three? species of *Bucculatrix*, one of which is a somewhat aberrant form.

All of the species are new except ten. These are as follows:

Gelechia cercirisella Cham.,

“ *aequaputvella* “

Ypsolophus eupatoriella Cham.,

Plutella cruciferarum Zell.,

<i>Gelechia disco-ocella</i> Cham.	<i>Holocera glandulella</i> Riley,
“ <i>roseo-suffusella</i> Clem.,	<i>Bucculatrix pomifoliella</i> Clem.,
<i>Hagno faginella</i> Cham.,	<i>Hamadryas Bassettella</i> “

Of these ten species, *G. roseo-suffusella*, judging from the number of specimens in the collection, appears to be by far the more numerous, though it may turn out that some of the specimens do not belong to this species, but to a very closely allied and undescribed one; and all the specimens are of a darker hue than those from the Northern States. This species appears to be distributed nearly all over the United States, and is perhaps the most common species of the genus.

G. cercerisella was originally placed by me in *Depressaria*, and I was led to do this by giving too much importance to the neuration of the wings. It is, however, properly referable to *Gelechia*. The specimens—thirteen in number—belong to a very well marked variety. In all the specimens (a great many) that I have heretofore examined, the fore wings are marked just within the middle of the dorsal margin by some faint, short, ochreous streaks, only discernible distinctly under a lens. In these thirteen specimens these ochreous streaks are not present, and their place is occupied by a larger snow white spot, like those on the margins of the wings.

G. æquæpulvella is well represented in the collection, but there appears to be some variation in the shade of the ground color and in the density of the dusting.

The single specimen of *Holocera glandulella* differs from Mr. Riley's description as follows: there is a single discal spot behind the angulated line, and two others at the end of the cell, instead of “two discal spots,” as stated by Mr. Riley; besides, “three tolerably distinct, dusky marks around the discal spots” are wanting. Unfortunately I have now no typical specimens of this species, with which to compare it, but I doubt not it is the same.

Hamadryas Bassettella was described by Dr. Clemens from specimens sent to him from Connecticut. He states that it appears to be congeneric with a portion of *Gelechia*. The remark is applicable to almost every species of the family *Gelechidae*. Dr. C. does not seem to have observed its very close relationship to *Dasycera*, nor, perhaps, its still closer relationship to, or even identity with the genus *Panalia*. The antennae in *Bassettella* are stout, and the ciliation is microscopic, quite distinct in this respect from species of *Dasycera*. The wings of *Bassettella* are narrower

and the form of the secondaries is different, approaching that of *Butalis*. Mr. Stainton's figure (Ins. Brit., v. 3) represents the secondaries of *D. sulphurella* narrower and more pointed than are those of *D. Newmanella*, but less so than those of *Bassettella*. The ornamentation of *D. Newmanella* resembles that of most species of *Butalis*. The ornamentation of *Bassettella* rather resembles that of *Panacalia*, to which, also, I think, it makes the nearest approach structurally.

Hagno faginella seems to have the transverse dusky lines of the primaries darker and more distinct than in the Kentucky specimens, and those about the middle of the wing condensed into two indistinct fascia.

Plutella cruciferarum presents nothing unusual; but there is in the collection a single specimen which I incline to consider an undescribed species. In it the lighter color of the inner margin projects into the darker part of the wing only once, and that very faintly, behind the middle of the wing; otherwise the line between the two colors is nearly straight; the markings in the posterior portion of the costal half of the wings also differ somewhat from those of *P. cruciferarum*. But the specimen is imperfect, and I shall not at present separate it from *cruciferarum*. From an examination of my collection of *cruciferarum*, I concur with Mr. Stainton's suggestion that *P. mollipedella* Clem. is the female of *P. cruciferarum*.

The new species are as follows :

AMADRIA? Clem.

A. Clemensella. N. sp.

Yellow; the palpi are a little paler, except the outer surface of the second joint. Primaries with minute brown spots arranged in transverse rows; these require close observation: one spot on the fold and one on the end of the disc, a little larger than the others. *Al. ex.* $\frac{1}{2}$ inch. There is also a row of small fuscous spots around the base of the ciliae.

TINEA.

T. obscuroides. N. sp.

Dark fuscous; the primaries obscurely mottled with sordid yellowish; there is a row of indistinct yellowish spots or streaks on the costa, from the middle to the tip, and along the base of the dorsal ciliae. *Al. ex.* $\frac{1}{3}$ inch. Season, October.

ANESYCHIA.

A. multipunctella. *N. sp.*

Second joint of the palpi dark brown, tipped beneath with scattered white scales, and with a few scattered white scales above; third joint white, tipped beneath at the base with dark brown; face black; vertex white, with a central black spot; antennae fuscous; thorax white, with six black spots, one of which is placed close to the base of the wings and is continuous with the dark brown of the wings; two others on top, and one on each side a little before the tip. Primaries shining dark brown or black, with a wide white streak extending along the dorsal margin from the base nearly to the tip, and a white costal spot close to the tip; there is a sinus, or projection of the white into the dark brown portion, just before the middle, and from thence to the tip the line between the two colors is irregular, with another sinus behind the middle; there is a small black spot in the white at the first sinus, and six others along the dorso-apical margin at the base of the ciliae, and another in the costal white spot, or more properly, perhaps, there are three in the costal white spot, two of them being confluent with the dark brown color around it; ciliae white, except at the tip. *Al. ex.* $1\frac{1}{2}$ inch. Season, April and May. In nine specimens I detect no variation.

A. mirusella. *N. sp.*

Palpi pale yellowish ochreous; the second joint has two brown spots on its outer surface, that nearest to the base being largest; the third joint has the base and tip dark brown. Head pale yellowish or nearly white; antennae pale fuscous; thorax pale yellowish ochreous, with four brown spots, two of which are about the middle and one on each side near the tip. Primaries white, faintly tinged with ochreous yellow, and with a rather wide golden brown basal streak, which begins near the costa and diverges thence to the end of the cell, and from thence narrows and becomes more diffuse towards the apex, which it does not quite attain. The costal whitish portion is more streaked and suffused with ochreous than the dorsal portion, which has a small brown spot before the middle; there is likewise a row of small brown spots around the apex, at the base of the ciliae. *Al. ex.* $1\frac{1}{2}$ inch. Season, April and May.

I have not examined the neuriation, and the ornamentation is unusual in the genus; but the other characters are those of *Anesychia*.

HARPALYCE, gen. nov.

In the neuration, and more decidedly in the form of the secondaries, this genus makes a very near approach to the *Tortricidae*. The hind wings are as wide as in any genus of that family. The primaries, however, rather resemble those of the genus *Hagno*, and the palpi also ally it to the *Gdechidae*.

Wings nearly horizontal (in the dead insect).

In the primaries the costa is regularly arched, and the wing is widest about the middle; the costa attains the margin behind the middle; the cell is rather narrow; the subcostal gives off four branches to the margin before the end of the cell, the first and longest of which arises before the middle, and the last of which arises close to the end of the cell, and reaches the costal margin close to the apex; the apical branch reaches the apex or the margin close to and beneath it; the discal vein gives off two branches; the median gives off, close to the end of the cell, a single branch, which becomes furcate, and the apical branch runs to the margin, parallel to the discal branches; the fold is thickened at the end, and the submedian vein is long and furcate at the base.

The secondaries are at least one-half wider than the primaries, their width being equal to about two-thirds of the length; the costa is strongly arched near the base, and *very* faintly sinuate before the apex, which is rounded, and the dorsal margin *very* faintly sinuate beneath it; the costal vein is sinuate from the margin and almost coincident with the subcostal towards the base, and attains the margin near the apex; the cell is wide; the subcostal is furcate behind the cell, with the superior branch delivered to the apex; the discal vein is curved or angulated, the angle pointing towards the base, and *near* the median it is again angulated, the angle pointing backwards, and a branch proceeds from it to the margin; the median sends a branch from behind the middle to the margin, and from the origin of the branch bends up to its union with the discal, at which it becomes furcate. Submedian and internal veins distinct. In one of the species (*canusella*) the costa is not so much arched, and the posterior margin not at all sinuate beneath the apex, and the discal vein is curved (not angulated) and unites with the median without forming a second angle, what I have described as the discal branch vein, being continuous with the median and arising from a common origin with the furcate branch.

Tongue rather short; maxillary palpi minute; labial palpi simple, slender, slightly overarching the vertex, the third joint about half as long as the second, and pointed; antennae simple, more than half as long as the primaries, with the basal joint short and a little enlarged; scales of the posterior portion of the vertex a little roughened, but not forming a tuft; eyes globose, of moderate size; ocelli, none.

H. tortricella. *N. sp.*

Yellowish or straw color; head and hind wings paler, nearly white; there is a minute, pale brownish spot at the end of the disc. *Al. ex.* $\frac{3}{4}$ inch. Season, May.

H. albella. *N. sp.*

White; a minute, indistinct, ochreous spot at the end of the disc, on the forewings, and a very few widely scattered dark brown scales. There is a brownish, ochreous streak on the outer surface of the second joint of the palpi. *Al. ex.* $\frac{1}{2}$ inch. Season, June, July and August.

H. canusella. *N. sp.*

Pale grayish, almost white, with obscure patches of very pale fuscous on the primaries; a small brown spot within the dorsal margin, before the middle; another a little behind it on the fold, and another at the end of the disc. At the beginning of the ciliae is an obscure, narrow, curved, pale fascia, which is very concave towards the base of the wing. *Al. ex.* $\frac{1}{8}$ inch.

GELECHIA.

G. thoracalbella. *N. sp.*

Second joint of the palpi brush-like, the brush spreading and faintly divided; third joint slender, more than half as long as the second.

Palpi whitish, the second joint ochreous brown at the base, and the scales of the brush tipped with ochreous yellow; face, head, and a wide streak from the head to the apex of the thorax, white. Antennae, sides of thorax over the wings, and the primaries brown, the primaries very faintly streaked with whitish towards the apex. *Al. ex.* $\frac{1}{8}$ inch.

G. minimaculella. *N. sp.*

Second joint of palpi brush-like; third more than half as long as the second.

Head and palpi ochreous yellow ; palpi with the base of the second joint, a spot on its outer surface, near the tip, and a ring around the third joint, near the tip, dark brown ; antennae dark brown ; thorax brownish ochreous above, except the sides just above the wings, which are dark brown like the primaries, and, like them, faintly tinged in some lights with a bluish cast. Near the base of the primaries, extending from the costa to the fold, is a narrow, irregular, interrupted, somewhat oblique ochreous yellow line or series of small spots ; there are three or four minute ochreous yellow spots on the disc, and a spot of the same hue about the beginning of the dorsal ciliae, and an opposite costal one. *Al. ex.* $\frac{3}{4}$ inch.

G. ochreosuffuscula. *N. sp.*

Second joint of the palpi brush-like ; third joint about half as long as the second.

Insect dark brown ; second joint of the palpi above sprinkled with white or pale yellow scales ; third joint ochreous or yellowish, except at the base and a narrow annulus before the middle, which are dark brown ; head ochreous, densely dusted with dark brown, so as almost to obscure the ground color ; thorax, base of the wings, and a streak along the fold suffused with reddish ochreous ; primaries sparsely dusted with whitish and with a reddish ochreous streak at the base near the costa, as well as that on the fold, and with the costal and dorsal spots faintly indicated. The white dusting of the primaries is sometimes very distinct, and it forms an interrupted fascia or rather a line of small specks across the wing, just before the ciliae. *Al. ex.* $\frac{3}{4}$ inch.

G. depresso-strigella. *N. sp.*

Second joint of the palpi brush-like ; third joint about half as long as the second.

Brown, with a grayish ochreous tinge, the wings streaked with ochreous and the palpi sprinkled with whitish scales. Thorax, basal portion of the wings, and a streak along the fold suffused with reddish ochreous ; four very indistinct, oblique, dark brown lines extend along the disc, and the spaces between the veins in the apical part of the wing are each marked with a similar line, and all of these lines appear to be depressed or sunken below the general surface of the wing. *Al. ex.* $\frac{3}{4}$ inch. Season, July, August and September. It resembles the preceding species, but the

brush is smaller, color of the head and palpi different, and the narrow longitudinal depressed brown lines separate it from that species.

G. pallidagriseella. *N. sp.*

Second joint of the palpi brush-like; third joint about half as long as the second.

Palpi and head whitish, almost hoary. Pale yellowish gray, a little suffused with ochreous on the thorax and primaries. There is a minute rust red spot about the middle of the disc; extreme costa dark brown at the base; antennae dark brown. *Al. ex.* $\frac{3}{4}$ inch.

G. quadrimaculella. *N. sp.*

Third joint of palpi longer than the second; palpi not at all brush-like.

Dark brown, in some lights tinged with ash gray; a small dark brown spot on the fold within the basal fourth of the primaries; another also on the fold about the middle; another near it, about the middle of the disc, and another at the end of it. *Al. ex.* $\frac{5}{8}$ inch. Season, May. The brown spots are very indistinct, differing but little from the general hue.

G. Wacoella. *N. sp.*

Second joint of palpi with a small brush; third about as long as the second.

Ochreous, sprinkled above with dark brown; third joint dark brown; head and thorax dark brown, with a faint ochreous tinge. Primaries dark brown; two ochreous spots on the costal margin near the base, another at the beginning of the ciliae, and two small spots of the same hue on the fold before the middle. *Al. ex.* $\frac{2}{3}$ inch.

G. crescentifasciella. *N. sp.*

Palpi not brush-like; third joint about as long as second.

Ash gray, microscopically dusted with brown; there is a crescentic, very indistinct pale fascia at the beginning of the ciliae, very concave towards the base of the wing; one or two minute dark spots on the disc, and one at its apex. *Al. ex.* $\frac{1}{2}$ inch. Season, April and May. It resembles *G. quadrimaculella*, but is smaller and of a more ashen hue. Sometimes the fascia is absent.

G. pullusella. *N. sp.*

Palpi slender, simple; third joint more than half as long as the second.

Brown, microscopically sprinkled obscurely with whitish scales. *Al.*
ex. $\frac{1}{16}$ inch. Season, August.

G. plutella. *N. sp.*

Palpi simple, slender; third joint more than half as long as the second, and pointed.

Face and palpi white; vertex pale yellowish, with a dusky central spot; antennae pale yellowish; patagia and costal half of the primaries, almost to the tip, creamy white; thorax and dorsal half of primaries and the tip dark brown; the whitish portion of the primaries is widest at the base, and the dark brown portion at the apex, and the whitish part sends two short, oblique projections into the brown one just before the middle and the other just behind it. *Al. ex.* $\frac{1}{2}$ inch. Season, August.

The ornamentation of the wings bears considerable resemblance to that of *Plutella cruciferarum*, except that the colors are reversed.

G. sella. *N. sp.*

Second joint of the palpi thickened beneath towards the tip, but not at all brush-like; third joint more than half as long as the second.

Head yellowish white, sometimes with a wide longitudinal brownish streak on the vertex. Palpi very pale yellowish, with the second joint externally brown and internally streaked or sprinkled with brown, and the third joint, with the tip and a band around the middle, dark brown. Thorax and primaries pale ochreous gray; under the microscope pale ochreous yellow, somewhat dusted with fuscous. There is a velvety dark brown spot on the fold, not far from the base, behind which is usually a dark brown dorsal streak, extending more than half across the wing, perpendicular to the margin, placed before the middle, but sometimes it is represented only by a triangular spot on the fold, and which does not touch the margin; and there is another small spot of the same hue at the end of the cell, and surrounded by a paler annulus; base of the costal margin and six or seven small spots along the costa dark brown, the last of which is just before the ciliae; and there is a narrow ochreous basal streak just within the costal margin; occasionally the spots along the costa are absent. *Al. ex.* $\frac{1}{2}$ inch. Season, July and September. It is a handsome species.

G. trimaculella. *N. sp.*

Second joint of the palpi scarcely thickened beneath; third half as long as the second; acuminate.

Head, antennae and palpi pale yellowish white; third joint of the palpi tinged with fuscous. Thorax and primaries very pale ochreous yellow (under the lens sparsely and minutely dusted with pale reddish ochreous scales); two small, nearly circular, blackish spots before the middle, one beneath the fold, the second on the disc, a little behind the first one; and a larger one of the same hue at the end of the disc, and a row of minute, dark brown spots around the base of the ciliae. *Al. ex.* $\frac{1}{2}$ inch. Season, April and May.

G. elegantella. N. sp.

Second joint of palpi scarcely thickened beneath; third more than half as long as second.

Palpi white; second joint yellowish towards the tip, the third with three brown annulations, one at the base, one before the middle, and one before the tip, sometimes connected by a line along the under surface; head and thorax sordid white or yellowish, slightly iridescent; base of the primaries white, iridescent, narrow, but wider on the dorsal than on the costal margin; this is followed by an oblique, ochreous or yellowish orange band, which crosses the wing and is margined with brown before and behind, and followed by an oblique white band, which also crosses the wing, and is rather widely margined behind by an iridescent, brown line, terminating at a smooth tuft of raised scales on the dorsal margin, the tuft or rather smooth elevation being metallic and highly iridescent, as also are the brown margins of the ochreous bands; the dark brown, posterior margin of the second brown fascia is produced backwards along the disc and passes backwards along the disc, inclining towards, but not reaching the base of the dorsal ciliae, and containing three smooth, metallic elevations, like the one on the dorsal margin, the wing between it and the costa being white, and between it and the dorsal margin the wing is white and pale ochreous. The oblique streak terminates just before the dorsal ciliae at a curved fascia, which is very convex towards the base, is reddish ochreous on the dorsal margin, and brown on the costal margin. This curved fascia is followed by an oblique one, which is nearest to the tip on the costal margin, and the costal portion of it is wide and white, and the dorsal portion brown, and in some lights is brilliant metallic; the brown portion is narrow where it meets the white costal portion, and passes

around behind it to the costal margin, and thence curves as a narrow line backwards around the apex at the base of the ciliae, returning to its origin on the dorsal margin, thus enclosing an oblong, egg-yellow or golden patch, parallel with the base of the dorsal ciliae. In some lights this fascia is dull brown, not at all metallic, and the yellowish ochreous parts of the wing become almost brick red; and, in truth, all the colors of the wing, except the dark velvety brown streak which passes obliquely the disc, are so variable that it is very difficult to give an adequate or intelligible description of the insect. The ciliae are fuscous. *Al. ex.* $\frac{3}{8}$ inch. Season, May, August and September. I have also received it from Miss Murtfeldt, from St. Louis.

This species belongs to the same group with *G. roseo-suffusella*, &c., and is the prettiest *Gelechia* that I have seen.

G. rufusella. *N. sp.*

Second joint of the palpi somewhat thickened beneath before the apex (nearly as in the European G. populella); third joint a little longer than the second.

Palpi white; second joint externally dark brown at the base. Head, thorax and base of the primaries yellowish white, with a faint reddish tinge, which gradually deepens and becomes more distinct as it passes backwards over the wings, and about the basal one-fourth becomes bright brick red, and continuing to deepen, becomes tinged with fuscous at the apex. Antennae brown, annulate with pale yellow. *Al. ex.* $\frac{1}{2}$ inch. Sometimes the primaries are sparsely dusted with brown. Season, September.

G. costa-rufocella. *N. sp.*

Second joint of the palpi clavate, not brush-like, brown, tipped with yellowish; third joint pale yellowish. Antennae brown; head, thorax, base of the primaries, and costal margin to beyond the middle, rufous; the remainder of the primaries brown, with four small yellow spots, two of which are on the fold, and two on the disc, and a fifth small one at the beginning of the costal ciliae; ciliae brown, pale at their base. Al. ex. a little over $\frac{1}{2}$ inch. Season, September.

G. subruberella. *N. sp.*

Labial palpi, with the second joint of the palpi, a little thickened before the tip, as in rufusella.

Pale ochreous, faintly tinged with rufous, streaked and blotched with brick red along the base of the dorsal ciliae; a minute rufous spot on the fold, and a circular brown one at the end of the disc, with a small one before it. *Al. ex.* $\frac{1}{2}$ inch. Season, October. Very near to *rufusella*, perhaps a variety. The palpi are precisely as in that species as to form and colors, but the general hue is much paler.

G. maculimargindla. *N. sp.*

Second joint of the palpi a little brush-like, yellowish, dusted with dark brown; third joint dark brown, with extreme tip and a few scattered scales white; about as long as the second. Antennae dark brown; head pale ochreous yellow and brown; thorax and primaries dark gray brown, spotted with darker colors; one of the spots is on the costa near the base, and there is a small yellowish spot before it and another behind it, and beyond that is another of the dark spots; there is a dark spot on the fold, with a small yellowish one before it; a small dark spot about the centre of the disc, without any yellow spot before it, and about the end of the disc is another dark spot, with a small yellow one before it. There is a pale yellowish streak at the beginning of the costal ciliae, and an opposite dorsal one. Al. ex. $\frac{1}{2}$ inch. Season, July.

G. argenti-albella. *N. sp.*

Second joint of the palpi scarcely thickened beneath; the third more than half the length of second.

Silvery white; each joint of the palpi has a dark brown annulus before the tip; there are a few blackish scales over the base of the antennae, which are annulate with brown; a small dark brown spot on the extreme costa at the base, followed by three others within the margin, and there is also a small one within the dorsal margin near the base; there is a transverse brown spot or line on the fold, and another at the end of the disc, a brownish fascia at the beginning of the ciliae, and a brownish golden streak around the apex at the base of the ciliae. *Al. ex.* $\frac{1}{4}$ inch. Season, June. A rather pretty and distinctly marked species, like *G. variella*, but I think it is quite distinct from it.

G. bidiscomaculella. *N. sp.*

Pale ochreous, becoming a little deeper towards the apex of the primaries; there is a small brown spot about the middle of the disc,

another at its end, and a brown streak along the base of the costal ciliae. *Al. ex.* $\frac{3}{8}$ inch. Season, July. I have but a single specimen, and in it the palpi are missing. Allied to *subruberella*; perhaps a variety of it.

G. subalbusella. *N. sp.*

Second joint of the palpi not thickened.

Creamy white, sparsely dusted with ochreous yellow and brown. *Al. ex.* $\frac{3}{8}$ inch. Season, July.

G. parvipulvella. *N. sp.*

Palpi simple.

Pale yellowish white, lightly dusted with fuscous, the dusting more dense towards the apex of the primaries. *Al. ex.* $\frac{3}{8}$ inch. Season, May and August. Possibly a variety of *G. subalbusella*.

G. lavernella. *N. sp.*

Second joint of the palpi a little thickened beneath towards the apex; third joint rather thick.

Palpi ochreous, with the basal half of the second joint and a band before its tip, dark brown; an annulus before the middle of the third joint, and another wide one before its tip, dark brown. Thorax and primaries gray; base of the costal margin dark brown, and from it a narrow, oblique, dark brown streak crosses the wing to the dorsal margin, in its course crossing almost at right angles an indistinct brown line which proceeds from a brown spot on the costal margin, and passes obliquely forwards nearly to the base of the wing; and at the intersection of the lines the brown color spreads around them, forming another spot; these lines are irregular, and in some parts indistinct; behind these lines the wing is densely dusted with fuscous to the tip, and a brown fascia is well indicated at the beginning of the ciliae. *Al. ex.* $\frac{1}{2}$ inch. There is something in the clumsy looking palpi and general appearance which reminds one of a *Laverna*.

G. ciliolineella. *N. sp.*

Only microscopically distinguishable from *G. solaniella*. Ochreous, tinged slightly with grayish; there is an indistinct brownish spot on the fold, and another a little behind it on the disc, and another in the apical part of the wing. Costal ciliae whitish, and a narrow, indistinct, white

line at their base, and one also at the base of the dorsal ciliae, and three dark brown hinder marginal lines in the apical ciliae. *Al. ex.* $\frac{1}{2}$ inch.

G. minimella. *N. sp.*

Palpi simple.

Insect dark brown, indistinctly sprinkled with white. *Al. ex.* $\frac{3}{8}$ inch. The neuration is nearly that of *Cleodora*.

ANARSIA.

A. suffusella. *N. sp.*

Ochreous yellow, somewhat suffused with fuscous. Outer surface of the second joint of the palpi dark brown, tipped with ochreous; third joint pale yellowish. The third joint of the palpi is more slender than in *A. pruniella* Clem., and the fascia is narrower. *Al. ex.* $\frac{3}{4}$ inch. Season April.

A. trimaculella. *N. sp.*

Outer surface of the second joint of the palpi dark brown, except at the apex of the tuft, where it is whitish; third joint yellowish. Head pale ochreous; head and thorax pale ochreous, densely dusted with fuscous. Primaries ochreous, suffused and dusted with brown; a small dark brown spot on the fold before the middle; one a little larger at the middle of the disc, and one at its end, and some scattered dark brown scales along the base of the dorsal ciliae, near the apex. *Al. ex.* scarcely $\frac{1}{2}$ inch.

NEDA, *gen. nov.*

This genus is between *Anarsia* and *Cleodora*. It is an *Anarsia* in all but the hind wings, which are those of *Cleodora*, both in form and neuration.

Head smooth, convex; ocelli, none; antennae minutely denticulate; tongue moderate, scaled; labial palpi moderate, second joint with a projecting tuft at the apex; third joint smooth, ascending in the ♀ (all my specimens are ♀.) Primaries lanceolate, ciliae moderate; the costal vein attains the margin before the middle; the cell is narrow and pointed; the first branch of the subcostal is given off before the middle, and there are two other branches towards the end of the cell; the apical branch is

furcate on the costa before the tip, and has almost a common origin with the apical branch of the median at the end of the cell; the median has three branches behind the middle, and the submedian is furcate at the base. The secondaries are pointed, scarcely as wide as the primaries, with the dorsal margin deeply excavated beneath the tip; the costal margin is excavated from the basal third to the tip; the costal vein attains the margin about the middle; the subcostal is straight to the end of the cell, and thence bends a little upwards to the apex; the cell is very wide; the discal vein oblique, with two branches to the dorsal margin, the upper branch arising close to the subcostal, and the second continued faintly through the cell to the base; the median is trifurcate behind the middle, the first branch remote from the others; the submedian distinct; internal obsolete.

N. plutella.

Third joint of palpi and upper surface of the second one creamy white, the second otherwise dark gray brown; head, thorax and the dorsal margin of the primaries to a point beyond the beginning of the ciliae, creamy white, the primaries otherwise dark gray brown, except that the extreme costa is creamy white and the costal margin is obscurely streaked with the same hue. Ciliae of primaries creamy white, except at the apex. *Al. ex.* $\frac{7}{8}$ inch. Season, September. The ornamentation reminds one of a *Plutella*.

CLEODORA.

(No species of this genus has heretofore been described from the U. S. or Canada.)

C. pallidastrigella. *N. sp.*

Palpi pale yellowish; a spot on top of the third joint, and the brush on the second joint reddish ochreous. Thorax and primaries pale orange; paler, nearly white, along the dorsal margin, and on the extreme costa beyond the middle; a narrow, indistinct, whitish line along the fold, ending at a small brown spot; there is an oblique, narrow, whitish streak along the base of the costal ciliae, continuous with the white of the extreme costa, and there is a short one along the base of the dorsal ciliae; a minute brownish spot surrounded by a pale ring at the end of the disc, and an oblique brownish streak in the ciliae at the apex. The brown spots are all indistinct. *Al. ex.* $\frac{3}{8}$ inch.

The neuration of the primaries differs from that of *C. cytisella*, as figured by Mr. Stainton (*Ins. Brit.*, v. 3), by having a branch from the apical vein to the costal margin, just before the vein becomes furcate, and that of the secondaries differs from it by having a single branch from the discal vein, and the subcostal furcate beyond the cell, or rather the superior branch of the discal is united with the subcostal at the cell. Nevertheless, I have no doubt that this species and the following are properly placed in this genus.

C. pallidella. *N. sp.*

To the naked eye this species appears very pale gray, almost white; under the lens it appears pale ochreous gray, with minute and indistinct pale fuscous specks; there is a fuscous streak along the upper surface of the second joint of the palpi, and the antennae are annulate with fuscous. *Al. ex.* $\frac{3}{8}$ inch. Season, August.

Mr. Stainton, in a foot note on page 111 of his edition of the Clemens papers, doubts whether *Anorthosia* Clem. ought to be separated from *Cleodora*. But the two genera differ decidedly in neuration, and the palpi of *Anorthosia*, as figured by Dr. Clemens, are very different from those of *Cleodora*, as figured by Mr. Stainton (*Ins. Brit.*, v. 3). On the other hand, the palpi of *Anorthosia* resemble more closely those of my genus, *Sagaritis*. In both the tuft rises above the palpal joint, instead of spreading around it, as in *Cleodora*, and in those genera the tuft is composed of long scales, whilst in *Cleodora* it is clothed with stiff, bristle-like scales. In *Anorthosia* the tuft is figured largest at the base of the joint, whilst in *Sagaritis* it is largest towards the apex. The terminal joint in Dr. Clemens' figure is represented shorter relatively to the third than it is in either *Sagaritis* or *Cleodora*. In both these genera the cell is closed in both wings, while in *Anorthosia* it is open. There are also other differences both in the form and neuration of the wings. *Sagaritis* is quite distinct from *Cleodora* in the more elongate and slender body and legs, and more graceful appearance, as well as in the form and neuration of the wings.

NOTHRIS.

N. griseella. *N. sp.*

Tuft large, but not projecting beyond the end of the joint, its anterior and inferior margins forming almost a right angle with each other; the

terminal joint of the palpi is nearly as long as the second, recurved; tongue rather scantily and roughly scaled at the base, the scales laterally projecting. Having but a single specimen, I have not examined the neuration, but the palpi are nearly those of *N. vecharcella*, as figured in *Ins. Brit.*, v. 3, than to any other genus known to me.

Pale gray; basal half of the second joint of the palpi dark brown on the outer surface; tip of third joint dark brown; basal joint and annulations of the stalk of the antennae brown. There is a rather short dark brown line on each side of the thorax above the wings. Primaries with the extreme costa at the base, and the inner angle, dark brown, and the base towards the dorsal margin suffused with faint reddish yellow; the disc from the base nearly to the middle is suffused with brown, and there are faint brownish streaks between the veins in the apical part of the wing. *Al. ex.* $\frac{3}{4}$ inch.

HOLOCERA.

H. Clemensella. *N. sp.*

H. chalcifrontella Clem. is so variable a species that it is possible this may be a variety of it; but it is not one of the described varieties.

Whitish, dusted lightly with dark purplish brown, the dusting dense on the second joint of the palpi. There is a purplish brown patch at the base of the costa, a small one about the middle of the costa, a small one opposite to it on the fold, a small one on the disc opposite the space between the other two, one at the end of the disc, and a row of small dots around the apex at the base of the ciliae. *Al. ex.* $\frac{1}{2}$ inch. Season. August.

POLYHYMNO, *gen. nov.*

The two insects for which I erect this genus are possibly not congeneric. *P. luteostrigella* is a slender, elongate insect, whilst *P. sexstrigella* is rather robust; there is but a single specimen of the latter species, and the head of that is wanting, though it is otherwise perfect. The form and neuration of the secondaries is very nearly the same in both, and so is the form of the primaries, except that those of *sexstrigella* are a little wider. The generic diagnosis is that of *luteostrigella*. The points in which *sexstrigella* differ from it are noticed under that species. The form of *luteostrigella* and the markings of the wings in both species are suggestive

of affinities with *Gracilaria*, especially the short streaks at the apex of the primaries, reminding one of the "hook" in some species of that genus. The palpi are rather suggestive of relation to *Cosmopteryx* or *Stathmopoda*, but the form and neuration of the wings place it beyond doubt in the *Gelechiidae*, though the caudate primaries are peculiar.

No maxillary palpi; labial palpi recurved, very long and slender, with the third joint longer than the second, and pointed; tongue long, scaled at the base; forehead convex; face broad; scales of the head and face appressed; basal joint of the antennae small, scarcely distinguishable from the stalk, which is long and slender.

Primaries lanceolate, narrow, caudate, the costal and dorsal margins both being excised before the tip, behind the cell, the dorsal margin deeply so, and the extreme tip is a little hooked backwards. The costal vein is short, cell narrow; the subcostal gives off two branches, both behind the middle, the first remote from the second, which is at the end of the cell; and the apical branch is furcate behind the cell, both branches going to the costal margin. The discal vein gives off a single branch, which goes to the dorsal margin, and the median is four-branched, all four at or near to the end of the cell; the submedian is furcate at the base.

The secondaries are deeply emarginate beneath the apex, which is a little hooked backwards; the subcostal gives off a long branch from before the middle, and is furcate, with one branch to the costal and the other to the dorsal margin before the tip; the cell is unclosed, and the independent discal branch arises at the median, which is three-branched, the first one being before the middle and remote from the others. They are about as wide as the primaries.

The neuration of the secondaries allies this genus to *Trypanisma* Clem., *Taygate*, *Evippe*, &c., Cham.

P. luteostrigella. *N. sp.*

Silvery white; ciliae pale stramineous; upper surface of the thorax, with four narrow, equidistant, longitudinal, golden yellow lines. Primaries with three similar golden yellow lines extending through the entire length of the wings; one of these is placed just within the dorsal margin, and is continuous with one of the central thoracic lines, but the line is very indistinct, becoming more distinct towards the apex; another of the lines on the wing is continuous with one of the lateral thoracic lines, is very

distinct, becomes furcate on the disc, one branch going to the extreme apex and the other towards the dorsal margin at the beginning of the ciliae, where it becomes confluent with the first mentioned line, but immediately separates from it again, the two lines continuing on parallel to each other around the base of the dorsal ciliae to the apex. The third line begins on the costa at the base, and runs just within the costal margin nearly to the apex, where it becomes confluent with the second or apical branch of the second or median streak. In the apical part of the wing are three golden costal streaks, which become confluent with the second and third longitudinal lines, and point obliquely backwards, the first being rather remote from the other two; behind these three streaks is a fourth one, perpendicular to the margin; behind this is a fifth, pointing obliquely forwards, and behind this again two short curved ones, pointing forwards, one at the apex and the other close to and before it. There are two distinct, though small black spots¹ in the dorsal ciliae. *Al. ex.* $\frac{3}{8}$ inch. Season, August.

Polyhymno? sexstrigella. N. sp.

As already stated, the head is missing in the single specimen which I possess of this species, and the primaries are wider, decidedly so in proportion to their length, being a little wider than the secondaries, and the costal margin before the tip is not so decidedly scalloped; the tip is not hooked backwards; the apical branch of the subcostal is not furcate; there are three branches before it, instead of two, as in *luteostrigella*, but the last one has almost a common origin with the apical, and the median is only three-branched, instead of four.

The secondaries are the same, except that in this species the long branch of the subcostal (the first branch) is absent.

The insect is more robust than *luteostrigella*.

Iridescent fuscous, in some lights silvery. About the middle of the primaries is an oblique, wide, silvery white costal streak, of irregular outline, reaching the fold, pointing obliquely backwards, divided in part by a narrow yellowish line, which passes back along the middle of the wing to the second costal streak, the wing above and below it being dark fuscous, somewhat iridescent; the second costal streak is white and placed behind the middle; opposite to it is a white spot, just within the dorsal margin; the second streak is dark margined behind, and the dark margin is produced backwards as a line along the centre of the apical part of the wing, but does not quite reach the apex, and nearly opposite its end are two

small, straight, silvery white costal streaks, both dark margined behind and close to each other; behind these two streaks are two others, also close together, the last one at the apex and both dark margined behind. The apical part of the wing (behind the second costal streak) is golden-yellow, sprinkled towards the dorsal margin with brown. Ciliae silvery fuscous, with a wide, dark brown hinder marginal line. *Al. ex.* $\frac{3}{8}$ inch. Season, July.

In the form and neuration of the wings, and in the disposition of the costal streaks it *approaches luteostrigella*; whether it does in the palpi and antennae remains to be seen.

Since the above remarks were written, I have received from Mr. Belfrage more perfect specimens, and find the palpi and antennae as in *luteostrigella*. It may be necessary to amend the specific description a little hereafter.

(To be Continued.)

ON A NEW SPECIES OF CERAMICA.

BY H. K. MORRISON, CAMBRIDGE, MASS.

Ceramica rubefacta (nov. sp.)

Expanse, 41 m. m.; length of body, 20 m. m.

Eyes hairy; collar and thorax reddish brown; the thorax of my only specimen was injured in capture, so that the presence, or if present, the size of the tufts could not be ascertained. But apparently it was tufted, as there are traces of a meta-thoracic elevation. Abdomen yellowish, with a strong basal tuft; the labial and anal tufts tinged with carneous; beneath red; anterior wings deep uniform red; lines obsolete; nervules distinctly black; a white dot on the costa at the base; the interior line is only represented by a white dot on the costa and on the subcostal, median and submedian nervules. The orbicular is blackish, small, oblique and with a grayish centre, situated close to the reniform, and at more than the usual distance from the base; reniform vague and blackish, with a gray

centre; the exterior line consists of faint white dots on the nervules, and its course is marked by the slightest possible change of color between the median and subterminal spaces; the ante-apical white dots are very distinct; the subterminal line wanting, except at the costa, where several linear white shades show its place. Posterior wings yellowish white, with a broad fuscous terminal border; beneath the anterior wings are gray, with traces of an exterior line; the apical, costal and terminal regions deeply suffused with carneous. Posterior wings whitish, with the fringe yellow; the costal and apical portions of the wings carneous. *Hab.* Malden, Mass.; from my collection. Found under bark, June 24, 1873.

In a recent paper, Mr. Grote refers *Ceramica* to *Taeniocampa*, being then only acquainted with *Ceramica picta* Harr. The discovery of this species, which agrees perfectly in structural characters with *picta*, confirms my previous opinion that the genus should be recognized. The characters which separate it from *Taeniocampa* are not very striking, but they can be readily appreciated, and the habits and markings of the two species are very different from any of the *Taeniocampas*. *Rubefacta* approaches to the description of *vindemialis* Guen., but differs in the presence of the orbicular and in other particulars.

In a recent number of the ENTOMOLOGIST Mr. Grote described a species under the title of *Perigrapha normani*. In working on allied genera, we have identified this form, but we are unable to see the propriety of the generic reference.

The following are the characters of Lederer's genus *Perigrapha*:

Eyes hairy; tibiae unarmed; antennae pectinated in both sexes; collar cut out and produced in front into a sharp corner: thorax with an angular projection on each side, and bearing behind the collar a lofty, sharp-edged, longitudinal crest; abdomen with a closely cut tuft on the first segment.

In the species under consideration the antennae in both sexes are simple; the collar is not produced into a sharp corner; the thorax is rounded, without angular projections on the sides. Behind the collar there is simply a small, flat, furrowed tuft, instead of a lofty crest; the abdomen is untufted.

Such being the generic characters of *normani*, we remove it from *Perigrapha* and refer it to a separate section of *Taeniocampa*, as it agrees with the typical species of that genus, except in the possession of a slight prothoracic tuft. The known species will now stand as follows

Tacniocampa Guen.

Section 1.—Thorax untufted.

Alia Guen.

Oviduca Guen.

Pacificata Harvey.

Section 2.—Thorax with a weak, flat, furrowed tuft behind the collar.

Normani Grote.

ON THE SPECIES REFERRED TO ORTHODES BY GUENEE.

BY H. K. MORRISON, CAMBRIDGE, MASS.

In Mr. Grote's recent "List of the Noctuidæ" four of the five species described by Guenée are marked unidentified. With a very large material (nearly 100 specimens of the different species, for many of which we are indebted to Mr. F. C. Bowditch, who has found them common in the vicinity of Boston) before us, we have attempted to straighten out the species and to characterize the two genera to which we refer them.

Mr. Guenée, in instituting this genus, comprised under it many discordant forms, and in his preliminary remarks he foresees the necessity of a future generic separation of the species.

We restrict *Orthodes* to the group of which *infirmus* is the type, and also the most widely known member.

ORTHODES Guen., Noct., vol. 1, p. 371 (1852.)

Imagines of medium size. The eyes hairy; antennæ simple in both sexes; the palpi stout, erect, thickly but evenly clothed; the terminal joint short, but distinctly separated from the other two; the collar rounded, distinctly lobed, and well separated from the thorax; in *infirmus* there is an open space between the two lobes. The thorax untufted, its villosity smooth and pressed down; the abdomen untufted, in the female slightly exceeding the posterior wings; in the male long hairy tufts which have their origin at the base of the genitalia, enclose and extend far beyond the parts; the anterior wings rapidly increasing in width from the base outward, triangular, the apex and internal angle rounded. The spots and lines are very clear and evident. Beneath, the males have on the median space an irregular, slightly raised patch of closely compressed hair.

SPECIES.

Infirma, Guen., Noct., 1, p. 375 (1852).

In this species the squamation is smooth ; the lobes of the collar are separated below ; the thorax is concolorous ; the anterior wings are dull purple gray ; the lines and spots are all present, with the exception of the claviform spot, and accompanied by distinct, even, yellow lines ; the half-line parallel with the interior line ; the median lines are trapezoidal ; the median shade is blackish, diffused, and curved, passing between the spots ; the reniform and orbicular are large, contiguous, and surrounded by pale annuli ; a double row of spots on the nervules follow the exterior line ; the subterminal line is distinct, even and slightly curved ; the subterminal space dark, particularly near the costa ; a pale scalloped line at the base of the wings. Beneath yellowish, with a common line ; on the anterior wings the characteristic patch of hair is more elongated and narrower than in the allied species ; on the posterior wings discal dots.

Expanse, 32-35 m. m. *Hab.*, the Eastern and Middle States. I have also received specimens from St. Louis (Prof. C. V. Riley.)

This species is very constant, except that the ordinary spots differ in their closeness to each other. It is extremely common in the Middle States in July ; to the northward it becomes less abundant.

Cynica Guen., Noct., 1, p. 375 (1852).

Nimfa Guen., id., p. 76 ; *candens* Guen., id.

♂ The collar rounded, well separated from the thorax ; there is no open space between its two lobes. It varies greatly in color from light ochreous through all the shades of reddish and purple brown. The thorax concolorous with the anterior wings ; the latter are rounded, proportionately shorter than in *infirma* ; they vary from gray, with scarcely any red admixture, to deep reddish brown. The median lines are always present, simple, black and irregular, accompanied by paler shade lines ; their position in reference to each other varies in different specimens in some they are trapezoidal, in others they are almost sub-parallel, and they vary to infinity between these two limits. The median shade is black, diffused and arcuate, always touching the base of the reniform, and approaching more or less near to the exterior line. The ordinary spots are always distinct, concolorous, with white annuli ; they vary in their distance from each other. The orbicular is usually oblique, and but little smaller than the reniform ; in

one specimen, however, it is round and very small. The subterminal line is generally whitish, distinct, and preceded by a dark shade line; this latter is sometimes absent. The posterior wings are uniform, fuscous, slightly lighter at the base, with a faint discal dot; the fringe tinged with ochreous or carneous, or with a shade between them. Beneath the anterior wings are gray, the apex sometimes carneous. The characteristic patch of hair covers the upper part of the basal and median spaces. The posterior wings are yellowish, with a discal dot and thick median line; the latter is rarely obsolete. The fringes of both wings vary; they are usually carneous, but sometimes ochreous or even pale gray. The anal tufts are usually yellowish.

Expanse, 30 to 33 m. m.

♀. In the female the collar is purple, tipped with ochreous; the thorax and anterior wings are never gray, or with any trace of ochreous, neither are they reddish brown, as in the males; they are usually of a dark intense purple brown. The median lines vary as in the males, but they are always less distinct; the ordinary spots are usually present, as in the males, but in one specimen they are barely traceable. The subterminal light line is less distinct, and frequently entirely obsolete. The posterior wings are as in the males; beneath also varying as in the other sex.

Expanse, 29 to 32 m. m. *Hab.* Maine, Mass., N. Y., Ohio; St. Louis, Mo. (Prof. C. V. Riley). Appearing in the latter part of June and first of July.

We have no hesitation in referring *nimia* as a synonym of this species, as specimens from New York exactly correspond with Guenée's description. *Candens*, however, may be distinct; but we are disposed to consider it merely a variety, from the description; at least until it is discovered and proved to be a good species.

PSEUDORTHODES (*nov. gen.*)

Closely allied to *Orthodes*, but we think sufficiently distinct from it. The anterior wings are narrower than in *Orthodes*, and lack the distinctive sexual patch of closely compressed hair of the males. The markings are confused, and the ordinary spots are obsolete. The males have not the long anal tufts found in *Orthodes*. The third palpal joint is longer and better defined.

Vectors Guen., Noct. 1, p. 376 (1852.)

Var. *griseocincta* Harvey, Bull. Buff. Soc. Nat. Sci, 1874.

In this species the thorax is concolorous with the anterior wings ; the abdomen is smooth and flattened ; the wings are usually reddish brown or gray, lustrous ; the median lines are blackish and confused, often accompanied by pale, faint shade lines ; the interior line is slightly oblique and sometimes geminate ; the median shade is broad, black, arcuate, and diffused, touching the reniform, which is reduced to a red or white spot. The orbicular and claviform are absent. The exterior line is always simple and denticulate ; the subterminal line is faint, light, preceded very frequently by a dark shade, in which are sometimes formed, opposite to the cell, black cuneiform dots. The fringe is concolorous. Posterior wings dark grayish fuscous, sometimes almost black. The discal dot is always present. Beneath the anterior wings are dark gray, with the terminal space usually light ; the posterior wings lighter, with a distinct discal dot. A common median line extends over both wings.

Expanse 25 to 32 m. m. *Hab.* Atlantic States.

Nearly forty specimens were examined from different localities.

O. cynica can be justly called a variable species, but this one is infinite in its variations of size as well as color. We can not consider *griseocincta* other than a specimen in which the reddish tint is entirely absent, and the gray shades accompanying the lines are unusually prominent. The forms of this species slide so gradually into each other that it is impossible to draw distinct lines of demarcation. There are, however, two principal varieties ; in one the reniform is clear, white and conspicuous, and the ground color is reddish ; in the other the reniform is reddish, or indicated only by a few pale scales, and the ground color is gray with but slight reddish admixture. Specimens of this latter variety (which is the only one described by Guenée) sometimes occur in which the ground color is red, but it is more frequently the other way.

In one specimen expanding only 25 m. m., the reniform is white ; the ordinary lines are diffused and black, coloring the whole wing, and entirely obscuring the usual reddish shade. In another, which approaches *griseocincta*, the expanse is 31 m. m. ; the reniform is simply a few collected whitish scales. The lines are nearly obsolete, and the interior line is preceded by a faint pale shade band. The ground color is a dull lustrous-slightly brownish gray.

Obituary.

The sad intelligence of the death of that distinguished Entomologist, Francis Walker, of London, England, conveyed in a brief notice in our last, will, we know, have brought grief to the hearts of all those who have been favored with the correspondence of that genial-hearted man. His continued and disinterested kindness towards all those with whom he had to do has endeared him to many. Although we never had the pleasure of a personal acquaintance with the deceased, yet to ourselves personally, as well as to our Society, he has always been among the truest and kindest friends we have had, ever ready to do us any service in his power. His death leaves a void in our circle which it will be hard to fill. The following brief sketch of his career and his unceasing labors, written by one who knew him well, will be read with interest :

It has become my painful duty to record that Francis Walker, the most voluminous and most industrious writer on Entomology this country has ever produced, expired at his residence, Elm Hall, Wanstead, on the 5th of October, 1874, sincerely lamented by all who enjoyed the pleasure and advantage of his friendship. He was the seventh son, and the tenth and youngest child, of Mr. John Walker, a gentleman of independent fortune, residing at Arno's Grove, Southgate, where the subject of this memoir was born on the 31st of July, 1809. Mr. Walker—the father—had a decided taste for science, especially Natural History; he was a fellow of the Royal and Horticultural Societies, and vice-president of the Linnean, so that his son's almost boyish propensity for studies, in which he afterwards became so eminent, seems to have been inherited rather than acquired.

Mr. Walker's decided talent for observing noteworthy facts in Entomology was first exhibited at home, when, as a mere child, his attention was attracted by the butterflies, which, in the fruit season, came to feed on the ripe plums and apricots in his father's gardens; *Vanessa C-Album* is especially mentioned; and *Limenitis Sibylla*, another species no longer found in the vicinity of London, was then common at Southgate.

In 1816 Mr. Walker's parents were staying with their family at Geneva, then the centre of a literary *coterie*, in which they met, among other celebrities, Lord Byron, Madame de Stael, and the naturalists De Saussure and Vernet. They spent more than a year at Geneva and Vevey, and in 1818 proceeded to Lucerne, from which place Francis, then a boy nine

years of age, made the ascent of Mont Pilatus, in company with his elder brother Henry; their object, in addition to the ever delightful one of mountain-climbing, being the collecting of butterflies. The family afterwards visited Neuwied, and returned to Arno's Grove in 1820.

In 1830 the two brothers, Henry and Francis, again visited the Continent, and now it was purely an Entomological tour, the late Mr. Curtis, the well-known author of 'British Entomology,' being their companion. This party collected most assiduously in the island of Jersey, and afterwards at Fontainebleau, Montpellier, Lyons, Nantes, Vaucluse, &c., the French Satyridæ, of which they formed very fine collections, being their principal object.

Mr. Walker's career as an author commenced in 1832. He contributed to the first number of the 'Entomological Magazine,' the introductory chapter of his 'Monographia Chalciditum,' a work on the minute parasitic Hymenoptera—a tribe of insects which he ever afterwards studied with the most assiduous attention, and one on which he immediately became the leading authority. He was then only twenty-three years of age; but his writings exhibited a depth of research and maturity of judgment which have rarely been excelled, and which abundantly evince the time and talent he had already devoted to these insects. It is worthy of notice that he now descended from the largest and most showy to the smallest and least conspicuous of insects, doubtless feeling that whereas among the magnificent butterflies there was little opportunity for the discovery of novelties, among the Chalcidites everything was new—everything required that minute, patient, and laborious investigation in which he seemed so especially to delight. Only two authors, Dalman and Spinola, had preceded him in devoting their attention to the structure of these atoms of creation; and even these two had described comparatively a very small number of species.

In 1834 Mr. Walker, somewhat reluctantly, consented to undertake the editorial management of the 'Entomological Magazine,' and resigned this office the following year, yet continued a constant contributor to its pages. The same year he visited Lapland, in company with two of our most distinguished botanists; and in this extreme north of Europe, and especially at Alten and Hammerfest, he assiduously collected insects, more particularly the northern Diptera, the Satyridæ among Lepidoptera, and the Chalcididæ amongst Hymenoptera. During this journey we have the first and only notice of his prowess as a sportsman: he shot wild grouse

and ptarmigan; and on one solitary occasion was accessory to the death of a reindeer, but as other rifles besides his own were simultaneously discharged, it is difficult to say whose was the effective bullet. I am glad to be able to record that Mr. Walker declined to give the poor creature the *coup de grâce*, and, for this especial purpose, resigned to another his *couteau de chasse*.

In May, 1840, he married Mary Elizabeth, the eldest daughter of Mr. Ford, of Ellett Hall, near Lancaster, and spent the summer on the Continent, again collecting in Switzerland with his customary assiduity.

In 1848 he explored the Isle of Thanet, the following year the Isle of Wight, and succeeding years, 1850 and 1851, he visited Geneva and Interlachen; and during the former year commenced his great work on Diptera. This formed part of a projected series of works on British insects, to be called 'Insecta Britannica,' a project in which the late Mr. Spence took a deep interest.

During the year 1851 was published the first volume of the 'Diptera.' This work is printed in 8vo., and contained 314 pages; the second volume appeared in 1853, and contained 298 pages; and the third volume in 1856, and contained 352 pages. Thus the entire work comprised nearly 1000 pages of closely-printed descriptions.

Another tour on the Continent occupied a considerable portion of 1857, Mr. Walker visiting Calais, Rouen, Paris, Strasbourg, Baden-Baden, Heidelberg, Wiesbaden, Frankfort, Mayence, Cologne, Brussels, Aix-la-Chapelle, and Antwerp. During the journey he collected in the Black Forest; and this is the only scene of his scientific labours, during the tour, of which I have any intelligence.

The summer of 1860 was devoted to a thorough exploration of the Channel Islands. Dr. Bowerbank was his companion during a portion of the time, and, as a consequence, the sponges of these islands were a main object of research—the Gouliot caves in Sark, so celebrated for their marine productions—were a great attraction to both naturalists.

In 1861 Mr. Walker's excursions were chiefly confined to North Devon; he visited Linton, Clovelly, Ilfracombe, Bideford, and Barnstaple; and now his attention seems to have been again chiefly occupied with Lepidoptera, at the scarcity of which he was greatly disappointed, having expected, from the extensive woods, to have found moths particularly abundant.

In 1863 he toured the English lakes ; and, in the spring of 1865, North Wales and Ireland ; and in the autumn he again visited Paris, Geneva, Lucerne, Interlachen, and Altdorf, ascending the Righi, Mont Pilatus and the Mürren, and proceeding to Kandersteg, the Oeschinen See, and the Gemmi Pass.

In 1867 we find him again in France and Switzerland, ascending the Col de Voza, and examining the Jardin of the Mer de Glace ; thence over the Tête Noir to Martigny, Sion, and the Great St. Bernard ; returning by St. Maurice and the Villeneuve to Geneva.

In 1869 he made the tour of the Isle of Man, and returned by Holyhead ; in 1870 he paid another visit to Llanberis, as well as to all the more beautiful scenery in North Wales, crossing over to Ireland, and touring that island from south to north ; and in 1871 he examined Entomologically the Scilly Islands, and the districts of the Lizard and the Land's End.

In 1872 he turned his attention to Italy, visiting Rome, Piza, Lucca, Florence, Naples, Sorrento, Capri, Milan, and Venice, as well as the Lakes of Como and Maggiore.

And, finally, in the present year, he had again proceeded as far as Aberystwith, on his way to Ireland, when his intention was frustrated by illness, which terminated fatally on the 5th of October. He died in the most perfect peace of body and of mind. For many years Mr. Walker was a member of the Linnean and Entomological Societies of London, but resigned his membership in both some time before the close of his life.

It might be excusable in a man of such incessant bodily activity—so locomotive by inclination, so devoted to the study of Nature in all her aspects, so dilligent a collector of the objects of his favourite study—had he allowed his pen to rest while his hands were engaged in forming and arranging his collections. But this was not the case with Mr. Walker, as his Catalogues of the National Collection abundantly testify. Of the Lepidoptera Heterocera, alone, Mr. Walker catalogued and described upwards of twenty-three thousand species ; in addition to which he prepared similar catalogues, although perhaps not to the same extent, of the Diptera, Orthoptera, Homoptera, Neuroptera, and part of the Hymenoptera : such an amount of labour, as is testified by these catalogues, has seldom, if ever, been accomplished by one individual. But this statement by no means represents the whole of his literary labours. He contributed

shorter or longer papers to the Transactions of learned societies, and to the periodicals of the day, especially to the 'Zoologist' and 'Entomologist'; by the indexes of the latter I find he sent thirteen communications to the first volume, three to the second, one to the fourth, thirteen to the fifth, and forty-three to the sixth; during the present year his writings appear in every number. I intended to catalogue these and his other labours, to give some idea of the number of pages, number of species and dates of each; but I can scarcely now venture to look forward to the accomplishment of this labour of love.

A word remains to be spoken of the man apart from the scientific and accomplished naturalist. Throughout my long life I have never met with anyone who possessed more correct, more diversified, or more general information, or who imparted that information to others with greater readiness and kindness; I have never met with any one more unassuming, more utterly unselfish, more uniformly kind and considerate to all with whom he came in contact. It is no ordinary happiness to have enjoyed the friendship of such a man for nearly half a century.—*Edward Newman in The Entomologist.*

CORRESPONDENCE.

ON CIRREDIA PAMPINA Guen.

DEAR SIR,—

In the list of the North American Noctuidæ published in the Bulletin of the Buffalo Society of Natural Sciences, we find the familiar name of *Cirredia* Guen. replaced by *Atethmia* Hubn. We are unable to see the necessity of this change. *Atethmia* was founded by Hubner in the *Verzeichniss* (1816) on

x crampelina Hb.

ambusta W. V.

subusta Hb.

Guenée, in his "*Essai sur les Noctuidites*," printed in the Annals of the French Entomological Society for 1839, p. 489, takes out *x crampelina*, which is congeneric with our *pampina* as well as the European *ambusta*, placing it in the genus *Cirredia*. In 1852, the same author in the "*Species Général*," vol. 6, p. 12, defines *Athetmia* (which he spells as in the index, not the text of the "*Verzeichniss*"), referring *subusta* as the typical

species, and adding another, *inusta*, to the genus, both of these species being native in South America.

This being the synonymy of the two genera, we would retain *Cirrædia* for our well known form.

H. K. MORRISON, Cambridge, Mass.

BOOK NOTICES.

Manuscript Notes from my Journal, or Illustrations of Insects, Native and Foreign Diptera, by Townsend Glover, Washington, D. C.

We sincerely thank the author of this valuable work for his great kindness in placing us on the list of the favored few among whom the first small edition of forty-five copies of the above work has been distributed. This work is unique in several respects. It is a fac simile of the author's own note book on this family of insects, written by the author himself on prepared paper, then transferred to stone and printed on a lithographic press. The costliness of the paper required for this purpose and the fact that it can only be used on one side, adds much to the expense of issuing this work, which expense has been borne entirely by the author. Such generosity and disinterestedness in the interests of our favorite science is deserving of the highest commendation.

The work is published in quarto form, and opens with three pages of introductory matter, followed by thirteen plates, containing no less than 480 excellent illustrations of Dipterous insects in their various stages, or of parts of these insects, accompanied by suitable explanatory lists of names, &c. The labor on these plates alone, all of which is the work of this pains-taking and laborious Entomologist, is something enormous, and this, to our knowledge, is but a fraction of the work he has accomplished in this department during the past few years. The next 59 pages are occupied by an alphabetical list of the families and genera of Diptera, with synonyms, habitat, food, &c. Then a list of predaceous or parasitic Diptera; vegetable and animal substances inhabited, injured or destroyed by Diptera, &c., &c. A valuable practical portion of the work is the enumeration and description of various remedies which have been suggested to guard against the injuries caused by these insects. Each division of the work throughout is arranged alphabetically and in the most convenient manner, so as to enable the student to refer readily to any portion he may desire.

Notices of other books received will appear in our next.

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