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AMERICAN
ENTOMOLOGY,

OR

Descriptions

OF THE

INSECTS OF NORTH AMERICA.

ILLUSTRATED BY

COLOURED FIGURES

FROM

ORIGINAL DRAWINGS EXECUTED FROM NATURE.

BY THOMAS SAY,

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[Vol. II.]

"Each moss,
Each shell, each crawling insect, holds a rank
Important in the plan of Him who fram'd
This scale of beings."

STILLINGFLEET.

Philadelphia Museum:

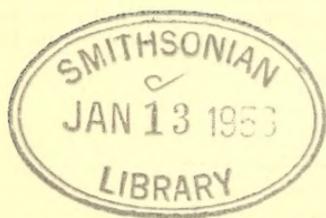
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FOR SALE BY ANTHONY FINLEY, CORNER OF FOURTH AND CHESNUT ST.

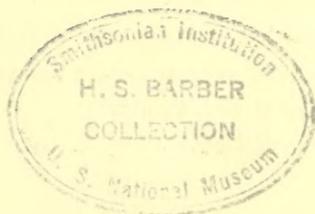
William Brown, Printer.

1825.

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ÆGERIA.

GENERIC CHARACTER.

Antennæ fusciform; palpi long, separate, covered with long scales or porrected hair; wings horizontal in repose; abdomen bearded at tip.

OBSERVATIONS.

Fabricius formed this genus for the reception of such species of the genus *SESIA*, as have the palpi prominent, distinct, and covered by elongated scales. As *SESIA* now stands, it differs from the present, by the short palpi, which are covered by short, close-set scales; and their terminal joint is very short, tuberculiform: Lamarck, however, applies the name *SESIA* to the present genus.

The wings in the various species of *ÆGERIA* are chiefly transparent, and the body being slender, with coloured bands in some of the species, they have much the appearance of bees and wasps; whence the names *apiformis*, *vespiformis*, *crabroniformis*, &c., which have been

applied in this genus. Degeer, in his history of one of the species, observes, "the first time that I saw it, I hesitated to take it with my naked hand, believing I had found a wasp."

ÆGERIA EXITIOSA.

DESCRIPTION.

MALE. *Body* steel-blue: *antennæ* ciliated on the inner side, black, with a tinge of blue: *palpi* beneath, yellow: *head* with a band at base, both above and beneath, pale yellow: *eyes* black-brown: *thorax* with two pale yellow longitudinal lines, and a transverse one behind, interrupted above, and a spot of the same colour, beneath the origin of the wings: *wings* hyaline, nervures and margin steel-blue, which is more dilated on the costal margin, and on the anastomosing band of the superior wings: *feet* steel-blue, the coxæ, two bands on the tibiæ including the spines, incisures of the posterior tarsi, and anterior tarsi behind, pale yellow: *abdomen* with two very narrow pale yellow bands, one of which is near the base.

and the other on the middle: *tail* fringed, the fringe margined with white each side.

FEMALE. *Body* very dark steel-blue, with a tinge of purple: *antennæ* destitute of cilliæ; *palpi* beneath, black: *thorax* immaculate: *superior wings* steel-blue, without any hyaline spot: *inferior wings* hyaline, with an opaque margin and longitudinal line; the latter and the costal margin are dilated: *tergum* with the fifth segment bright reddish-fulvous.

PUPA with two semifasciæ of spines upon each of the segments, excepting the three terminal ones, which have a single row only.

FOLLICLE brown, oblong-oval, composed of small pieces of bark and earth, closely connected together by the web of the animal.

SYNONYM.

ÆGERIA EXITIOSA. *Nobis. Journ. Acad. Nat. Sciences*, vol. iii. p. 216.

OBSERVATIONS.

This insect has been for years the cause of great solicitude and regret to all the lovers of fine fruit. Our readers will acknowledge the

fact, when we inform them, that small as it is, it is no other than the silent, insidious destroyer of the peach-tree.

The sexes are so remarkably different from each other, that we should hesitate in yielding our assent to their specific unity, if we were not apprised of the circumstance, that the sexes of many of the species are very unlike each other. In the present instance, the difference is so great, as to render it difficult to construct a good common specific character.

We are indebted to Mr. James Worth, a zealous and careful observer, for the principal part of the accurate information which we possess relative to this formidable insect. The following observations are extracted from a valuable essay, by that gentleman, published in the volume quoted above.

The egg deposited on the side of a glass tumbler, was oblong-oval, dull yellow, and so small as to be only just discernible by the naked eye. Excepting in a state of confinement, he never saw the female at rest, but in one instance, when she was perched on a leaf, which may possibly be the usual place of deposit, though he is inclined to believe that it is made on some part of the trunk of the tree. The larva is of

a white colour, the head being reddish-brown. It is somewhat difficult to ascertain the early movements of the larva, in consequence of its small size; but its destructive career certainly commences about the last of September, or early in October, by its entering the tree probably through the tender bark under the surface of the soil; after having passed through the bark, it proceeds downwards into the root, and finally turns its course towards the surface, where it arrives about the commencement of the succeeding July.

Having attained to its full growth, the larva enters the pupa state, between the first and the middle of July; enveloped in its follicle, it may then be readily discovered close to the trunk, surrounded by the gum which oozes from the wound. The pupa state continues from the tenth of July to the latter part of that month, or beginning of August.

Mr. Worth examined his fruit trees on the tenth of July, when he obtained twenty follicles, and about thirty larvæ; of the follicles, four were empty, the insect having assumed the winged state. The larvæ had all arrived near the surface of the ground, for the purpose of undergoing their great change.

Against the depredations of this insect, many supposed remedies have been prescribed, such as the application of hot water, tanner's bark, and flower of sulphur, to the root of the tree, and soft soap and lime-wash to the trunk; but it is obvious, that no application of this kind can injure the insect, without coming in contact with it whilst it remains in the egg, or infantile state, on the outside of the tree, for after having penetrated to the interior, no superficial application can affect it. The various substances placed around the root of the tree, such as ashes and sand, the uncovering of its base during winter, and covering again for the summer, are also pronounced by Mr. Worth, from his experience, to be inefficient, and even injurious to the health of the tree.

“The best plan of guarding against the ravages of the insect, which I have found, is to examine the trees early in the month of July; take a bricklayer's trowel, and opening the ground around the trunk, the lodgment of the insect will at once be discovered, by the appearance of gum, and it can readily be destroyed; one person can thus examine more than a hundred trees in less than half a day, and very few, if any, of the insects will escape. But in order the more

effectually to destroy them, I would advise, that from the first to the middle of August, some swingling tow, a piece of hairy hide, (the hair inside, but turned over at top,) or some other coarse thing of six or more inches in width, be tied close around the trunk of the tree, the under edge to be a little covered with earth, so as to prevent any passage beneath; about the middle of September remove the bandage, and immediately give the whole trunk of the tree a covering of soft soap or lime-wash, well brushed on, that no spot from the head to the root may remain untouched. Perhaps a decoction of tobacco, or some other wash, might do better; even hot water would be effectual, where the tree was sufficiently hardy to bear the application; or it may be, that the wash would answer the purpose without the bandage, but where the bandage is dispensed with, the wash ought, I think, to be applied about the first of September, or I should have great confidence in a bandage of tobacco leaves or stems; it should be kept on from the first of August to November, and could do no damage by being continued, provided it was not tied so close as to cramp the growth of the tree.

“But there are causes of decline other than

that of the insect, and the principal one is the not stirring of the ground; I apprehend, that the disease called "yellows" is often thus occasioned. Last year my peach orchard was considerably affected; and the ground had not been ploughed for three years, and had become quite covered with grass. In the spring of the current year I had it well broken up, and kept clean during the summer; the trees soon assumed a healthy appearance, and furnished a plentiful supply of fine fruit, and the whole orchard is now in the most flourishing condition, and I believe there will be no difficulty in keeping it in that state."

But my friend Mr. J. Gilliams, has certainly derived great advantage from the use of the cinders of the common anthracite, which is now so generally introduced as a fuel; he opens a small basin around the trunk of the tree, and fills it with the cinders; he informs me that the trees thus treated, have assumed a more healthy appearance than others, and they are not at all infested by this destructive insect.

In Mr. Skinner's very useful paper, the *American Farmer*, (vol. vi. p. 14.) are a few highly important remarks on this subject, by Mr. William Shotwell, of which the following is an extract: "I cleaned a number of trees, and

put a coat of *lime-mortar*, about half an inch thick round the body, then drew the earth up to it. These trees are now perfectly healthy, and there has not been the sign of a worm about them since, although it was five years past, that the experiment was made. I have since tried the same on a great number of trees with equal success."

In the same work (vol. vi. p. 37.) are some interesting observations on the preservation of peach-trees, by Mr. Evan Thomas, jr. from which we gather the following information. On removing the earth from about the roots of some trees of a sickly appearance, he observed a considerable quantity of gum that had exuded from several minute apertures of the trunk ; on opening these carefully with a knife, the larvæ were discovered. They were about one inch long, of a cream colour, the head somewhat depressed, chestnut-brown. "They had perforated the bark about one inch below the surface of the earth, and were devouring voraciously, both the alburnum and liber, leaving the cortex and epidermis as a covering and defence." Having destroyed these depredators, Mr. Thomas applied Forsythe's healing composition to the wounds, with the expectation that it would not only exhibit its

usual efficacy, but that it would also prevent the access of a new colony of the enemy. In this, however, he was disappointed, for on examining the same trees again, at the expiration of about six weeks, he found that a new deposit had been made, and that the young worms were then devouring what their predecessors had left. This fact exhibited the inefficacy of the practice of laying bare the roots during the winter. "About the close of July, many of these insects, having assumed the winged state, soon after deposit their eggs in peach-trees, just beneath the surface; first wounding the bark in different places, which, on examination, appears to have been effected by a blunt pointed instrument. They leave from one to fifty, and in some instances, nearly three hundred eggs in each tree, according to its size and capacity to support the future progeny: these soon appear, but it is difficult to detect them until they have acquired a growth of two or three weeks, when they are four or five lines in length. From this period, their growth is accelerated or retarded in proportion to the quantity of nourishment afforded. In general, however, the pupæ are formed early in October, in the midst of a conglomeration of gum, fibrous and excrementitious matter, and about the close of the

month, the insect issues from the chrysalis, deposits its eggs as before mentioned, and prepares to hibernate, like others of the same tribe, in the roofs of houses, beneath the bark of old trees, &c. The larvæ appear in April, assume the nymph state, and accomplish their final transformation in the course of July. Thus, there are two periods in each year assigned for their production and reproduction: nevertheless, individuals may be seen during the whole season, in almost every stage of existence." Having thus ascertained an important part of the natural history of the species, and the inefficiency of the applications hitherto made with a view to prevent its depredations, Mr. Thomas was led to make another experiment, which, he informs us, has been completely successful. "Remove the earth from about the trunk of the tree quite down to the lateral roots, press with the but end of the pruning knife against the bark in different places; if it appears to adhere firmly, and no gum or moisture issues, a thin coat of the composition described below, may be applied both above and beneath the surface, by a brush or wooden spatula, about two inches broad. Then take Canton matting, (or any other similar substance,) cut into pieces of from six to twelve inches in width,

according to the size of the tree, and of sufficient length to encircle it; bind one of these around the part intended to be secured, by two or three ties of twine or woollen yarn, so that one half shall be below, and the other half above the surface; draw earth, divested of grass or rubbish, to the tree, pressing it with the foot, close to the matting. The insects, governed by instinct, will not lay their eggs in the matting, but will seek elsewhere for a situation congenial with their habits. If, however, there is a clammy moisture, or portions of gum adhering to the main stem or roots, these should be regarded as almost certain indications of worms; every opening, however minute, should be carefully probed, and the direction taken by each worm, ascertained; cut away that portion of the bark only, of which the interior part has been destroyed, until you arrive at the object of pursuit, which must be removed and killed. Having in this manner extirpated all that are to be found, trim the edges of the wounds neatly, and fill up the cavities with a composition consisting of two parts of fresh cow-dung, one part of leached ashes, to each gallon of which, add a handful of ground plaster-of-paris, and as much water as will reduce the whole mass to the consistence of

a thick paste; spread a thin coat of this composition over the part to be covered, and then apply the bandage as before directed. As the ants, and several other insects among the wounded trees, exceedingly and materially retard their recovery, I would recommend the part to be washed with common white-wash, and a little flour of sulphur, or snuff sprinkled over it, before the composition is applied. The latter end of April, and the beginning of September, are the most suitable periods, for those accustomed to it, to begin the search."

Several other gentlemen have particularly observed the peach insect, and of these, we may mention Dr. James Smith, who has given the result of his inquiries, in the sixth volume of the American Farmer, p. 334, and Mr. Reuben Haines, who has published his observations in p. 401, of the same volume. But we think it highly probable, that the practice first proposed by Mr. Shotwell, if carefully and properly carried into effect, will effectually secure the peach-tree from the depredations of the *Ægeria exitiosa*.

Upper Figure—Female.

Middle Figure—Male.

Right Figure—Exuvia of the Pupa.

Left Figure—Follicle.

PLATE XIX.

ÆGERIA OMPHALE.

SPECIFIC CHARACTER.

Body red; abdomen behind and dorsal line black, with blue spots.

SYNONYM.

COSMOSOMA OMPHALE. *Hubner*. Fig. 1. 4. ♂ ♀

DESCRIPTION.

Body bright red: *head* black, with large brilliant blue spots: *antennæ* at tip, whitish: *palpi*, second and third joints red: *thorax* with a black transverse line before, continued over the wings; on the anterior part are four blue spots: *tergum* bright red, with a longitudinal line, abbreviated at base, and tip black; in which colour are four lateral brilliant blue spots, and about seven dorsal ones: *venter*, excepting at base, and each side near the base, black, with a large pure white spot on each side, before the middle; tuft at tip obsolete: *wings* hyaline, nervures

and margins black; the black of the tip wide: *feet* bright red: *intermediate tibiæ* black before: *posterior tibiæ* with a black line before.

OBSERVATIONS.

This very beautiful species was found by Mr. T. Peale in Florida, and was presented to me, for the present plate, by the Prince of Musignano, with whom I agree in the specific name here adopted from Hubner.

The striking contrast of the red and black colours, and the beautiful brilliant vivid azure blue, reflected from the spots of the abdomen, anterior part of the thorax and the head, render this a highly interesting insect.

Lower Figure.

PLATE XIX.



COENOMYIA.

GENERIC CHARACTER.

Antennæ porrect, triarticulate, first joint rather long, cylindrical; second, cyathiform; third, conical, eight ringed; seta none; palpi elevated; proboscis short; scutel bidentate; wings horizontal, crossed upon the tergum.

OBSERVATIONS.

We are indebted to Latreille for this genus, which has been adopted by Meigen, who, in his *European Diptera*, describes but a single species as belonging to it. Fabricius gave the name of *Sicus* to this genus, a designation that Latreille had already applied to a very different group. The present name will therefore be considered as having the priority.

COENOMYIA PALLIDA.

SPECIFIC CHARACTER.

Wings and abdomen yellowish-testaceous; thorax ferruginous.

SYNONYM.

COENOMYIA PALLIDA. *Nobis. In Long's Second Expedition.*

DESCRIPTION.

Head yellowish-testaceous; *orbits* beneath and behind, dark cinereous; *vertex* with an elevated, obtuse, dusky line between the stemmata: *thorax* ferruginous; anterior angles a little prominent, rounded and concave behind, with an elevated line reaching to the origin of the wings: *scutel* colour of the thorax: *wings* pale yellowish-brown, with margined nervures: *poisers* whitish: *feet* somewhat paler than the thorax: *tergum* polished; posterior segments somewhat sericeous:

second, third, and fourth segments, with three abbreviated series of punctures near their bases.

OBSERVATIONS.

During the recent journey of Major Long's party to the source of St. Peter's river, I obtained three individuals of this interesting species, the only one yet found in North America. They occurred in a small forest of scattered trees, where we halted at our dining hour, in the immediate vicinity of Wennabea's Sauk village on the Pecktannos.

None were observed at any subsequent period of the journey.

PLATE XX.



LYCUS.

GENERIC CHARACTER.

Head retracted; antennæ approximate, much compressed, more or less serrated; mouth small, produced into a short rostrum; maxillary palpi much longer than the labiales, terminal joint triangular, truncated; mandibles at tip, entire and acute: elytra thin and flexible, nearly of equal breadth, or much enlarged towards the tip; thorax receiving and covering the head, rounded before; penultimate joint of the tarsi bilobated.

OBSERVATIONS.

These insects are somewhat similar in their appearance to the well known "Fire-fly," whose scintillations, on a summer's evening, are scarcely less abundant than the lights of the firmament, which they feebly, and but for a moment, rival. But *LYCUS* is not endowed with the property of yielding light, and it is further distinguished from *LAMPYRIS* by the somewhat elongated mouth, eyes of moderate size, and by the form of the

terminal joint of the palpi, which is dilated, compressed, and truncated at tip. Another kindred genus, *OMALISUS*, of Geoffroy, is in like manner destitute of the curious power of giving light, but the mouth is not rostrated, the second and third joints of the antennæ are very short, and the head is only in part covered by the thorax.

Fabricius separated these insects from *LAMPYRIS*, under the name of *LYCUS*, (*Λύκος*.) a word, which, according to Olivier, was employed by Herzychius to designate a species of spider; by Atheneus for a fish; and by Aristotle for a kind of bird. But the word was commonly used by the Greeks, and by Homer himself, to indicate the wolf.

In respect to form, the body is, in many instances, somewhat linear, that is, having the sides approaching to parallelism; but in the *L. latissimus*, Fabr. of Africa, and the *L. palliatus*, Fabr. of the Cape of Good Hope, the elytra are so much dilated as to give the species an orbicular appearance; whilst in other species, as the *L. fasciatus*, Fabr. of Cayenne, these substitutes for anterior wings are greatly dilated, only towards their posterior extremities. Many have this dilatation, which is more particularly observ-

able in the males. Their colours are chiefly fulvous, violet-black, and sanguineous.

The larva is supposed to live in the earth; the perfect insect is innoxious, and is found on flowers.

LYCUS RETICULATUS.

SPECIFIC CHARACTER.

Black; lateral thoracic margins fulvous; elytra fulvous, with a band, and extremity, blackish.

SYNONYM.

LYCUS RETICULATUS. *Fabr. Syst. Eleut.* pt. 2. p. 111. *Oliv. Ins.* vol. ii. No. 29, p. 7. pl. 1, fig. 7.

DESCRIPTION.

Body deep black, polished: *antennæ* exceeding the middle of the elytra, opake: *rostrum* short: *thorax* black, the dilated lateral margins a little recurved, fulvous; an acute carina in the middle;

posterior angles attenuated, prominent and acute: *elytra* fulvous, with four elevated lines, which are alternately larger, the suture and exterior edge are also elevated; interstitial spaces with numerous transverse elevated lines; near the base, is a broad black band, which nearly reaches the middle, and is continued along the suture to the base; a much dilated terminal black band, which does not reach the middle; both these bands are slightly tinged with violaceous: *wings* blackish, the nervures margined with whitish: *feet* sericeous.

OBSERVATIONS.

This species may well be said to inhabit North America, for it would seem to be found in almost every part of it, excepting, perhaps, the region beyond the Rocky Mountains, and the more northern inhospitable solitude of Canada. I have received it from Mr. Holmes of Maine, and have myself found specimens in Missouri, North-West Territory, and East Florida. In Pennsylvania it is very common.

The *elytra* of the male, are more dilated behind than those of the female.

The upper left figure of the plate.

PLATE XXI.

LYCUS TERMINALIS.

SPECIFIC CHARACTER.

Black; thorax with fulvous lateral margins; elytra fulvous, with a black tip.

SYNONYM.

LYCUS TERMINALIS. *Nobis. Journ. Acad. Nat. Sciences*, vol. iii. p. 178.

DESCRIPTION.

Body deep black, polished: *antennæ* reaching the middle of the elytra, opaque: *rostrum* short: *thorax* black, the dilated lateral margins a little recurved, fulvous; an acute carina in the middle; posterior angles attenuated, prominent, acute: *scutel* black: *elytra* fulvous, with four elevated lines, which are alternately a little larger; the suture and exterior edge are also a little elevated; interstitial spaces with numerous transverse elevated lines; terminal third of the surface violaceous-black: *wings* blackish at tip: *feet* sericeous.

OBSERVATIONS.

Numerous specimens were observed by Major Long's party in Missouri and Arkansas. They occurred in the prairies on plants, and I found them to be especially abundant near the village of the Konza Indians.

It is, without doubt, closely allied to the preceding, but the anterior band of the elytra is always deficient, the tibiæ are somewhat more dilated, and there seems to be a greater difference of size between the sexes, the male being proportionally smaller. We cannot suppose it to be the *L. dimidiatus* Fabr., although the general tenor of the description corresponds very well, inasmuch as he represents the antennæ to be flabellate, with elongated serratures, and the base of the elytra to be rufous, whereas, the antennæ of this species are similar to those of the *reticulatus*. The black on the thorax of the female, is reduced to a narrow line.

The upper right figure of the plate.

PLATE XXI.

LYCUS SANGUINIPENNIS.

SPECIFIC CHARACTER.

Thorax black; lateral margin sanguineous; elytra sanguineous, immaculate.

SYNONYM.

LYCUS SANGUINIPENNIS. *Nobis. Journ. Acad. Nat. Sciences*, vol. iii. p. 178.

DESCRIPTION.

Body deep black, polished: *rostrum* prominent: *thorax* broad, not narrowed before; the transverse diameter exceeding the longitudinal; livid-black; lateral margins a little recurved, pale sanguineous; a carinate line on the anterior margin, terminating in a groove which extends to the base; posterior angles a little prominent: *scutel* black: *elytra* pale sanguineous, with elevated lines, and intervening transverse ones: *wings* a little dusky, with brown nervures.

PLATE XXI.

OBSERVATIONS.

One individual only, occurred to Major Long's exploring party, near the base of the Rocky Mountains. It is widely distinct from the preceding species.

The lower right figure.

LYCUS PERFACETUS.

SPECIFIC CHARACTER.

Black; thorax each side rufous; elytra striate.

DESCRIPTION.

Body deep black: *head* polished, with a deeply impressed longitudinal line: *antennæ* opaque, compressed, a little serrated; second joint more than half the length of the third, which is as long as the fourth, though less dilated: *thorax* somewhat unequal, polished black, with broad rufous lateral margins; an impressed longitudinal line; posterior angles acute: *elytra* with slightly impressed striæ.

and rounded interstitial lines: *beneath* polished black.

OBSERVATION.

Inhabits Pennsylvania.

The lower left figure of the plate.

PLATE XXI.



ICHNEUMON.

GENERIC CHARACTER.

Antennæ more than twenty-jointed; abdomen elipsoidal, composed of more than five segments, and attached to the thorax by a portion only, of its transverse diameter, by an abrupt slender peduncle; all the wings having very distinct nervures; extremity of the abdomen of the female very slightly compressed, not obliquely truncated; oviduct concealed, or hardly prominent.

OBSERVATIONS.

As originally instituted by Linné, the genus of this name was extremely abundant in species, and although many divisions have been made by Fabricius and others, the species are still numerous. As I adopt the genus, it corresponds with that of Fabricius and Latreille, and with *Cryptus* as defined by Lamarck.

These insects perform an important part in the operations of nature, inasmuch, as they seem destined to limit the increase of Lepidopterous

insects, by destroying their larvæ, so injurious to the interests of agriculture. All are parasitic, and in habit, they may be compared to the Ichneumon amongst the quadrupeds, an animal said to break the eggs of the crocodile, and even to penetrate the abdomen of that formidable reptile, in order to devour the living viscera.

The female, in this interesting genus, when about to deposit her eggs, becomes very active and impatient, flying from leaf to leaf, in search of a proper nidus; having found a caterpillar of suitable magnitude, she places her eggs either upon the skin, or by puncturing it, within the body, notwithstanding the convulsive efforts of prevention made by the victim. I was witness to a somewhat curious fact in relation to one of these insects; observing an object closely resembling a caterpillar, resting on a leaf, I was preparing to take possession of it, when an Ichneumon alighted on the leaf, and proceeded to examine the object of my attention; it ran briskly up to it, and touched it first on one side, and then on the other, with its vibratory antennæ; but it finally departed without any attempt at oviposition. This deportment excited my suspicions in regard to the nature of the supposed caterpillar, and on examining it more closely, I

discovered, to my surprise, that it was not the larva of an insect, nor even the remains of one. Thus it appeared, that the Ichneumon, as well as myself, was deceived by its organ of vision, and that another sense was resorted to, in order to ascertain the truth.

The larvæ disclosed from the eggs of the parent Ichneumon, are altogether destitute of feet; like intestinal worms, they feed on the interior of the body of their Promethean victim, which continues to walk and feed as usual. The depredators are by no means indiscriminate in their choice of food, but prefer the adipose part of the system, and spare the vitals until the former is exhausted. By this selection, the life of the larva is continued until the parasite obtains its full size, and is prepared to enter into the state of pupa. The larva then attaches itself firmly to a fixed surface by means of its feet, and dies. The pupæ, secure within, await their destined period in tranquillity, and the included insects finally emerge from their contracted boundaries, by gnawing a passage through their own indurated covering, as well as through the common integument of the larva.

ICHNEUMON DEVINCTOR.

SPECIFIC CHARACTER.

Black ; abdomen rufous ; scutel, annulus of the antennæ and of the tibiæ, white.

DESCRIPTION.

Body black: *antennæ* rather short, annulus pure white, commencing at the ninth joint, and extending to the eighteenth: *scutel* pure white: *wings* dusky violaceous: *abdomen*, with the exception of the first segment, bright rufous: *tibiæ*, excepting at base and at tip, pure white: *anterior and intermediate tarsi*, with the first joint, white at base.

OBSERVATIONS.

This species is not very common. I obtained a specimen in the North-West Territory. An individual occurred in Missouri, that may, perhaps, be only a variety of the present species; it

is smaller, and has ferruginous, instead of white, on the feet.

The upper right figure.

ICHNEUMON UNIFASCIATORIUS.

SPECIFIC CHARACTER.

Black; annulus of the antennæ, two scutellar spots, and band near the base of the abdomen, white.

DESCRIPTION.

Body black: *front*, *nasus*, and line on the frontal and exterior orbits, white: *antennæ* moderate, with a white annulus beginning at the fifteenth joint, and extending to the twenty-first joint: *thorax* with two abbreviated white lines on the middle; an oblique line each side before the wings, wing scale, and small spot beneath the wings, white: *scutel* white, with a small transverse white spot at its tip: *wings* fuliginous: *abdomen* depressed, rather slender; first segment

white at tip, forming a band: *tibiæ* white on the exterior side.

OBSERVATIONS.

This insect is of frequent occurrence in all the middle states. There is a variety, of which the abdomen is very slightly tinged with rufous. Allied to *nigratorius*, Fabr. but may be distinguished by the band on the first segment of the abdomen, and by the white spot behind the tip of the scutel, and by the two between the anterior wings.

The lower right figure.

ICHNEUMON CENTRATOR.

SPECIFIC CHARACTER.

Black; antennæ annulate; scutel, and disk of the thorax, ferruginous.

PLATE XXII.

DESCRIPTION.

Body black: *head* dull ferruginous, with a polished, impressed, black line at the base of the antennæ: *antennæ* with a white annulation, beginning at the seventh joint, and extending to the seventeenth: *thorax* with the disk between the anterior pair of wings, and the scutel, dull ferruginous: *tibiæ* dull rufous, excepting at tip: *wings* dusky violaceous.

OBSERVATIONS.

It occurs frequently in Pennsylvania, and as I have found it both in Missouri and the North-Western Territory, it appears to be a pretty general inhabitant of the United States.

The lower left figure.

PLATE XXII.

ICHNEUMON BREVICINCTOR.

SPECIFIC CHARACTER.

Black; scutel and the very short band on the antennæ, white.

DESCRIPTION.

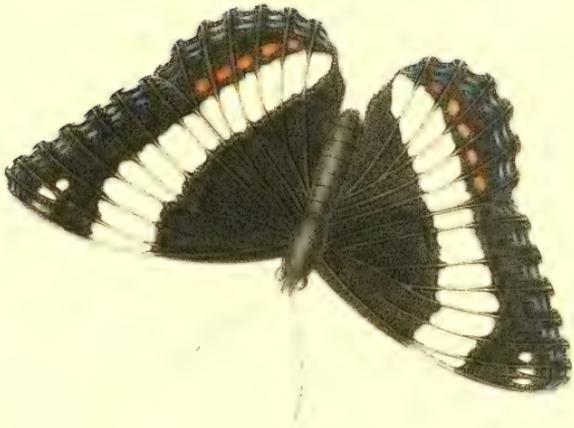
Body black: *head* immaculate: *antennæ* with the white annulus beginning at the seventeenth joint, and extending to the twenty-first: *thorax* immaculate: *scutel* yellowish-white: *wings* a little dusky: *knees* and *tibiæ* of the anterior pair of feet, dull rufous.

OBSERVATIONS.

In form and general appearance, it resembles *unifasciatorus*, Nob. but the different individuals correspond in having the annulus of the antennæ very short, and commencing at the seventeenth joint; in having no spot beyond the tip of the scutel, in having the head immaculate, &c. It also resembles *nigratorius*, Fab. but is much smaller, and is altogether destitute of orbital lines.

The upper left figure.

PLATE XXII.



LIMENITIS.

PAPILIO, *Lin.*—NYMPHALIS, *Latr.*

GENERIC CHARACTER.

Antennæ gradually clubbed; club slender, hardly compressed, elongate-obconic; palpi not elongated, second joint not much compressed, the anterior margin not remarkably broader; anterior pair of feet spurious; wings not very much longer than broad; four hinder feet with double nails; abdomen received in a groove, formed by the dilatation of the inner margin of the inferior wings.

OBSERVATIONS.

This is one of the numerous modern genera of Papilionides, that are eminently remarkable by the feeble, abbreviated, and incomplete anterior feet of the species of which they are composed. These feet are usually so short, as to be altogether useless for the purpose of locomotion; they are habitually applied against the breast,

and are altogether destitute of nails. The larvæ are elongated, and feed on leaves, and the chrysalids are suspended by the tail, with the head towards the earth. For the genus *LIMENTIS*, we are indebted to Fabricius; but this learned author has not left us sufficiently obvious characters, by which to distinguish it from his closely allied genus *APATURA*. We are, in fact, inclined to consider them both as sub-genera, as well as many other of the Fabrician genera of *Lepidoptera*.

LIMENTIS ARTHEMIS.

SPECIFIC CHARACTER.

Brown-black; wings indented, with a common white band, and common marginal row of double blue lunules; a series of six ferruginous dots on the posterior wings; venter and lateral line, white.

PLATE XXIII.

SYNONYM.

Nymph. Phal. ARTHEMIS. *Drury*, vol. ii. pl.
10, fig. 3 and 4.

DESCRIPTION.

Body black: *occiput* with two white points; a short white line behind each eye: *palpi* white on the exterior side: *wings* with a broad common white band a little beyond the middle, intersected by the black nervures which are not margined; a common marginal series of double blue lunules; edge alternating with white and black: *superior wings* with three or four white dots beyond the band, but immaculate between the band and base: *inferior wings* with a series of six fulvous dots between the white band and marginal lunules: *beneath* fulvo-ferruginous, with the white band, marginal lunules, white and black alternating lines of the edge, and white spots of the superior wings, as distinct as those of the superior surface; superior wings, between the white band and base, dark purplish, with two fulvous spots, and two or three whitish or bluish ones; inferior wings dull fulvous between the band and base, with three or four brighter

spots, which are interspersed with bluish: *pleura* with about three white spots at the base of the wings, and another at the base of the superior wings: *coxæ* with a white spot: *anterior pair of feet*, white before: *abdomen* with a white line each side, and a broader one on the venter.

OBSERVATIONS.

This beautiful insect, occurred sparingly in the North-Western Territory, during the advance of Major Long's expedition towards lake Winnepec. I also found it at that lake, as well as at the Lake of the Woods, and in other parts of Upper Canada. On the expedition to the Rocky Mountains, I obtained several specimens in Arkansaw, and Mr. Nuttall has recently sent me one from Cambridge.

Drury first described this insect; his figure is that of a small specimen.

The plate represents two views of the insect, of the natural size.

PLATE XXIII.



DICÆLUS.

GENERIC CHARACTER.

Mandibles destitute of an articulated nail at tip; palpi six, terminal joint, obconic, truncated; anterior tibiæ emarginate; two anterior tarsi dilated in the male, and furnished beneath, with dense, granuliform papillæ; antennæ filiform; labrum emarginated, and with a longitudinal indented line; posterior thoracic angles, covering the humeral angles.

OBSERVATIONS.

As respects number of species, this is a limited group of insects. Their aspect is, however, striking and peculiar, the body being large, dilated, and depressed, with profoundly indented striæ on their elytra; the posterior angles of the thorax extend far backward, covering the base of the elytra, so as to present no interval between the thorax and abdomen. Our great master, Linné, would have placed these insects in his comprehensive genus *CARABUS*, which in the

modern system, is a large family, distinguished by the name of CARABIDÆ, and containing nearly ninety genera, of which the present is one. The genus DICÆLUS, was established by Professor Bonelli, of Turin, in an excellent essay, entitled "Observations Entomologiques," which was published in the Memoirs of the Imperial Academy of Turin.

DICÆLUS VIOLACEUS.

SPECIFIC CHARACTER.

Above and beneath, violaceous-black; antennæ, mouth, and feet, black.

SYNONYM.

DICÆLUS VIOLACEUS. *Bonelli. Obs. Entom. in Mem. de l'Acad. Imper. de Turin.* And the author, in the *Trans. Amer. Philos. Soc.* vol. ii. New Series, p. 67.

DESCRIPTION.

Head black, obsoletey tinged with purplish: *mouth* and *antennæ*, black: *thorax* with the disk

black, faintly tinged with violaceous; this colour is very obvious on the lateral edge, and posterior margins; lateral, a little excurved near the posterior angles: *elytra* deeply striated; the disk is less distinctly violaceous than the margin, and in a particular light, their colour exhibits a slight greenish tinge; *beneath* violaceous, and more particularly so on each side: *epipleura* bright violaceous.

OBSERVATIONS.

It seems probable, that this species is not an inhabitant of the northern part of the United States, or if found at all in this region, it is certainly very rare. It is, without doubt, chiefly limited in its range to the southern and southwestern states, but it is not known to be abundant any where. In my specimen, the second and third interstitial lines of each elytrum, are connected near the base by a transverse line, but this is very possibly not a permanent character. It is now figured for the first time.

The upper right figure.

PLATE XXIV.

DICÆLUS SPLENDIDUS.

SPECIFIC CHARACTER.

Thorax violaceous; elytra cupreous brilliant.

SYNONYM.

DICÆLUS SPLENDIDUS. *Nobis. Trans. Amer. Philos. Soc.* vol. ii. New Series, p. 69.

DESCRIPTION.

Head black: *thorax* hardly perceptibly narrowed at base; the posterior part of the lateral edge is not in the slightest degree excurved, but proceeds rectilinearly to the posterior angle; lateral and posterior margins depressed, lateral edge reflected; colour blackish-violaceous on the disk, and more vivid violaceous on the lateral and posterior margins: *elytra* highly polished, brilliant red coppery, exhibiting in a particular light, a green reflection; humeral carina extending two thirds the length of the elytra; striæ

profoundly impressed: *beneath* bluish-purple:
feet black.

OBSERVATIONS.

This is by far the most beautiful species of the genus, yet discovered. When the rays of light fall perpendicularly on the surface of the elytra, a highly brilliant reddish-coppery colour is exhibited, but when the rays are reflected at a considerable angle, the tint changes to a fine polished green. The specimen was brought from the Missouri, by Mr. Thomas Nuttall.

The upper left figure.



DICÆLUS DILATATUS.

SPECIFIC CHARACTER.

Black, impunctured; striæ obsoletely punctured towards the tip.

PLATE XXIV.

SYNONYM.

DICÆLUS DILATATUS. *Nobis. Trans. Amer. Philos. Soc.* vol. ii. New Series, p. 68.

DESCRIPTION.

Head black: *palpi* blackish-piceous: *antennæ* brown towards the tip: *thorax* entirely black; margins depressed; lateral edge slightly reflected; base very slightly wider than any other part; lateral edge nearly rectilinear, very slightly incurved before, and not at all excurved near the posterior angles: *elytra* totally black; striae profound, very slightly punctured towards the tip: *feet* piceous.

OBSERVATIONS.

This species is an inhabitant of Pennsylvania, and may be occasionally found under stones and other objects, which rest loosely on the soil. Its colour is a uniform black, without any tint of those gay colours for which the two preceding species are remarkable.

The lower left figure.

PLATE XXIV.

DICÆLUS SCULPTILIS.

SPECIFIC CHARACTER.

Black; elytra with irregularly serpentine striæ.

SYNONYM.

DICÆLUS SCULPTILIS. *Nobis. Trans. Amer. Philos. Soc.* vol. ii. New Series, p. 68.

DESCRIPTION.

Body entirely black, immaculate: *thorax* very slightly widest at base; the lateral edge not at all excurved near the basal angle, and the commencement of the anterior curvature of this edge, is at the middle of its length; *elytra* with its striæ very irregularly serpentine; the interstitial lines are irregular and unequal on their sides, and exhibit a very few adventitious punctures, with raised centres.

OBSERVATIONS.

Very distinct from the foregoing species, by the singular irregularity, and sculptured appearance, of the striæ of the elytra. It was discovered in Missouri by Mr. Thomas Nuttall, and has not been found in the Atlantic States.

The lower right figure.

PLATE XXIV.



MANTISPA.

GENERIC CHARACTER.

Antennæ filiform, but little longer than the head, the joints transverse; eyes prominent; thorax having the anterior segment elongated, cylindric-clavate, supporting the anterior pair of feet at its anterior extremity; anterior feet advanced, very conspicuous, cheliferous, the basal joint very much elongated; wings reticulated, deflected.

OBSERVATIONS.

A very small, but singular and natural group of insects, allied to *MANTIS*, and also to *RAPHIDIA*. Linné placed a species, which he described under the name now adopted as generic, in the genus *RAPHIDIA*, and Lamarck assents to an alliance with that genus, by placing *MANTISPA* immediately next to *RAPHIDIA*, in his system. Latreille, who formed the genus, and most other authors, refer it to the same family with *MANTIS* and

SPECTRUM; indeed, in the Règne Animal, it is considered as a mere sub-genus of MANTIS.

But if we adhere rigidly to the characters of the order HEMIPTERA, in which the superior wings are stated to be coriaceous or of a different consistence from the inferior pair, the genus MANTISPA, notwithstanding its acknowledged affinity with MANTIS, will be altogether excluded from that order. In construction, number, and consistence of the wings, from which the characters of these grand divisions are derived, it is, beyond a doubt, a NEUROPTEROUS genus, and we adopt Lamarek's arrangement in this respect. It is distinguished from all the other genera of this order, by the particular form of the anterior feet.

These insects are not quiescent in the nymph state, or that condition which corresponds to the chrysalis state of the butterfly, but they remain active, as in the larva.

PLATE XXV.

MANTISPA BRUNNEA.

SPECIFIC CHARACTER.

Light brown; antennæ fuscous, light brown at the extremity; wings with a very broad, brown margin.

SYNONYM.

MANTISPA BRUNNEA. *Nobis.* *Long's Expedition to the sources of St. Peters' river*, vol. ii. p. 309.

DESCRIPTION.

MALE. *Antennæ* short: posterior and inferior orbits, yellow: *thorax*, first segment obtusely wrinkled or undulated transversely; anterior margin black, sub-margin yellow; base black, with a yellow, transverse, angulated line: *scutellum* yellow: *metathorax* yellow on the posterior edge: *pleura* bilineate, with yellow: *wings* with a broad, light brown costal margin and tip: *feet*, intermediate and posterior pairs, with yellow

tibiæ and tarsi, a rufous spot being near the knee ; anterior thighs blackish on the inner side, with a yellow exterior inferior margin, and numerous spines on the inferior edge, of which one is very prominent: *tergum*, at the base of the first and second segments, black, the former margined with yellow: *venter* black at base, segments broadly margined with yellow.

FEMALE. The yellow colour, and marginings, excepting on the feet, and on the first segment of the thorax, obsolete; the wings are darker than those of the male, and the hyaline portion of the wings is tinctured with a shade of the general colour.

OBSERVATIONS.

A specimen of the female of this curious insect, was presented to me, some time since, by Mr. William Mason, of this city; it was found near Philadelphia, by Mr. Tyler. I had the good fortune to find a male, when travelling with Major Long's party on St. Peters' river, in the North-West Territory.

The middle figure represents the male, and the lower figure the female. On the right is an

enlarged view of the head, with the antennæ, and part of the thorax, and on the left, is an enlarged view of an anterior foot.

MANTISPA INTERRUPTA.

SPECIFIC CHARACTER.

Wings hyaline, with a narrow ferruginous costal margin, widely interrupted near the tip.

DESCRIPTION.

Body pale: *antennæ* rather slender, perfectly filiform, not differently coloured at tip, but somewhat paler at base: *thorax*, anterior segment rather long, annulate, with slightly elevated obtuse lines, which give it a somewhat wrinkled appearance; two small tubercles before the middle, placed transversely; posterior segment greenish-yellow, with a longitudinal brown line, and another on each side above the wing: *wings* alike, hyaline, the ferruginous costal margin is narrow, interrupted beyond the carpus, so as to leave only a spot at tip of the wing; on the sub-

margin, is an irregular quadrate dark fuscous spot, confluent with the carpus; the ferruginous margin of the superior wing, is paler towards the base: *postpectus*, and *intermediate* and *posterior feet*, pale greenish-yellow, the front of the former dusky: *tergum* pale reddish-fulvous, incisures, and vertebral line, blackish: *venter* pale yellow.

OBSERVATIONS.

The annexed figure is taken from the only specimen I have seen. It alighted on the apron of a gig, near this city, and was carefully secured by Mr. James P. Parke, who kindly presented it to me. It remained lively and active for several days in a glass vessel on my table, and I was frequently amused by its dexterity in catching the flies which were introduced for its nourishment. It moved very slowly and cautiously towards its victim, and when at the proper distance, the fore-feet were thrown forwards, and again retracted, with a rapidity of motion, that the eye could not follow, bringing the fly with them to the mouth. These feet are used almost exclusively as arms and hands, turning the food offered to the mouth, in various positions for the convenience of mastication; they are rarely used

in locomotion, but when the insect advances by means of the other feet, these are folded up, and rest on each side of the long anterior segment of the thorax. The two or three flies first given to this little animal, were entirely devoured, so that not a fragment remained; but having abated its hunger, it extracted the fluids chiefly, of those afterwards placed within its reach.

The upper figure; below, is an enlarged representation of a wing, and a posterior foot.



BUPRESTIS.

GENERIC CHARACTER.

Body firm; head vertically inserted in the thorax to the eyes; antennæ short, filiform, serrated; palpi very short, filiform, or but slightly enlarged towards the tip; mandibles entire at tip; maxillæ bifid at the extremity; thorax with its posterior edge applied to the base of the elytra, the posterior angles not elongated; anterior margin of the pectus advanced towards the mouth, its opposite extremity elongated in the form of a horn, which is received into a sinus of the postpectus, and is not concealed in it; feet short, tarsi dilated, somewhat triangular, the penultimate one bilobated.

OBSERVATIONS.

A large and very natural assemblage of insects, remaining at the present day, nearly as it was founded by Linné. A few of his smaller species have been separated from it, by Fabricius, under the name of TRACHYS, chiefly distinguished by

the shorter, more dilated, and sub-triangular form of the body. Two or three very small species, discovered since his time, and referred to this genus by Fabricius and Olivier, have been generically separated by Latreille, with the name of *APHANISTICUS*; these have clavate antennæ.

The family *BUPRESTIADÆ*, consisting of the above mentioned genera, is closely allied to that of *ELATERIDÆ*. But all the species of the latter group, are endowed with the power of leaping, by an abrupt inflection of the anterior portion of the body; their tarsi, also, are simple, without any dilatation of the basal joints.

Many of these insects are gaily ornamented with the most splendid colours, which often shine with a metallic brilliancy. Some have a general coppery tint, whilst others present the beautiful contrast of fine yellow spots and lines, on a polished green or blue surface, and others exhibit the appearance of burnished gold, inlaid on emerald or ebony. In fine, all that is rich and brilliant in colours, may be observed in the decoration of these insects.

They in general, walk slowly, though some run with considerable agility; they rise on the wing with facility, and fly with ease and rapidity. Many elude their enemies by folding their feet

and antennæ close to the body, and falling, apparently dead, to the earth. The females have a coriaceous appendage at the posterior part of the abdomen, composed of three pieces; this is probably the oviduct, by means of which, they deposit their eggs in old wood, where the larvæ lives until its change into the perfect state. Their existence in the perfect state is but short, appearing to be devoted almost exclusively to the great object of continuing the race.

Though beautiful and rare, the species are very numerous, and upwards of two hundred are now known; of these, the largest and most splendid, are inhabitants of the American continent.

A species of *BUPRESTIS*, has furnished us with a remarkable instance of insect longevity; the following is extracted from a communication, by Mr. Marsham, to the Linnæan Society. (See vol. x. p. 399.)

Mr. J. Montague, on going to his desk in the office of Works at Guildhall, observed an insect which had been seen by his brother in the early part of the day, endeavouring to extricate itself from the wood, which formed part of the desk; he carefully released it from the cell, and it proved to be *BUPRESTIS SPLENDENS* of Fabri-

eius, full of strength and vigour. The desk had been fixed in the office twenty-two years before, and was made of fir wood, imported from the Baltic. That the insect existed in the wood before the desk was made, was proved by the fact of the channel formed by the insect, having been then transversely cut.

The word BUPRESTIS, is derived from the Greek ΒΥΡΗΣΙΣ; but to what insect that ancient people applied the word, is not known with certainty at the present day. The Romans, also, held the same insect to be poisonous, and their civilians recommended the punishment of the law to be inflicted upon those persons who rashly administer, internally, those poisonous insects, the *pithyocampas*, (*Bombyx pithyocampa*, Fabr.) and the BUPRESTIS. It is evident, however, that they had no reference to any individual of this family, inasmuch as no one of the species is capable of inflicting a serious injury on any of the larger animals. But as the ancient BUPRESTIS was stated to be endowed with the power of destroying even the ox, it is conjectured that the Greeks thus designated a vesicating insect, such as a MYLABRIS, a LYTTA, or, according to some authors, a CARABUS, the two former of which, when taken into the stomach,

produce the most serious effects on the animal economy, and even death itself, under the most afflicting circumstances.

BUPRESTIS RUFIPES.

SPECIFIC CHARACTER.

Elytra, each with four yellow spots, of which the basal one is longitudinal.

SYNONYM.

BUPRESTIS RUFIPES. *Oliv. Ins.* vol. ii. No. 32, p. 16, pl. 7, fig. 73, a. b. *Fabr. Syst. Eleut.* pt. 2, p. 188, No. 13. *Encyc. Meth.* No. 15. *Herbst. Natur.* pt. ix, p. 79, pl. 140, fig. 3.

DESCRIPTION.

Body green, polished, slightly tinged with brassy: *head* rough with deeply impressed confluent punctures; an obsolete impressed line on the vertex, becoming elevated on the front: *antennæ* rufous: *thorax* with small distinct pro-

found punctures, and an impressed spot before the scutel: *elytra* with narrow, deep striæ, and, at tip, bidentated; an abbreviated fulvous vitta originates near the humerus, and extends near to the middle; a transverse, abbreviated, undulated fulvous band, a little beyond the middle, does not quite reach the suture; intermediate between this band and the tip of the elytra, is another undulated one, of the same colour; at the tip, is also a narrow band: *pectus* greenish-violaceous; a dilated vitta in the middle, and another each side, fulvous; the latter on its anterior part passes a little above the edge of the thorax, and is in some specimens continued backwards to the base of the thorax, forming a margin on that part, but not covering the edge; *postpectus* green, tinged with brassy, and somewhat sericeous; a yellow spot near the middle, and two or three on each side: *feet* rufo-violaceous: *venter* rufo-violaceous, more or less varied with green, particularly at the base, and with three series of obscure fulvous spots, two of which are lateral.

PLATE XXVI.

OBSERVATIONS.

One of the largest species of North America, at the same time very beautifully ornamented.

Fabricius quotes Petivier's work, and states its native region to be Maryland; Olivier observes that it is found in Carolina; I obtained a specimen in Missouri, when with Major Long's party in that country, and another has been found in Pennsylvania; but in this state they must be extremely rare.

The lower right figure.

BUPRESTIS FASCIATA.

SPECIFIC CHARACTER.

Green brilliant; elytra with a yellow band and spot.

SYNONYM.

BUPRESTIS FASCIATA. *Herbst. Natur. Syst.*
vol. ix. p. 162, pl. 145, fig. 22. *Fabr. Syst.*
Eleut. pt. 2, p. 191, No. 31. *Oliv. Ins.* vol.
ii. No. 32, sp. 22, pl. 9, fig. 92.

DESCRIPTION.

Body highly polished, green with a brassy tinge, punctured: *head* confluent punctured: *thorax* more densely punctured on the anterior portion; on the middle of the posterior margin a distinct indentation: *elytra* striate, the striae punctured; a yellow undulated band behind the middle, with a dark violaceous areola; midway between the band and the tip, is a yellow spot on each elytrum, with a dark violaceous areola; tip bidentate: *beneath* immaculate: *feet* of the same colour as the body.

OBSERVATIONS.

This beautiful insect was sent to me by Mr. E. Holmes of Gardiner Lyceum, Maine. The authors quoted in our synonyms, observe that it inhabits North America, without mentioning any particular part of the continent in which it was found. I had supposed it to be a native of the southern States, and was therefore surprised to receive it from the northern extremity of the Union. In his description of this species, Olivier remarks, that "on voit quelquefois un point fauve vers le milieu de chaque élytre,

entouré de bleu," and this he represents in his plate, but I have only a single specimen, and reference to another in the collection of the Philadelphia Museum, both corresponding with the annexed figure.

Herbst describes Olivier's variety as a distinct species, under the name of *C. maculata*, (vol. ix, p. 163, pl. 148, fig. 5,) without any reference to Olivier.

The upper right figure.

BUPRESTIS CONFLUENTA.

SPECIFIC CHARACTER.

Green, polished, punctured; elytra with confluent yellow spots.

SYNONYM.

BUPRESTIS CONFLUENTA. *Nobis. Journ. Acad. Nat. Sciences*, vol. iii. p. 159.

PLATE XXVI.

DESCRIPTION.

Body bright green, punctured : *head* densely and confluent punctured ; an obsolete indented longitudinal line, more distinct on the vertex : *antennæ* purplish, the basal joint rufous : *thorax* densely and confluent punctured, more particularly on the anterior and lateral margins ; in the middle of the disk, these punctures are somewhat sparse : *scutel* rounded, convex : *elytra* striate, slightly tinged with violaceous ; the striae and interstitial lines, slightly punctured ; very numerous transversely confluent light yellow dots ; tip slightly obliquely truncated, acute at the suture, but not mucronate or dentate ; edge entire : *tarsi* purplish-brown.

OBSERVATIONS.

I cannot find any notice of this very fine insect in any attainable author, and having never obtained an individual in the Atlantic States, I think it highly probable, that it is altogether limited in its range, to the Western region.

A specimen was presented to me, when at Fort Osage, on the Missouri river, by Lieut. Scott, of the Rifle regiment, a gentleman, whose

extraordinary skill as a marksman, has almost passed into a proverb, in that country. I obtained two other specimens, during the progress of Major Long's exploring party towards the mountains.

The thorax varies in being in some specimens of a bright blue colour, in others purplish.

The lower left figure.

BUPRESTIS CAMPESTRIS.

SPECIFIC CHARACTER.

Elytra serrate, quadrilineate; beneath canalliculate.

SYNONYM.

BUPRESTIS CAMPESTRIS. *Nobis. Journ. Acad. Nat. Sciences*, vol. iii. p. 165.

PLATE XXVI.

DESCRIPTION.

Head rugous, with large confluent punctures : *front* concave : *antennæ* purple-black, the first and second joints greenish-cupreous : *thorax* unequal, with large confluent punctures each side, and canaliculate along the middle ; posterior angles acute : *scutel* very small, transverse suborbicular, indented on the middle : *elytra* with four distant, somewhat elevated lines, and one or two near the suture ; in the interstitial spaces are irregular, slightly elevated transverse lines, hardly visible to the unassisted eye ; before the middle of each elytrum, is a large, very slightly impressed spot, and another similar one, is rather behind the middle ; there is also a very small common indented spot on the suture, opposite to the former spot ; exterior edge serrated, from near the middle to the tip ; tip simple, somewhat acute : *beneath* cupreous, polished ; a brilliant dilated coppery line extends from the mouth to the pectus ; a large groove originates on the anterior part of the pectus, and terminates on the second segment of the venter : *tarsi* dusky bluish.

PLATE XXVI.

OBSERVATIONS.

This is one of our largest species, and although far less agreeably decorated than the preceding, is yet distinguished by a more uniform garb of polished metallic colouring. I captured the specimen when descending the Arkansaw river, with a detachment of Major Long's exploring party.

The upper left figure.

PLATE XXVI.



VANESSA.

GENERIC CHARACTER.

Antennæ terminated by an abrupt short club ; palpi contiguous, even at the extremity, the two combined, resembling a rostrum ; anterior pair of feet in both sexes, short and very hairy ; the two posterior pairs of tarsi, with double nails.

OBSERVATIONS.

The species which constitute the Fabrician genus *VANESSA*, were referred by Linné, to his comprehensive genus *PAPILIO*.

The larvæ or caterpillars in this genus, live on plants of little altitude, and are often gregarious ; they are armed with numerous, long, rigid, dentated spines, which, like the quills of the Hedgehog, constitute their only defensive weapons. The chrysalids are attached to a fixed object by the tail, and in this reversed posture, quietly wait for the period of final emancipation and perfection.

The larva or caterpillar state of insects, has

been aptly stated by the great Linné, to be a masked condition of the animal, concealing beneath its rude vermicular garb, all the parts of the future perfect insect; the pupa he compared to an infant enveloped in swaddling clothes, after the old fashion. The pupa of some species of the present genus presents a singular appearance: two elevations on the head resemble horns, and a prominence upon the back represents a nose of the human face, and but little aid of fancy is required to assimilate such pupæ to a grotesque mask. Many of these pupæ are worthy of the name of *chrysalids*, by which they were formerly distinguished, being splendidly decorated with spots, resembling burnished-gold, and silver.

VANESSA FURCILLATA.

SPECIFIC CHARACTER.

Wings angular, with a common fulvous band, and two fulvous spots on the superior wings; beneath, brown, with black lineations.

PLATE XXVII.

DESCRIPTION.

Superior wings above black, with a broad fulvous sub-marginal band, which is bifid at the costal margin, having the exterior division terminated by a white spot, and the inner division by a pale yellow one; between the band and the base of the wing, are two fulvous transverse spots; costal rib near the base, with yellow variegations: *inferior wings* above black, with a broad fulvous sub-marginal band, and on the black margin is a series of six or seven small sublunate purplish-opalescent spots; all the wings beneath are blackish, with very numerous transverse blacker lineations, some of which are undulated, and deep velvet black; a common pale brownish broad sub-marginal band also with the blackish lineations: *antennæ* yellow at the tip of the club: *venter* dull whitish.

OBSERVATIONS.

This pretty species we observed several times in the North-West Territory, during the progress of the late expedition under the command of Major S. H. Long, over that region. In the vicinity of Fort William, an establishment of the

Hudson Bay Fur Company, it frequently occurred in the month of September, whilst the party remained at that place. It is closely allied to the *polychloros* and *urtica* of Europe, but is sufficiently distinct from either.

The plate presents two views of the insect.

PLATE XXVII.



CRYPTOCEPHALUS.

GENERIC CHARACTER.

Body short, robust, cylindric; head vertical; antennæ inserted between the eyes, simple, filiform, more than half the length of the body; palpi terminating with a conic-cylindric joint, maxillary palpi very apparent.

OBSERVATIONS.

Many of this group are agreeably ornamented with coloured spots and lines. They were mingled with the *CHRYSOMELÆ* by Linné, from which they may be known by the more cylindrical form of the body, and by the abrupt deflection of the head. In these characters, the present genus corresponds with *CLYTHRA*, to which it is more closely allied than to any other; but the antennæ of *CLYTHRA* are short and serrated, instead of being long, simple, and filiform, as in the genus before us. The genus *CRYPTOCEPHALUS* was established by Geoffroy, and has been adopted by the greater number of entomolo-

logists who have written since his time. These insects feed on vegetables, and many of the species are very injurious to useful plants, by devouring their leaves and buds. The larva is furnished with six scaly feet, which are situated near the head; some of the species in the larva state, protect themselves from the ardour of the sun, and from the attacks of their enemies, by fabricating a cylindrical covering, closed at one end, into which they can withdraw every part of the body; it is generally composed of small grains of vegetable and excrementitious matter, agglutinated together by a viscous excretion from the body. With the head and feet protruded from this little domicil, and carrying it erect with respect to their pathway, the artificer proceeds at a slow pace, in quest of food. The perfect insect is, also, slow in its movements, and on the approach of danger, it counterfeits death by retracting the feet and antennæ close to the body, and permitting itself to fall from any height to the ground.

PLATE XXVIII.

CRYPTOCEPHALUS ORNATUS.

SPECIFIC CHARACTER.

Reddish-brown; thorax with the margin and two spots, yellow; elytra yellow, with two black vittæ on each.

SYNONYM.

CRYPTOCEPHALUS ORNATUS. *Fabr. Syst. Eleut.* pt. 2, p. 47, No. 32. *Coqueb. Illustr. Icon. Insect.* p. 129, pl. 29, fig. 10, a. b.

DESCRIPTION.

Body reddish-brown: *antennæ* black, five basal joints pale reddish-yellow; orbital line yellow: *thorax* with the anterior and lateral margins yellow, the edge black; base with two yellow, oblique, abbreviated lines, curvilinearly united over the scutel, so as to form an arc of a circle: *elytra* pale yellow, with two black, abbreviated vittæ on each, and a black suture; the lateral vitta originates on the humerus, and terminates near

the tip; the inner one is oblique, and becomes confluent with the suture a little beyond the middle; the common black sutural vitta includes the scutel at base, and does not reach the tip; edge all round, black; *anal segment* with an obscure yellow arc.

OBSERVATIONS.

The *ornatus* of Herbst, in Fuessly's Archives, and of Olivier in the Encyc. Method. is quite a different insect from the present; but as that is an uncertain species, we prefer retaining the name for our insect.

This species is an inhabitant of various parts of the United States. I have found it in the middle and southern States, at the Rocky Mountains, and in the North-Western Territory. It is subject to vary, in having the exterior vitta of the elytra so widely interrupted in its continuity, as to exhibit only two remote spots.

The upper right figure.

PLATE XXVIII.

CRYPTOCEPHALUS CONFLUENTUS.

SPECIFIC CHARACTER.

Rufous; elytra yellow, trilineate with black; the inner line confluent with the suture beyond the middle.

SYNONYM.

CRYPTOCEPHALUS CONFLUENTUS. *Nobis. Journ. Acad. Nat. Sciences*, vol. iii. p. 440.

DESCRIPTION.

Body yellowish-rufous: *head* impunctured, yellow; a rufous spot on the vertex, and another surrounding the base of each antenna: *antennæ* black, pale at base: *thorax* impunctured; anterior and lateral margins yellowish; lateral submargin more deeply rufous than the disk: *scutel* black: *elytra* pale yellow, with punctured striæ; three longitudinal, nearly parallel black lines on each elytron, the interior line confluent with the

suture near the tip; edge all round, black: *beneath* rufous.

OBSERVATIONS.

The similarity of this species with the preceding, is obvious, and even striking; but it is specifically distinguished by the existence of two black lines on the elytra, in place of the exterior one of that insect. I obtained several specimens near the Rocky Mountains, when with Major Long's party in that region, but it does not appear to be an inhabitant of the Atlantic States.

The upper left figure.

CRYPTOCEPHALUS BIVITTATUS.

SPECIFIC CHARACTER.

Yellowish-rufous, punctured; elytra yellow, with two vitta, and sutural edge black.

PLATE XXVIII.

SYNONYM.

CRYPTOCEPHALUS BIVITTATUS. *Nobis. Journ. Acad. Nat. Sciences*, vol. iii. p. 440.

DESCRIPTION.

Body yellowish-rufous, punctured: *orbits* yellow: *front* with a longitudinal indented line: *thorax* with dense impressed punctures; lateral margin and an abbreviated obsolete dorsal line originating at the anterior edge, more distinctly yellow: *scutel* black: *elytra* irregularly and densely punctured, one or two regular series of punctures on the exterior margin; colour yellow; each elytrum with a broad black vitta originating midway between the humerus and scutel, and not reaching the tip; another vitta, less dilated than the preceding, takes its rise at the humerus, and terminates a little beyond the tip of the preceding vitta; it is generally interrupted into two or three spots: *beneath* very pale rufous: *postpectus* varied with dusky.

OBSERVATIONS.

I obtained this species near the Rocky Mountain.
PLATE XXVIII.

tains, whilst descending the Arkansaw river with Major Long's exploring party. It is at once distinguishable from its companions on the annexed plate, by the confused and dense punctuation of its elytra.

The middle figure.

CRYPTOCEPHALUS VIDUATUS.

SPECIFIC CHARACTER.

Black; thorax with three abbreviated yellow lines; elytra yellow, with two black vittæ.

SYNONYM.

CRYPTOCEPHALUS VIDUATUS. *Fabr. Syst. Eleut.*
pt. 2, p. 49, No. 49.

DESCRIPTION.

Head black, with a yellowish spot at each superior canthus of the eyes, and another at the mouth: *antennæ* at base yellowish: *front* with

PLATE XXVIII.

an impressed line: *thorax* densely punctured; anterior and lateral margins yellow, tinged with rufous; a yellow abbreviated line commences at the middle of the anterior margin, and terminates at the middle of the disk; two distant yellow abbreviated lines arise from the basal margin, and terminate each side of the middle of the disk: *scutel* black: *elytra* yellow, with striæ of impressed punctures; two dilated black vittæ, of which one originates on the humerus, and does not reach the tip, the other is rather shorter, originating midway between the preceding and the scutel, and hardly approaching the suture at its tip; suture black: *anal segment* whitish: *beneath* black: *feet* rufous.

OBSERVATIONS.

I obtained the specimen from which this description and the figure were taken, on the bank of the Mississippi river, above the confluence of the Ohio. Some doubts may reasonably be entertained, respecting the identity of this insect and the *viduatus* of Fabricius, on account of its smaller size, and the character of "pedibus variegatus," attributed to his insect by that author. But as the present specimen corresponds with

his description in every other respect, and as the difference in magnitude may be dependent on sex alone, I have ventured to refer it to that species. It is now figured for the first time.

The lower right figure.

CRYPTOCEPHALUS OTHONUS.

SPECIFIC CHARACTER.

Black; thorax with a narrow margin and abbreviated line, dull fulvous; elytra yellowish, with two black vittæ.

DESCRIPTION.

Head with small dense punctures; black, with two triangular yellow or rufous spots at the superior canthi of the eyes: *antennæ* yellowish at base: *thorax* black, confluent punctured, with a narrow margin all round, and a dorsal line extending from the anterior edge to the middle, dull fulvous: *scutel* black: *elytra* dull yellowish-white, with two broad black vittæ, abbreviated

near the tip, the exterior one originates at the humerus, and the other takes its rise on the basal margin, midway between the exterior vitta and the scutel, it does not approach the suture at its tip; sutural edge black; the series of punctures are rather large and profoundly impressed: *beneath* black, punctured: *feet* pale testaceous.

OBSERVATIONS.

This is the *C. bivittatus* of Melsheimer's Catalogue; I certainly would have adopted his name, had I not inadvertently pre-occupied it with the description of the preceding species, before I was acquainted with this insect. It can be readily perceived to be specifically distinct from either of those represented with it on the accompanying plate, by the confluent density of the thoracic punctures, as well as by its colours and their arrangement.

The lower left figure.

PLATE XXVIII.



SCOLIA.

GENERIC CHARACTER.

Thorax with the first segment very much arcuated and contracted on the posterior middle; antennæ robust, with short close set joints; the first joint long, cylindrical; second joint distinct; superior wings not folded; radial cellule detached at tip from the anterior edge of the wing; cubital cellules two or three, the last one remote from the tip of the wing, the first one placed on the same longitudinal line with the radial cellule; eyes emarginate; stemmata three; thighs thick, arcuated in the females, compressed; tail three spined in the males.

OBSERVATIONS.

A genus, in some respects, closely allied to *TIPHIA* and *PLESIA*, but at once distinguishable by the emarginated eyes. The thighs are remarkable for their thickness and curvature. The form of the cubital cellules varies considerably, but to a determinate and limited extent. In the

distribution of the nervures of the wings, Jurine remarks, they present more remarkable anomalies, than are to be found in any other hymenopterous insects; "it would seem that nature, in circumscribing the extent of the cubital cellules, has amused herself with varying them in several respects of manner and form, supplying to one part what she retrenches from another." Latreille has availed himself of these anomalies, to form divisions of the numerous species of this genus. This author gives the following account of the species: Many of them are of a large size, and inhabit warm and temperate climates exclusively. In Europe, the larger species begin to appear about the forty-third degree of latitude. Their metamorphosis is unknown, but Mr. Latreille supposes that their larvæ are parasitical, from the circumstance of his not having seen the parents transport larvæ, spiders, &c. to feed their young. They frequent arid, sandy places, and feed on the contents of the nectary of flowers.

PLATE XXIX.

SCOLIA CONFLUENTA.

SPECIFIC CHARACTER.

Black ; tergum trifasciate with yellow.

SYNONYM.

SCOLIA CONFLUENTA. *Nobis.* *Western Quarterly Reporter*, vol. ii. p. 74.

DESCRIPTION.

Body deep black : *antennæ* short, arcuated : *front*, *occiput* with yellowish cinereous hair : *thorax* immaculate, with yellowish cinereous hair before : *wings* tinged with ferruginous : *nervures* ferruginous : *cubital cellules* two, the second receiving two recurrent nervures : *meta-thorax* acutely edged and hairy above ; behind concave and very rugous, with elevated, abbreviated, transverse lines, and a longitudinal one : *tibiæ* rugous, armed with prominent spines : *abdomen*, segments ciliated on the edge : *tergum* trifasciate with yellow ; first band with a small black

dot on the middle of the anterior edge ; second band widely and deeply emarginated on the anterior middle, and rather abruptly narrowed on the side ; third band composed of two confluent triangles, which are marked by a small black transverse dot near the exterior angle of each.

OBSERVATIONS.

This fine species inhabits Arkansaw ; it agrees with the description of *fossilana*, Fabr., excepting that it has but three bands on the tergum.

The upper figure.

SCOLIA OCTO-MACULATA.

SPECIFIC CHARACTER.

Thorax black, scutel with a yellow line ; tergum four-spotted each side.

SYNONYM.

SCOLIA OCTO-MACULATA. *Nobis. West. Quart. Report.* vol. ii. p. 74.

PLATE XXIX.

DESCRIPTION.

Head black, with the vertex, basal joint of the antennæ, anterior margin of the clypeus, and base of the mandibles, dull rufous: *thorax* black, anterior segment, and two spots before the scutel, obsoletely dull rufous: *scutel* with a yellow line: *metathorax* rufous each side and above: *superior wings* tinged with purplish; costal margin rufous to the tip of the cellules: *cubital cellules* three, the intermediate one petiolated, and receiving two recurrent nervures: *feet* rufous: *tergum* dusky rufous, with four transversely oval bright yellow spots on each side, of which the anterior one is very small, and the posterior one is nearly extended into a band.

OBSERVATIONS.

Inhabits various parts of the Union, and is not uncommon in Pennsylvania. The wing cells are remarkable; the intermediate cubital cellule having two recurrent nervures.

The lower figure.

PLATE XXIX.

SCOLIA TRICINCTA.

SPECIFIC CHARACTER.

Black; collar with two yellow spots; scutel with one yellow spot; tergum trifasciate with yellow.

SYNONYM.

SCOLIA TRICINCTA. *Nobis. Western Quarterly Reporter*, vol. ii. p. 74.

DESCRIPTION.

Body black: *front* with obscure yellowish hair: *mandibles* rufous at base: *collar* with a yellow spot on each side, sometimes united: *squammula* rufous: *scutel* with a small yellow spot: *feet* rufous: *superior wings* dusky on the costal tip, nervures ferruginous: *cubital cells* two, the second receiving one recurrent nervure: *tergum* with three yellow bands, of which the first and second are nearly, or, quite interrupted

in the middle, each into two oval spots; first segment with an obscure piceous band.

OBSERVATIONS.

The terminal nervure of the radial cellule is so perfectly transverse, that the cellule has not the usual appearance of being separated at tip from the costal edge of the wing. The species is, notwithstanding this anomaly, a true *SCOLIA*.

The middle figure.

PLATE XXIX.



PIERIS.

GENERIC CHARACTER.

Feet nearly equal ; nails of the tarsi very apparent, bifid or unidentate ; inferior wings dilated beneath the abdomen, so as to form a groove.

OBSERVATIONS.

This is one of the many genera into which the vast and sumptuous genus *PAPILIO*, of Linné, has been separated. We are indebted for it to Schrank. It nearly corresponds to the group of *DANAI CANDIDI*, and includes the genera *COLIAS* and *PONTIA* of Fabricius, and *GONEPTERYX* of Leach.

These butterflies are natives of various regions of the globe ; some of them are very frequent in almost every field, and must have been noticed by the most casual observer, flitting with a devious direction over the herbage, and on meeting with a companion, mounting aloft in the air, with a hurried and irregular movement. Some species

occasionally alight in great numbers on moist places in roads.

The caterpillar is destitute of the retractile tentacula of the neck, and the chrysalis is of an angulated form, attached to a fixed object by a thread passed around the body, the head being upward.

PIERIS NICIPPE.

SPECIFIC CHARACTER.

Wings slightly crenate, fulvous; terminal margin black-brown; upper pair with a black abbreviated line before the middle on each page; inferior pair with abbreviated ferruginous lines and spots.

SYNONYM.

PAPILIO NICIPPE. *Cramer*, tab. 210, fig. C. D.
Herbst. Natur. Ins. pt. 5, p. 176, pl. 107,
fig. 3, 4.

PLATE XXX.

DESCRIPTION.

The black terminal margin of the upper wings extends along the costal margin nearly to the middle; the black transverse line on this pair of wings is very short, and consists of two curvatures; this curvilinear line appears also on the inferior surface, which is yellow, very slightly tinged with fulvous on the disk, with a blackish point at each indentation of the edge, and an ovate bright fulvous spot near the base; the black terminal margin of the inferior wings has a prominent undulation in the middle; the inferior surface of this pair of wings is yellow, marked by numerous brownish or ferruginous abbreviated transverse lines, a minute black point in the centre of the wing, and two or three more obvious, irregularly undulated, ferruginous, oblique lines: *head* and *thorax* above, blackish: *antennæ* blackish, beneath white, with black incisures: *feet* whitish: *abdomen* black, each side with a yellow line: *venter* with yellow incisures.

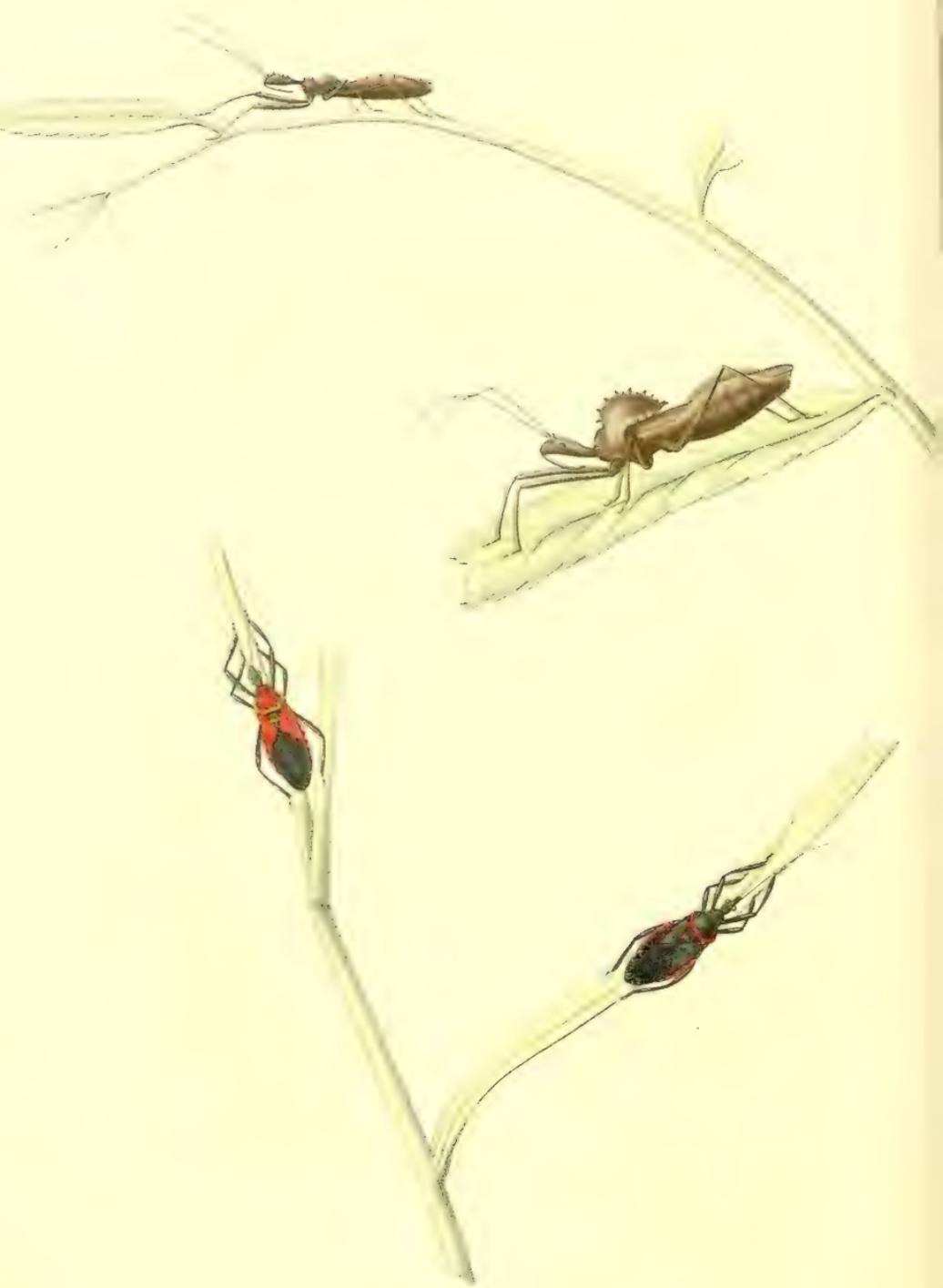
OBSERVATIONS.

It is said by Cramer to inhabit Virginia, but it is also found in Pennsylvania, and in all the

southern States. It is subject to some little variations; the fine fulvous spot near the base of the inferior surface of the upper wings, is sometimes white, and the oblique lines under the inferior wings, differ in width and distinctness.

The plate represents two views, of the natural size.

PLATE XXX.



REDUVIUS. *Fabr. Latr.*

GENERIC CHARACTER.

Body not linear; thorax sub-bilobate; rostellum arcuated, three-jointed, middle joint longest; antennæ inserted above a line drawn from the eyes to the base of the rostrum; tibiæ simple.

OBSERVATIONS.

Linné placed the species in the same genus with the common and well known "bed-bug," from which, however, they are without doubt, very distinct. Under the reforming hand of Fabricius, they were established as a separate group, with the present designation. These insects are carnivorous, and live by rapine in all their states. They seize smaller insects, and suck out their fluids. The collector must be very cautious how he handles these insects, as they are apt to inflict a painful puncture with their very pointed beak. When disturbed, they emit an acute sound, by the friction of the base of the head or the neck against the thorax.

REDUVIUS NOVENARIUS.

SPECIFIC CHARACTER.

Blackish; antennæ and rostellum rufous; thorax crested, crest eight or nine-toothed.

DESCRIPTION.

Brownish liver-colour, with very short hair: *head* cylindrical, a profoundly impressed transverse line between the eyes; a spine behind each antenna inclining forwards: *antennæ* rufous: *rostellum* dark rufous, first joint more than half the whole length of the organ: *thorax* with a short robust spine each side at the base of the head; crest prominent, with eight or nine cylindrical, rather distant teeth; lateral angles bidentate, posterior tooth largest; posterior margin crenate, with two prominent, terminal spines: *hemelytra*, membranaceous portion, brassy: *feet* simple, rather long: *tibiæ* tinged with rufous.

PLATE XXXI.

OBSERVATIONS.

This large and fine species is not uncommon in various parts of the Union, at least from Pennsylvania to the southern boundary. Its puncture is very painful, benumbing the vicinity of the wounded part, for a considerable time.

Its great similarity to the *R. cristatus* of South America, has hitherto induced entomologists to identify it with that species; but having carefully considered their respective characters, I am of opinion that they are distinct, though certainly very closely allied. The *cristatus* has at least twelve denticulations to its crest, and its pale rufous tibiæ, strongly contrast with the femoral colour.

The upper right figure of the plate.

REDUVIUS CRASSIPES.

SPECIFIC CHARACTER.

Blackish; thorax and abdomen margined with reddish; feet thick.

SYNONYM.

REDUVIUS CRASSIPES. *Fabr. Syst. Rhyng.*
p. 273.

DESCRIPTION.

Body villous; posterior lobe bituberculate: *thorax* margined all round with red; anterior lobe with a triangular central indentation: *scutel* with a red band beyond the middle: *hemelytra* with a reddish humerus; coriaceous portion with two or three obsolete reddish points at tip; membranaceous portion much deeper black: *tergum* with red triangular spots on the incisures at the lateral margin: *pectus* with a spot above the insertion of each foot, and coxæ red: *venter* margined each side with red.

OBSERVATIONS.

This species was obtained by Bosc, in Carolina, and was described from his collection by Fabricius. I found the specimen in Arkansas.

The lower right figure.

PLATE XXXI.

REDUVIUS SPISSIPES.

SPECIFIC CHARACTER.

Thorax and hemelytra light reddish-brown, edged behind with whitish ; feet thick.

SYNONYM.

REDUVIUS SPISSIPES. *Nobis. Journ. Acad. Nat. Sciences*, vol. iv. p. 328.

DESCRIPTION.

Head black, posterior lobe with two tubercles : *thorax* light reddish-brown ; anterior lobe with dilated, black, oblique, or arcuated lines, of which some are confluent ; posterior lobe hardly more elevated than the preceding, with a black posterior sub-margin, and white posterior margin : *scutel* black, margined with white, and tipped by a few hairs : *hemelytra*, coriaceous portion light reddish-brown, with a narrow whitish posterior margin ; membranaceous portion black, or dark fuscous : *feet* thickened, black, hairy :

coxæ bright red: *abdomen* black; margin and band on each segment, white.

OBSERVATIONS.

The species here described, is very closely allied to the *crassipes*. It occurred in some plenty in Arkansas.

The lower left figure.

REDUVIUS RAPTATORIUS.

SPECIFIC CHARACTER.

Obscure brownish; head, thorax, and anterior feet, spinous; the latter raptatory.

SYNONYM.

REDUVIUS RAPTATORIUS. *Nobis. Journ. Acad. Nat. Sciences*, vol. iv. p. 327.

PLATE XXXI.

DESCRIPTION.

Body oblong, obscure brownish: *head* with a deeply impressed line above the eyes, spinous; six larger spines before the impressed line, placed two and two, and two or four larger ones behind the line: *stemmata* sanguineous: *eyes* inserted in the lateral middle of the head: *antennæ* inserted near the tip of the clypeus, with dilated annulations of dull rufous and pale: *rostellum* slightly arcuated, pale: *thorax* with numerous, short, obtuse spines on the anterior lobe, and dense granulations on the posterior lobe; posterior angles hardly prominent: *feet* somewhat pale, sub-annulate, granulated; anterior pair raptatory: *thighs* unequal, anterior pair robust, villous, dusky, armed with an erect, prominent, obtuse spine, near the tip above, and a double series of ten equal, equidistant, acute spines, beneath; anterior tibiæ with a double series of six similar spines on the inner side: *tergum* rufous on the disk, margin varied with black, and pale: *hemelytra* on the membranaceous tip, with a longitudinal reddish-brown line.

OBSERVATIONS.

This may possibly prove to be the *R. diadema*, Fabr. It is common in many parts of the Union, and I found it not uncommon in Missouri, as well as in Pennsylvania.

The upper left figure of the plate.

PLATE XXXI.



TREMEX.

GENERIC CHARACTER.

Antennæ setaceous, inserted on the front, thirteen or fourteen jointed; mandibles robust, short, denticulated; labial palpi terminated by a thick, hairy joint; superior wings with two radial cellules, the second incomplete, and two cubital cellules, of which the first is very large, receiving the two recurrent nervures, the second incomplete, not attaining the end of the wing; abdomen sessile, terminating in a point; oviduct exerted.

OBSERVATIONS.

This genus is very similar to SIREX, from which it was separated by Jurine. It may be distinguished by the smaller number of joints in the antennæ, as well as by the number and form of the cellules of the wings.

PLATE XXXII.

TREMEX SERICEUS.

SPECIFIC CHARACTER.

Ferruginous; tergum yellowish-sericeous.

SYNONYM.

TREMEX SERICEUS. *Nobis.* *Western Quarterly Reporter*, vol. ii. p. 73.

DESCRIPTION.

Body ferruginous, punctured: *head* with three indented longitudinal lines on the vertex, and a transverse one between the eyes: *antennæ* yellowish: *thorax* scabrous before, disk with a black spot on each side: *wings* brownish-fuliginous: *carpus* yellowish: *feet* pale yellowish: *thighs* ferruginous: *tergum* pale yellowish-fulvous, sericeous: *pectus*, above the posterior feet, black.

OBSERVATIONS.

The specimen is a female. I obtained it in

PLATE XXXII.

Missouri, whilst engaged in the exploring expedition under the command of Major Long.

The upper figure.

TREMEX OBSOLETUS.

SPECIFIC CHARACTER.

Ferruginous; tergum black.

SYNONYM.

TREMEX OBSOLETUS. *Nobis.* *Western Quarterly Reporter*, vol. ii. p. 73.

DESCRIPTION.

Body ferruginous, punctured: *head* with three obsolete indented lines upon the vertex, and a transverse one between the eyes: *antennæ* pale ferruginous: *thorax* scabrous before, with a black spot on each side of the disk: *wings* yellowish-brown, hyaline: *carpus* rufous: *posterior tibiæ* and *tarsi*, black at their tips: *tergum* black,

polished; segments, particularly those near the base, with an obsolete rufous spot on each side, more distinct on the fourth segment.

OBSERVATIONS.

Taken in the same region with the preceding. The number of cubital cellules do not correspond with the definition of the genus, as we have here adopted it. There are, in fact, three cubital cellules, of which the first is very small, and it is the second that receives the recurrent nervures. Notwithstanding this character, however, there can be no doubt of these insects being correctly arranged, when placed in this genus.

The left figure.



TREMEX COLUMBA.

SPECIFIC CHARACTER.

Thorax ferruginous; abdomen with a band and lateral spots yellow.

PLATE XXXII.

SYNONYM.

- SIREX COLUMBA. *Fabr. Syst. Piez.* p. 49.
Amœn. Acad. vol. vi. p. 412. (Fabr.)
- SIREX PENNSYLVANICA. *Degeer. Ins.* vol. iii.
p. 393. pt. 1. pl. 30. fig. 13. (Fabr.)

DESCRIPTION.

Head ferruginous: *vertex* a little grooved, a blackish line through the stemmata passes upon the posterior orbits: *antennæ* black, four basal joints pale ferruginous, two terminal joints fulvous: *thorax* ferruginous, sutures blackish: *wings* blackish: *carpus* ferruginous: *tergum* deep black; first segment with a small obsolete spot each side, yellow; second segment yellow, with an inconspicuous longitudinal black line; remaining segments with an oblong-triangular yellow spot on the base of each; terminal spine, and valves of the oviduct, ferruginous: *pectus* black, a large ferruginous spot beneath the anterior wings: *feet* pale ferruginous; thighs above, and posterior pair entirely, black: *venter*, with the segments slightly tinged with piceous.

OBSERVATIONS.

The specimen above described, was taken on the bank of the Missouri river. It inhabits many parts of the Union, and is a very fine species.

The right figure.

PLATE XXXII.



PANGONIA.

GENERIC CHARACTER.

Wings divaricated; antennæ porrect, approximate, three-jointed; first joint cylindrical, second cyathiform; third joint elongated, subulate, eight-ringed; proboscis elongated, exerted; stemmata three; abdomen of seven segments.

OBSERVATIONS.

This genus is very closely allied to *TABANUS*, the species having a close resemblance to each other; but, on accurate comparison, we shall agree with Latreille in the propriety of separating them. In fact, the *TABANI* are altogether destitute of the stemmata, and are very different from insects of the present genus in several other characters, such as the form of their antennæ, the disposition of the nervures of their wings, and the comparative length of their proboscis. In some of the species, the stemmata are so small as to require a lens to discover them, but they certainly exist in all. Six species are described

by Meigen as inhabiting Europe; and five extra Europeans are described by Wiedemann.

These insects are inhabitants of warm climates, and are said to subsist upon the honey of flowers; but Meigen suspects that their females feed on the blood of animals, like those of the species of other genera in this family.

PANGONIA INCISURALIS.

SPECIFIC CHARACTER.

Thorax dusty glaucous, with dirty yellowish hair; abdomen dark chesnut, with whitish incisures.

SYNONYM.

PANGONIA INCISURALIS. *Nobis. Journ. Acad. Nat. Sciences*, vol. iii. p. 31.

DESCRIPTION.

Front ochreous: *ocelli* distinct: *hypostoma* dusky: *palpi* and *setæ* of the *proboscis* testaceous:

PLATE XXXIII.

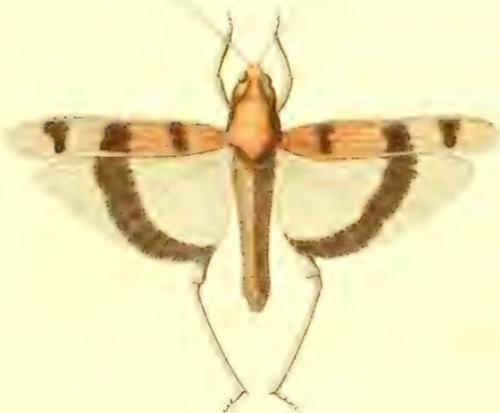
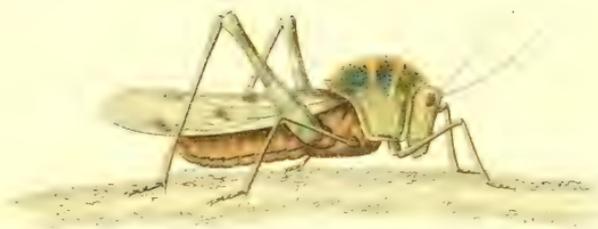
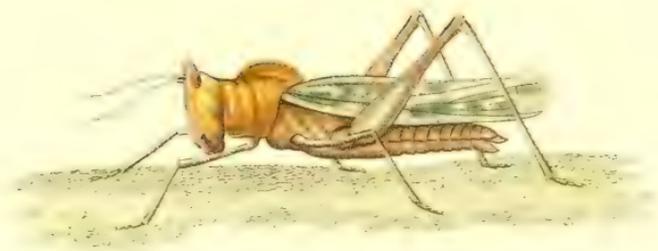
proboscis black: *antennæ* pale yellowish: *occiput* with very short, greenish-yellow hair: *thorax* with two distinct obsolete lines: *wings* reddish-brown: *feet* yellowish: *thighs* dark chesnut at base: *tergum* and *venter* ♀ dark chesnut, polished, the posterior margins of the segments whitish, and slightly hairy; ♂ pale testaceous, with short hair.

OBSERVATIONS.

This is the only species yet known to inhabit North America. It was brought from Arkansas by Mr. Thomas Nuttall.

The upper figure exhibits the appearance of the male, and the lower that of the female.

PLATE XXXIII.



GRYLLUS.

GENERIC CHARACTER.

Antennæ filiform, with from twenty to twenty-five joints; hemelytra and wings deflected, the latter large, much folded; posterior feet formed for leaping, hardly longer than the body; tarsi three-jointed; oviduct not exerted; stemmata unequidistant.

OBSERVATIONS.

Insects of this genus are well known to every person in this country by the familiar and characteristic name of "grasshoppers." They are in some seasons very abundant, and become an inconvenience to the farmer, by devouring his grasses and other vegetable productions. But their increase here is always limited, so that, even when most numerous, a great portion of the crop is saved. There are countries, however, where this is not the case, and we have only to inform the reader, that the *migratory locust* is one of the members of this genus, to apprize him

of their formidable character. "Of all the insects which seem capable of adding to the calamities of the human race, locusts seem to possess the most formidable powers of destruction. Legions of these voracious animals of various species are produced in Africa, where the devastation they commit, is almost incredible. The air is darkened by their numbers; they carry desolation with them wherever they pass, and in the short space of a few hours, are said to change the most fertile provinces into a barren desert." During their migrations in search of food, they move in immense dense masses, which resemble huge thunder or hail clouds, and at the termination of their career, every leaf is soon devoured, and the atmosphere is finally loaded with putrid exhalations from their dead bodies, producing pestilence in the train of a general famine, which is the consequence of their voracity.

Swarms of these animals have appeared in various parts of Europe, from Tartary, and small flights have made their way even into England. A species of this genus occasioned so much destruction in some parts of Europe, that in the year 1813, the French government issued decrees with a view to occasion the destruction of the larvæ. Although the thickly settled parts of the United

States are altogether unacquainted with the scourge of any species of migratory locust, yet we shall have occasion at a future time, to speak of several species found within the limits of our territory, that have already proved a very serious evil.

There seems to be little doubt, that a species, probably the *G. migratorius*, constituted one of the plagues of Egypt mentioned in the Bible; and that John the Baptist was compelled to use them for food during his sojourn in the wilderness.

Even at the present day, the inhabitants of divers countries of Africa, make great use of these destructive insects for food. For this purpose, the insect requires but little preparation, and we believe the hemelytra and wings are always rejected, whether it is to be eaten fresh, or salted. In the latter state, they are constantly exposed for sale in the markets of the Levant, and they are known to be a considerable article of commerce in that region.

Many travellers assure us that they constitute an agreeable food; according to Shaw, when fried with a little salt, they have the taste of the Cray-fish, a crustaceous animal like a miniature lobster, abounding in our fresh water streams.

Some of the Arabs are stated by Niebuhr, to preserve large quantities of these insects in the dried state, for winter consumption.

The GRYLLI feed exclusively on vegetables. They fly with a considerable strength of wing, and some species make a noise when they poise themselves in the air, previously to alighting, by striking the hemelytra together. During their several changes, they continue active and voracious, and their gait is always either a leap or a walk. In the larva state, they are destitute of any appearance of wings or hemelytra, but on changing to the pupa, they gain the rudiments of those members, to be completely developed at the next change.

GRYLLUS FORMOSUS.

SPECIFIC CHARACTER.

Thorax with a much elevated, compressed, and denticulated carina.

PLATE XXXIV.

DESCRIPTION.

Body pale green: *antennæ* yellowish: *thorax* armed with numerous small denticles, above compressed, very much elevated into a regularly arcuated carina, forming a portion of a circle, the centre of which, is anterior to the origin of the hemelytra; carina with two yellow radii, and yellow posterior and anterior edges; posterior half of the edge, prominently denticulated: *hemelytra* with about six large brown spots, with pale areolæ, placed 2, 2, 2: *posterior thighs* annulate, with yellow.

OBSERVATIONS.

When returning with a detachment of Major Long's party, at the distance of about an hundred and fifty miles from the mountains, on the banks of the Arkansaw river, I had the pleasure to find a considerable number of this uncommonly beautiful species. It occurred only in a very limited district, and was not afterwards seen.

The middle figure, with a wing above on the left.

GRYLLUS HIRTIPES.

SPECIFIC CHARACTER.

Head conic, posterior segment of the thorax elevated into a carina.

DESCRIPTION.

Body pale green: *head* above conic, elevated. with dark green lines: *antennæ* red: *thorax* varied with dark green; posterior segment compressed above, and elevated into a prominent, arcuated, mutic carina: *hemelytra* with large, confluent, dark green spots: *feet* hairy; posterior *tibiæ* densely hairy.

OBSERVATIONS.

A curious species, of which the conic head gives it the air of a *TRUXALIS*, but the *antennæ* are not ensiform, neither are the posterior thighs elongated, as in that genus. The anterior seg-

ment of the thorax is altogether destitute of any appearance of carina.

It occurred with the preceding.

The upper figure, with a wing below on the right.

GRYLLUS TRIFASCIATUS.

SPECIFIC CHARACTER.

Hemelytra trifasciate with fuscous; wings pale yellow at base, with a fuscous band.

DESCRIPTION.

Head green: *antennæ* blackish, first and second joints pale; triangular space between the eyes, brown, extending in a curved line backwards and downwards: *thorax* greenish-brown, above depressed, on the two anterior segments, an inconspicuous, hardly elevated, longitudinal line: *hemelytra* pale dull yellowish, at base brownish, nervures at tip, dusky; three equidistant broad brownish-black bands, the intermediate one on

the middle: *wings* pale yellow, with a slight tinge of green; a broad brownish black band, narrowed and marginal behind; tip dull whitish, with the nervures blackish: *posterior thighs* dull yellowish, with a black band on the middle, on the inner side, extending broadly towards the base; tip blackish: *posterior tibiæ* bright fulvous.

OBSERVATIONS.

This pretty insect occurred in Arkansaw, at the distance of about three hundred miles from the Rocky Mountains.

The lower figure.

PLATE XXXIV.



HETEROMYIA.

ARTIFICIAL CHARACTER.

Antennæ porrect, filiform, fourteen jointed; five terminal joints elongated; palpi exserted, a little arcuated, four jointed; basal joint shortest, a little contracted in the middle; ocelli none; eyes reniform; posterior feet much elongated, slender, and with a single nail at tip; anterior pair with somewhat elongated coxæ, and much dilated femora, armed with a series of short spines on the anterior edge, on which the arcuated tibia closes.

NATURAL CHARACTER.

Body moderately slender; head small, rounded, flattened before; antennæ in the middle of the face; first joint large, but not long; the eight following joints sub-oval; the five terminal joints long, not dilated, cylindric, each being twice the length of one of the preceding ones; eyes reniform, large, wider beneath, and approaching above; stemmata none; palpi arcuated, four

jointed, first joint shortest, last joint longest; proboscis shorter than the head; thorax sub-globular, convex above, and projecting a little forward acutely before; beneath convex; scutel transverse; wings moderate, somewhat lanceolate; poisers naked; feet unequal; anterior pair with the coxæ somewhat elongated; thighs dilated, and with a series of spines on the lower side; tibiæ arcuated, accurately closing on the inferior surface of the thigh; tarsi moderate; intermediate pair slender, longer than the anterior; third pair longest, slender, the tarsi elongated, terminated by a single long and slender nail.

OBSERVATIONS.

This genus is closely allied to *TANYPUS*, *CHIRONOMUS*, and *CERATOPOGON*, but it differs from them by the remarkable conformation of the anterior and posterior feet.

PLATE XXXV.

HETEROMYIA FASCIATA.

SPECIFIC CHARACTER.

Wings hyaline, trifasciate with dusky.

DESCRIPTION.

Body testaceous: *thorax* with a black disk: *wings* with three equidistant bands, the two exterior ones somewhat confluent: *posterior thighs* a little dilated towards the tip: *abdomen* with a silvery sericeous reflection; ♂ cylindrical, ♀ dilated towards the tip.

Variety, *a.* Thorax entirely testaceous.

OBSERVATIONS.

The manners and habits of this insect are unknown, though it is of rather frequent occurrence.



HIPPARCHIA.

GENERIC CHARACTER.

Antennæ with a slender, somewhat fusciform, or trigonate-orbicular club; palpi meeting above the tongue, with the second joint very much compressed, and much longer than the first; anterior pair of feet shorter than the rest, and often very hairy; feet of the other legs with double nails; hinder wings somewhat orbiculate-triangulate, with the internal margin excavated to receive the abdomen; the middle cell closed behind, from which part the nervures radiate; the outer margin entire, or with acute or obtuse indentations. (Leach.)

OBSERVATIONS.

We adopt the generic name from Fabricius. It is the *MANIOLA* of Schrank, *SATYRUS* of Latreille, and of course, *PAPILIO* of Linné. The genus is numerous in species, and the wings of many are beautifully ornamented with eye-like spots. The caterpillar is downy and bimucronate

behind. The pupa is suspended by the tail; it is angulated, bimucronate on the front.

HIPPARCHIA ANDROMACHA.

SPECIFIC CHARACTER.

Wings brown, with sub-marginal blackish spots; beneath paler, sub-perlaceous, with a series of ocellate spots.

SYNONYM.

OREAS MARMOREA ANDROMACHA. *Hubner.*

DESCRIPTION.

Body above, and the superior surface of the *wings*, brown: *anterior wings* beyond the middle, with a broad paler band, bifid before, and including a series of four fuscous oval spots, or epupillate ocellæ, of which the second, and sometimes the third, are small, and the posterior one largest; between the band and the exterior edge is a single narrow pale line, sometimes obsolete;

exterior edge alternately white and black: *posterior wings* with a narrow, fuscous, angulated line across the middle, and a broad pale band beyond the middle, in which is a series of five fuscous epupillate ocellæ, with a yellow iris, the third smallest, then the fifth, the first being largest; exterior margin slightly tinged with rufous, and with one or two fuscous lines: *beneath* perlaceous, with a brown narrow band before the middle, and another rather beyond the middle; beyond which, is a broad lighter perlaceous band, in which, on the superior wings, are four epupillate ocellæ, the two or three anterior ones small; and on the inferior wings are six ocellate spots, consisting of a fuscous spot surrounded by a yellow line, and having a white pupil; first spot distant, third small, fifth double; exterior margin with a yellow line.

OBSERVATIONS.

Two specimens of this insect were presented to me by Mr. Thomas Nuttall, who obtained them in Arkansaw. It seems probable, that they also inhabit the southern Atlantic States, as Hubner has given a plate of the insect. It has not been found so far north as Pennsylvania.

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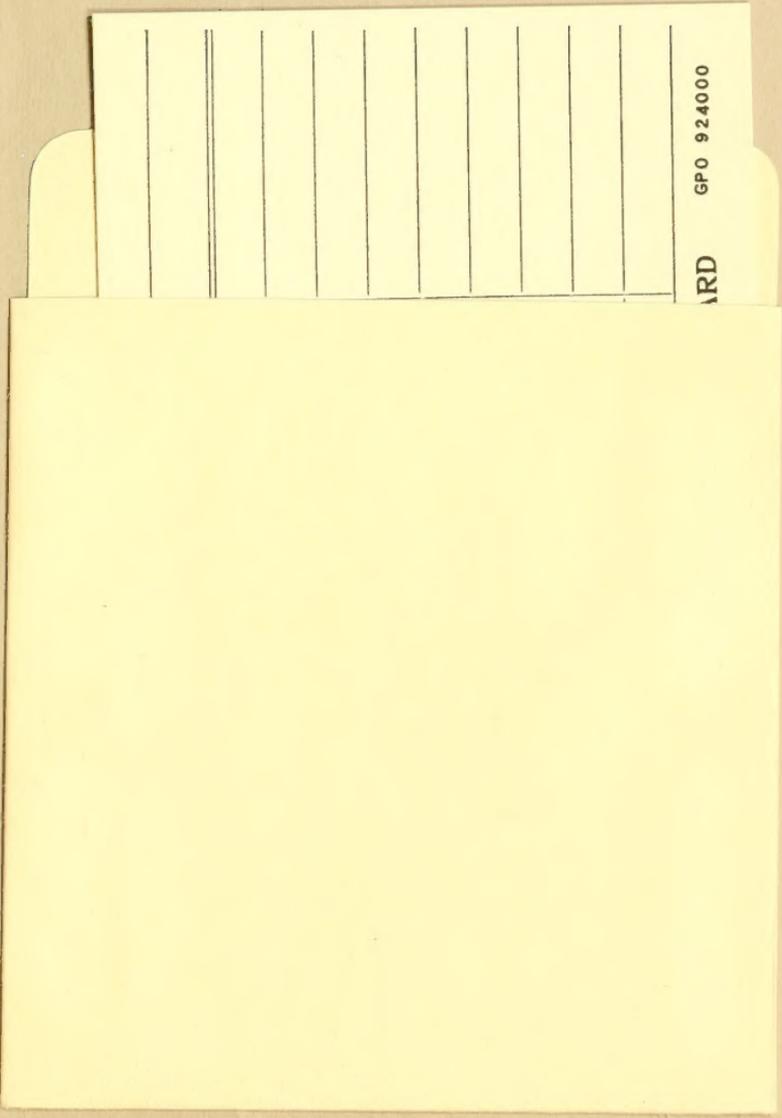
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