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BUTTERFLIES AND MOTHS
OF
NORTH AMERICA,
WITH FULL INSTRUCTIONS FOR COLLECTING, BREEDING, PREPARING, CLASSIFYING, PACKING FOR SHIPMENT, ETC.,
A Complete Synonymical Catalogue
OF
MACROLEPIDOPTERA,
WITH
A FULL BIBLIOGRAPHY,
TO WHICH IS ADDED
A GLOSSARY OF TERMS AND AN ALPHABETICAL AND DESCRIPTIVE LIST OF LOCALITIES.

By HERMAN STRECKER,
Life Member of the Academy of Natural Sciences of Philadelphia; Member of the American Entomological Society, and of various other Scientific Associations.

DIURNES.
"TIME AT LAST SETS ALL THINGS EVEN."

READING, PA.
PRESS OF B. F. OWEN,
1879.
Entered according to Act of Congress in the year 1878, by HERMAN STRICKER, in the office of the Librarian of Congress at Washington.
To

WILLIAM CHAPMAN HEWITSON

THIS VOLUME IS

WITH PROFOUND RESPECT

AND LOVING REMEMBRANCE

GRATEFULLY DEDICATED.
Hingegangen in den Wind.

Salomo! wo ist dein Thron hingegangen? in den Wind.
Lilie! wo ist deine Kron' hingegangen? in den Wind.
Predigtet du in den Wind, Erdenweisheit! immer noch,
Seit der weise Salomon hingegangen in den Wind?
Brue تست du im Hauch des Gluecks denn noch immer, Erdenmacht!
Seit der maecht'ge Salomon hingegangen in den Wind?
Auf des Lebens Fruehlingstra'n draengej tausend Keime sich,
Fragen nicht, ob tausend schon hingegangen in den Wind.
Feucht' einmal mit Wein noch an, Schenke! diesen durst'gen Staub,
Eh der nicht'ge Erdensohn hingegangen in den Wind.
Schenke! wie ein Traum der Nacht, wie ein Schatten auf der Flur,
Ist das Leben mir entfohn, hingegangen in den Wind.
Hoffnungen, wie Spreu verweht, Wunsche, Rosendueften gleich,
Liebessueften ohne Lohn hingegangen in den Wind.
Falscher Schmeichelhauch der Huld, und des Hohnes kraenckender,
Lieb' und Hass ist, Huld und Hohn, hingegangen in den Wind.
Las der Thraenen letzten Rest mich verweinen dieses Aug's,
Bis die letzte Spur davon hingegangen in den Wind.
Licht der Jugend! Schoenheitsbild! kaum erschienen bist du mir,
Glenschend wie die Lilienkron', hingegangen in den Wind.
Lebenszierde! Schmuck der Welt! herrlich prangend, bist du uns
Schoen wie Salomonis Thron, hingegangen in den Wind.
Um dein Angedenken soll ewig spielen Freimunds Lied,
Bis davon der letzte Ton hingegangen in den Wind.

Fr. Rueckert.
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I would beg you friend not to pass this by, for, while that which follows may concern you the most, this is the part that relateth more particularly to myself and my wants, and it is human nature, you know, to think of ourselves first, last and always.

This Pamphlet is the result of numerous applications from beginners in many parts of the country, for information as to the methods of capturing, preserving, classifying, &c., Lepidoptera (Butterflies and Moths); and I have endeavored to give such notes as lie in my power, the result of a lifetime devoted to studying and collecting in this branch of Natural Science.

Almost the first thing the beginner wishes to know, after he has made a few captures and finds butterflies are not all alike, and not confined to two or three kinds, viz., little yellow ones and big red or black ones, is whether they have names and what those names are. In default of being able to obtain this information, ten to one he will give them names of his own invention, probably derived from some peculiarity, real or fancied, of form or colour. Then comes the desire to obtain literature on the subject; then to get specimens from other localities as soon as he becomes aware that those of Calabar are not the same as those of Kentucky; and so one thing leads to the other until, from the little acorn sown by chance, a goodly tree doth grow and flourish.

To give some plain information that will tend a little to lighten the labor of the beginner, (perhaps far away from good collections, libraries and congenial companions,) has been my object, as also to increase my correspondence with many students and collectors, both new and old, in various parts of this country as well as abroad, with whom I have not as yet had the pleasure of communicating.

I am not only anxious to secure correspondents in our own States and Territories, Canada and British America, but also in Mexico, Cuba, Brazil, New Granada, Surinam, China, Amoorland, India, Japan, Algiers, Sierra-Leone, South and East Africa, Madagascar, Australia, Ceiebes, Moluccas, &c.; and should this circular fall, perchance, into the hands of any one living in one or the other of these countries who is interested in the study of Butterflies (Lepidoptera), I would esteem it the greatest possible favour to receive a line on the subject.

Missionaries could do a vast deal if they would collect and transmit collections of these things; it is not at all necessary that they make the captures themselves; with a little instruction, natives will make very good collectors, and if a little pecuniary reward were in the perspective, they might accomplish wonders.

Soldiers stationed at various points in our Territories could also do good work in the cause of science by devoting an occasional leisure hour to collecting these beautiful objects; to any such who feel interest enough to collect and send me examples, I would be happy to render an equivalent in any way desired.
Any persons, here or in foreign countries, willing to correspond with me or to exchange examples of either indigenous or exotic species, will confer a great favour by sending me a line to that effect.

Also any one having undescribed or hitherto unfigured species, either butterflies or moths, native or exotic, will confer a great favour by loaning them for the purpose of illustration and description in the work on "Lepidoptera," which I am at present publishing in monthly parts; the greatest care will always be taken of all such examples intrusted to me, and they will be promptly returned as soon as described and figured, and a guarantee given to that effect whenever required; in such cases all credit, of course, will be duly given to the discoverer.

I will cheerfully and gratuitously identify specimens of butterflies and moths sent to me for that purpose; where persons have them in duplicate the best plan is to put numbers on the specimens sent, corresponding with those on the specimens in their collections, and I need only the names after the numbers, thus: No. 7 is Papilio Eurymedon; you look at No. 7 in your collection and see in a moment that that is the species meant. Where you have only a single specimen, and wish it returned, it is of course unnecessary to affix any number, as I can write the name on a small slip of paper and stick it on the pin of the insect to be returned.

If I have in these pages failed to meet all the requirements of the case, I trust no one interested in the science will hesitate to write to me, for I am always equally as willing and glad to receive information as I am at all times to impart any, as far as lies within my power. It would be a churl indeed who would fail to answer an appeal from one who is traveling the same road that in bygone days he had traversed. I shall never forget when a little boy how my heart bounded when I opened the pages of Prof. Jos. Leidy took me into the basement of the Philadelphia Academy of Natural Sciences, and pointing to the books on Entomology told me I had permission to examine their contents. Great God what a Heaven opened to me! my books on natural history previously were sundry of the "Peter Parley" suit; with what contempt I looked over thereafter at the venerable Peter, as pictured on the first page, in knee breeches, surrounded by his numerous descendants who were supposed to be listening with eyes, mouths, ears all extended, to his accounts of vampires, cockroaches half a foot long, and the inevitable tarantula, that after biting people looked at them till they danced themselves to death; but alas, the once treasured "Peter Parley" books had served their time, and their place knew them no more. How I now reveled in the treasures of old Cramer, in Donovan, in the wonderful Thesaurus of Mad. Merian, in indefatigable Hubner, and in dust ad libitum. How I gazed wonder-struck on the great African Saturniidae depicted by the old masters, never dreaming that I should ever become the happy possessor of such treasures. Time in this respect has dealt kindly with me, many of Cramer's and Drury's species and many that Cramer and Drury doubtless never saw, now grace my cabinets, and are things of beauty and to me things of endless joy. Oh I never my friend, give a cold look or a short word to those who hunger after the truths of science; foolish questions may be asked you, and your patience at times taxed, but remember the time, far back, when you too were groping in the dark, vainly striving to find the path of which you could only catch in the distance the faintest glimmer. Remember how a hand was reached out to direct you a right from gloom and uncertainty to light and knowledge; show now your gratitude for that kindness, in the only way in your power, by
doing for some other one who is humbly striving, that which at a time long passed, was done for you. I have passed away from my subject entirely, but it seems as if it were but a few days since I was taken by the hand and led wondering, almost trembling into the presence of the grand old masters of natural science, those titans who laid the mighty ground work for all futurity to build upon. Lengths of cramp were festooned across the Library, centred in the beak of a great condor, a tribute to the learning and worth of Dr. Morton, who had then just passed from his studies here to those in a land where alone perfect knowledge is attained; and further back peering out of the gloom, hideous in its frightful ugliness, was the head of Gorilla Caniceps, looming up like some Afrit or Gnome, the offspring of opium eating orientalism, and all around and above were books, books. How I wished I could but spend my whole existence there, and I recollect staggering under the weight of an old volume, heavier almost than myself, to where Dr. Zantzinger was sitting, and asking him where the name of the huge moth there depicted could be found, and how I stared when he told me that in those days they had not yet named them, and how I wondered why Adam had omitted naming such a vast number of beautiful things, or perhaps his records and catalogues were lost in the deluge, (this latter was the most satisfactory conclusion I could at that time arrive at.) And when new wonders revealed themselves at every page, how I wanted some one to talk to about them and to share my great happiness with me, but as I looked around I could see that all present were either reading or writing, perchance some one as he glanced up from his volume for a moment, met my enthusiastic gaze, and gave the little sickly-looking boy a kindly smile ere he again resumed his book. Oh, those were golden days! How I treasured up the first poor battered specimen of the European Peacock Butterfly, (Vanessa Io,) for which I paid 25 cents to a venerable taxidermist, who thought he might as well take my half-year's savings for it as to throw it away; how I wondered if by any earthly possibility I should ever get another, in case accident by fire or flood should happen to this one. Then the first sphinx I ever captured (Linenta I think was the species,) I kept him in a little box with a glass front, thinking that he would die before long, in which opinion he didn't appear in the least to agree with me, as his eyes shone like coals of fire night after night, and thinking it would overcome the little difference of opinion, I at last ran a pin through his body and impaled him on a board with the innocent idea that it would kill him, and the stupid thing wouldn't die after all, and my conscience smote me day by day, for a week nearly, as he persisted in refusing to give up the ghost; and at last my father, who couldn't bear to see the thing suffer any longer, unpinned it and despite the tears and appeals of his first-born, threw it into the great old-fashioned wood stove to get it out of its misery, as he said. This fixed that stove indelibly in my memory, it was a monstrous old thing, that either threw out a fearful heat or none whatever, no medium, if you let it burn, you had tolerably fair conceptions of Gehenna, if you lowered the fire, lo! it would suddenly die away; "Darling & Smith, Joanna Furnace," was the inscription borne by this household Moloch. Circumstances have many years later brought me to my present home, not many miles from "Joanna Furnace." Since then on many an occasion I have met the "Darling & Smith," and their children and their children's children, but it needs none of these to remind me of the ruin of my first great entomological capture, the recollection of which "only in death will die."
retrospective wanderings into the infant realm of bread-and-butter, nankeens, and credulity-in-perfection, and I may as well agree with my readers as my recollections of infancy will only cost more printer's ink without further enhancing the value of my pamphlet. The novelty of the first underwing moth (Catocala Amatrix) has passed away, nor can an old torn Telea Polyphemus longer hold me spell-bound, and as the years of man are few, and time goeth far too swiftly, I may as well at once get out of the shadowy past into the real present, and make the most of it by endeavoring to obtain from those interested in our beloved science, further material wherewith to feast my eyes, and to give me greater opportunity of acquiring knowledge of these most lovely of all of nature's works.

As I continually have need of great numbers of examples of different species, I am always glad to exchange with parties having duplicates of Moths or Butterflies, either native or exotic. Of the N. American species I can always use almost any number of perfect examples of all species, especially, Lycaenidae, Hesperiidae, Sphingidae, Bombycidae, Catocalidae and the Noctuae and Geometrae generally. Very rare species will be acceptable even if they be not perfect specimens, for of such we must be content to take the best we can get, without being too fastidious. Particularly want numbers of Sphingidae, (except Deil. Lineata, S. 5-Maculata and S. Carolina,) also Arctidae, any species, Hem. Maia, Cith. Regalis, Eac. Imperialis, Act. Luna, Cal. Anguilifera, Debris Portlandia, Neonympha Gemma, Geo. Areolatus, Catocala Coccinata, C. Viduata, C. Muliercula, C. Amasia, C. Reficta, and in fact any others.

The following are a few particular desiderata of the N. American species, viz.:

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<thead>
<tr>
<th>Argynnis Nokomis, ♀♂</th>
<th>Arctia Parthenos</th>
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<td>Argynnis Leto, ♀</td>
<td>Platsanidia Columbia,</td>
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<td>Lycaena Regia,</td>
<td>Citheronia Sepulchralis,</td>
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<tr>
<td>Colias Edwardsii, ♀</td>
<td>Hepialus Purpurascens,</td>
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<tr>
<td>Macroglossa Flavofasciata,</td>
<td>Catocala Stretchii,</td>
</tr>
<tr>
<td>Sesia Axillaris,</td>
<td>Catocala Zoe,</td>
</tr>
<tr>
<td>Proserpinus Gaurae,</td>
<td>Catocala Consors.</td>
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<tr>
<td>Darapsa Versicolor,</td>
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For one or more of any of these I will give large exchanges or pay in money, as may be most agreeable.

I am also equally desirous of obtaining such exotics as I need from parties having duplicates from any locality.

The following species and varieties I would esteem above everything could I but obtain them; and I insert this, not with any expectation of speedily getting them, but knowing that they are in the world, I hope that perhaps after many days or years some one or other of them may come into my possession. I can only watch and wait, and beg that if any European friend is fortunate enough ever to possess any of the following in duplicate he would remember then that there is one here who has grown grey trying to obtain them, who will give any exchange or pay in cash for them their price. That I should die without beholding these would be, indeed, too hard a fate, but I will not stop to contemplate so desolate a prospect, but will proceed to name the peerless things, which are as follows:
I am particularly anxious to obtain Varieties Hybrids, Hermaphrodites and other aberrant and abnormal forms for which I am always ready to negotiate liberally.

I would like very much to secure correspondents in Bogota, Peru, Surinam and Rio Janiero. Should this meet the eye of any one at any of the above mentioned places, or any other part of S. America, I would esteem it the greatest favour if they would do me the honour to communicate with me for purposes of exchange, &c.

In conclusion, I would repeat that I will always be delighted to hear from Lepidopterists in any part of the world, and any one so favouring me will receive the promptest attention.

And should any Entomologist find himself in my neighborhood, I trust he will not slight me by neglecting to call on me and allowing me the pleasure of showing him my collections.

I am always ready to identify, for any one, Lepidoptera, native or foreign, Moths or Butterflies.

Always ready to exchange specimens from our own or other lands.

Parties either in the United States, or other countries, having Lepidoptera or Coleoptera, of any country, that they would like to sell, would do well by placing them in my hands for that purpose.

Any persons wishing to purchase specimens, native or foreign, by sending lists of their desiderata, will be accommodated promptly and satisfactorily, prices in accordance with the rarity of the species and quantity desired. I will also furnish, when desired, Entomological Pins, Forceps, Setting Blocks, &c., &c., also procure books, pamphlets, &c., either new or out of print, whenever obtainable.

In writing, no matter how often you may have occasion to do so, always put under your signature your full address, No. of street or Post Office box; city or town; county, shire or province; State, Empire, Kingdom, Country; for it saves much time and trouble to have merely to glance at the bottom of the letter you have just answered, instead of having to hunt up some old letter to find the address, or else if you keep a list to have to go through the address of several hundred correspondents to find the one wanted. Always
direct as below, and if you reside out of the United States, instead of Pa.
spell Pennsylvania in full and add U. S. of N. America. Thus endeth the
preface to these pages of

Yours, truly,
HERMAN STRECKER,
Box 111 Reading P. O.,
Berks County, Pa.
THE CAPTURING

of

DAY BUTTERFLIES (RHOPALOCERES.)

THE IMPLEMENTS NECESSARY.

The first and of course principal thing necessary is a bag-net, (See Fig. XI, Plate I,) this can be made, to answer all practical purposes, as follows: the rim you can make by bending a piece of strong iron wire to form a hoop, twisting the two ends together and filing them sharp that they may be driven into the end of a handle, or, if the collector be inclined to luxuriousness, and does not wish to excite the interest of the intelligent mob by carrying so curious an implement through the highways on his journey to the glades and woods, he can have the ends soldered fast to a ferrule of sheet iron or tin, which can be put over the end of the handle when he gets without the city precincts; until that time the net can be carried under the coat, and the handle will serve conveniently for a walking stick, also as a preventative to the too close intimacy of canines. To the iron rim there should be affixed a bag made of fine strong gauze—mosquito netting from which the stiffening has been well washed will do; this bag should be eighteen to twenty inches long, and the bottom bound with a strip of muslin which is to be fastened to the iron rim, the diameter across this rim should be eleven or twelve inches. The handle should be about as long or a trifle longer than an ordinary walking-stick, if much longer it becomes unwieldy, though practice will make one perfect in anything, except living without food or sleep, and if a person should become handy with a long handle to the net, of course the advantage is obvious.

Nets are made in various other ways besides that described; in some the rim folds up in sections, in others it is made of steel and can be coiled up like a watch-spring, (see figs. XII, plate I,) all with the one object that they may be put in some big pocket to be out of sight until we are in the fields, for in this enlightened land a man can easily earn a reputation for lamency if he lets it once be known that he is a butterfly hunter or any other kind of hunter except a money hunter; but if the collector be of moderate means, or of no means at all, as is the case with the writer, then a home-made one constructed as I have described will answer all purposes satisfactorily, and if he be ambitious to practice with a long handle, one of those fishing rods that are in sections, fitting into one another, will answer excellently.

Besides the net you should be provided with some strong pasteboard or light wooden boxes, lined at bottom with cork, of a size convenient to carry in the pocket; these boxes are to put your specimens in as fast as you catch them.
THE MODUS OPERANDI OF USING THESE IMPLEMENTS.

In catching butterflies the net can be put over them whilst sitting on flowers, bushes, &c., or with practice they can be secured whilst flying, by sweeping the net towards them and the moment they are in it giving it a quick turn that the upper end of the net which encloses the butterfly will hang over the rim, thereby preventing its escape before you have an opportunity to secure it. If the net is put over the butterfly whilst at rest it is well to bear in mind that in ninety-nine cases out of a hundred the butterfly always flies upwards, so that by taking the end of the net in the fingers and stretching it upwards, the insect instead of creeping or flying out below as it might do if it had decent instinct, will fly upwards to the end or point of the net where it will get imprisoned past all hope.

When they are in the net you can easily kill them by pressing the thorax between the thumb and index finger, (see fig. XIV, plate I,) the wings being always folded back; do this whilst they are in the net; in so doing the gauze of the net will be between your fingers and the butterfly, but that makes no difference; do not attempt to put your hand inside of the net and commence a chase of the captive which will end either in its escape, or what is equally as bad, in its tearing and ruining its beautiful wings; even in securing them through the net, in the manner I recommend, it requires some care and dexterity to do so without mutilating or rubbing off the scales which constitute the beauty of their colouring, but with a little practice it is easily done, for after all experience is the best of all teachers, though withal at times a little expensive.

The large butterflies, such as the swallow-tails, (Papilio), mother-of-pearls, (Argynnis), &c., &c., are easily killed, when in the net, with but little danger of damaging them; but there is a class of most interesting little fellows yeilded Skippers, (Hesperidae), so called from their jerking, short flight, which when they get into the net keep up a most intolerable nuisance, not content to submit quietly to their fate, and with no appreciation of the fact that they are to serve the great ends of science, they do all to defeat those ends and exasperate the collector by flying and buzzing to a maddening extent; but, as says the German proverb, "there are more chains than bad dogs," the way to manage the little fellows is, the moment they are in the net, to hold it at both ends and stretch it across the knee so that the butterfly is generally pressed between the folds, then you can finish his existence by pressing the side of the thorax uppermost, the other side being against your leg or knee, with your thumb-nail; or what is a still better plan is to have with you a small glass jar as wide, or nearly so, at mouth as at bottom; it should be about 6 inches high and 3 in diameter (see fig. XIII, plate I,) which is a size convenient to carry in a lunch-coat pocket; this jar should have a tin cover or top to it, and in the bottom you should have a lump of raw cotton saturated with chloroform; when you have the small butterfly (Hesperia) in the net, grasp the folds in which he is enclosed in a lump in your hand, and hold them over, or if possible push them into the mouth of the jar; the odor of the chloroform will produce a state of repose in the unruly butterfly in which condition you can take him out of the net and kill by pressure, but I would advise you not to delay the killing too long, for it takes but a comparatively short time for them to recover from the effects of the drug—more tenacious are they of their worthless lives than are we greater human things.

Best of all, however, if you are free of lead, you can secure any Thysbe, or Phaon, or any other butterfly, the same as if it was the last one in the world, by dipping the edge of the net in a little liquid, and this is the way:

In the first place the butterflies are killed with the knife or with a stick, and so far all the apparatus is a common one: the closed ends of the net are then filled with rubber, which is the best material that happens to hand.

The butterfly is then made to creep between which and the thorax the fingers are inserted.

The net is then put on, and a half hour may be allowed for the butterfly to die. When two or three are in the net the last of all nothing will effect their destruction. After June, when the butterflies are ripe, you can reap them easiest in the day time; take it is, make the net like a cottage-door, fit it horizontally and sweep the butterflies into the net, which will secure them. I have served the purpose thus with success when dogs and cats were about. The next step is to up small cages, which I suppose the farmer would do, but I should think it to one's advantage to use large cages.

These cages can be built of planks and masts, and covered with thick thistles, and so on, with a continual supply of food, so that the possessed butterfly can have no desire to escape, for it was never my practice to keep a butterfly in a cage less than a month. Octavious days, however, we had them, especially in autumn, when the Swallow-tails and mother-of-pearls are so often to be seen. In selecting them, if young, always to employ the forceps; if they are older, carry a sharp-pointed thin bone through your pocket, and use that.
Besides the butterflies proper there are various moths (Heterocera) that also fly in day time, among them the Humming-bird Hawk-moths (Sesia Thysebe, S. diffinis, S. Buffaloeneis, &c.); these must be treated in capturing the same way as the Hesperidae but as they are large waisted things pressure would spoil their beauty, therefore the killing is done by inserting a needle dipped in oxalic acid or Cyanide of Potash, thrusting it into the head, passing it lengthwise through the body once or twice, and they will fold their wings and silently go to rest.

In putting them in the temporary boxes (carried for the purpose) after they are killed, you can put as many on one pin as it will conveniently hold, but with the exception of the Hesperidae and Humming-bird Hawk-moths, all so far alluded to should be temporarily pinned through the side with the wings closed, which preserves the upper and more susceptible surface from being rubbed or scratched by the one pinned above it, as perhaps might accidentally happen if life were not quite extinct.

The Hesperidae and smaller butterflies as well as all night butterflies, (of which more hereafter,) should be at once pinned through the middle of the thorax, from the back, and whenever practicable only one on each pin.

The best time of the day for collecting is from early morning, when they may be picked off the leaves whilst their wings are yet heavy with dew, until two o'clock P. M., of course on cloudy, windy or rainy days, you will get nothing but disappointment and discomfort for your pains, but on a pleasant June, July or August day, with a clear sun and no air stirring, you may reap a rich harvest. If a desirable butterfly be hovering near you, it is ever better not to be too rash, for if you stand still he will alight here and there around you until finally he will come within the sweep of your net or alight, then if you don't secure him you scarcely deserve to, that's all, but give chase and try to run them down under a July sun, with the occasional slight obstacles of fences, creeks, rocks, logs, farmers' dogs and farmers' boys, (just as bad,) and to find your expected prey wind up snugly in a grain or clover field within sight of the farmer's homestead, farmer's self in shirt sleeves on porch, farmer's shot-gun within easy reach of farmer's fingers, forms a combination of circumstances by no means conducive to one's respecting the third commandment.

The best localities for finding butterflies are gardens in the country, marshes and meadows along the edges of woods, and above all wherever plenty of thistles and sumac are growing, but unfortunately these valuable plants are continually doomed to destruction whenever detected, because they will take possession of ground that some unlettered boor wants for cereals, just as if we couldn't get our wheat from California if the crops failed here, or if there wasn't room enough to grow it; why, you can buy California flour here anytime at the same price as that ground from wheat raised east. But it is useless to complain, we must, alas, take things as they are, not as we would make them, as the millenium is still a day or two distant.

Occasionally fine butterflies may be captured sitting in roads on the mud, especially if it be full of little puddles of water. I have often taken fine Swallow-tails, Limenitis, &c., in such positions.

Cow-dung, decayed fish or a dead snake have a powerful attraction; I have often taken three or four at once that were enjoying themselves at such attractive objects.

Do not go on hills in dry, stony woods for butterflies; bear in mind always that swamps, meadows, woods near such, flower and vegetable gardens in the country, and pieces of waste land with creeks running through
and on which are growing thistles, sumac, blackberry bushes, &c., are their favorite resorts, and there you will be rewarded for your pains. But alas, each year these Paradisical spots become more rare; it has cut me to the soul many a time to see just such places burnt over, strewn with lime and ploughed up to raise wheat to make bread, to keep the worthless souls in the worthless bodies of worthless beings which live and die without leaving the slightest vestige of a footprint "on the sands of time."

I would further add that for these excursions: a coat made of some light woolen material is preferable: linen coats are abominable, as the suspenders, by the aid of perspiration, adorn the back of that garment with a St. Andrew's cross, which, though of no moment to our country cousins, is by no means desirable as we get within the city limits on our return homeward, if it be still daylight. This coat should be plentifully supplied with pockets, two inside breast-pockets, one of great capacity to put the net, rim and all in, if you don't want to carry it in your hand, the other for your handkerchief, cigar-case, small glass jar, &c.; it should also have two outside pockets near bottom of coat, the one to put your collecting box in, and the other for lunch, which latter, although when you start you think your breakfast will last all day, becomes of vital importance about the time the sun is directly over your head, when you will devour every crumb and, like poor Oliver, cry for more. Carry a little India Rubber, leather or tin drinking-cup with you but don't put much water inside of you—it is deleterious during these tramps; once give way to the temptation of guzzling creek water and you are ready to drag yourself home you will be as near a gone case of foundering as an undertaker need delight to see. If you feel thirsty smoke segars, if you can't smoke moisten your lips with a little lemon-juice or whisky, but don't moisten with too much of the latter so that the last seen of you is adorning the corner of some fence, with the flies hovering around your mouth trying to ascertain whether it was "Mountain Dew" or "Lavan's best proof" that has put you in a position for your friends to be ashamed of you, sir.

It is always better on entomological excursions to go alone, but if you must have a companion let him be one likewise interested in the same pursuit, and when you arrive at the hunting grounds separate with the understanding that you are not to meet until the time arrives for returning home, and if your friend has a dog, (which of course he has), which miserable brute must of course accompany him on all possible and impossible occasions, (far who ever owned one of those wretched cures that did not have it forever walking at his own heels and snarling at everybody else's), then in self-defense, if you want to take a single butterfly that day, follow my advice—put as great a distance between yourself and your friend as possible. By the way, in order to ward off the effects of the sun's rays on yourself, always adopt the old plan of putting in your hat some large leaves (oak, chestnut, &c.) which have been previously immersed in water; this is a standard preventive of sun-stroke, nor will any one suffer from the effects of the sun's heat striking on the head if he adopts this plan; the leaves should be from time to time dipped in water as they become too dry.
THE CAPTURING OF NIGHT BUTTERFLIES OR MOTHs
(HETEROCERES).

For these a different mode is necessary; a glass jar like the one used in
taking Hesperidae, but if a little wider it will be no disadvantage, should be
provided; in the bottom of this should be placed a number of pieces of Cy-
anide of Potash, over these plaster of Paris mixed with water to the con-
sistency of molasses, should be poured to the depth of an inch or so until the
Cyanide is just about covered; in a short time the plaster will become set
and the bottle or jar thus prepared will be fit for use for a long time. During
the day many small moths may be detected on the underside of leaves, in
shady corners on rocks, under the eaves of out-houses, &c.; when one is de-
tected hold the jar over him close to the object on which he is sitting, and he
will become overpowered by the fumes of the drug and drop into the jar from
whence he may be taken out and killed. This mode is the best that can be
used for taking Catocalas; these fine moths during the day sit on the trunks of
trees, and are scarcely distinguishable from the bark thereof, as their grey
lichen-looking upper wings entirely conceal the splendor of the scarlet, or
yellow under wings, but by looking carefully on the trunks of the trees from
the roots up to as high as you can reach may detect their presence, then
cautiously and carefully clapping the poisoned jar over them; the noise caused
by your trampling over the dead leaves will often rouse them from their hiding
places, and when they again alight you will have opportunity to secure them.
The Catocalae are always in much demand for exchanging, and whenever a
species is present you may look for it in numbers; they occur in oak and
eastern woods, &c., some species are found where willows are abundant;
all are conspicuous beautiful insects.

For night collecting a preparation of rum and sugar, or beer and sugar
mixed to the consistency of sirup should be painted in patches and strips on
the trunks of trees, and other suitable places here and there but not laid on too
thick; also you may soak pieces of dried apples and string them with a
darning needle on pieces of twine and festoon the fences, trunks of trees and
other places with them, this mess in either instance has a wonderful attraction
for Noctuæ and many will by that means be obtained which otherwise never
would have the fortune to grace the naturalist’s cabinet; the moths will fly to,
and alight on this sweet and delusive mixture and by directing the light of
a lantern on them and using your poisoned jar you can make many captures.
It is not necessary to take every one out of the jar as fast as it falls in, get as
many as it will hold without spilling, and then when the novelty has ceased,
go into your quarters at some adjacent farm house and take them out at your
leisure, in comfort. Do not be disgusted if your first night’s experiment
results in nothing but an army of ants or hundred-legged-bugs, but persevere,
for though the first or second or third night even may result in nothing, the
fourth may pay for all of them; warm dark damp nights are the most favour-
able, windy ones ain’t worth anything; but as in everything else experience
will perfect the knowledge of which I can give you only the rudiments.

If arsenic be mixed with the rum and sugar, it will facilitate matters, but in
that case an old sheet should be spread on the ground beneath the tree-trunk,
fence or other object that is anointed with the potion, to receive those which
fall overcome by the poison.

Many moths may be captured in the evening in the country when they fly
into the open windows attracted by your light, clap your jar over them as they
alight on the walls or table and secure them, some of these small things are of great rarity, and it is among these we must look for new and hitherto unknown kinds, as the larger and more conspicuous ones, are those to which the most attention has heretofore been given.

And finally in collecting, always bear the following directions in mind:
1st. Always retain a poor or damaged example until you get a better one of the same kind.
2d. Collect all kinds, large and small, beautiful and ugly, scarce and common, those that fly by night (moths) as well as those that fly by day.
3d. Get as many different kinds as possible.
4th. Get as many of each kind as possible.
5th. Recollect that no matter how common a species may be in one locality, there are other places where it is not found at all, and where naturalists would be glad to get it.
6th. Always endeavor to secure as many of the night butterflies (moths) as possible, both large and small, for these have been the most neglected.
7th. Try your utmost to induce your friends in other localities to collect, for many that may not be found in your neighborhood, may occur in theirs; and bear in mind that every fifty miles produces variation in many species.
8th. Should any species be taken in copulation make note of the fact, as in some instances the sexes are very dissimilar, and this is generally a sure way of knowing if they be sexes of the same insect.
9th. Look particularly for varieties and aberrant forms of various species, there occur sometimes individuals presenting differences, and in some instances to such an extent as to almost force us to believe they are new species, as is the case with the variety of Papilio Asterius called P. Calverleyi, of Argynnis Idalia called A. Ashtaroth, of Vanessa antiopa called V. Hygiaea (V. Lintherv, Fitch), of Pyrameis cardui called P. Elymi, &c., &c.
10th. Bear it in mind that some species appear in abundance some years, whilst in others scarcely one will be obtained; so in seasons of plenty prepare for dearth, and capture all you can; for should you get a thousand or more of a kind, it is a small number to supply the numerous entomologists in different parts of the world who may want them.

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PREPARING FOR THE COLLECTION.

After you have returned home from the fields and fens with your accumulated treasures, and have recruited yourself with food, rest you must not, (for if you think of lying down for a few minutes or a half an hour, the demon of inertia will seize you, and your butterflies will lay till some other day,) you can immediately expand the larger examples; the smaller ones are probably too much dried to attempt them at present, of which more anon; for the purposing of expanding and drying your specimens you must have setting-blocks or boards of various sizes (see fig. I, plate II.) to suit the different examples; these blocks should be made of ¼ inch wood, with a groove cut in the middle about ¼ to ½ inch deep for the large butterflies and moths, and ¼ inch for the smaller ones; the block should be thickest at the two outer edges and a little

thinner towards the middle, when done by the hands, course; the edges of the horizontal rays, or what is called the firsts, should be pressed against a block, or to the bladder, and be well soft that they do not spring to bottle. Be careful about it if you choose to use it. In Benedit's book.

After the thorax has a hole in it, course, just where it closes and within your setting, and the block will be that end, hand, and edge of another block in the range of the costa, wing five. There is there the same three, with an upper and smaller, and second plate in the hand in the wings, which belong to the side, but the lower of block, and secured with use in the box; it is to much for it to a week's collection, it being to attach them.

Then make up the setting of the same thickness, and secure each one (see fig. II., and the two blocks for if you the fourth)
PREPARING FOR THE COLLECTION.

thinner in the middle at the groove, so that the butterflies' wings will stand, when dried, a little higher at the apex than at the base near the body; in course of time the wings will fall a little anyhow, and if they be set exactly horizontal at first, when they sink they will be below level, which finds no favour in the eyes of any except the English Lepidopterists who always set their examples with the wings deflexed. In the centre of the groove there should be a couple of little gimlet holes, about \( \frac{1}{4} \) inch apart, bored through the block; behind these holes, on the back of the block, should be glued or tacked a strip of cork, around which (cork) should be tied a piece of coarse, soft thread long enough to wrap eight or ten times around the block from top to bottom; now, having described the block, I will tell you what to do with it if your own sagacity (for which I would not give much if you were born in Berks County, Penna.) has not already pointed out the method of using it. After seeing that the insect-pin is properly inserted in the middle of the thorax of the butterfly or moth, you then pass the point through the gimlet hole in centre of block into the cork fastened behind it where it will stick, of course; then take the thread (that is fastened to the cork behind) and draw it close over the top of the block, and close, but not tight, over the wings of your specimen facing your left hand, then pass it behind, across the back of the block, over the top and down the front over the wings facing your right hand, and secure the string in a notch or slit made by a pen-knife on lower edge of block on side facing your right hand; your butterfly is now secure, but his wings are not spread evenly; one is nearer, probably, the top edge of block than the other, one is nearer the body, perhaps, than the other; to arrange this take an insect pin and insert it in the forewing right behind the costa, (the great front edge of the wing) one-third the whole length of the wing from the body, and draw the wing to the right position and keep it there by sticking (without withdrawing first) the pin into the block; do the same thing with the opposite forewing, then with one of the hind wings, then with the last hind wing, thus you will have the four wings properly placed and secured by the four pins sticking through them into the wood (see fig. E, plate II); then unloosen and unwrap the string on the side facing your right hand and wrap it four times, about, around the side of the block, butterflies' wings and all, facing your left hand, then pass it crosswise behind the block to the side facing your right hand, then wrap it four times or so around that side, butterflies' wings and all, and secure the end in the slit or notch in edge of block (see fig. F, plate II); then take out the four pins that have so far secured the wings, as they have done their work and are now of no further use in that position, then stand your block aside in a safe place, not exposed to much sunlight, to dry. If a small or medium sized butterfly it will take a week to completely dry it that the wings will permanently retain their position, if a large butterfly, moth or Sphinx it will take from two to three weeks to attain that end.

The above method, with strings, will do admirably for day butterflies and the smaller moths, but for large moths, which have heavy fur on them and thick, downy wings, pieces of card board must be laid across the wings and secured with a pin in the block above the upper wing and below the lower one (see fig. G, plate II); each card board should be large enough to cover the two wings on one side, from where they join the body to their extremities, for if part of the wing only be covered there will be a depressed line cut in the fur across the wings by the edge of the card.
PREPARING FOR THE COLLECTION.

What I have tried to make clear I might have told you my good reader, by word of mouth in a few minutes, but as that was impossible, owing to my not having the attribute of ubiquitosness, I still hope I have made myself intelligible, but different species will want different little arrangements, which will suggest themselves as necessity requires their use.

CABINETS, &c., FOR CONTAINING LEPIDOPTERA.

Various Entomologists employ different kinds of receptacles for their examples.

The plan adopted by myself (see fig. II, A, plate II.) is to arrange them in drawers which are contained in cabinets; the size of the drawers which I use are 19 x 16 inches in the clear and 1 1/2 inches deep, they are made of 1/2 inch stuff with soft pine bottoms, of course if you are wealthy (which few naturalists in this country are) you can line the bottom of your drawers with cork which of course is an advantage, but soft pine will answer every purpose. These drawers have the groove, by which they slide into their places in the cabinets, in the middle of the side, which obviates the necessity of having strips between each drawer and thereby losing space, in the height of the cabinets, that would hold a couple of more drawers; in the tops of these drawers fit narrow walnut or other hard wood frames with glasses putted into them, (see fig. II, C, plate II.) these are removed by merely lifting up and laying aside when necessary; I have three rows of these drawers in each cabinet, the short sides of the drawers being its front, that is when in the cabinet they are longer from front to back than they are wide. I paint the top edges of the drawer, where the frame and glass fit in, with creosote occasionally, say whenever I have necessity to work a drawer I put some on, with a large soft hair pencil or brush, the drug permeates the wood, and keeps away the Dermestes and Anthrenus, the pests so destructive to collections of objects of natural history. The drawers should be papered inside with white paper, such as periodicals and magazines are printed on does very well, it costs about 60 cents a quire, and that quantity will paper at least fifty drawers.

The above plan of receptacle I consider the very best, and it is the one generally adopted for great collections all over the world.

But the drawers should be made to slide into their places very easily; give them a little play so that you may, when necessary, change them about; thus, we will say drawer No. 20 is the last containing swallow tails (Papilio) and drawer 21 is the first containing the white butterflies (Pieris). Now you get an accession in the Papilio, but your last drawer No. 20, devoted to that genus is full, well, instead of having to unpin your whole collection to get drawer No. 21 empty for the occupancy of the new ones, you merely take the last drawer in your cabinet, (which is empty) and pin your new examples in it, you then put the drawer that is next to the last one in the place from whence you took the latter, and the drawer above that in its place and so on until you come to drawer No. 21 which you will then put in the place of drawer No. 22 and in the space above formerly occupied by drawer 21, you now put in the drawer which was the last in your cabinet and in which you have pinned your next from below.
your new Papilio, and the only trouble you had was to put your drawers, from No. 21 to the last, one drawer further down which of course is a pleasure, for as you pull each one out to change it to its place below you at the same time have the delight of feasting your eyes on its contents.

Another plan of receptacle is to have boxes made in the form of books about 12 x 9 inches in the clear, and each half 1½ inches deep in the clear, the two are joined together at the backs by a piece of stout canvas being glued over it, which serves as a hinge; when closed the clear space is 2½ inches and the specimens can be pinned on both sides; the superficial space thus occupied in a double box of above size is 18 x 12 inches; the edges where they meet can be painted occasionally with creosote to keep out destructive vermin.

The principal objection to this plan of box is that if the greatest care be not taken always in opening and shutting, the force of the air is apt to loosen the wings of the examples, especially of the smaller trailer ones.

Others have the bottoms of the drawers, i.e. cabinets, glass as well as the top, and with little bits of cork gummed to the glass to pin the insects on, or else narrow strips of same material or soft wood fastened in, for same purpose, from one end of the drawer to the other; this method has the advantage of allowing you to turn the box around to see the under surface of your examples, but the disadvantage when you want to add new material is fearful; this plan is only good for a finished collection where the owner intends to add nothing more, or for a local collection where you know just how many species you can expect to get and can leave space for each accordingly.

But whatever manner of box or drawer is used, the great desiderata to be obtained is to keep them out of the action of sunlight and dust, also do not keep them in a damp place which will engender mould, which ruins Lepidopterous examples past all redemption.

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**ENTOMOLOGICAL FORCEPS.**

Having now your cabinet you will want forceps with which to pin your examples into the drawers; these are absolutely indispensable; I would sooner do without my spectacles than my forceps, and the only decent ones I have ever met with in this country are those made by Blake & Co., No. 212 Chester Street, Philadelphia, Pa.; a pair of their make will last you a lifetime, and once in your hands you would as soon think of doing without your night-cap as of trying to work in your cabinet without them; Mr. Blake, himself, is a practical Entomologist and well known through his writings on the N. Am. Mutilidae, &c.
ENTOMOLOGICAL PINS

are made of all requisite thicknesses, the German pins, which run from Nos. 1 to 5, are the most extensively used and are, without doubt, the best; they range in prices from $1.00 to $1.50 per thousand.

The pins used by English Entomologists are much shorter, and the use of them is confined almost exclusively to the naturalists of that nation.

No. 3 German pins are best size for general use as they will do for a small fly and are strong enough for quite a large one; but with Nos. 2, 3 and 4 you are fixed for any size of Lepidoptera.

THE ARRANGING OF EXAMPLES IN THE CABINET.

First see that the examples are spread or expanded in a uniform style, wings of all in same position and all the same height on the pin, and not too high or too low, so that one-third of the pin shows above the insect.

In pinning the insect into the drawer or box, seize the pin, a little above the point, with the forceps which you hold in your right hand, (unless you be left-handed, then vice versa), at the same time whilst pressing the pin into the bottom of box with the forceps, hold the tip of the index finger of left hand gently on the head of the pin until it is firmly fixed and the forceps withdrawn; this will cause the pin to stand perpendicular, for if you fasten it without holding your finger on the head of the pin you may find that when you remove the forceps your specimen will be leaning to the one side or other.

You begin of course to place your examples at the upper corner facing your left hand; some pin them in single rows up and down, for example we begin with Papilio Philenor, male, right below him we put the female, then below her the next species, Papilio Turnus, male and its female, and so on to the end of the row, and then begin the next, and so on; of Lepidoptera, of the size of those just mentioned, drawers like those previously described will hold four rows, of Vanessa, Coliades, &c., six rows, and of Lycenidæ, &c., eight to ten rows. This plan is economical as regards space, but terribly troublesome, when you get new species which must be wedged in between some of those already in, and necessitates the unpinning of half a drawer or box perhaps, with beginners this may be pleasant, with old hands it is simply waste of time.

The plan which I have adopted and carried out in a collection, embracing some forty thousand examples, is as follows: I place them in double rows, thus, we will take for example that group of Pieris of which P. Protodice is the common American representative, I have placed first a male of P. Protodice then right aside of it the female, then I place another male, with the under-surface turned up, directly under the first male, then a female showing the under-surface under the first female, then a male of P. vernalis with its female aside of it and below each a reversed specimen and so on, the following will illustrate plainly my plan.

Wh...
THE ARRANGING OF EXAMPLES IN THE CABINET.

and so on, ad libitum, if you have the specimens.
If I have but three examples of a species I place them thus:

Pieris Autodice, male. P. Autodice, female.
" " male, reversed. " " female, reversed.

Pieris Vernalis, male. P. Vernalis, female.
" " male, reversed. " " female, reversed.

Pieris Callidice, male. P. Callidice, female.
" " male, reversed. " " female, reversed.

putting the third, male or female as it may be, in the middle, below the two upper ones. When I acquire the fourth example I remove the third, and place it directly under the upper one of its own sex, and the newly-acquired fourth one under the other upper example.

If I have only a single example of a species I place it in the middle between the two rows, like P. Leucodice below:

Pieris Callidice, male. P. Callidice, female.
P. Leucodice, male.
Pieris Autodice, male. P. Autodice, female.

When I get its mate I push the one I already have directly under the fly above, and put the new one aside of it.

This plan shows the whole insect—male, female, upper and under surface—at a glance, and besides gives room for additions, for if I get an example of another species of the Pieris near P. Leucodice, before I get the second Leucodice, I can temporarily let it occupy the position that the future P. Leucodice will have, until I have the good fortune to obtain the latter.

Of course, if you have varieties of the same species, or aberrant forms, or monstrosities, you place them under the examples of the normal form of whatever species they may have sprung from. Also, you can place below them the preserved larva, chrysalids, as well as any parasites that infest the species, so far as you may be able to obtain them.

LABELING THE EXAMPLES,

which is of incalculable importance, can be done best as follows: you should have the labels of white cardboard with plain black borders printed on them, and three or four dotted lines within; on these you write, or print with pen and ink, the name, author's name, synonyms when necessary, name of work in which the species was first described, locality where found, and if it be a type specimen state the fact. Here are examples:

Pieris Protodice, male. P. Protodice, female.
" " male, reversed. " " female, reversed.

Pieris Vernalis, male. P. Vernalis, female.
" " male, reversed. " " female, reversed.

Pieris Callidice, male. P. Callidice, female.
" " male, reversed. " " female, reversed.
The above is the most exhaustive way of labeling, but will save you much future trouble; you may, however, shorten it by leaving out the work in which it was first described, thus:

PAPILIO TROILUS.
Bucks Co., Pa.

PAPILIO COPANÆ.
Copan. (Orig. type.)

Always remember that the name of the author is as necessary as that of the species.

If you don’t know the name at all, never neglect to state the locality; when you have the same species from different localities you can have smaller labels for each locality, only using the large label with the name for the first two of a species, and giving each of the other localities one of the smaller labels, thus:

PIERIS OLERACEA,
Harr.
Trenton, N. J.

Ontario, Canada.
Great Slave Lake.
Labrador.
Massachusetts.

These labels are fastened to the bottom of the drawer or box, directly above the specimens of the insect designated, by a short pin at each end.

Many Lepidopterists collect the species of their own country or locality only, others, those having the greatest collections, place the species from all countries together, which I hold to be the only proper way, as nature has not set county lines in such matters, and the species of all parts of the world are but links in the great chain, and by omitting those of some particular country you break the chain, and must produce discordancy. In my own collection, before referred to, I have placed those from all countries together, thus: in the orange-colored forms of the Coliades I have them native and foreign arranged in the following manner:
—and so on, group after group, just as they seem nearest to each other in structure, &c., regardless of locality.

It is never amiss to have the same species represented by examples from various localities, as it is vastly interesting to see what changes may be produced by climatic and other causes, as for instance Limenitis Misippus, which is red in the northern States, the same colour as Danais Eriphus, is very dark brown almost blackish in Florida, where it resembles another species of Danais called Berenice; and the female of the Central American form of Papilio Asterius has a broad sub-marginal band or row of yellow spots on all the wings like the male, whilst the female in the common United-States form is almost altogether devoid of these spots; in the female of the same species from Labrador the yellow band is broader even than in those from Central America, which is still more curious when we consider that in those found in the United States, between the two extremes of Labrador and Central America, the female is destitute of the macular band, or it has been represent by only a few small, half-obscure spots.

ON CLEANING SPECIMENS.

Sometimes a butterfly or moth will be found to be more or less greased on body and wings, always starting at body and extending over the wings more or less, defacing and altogether hiding their beauty. This may be entirely removed by the following process: get a wide glass jar, need not be very deep, put a thin slab of cork in the bottom, the cork should be a trifle larger than the inside of the jar, so that it will take a little gentle squeezing to get it down to the bottom tight that it cannot move; pour the best refined benzine into the jar to the depth of two inches or so, and pin your greasy specimen on the cork in the bottom of jar so that it will be entirely covered with the benzine, then cover the top of jar, and let it rest a longer or shorter time—a half an hour generally suffices, but if very bad they need a longer time; when you think the specimen was in long enough, take it carefully out by the pin, and pin it on a piece of cork, stand it in some safe place where it ain't dusty, and do not be frightened at the desolate, slunk appearance of your specimen, for no matter how bad it looks, depend on it, it will come all right; just let it alone ten or fifteen minutes, and you will find it beautiful, brilliant, and
all the grease gone, or, if any traces of the latter still remain, give it another benzine bath; should the wings, after it is dry and the benzine evaporated, appear a little curled or bent, put it into the slack pot (hereafter described) from twelve to twenty-four hours, or longer if necessary, then fasten on setting block with cardboard stretched across the wings; let it remain on the block three or four days, then take it off and pin in its place in the cabinet, and you will have no cause to complain of the result of your labour.

ON RELAXING AND EXPANDING SPECIMENS.

Where specimens are received in papers, with the wings folded, or badly set, or on pins with the wings pointing four ways for Sunday, they should be treated in the following manner:

A large earthen pot is needed, what the housewife calls a butter-pot is the best; this is about 10 inches in diameter and 6 or 7 deep, and has a lid to cover it; of course if you can’t get this kind any other crockery-ware thing will do, but this is the most convenient in size and shape, being of as great diameter at bottom as at top. Into this you put 2 or 2½ inches of clean white sea sand, kept by the grocers and called silver sand; do not get it too fine, it is better a little coarse, that which is used to saw marble is the best. Pour in water enough to permeate through and through it, but not enough to make a slop or to stand on top of the sand,* then smooth the sand over and lay thereon two thicknesses of clean white paper, (don’t use paper that is printed on). On this you lay or pin the examples that need softening, then put a couple of pieces of paper over the top of the jar or pot outside, and put the lid on, working it around a little that it squeezes the paper into the joint and fits tight; this paper under the lid is to make a tight joint, as the lids of crockery articles are not proverbially tight fitting; stand the pot in a dry, cool place, (but not where it is cold enough to freeze); if it be too warm the examples are liable to mould, and to relieve specimens of Lepidoptera of mould, without injuring them, is impossible; a piece of gum camphor laid in the pot, or a small vial of creosote stuck in it in the sand will act as a partial preventive to mould. Let your pot stand twenty-four hours in peace, don’t lift the lid and look in every half hour, but when twenty-four hours have elapsed, look at the specimens, try gently if the wings can be moved in any position; if easily moved, take the examples out of the pot and expand on setting blocks, according to the same directions previously given for expanding and drying specimens freshly caught; but with these dried specimens; it is not necessary that they remain on the setting blocks more than two or three days to be fully dried and fit for the cabinet; in fact, with the smaller ones you will have to be quick while fixing them on the blocks lest they dry before they ought to; it is best to set them on the blocks in a cool room, a damp cellar would be excellent to expand such specimens in, but not to let them stand in after they are expanded; to dry properly they should be put in a dry moderately cool room in a closet with gauze over the doors or in a skeleton box covered with gauze or else merely set on edge

*You need not afterwards add any more water for several months.
ON RELAXING AND EXPANDING SPECIMENS.

on a table in a room where there is not much dust likely to be stirred up; if the specimens get dusty they can be gently brushed off with a very soft long-haired camels-hair pencil, but be careful you don't brush the antennae and little pieces out of the edges of the wings along with it.

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REPAIRING SPECIMENS.

Sometimes in transporation, or from other causes valuable specimens become more or less broken, and in too unsightly a condition to be fit for the cabinet, but, with care and patience, this can be in a great measure remedied.

The best adhesive to be used is gum tragacanth mixed with water until it is of the consistency of jelly; this adheres to the wings, dries quickly, and is by far the best thing for the purpose that can be used; don't mix gum arabic with it; and if it does smell a little bad after standing a week or two that don't hurt it, it will stick just as well as before nature perfumed it.

If the wings of your specimen be split or pieces torn out, you can, with a small soft hair-pencil or brush, put a little of the dissolved gum tragacanth along the parts to be joined, and they will close together; if the piece is entirely torn out, it is then necessary to back it up by pasting against the under surface a piece of wing taken from a worthless specimen of the same species, or in default of that something that will come very close to it; it takes practice to do this neatly, and the exigencies of the case will at times tax your ingenuity to its utmost.

Of course the less repairing that is done to specimens the better, but where the preservation from further injury depends in its being fixed, we had better take our choice of two evils, and select the least.

Never use glue; or gum arabic, but always gum tragacanth, which is the best; starch or even common flour paste is immeasurably to be preferred to glue, to use this latter is simply barbarous.

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MUSEUM PESTS.

When Anthrenus or Dermestes (the small beetles that infest collections of Natural History) are in a specimen, their presence may be detected by a fine dust on the bottom of the box around the pin on which the infected insect is; as soon as this is discovered take out the specimen with the forceps, and whilst holding the pin tight strike the forceps a couple of smart raps on the table; this will dislodge the robber, and you then put an end to his baneful existence in any way that your ingenuity or the magnitude of the offence may suggest. A constant surveillance should be kept over a collection, anointing the drawers with creosote, &c., &c. On getting new examples from other parties, it is well first to put them in another box, that is strongly poisoned with creosote; let them remain there tightly closed a week or so before placing them finally in your collection.
PACKING AND TRANSPORTATION.

As no Entomologist is able to collect even in all parts of his own fatherland, let alone in foreign parts, he is obliged to get examples from other localities by exchanging duplicate examples of those found in his own neighborhood, and by purchasing; and, inasmuch as one fine, perfect specimen is worth any number of damaged or defective ones, it is requisite to pay particular attention to the packing for transportation.

We will begin first with the day butterflies (Rhopaloceres); these may be packed singly in papers without expanding; in using this method the butterfly should have the wings folded back, in the position that they occupy when at rest, and should then be put in a paper folded in a three cornered envelope;* the locality and date of capture may be written on this envelope with lead pencil before putting the specimen in it; the paper used should be soft, not too stiff or heavy, and care should be taken, in placing the butterfly in, that its wings or feelers (antennae) do not get caught in the folds of the paper, and consequently broken or scratched. The papers containing the butterflies may then be put in a flat sugar-box—as many as it will hold; that is, they may be placed in the box carefully until it is a little over full, so that in closing the lid down gently it will press them down and by that means they will not shuffle about loosely in the box, but care should be taken that it be not, on the contrary, too full, lest the pressure in closing the box might break them; keep a just medium; before fastening the lid down put in a little gum-camphor, in fine pieces or dust, (a large lump would damage the specimens) to keep vermin away until your box reaches its destination, and thereby probably save the contents from destruction; in the absence of camphor, tobacco dust, wild sage or other strong-smelling herbs will do as a substitute.

After the lid is down, it should be secured by having strong paper strips pasted over the edges all around, and if the side and bottom edges are also pasted over with paper it will be an improvement in the way of keeping the contents safe from the access of vermin; if the paper used be such as is impervious to damp, so much the better, common boiled flour paste is better than glue or gum. Butterflies done up in this way need no further packing, and may be sent by mail to any part of the United States or possessions, at letter rates of postage, 3 cents per oz. or fraction thereof. If the box be not pasted shut, but only tied tight with strong twine, and does not exceed 12 oz. in weight, it will go at sample parcel rates, which is much cheaper, being only 2 cents for every 2 oz. or fraction thereof, but the latter has the disadvantage of being opened by the Post Office officials in the course of their duty, and as these gentlemen and ladies are not all naturalists, or acquainted with the mode of handling such objects, damage is sometimes unavoidable; it is best if the specimens are many and valuable to have the boxes pasted shut, even if the postage is higher. I certainly always would prefer that plan. For the address you must paste a clean piece of yellow or white paper on the lid, and write on it always the full address, thus:

Name,
No. of Post Office box, or street, as the case may be,
City or town,
County, Shire or Province,
State, Kingdom or Empire,
Country.

* See Plate 2, C 1, C 2.
Do not give merely the man's name and town and imagine because he is a valued friend of yours, and known to naturalists, that he is by any means as equally well known to the Post-Office carriers, who have enough to do without doing hours of work that you might perhaps save them by a scratch of the pen. I always direct all letters in full, and of the thousands I have written, I can recollect of but four failing to reach the parties addressed, and in the case of two of these it was owing to the parties having removed to parts unknown; bear these few hints well in mind, and you will save the Post-Office officials, your correspondents, and yourself much trouble and disappointment, and perhaps in some cases loss to yourself.

The packing of moths must be managed differently, for to fold their wings back like the day butterflies is unnatural and compresses the back of the thorax destroying much of the beauty; they should be put on pins; where it is absolutely necessary three or so may be put on one pin, leaving a little space between each; but I would advise this only where it is necessary to make the package containing them as small as possible; it is infinitely better to put but one on each pin; these can be pinned tightly into a flat segar-box, lined with cork at the bottom; force the pins in with the forceps, force them through the cork into the wood of the box even, if you choose, for if only one gets loose during transportation it will ruin probably the contents of the whole box; before putting them in see that the abdomens are all tight; if one be loose put a little dissolved Gum Tragacanth on below where it is joined to the thorax, this you do of course with a small camel's-hair pencil or toy paint brush. With the larger moths and Sphingidae it is necessary to secure the abdomen by a little raw cotton drawn over it and secured by pins forced into the bottom of the box, so if the abdomen should get loose from the thorax it cannot move from its position or do harm; I will allude further to this in my remarks on packing expanded and prepared specimens to send to foreign parts; when the specimens are all tightly pinned in the box, paste it shut. But in this case, where your examples are on pins, you must put your segar-box, containing them, into another larger box of light wood or stout pasteboard, and have the space between the two filled with raw cotton, fine marsh hay, tow or kindred soft material; if you neglect this, your correspondent will have the mortification of receiving the examples without their antennae or abdomens, as it is the soft packing, between the inner and outer boxes, that acts like a spring and breaks the jarring that, of course, anything is subject to during transportation by railway or coach; the space between the box containing the Lepidoptera and the outer box should not be less than one inch. When all is packed, direct it, ask your Postmaster the amount of stamps requisite, see that he carefully weighs it, see that you rub the stamps tightly on with your thumb nail—don't just wet one corner and give them a dab with the end of your finger and let them go—these are trifles, you will say, but attention to them may save, perhaps, much time and vexation.
PACKING SPECIMENS ALREADY EXPANDED TO PLACE IN THE COLLECTION, FOR TRANSMISSION TO FOREIGN PARTS.

For this purpose it is best to have boxes made of very stout paste-board, binders’ board, or of light wood such as is used for cigar boxes; these boxes should be 10 x 14 inches and 1½ inches deep in the clear, the lids should fit over them, the bottom of the box must be lined with cork or other soft material; cork is the best as it is tenacious and closes on the pin when it is inserted into it, whilst in aloe pith and such like the pin breaks a hole into it, as it were, and jarring during a long journey may loosen the pin entirely, that it drops out; then the very mischief is loose, as the insect thus freed rolls from end to end of box cutting furrows through the lines, of beautiful specimens, it is enough to burn one’s heart even to think of it.

In the centre of the lid of this box, cut a square hole, 3 x 3½ inches, and on the outside of the lid, over this hole, lay a piece of stout glass of about 4 x 5 inches, which you secure in its place by first fastening strips of stout paper along its edges to the lid with gum arabic, (which adheres to glass), and then paste other larger strips over these with flour paste; this will secure the glass firmly in its place; this glass is, of course, only necessary to be put into boxes that have to pass through the hands of Custom House officers; they see through the glass that the contents are insects, and that ends the matter; but were the glass not in they would rip the boxes open where they are pasted shut, and in so doing damage the contents, besides they would not again be pasted shut, and I leave you to imagine in what state your butterflies will reach their destination.

The box just described is the best I know of; it is light in weight, sufficiently strong, and with careful packing a great number of examples may be safely put away.

Never use a double box for transportation, in which the insects are to be pinned on both sides; such boxes are only fit to stand on the shelves of a closet, but never to send away.

After the bottom of the box has the cork glued securely in, paste clean paper over the cork, when that is dry put a thin layer of clean, raw cotton over the whole bottom; you can secure this by pushing a dull punch or awl through the cotton into the cork, giving the awl a twist and then pulling it out—the cotton will stick in the hole; do this here and there, at spaces of about two inches apart, along the edges.

You are now all ready to put your specimens into the box; you begin at the uppermost corner, facing your left hand, and pin a butterfly or moth in with the forceps, force the pin in tightly and see that the body is all tight and right, then take another butterfly and pin him aside of the first, letting his wings, facing your left hand, cover the wings of the first one you put in, facing your right hand, then take another, and so on until you get to the edge of the box facing your right hand; then begin a second row, at the same end of the box as you began the first, and when you place the first butterfly of this second row try to get the head and thorax between the hind wings of the fly right above him, which will cause his front wings to partially cover the hind wings of the specimen right above him; after he is in place take another, and so keep on; Diagram III A, Plate 2, will make the above clear. This method is called shingling, and is used and probably originated with the German Lepidopterists, and a better or prettier way don’t exist; it is best to have
the specimens in one row, as near of a size as possible, and in the case of large- 
bodied moths always secure the abdomen in the manner described on page 23.

Another plan, somewhat similar to that just described, is to begin at the 
upper corner, facing your left hand, as in previous instance, but, instead of 
pinning from left to right, to pin from top to bottom of box; see Diagram 
III B, Plate 2; but the first plan will be found the best, on trying.

If you wish to send the names of the examples along, the best plan is to 
put on the pin, near the point, of each specimen a little piece of paper with a 
No. corresponding to a No. on a list which you send by mail; thus, No. 5 is 
on the pin of a white butterfly—your correspondent looks on the list you have 
sent him; and finds that No. 5 is Anthocaris Genutia. Here is the plan of 
making out lists:

**ORDINARY FORM.**

<table>
<thead>
<tr>
<th>No. on the pin</th>
<th>Number of examples of each species</th>
<th>NAME.</th>
<th>LOCALITY.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Heliconius Cydno ♂</td>
<td>Bogota.</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>Colias Philodice ♂♀</td>
<td>Penna.</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Colaesis Dido ♂</td>
<td>Para.</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Catocala Nupta ☯</td>
<td>Germany.</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Deilephila Zygothylli ♂♀</td>
<td>Russia.</td>
</tr>
</tbody>
</table>

**FORM IN WHICH THE EXCHANGING IS DONE ON A MONEY BASIS, EACH EXAMPLE HAVING A FIXED PRICE.**

<table>
<thead>
<tr>
<th>No. on the pin</th>
<th>Number of examples of each species</th>
<th>NAME.</th>
<th>Price per example</th>
<th>Price for the whole number of examples</th>
<th>LOCALITY.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Heliconius Cydno ♂</td>
<td>$0.75</td>
<td>$0.75</td>
<td>Bogota.</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>Colias Philodice ♂♀</td>
<td>.05</td>
<td>.30</td>
<td>Penna.</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Colaesis Dido ♂</td>
<td>.50</td>
<td>1.00</td>
<td>Para.</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Catocala Nupta ☯</td>
<td>.15</td>
<td>.15</td>
<td>Germany.</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Deilephila Zygothylli ♂♀</td>
<td>3.75</td>
<td>7.50</td>
<td>Russia.</td>
</tr>
</tbody>
</table>

Always keep a copy of the list, so that if your letter containing it is lost, 
you can make out another for your friend.

Never send this list in the box or package which contains the butterflies, 
unless they are not going out of the country, for the revenue regulations are 
strict as regards sending writing in boxes of goods, and never, on any pre- 
tence, send a letter in a box that is to pass through the Customs; it not only
would get you into trouble, but also your consignee, and the party or company who transport your packages; the penalty would be heavy fines and total confiscation of your box or package.

You now have your butterflies all pinned tightly in the box which presents a beautiful mosaic of tints and shades that the art of man is futile to imitate; after giving them a last admiring look, you may with a brush smear a little creosote on the inside of the lid here and there, not slop it on, but rub a little back and forward with the hair pencil till nearly dry, as it were; then put the lid on and paste it fast with strips of strong paper, so that neither vermin, dust, or anything else can get in—secure every place; thus they are safely shut in, though you can still get a peep at a small portion of the contents through the glass placed in the lid for the delight of the Custom House officials.

You have now four of these boxes filled and pasted shut (the paste is entirely dry by this time); these, when placed on each other, make a bulk of 13 inches long, 10 inches wide, and 8½ high, allowing for some hay or layers of old, soft paper to be placed between each. What you next require is a tight box, made of strong, light, ½ inch wood, to be the clear 16 inches long, 13 inches wide and 12 inches deep; in this you must put fine, dry marsh hay, tow or other soft, springy material, to the depth of 1½ inches, then place in one of your boxes of butterflies, all around which, after it is in, will be 1½ inch space; this space you fill with more hay—don't pack tight, only moderately, so that there is a little spring, as it were—then put on top of this box of butterflies, just packed in, a thin layer of hay or a few thicknesses of old, soft paper, and put in then your next box and pack hay around it, and so on until the four boxes are in; there will be then 1½ inches space between the last box of butterflies and the top of the wooden box enclosing them; fill this with more hay—not too tight packed, yet not too loose—and screw on the lid of the wooden box; don't nail it, by any means—always screw it—do not use more screws than are necessary, but still enough, then direct plainly as follows:

---

**SPECIMENS OF NATURAL HISTORY—INSECTS.**

*Handle Carefully and Keep Dry—Fragile.*

Name of party to receive the box,

No. and Street,

City, Town or Village,

County, Shire, Canton, &c., as the case may be,

Kingdom, Republic, Principality, &c., as the case may be,

Europe, U. S. of N. America, &c., as the case may be.

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**Care of, or via**

**MORRIS EUROPEAN AND AMERICAN EXPRESS,**

*Office, 50 Broadway, New York, N. Y.*
Do this and your box is bound to go safely. You can also put in pamphlets and other printed matter along with your butterfly boxes, but in that case you must state so in the direction under “Specimens of Nat. History,” thus, “Samples of Publication on Nat. History,” or whatever it is; but be careful and, as I before cautioned you, never put any letter or other writing in, also put nothing more in than what you state on the outside of the box to be its contents.

You have now all ready for shipment, and though it has cost you trouble, it has been a pleasure to you nevertheless, and you anticipate many additions and new treasures for your collection as the result of this lot.

If you live in New York, you have only to have your box delivered at the office of the Morris European and American Express, 50 Broadway, N. Y.; get it insured if you wish to—they will do that for you, too, at a moderate rate—and should the vessel go down taking your box with it you will receive its value in money, which, of course, isn’t as satisfactory by half as having your box reach its destination in safety, but, as “man proposes and God disposes,” as our old copy-book headers used to say, it is still better than to get nothing at all.

Having paid your insurance and got the receipt therefor, and bill of lading, you have nothing further to worry about; your box will go safe and be delivered at the door of your consignee, be it in Liverpool or St. Petersburg, Alexandria, Bombay, Cape Town, or anywhere else.

There are also other trans-Atlantic Express Cos., but this is the one that has done my principal business, and has always done it well, safely and rapidly, in less time and at less cost than any other company. Their Central European Office is at present 7 Rue d’Antin, Paris.


Hamburg: P. Lehr’s, 31 Kleine Reichenstrasse.

Bremen: Heinrich Becker, 39 Langestrasse.

If you live inland, your nearest Express or Transportation Co. will take your box to the nearest office of the Morris European and American Express, and give you a receipt for its safe delivery; you can also, if necessary or desirable, write at time of shipment, to the Company’s Office, advising of fact of shipment and giving or asking any information desirable.

If you live in the United States, you can, through this company, have anything brought from Europe or elsewhere, by advising your correspondents to ship by them, as through them you can get a box from St. Petersburg to San Francisco and vice versa.

A box of the size described will cost, to send from New York City to any part of Germany, $4.00; this covers all expense except Custom House Duties, but objects of Natural History are exempt from all duties whatever.

For further particulars of rates, &c., the Morris European and American Express circulars furnish full details, besides much other valuable information; these can be had on application, by mail or otherwise, at any of the Company’s Offices.

If you wish to send from the United States to Canada, or vice versa, the same precautions are necessary and must be observed, as there are also Custom Houses on the Canadian line, but you can forward your boxes, &c., to Canada by the Central Express whose agencies are almost everywhere in N. America.
If you wish to send to California or far west, or the West, it takes longer and is as expensive, and there is more risk than in sending to or from Egypt. The very best way to get your specimens to or from there, if there be not too large a quantity, is to use the mail, but if you have such quantity as will make a bulk of 1 to 1½ cubic feet, use the Express Co.;—it will cost frightfully but can't be helped; or, if yet larger numbers that perhaps your boxes will fill an outer case of 24 ins. x 18 x 18, or larger, then use the Freight lines, but when you deliver your box at the Railroad Freight Office be sure to get a receipt and a duplicate receipt; the first you keep in some safe place, the second you send by mail to your consignee, for you will probably, before the boxes reach their destination (if they have any great distance to go), have to begin to trace where they are from both ends of the line; I had the pleasure once of amusing myself for nearly six months that way; yes, it actually took over five months to get a box from San Francisco to Reading, but the box was a large one and only cost $5.00 freight; had it come by express it would have cost about $50.00.

Finally, never send or allow things to be sent by sailing-vessels when you can use steamers; if you do, the consequences are, that they are ten times as long on their way, and arrive at their destination ruined by mould.

If you live in the United States, never have things sent to you that you will have to try to get out of the Custom House yourself, for they will remain there till you are concerned, for you can't get them out—you can't do it, don't try it even; if ever such an accident does occur, apply directly to a Custom House broker and make up your mind it is going to cost you as much, at least, to get it out of the Custom House as it did to get there from any part of Europe; be resigned, thank God, when after many days you get your box, and guard against the like occurring again in the future.

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THE REARING OF LEPIDOPTERA FROM THE EGG AND CATERPILLAR.

In order to get the eggs of day butterflies it is necessary to confine the live female along with the growing food-plant; this has been successfully done by putting over the plant, if it be a small one, a nail-keg or barrel, out of which the bottom has been knocked; the top of the keg, after it is placed over the plant with the butterfly imprisoned, you cover with a cloth; the female thus imprisoned will deposit her eggs, from which in a few days the young caterpillars will emerge; for these, care must be taken in providing fresh food and keeping out of the reach of ants, &c.; glass jars with gauze over the top answer well for breeding cages for some of the smaller species, but the better plan is to have breeding cages, the skeleton of which is wood and the sides fine iron-wire gauze; within this can be stood flasks of water in which the food-plant may be placed; keep your breeding cages out of the sun, the food fresh, and things generally in as near a state as possible to what they ought to be if the larvae were at large; the size of these cages is not material, but may be made to suit the convenience. The larva will, after undergoing several moults, or throwing off of the old skin, transform into naked chrysalis affixed to the stems or leaves of the food-plant, or to the sides of breeding cage, by
the tail and a filament at each side, as do the Papilio, &c., or suspended by
the tail alone, head down, as do the Vanessas, &c.; in a couple of weeks the
butterfly will emerge and you will thus get specimens in the greatest perfec-
tion; to the entirely uninitiated I might as well mention that the butterfly,
on emerging, will have the wings exceedingly small, scarce one-fifth of the
length that they will be when fully developed; all you will have to do is to
let the butterfly alone—it knows its own business best—and, as soon as it
finds a suitable place to hang on by, its wings will begin to develop or grow
under your eyes, and in a short time, a quarter to a half hour or so, will reach
their full size and beauty, but it takes an hour or so longer for them to get
their strength.

If your larvae be of the fall brood, the fly will not emerge until the follow-
ing spring, remaining in the chrysalis all winter; but if you put the box con-
taining the chrysalids in a warm room, you can thus force them out in a few
weeks, but your specimens are apt to be deformed when this forcing process
is used.

In obtaining eggs and rearing caterpillars of moths, a somewhat different
treatment is necessary.

The female, when confined in anything, will lay her eggs on the sides of
her prison or in any other place, and no food-plant or other plant is necessary.
If you capture a virgin female, or have one to emerge from the chrysalis
for you, of the Saturniidae or some of the Sphingidae, &c., secure her alive in
some convenient place out-doors, and the males will be powerfully attracted
and come to her, from apparently a great distance; thereby she will become
impregnated and you will get fertile eggs, as well as at the time you may
obtain good examples of the males that fly to her; often, when I have had a
female come from the cocoon, in the house, I have had the males to fly into
the windows to her.

With the larva of the Saturniidae and other spinners you may pursue the
same course of treatment as in the case of the day butterflies, but, instead of
transforming into a naked chrysalis like these latter, they will spin a silken
cocoon and undergo their transformation therein. But the Sphingidae, Cith-
eronia, Eacles, &c., which undergo their metamorphosis under ground without
spinning a cocoon, require more judgment and care; for these, the bottom of
the breeding cage should be furnished with 6 to 8 inches ground, moss, saw-
dust, dead leaves, &c., so that the worms, when they are ready, may go into
it; after they have changed to the pupa state they may be put between
layers of moss in an open box, about 6 inches deep, and placed in the open
air on a veranda or in a cool room, where they will remain until the following
spring or summer, when the moths will emerge; it is necessary to sprinkle
the moss, covering the pupas, occasionally with water, or if there be drizzling
rain that is not freezing, as sometimes occurs, set your box out for awhile and
let the contents have the benefit of it. Another way is to sink a half barrel
into the ground and put your moss and pupas in it and let them take care of
themselves; this is getting them into a position as near to nature as is possible,
but you must protect them from rats, &c., by putting an old sieve over the
sunken barrel; this also is necessary, in spring and summer, to prevent the
escape of the moths as they emerge, otherwise they would leave with no
thanks for what you have done for them.

Some larva hybernate over winter; these are the most difficult to deal
with, for if the situation and concomitants are not just such as suits them they
wither up and die. But the best rule to go by, in rearing larva, is to try,
under all circumstances, to keep them as nearly situated, in all possible respects, as they would be in nature.

Some larva may be fed on the growing plant; if it be a tree, there can be a gauze bag tied over the branch on which they are to feed, and when they have stripped that branch, gently remove them to another by bending it towards them; when they have crawled on to the new branch put the gauze over it as before, and so on; of course, when nearly full-grown, the larvae will have to be removed to the breeding box to undergo their change into the pupa state.

The above plan may be adopted in forcing some species of Diurnals to lay their eggs; it is not convenient to get a puncheon big enough to put over an apple tree, but you can enclose the end of a branch in a bag, inside of which the butterfly will lay its eggs.

In rearing larva, I would recommend the rearing of large numbers of even the common kinds, as it takes no more trouble to get food for a hundred than it does for a dozen, and not only can you use all the butterflies that result therefrom in perfect condition, but you may be rewarded with varieties, one alone of which might be sufficient reward for years of entomological labour; for instance, if you get from the willows, in June, the black spine-covered caterpillars of Vanessa Antiopa, and transfer them to your breeding cage and feed them a day or so—you need not trouble yourself to get them until they are nearly full-grown, unless you wish to— they will transform, and in two weeks thereafter will emerge butterflies; now, what may be the result? Well, I will tell you what it was in my case: one emerged with the yellow band of wings twice as broad as in the normal form, and with no vestiges of the band of blue, submarginal spots that are on the ordinary specimens; this was the rare var. Hygeia, Holr., (Lintnerii, Pich), and any one who each successive season secures the larva of V. Antiopa will be sooner or later rewarded with examples of this variety; one friend got three, another one, so you see the value of every season securing as many of the larva of V. Antiopa from the willows as possible, and imprison them in your breeding cage; if they all come out the common form no harm is done—you only need stand your cage on the ledge of the open window, open its door and let them fly out—but if some wondrous variety is among them, how great the reward! This species produces, besides other varieties, one in which the pale yellow covers the full outer half of all wings; another in which the marginal band of primaries, instead of being yellow, is dark like the rest of the wing.

Also secure all the larva of Pyrameis Cardui, which is found on the thistles; it is brown and yellow striped and covered with spines; though a common species, there sometimes occurs a marvelous variety in which the under side secondaries is plain white, and the upper surface is curiously ornamented with white, wedge-shaped marks on the nervures and nervalces near and at their terminations on the exterior margin of wings; this is the rare Vanessa Elym', Rbr., occurring both in Europe and N. America.

Pyrameis Atalanta, also, though much more seldom, produces a variety entirely different from the ordinary form.

Argynnias Idalia produces the variety Ashtaroth, in which the upper side of secondaries is plain black, devoid of spots, and the under surface has only one great, silver spot; of this species, however, the larvae is not yet known, but doubtless, in common with the other Argynnidae, it feeds on violets.

Papilio Asterius gives the splendid variety Calverleyi, in which the basal half of all wings is black, and outer half rich orange. Rear all the larva of
Asterius you can possibly find—it is a species subject to much variation; there is no trouble at all either to find or raise the larva; it is light-green, banded with velvet black, it feeds on the leaves of carrots, parsnips and allied plants; if the worm be touched it sends, from behind its head, a forked, yellow affair which hurts nobody.

I would also say of P. Turnus that it presents innumerable varieties; this species, as is well known, is dimorphic, having two kinds of females, one yellow like the male, and the other black, but there occur forms between the two which are neither yellow nor black, but pepper-and-salt, mixed up of both colours; others there are where the upper surface is black and the under yellow, others where the two wings of one side are black, female, and those on the opposite side yellow, female, others where one side is male (yellow), and the other is female (black).

There are varieties of Catocala Philodice greyish black on the whole upper surface.

Among the moths is also found much variation; Telea Polyphemus occurs in many colours, greyish, brownish, reddish, bright yellow, and almost white, and varies in expanse from 2½ to over 6 inches.

Should any one, by following my suggestions, be fortunate enough to breed any of the above or other curious varieties, I would hold it a great favour if they would communicate the intelligence to me with the full particulars.

I would also ask my friends to direct their attention to the raising of the larvae of Smerinthus Myops, Sm. Asylyus, Sm. Modestus and Darapsa Versicolor, also to secure Catocala Relicta; these species are always in high demand, and will command splendid exchanges. In the appended synopsis will be found the names of the food-plants of the Smerinthii, as well as of many others, to which I beg the attention of the reader, as well as also to remind him once again that I need great numbers of all species, rare as well as the more common, whether butterfly or moth; every year I need and can use thousands.

A FEW FINAL REMARKS.

Entomology, in common with every other earthly pursuit, whether of pleasure or business, requires the expenditure of some money for books, material, occasional specimens, &c., &c., and as these are often to be obtained from a distance, in the larger towns or cities, I would advise you never to send money loose in a letter; if it goes anywhere within the United States use a Post-Office money order, or if there is no money order system at your place, get the letter registered; in sending money to Canada, get the letter containing it registered. If you send money to Europe, and the amount be not too large, use the Post-Office money order system—it is admirable; the amount you deposit with your Postmaster is delivered into the hands of your European friend without any trouble to yourself; if the amount you wish to send be large, then, of course, the better way is to get from the Messrs. Drexel, 3d Street, Philadelphia, or Exchange Place, New York, a gold draft payable to the order of your European correspondent, which you send him by mail.

In Continental Europe every species has its price, according to rarity or beauty, and in exchanging abroad it is almost invariably necessary to also affix a cash value to each species you send; as we have no fixed prices in this
country, it is a little difficult to do so, but by comparing our insects with the European species of like rarity or commonness, we can place to them the same or approximate prices.

Neatness in expanding and perfection of specimens have been too lightly heeded heretofore in this country, as the collector seemed to think if he had captured the insect it was all right, no matter how much it was battered or defaced; it is ever well to bear in mind that one fine, faultless specimen is worth no end of rubbish, but still, as I have before remarked, in the very rare species we must be satisfied to take the best we can get; but if all our collectors would take heed and not put Sphinx pins in Geometrae, and some examples near the head of the pin and some two-thirds down, it would enhance the value of their examples very considerably.

It must be borne in mind that many species, especially Exotics, can only be gotten by purchase; as the expenses of traveling and living in some countries are very great, the products of the collector’s labours must bring him money to meet those expenses, and as the major part of his collections are generally not the rarest species, it is but reasonable to suppose that the rare species will have to pay for what he loses by the small price of the commoner kinds. Though by purchasing a large number or quantity together, often times very great rarities are secured at a merely nominal figure; in the prices (except of the European species) there is no set value—the law of demand and supply regulating it; a species that you may get to-day for a dollar may be worth, in a week, five, or what may be five to-day may in a short time fall to one.

As a rule, the species of Siberia and Amoorland are the most expensive, then come certain splendid exotics, such as the glorious Agrias, many of the Papilio, Saturnidae, &c. Papilio Antimachus, Dru., from W. Africa, of which but few specimens are known, all male, would bring, if it could be at all obtained, almost any price, and there are other species that would command any price. almost, if they could but be obtained.

Then again, many very handsome species, such as Papilio Sarpedon, P. Agamemnon, P. Evemon, P. Phaeton, Callicore Clymena, Vict. Sthenales, Agoronia Arethusa, A. Peronia, &c., &c., &c., can be had at prices ranging from 25 cents to $1.00 apiece. But as the student gets deeper interested in the study, and better acquainted with the various species through the figures and descriptions of the different authors, he will better appreciate their value.
MOTHS, AS SHOWN ON P. X.

*Papilio Turnus*.

Six or seven.

E.

Shoulder covers.

Wing.

y to the Papilionidae.

Papilionidae and Morphidae.

Hind Wing.
country, it is a little difficult to European species of like rare
sane or approximate prices.

Neatness in expanding and heeded heretofore in this country captured the insect it was all defaced; it is ever well to bear worth no end of rubbish, but a rare species we must be satisfied collectors would take heed and examples near the head of the hance the value of their example.

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Apilio Turnus).

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Then again, many very rare Agamemnon, P. Evemon, P. Ageronia Arctius, A. Feronia, from 25 cents to $1.00 apiece, the study, and better acquaint and descriptions of the different
STRUCTURE OF BUTTERFLIES AND MOTHS, AS SHOWN ON PLATE 1, FIGS. I-X.

I. BODY, UNDER SIDE, (of Papilio Turnus).

A. HEAD.
   a, a. Antenneæ, or feelers.
   b, b. Eyes.
   c, c. Palpi.
   d. Tongue, or Haustellum.

B. THORAX.
   e, e. Pedes antici, fore legs.
   f, f. Pedes medii, middle legs.
   g, g. Pedes postici, hind legs.

C. ABDOMEN.
   h, h, h, h. Segments, of which there are six or seven.
   i. Anal extremity.

II. BODY, ABOVE.

   a. Collar.
   b, b. Scapulæ, Tegulæ or Pterygodes, shoulder covers.
   c, c, c, c. Abdominal segments.

III. PRIMARY, OR FORE WING.

   a, a. Costal nervure.
   b. Sub-costal nervure.
   b 1, b 2, b 3, b 4, b 5. Sub-costal nervules.
   c 1, c 2. Discoidal nervules.
   d. Median nervure.
   d 1, d 2, d 3. Median nervules.
   e. Sub-median nervure.
   f. Internal nervure, confined almost solely to the Papilionidæ.
   g 1. Upper disco-cellular nervule.
   g 2. Middle disco-cellular nervule.
   g 3. Lower disco-cellular nervule.
   h. Interno median nervule, found only in Papilionidæ and Morphidæ.

IV. SECONDARY, POSTERIOR OR HIND WING.

   a. Costal nervure.
   b. Sub-costal nervure.
   b 1, b 2. Sub-costal nervules.
   c. Discoidal nervule.
   d. Median nervure.
   d 1, d 2, d 3. Median nervules.
   e. Sub-median nervure.
   g 1, g 2. Disco-cellular nervules.
   k. Pre-costal nervure.
V. Leg.

a. Coxa.
b. Trochanter.
c. Femur.
d. Tibia.
e. Tarsi.
f. Calcarea, spurs.

VI. Side View of Head and Thorax of Vanessa (larger than in nature).

a. Abortive fore legs which lay against the breast.
b. Pedes medii.
c. Pedes postici.
d. Tongue.
e. Palpi.
f, f. Clubs of antennae.
g, g. Tips of clubs.

VII. Front View of Above.

a, a. Abortive fore legs.
b, b. Palpi.
c. Tongue.

VIII. Side View of Body of Papilio.

a. Fore legs.
b. Middle legs.
c. Posterior legs.

IX. Primary or Fore Wing of Catocala (C. Parta).

A. Basal area or space.
B. Middle area or space.
C. Limbal area or space.

a. Transverse anterior line.
b. Transverse posterior line.
c. Basal line.
d. Sub-marginal line.
e. Reniform spot.
f. Sub-reniform spot.
g. Sub-apical shade or dash.

X. Posterior or Hind Wing of Catocala (C. Parta).

a, a. Marginal band.
b, b. Median or mesial band.
c. Discal lune or mark.
d. Frenulum, simple in male and forked or double in female.
THE TERMS AND ABBREVIATIONS USED IN WORKS ON LEPIDOPTERA.

_Abdomen._ The hind part of the body._Vide_ Pl. 1, f. I, c.

_Abdominal groove._ The concave shape of the abdominal margin of the primaries, which enclose the abdomen while at rest, in some families of the Rhopalocera, in the Satyridae and Nymphalidae, for instance.

_Abdominal margin._ The margin or edge of wings nearest to abdomen._Vide_ Pl. 1, f. IV.

_Abdominal pouch._ In the females of _Parnassius_ and _Euryxus_, a corneous appendage attached to the under side of abdomen near the anal extremity.

_Abdominal segments._ The rings or annulations composing the abdomen._Vide_ Pl. 1, f. I, C, h, h. h

_Ab._ An example._Aberration,_ widely differing

_Aberration, Lat._ from the parent

_Abänderung, Ger._ form, as in the cases of the aberrant _Vanessa Hygeia_ (V. Lintnerii, Fitch), _Pyramis Elymi_, _Argynnis Ashtaroth_, etc.

Aberrant form. _See_ aberration.

_Acuminate._ Sharply pointed.

_Ales anteriores._ Fore wings.

_Ales posteriores._ Hind wings.

_Alb._ White.

_Albis._

_Alba._

_Album._

Albinus. Relating to albino forms.

_Anal._ Relating to the hinder extremity of the abdomen.

_Anal angle._ The angle of wings nearest to extremity of abdomen._Vide_ Pl. 1, f. III, IV.

_Anal eye._ An eye-like spot at or near anal angle of hind wings.

_Anal extremity._ Hind extremity of abdomen.

_Anal ocellus._ _See_ anal eye.

_Anal spot._ A spot near the anal angle of hind wings, distinguished from the anal eye by being plain and generally of but one colour, whilst the ocellus is formed of consecutive rings of various colours, thus forming an eye-like spot.

_Anal segment._ The last segment, ring or annulation of the abdomen.

_Anal tuft._ The brushes or tufts of hair or hairy scales which ornament the extremity of the abdomen in some species, most conspicuous in _Macroglossa_ and allies.

_Anal valves._ On the last segment of the abdomen, conspicuous in the males of the genus _Papilio._ _Vide_ Pl. 1, f. I, i.

_Analogue._ A species of one country that is analogous to that of another: thus, _Colias Eurytheme_ is the N. American analogue of the European _C. Edusa_, or _Papilio Zolicaon_ that of _P. Machaon_, etc.

_Angulated._ Where the exterior margin of the wings is dentated and pointed, as in _Grapta_, _Vanessa_ and _Junonia._

_Annulated._ Ringed.

_Annulations._ Rings or joints, as of the abdomen, antennae, etc.

_Antennae._ Feelers._Vide_ Pl. 1, f. I, a, a.

_Anterior wings._ _See_ alae anteriores._Vide_ Pl. 1, f. III.
Apex, The outermost angle
Apices, pl. of wing, formed by the
Apical angle, junction of the costal and exterior margins.—Vide Pl. 1, f. III, IV.
Apical. Relating to the apex.
Apical dash. A dark mark on primaries near the apex in many of the Noctuae, especially the Catocalae.
Arcuate, Applied to the costa
Arcuated of primaries when much rounded or curved in the form of a bow, as in some of the Attacli.
Area. The surface or a part of the surface of the wing; as basal area or middle area.—Vide Pl. 1, f. IX, A, B, C.
Argenteous. Silvery.
Articulations. Joints.
Apterous. Without wings, wingless.
Auroral spot. The bright orange-coloured spot on the apical part of primaries in the genus Anthocharis.
Band, A rather even and some-
Bar. what broad stripe.
Base, That portion of the wings
Basis, or antennae which join the body or head.
Basal. Belonging to, or at the base.
Basal area. The area of the wing nearest the base.—Vide Pl. 1, f. IX, A.
Basal hairs. The hairs which clothe the parts of the wing nearest the body; in many of the Heterocereus these are laid on very heavy and thick.
Basal line. The line on primaries nearest the base.
Basal patch. The patch of colour nearest the base.
Bifid. Forked, or divided in two.
Blind-eye. A spot without a pupil.
Bloom. The fine violet dust-like appearance conspicuous on the pupas of Catocala, resembling that on plums and some other fruit.
Blotch. A rather large, irregular-formed patch or mark.
Calcareae. The spurs at the end of the tibias.—Vide Pl. 1, f. V, f.
Caterpillar. The larval or embryonic state of Lepidoptera.

Caudal. Appertaining to the tail.
Caudal horn. The horn on anal segment of the larva of Sphingidae.
Caudal appendage. Tail-like processes on the exterior margin of the hind wings of many species of butterflies and moths.
Caudate. Tailed.
Cells, The spaces between the
Cellulae, nerves and veins.
Chrysalis, The second transforma-
Chrysalid, tion of Lepidoptera. The pupa. A mummy-shaped affair, incapable of feeding, suspended in some instances by the tail; in others it lies concealed in the earth, or else is protected by a cocoon.
Cilia, Fringes or hair-like scales
Ciliae, on the exterior margins of the wings of Lepidoptera.
Ciliated. Fringed.
Cinereous, Grey. Ashen col-
Cineraceous.oured.
Clavate. Club form.
Clavate antennae. Antennae terminating in a club.
Club. The heavy terminations of the antennae of day butterflies.—Vide Pl. 1, f. VI, f.f.
Clypeus. Front plate of the head.
Cocoon. A case formed by many of the larvae of the Heterocereus previous to their changing to the pupa state. They are sometimes all silk, more or less gummed, and sometimes the hairs of the caterpillar itself help to form it, or bits of dead leaves, etc., enter into its composition.
Coll. Collectia, collection, museum.
Collar, The part immediately be-
Collare, hind the head.—Vide Pl. 1, f. II, a.
Common. Found in more than one species, or, if applied to ornamentation, when the same marks or colours are "common to both wings, etc."
Concomate. Excavated or hollowed out in a curved form.
Concolor. The same color.
Concolorous. Of the same color.
Confluent. Running into each other: as confluent spots, spots running into each other.
**Terms and Abbreviations.**

**Congener.** Belonging to the same genus with other species.

**Congeneric.** Of the same kind.

**Contiguous.** Joining one another: as "contiguous spots."

**Convex.** Curved outward.

**Cordate.** Heart-shaped.

**Ciliate.** Leathery, tough, stiff.

**Corneous.** Horn of horn-like substance.

**Corneous pouch.** See abdominal pouch.

**Costa.** Front or anterior edge of the wing.

**Costal.** At the costa.

**Costal nervure.** The great vein on the anterior margin.

**Costal vein.** The anterior margin.

**Oxal.** The first joint of the leg which connects it with the body.—Vide Pl. 1, f. V, a.

**Crenate.** Having round teeth; scalloped.

**Crenulated.** Having small round projections.

**Crescent.** A mark the shape of the moon in her first quarter.

**Crepuscular.** Flying in the twilight, or just before dawn.

**Crepuscular Lepidoptera.** Formerly used to designate the Sphingidae, a family of Heteroceres that fly in the twilight or gloaming.

**Crested.** Ornamented with a crest of raised scales on the back of the thorax, as in the case of many of the Noctua.

**Ocellated.** Hooded.

**Cuprous.** Copper-coloured, or of a coppery tinge.

**Dentate.** Toothed, serrated.

**Dentated.** With teeth, as when the margin of a wing is "dented" or toothed.

**Denticulate.** With small teeth or Denticulated, points.

**Desideratum.** Pl. Desiderata. Something that is lacking or wanting; as "any new species of Colias or Argynnis are always great desiderata with me."

**Diaphanous.** Transparent; as in the genus Ithomia, where the wings are clear, and nearly destitute of scales.

**Dilated.** Expanded.

**Dimorphic.** Occurring under two forms, as in the case of Pupilio Turnus, which has a yellow female resembling the male, and another female entirely black; or, as with the Collades, which have, in addition to a normal-coloured female, another that is quite white.

**Dimorphism.** The state of being dimorphous.

**Disc.** Vide Pl. 1, f. III.

**Disk.**

**Discal.** Pertaining to the disc.

**Discal bar.** A bar or stripe on or very close to the disco-cellular nerves.

**Discal spot.** A spot situated at the disco-cellular nerves.

**Discoidal veins.** Vide Pl. 1, f. III, IV, g 1, g 2, g 3.

**Discoidal cell.** Vide Pl. 1, f. III, IV.

**Diurnae.** Day butterflies, Rhopalomeros.

**Diurnal.** Pertaining to day, as the butterflies that fly in the day time only are called diurnae.

**Divergent.** Apart from each other, as divergent rays.

**Dorsal.** Pertaining to the back.

**Dorsal bar or stripe.** A band or stripe on the back.

**Emarginate.** Notched.

**Emarginations.** Notches or indentations, as in the exterior margins of wings of many species of butterflies and moths.

**Entire.** When used in connection with the wings, it means the edges are of an even curve, without indentations or projections.

**Etc.** Et caetera, and so on; in German u. s. w., and so weiter.

**Ex.** Specimen.

**Ex larva.** From the larva; reared or raised from the larva.

**Ex ova.** From the egg; raised from the egg.
Ex parte. One-sided; ex parte statement, a one-sided statement.

Expanse. The greatest width across from tip to tip of the expanded fore wings or primaries.

Exserted. Protruded, stuck out.

Externally. Outwardly; towards Exteriorty. The exterior or outer margin, etc.

Exterior margin. The outer margin. Vide Pl. 1, f. III, IV.

Exuvia. Cast-off skin, as of caterpillars when they molt.

Falcate. Hooked, sickle shaped, as in the primaries of some of the Attaci.

Falcated. Sickle-shaped.

Family. A group of allied genera, Familia. As the family Nymphalidae, etc., etc.

Fascia. A rather broad transverse band.

Fauna. The animals of any given territory; thus, the insect fauna of Labrador embraces all the insects found within the limits of that country.

Femur. Thigh, the third joint of leg. Vide Pl. 1, f. V, c.

Fenestral. Windowed; used in connection with those Lepidoptera which have many transparent spots on the otherwise dark surface of the wings, as in case of Heleona Fenestralia, an Australian species.

Ferruginous. Iron rust coloured, colour of burnt sienna.

F., Fig. Figure; representation of an object or specimen.

Filiform. Thread-like.

Flavus. Yellow.

Flava. Yellow.

Flavum. Yellow.

Flavism. Yellowness; as in a yellow example of a butterfly in which the parent and normal form is some other colour; for instance, in the yellow females of Anthocharis, Sara, and Pieris Sinemirrit, which are exceptions to the ordinary colour of those species, which is white.

Flavescent. Of a yellowish cast, with a tendency towards yellow.

Flexuous. Sinuous, winding; as a flexuous line is a winding, irregular line.

Foliaceous. Leaf-like; as in the under surface of Gonepteryx Clarinde, Kallima Inachus, etc.

Fore wing. Primary, anterior or superior wing. Vide Pl. 1, f. III and IX.

Fovea. A depression, like in the middle of the upper surface of hind wings of Tecophora Fovea, from which peculiarity it has derived its name.

Frenulum. A strong nerve or bristle, emanating from the costa of hind wing near the root. This is only found in such Lepidoptera as fold their wings while at rest, like the Catocalae and other Noctuae; in the male it is single, in the female double or bifid. Vide Pl. 1, f. X, d.

Fringe. See cilia.

Fringes. See cilia.

Fuliginous. Sooty, dusky, smoke-coloured.

Fulvous. Brownish-yellow, tawney.

Furcate. Forked.

Furcated. Forked.

Fuscous. Blackish brown.

Fusiform. Spindle-shaped, tapering at both ends; thus, fusiform antennae are antennae which are thickest near the middle.

Gamma. The third letter in the Greek alphabet. A silver spot in the shape of a gamma adorns the upper wings of several noctuae, among them Plusia Gamma, L., which has very appropriately received its name from that circumstance.

Ganglion. Pl. Ganglia. Centres of the nervous system, from which are thrown off the various nerves.

Geminate. Twin, in pairs; as geminate spots are two spots nearly alike in size, and close together.

Generation. Brood.

Generatio prima. First or spring brood.

Generatio secunda. Second or summer generation or brood.
Genital armour. The outer casing, anal hooks, etc., of the organs of generation.


Glabrous. Smooth; devoid of hair or granulations.

Glaucous. Hoary, or greyish-blue or green.

Globose. Prominently round; like a globe; globular.

Granulated. Rough, like the grain of coarse stone, full of innumerable little prominences and wrinkles.

Griseous. Light grey, composed of a combination of black and white atoms; grizzled.

Hab. Habitat. Locality, home.

Hastate. Shaped like the head of a halberd or dart.

Hatched. Closely marked with无数 number short, transverse lines.

Haustellum. Proboscis, sucker.—Vide Pl. 1, f. I, II, VI, d.

Haustellated. Having a proboscis-like tongue.


Heteroceres. The second of the two great divisions of Lepidoptera, embracing the Sphinxes, Bombyces, Noctuae, Geometrae, Pyralidina, Tort ricina, Tineina, Micropteryxina, Pterophorina and Alucitina, the greater part of which fly at night.

Heterocerous. Pertaining to the Heterocera.

Hexapod. A six-footed animal, as the true insects.

Hexapodous. Having six feet.

Hind wing. The inferior wing, or secondary.—Vide Pl. 1, f. IV and X.

Hirsute. Hairy; covered thickly with hair, as the larvae of the Arctiidae.

Hyaline. Transparent like glass. See diaphanous.

Hybrid, Mongrel, bastard.


Imago. The final and perfect state of an insect.

Immaculate. Spotless, pure; devoid of all spots or markings whatever.

Inferiors. Hind wings, Secondaries. Vide Pl. 1, f. IV and IX.

Inferior surface. Under surface.

Inferior wings. See inferiors.

In. Initio. In the beginning; commence¬ment.

Inner angle. Posterior angle, formed by the meeting of the exterior and interior margins.—Vide Pl. 1, f. III.

Inner margin. The margin or edge of wings nearest the abdomen. Vide Pl. 1, f. III, IV.

Internally. Inwardly, towards the thorax.

Interiorly. Inwardly, towards the thorax.

Interrupted. Broken; as, an inter¬rupted line is a broken line, etc.

Iridescent. Showing the reflection of the prismatic or rainbow colours.

Irrorate. Powdered with minute scales or dots.

Isolated. Alone, by itself; as, an isolated spot, mark or dash, etc.

Labial palpi. Small organs attached to the labium.

Labium. Lower lip.

Labr. Upper lip.

Lamellate, Formed of thin plates, leaves or scales.

Lamelliform. In the form of a plate or scale.

Lanceolate. Drawn out to an acute point; lance-shaped.

Larva. The first stage of an insect; the caterpillar.

Lateral. On the sides; pertaining to the sides.
Terms and Abbreviations.

Lat., Latin.
Latinus. Latin.

Lepidoptera. The third great order of insects, according to Linnaeus. They were formerly divided into Papilio, or day butterflies, Sphinx, or those which flew at dusk and dawn, and Phalaena, or the night-fliers, but at present we recognize but two great divisions, the Rhopalocera and Heterocera; the former having clubbed or knobbed antennae and the latter with these organs of every form, as filiform, fusiform, pectinate, etc., etc.

Lepidoptera Rhopalocera. The butterflies that fly by day, and having knobbed antennae. German, Tag-falter.

Lepidoptera Heterocera. Moths, night butterflies, comprising more than nine-tenths of all the Lepidoptera. German, Nachtfalter, or Nacht-Schmetterling.

Lepidopteron. A butterfly or moth; a Lepidopterous insect.

Lepidopterous. Pertaining to Lepidoptera.

Limbal area. The outer or marginal area or space of the wing. Vide Pl. 1, f. IX, C.

Linear. Long and narrow, like a line.
L. c., At the place cited.
Loco citato. At the place cited.

Longitudinal. Lengthwise; from base to extremity of wing, from head to end of body, etc.

Lune. A moon-shaped spot or mark.
See crescent.

Lunate. Crescent-shaped.

Lunule. A small crescent or moon-shaped mark.

Lumular, Crescent-shaped.

Lumimated. Crescent-shaped.

Luteous. Yellow.

Macular. Spotted; composed of Maculated spots; as, a macular band is a band formed of spots.

Macro-Lepidoptera. Great or large Lepidoptera, comprising all the Rhopalocera, and the Heterocera to Pyralidina.

Major. (Lat. comp. of Magnus, great.) Greater; as, the major part, the greater part, etc.

Mandibles. Upper jaws.

Marbled. Variegated with irregular lines or blotches of two or more colours.

Margin. The edge.

Marginal. At or on the edges of the wings.

Marginal band. The terminal band of the wing, extending to the exterior margin or edge.

Marginal spots. Spots at the exterior margin of the wings.

Maxilla. Lower jaws.

Maxillary palp. Minute organs attached to the maxillae.

Median. On or near the middle of the wing.

Median cell. The space between the cross nerve and medians. Sometimes it is divided by a longitudinal nervure into two parts, which are called the anterior and inferior median cells.

Median nervure. Vide Pl. 1, f. III, IV, d.

Median nervules. Vide Pl. 1, f. III, IV, d 1, d 2, d 3.

Median space. Middle field of wing. Vide Pl. 1, f. IX, B.

Median vein. See median nervure.

Melanism. In a black state, opposite of Albinism. Like the black female forms of Papilio Turnus.

Melano. A black form or variety.

Melanotic. Relating to melanism.

Mesial band. A band or stripe transversely crossing the middle of the wing, as in the hind wings of the Catocalas.

Meso-thorax. Second or middle ring of thorax.

Metathorax. Third or last ring of thorax.

Micro-Lepidoptera. Little Lepidoptera or butterflies; commencing with the Pyralidina and continuing to and embracing the Alucitina, the last in the great order Lepidoptera.

Middle area. See middle space.
Minor. Smaller; as in Asia-Minor, smaller or lesser Asia.

Mould. To cast off the skin; this is done by caterpillars a number of times before they change into the chrysalis, and in many instances each successive mould results in great difference in their appearance.

MSS. Manuscript. Manuscript description; manuscript name; a name or description as yet unpublished.

Mucronate. Terminating in a short, sharp process, as do the chrysalids of Euxes Imperialis, Anisota Senatoria, etc.


Nerved. The main ribs or veins that support the wings.

Nervules. Branches of the nerved; small nervules; veinlets.

Neuration. Arrangement of the nerved and nervules; nervation; venation.

Niger, 
Nigra, } Black.
Nigrum.

N. in litt., } Manuscript names; 
Nomen in litteris. } unpublished names —names that have been only used in correspondence, or in a private collection, but not published, and of course not valid.

N., } Name.
Nomen. }

Nomenclature. The technical terms used in any particular branch of science, or in any order, family or group, etc., in any branch of science.

Nov. sp. New species.

N., } Number.
No., }

Nymph. The old term for pupa.

Obconic. Conical, but with the point reversed; inversely conical.

Oblique. Slanting; diagonal to longitudinal and transverse.

Obliterate. Very faint.

Obscura, } Obscure; dusky.
Obscurum. }

Obsolet, } Wanting, or scarcely
Obsolensce. } discernible; obscured.

Obtuse. Blunted at extremity.

Occiput. The base or bind part of the head.

Occipital. Pertaining to the back of the head.

Ocelli. Simple eyes situated in the rear of the large, compound eyes.

Ocellus. An eye-like spot, like on the hind wings of Smerinthus Ocellata, S. Execestus and Hyperchera Varia.

Ocellated. Marked with an eye-like spot, formed of concentric rings of various colours.

Ochraceous. Color of ochre or yellow clay.

Ocelli. Large, round, compound eyes, occupying a large portion of the front part of the head.

Olivaceous. Olive colour; a sort of greenish-brown, remarkable only for ugliness.

Omnis. All.

Onisciform. Shaped like a wood-louse, as are many of the larvae of the Lycaenidae.

Orbicular, } In the Noctua, a
Orbicular spot. } round spot in the median cell of the fore wings, interior to the reniform.

Original form. The parent form; stem form, from which aberrant or variable types may, in time, be developed.

Original type. The example or specimen from which a species was first described.

Oval,

Ovate, } Egg-shaped.

Ovoidal.

Ovipositor. The organ used by insects for depositing their eggs.

Oviposition. Depositing of eggs.


P. Page.
Palpi. Jointed organs attached to the head; in the Papilio they are small and do not project, but in the Nymphalidae they stand out beyond the forehead, and in Libythea they are of enormous length.—Vide Pl. 1, f. VII, b, b

Palpi. Appendage growing above the palpi in some of the Heterocera, but not present in all species.

Patagia. Shoulder tippets, covering the base of the wings.

Patch. A space or large blotch; as, "a patch of grey near the inner angle."

Pectinate, | Comb-like; like the Pectinated. | pectinated antennae of the Saturniidae, which are furnished with regular processes arranged as are the teeth of a comb.

Pedes antici. Fore legs.—Vide Pl. 1, f. VI, a.

Pedes medio. Middle legs.—Vide Pl. 1, f. VI, b.

Pedes postici. Hind legs.—Vide Pl. 1, f. VI, c.

Pilose. Covered thickly with down.

Planche, Fr. Plate; table.

P. Plate; table.

Plumose. Resembling a feather; featherly, plume-like.

Polymorphic. When several different forms occur in the same species, as in the case of the E. Indian Papilio Memon, L., which has many forms of the female, some with heavy tails, others tailless like the male, all differing more or less from each other in colour and ornamentation.

Porrected. Stretched, or pushed forth.

Posterior margin. Hind margin. See exterior margin.

Posterior wings. Secondaries; hind wings.—Vide Pl. 1, f. IV and X.

Primaries. Fore or anterior wings; superiors.—Vide Pl. 1, f. III and IX.

Proboscis. See Haustellum.—Vide Pl. 1, f. I, II, VI, d.

Process. A projection, as the fleshy processes on the larva of Papilio Philenor.

Produced. Lengthened out; elongated.

Pro-legs. The fleshy legs of caterpillars, sometimes called false legs.

Prothorax. First or front division of thorax.

Pruinose. Hoary; frosted.

Pseudo. Meaning false, as in Lycæa Pseudargiolus, false or counterfeit Argiolus, so named from its close resemblance to Lycæa Argiolus.

Pterygodes. Shoulder covers, called also scapulae.—Vide Pl. 1, f. II, b, b.

Pubescence. Soft, fine hairs.

Pulverulent. Dusty.

Pupa. Chrysalis; the second stage of an insect.

Pupilled. The centre of an ocellus or eye-like spot.

Pupilled. Provided with a pupil; Pupillated. as, "all the sub-marginal spots are pupilled."

Quadrate. Square.

Ray. Long, bright marks or streaks diverging from each other.

Recurved. Curved backwards.


Reticulate. Covered with fine lines.

Reticulated. Crossing each other like net-work.

Retractile. Having the power of drawing in, or contracting.

Rhopalocera. The first of the two great divisions into which the Lepidoptera have been divided. They all fly by day, have the antennæ terminated by a knob or club, and comprise the Papilionidae, Pieridae, Lycæidae, Erycinidae, Libytheidae, Nymphalidae, Acraeidae, Danaidae, Satyridae and Hesperidae, though the latter have strong claims to belong to the Heterocera.

Ribs. Veins; nervures. German, Rippe or Rippen.

Ruber, | Red.

Rubra, | Red.

Rubrum, |
**Rudimentary wings.** Only partially developed or abortive wings which are stunted or imperfectly formed, and are incapable of producing flight, as in the females of the genus Onomya and Hybernia.

**Setaceous.** Like a bristle.

**Setiform.** Bristle-shaped.

**Setose.** Covered with bristles; bristly.

**Simple.** Plain; opposed to compound; as, "simple eyes.”

**Sinoate.** Winding; waved; irregu-

**Sinoous.** Lar; sinusous lines; winding or undulating lines.

**Sinus.** A deep indentation.

**Spatulate.** Spoon-shaped.

**Sp.,** A distinct kind, differing

**Species.** From others in the same genus.

**Sp. Darwin,** Darwinian

**Species Darwiniana.** A species. Species which, through climatic or other

**Spiracles.** Breathing holes, situated in the sides of the segments, in both larva and imago, and are connected with the two large tracheae, which extend along the sides of the body.

**Spur.** A small spine on the tibiae.

See calcarea.—Vide Pl. 1, f. V, f.

**Spurred.** Furnished with spurs.

**Squamose.** Scaly, covered or clothed with scales.

**Squamation.** Scallopedness.

**Stamm, German.** Stem.

**Stammform, German.** Stem form; parent form, from which other later forms have originated.

**Stemmata.** Simple eyes. See Ocelli.

**Sternum.** The lower part of the thorax; the breast.

**Streak.** A narrow stripe.

**Stria. Pt. Striae.** A small line; properly, a depressed or indented line.

**Striated.** Marked with fine lines.

**Sub.** Prefixed to other words, modifies or lessens their force; thus sub-

**Hyaline means partially hyaline;** sub-terminal, near the margin.

**Sub-apical.** Near the apex.

**Sub-apical dash.** A not very large dark mark starting from the exterior margin of primaries not far from the apex; most noticeable in the Catocalidae.

**Sub-basal.** Near the base.
Sub-Costal. Near or below the costa.
Sub-hyaline. Partly hyaline or transparent.
Sub-marginal. Near the margin.
Sub-median. Below the middle of the wing.
Sub-quadrate. Nearly square.
Sub-reniform, } A spot below the 
Sub-reniform spot. } reniform on the 
fore wings of the noctuae.
Sub-terminal. Near the extremity or 
end, as a sub-terminal joint is the 
joint next to the last.
Sub-terminal band. The band nearest 
the last or marginal band, or near 
without being on the margin.
Suffused. Clouded or obscured with 
a darker colour.
Suffused variety. A variety or form 
in which some one colour of the 
wing has predominated and ob- 
scured wholly or in part the other 
colours, as in the instance of Argyn- 
nis var. Ashtaroth, Pyrameis var. 
Elymi, and others; but it is a freak 
of great rarity.
Suite. A large number or line of one 
species; See series.
Superiors, } Upper or fore-
Superior wings. } wings, primaries.— 
Vide Pl. 1, f. III and IX.
Superior Surface. Upper side or surface.
Surname. Indentation or joint between 
the segments.
Synonym. } A different name given 
Synonymous. Meaning the same; as, 
thus: "in Berks County, Pa., to be 
a scientist is synonymous to being a 
lunatic."
Synopsis. A combined, condensed 
description of all the families, gen-
ers, etc., composing a whole order.
Tarsus. Pl. Tarsi. The foot; the 
fifth and last division of the leg. 
Vide Pl. 1, f. V, e.
Tawny. Buff; greyish-yellow.
Tegulae. Shoulder covers; Pterygodes. 
Vide Pl. 1, f. II, b, b.
Tentacle. A process proceeding from 
the head in some larva; it is either 
simple or branched. In the larva 
of the Papilionidae it is Y-shaped, 
and can be protruded or drawn en-
tirely in, at the pleasure of the 
animal.
Tentaculated. Provided with Tenta-
cles.
Terminal. Belonging or pertaining to 
the extremity or end.
Terminal joint. The last joint as "ter-
mental joint of abdomen."
Terminal segment. The last annula-
tion or joint.
Terminal horn. A horn situate on the 
top of the last segment in some 
caterpillars. See Caudal horn.
Tessellate, } Checkered like a chess-
Tessellated. } board.
Thoracic. Belonging to the thorax.
Thorax. The second great division 
of the body, situate between the 
head and abdomen. The legs are 
attached to this part.—Vide Pl. 1, 
f. I, B.
Tibia, Pl. Tibia. The fourth joint of 
the leg.—Vide Pl. 1, f. V, d.
Type. The ends of the clubs of the 
antennae.—Vide Pl. 1, f. VI, g, g.
Tooth. A prominence on the exterior 
margin of wings, generally a more 
or less prolongation of the veins, 
the hollow spaces between such 
prominences are called emargina-
tions.
Toothed. Provided with little pro-
jections.
Trachea. Air tubes; respiratory 
organs; these open by a number 
of breathing holes, called Spiracles, in 
the sides of the body of both larva 
and perfect insect; in the latter the 
principal of these are situated in the 
first abdominal segments and the
thorax. In the larvae there is, on each side, one on each segment to the number of ten or eleven.

Transverse. Across the wing from costal to interior margin; or, the body from side to side.

Transverse line. A line crossing the wing from costal to interior margin.

T a. line. In the Cato-

Transverse anterior line. calas, the line that divides the basal from the middle area on the fore wings.—Vide Pl. 1, f. IX, a.

T. p. line. In the Cato-

Transverse posterior line. calas, the line that divides the median from the limbal or outer area on the fore wings.—Vide Pl. 1, f. IX, b.

Tri-tailed. With three tails on the exterior margin of secondaries or hind wings.

Trochanter. The second joint of leg; it is between the coxa and femur. Vide Pl. 1, f. V, b.

Truncate. Terminating abruptly, Truncated. as if cut squarely off.

Tubercles. Small wart-like projections.

Tuberculose. Covered more or less with tubercles.

Type. The example or Type specimen. specimen from which a species was first described.

Under surface. The under side, the inferior surface.

Undulate. Wavy, sinuous.

Unguis. A claw.

Unicolorous. Of one colour, as when an insect is all of one colour it is unicolorous.

Upper surface. Upper side, superior surface, the side exposed to view when the wings are spread.

V., Species that from climate, food or other influence, present differences (1) Variety, in colour, shape or size Variation) from the typical form; thus some butterflies that are tailed in India and China are devoid of those appendages in the Polynesian Islands, and some that are pale coloured become darker as they occur further northward.

Veins. See nervures.

Veinlets. See Nervules.

Venation. See Neuration.

Ventral. Pertaining to the under side of body or abdomen.

Ventral band. A longitudinal band, Ventralline stripe or line on the Ventrall stripe. under side of the abdomen.

Verrucose. See tuberculose.

Violaceous. Inclining to violet or purple.

Villos. Covered with long, soft hairs.

Vitreous. Glassy; transparent. See diaphanous.

♂ Male.

♀ Female.
AN ALPHABETICAL AND EXPLANATORY LIST OF LOCALITIES OF WHICH THE LEPIDOPTEROUS FAUNA IS MORE OR LESS KNOWN.

ABYSSINIA (Arabia). A country in East Africa, bordering on the Red Sea on the north-east, and on Nubia on the west.

ADELAIDE. The capital of South Australia.

AFGHANISTAN. The country of the Afghans; lies between Persia and Hindostan, south of Turkistan, and north of Beloochistan.

AFR. Africa. Afrique.

AFRICA CENT. Interior of Africa.

AFRICA MER. South Africa.

AFRICA SEPT. North Africa.

AFRICA OCC. West Africa.

AFRICA OR. Eastern Africa.

ALABAMA (Indian). One of the United States of N. Am.; it is south of Tennessee, east of Mississippi, and west of Georgia.

ALASKA. Formerly Russian America; the most north-western part of N. Am.

ALBANIA. In the south-west of European Turkey.

ALGIERS. One of the Barbary States, on northern coast of Africa, between Morocco and Tunis.


ALEUTIAN ISLANDS. A chain of islands between Alaska and Kamtschatka.

ALPS. Higher mountains of Europe.

ALPINE. Relating to the Alps.

ALT. Altai. Siberia.

AMASIA. A town in Asia Minor.

AMAZON INF. Lower Amazons.

AMAZON SUP. Upper Amazons.

AMBALA. North-west India, near the Himalayas.
south-western Siberia; its southern shores are on Turan.

ARCTIC REGIONS. The region north of the line of 60° N.

ARIZONA (Indian). A Territory, bounded on the north by California, on the south by Mexico, on the east by N. Mexico, and on the north by Utah.

ARKANSAS (Indian). One of the United States; it lies east of Indian Territory, and north of Louisiana.

ARM., } North-eastern part of

ARMENIA. } Asiatic Turkey.

ARU. Aru Islands. A group of islands south of the western end of New Guinea.

AS. Asia.

ASIA MINOR. Little Asia; the north-eastern part of Asiatic Turkey.

ASHANTI. In north Guinea, on the west coast of Africa.

ASTRACHAN. South-eastern Russia; its principal town, of the same name, is at the mouth of the Volga.

ASSAM. A district of N. E. Hindostan, adjoining Birmah. Also a settlement on the island of Bali.

ATLANTIC STATES. Those of the United States bordering on the Atlantic Ocean.

AUSTRIA. The Empire of Austria, in Germany, is north of Turkey, west of Russia and south of Prussia.

AUSTRALIA. The largest island in the world, it lies south of Papua. Its Lepidopterous fauna does not present the same remarkable forms as in the larger animals, although there are immense Cossidae, some expanding eight inches, besides curious Sphingidae, etc.

AUSTRALASIA. Contains Australia, New Guinea, New Zealand, Van diemens' Land, Solomon's Islands, New Britain, New Ireland, and New Hebrides.

АЗORES. A group of small islands in the Atlantic, westward of Portugal.

BAHIA. A district of Brazil; Bahia or San Salvador, on the Bay of All Saints on the eastern coast is one of the principal cities of Brazil.

BAHAMAS. Bahamas or Lucayan Islands, a number of small islands east and south-east of Florida.

BAikal Lake. An inland sea in Irkoutsk, south-eastern Siberia.

BALCAN, } A tract of country, embracing Dalmatia, European Turkey and Greece.

BALI. An island direct east of Bany._Java, lying between the latter and Lombok.

BANANA ISLAND. Near the coast of Sierra Leone, west Africa. The locality of Drury's wonderful, long-tailed Saturnia Argus.

BANCA. A small island, N. E. of Celebes, from which it is separated by the Straits of Banca.

BANDA ISLANDS. Some small islands of the Moluccas, lying between the latter and Obi.

BANKA. An island in the China Sea, close to and south-eastward of Sumatra, famous for its tin mines.

BARBARY, } The north coast of Barbary, } Africa, embracing Morocco, Algiers, Tunis and Tripoli.

BATAVIA. The capital of Java.

BATCHIAN. One of the Moluccas, near the southern extremity of Gilolo.

BEHRING'S STRAIT. The narrow strait that separates Asia from America; it is but 40 miles wide.

BELGIUM. Kingdom of Belgium, north-east of France.

BELOOSTAN. The country south of Afghanistan, and between Persia and Hindostan.

BENGAL, } That part of Hindostan BENGALIA, } that lies on the Ganges.

BERMUDAS. Small islands in the Atlantic, eastward from Georgia.

BEYRT, } A town on the west BEYROUT. } coast of Syria.

BHOTAN. In the north-east of Hindostan, near Assam.

BIRMAH. A part of Farther India, lying between Hindostan and Siam, and bordering on the south on the Bay of Bengal.
LIST OF LOCALITIES.

Bissao. Portuguese possession on the coast of Senegambia, West Africa.


Bohemia. In the north-west of Austria, south of Saxony and east of Bavaria.

Bolivia. A republic of South America, north of Buenos Ayres and between Brazil and Peru.

Bombay. A district on the west coast of Hindostan. Its capital bears the same name.

Borneo. An immense island lying south-east of Farther India, north of Java, and south of the Philippines.

Brasilia. Empire of Brazil in South America.

Brisbane. A town on Moreton Bay, in New South Wales, East Australia.

Britannia. Great Britain.

British America. The British possessions in North America, comprising, with the exception of Alaska, all that part north of N. L. 49°.

British Guiana. Demerara, Essequibo and Berbice.

Buenos Ayres. That part of South America east of Chili, south of Bolivia, and north of Patagonia.

Bulgaria. A territory in the eastern part of European Turkey, separated from Wallachia on the north by the Danube River, while on the east it borders on the Black Sea.

Buras. A small island, near the south-eastern extremity of the great island of Luzon.

Burma. See Birmah.

Buton. One of the Moluccas, close to and south-east of Celebes.

Caffraria. On the south-east coast of Africa, east of Cape Colony. Natal is its principal town.

Calabar. New and Old Calabar, two settlements on the coast of upper Guinea, West Africa.

Calabria. Extreme southern province of Italy.

Calcutta. The largest city in Hindostan, situated on the Hoogly river, one of the mouths of the Ganges.

California. On west coast of N. America, borders on the Pacific and is south of Oregon. The Lepidopterous Fauna of this state and adjacent territories have a wonderful similarity to those of Europe.

Cambodia. In Farther India, east of Siam.

Cameroons. In lower Guines, west coast of Africa, below Calabar.

Cametá. A town in N. Brazil near the mouth of the Tocantius river.

Campeachy. On the coast of Yucatan.

Canada. Dominion of Canada, part of the British possessions in North America.

Canara. A district on west coast of Hindostan.

Canaries. A group of islands west of Morocco.

Cape Coast. Coast around the Cape of Good Hope.

Cape Colony. The southernmost part of Africa.

Cape of Good Hope. The most southern point of Africa.

Cape Town. Capital of Cape Colony.

Cape York. The northernmost point of Australia; it is the home of the Ornithoptera var. Pronomus.

Cape Verde. On the coast of Senegambia, the most western point of Africa.
LIST OF LOCALITIES.

CAPE VERDE ISLANDS. A cluster of islands off Cape Verde.

CAPPIL. A small river which empties into the Rio Para near its mouth, in Para district, north Brazil.

CAROLINAS. The States of North and South Carolina.

CAROLINE ISLANDS. A number of small islands in Polynesia, northeast of New Guinea.

CARRACAS. The capital city of Venezuela; it is situated 3,000 feet above the sea; was almost entirely destroyed by an earthquake in 1812, which buried 10,000 of its inhabitants.

CASHEMIR. The most northern district of Hindostan.

CASHMERE. A district of Hindostan.

CASPIAN SEA. Great inland sea, having Russia on the north-west, Turan on the east, and Persia on the south.

CATHAY. China proper.

CATSKILLS. Catskill Mountains, on the borders of Greene and Ulster Counties, in eastern New York.

CASTILE. Province of Central Spain. It is from here the peerless Saturnia Isabelle comes.

CAUCASUS. Mountains in Georgia, south-east Russia, ranging from the Caspian Sea to the Black Sea.

CAYENNE. French Guiana.

CAYMANICA. River in Senegambia, west coast of Africa.

CELEBES. A large, very irregular-shaped island, lying between Borneo and the Moluccas.

CENT. AM. The territory between Mexico and South America, consists of the states of Guatemala, Honduras, Nicaragua and some smaller ones. This country is in the enjoyment of almost continual internecine war.

CERAM. One of the Moluccas, direct west of New Guinea, and south of Gilola.

CEYLON. A large island south of Hindostan.

CHATHAM ISLAND. A small island east of New Zealand.

CHIAPAS. The southernmost province of Mexico, adjacent to Guatemala.

CHILE. One of the South American states, on the Pacific coast south of Peru, and west of Argentine Republic or Buenos Ayres.

CHILOE. An island directly south of Chili.

CHINA. Properly that portion of the Chinese Empire south of Tartary, east of Thibet, and north of Farther India.

CHINESE TARTARY. A great tract of country lying between the Amur River and China. A part of the Chinese Empire.

CHIMBORAZO. The second highest mountain in S. Am., is 21,427 feet in height. In the western part of Ecuador.

CHIRIQUI. District in West Panama, adjacent to Costa-Rica. Marvelously rich in Lepidoptera. The locality of Dynastor Napoleon.

CHUSAN, OR TSCHUSAN. A small island near the east coast of China.

CIRCUMPOLAR. That portion north of N. L. 60°, surrounding the North Pole.

COCHIN CHINA. The part of Farther India on the west bordering on the China Sea.

COLORADO TERRITORY. South of Wyoming, east of Utah, north of N. Mexico, and west of Kansas; rich in a peculiar mountain fauna.

COLUMBIA. United States of Columbia, New Granada, the north-western state of S. America.

CONNECTICUT. One of the New England States, east of New York and south of Massachusetts.

CONGO. In Lower Guinea, west coast of Africa, between Loango and Angola.

COPAN. The ruins of an ancient city in north-western Guatemala. Numbers of wonderfully carved sandstone idols and altars, of whose origin or history nothing is known, are there succumbing to the effects of time and quietly crumbling away.
Cordilleras. The Andes. A long chain of mountains extending along the whole western coast of South America, from north to south.

Korea. A peninsula N. E. of China, between the Yellow Sea and the Sea of Japan.

Coromandel. South-east coast of Hindostan.

Corrientes. A cape on the coast of Mozambique, east Africa. Also a province and town in the east of Buenos Ayres, S. America.

Corsica. A large island in the Mediterranean Sea, west of France. The birth-place of Napoleon Bonaparte.

Costa Rica. The most southern State of Central America, lying between Nicaragua and Panama. It has a glorious Lepidopterous fauna.

Crete. Candia. A large island in the Mediterranean Sea, south of Greece.

Croatia. The most north-western territory of European Turkey.

Cuba. Largest of the West India Islands, is the locality for the gorgeous and rare Papilio Gundlachianus, P. Caiguanaebus, and other fine species which occur nowhere else.

Cuenca. A town in the south-western part of Ecuador.

Curacoa. Island north of Venezuela.

Cyprus. A large island in the Mediterranean, near to and belonging to Asiatic Turkey.

Dahomey. East of Ashanti, in Upper Guinea, west coast of Africa. The pleasant place where on the death of one of its kings, a few thousands of his slaves and wives are immolated at the burial of the dead departed.

Dakota. Territory of the United States, it is bounded on the north by British Columbia, on the south by Nebraska, east by Minnesota and west by Montana and Wyoming.

Dalmatia. A narrow territory belonging to Austria; it adjoins on the east Croatia, in Eur. Turkey, and on the west it coasts the Gulf of Venice.

Damara-Land. South-west coast of Africa, above Cape Colony.

Damascus. A city in the south-west of Syria.

Dania. Denmark.

Darien. Isthmus of Darien, the narrow neck of land that connects North and South America.

Darjeeling. In Sikim, north-eastern Hindostan.

Dauria. South-east Siberia.

Dahuria.

Deccan. Large district in southern Hindostan.

Delaware. One of the United States, south of Pennsylvania and New Jersey.

Delaware River. Runs between Pennsylvania and New Jersey, and between the latter and Delaware.

Delhi. A district in northern Hindostan, west of Nepal and Oude; its capital city, of the same name, was the seat of government and residence of the Mogul dynasty.

Demerara. British Guiana, lies between Venezuela and Surinam, or Dutch Guiana, on the north coast of South America. Georgetown, its capital, is situated at the mouth of the Demerara River.

Denmark. Kingdom of Denmark.

Digne. A town in the lower Alps in south-east part of France near the borders of Italy; the beautiful and rare Thais var. Honoratii occurs in this locality.

Dhawalaghiiri. The highest peak in the world; one of the Himalaya range in North Hindostan; it is 28,070 feet high.

Dorey. A point on the north-west of New Guinea.

Dshilola. Gilola.

Dutch Guiana. Surinam, on the northern coast of S. America, between British Guiana and Cayenne or
French Guiana. It was here that Mad. Merian sojourned in 1699 and 1701, for the purpose of collecting and studying the material for her great work, the "Metamorphosis Insectorum Surinamensium," which was one of the earliest illustrated works on Lepidoptera published. On the Zoellen plantation, in this district, the original of Cramer's figure of Eudæmonia Semiramis was taken, one of the most remarkable moths in the world, having tails to the hind wings five inches long.

EAST INDIES. East Indian Archipelago; the islands in the Pacific; Malaysia, Australasia, and Polynesia.

EQUADOR. Territory in the west of South America, between Columbia and Peru; it contains the highest peaks of the Andes, Chimborazo and Cotopaxi; the former was ascended by the great Humboldt, in 1797, to the height of over 19,000 feet.

Ega. A town on the Amazon, in Solimoes district, north-west Brazil.

EGYPT. The north-eastern territory of Africa. The land of the Pharaohs, but remarkably meagre in Lepidoptera, though a land of mighty wonders to the archæologist.

ENG. England.

EQUATORIAL AFRICA. That portion of Africa along the Equator, including Lower Guinea, Ethiopia, Zanguebar, etc.

ERIE (Indian). Lake Erie, one of the five great lakes of North America, four of which—Superior, Huron, Erie and Ontario, lay between the United States and British Columbia.

ESMERALDAS. A town on the north-east coast of Ecuador.

ETHIOPIA. Ethiopia, central Africa; most of it unknown.

EUR. • Europe.

EUROPA. • Europe.

EUXINE SEA. Black Sea, lying between Russia and Turkey.

FARThER INDIA. Includes Burmah, Siam, Cambodia, Cochin China, Laos, Tonquin and Malaya.

FEJEES. Feejee Islands; a cluster of small islands in Polynesia east of the New Hebrides; the two principal are Takanova and Amboo.

FENNIA. Finolland.

FERNANDO PO. An island near the northern part of the coast of Lower Guinea, W. Africa.

FEZZAN. Great oasis in Sahara, south of Tripoli.

FIJI. The Feejee Islands. See Feejees.

FINLAND. The country of the Finns, in north-west Russia, it borders on the north on Lapland, and on the west on the Baltic Sea.

FLA. Florida.

FLORES. An island in Malaya east of Java, between Sambawa and Timor, and south of Celebes.

FLORIDA. The most southern of the United States; it joins Georgia on the north, its west coast is on the Gulf of Mexico, and its east on the Atlantic Ocean.

FONTE BOA. A town on the Amazon River, in Solimoes district, north-western Brazil.

FORMOSA. A great island off the coast of China.

FR. France. German, Frankreich.

FRENCH GUIANA. See Cayenne.

FRIENDLY ISLANDS. A group of small islands in Polynesia, east of the Feejees, and south of Navigator's Islands.

GABON. A river on the Equator, in Lower Guinea, west Africa.

GALAPAGOS. Some small islands on the Equator, west of S. America.

GALICIA. A northern province of Austria, bordering on Russia.

GALLIA. France.

GAMBIA. A river in Senegambia, west coast of Africa.

GEBIRGE (German). Mountains.

GENGUEH. In southern California.

GEORGIA. One of the United States of N. America; on its north is Tennessee, on the south Florida, on the west Alabama, on the east
South Carolina and the Atlantic Ocean.

**Georgia.** In Transcaucasia; a tract of country separated from south-east Russia by the Caucasian Mountains; on its south are Asiatic Turkey and Persia.

**Gy.** Germany.

**Germania.** Germany.

**Gilola.** The largest of the Moluccas, lays between New Guinea and Celebes.

**Gold Coast.** Coast of Ashanti, W. Africa.

**Goram.** An island, in Malaysia, east of Ceram and west of New Guinea.

**Greece (Graecia).** Greece.

**Granada.** Southern part of Spain, bordering on the Mediterranean Sea.

**Great Slave Lake.** In Northern British America.

**Greenland.** Polar regions north-east of British America, it is here that *Colias Helola* is found.

**Guadalupe.** One of the Little Antilles, south-east from Porto Rico and Hayti.

**Guatemala.** In Central America, lies between Honduras and Chiapas, and borders on the Pacific.

**Guayaquil.** A town in western Ecuador.

**Guatemala.** See Oaxaca.

**Guinea.** Upper and Lower Guinea, on the west coast of Africa; the former embraces Ashanti, Dahomey, etc., and the latter Loango, Angola, Banguela, etc.

**Gulf of Guayaquil.** On the south-west coast of Ecuador.

**Haiti.** Hayti, or St. Domingo, with the exception of Cuba, the largest of the West India Islands.

**Hakohadi.** A city on the southern point of the island of Yesso, or Jesso, in Japan.

**Halicia.** See Galicia.

**Hawaii.** Owyhee, the largest of the Sandwich Islands. Capt. Cook was killed there in 1779.

**Helvetia.** Switzerland; Schweiz.

**Hbrides.** Some islands north-west of Scotland, sometimes called the Western Islands.

**Hibernia.** Ireland.

**Himalaya.** The great chain of mountains in the north of Hindostan, containing the highest peaks in the world.

**Hindostan.** India, south of Tartary, and between the Arabian Sea and Bay of Bengal.

**Hispania.** Spain.

**Honduras.** In Central America, east of Guatemala, and north of Nicaragua and San Salvador.

**Hong-Kong.** A city on a little island at the mouth of the Si King River, south-eastern coast of China.

**Hudson Bay.** Vast body of water in British America.

**Hungary.** Ungarn. A kingdom of Austria, south of Galicia.

**Huron.** Lake Huron; one of the five great lakes of N. America; its western shores are on the state of Michigan, and its eastern on Canada.

**Ib.,** | Peninsula of Spain and Iberia. | Portugal.

**Iceland.** A large, Arctic island, north-west of Great Britain, and to the east of Greenland.

**Idaho (Ind).** One of the western Territories of the U. S.; it borders on the west on Washington Territory and Oregon, on the east on Montana and Wyoming, on the south on Utah and Nevada, and on the north on British America.

**Ill.** | Island.

**Isle, Isle, Is.**

**Illinois.** One of the United States of N. Am.; it is south of Wisconsin, and is bounded on the east by Indiana, on the west by Iowa and Missouri, and south by Kentucky.

**Imeritia.** Western Transcaucasia.

**Ind.** | Hindostan and Farther India.

**India.** | India.

**Indian Islands.** Malaysia, Poly-
nel directly south of Hampshire.

ISLAND. See Bourbon.

ISLANDIA. Iceland.

ISLANDS. Includes the larger and smaller islands of the northern and western British dominions and of the world, and many others.

ISEN. Island, south of western Cuba.

ISEL OF WIGHT. In the British Channel.

ITALIA. Italy.

JAKUTSK. Territory in eastern Siberia, on the Lena River, which permeates through it, is the town of Jakutsk, or Yakoutsk, one of the principal depots of the fur trade.

JANNA. The third largest of the West Indian Islands; it lies south of eastern Cuba.

JAPAN. The Japanese Empire, consisting of a chain of large islands east of Tartary and China.

JAYA. One of the large islands of Malaysia; it lies south of Borneo and south-east of Sumatra, from which latter it is only separated by the Straits of Sunda.

JEDAO. The capital of the Japanese Empire, situated on the east coast of the Island of Niphon, and is one of the most populous cities in the world.

JERUSALEM. The Holy City, is in the southern half of Palestine, between the Dead Sea and the Mediterranean Ocean, and both wonderful and rare to visit, it is equally the Holy City of Israelite, Christian and Mohammedan.

JULIA. See Gilola.

JUAN FERNANDEZ ISLANDS. Mafaquina, Matutina and Goat Is.; three small islands in the Pacific, west of Chili, rendered famous through Defoe's story of Robinson Crusoe, (Alexander Selkirk), who was left there to take care of himself for ever so long, and who was, if a tithe of what was said about him be true, a most fortunate and ingenious gentleman.

JUTIA. The northern and

JUTLAND. Greater part of Denmark.
Kalamazoo. A town in the south west of Michigan.


Kanawha. A county in West Virginia. The home of the peerless Argynnis Diana.

Kanawha River. A branch of the Ohio River, in west Virginia, running through the counties of Mason, Putnam, Kanawha and Fayette, and between Raleigh and Greenbrier, and Mercer and Monroe.

Kangaroo Island. An island near the south coast of N. S. Wales Australia.

Kansas. One of the United States, south of Nebraska, north of Indian Territory, east of Colorado, and west of Missouri.

Ke Islands. Directly south of western New Guinea.

Kentucky. One of United States of N. Am., divided by the Ohio River on the north from Illinois, Indiana and Ohio, on its east is Virginia, and south of it is Tennessee.

Kern County. In Southern California, lying north-west of San Bernardino, and south of Tulare counties; it contains a river and a lake of the same name.

This is a sort of a memorial definition: as probably very few persons now living know, and still fewer care, why it was so named, but inasmuch as the three persons to whom this county, river and lake were dedicated, were own brothers to the writer's maternal relative, he of course feels it incumbent to write these few facts. In Philadelphia were three brothers bearing respectively the names of Ben., Richard and Edward Kern, and they were sons of a certain John Kern, who was a "man in place," having for many years, up to the time of his death, which event was caused by the falling of a derrick in the Philadelphia Navy Yard, enjoyed the comforts and emoluments arising from the construction of the Port of Philadelphia. The eldest of these brothers, Ben., was a doctor, and the other two, Richard and Edward, were artists—all three were naturalists; many years since, when California was a terra incognita, these brothers accompanied Fremont on his pioneer expedition over the Rocky Mts., where Ben. had his career rather summarily ended by either the arrows of the noble Indian or from the slower but less painful effects of cold and starvation, which was the proximate cause, has I believe, never been definitely settled, neither at this late date can it be of any material importance. Some years later, in 1853, the second brother, Richard, was massacred along with Gunnison's surveying party on the Sevier river, by Utah Indians, who by these sanguinary means became the joyous possessors of sundry mules, arms and engineering instruments. The youngest and surviving brother, Edward, accompanied Perry's Expedition to Japan, and shortly after the return of the expedition to the United States, he died of heart-sickness, or starvation, or something of the sort, which, however, is also at this late date of no particular import. Whether the name of these brothers was bestowed on the desolate earth and water in question, by Fremont, or themselves, or whether it was an honor conferred by the administration, is a point I am not able to decide, neither does this much matter now, though we will trust it was thither, as we have no record of any further or other acts of munificence done by a grateful government in acknowledgment of their services and the sacrifice of their lives. Requiescat.

N. B. Capt. Gunnison's name is also rendered immortal by an island in the northern part of Great Salt Lake, which, on a very large map, is represented by a spot or two quite the size of a speck of fly dirt.

Kretchta. A town on the Selenga River in Irkutsk, south east Siberia.

Kirkh. Great Siberian Steppes.

Kirkhis Steppes. east of the Ural River.

Khorassan, North-eastern Persia, bordering on Afghanistan and Turkistan.

Kodiak. An island south of Alaska.

Kooloo. A mountainous district of northern Hindostan.

Kordofan. A territory in eastern Africa, south of Nubia, west of Senmar and Abyssinia, and south-east of the Libyan Desert.

Koorile Islands. A chain of small islands, running from near the south point of Kamchatka to near Yesso, one of the Japanese Islands.

Koordistan. The territory of the Kurds, a mountainous district on the borders of Asiatic Turkey and Persia.

Kuma. A river south of Astrachan,
in south-east Russia.

KURDISTAN. See Koordistan.

KURILS. See Koorile Islands.

LABRADOR. The part of British America bordering on the Atlantic, south-west of Greenland. It has a Lepidopterous fauna in which are species found nowhere else on earth, among them Colias Nastes, Arynnesia Polaris, etc.; these are found at N. L. 57°.

LABUAN. A small island near the north-west of Borneo.

LADAK. A town in north-west Ladak, near Thibet.

LAHORE. A city in the Punjab, in north-west Hindostan.

LAKE ERIE. See Erie.

LAKE MICHIGAN. One of the five great lakes of N. Am.; it lies between the States of Michigan and Wisconsin, and south of Lake Superior.

LAKE HURON. See Huron.

LAKE N'GAMI. Great lake in the interior of eastern Africa west from Zanzibar.

LAKE ONTARIO. One of the great lakes of N. Am.; it lies north-west of State of New York.

LAKE SUPERIOR. The largest of the five great lakes, it lies between the State of Michigan and Canada West.

LAKE TCHAD. A great inland Sea in Bornu, Central Africa.

LAKE WINNEPEG. A lake in the southern part of British America, north-west of Lake Superior.

LAOS. A part of Farther India, having Tonquin and Cochín China on the east, China on the north, Burmah and Siam on the west, and Cambodia on the south.

LA PAZ. One of the western districts of Bolivia, the principal town of which bears the same name. Also a town in the southern part of Lower California.

LAPPLAND. The most north-western part of Russian above the Arctic line; it borders on the north on the Arctic Ocean.

LA PUEBLA. One of the Mexican States; its north coast is on the Gulf of Mexico, and its south on the Pacific Ocean. Its capital city bears the same name.

LIVONIA. A province in western Russia.

LOANGO. District of Lower Guinea, west coast of Africa.

LOMBOK. One of the chain of islands directly east of Java; it lies between Bali and Sumbawa. Bali is the island immediately next to Java, and separated from it by the Straits of Bali or Baly.

LOO CHOO ISLANDS. Off the east coast of China, and south of Japan.

LOS ANGELOS. A town in the southern part of California, in the county of the same name. It was in the latter that the types of Hymenites Californica, Lyceena Tehua, Lyceena Monica, etc., were taken.

LOUISIANA. One of the southern United States of N. Am.; originally settled by the French; it is south of Arkansas, west of Mississippi, east of Texas, and borders the Gulf of Mexico on the south.

LOUISADE ARCHIPELAGO. A number of small islands near the eastern extremity of New Guinea.

LUSITANIA. Portugal.

LUZON. The largest of the Philippine Islands, it lies east from Cochin China and south of the island of Formosa, which latter is off the coast of China.

LYDIA. West and south-west Asiatic Turkey.

MACASSAR. A town on south-west end of Celebes.

MACASSAR STRAITS. Run between Borneo and Celebes.

MACAO. An island and town on the estuary of the Si Kiang River, south-eastern coast of China.

MACKENZIE'S RIVER. A large river in north-western British America.

MADAGASCAR. A great island off the south-east coast of Mozambique, Africa, from which it is separated by the Mozambique Channel. It is
here that *Thaliura Rhipheus*, the most splendid of all known Lepidoptera, is found.

**MADEIRA ISLANDS.** Some small islands west of Morocco.

**MADAGASCAR.** Some small islands north-east of Formosa and south of the Loo Choo Islands.

**MADRAS.** The capital of the Presidency of Madras, on the Coromandel coast, south-east Hindostan.

**MADURA.** An island in the Java Sea, north of the eastern end of Java.

**MAGELLAN.** Straits of Magellan, between Patagonia and Terra-del-Fuego.

**MAINE.** The most north-eastern of the United States of N. America.

**MALABAR.** The south-western coast of Hindostan.

**MALACCA,** The southernmost part of Malaya, of Farther India, and is a peninsula south of Siam, on the west the straits of Malacca divide it from Sumatra, and on the east it coats the China Sea.

**MALAYSIA.** The Asiatic Islands, embracing Sumatra, Java, Borneo, Philippines, Celebes and Moluccas or Spice Islands.

**MANADA.** *See Menado.*

**MANILA.** The capital city of the Philippines, is in the south-western part of the island of Luzon, the largest of that group.

**MANTCHOORIA,** North-eastern part of China.

**MANTCHURIAS.** Of the Chinese empire.

**MANDSHOORIA,** prize; Amoorland.

**MARACAIBO.** A city of Venezuela, on Maracaibo lake near its outlet.

**MAROC.** One of the Barbary States, the most north-western part of Africa.

**MARAÑON.** An important commercial town on an island at the mouth of the Marañon River, in the district of same name in the north-east of Brazil.

**MARQUESAS ISLANDS.** One of the more eastern of the groups of Polynesia, they are in the same latitude as the south-eastern end of New Guinea.

**MARTINIQUE.** One of the lesser Antilles.

**MARYLAND.** One of the United States of N. America, south of Pennsylvania and north and north-east of Virginia.

**MASS.** One of the New England States, it lies east of New York, and south of Vermont and New Hampshire, north of Connecticut and Rhode Island, and on the east it fronts the Atlantic.

**MATABELA.** An island south of Goram, and south-west of New Guinea.

**MATANZAS.** A city on the northern coast of western Cuba.

**MAUNA ROA.** A volcano in Owhyhee, Sandwich Islands.

**MAUR.** North-west Africa.

**MAURETANIA.** Algiers and Morocco.

**MAURITIUS.** An island in the Indian Ocean, east of Madagascar and north-east of Isle of Bourbon. *Thaliura Rhipheus* has also been found on this island.

**MD.** Maryland.

**MELBOURNE.** The capital of Victoria the south-eastern province of Australia.

**MENADO.** Town on the north-east of Celebes.

**MERIDA.** The capital of Yucatan, is in the north-west of that state, about 25 miles from the coast.

**M.**

**MERIDIONALIS.**

**MEX.** The country of the Mexican towns, or rather what is left of it; what still remains is bounded on the north and north-east by New Mexico and Texas. The principal pastime of the inhabitants is to cut each other's throats. They have very frequent changes of the administration, sometimes being blent with several in one day. The
east coast of Africa; between it and the great island of Madagascar runs the channel of Mozambique. It was in this Territory that the resplendent Thalura Crescent was discovered.

MT. BUREIA. In Amoorland.

MT. DIABLO. A mountain in Contra-Costa County, west California, it is here that the most beautiful of the N. American Lycaenidæ, Lyceena Regia, is taken.

MT. GOTHARD. One of the peaks of the Swiss Alps, 9,975 feet high.

MT. TOM. One of the White Mountains of New Hampshire.

MT. WASHINGTON. The highest peak of the White Mountains of New Hampshire, 6,226 feet in height. On this mountain is found Chionobas Semideæ, Arcelia Queneschi, Anarta Cordigeræ, and other Arctic or Alpine species.

MUNDUS. The world.

MYSOL. One of the Moluccas or Spice Islands; it is south-east of Gilola, east of Oby, north of Ceram, and west of New Guinea.

MYSORE. A district in which is also a town of same name, in south-west Hindostan.

MYSORY. An island near the north-west coast of New Guinea.

N. AM., } North America, em-
N. AMER. } bracing British Columbia, Alaska, United States and Mexico.

NANKIN. One of the principal cities of China, is near the mouth of Yangtse-Kiang River, in eastern China.

NATAL. Port Natal, on the south-east coast of Africa. Many beautiful Saturniidae are found here, among them Gymnissa Isis, Actias Minos, Antherea Menippe, A. Arata, Hyalophora Mythimnæa, etc.

NAPA. A county in western California. One of the principal localities for that most beautiful of all known Coliades, C. Eurydice.

NAPO. A branch of the Amazon, running through central Ecuador.

NAUTA. On the Amazon, near the southern boundary of Ecuador.

NEBRASKA. One of the United States; it lies south of Dakota, east of Colorado and Wyoming, north of Kansas, and west of Iowa, from which latter it is separated by the Mississippi River.

NEELGERRY; } Blue Hills, in
NEELGERIRES, } the southern part
NEELGERIRES, } of Mysore and ad-
NILGERIES, } jacent districts of
Hindostan.

N'GAMI. See Lake N'Gami.

NEPAL. } One of the north-eastern
NEPAUL. } districts of Hindostan, bordering on the north on the Himalayas.

NEVADA. One of the United States of N. Am.; it lies east of California, south of Oregon, and west of Utah and Arizona.

NEW BRITAIN. An island north-east of New Guinea, separated from it by Dampier's Straits.

NEW BRUNSWICK. A province of British America, east of the State of Maine.

NEW CALEDONIA. An island in Australasia, east of Australia, south of New Hebrides, and north-west of New Zealand.

NEW ENGLAND, } The six Uni-
NEW ENGLAND STATES, } ed States of New England, east of New York; they are Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island.

NEWFOUNDLAND. A large island in the Atlantic Ocean; it is separated from south Labrador by the Straits of Belle Isle.

NEW FREIBURG. A settlement in south-east Brazil. Eudemonia Derceto, of Maassen, one of the most wonderful of known Heteroceres (moths), was discovered here; there are so far but three species known to this genus, viz.: E. Semiramis, Cram., E. Derceto, Maassen, and E. Jehovah, Strecker, distinguished by the immense length of the tails of the hind wings, which in Semiramis measure five inches.
New Granada. See Columbia.

New Guinea. One of the largest of the Pacific islands; is in Australasia, north of Australia, from which it is separated by Torres Straits; its inhabitants are oriental negroes; the flora and Lepidopterous fauna are exceedingly rich.

New Hampshire. One of the New England States; it lays west of Maine, east of Vermont, and north of Massachusetts; in this state are the White Mountains, having a curious Arctic and Alpine fauna.

New Hebrides. A group of islands in Australasia; they are north-east of Australia, north of New Caledonia, south-east of New Guinea, and west of the Fueje Islands.

New Holland. Australia.


New Jersey. Although not generally so considered by Americans, really is one of the United States of N. Am.; it lies south of New York, east of Pennsylvania, and its eastern shores are on the Atlantic Ocean. In its swamps are good collecting grounds for the Lepidopterist.

New Mexico. Territory of the United States of N. Am., lying north of Mexico, east of Arizona, west of Texas, and south of Colorado. It is the locality of the splendid Papilio Pilumnus and P. Daunus, and other fine species.

New Orleans. The capital of the State of Louisiana; it is situated on the left bank of the Mississippi, about a hundred miles from the sea.

New South Wales. The eastern district of Australia; it lies south of North Australia, east of South Australia, and north of Victoria. Sydney, the capital of Australia, is on its east coast.

New York. One of the United States; it lies west of the New England States, south of Canada, and north of Pennsylvania; its principal city—of the same name—on its south-eastern point, is the metropolis of eastern N. America.

New Zealand. A large island, or rather two contiguous, large islands, divided by Cooke's Straits; the northern part is called New Ulster, and the southern New Munster; it lies south-east of Australia. One of the principal articles of export is the embalmed heads of the natives; these are splendidly tattooed, and when one chief overcome another in war, the head of the vanquished party was beautifully embalmed, but the demand for the article among civilized collectors became so large that a domestic market was established, by tattooing the faces of slaves and subjects, then tattooing them and passing their heads off on the unsuspicious customer as those of genuine chiefs. This is, or was, also where those missionaries, who were emulous to obtain the crown of martyrdom, went for that delectable purpose, when the obliging natives speedily fulfilled their pious wishes by butchering and afterwards feasting on them.

Niass. An island off the north-west of Sumatra.

Nicaragua. One of the states of Central America; it has Costa Rica on its south, the Gulf of Mexico on its east, Honduras on its north, and the Pacific Ocean on its south-west.

Nicobar, Nicobar Islands. Islands in the Indian Ocean, north-west of Sumatra, west of Malacca, and south of Andaman Islands.

Niger. One of the great rivers of Africa; flows through the eastern part of Upper Guinea, and thence into Soudan.

Nile. A large river, rising in Central Africa, where it has the name of the White Nile, running northward, through Nubia and Egypt, and emptying into the Mediterranean Sea.

Ning-Po. A city in the province of Choo Kiang, on east coast of China.
NIPHON. The largest of the islands comprising the Japanese Empire. Joddo, the capital of the empire, is on the east coast of this island.

NORTH AUSTRALIA. The northeastern part of Australia; its northern and eastern shores are on the Pacific, on the west it is bounded by West Australia, and on the south by New South Wales and South Australia.

NORTH CAROLINA. One of the southern United States of N. Am.; its eastern shore is on the Atlantic Ocean, on the north it is bounded by Virginia, and its south by South Carolina.

ORLOV, N. The north-western part of Europe, bordering on the Northern Ocean.

NOVA HOLANDIA. New Holland, Australia.

NOVA SCOTIA. The most south-eastern of the provinces of British America; it is a peninsula, connected with the south-eastern part of New Brunswick, and separated from the south of it, and from the State of Maine, by the Bay of Fundy.

NOVA ZEMBLA. A large island in the Arctic Ocean, north of Russia.

NUBA. A country in East Africa, lying south of Egypt, north of Abyssinia, east of the Libyan Desert, and with its western shore on the Red Sea.

NUKAIWA. One of the Marquesas, or Washington Isles.

OAXACA. One of the most southern divisions of Mexico; its south coasts on the Pacific Ocean, to its east is Tchauantepec, on the north Vera Cruz, and on the west La Puebla.

OBI. One of the Moluccas, or OBY. Spice Islands; it lies south of Gilola, west of Mysol and New Guinea, and north of Ceram.

OBYDOS. A town on the upper Amazonas, north-west Brazil.

OC. Western; to the Occidentalis, west; belonging to Occidental. The west.

OCHOTSK. Territory of eastern Siberia, bordering on the Ochotsk Sea; its principal settlement—of the same name—is one of the great fur-trade depots.

OCEANICA. The islands in the Pacific Ocean, comprising Malaysia, Australasia and Polynesia.

OESTERRHEICH. Austria.

OHI. One of the United States of N. Am.; it lies south of Lake Erie and Michigan, west of Pennsylvania, east of Indiana, and north of Kentucky and Virginia.

OKKAK. A station on the north-east coast of Labrador.

OKHOTSK. See Ochotsk.

OLD CALABAR. A settlement, east of New Calabar, in eastern part of Upper Guinea, West Africa.

ONTARIO. See Lake Ontario.

OR., ORIENTALIS. East; eastern; pertaining to the east; as, ORIENTAL. Europe or, eastern Europe.

ORB., ORBIS. The world.

OREGON. One of the most western of the United States of N. America; the Pacific washes its western shore, on its north is Washington Territory, to its east is Idaho, and on its south California and Nevada.

ORINOCO. A large river, running through Venezuela from east to west.

ORIZABA. A mountain peak on the western border of Vera Cruz, Mexico; it is 17,370 feet high.

OST, OEST. East.

OSTLICH. Eastern.

OTHEITE. The largest of the Society Islands.

OTTOMAN EMPIRE. The Turkish Empire—European and Asiatic Turkey, and the Baschali of Egypt.

Oude. A district in northern Hindostan; it lies south of Nepal and east of Delhi.

OVALAU. One of the Fiji Islands.

OWEN’S LAKE. In Inyo County, southern California.
Owhyhee. One of the Sandwich Islands. See Hawaii.

Pai: Pennsylvania.

Pachacamac. A small town not far from Lima, Peru. It was the scene of some of the depredations of Pizarro; in the time of the conquest it was the site of a great temple to the god Pachacamac, part of the ruins of which still remain.

Pagosa. A village and springs in S. W. Colorado.

Palamow. A district in the Presidency of Bengal, Hindostan.

Palenque. A village in Chiapas, near which are the wondrous ruins of ancient palaces, idols, etc., which, be it spoken to the shame of the United States, are, along with those of Copan, allowed to decay in the wilderness whilst a little energy, and a trifle of the money annually scandalously squandered by Government, would transmit them to a place of safety in some public institution.

Pacific Coast. West coast of N. America.

Pacific Slope. That part of the United States west of the Rocky Mountains.

Palawan. An island in Malaysia, north-east of Borneo and south-west of Mindora and Luzon.

Palestine. The Holy Land; in the south-western part of Asiatic Turkey.

Panama. The narrow tract of country which connects North and South America.

Papua. See New Guinea.

Para. A district in the north of Brazil; a city near the mouth of the Para River, in northern Brazil. This region is enormously rich in Lepidoptera and other orders of insects.

Paraguay. One of the States of S. America; it is south of Bolivia, and north-east of Buenos Ayres.

Parana. A district in the south of Brazil; its eastern boundary is the Atlantic.

Patagonia. The southernmost part of S. America.

Pebas. A town on the Amazon, in the south-east of Ecuador.

Pekin. The capital city of the Chinese Empire, is in the north-east of China proper, near the Great Wall.

Pelew Islands. A group of small islands in Polynesia, northward of New Guinea, and eastward of the Philippines.

Penang. See Pulo Penang.

Penn. One of the United States of N. Am.; it is south of New York, west of New Jersey, north of Maryland, and east of Ohio.

Pernambuco. One of the northeastern provinces of Brazil; its principal city—of same name—is of considerable commercial importance.

Pers. Lies east of Asiatic Turkestan, key, north of the Persian Gulf—which separates it from Arabia—west of Afghanistan and Beloochistan, and south of Georgia and Turan, or Turkistan.

Peru. One of the western of the South American States, bordering on the Pacific; it lies south of Ecuador, and west of Brazil and Bolivia.

Phila. One of the principal cities of the United States of N. America; situated on the Delaware River, in the south-eastern part of Pennsylvania. It is here that the Phila. Academy of Natural Sciences, and the American Entomological Society are located, and have built and sustained themselves, amidst all sorts of difficulties, entirely by the means and exertions of their members; for to look for aid to the United States Government, in anything that is great or good, would be as fruitless as to look to the Government of Dahomey.
PHILIPPINES. A group of PHILIPPINE ISLANDS. Large islands in Malaysia, lying north-east of Borneo, and eastward of Farther India; the largest of them are Luzon, Mindanao, Mindoro and Samar.

PIEDMONT. In the north-western part of Italy, separated from Switzerland on the north by the Pennine Alps.

PIKE'S PEAK. One of the highest of the Rocky Mts. in Colorado, and about 11,500 feet high.

PILATKA. A small town in Putnam County, Florida.

POLAND. Once independent, now a part of the Russian Empire, is in the western part of Russia, adjoining Prussia.

POLAR. Polar; pertaining to the POLARIS. Arctic regions.

POLAR-LAND. See Arctic regions.

POLYNESIA. That portion of Oceanic east of Malaya and Australasia, contains Navigators Is., Friendly Is., Marquesas Is., Sandwich Is., Ladrone Is., etc., etc., etc.

POMERANIA. A northern Province of Prussia.

PONDICHERRY. A French Settlement in Coromandel, Hindostan.

PONT. North-east Asia Minor, PONTUS. Amasia and Tokat.

POONA. District in the Presidency of Bombay, India.

PORT DENTON. In eastern Australia; the locality of Ornithoptera var. Cassandra.

PORT NATAL. See Natal.

PORTO RICO. The fourth in size of the West Indian Islands; it is directly east of Hayti, or St. Domingo.

POSEN. One of the eastern provinces of Prussia, formerly a part of Poland.

PO YANG. A great lake in Kiangse, China.

PREUSSEN. Prussia.

PRINCE OF WALES' ISLAND. See Pulo Penang.

PULO PENANG. Or Prince of Wales' Island; an island near the west coast of Malaya, in the Straits of Malacca, between Malaya and Sumatra.

PYRENEES. Chain of mountains between south France and north Spain.

QUERO. The capital city of Ecuador, is in the western part of that state, on the side of the volcano Pichincha, 9,500 feet above the sea.

QUEENSLAND. A district of Australia.

RADACK ISLANDS. In Mulgrave's Archipelago, north-east from New Guinea.

RAJAHMUNDRY. A town near the mouth of the Godavery River, east coast of Hindostan.

REG. ARCT. The Arctic Regions Arctice. Regions; north of the Arctic Circle.

REG. IND. Hindostan and REGIO INDICO. Farther India.

REPULSE BAY. A small bay on the Arctic Circle, below Melville Peninsula, in British America.

RHODE ISLAND. The smallest of the United States of N. Am.; it lies east of Connecticut and south of Massachusetts.

RHODES. An island near the west coast of Asiatic Turkey.

RIESEN GEBIRGE. A range of hills in eastern Saxony, and between Saxony and Silesia.

RIO. River.

RIO JANIERO. The capital of Brazil, situated on a fine harbor on the south-east coast.

RIO NAPO. A branch of the Amazon, in central Ecuador.

RIO NEGRO. The north-western province of Brazil; its principal river —of the same name—is a branch of the Amazon.

ROCKY MOUNTAINS. The great chain of mountains running from north to south through the whole western part of North America.

RODRIGUEZ. A small island east of Mauritius.

ROHOL. One of the Philippines, north of Mindanao.
Rossia. 

RUSLAND, Ger. 

RUPERT'S HOUSE. A fort, formerly on the south-east shore of Hudson's Bay.

RUPERT'S LAND. The territory in British America, to the south and south-east of Hudson's Bay.

SAGHALIEN. A long, narrow island, east of Manchuria and separated from it by the Gulf of Tartary.

SAHARA. The immense desert occupying the great part of northern Africa.

SALT LAKE CITY. The capital of Utah, on the River Jordan, near Great Salt Lake.

SAMAR. One of the Philippine Islands.

SALWATTY. An island to the extreme west of New Guinea, from which it is separated by a narrow strait.

SAMARAND. On the Kohuk River, in Bokhara, southern Turkistan; was one of the most noted cities of Asia.

SAMBEANG. A settlement near the western coast of Borneo.

SAMOA. One of the Shiffer Islands, north-east of the Friendly and Fiji Islands.

SANDAL-WOOD ISLAND. An island of Malaysia, south of Flores, south-east of Java and Sumbawa, and west of Timor.

SAN DIEGO. The southernmost county of California. One of the localities of Lycema Regia and Anthocharis Cooperii. Its principal town—bearing the same name—is on San Diego Bay, on the west coast.

SANDWICH ISLANDS. A group of islands in the north-east of Polynesia; they comprise Oahu, the residence of their king, Hawaii and some smaller ones.

SAN, SAINT.

SANTA. 

SAN FRANCISCO. The capital of California and the metropolis of the western United States of N. Am., is situated on a neck of land on the west coast.

SAN SALVADOR. A state of Central America, east of Guatemala, south of Honduras, and with its south bordering on the Pacific Ocean. Bahia, a city of Brazil, is also sometimes called San Salvador.

SANTA LUCIA. One of the Lesser Antilles, directly south of the Island of Martinique.

SANTA MARTA. One of the northern provinces of Colombia. The town of Santa Marta is at the mouth of the Magdalena River.

SANTAREM. A town on the Amazon, in Para District, northern Brazil.

SARAWAK. North-western coast of Borneo. One of the localities of the splendid Ornithoptera Brookiana.

SARDINIA. The kingdom of Sardinia—the north-western part of Italy. Also a large island in the Mediterranean, south of Corsica and north-west of Sicily.

SAREPTA. The south-east deserts of Russia.

SAX., Saxonia. 

SAXONY. West of Austria.

SCANDINAVIA. Sweden and Norway.

SCARAFFEN-LAND. Utopia, Fools' Paradise.

SCHWEITZ. Switzerland.

SCOTIA. Scotland.

SENEGAL. The most western part of Africa.

SENEGAMBIA. Part of Africa, south of Great Desert and west of Soudan.

SEPT., Septentrionalis. North.

SERPA. A town on the Guadiana River, in southern Portugal. Also a town on the Upper Amazon, northern Brazil.

SEYCHELLES. A cluster of small islands in the Indian Ocean, east of Zanzibar, Africa, and north-east of Madagascar.

SHANGHAI. A city in the Kiang-Soo District, on the east coast of China.
Droeborough Island. Near the coast of Sierra Leone, west Africa.

Siam. A kingdom of Farther India, bordering on the south on the Gulf of Siam, on its east is Cochin China, and to its north is Laos.

Shao. A small island, north of the north-east point of Celebes.

Siberia. The Russian possessions in Asia, comprising all that part north of the Chinese Empire and Tataristan, and east of Russia proper.

Sicily. A large island, south-west of Italy, from which it is separated by the Straits of Messina.

Sierra Leone. Mountains.

Sierra Nevada. The snowy mountains of California, running north and south along the west coast.

Sikim. A small province in north-east of Hindostan, between Bhotan and Nepal.

Silesia. The south-eastern province of Prussia, adjacent to Poland.

Sima. A small island in Malaysia, directly west of the island of Timor.

Sinia. An English sanitary station on the lower Himalayas.

Sinai. A mountain in Arabia Petraea, north-west Arabia; its height is 7,500 feet.

Singapore. A town and island directly south of Malaya.

Smyrna. The chief emporium of the Levant—is a city on the west coast of Asiatic Turkey.

Society Islands. A group of islands in Polynesia; they are east of the Friendly Islands, south-east of the Navigator's, and south-west from the Marquesas.

Solor. Island in Malaysia, adjacent to Timor.

Songaria. Territory south and south-west of the Altai Mountains.

Sonora. One of the north-western states of Mexico; its west is on the Gulf of California.

Sooloo Islands. Three islands—Talyabo, Mangola and Bessy—between Celebes and Moluccas, north-west of Bouro.

South Cape. The southernmost point of Van Dieman's Land.

South Carolina. One of the United States of N. Am.; its east is on the Atlantic Ocean; its north on North Carolina, and its south-west on Georgia.

Spice Islands. See Moluccas.

Spain. The south-western peninsula of Europe.

Stadt (German). A city.

St. Domingo. See Haiti.

St. Paulo. A town on the Amazon, in the north-west of Solimoes district, west Brazil. Also a town on Joannes Island at the mouth of Para River, on northern coast of Brazil.

Sud (German). South.

Suecia. Sweden.

Sumbawa. Island in Malaysia, lies between Lombok and Flores, and south-west from Celebes.

Sumatra. An immense island, south of Malaya, west of Borneo and north-west of Java.

Surinam. Dutch Guiana; its north is on the Atlantic; it is separated from British Guiana, on the west, by the River Coretyn, and on the east, from Cayenne, by the Maroni River. A country with a most marvelous Lepidopterous fauna.

Swan River. On the coast of south-western Australia.

Switzerland. A mountainous country north of Italy, east of France and south-west of west of Germany.

Swiss Alps. The mountains of Switzerland.

Sydney. On the south-east coast— is the capital of Australia.

Syria. South-western Asiatic Turkey.

Tabatinga, or Jabatinga. A town on the Amazon, in the extreme south-west of Rio Negro district, north-west Brazil.

Taiti, or Otaheite. The largest of the Society Isles.
TAIWAN. See Formosa.
TAPAJOS. One of the great arms of the Amazon, in Para, northern Brazil.
TARTARIA CHIENSIENSIS. Chinese Tartary—includes Mantchooria, Mongolia, etc.
TASMANIA, OR VAN DIEMAN'S LAND. A large island, south of New South Wales, Australia.
TENASSERIM. A district on the west coast of Farther India, above Malaya.
TENERIFFE. The largest of the Canary Islands; its peak is over 12,000 feet high.
TENNESSEE. One of the United States of N. Am.; it lies south of Kentucky and north of Mississippi, Alabama and Georgia.
TERRITORY. Tyrol.
TERRITORY. One of the Moluca—-west of Girola.
TERRA DEL FUEGO. Land of Fire; south of Patagonia, from which it is separated by Magellan's Strait.
TEXAS. The largest of the United States of N. Am.; it joins Mexico on the south-west, Indian Territory on the north, Louisiana on the east, and its south-east borders on the Gulf of Mexico.
THIBET. Part of the Chinese Empire; lies north of eastern Hindostan, west of China proper and south of Mongolia.
TIMOR. An island in Malaysia, south-west of New Guinea, south of Moluccas and south-east of Celebes.
TOCANTINUS. A large river in north-western Brazil.
TONDANO. An island near Celebes.
TRANSCAUCASIA. The country lying between the Caspian and Black Seas, south of the Caucasus Mountains and north of Asiatic Turkey and Persia.
TRINIDAD. An island near the north-east of Venezuela.
TULBAGH. A town in Worcester, Cape Colony, southernmost part of Africa; named after the old colonial governor, Ryk Van Tulbagh, who was much devoted to Natural History.
TURCIJA. Turkey; the Turkish Empire.
TURAN, \{ Independent Tartary \} lies south-west.
TURCOMANIA, or Tartary; lies south-west.
TURKISTAN, \{ of Siberia, west of Chinese Tartary, east of the Caspian Sea and north of Persia and Afghanistan; its northern part is occupied by the Khirgisu and its southern by the petty kingdoms of Bokhara, Khokan and Khiva, each ruled by a Tartar chief or king. It is here that the rare and gloomy-looking Arctiidea Maura, one of the largest of the Arctiidæ, is found.
TYROL. Territory.
TYROL. The most western province of Austria, bordering on north-east Italy.
UCAYALI. A district in the north-east of Peru; it is watered by a branch of the Amazon, of the same name.
UKRAINE. Regions on the River Dnieper, Little Russia.
UNION. United States of North America.
URAL MOUNTAINS. Great range of mountains in east Russia, and between Russia and Siberia.
URUGUAY. A state of S. America, south of Brazil and east of Buenos Ayres.
U. S. Abbreviation of United States.
VALDEZ. One of the southern States.
VALESIA. Cantons of Switzerland.
VALPARAISO. The most noted port of Chili, on the west coast of South America.
VANCOUVER'S ISLAND. A large island south-west of British America and north-west of Washington Territory.
VAN DIEMAN'S LAND. See Tasmania.
VANNA VALAVA. One of the Fiji Islands.
VARINAS. A town in north-western Venezuela.

VENEZUELA. One of the northern states of S. America; it lies on the north on the Caribbean Sea, to its west is New Granada and to its east British Guiana.

VERA. PAZ. One of the Central American States; it is north of Guatemala and west of Balize.

VERMONT. One of the New England or Eastern United States; it is east of New York, west of New Hampshire, south of Canada and north of Massachusetts.

VILLA NOVA. A town near the mouth of Amazon, in Para district, northern Brazil.

VIRGINIA. One of the Southern United States of N. Am., is south of Maryland and north of North Carolina.

VIRGINIA CITY. A city in extreme western part of Nevada.

WAIGIOU. An island near the north-west point of New Guinea.

WALES. Part of the British Kingdom.

WALLACHIA. A district in the north-east of European Turkey, south of Moldavia and north of Bulgaria.

WALLIS (German). Valais, Walesia.

WASHINGTON CITY. The capital of the United States of N. America—is on the Potomac River, in the District of Columbia.

WASHINGTON. Territory of the United States of N. Am., on the Pacific coast; it lies north of Oregon, south of British America and west of Idaho.

WEST INDIES. Great and Lesser Antilles; a great number of large and small islands south and south-east of the United States, and north and north-east of S. America. The four principal ones are Cuba, Jamaica, Haiti and Porto Rico, but there are as many smaller ones as there were saints in the calendar to name them after.

WEST VIRGINIA. The western part of the old State of Virginia, which was separated from the latter during the late war; it lies east of Ohio and Kentucky, south of Pennsylvania and north-west of what is left of the old Virginia.

WHITE MOUNTAINS. In the State of New Hampshire; the principal ones are Mt. Madison, 5,420 feet high, Mt. Jefferson, 5,660 feet high, Mt. Adams, 5,760 feet high, and Mt. Washington, 6,226 feet high.

WHITE NILE. The lower Nile.

WINNEPEG LAKE. A lake in British America, north-west of Lake Superior.

WISCONSIN. One of the United States of N. Am.; it is north of Illinois, west of Michigan, east of Minnesota.

WOODLARK ISLAND. One of the Louisiades.

WYOMING. The United States of N. Am.; south of Montana, east of Idaho, west of Dakota and Nebraska and north of Colorado.

YAKOUTSK. A great tract of east Siberia; its chief town is of the same name, and is a great fur depot on the Lena River.

YEDDO, OR JEDDO. The capital of Japan.

YELLOWSTONE. A branch of the Missouri River, running through the eastern half of Montana.

YLOE. One of the Philippine Islands, west of Mindora.

YOSEMITE. Mountains and Valley in Mariposa County, California; in the high mountains of this range are found the dark-green Colias, Belvii, and the rare Argyinnis Leto.

YUCATAN. A peninsula of Central America.

ZAMBESE. A river in eastern Africa, between Mozambique and Sofala.

ZAMHOANGO. A town on the west point of Mindanao.

ZANTE. One of the Ionian Isles.

ZANZIBAR. An island off the coast of Zanguebar, east Africa.

ZWEILLENDAM. The southernmost part of Cape Colony—contains a town of the same name.
CATALOGUE
OF THE
AMERICAN MACROLEPIDOPTERA
NORTH OF MEXICO.

Those species of which I possess the author's original types are prefixed with a ‡.
Those that are unknown to me in nature are denoted by a †.
Such as are wanting to my collection are designated by a *.

RHOPALOCERA.

FAMILY I. PAPILIONIDÆ.
GENUS I. PAPILIO L.


Astinus, DRURY, III. Ex. Ent., I, t. 11, (1773);


Larva on Aristolochia.


* Found at all in the U. S., confined to the lower part of Florida.

Larva found on various plants of the genus Aristolochia.

Two ♂; formerly in coll. Tryon Reekert, were taken in S. California, and received from Dr. Heerman in 1862.


A form of gen. I intermediate between Ajax (gen. I) and Marcellus (gen. II).

Like Ajax, but with the lower half of mesial bar strongly suffused with crimson on upper surface of secondaries.

The second brood; larger; tails much longer, and heavily edged with white nearly their whole length; at anal angle of interiors a crimson spot, sometimes two, instead of the bar of gen. I.

Larva feeds on pawpaw (Asimina triiloba, Gray).

P. Zonaria, Butler, Ent. Mo. Mag., V, p. 271 (1869); Kirby, Cat. p. 557, n. 267, (1871).

This species has been from time almost immemorial confounded with its ally (or perhaps var.) Celadon, Lucas. Cramer figured on t. 317, (Vol. IV), four figures, C, D, E, F, which purported to show both surfaces of the two sexes of Simon, but F, which he represents as the Q, is Celadon. Drury’s name, Proteus, would have held for this species (Simon) had it not been given previously by Lin. to another insect. Fabricius in Syst. Ent., (1775), first designated Drury’s “P. Proteus, Drus., I, t. 22, 3, 4,” as Simon. Later, in his Sp. Ins., (1781), he mixed B, with it and quoted P. Potchenem, Cras., (1, t. 37, A) as W. Afr. Sp., as a synonym of Simon (Proteus). Drus. nec Lin.) In his Mantissa, (1787), he confounds Simon and Celadon as Cramer had done, “Papilio Simon, Cras., Ins., 27, tab. 317, fig. C, D, E, F.” In the Ent. Syst., (1793), he repeats the error, “Cras., Ins., 27, tab. 317, fig. C, D, E, F, P. Proteus, Drus., I, tab. 22, fig. 3, 4.” Celadon is more frequently represented in N. Am. collection as Simon than is the true Simon itself, in fact the latter is very rare and the few examples I have seen in cabinets have no certain localities cited. Boisdauval, in the Sp. Gen., gives Jamaica, Florida and Cuba, as its habitat, and I have little doubt but that it really does occur in the southernmost part of peninsular Florida, the Lep. fauna of which is decidedly W. Indian.


Larva on orange in Florida, on ash in the more northern states.

Rare in the north; common south of Virginia.


Larva on a species of wild cherry.


Catesby's figure represents either a monstrosity or is a palpable exaggeration; the primaries are acutely falcate and many other points show the most liberal exercise of artistic license.


This common species is polymorphic, having a yellow c, like the c, and another (ab. Glauces) entirely black and between these every intermediate grade; some are black above and yellow beneath; others have the wings of one side yellow c and those of the other black c, and the body also half yellow and half black.

Larva on plum, apple, cherry, wild cherry, tulip tree.


Larva on Frangula Californica.


(1816).

The N. Am. examples are a little darker in the yellow of ground color, resembling in this the form occurring in Sicily, Turkey, etc. Its larva has not yet been found in this country, but of course it feeds on the Umbelliferae.


16. **Pergamus, HY, EDWDS., Proc. California Acad. Sc., (Dec., 1874).** According to its author close to Indra, but has tails as long as Asterius. Described from one ♀ taken in Santa Barbara, California, May, 1873.

17. **Asterius, Cham., Pap. Exot., IV, t. 385, (1782);** Oregon, United States and Territories from Atlantic to Pacific.


The macular bands of upper surface of wings fulvous instead of yellow; tails very short.


The macular bands on wings of ♂ are as broad and broader than in ♀; tails short. Larva on Archangelica purpurea.


Basal or inner half of wings black; outer half orange coloured, devoid of ornamentation; nearly alike on upper and under surface. But two examples so far known, one (♂) captured on Long Island, N. Y., the other (♀) taken on St. John’s River, Florida.


Macular bands of upper surface alike in both sexes; narrower than in common form of ♀, rarely any indications of yellow within discoidal cells.

var. e. Utahensis, Nob.—♂ Primaries more falcate, and all wings somewhat narrower than in the common form. ♀ Pale yellow stripes on each side of head and prothorax; tegule also pale yellow; usual lateral rows of yellow dots on abdomen; anal valves pale yellow; macular bands and submarginal lunules on wings pale yellow on both surfaces, devoid of the orange colour beneath so conspicuous in the eastern examples; anal eye orange pupilled with black, said pupil extending in a line to and connecting with the black of abdominal margin. ♀ with the macular bands reduced to a series of more or less obsolete spots.


I saw the type of this some years since, and, if my recollection serves me right, it is very near or perhaps the same as var. Asteroides, above cited.


Larva on sassafras (Laurus Sassafras).

ab. a.—with the submarginal lunules of secondaries prolonged inwardly towards base, forming dashes or rays. One example in coll. Peale.

ab. b.—with, on under surface of hind wings, a narrow yellow band which crosses the wing nearly parallel with abdominal margin, running from near anal angle to costa a short distance from base, the same as is always found in Falcoidea. One example in coll. Streeker.


Larva much resembles that of Troilus, and feeds on various species of Laurus.

GENUS 2. PARNASSIUS, Latr.


This form has yellow spots instead of red.

Larva on Sedum.


FAMILY II. PIERIDÆ.

GENUS 1. LEPTALIS, DALMAN.

GENUS 2. NEOPHASIA, BEHR.


Hy. Edwds. says, "Chrysalis is attached to the trunks of pine and fir trees. The caterpillar doubtless feeds on the spruce fir (Abies Douglasii), and should be sought in the early part of July."


GENUS 3. PIERIS, SCHRANCK.

26. NAPI, LINN., (Papilio N.), Faun. Succ., p. 271, (1761); California.


Paler form of the preceding. & sometimes with a more or less distinct black spot in middle of superior towards outer margin, and sometimes entirely destitute of such spot.

British Columbia, Oregon, California.


A. almost immaculate form,—a little greyish at base of wings and on costa and apex of primaries being all the decorations. Larva on cabbage, turnips, etc.


A. form having the veins of under surface of secondaries accompanied with dark scales.


Larva the too well-known cabbage-worm; is also found on turnips, mignonette, and some other plants.


$^3$ entirely lemon yellow on both surfaces.


Pap. Monust, Cram., Pap. Ex., II, t. 141, (1779);

(Pieris M.) Morris, Syn., p. 16, (1862).


ab. a. PHILETA, FABR., (Pap. P.), Syst. Ent., p. 471, (1775); Kirby, Cat., p. 458, (1871).


Pieris suasa, Bdl., I. c., p. 549, (1836).

Phileta is a smoky or melanotic $^3$ form.

Larva, according to Bdl., on Cleome Pentaphylla.


This is the first or spring generation of Protodice.

Larva on Cruciferae.


Closely allied to the preceding.


Closely allied to the preceding.


Canada, New England and M'dle States.

Southern U. States, W. Indies, Cent. Am., Cayenne, Brazil, Venezuela.

34. CAT amour.

35. AU BALI.

36. CREM.

37. LANG.

38. GEN.

39. SAR.

40. SPH.
Papilio Daplidice var. Russia, Esp., Schmett., I, 2, t. 90, (1784).


GENUS 4. ANTHOCHARIS, BDL.


Pieris L'herminieri, Godt., Enc. Meth., IX, n. 164, (1819)

Donovan's figure is incorrectly represented with long palpi like Lycythea.


CATALOGUE OF THE


Smaller than Sara, and Q is always white, never yellow, in some instances in the former. Probably the first generation of Sara.

40. CETHURA, Feld., Reise Nov. Lep., II, p. 182, t. 25. (1865); (Euchloe C) Kirby, Cat., p. 508, (1871).


Belongs to the group separated by Rambur into the genus Zegris.

GENUS 5. NATHALIS, Bdl.


Felicia, Poey, Mem. Cuba, I, p. 443, t. 18, (1851).


The original type of Luteolus is in my possession; it is merely a little darker yellow than is commonly the case.

GENUS 6. CALLIDRYAS, Bdl.


Pap. Volcanica, Perry, Arcana, (1811).


Larva on Cassia.


Hind wings of this species prolonged at the anal angle into a tail.

GENUS 7. KRICOGONIA, REAK.


Awnyntia et Cynthia Swainsonia, Swains., Zool. Ill., 2, Ser., t. 65, (1832).


GENUS 9. MEGANOSTOMA, REAK.


Larva on various species of clover (Trifolium).

GENUS 10. COLIAS, FABR.


AMERICAN MACROLEPIDOPTERA NORTH OF MEXICO.


The N. Am. f' examples are generally paler than the common European form, assimilating more to the var. Lapponica, Stgr. Edwds.' types (Helena et Chippewa) were 'taken at McKenzie's River, British Columbia, N. L. 61°, &c. about. I received examples from the region south-west of New North Wales, B. C. It is a common species in central and northern Europe and Siberia.

Col. Anthyale, Stgr., Cat., p. 5, (1871).

Diffs in nothing of any importance from the Labrador examples.


A form found in S. Labrador and in the Lake Superior region, in which the f is in the majority of instances yellow like the f.


A form of great size, f f often 2½ inches in expanse; the f is sometimes partially suffused with orange, like Eurythemis, as in the examples figured by Edwds. which were taken at Slave River, B. C. In the examples from N. S. Wales, N. C., the males are lemon yellow, like the typical Labrador form; the females are both yellow and white, the latter greatly in excess of the former. Above Lake Athabasca both the orange and yellow f, and the yellow and white f forms occur. All four exceed in size those from N. E. Labrador.


ab. a. f ALBA,—a white f form of rare occurrence.

What little difference there is between this and *Alexandra* is easier seen than described, being mainly in the presence of more dark scales on margin of primaries in ♀.


The common white ♀ form.

Larva on clover (*Trifolium*) and pea (*Astragalus*).

ab. b. ♂ NIG.—First figured by Glover in his unpublished plates from a unique example taken near Palmyra, N. Y. This figure was copied in Edwards' Butt. N. Am., II, t. III, Col., f. 8, 9, (1876). Another example, now in my possession, was taken near Montreal, Canada; it is wholly smoky black on upper surface; save the fringes, which are pink. Under surface dull green, with a large inky patch on inner half of primaries.

†ab. c. ♂ Virida.—One example taken at same time and place as the preceding; Upper surface dull dark green, with usual black border. Under side much as in preceding.


Suffused with pale orange.


Nevada.

Oregon.

California.

Canada, United States east of Texas, Kansas, ? Nevada.

Illinois, Georgia.

M'Kenzie's River, British Columbia; Oregon, California.
AMERICAN MACROLEPIDOPTERA NORTH OF MEXICO.

60. CHRYSOtheme, Esp., (Pap. C.), Schmett., I, 2, t. 65, (1777); Hüb., Eur. Schmett., I, f. 426—428, (1793—1827); Ochs., Schmett. Eur., I, 2, p. 178, (1808); (Col. C) Godt., Enc. Meth., IX, p. 103, (1819); Bdl., Icones, t. 9, (1832); Sp. Gen., I, p. 643, t. 6, (1836); Morris, Syn., p. 28, (1862); Stgr., Cat., p. 6, (1871); Kirby, Cat., p. 493, (1871); Streck., Lep., Rhop.-Het., p. 100, (1874).


‡ab. c. ♀ FLAVA,—destitute of every trace of orange. Mus. Streck.


Forma intermedia CHrysopshene et Eurytheme.

ab. e. ♀ ALBA W. H. Edwds., I, 2, f. 8, 9.


Destitute of all orange, lemon yellow like Philodice.

Larva on buffalo grass (T. reflexum) and other species of Trifolium.


So close to C. Hecla, Lefbr., that I almost doubt its being distinct.


ab. a. **ChiONE, Curtis**, App. Ross' 2d Voy., Nat. Hist., p. 66, t. 4, (1835); Stgr., Cat., p. 6, (1871); Kirby, Cat., p. 493, (1871).

Devoid of the black discal spot on primaries; marginal border narrow and obscure.


This is the Labrador form of the Lapland C. Werdandi, Zett., (Ins. Lapp., p. 908, (1828).

*var. a. **Rossii, Gn.**, Ann. Soc. Ent. Fr., p. 199, (1864); Stgr., Cat., p. 5, (1871); Kirby, Cat., p. 496, (1871).

Yellow form.


**GENUS 11. TERIAS, SWAINS.**

\[
\begin{align*}
\text{Xanthidia, Bdl.} \\
\text{Eurema, Hüb.}
\end{align*}
\]


ab. a. ♂♀ FlAVA.—Citron yellow without any traces of orange. ♂ very rare, ♀ more frequent.

Larva on Cassia and Trifolium.


**Boothia-Felix.**

N. E. Labrador.

**Boothia-Felix.**

Mts. of Cal., 10,000 ft. above the sea.

From Pennsylvania southward to the Gulf of Mexico and westward to the Pacific; Mexico, Central Am., W. Indies.

Texas, Mexico, Cuba, Cent. Am., Bolivia, Venezuela.
Habitat Texas, Mexico.

Habitat Texas, Duncan, Nat. Lib., Ent., V, p. 125, t. 8, (1837).
(Eurema M.) Kirby, Cat., p. 441, (1871).


Habitat Florida, Mexico.
Bates, Jnl. Ent., I, p. 242, (1861); (Eurema E.) Kirby, Cat., p. 444, (1871).

Habitat Cuba.

Habitat Southern United States.

Habitat Canada, U. S.
Larva on “Trifolium, Cassia and Glycine,” Bdl. Lec.


Habitat Mexico.
ab. a. ? Albina,—entirely white instead of yellow.
Larva food same as the preceding.

Habitat same as T. Delia.

? Ter. Albina, Poey, l. c.

FAMILY III. LYCAENIDÆ.
GENUS 1. THECLA, FABR.


Larva on Quercus Cinerea and other oaks.


T. Psyche, Bdl.-Lec., Lep. Am. Sept., p. 88, t. 27, (1833); Morris, Syn., p. 93, (1862); Kirby, Cat., p. 390, (1871).

Larva on Astragalus and Quercus.


T. Hyperici, Bdl.-Lec., Lep. Am. Sept., p. 90, t. 28, (1833); Morris, Syn., p. 94, (1862); Kirby, Cat., p. 396, (1871).

T. Favonius, Bdl.-Lec., Lep. Am. Sept., p. 95, t. 30, (1833); Morris, Syn., p. 95, (1862).


Larva on Humulus Lupulus, Crataegus.


Larva on black oak.


var. a.—with the orange patch on primaries obscured or represented by only a small spot.

Larva on Quercus Obtusiloba.


**CATALOGUE OF THE**


Larva on oak.


*T. Fabricii, Kirby, Cat., p. 654, (1871).*

Larva on Quercus Illicifolia.


*T. Borus, BDL., Lep. Cal., p. 43, (1869).*


**†100. CATALOGUE OF THE**

**†101. CATALOGUE OF THE**

**†102. CATALOGUE OF THE**
Larva on willow.
A species subject to some variation, more particularly in the extent of the reddish colour near the inner angle, etc., on upper surface of wings.


Larva on Smilacis.
Perhaps identical with the preceding.


The foundation for placing this in our fauna rests on one said to have been taken near Aurora, New York, in July, 1873.


Larva on oak and Eupatorium Celestium.


T. Hrithon, Morris, Syn., p. 100, (1862).

Larva on various species of Pinus.
AMERICAN MACROLEPIDOPTERA NORTH OF MEXICO.


T. Iris, Morris, Syn., p. 97, (1862).

var. a. Absage, Bdl.-Lec., Lep. Am. Sept., p. 103, t. 32, (1833); Morris, Syn., p. 97, (1862); Kirby, Cat., p. 389, (1871).

Median lines wanting the distinct white at termination on costa of both wings and on inner margin of secondaries.


Smaller. Inferior tailsless.

Larva on Vaccinium Corymbosum.


Larva on Hoveaella.

This is the American form of T. Rubi, L., from which it differs so little, if any, as scarce to deserve a separate designation.

GENUS 2. LYCAENA, FABR.

(Polyommatus, Latr.)

115. Tejua, Reak., Proc. Acad. Nat. Sc., Phil., p. 245, (1866); (Cupido T.) Kirby, Cat., p. 356, (1871); California.


116. Monica, Reak., Proc. Acad. Nat. Sc., Phil., p. 244, (1866); (Cupido M.) Kirby, Cat., p. 356, (1871); California.


Larva on Phaseolus Perennis, Lespedeza Capitata.


Cupido Comynzas var. Amyntula, Kirby, Cat., p. 356, (1871).


Larva on Hosackia.


Larva on Lupinus Perennis.


A number of examples from Alaska presented not the slightest point of distinction from the many European examples with which I have compared them.


Cupido Pseudargiolus et Neglesta, Kirby, Cat., p. 371, (1871).

Larva on Actinomenis.


Cupido Lucia et Violacea, Kirby, Cat., p. 368, (1871).


The type form has a large dark brown patch on disc of under side of secondaries. See Kirby's and Harris' figures.


The prevalent ♀ form in Virginia, upper surface entirely dark brown.

ab. b. ♀ INTERMEDIA,—a form intermediate in colour of upper surface between the blue and brown female, neither one nor the other but partaking in a measure of the characteristics of both. Rare.


Probably a var. of the preceding.


Lyc Polyphemus, Bdl., Lep. Cal., p. 49, (1869); (Cupido P.) Kirby, Cat., p. 373, (1871).


Under surface of secondaries devoid of the row of median spots, and with a large white spot near middle.


Under surface, with the exception of faint discal bars, immaculate.


Probably a var. of Pheres.

**Lyc. Fuliginosa, Streck., (neo Edvds.), Lep., Rhop.-Het., p. 89, (1874).**


**Cupido Aehaja, Kirby, Cat., p. 366, (1871); (Lyc. A.) Streck., Lep., Rhop.-Het., p. 89, (1874).**


A ? form, dark fulvous on upper surface and brown beneath.


**Lyc. Erymus, Bdl., Lep. Cal., p. 48, (1869); (Cupido**
Plebeius Mintha, Kirby, Cat., p. 653, (1871).

A darker form.

The above synonymy of Icaroideae I trust may prove correct.
Mr. Reakirt's original types of Rapahoe, both ♂, (though erroneously determined ♂♂ in the original description), are in my possession. Dedalus and Pardalis I received from their author, Dr. Behr. Kodiak I likewise received from that gentleman, who also had supplied Mr. W. H. Edwds. with the examples on which the latter based his description. The types of Lyce, Marico pa and Mintha I have not seen.
Mr. Edwds. says that Marico pa and Mintha are the same as the var. Pardalis.
Mr. Scudder tells us that Pardalis ♂ is possibly identical with Marico pa, which latter he pronounces distinct from Icaroideae, and that Pardalis ♂, to which he places Erymus as a synonym, is distinct from both Marico pa and Icaroideae.

Mr. Edwds. says Dedalus is a synonym of Icaroideae, and that Rapahoe is the same as Lyce. Mr. Scudder informs us that both Rapahoe and Lyce are synonyms of Edwds. 'Pembina,' whilst Mr. Edwds. holds Pembina to be a distinct species and one that has not yet been banded with aliases.


(Chrusophanus, Hüb.)


†tab. n. 9 Fasciata, NOH.—All the black spots on upper surface of primaries, save the one within the diskoidal cell, are enormously enlarged and confluent, forming a broad, somewhat irregular, black band extending from costa to inner margin. Under surface exactly as in common form.

Larva on Rumex Acetosella.


Larva on Polygonum.


"Food-plant: Hemizona."


Differs in ♀ being uniformly same colour above as the ♂.


In Kirby's Catalogue are cited the following apocryphal species:


These four have no existence in nature nor are their descriptions to be found in the work referred to. Mr. Scudder says "These names were sent to Mr. Kirby as about to be published, and by accident were never cancelled." Buff. Bull., III, p. 124.

GENUS 3. FENISECA, GROTE.


Larva on Ams, Vaccinium, Viburnum.

GENUS 4. EUMÆUS, HUB.


Larva on Zamia Pumila.

171. MINYAS, HUB., (Rusticus Adolescens M.), Sam. Ex. S. W. Texas, Schmett., I, (1806-1816); (Eumenæus M.) Verz. Mexico, Bek. Schmett., p. 67, (1816); Kirby, Cat., p. 426, Panama. (1871).


CATALOGUE OF THE

FAMILY IV. ERYCINIDÆ.

GENUS 1. APODEMA, FELD.

172. Mormo, Feld., (Lemonias M.), Wien. Ent. Mon., III, Utah, Ne-


Chrysobia Mormonia, Bdl., Lep. Cal., p. 52, (1869).


This form is a little smaller and differs further in that the median row of spots on upper surface of secondaries is confluent, forming a band, the inner edge of which is very irregular, having a deep sinus opposite the middle cell; this band is fulvous, edged more or less with white on its inner margin.

GENUS 2. LEMONIAS, WEST.

172. Palmerii, W. H. Edwards., Trans. Am. Ent. Soc., III, Utah, p. 195, (1870); Kirby, Cat., p. 652, (1871); (Chryso-


GENUS 3. CHARIS, HUB.


Nymphidia Pumila, Bdl.-Lec., Lep. Am. Sept., p. 131, t. 37, (1833); Morris, Syn., p. 104, (1862); (Cale-


FAMILY V. LIBYTHEIDÆ.

GENUS 1. LIBYTHEA, FABR.


Larva on Celtis Occidentalis.


FAMILY VI. DANAIĐÆ.

GENUS 1. DANAIIS, LATR.


Papilio Erippus, Cram., Pap. Ex., I, t. 3, A, B, Australia. (1779); (Danais E) Kirby, Cat., p. 7, (1871).

Papilio Archippus, Fabr., Ent. Syst., III, 1, p. 49, (1793); Abb.-Sm., Ins. Ga., I, t. 6, (1797); Brown, Const. Mis. Butt., I, p. 156, t. 23, (1832); (Danais A.) Bdl.-Lee, Lep. Am. Sept., p. 137, t. 40, (1833); Morris, Syn., p. 38, (1862); Harris, Ins. Inj. Veg.,


—— Petiver, Mus., 52, n. 527, (1696–1703).


var. a.—Generally smaller. Ground colour dull, much suffused with black, especially on primaries.

†ab. b. ♂—Black marginal band destitute of all white spots; the white spots of subapical band minute, almost obsolete. Mus. Streck.

var. c.—Not bright; more the colour of Berenice, but not so dark.

†ab. d. ♂—Ground colour on both surfaces of right hand primary pure white. Analogous examples of this partial albinism are not unfrequent among the copper Lycaenidæ. Mus. Streck.

Larva on various species of milkweed (Asclepias); also on bitter root (Apocynum Androseumfylum).

Catesby's figure, which is cited by Linn. in the Syst. Nat., Ed. X, and other editions, also in Mus. Lind. Utr., is, though crude, a fair representation in form and colour, and is the earliest reliable figure I have been able to examine of our species. Under Plexippus Linn. also cites fig. 5, 6, t. 239, in Sloane's Jamaica. These figures, however, do not represent this species at all, but the upper and under surfaces of D. Berenice.

I have strong doubts if Cramer's Erippus, fig. A, B, t. 3, in Vol. I, Pap. Ex., represents our species at all, but think it more likely to have been meant for the allied Brazilian Plexuris, Godt., at least to judge by the white which accompanies the venation of under side of secondaries.

Perhaps one of the most remarkable occurrences in connection with this, the commonest of all our N. Am. butterflies, is that within the last few years it has appeared in great numbers in Australia, and bids fair to be, if not already, as plentiful there as with us. It is worthy of some thought, "not that it is curious or rare, but how the devil it got there;" possibly and probably the chrysalis or larva, or even the perfect insect, through commerce was carried from San Francisco to some not very distant point in the Pacific, and in due time from thence further, and so on.


Papilio Gilippus, Abb.—Smith, (nee Cram., t. 26, f. C, D),
Ins. Ga., I, t. 7, (1797); (Danais G.) Kirby, Cat.,
p. 7, (1871).
——, Sloane, Jamaica, II, p. 214, n. VIII,
t. 239, f. 5, 6, (1725).
Larva on milkweed (Asclepias).
var. a. STRIGOSA, Bates, Ent. Mon. Mag., I, p. 32,
(1864); (Anosia S.) Scud., Buff. Bull., II, p. 246,
(1875).

Differs only in that on upper surface of secondaries the veins
as far as to the black margin are narrowly edged with ob-
scure white or grey.
Vinotoxicei, (Linnaeus ferruginen et Anosia), of Hubner is not our
species, but the Gilippus c. 'ram., a S. A. insect paler in
colour and with more white spots.

GENUS 2. CERATINIA, FABR.

181. Lycaete, Fabr., (Pap. L.), Ent. Syst., III, 1, p. 161, Los Angelos,
(1793); (Ceratinia L.) Reak., Proc. Ent. Soc., Phil.,
V, p. 218-219, (1865); (Dynothea L.) l. e., p. 222;
(Ithomia L.) Kirby, Cat., p. 26, (1871); (Dynothea
†var. a. NEGRETA, Reak., Proc. Ent. Soc., Phil, V, p. 220,
(1865); (Ithomia N.) Kirby, Cat., p. 26, (1871);

Differs principally from the type form in the presence of a
black spot in end of cell of secondaries.
This var. is close to var. Panamensis, Bates, but differs from it
in the presence of the black in middle cell of secondaries and
in the absence of the three white submarginal spots on same.

GENUS 3. MECHANITIS, FABR.

(1865); Kirby, Cat., p. 24, (1871); Scud., Buff. California.

FAMILY VII. HELICONIDÆ.

GENUS 1. HELICONIUS, LATR.

183. Charithonia, Linx., (Pap. C.), Syst. Nat., Ed. XII,
2, p. 757, (1757); (Helif. C.) Kirby, Cat., p. 141,
(1871).
Pap. Charitonia, Fabr., Syst. Ent., p. 462, (1775);
Cram., Pap. Ex., II, t. 191, (1779); (Apostrophia
C.) Hub., Verz. Bek. Schmett., p. 13, (1816);
(Heliconia C.) Godt., Enc. Meth., IX, p. 210,
(1819); Bill.-Lee, Lep. Am. Sept., p. 140, t. 41,
(1833); Lucas, Pap. Ex., p. 95, t. 50, (1835);
Morris, Syn., p. 39, (1862); (Apostrophia C.) Scud.,
15, 16, (1725).
FAMILY VIII. NYMPHALIDÆ.

GENUS 1. COLÆNIS, HUB.


Pap. Passaflora, Fabr., Ent. Syst., III, 1, p. 60, (1793); Abb.–Sm., Ins. Ga., I, t. 12, (1797).


ab. a. — Ground colour of upper surface olivaceous instead of red. Larva on blue and scarlet passion flower (Passaflora Caerulea et Incarnata).
GENUS 3. EUPTOIETA, DBLDY.


Larva on violets, Podophyllum, Sedum, Passiflora, Portulaca.


GENUS 4. ARGYNNIS, FABR.


Larva on the various species of violets, both wild and cultivated.


Above the spots and marks of primaries suffused and confluent, forming heavy black streaks between the veins and connecting with the black outer margin. Secondaries destitute of the two rows of white spots. Beneath primaries marked as above and with the black streaks in the cells heavily suffused with silver. Secondaries with the basal half silver and the outer half dark brown with blackish streaks between the veins; five submarginal silver spots, two only at all conspicuous, the others merely a few scales. Mus. Streck.

Fisher changed the name Astarte, under which it was originally described, to Ashtaroth, owing to the former being preoccupied by a species in Dibdy.-Hew., Diur. Lep., t. 25, f. 5.

Larval food is, probably, in common with that of the other species, various kinds of violets.


Wings somewhat broader. Under surface of secondaries in ♀ not greenish; generally with the space between the two outer rows of silver spots pale buff colour in both sexes.


Smaller. Green of under side of secondaries brighter.

Larva on violets.

†ab. a. $\sigma$ BAAI, NOB.—Upper surface primaries, submarginal lunules confluent with the row of round black spots interior to them. Secondaries, submarginal line wanting, submarginal lunules connected and suffused, forming an irregular jagged line; the row of spots interior to this almost obsolete, other marks suffused. Under surface primaries, all black marks increased and more or less confluent. Secondaries, over one-third of wing (basal part) silver, rest reddish brown, paler towards exterior margin; an irregular, rather broad, submarginal band formed of confluent silver lunules and spots. Mus. Streck.

Upper surface, ground colour of $\sigma$ same red as the normal form or a little darker, of $\varphi$ pale yellow or yellowish white, which colour is however confined mainly to the outer third of wings, the basal and discal parts being black or blackish brown. $\varphi$ with silver spots of under side of secondaries very small.


Pap. Daphnis, Martyn, Psyche, t. 3, f. 7, t. 4, f. 9, (1797).
Larva on violets.

χ, ground colour under surface all wings uniform cinnamon brown, seldom much indication of the buff space between the last row of silver spots and the submarginal lunules. χ, ground colour under side secondaries uniform very dark ferruginous.

ab. χ.—Whole upper surface obscured with blackish brown; no defined marks visible save one in cell of primaries. Under surface primaries, all black marks very much enlarged, in many parts confluent. Secondaries with very dark ground colour, silver spots as in usual form.

From Mr. Edwds’ figure should suppose this to be the same as Aphrodite.

Larva on violets.


Colorado.
S. Labrador, Can., Lake Sup. Region, N. E. States, N. Y., Pa., west’n States to Rocky Mts. Arizona.

British Columbia.

California.

California.

California.

Vancouver’s Is., Wash.
Ty., Oregon.
California.
Oregon.


var. a. RHODOPE, W. H. EDWDS., Trans. Am. Ent. Soc., V, p. 15, (1874); Butt. N. Am., II, t. 6, Arg., (1874); Scud., Buff. Bull., II, p. 260, (1875). Differ in the under surface of secondaries being darker colored; sometimes obscured with blackish on disc between the second and third row of spots. In ♀ the spots are more or less silvered; in ♂ the submarginal lunules sometimes silvered, sometimes pale yellow; all the other spots pale yellow.

var. b. BEHRENSESII, W. H. EDWDS., Trans. Am. Ent. Soc., II, p. 370, (1869); Butt. N. Am., I, t. 12, Arg., (1870); Kirby, Cat., p. 163, (1871); Scud., Buff. Bull., II, p. 260, (1875). Under surface of secondaries in both sexes deep ferruginous with more or less of a paler greyish tint between the outer row of spots and the submarginal lunules; all the spots brilliant silver. The greatest difference between this and the preceding variety is in the females; between the males it is not much.

This may prove to be one or the other of the above forms.


Arg. Hydaspe, Bdl., Lep. Cal., p. 60, (1869). Under the name of Zerene Dr. Boisduval in 1852 placed both this and the species afterwards described by Dr. Behr as Monticola. In 1869, premising that he had confounded two species, he renamed this one Hydaspe and retained Zerene for the species which in the interim (1863) Dr. Behr had separated as Monticola; of course Dr. Behr's name will stand for the latter and Dr. Boisduval's for the present, whilst Hydaspe sinks into a synonym.


Arg. Montivago, Kirby, (nee Behr), Cat., p. 159, (1871).
Submarginal lunules on under surface of secondaries in both sexes silver; all other spots whitish yellow as in Zerene.

var. b. MORMONIA, Bdl., Lep. Cal., p. 58, (1869); California.


All spots on under side of secondaries silver.


Very close to Mormonia, if not, as I believe, identical. Ground colour of under surface appears to be paler than in that form, and in some instances with only the submarginal lunules of secondaries silver.

Black markings heavier, with a tendency to suffusion. Submarginal lunules of under side of secondaries partly silver, sometimes all the spots more or less silvered.


This is not the "n. 4 Astarte" of Edwds., in Proc. Ent. Soc., Phil., III, p. 435, which is species (No. 210) described below as follows:

‡210. LARGE, NOB.—This name I have given to a smaller allied species from California, which has been sometimes mistaken for Montivago, and which may be a Pacific coast var. of Eurynome. It expands 1½-1½ inches; is on upper surface a trifle more red in colour, otherwise much the same as in that species. Beneath the primaries, except along the costa and towards the apex where they are buff, are tinged with red; in some cases the three or four marginal lunules nearest apex are silver, oftener not. Secondaries reddish buff, palest between the marginal lunules and the last row of silver spots, but nowhere dark; spots all silvered, no tinge of green whatever in any example of the very many I have examined. When compared with Eurynome, beneath the latter is much paler, is yellowish and generally mottled or shaded more or less with greenish, whilst the present species is darker, is of a ferruginous buff and never with the slightest indication of green; the spots are also comparatively smaller and not as heavily silvered as in Eurynome. This is the species cited as Astarte, Dbdy., by W. H. Edwds., Proc. Ent. Soc., Phil., III, p. 435, (1864), and later considered by the same author as identical with Eurynome, from which, however it is I believe, distinct, as shown above.


No silver on spots of under surface.


Larva on violets.


**California.**

**Colorado, Montana.**

**Alaska.**

**Cariboo, Brit. Col.**

**Canada, southern part of the Rocky Mts.**

**New England, Middle and Western States to the Rocky Mts.**

**Labrador, British Columbia, Colorado.**

**Labrador, Greenland, Lappland.**


Destitute, or nearly so, of the white basal marks on under side of secondaries.


Prevailing colour of under side of secondaries much more reddish or rust coloured.


Pap. Dia Lapponica, Esp., Schmett., I, 2, t. 97, (?1790.)

Arg. Lapponica, Kirby, Cat., p. 161, (1871).


219. Polaris, Bdl., Ind. Meth., p. 15, (1829); Icon, t. 20, (1833); Sp. Gen., I, t. 11, f. 1, (1836); Bdl.—Lee., Lep. Am. Sept., p. 159, (1833); Dup., Supl., I, 11, t. 20, (1832); Freyer, Neu. Beitr., V, t. 439, (1831-1858); H-S., Eur. Schmett., I, p. 32, (1843);


var. a. SAGA, KADEN.—Where described I cannot at present ascertain. It is a little smaller than the normal Friggia. On upper surface the basal half of secondaries entirely suffused with black; beneath the basal half of secondaries, except the large white spot at costa near base, arc dark rust red, the usual marks but dimly discernible.


Papilio Myrina, Martyn, (nee Cram.), Psyche, t. 1, f. 2, 3, (1797).

Larva on violets.


Fore wings not produced so much apically. Not as much dark suffusion on basal half of upper surface as is generally the case in Bellona. Markings of under surface of secondaries somewhat more distinct.

var. b. ♀.—It is difficult to say if this example belongs to Epithore or Friggia, but probably to the first. The upper surface is nearly as in Epithore. The whole under surface is paler than either of these species. The broad irregular mental band and basal spots of under wings are all uniform clear yellow, and all save one, basal spot at costa, edged with a sharp black line.
†222. IMPHOA, BUTL., Ent. Mon. Mag., XIII, 206, (1877).

†Morrisii, Reak., Proc. Acad. Nat. Sc., Phil., p. 245, (1866),
was described from an example of Arg. Euphrosyne, L.,
which Mr. Reakirt received from M. Lorquin the younger,
with California erroneously given as its locality.

is Dia, L., received by Mr. Reakirt under the same circum-
stances.

The Argynmides of the western slope, or Pacific side of the
Rocky Mts., are without doubt, if we except perhaps the Co-
lides, the most difficult of all the N. Am. Diurme to deal
with, as they not only run into certain variations, but again
into sub-variations, and even further; the two species Monti-
cola and Zerone, first considered identical by Dr. Boisduval,
are perhaps the most perplexing; each of these bears the
same relation to some of their varieties as does Niobe to its
var. Eris and Adippe to Cleodoza, but presenting by no means
the stability of form of these European variations, but
branching out into endless and endless varieties until the
student is completely at a loss to know where or to what they
may belong. The presence or absence of silver spots is not
of the slightest specific importance, for the same species may
be with or without them, or one sex of the same species is
with them silvered and in the other they are devoid of it, or
again the silver is confined to a single row of spots, or even
to part of a row, or to one or two spots only. Edwardsii and
Nenoquis are so close as to scarce deserve even a varietal
name. Nakomis may be and I believe is a form of Cyphele,
coming as it does from Arizona, which for its Lep. Fauna is
the wonderland of N. Am., we need scarce be astonished at its
remarkable aberrancy. Bremnerii may be a form of Monti-
cola. Nos. 194, 195, 197, 199, 200, 201, 205 var. c., 207, 212
and 222 are entirely unknown to me in nature; the majority
of them I feel assured will prove to be varieties of some of
the older species.

The lately described Alcestis is a var. of Aphantis; Mr. Edwds.
informed me that the larva is different; in my estimation the
difference in the appearance of the larva amounts to very
little; for if the perfect insect varies from the normal
form, why may not then the larva likewise vary? In fact, I doubt if there can be much variation in the insect
unless it existed in the earlier stages. Too much stress by
far is laid on the circumstance of whether the larva differs
or not from that of the ordinary form. If this were so con-
clusive, why is it then that the green and brown larva of Oer.
Imperialis, both bring precisely the same form of moth, or the
tawny and green larva of Thryeas Abbotii, produce the same
result? No; if we have a varietal form or subspecies in the
last stage of the insect we must just as reasonably expect to
find it in the earlier stages. Is the Albino offspring of negro
parents black when a child or with black or brown eyes?
Certainly not; as an infant it has the same abnormal white
cuticle to its body and the same fiery iris to the eye as when
it becomes an adult. Again, would the child born with six
toes or fingers on each foot or hand have but five to each ex-
tremity on attaining maturity?
GENUS 5. MELITAE, FABR.

\{ Phycioidea, Hüb. \}
\{ Eresia, Bll. \}


The figure of (under side) HERMAS agrees with the original type of Geniqueh, Reak., in every respect except that the ground colour of the former has a little more of a reddish tinge, not so much of an ochre.


This is only known to me through Mr. Edwds's description, which, however, seems equally applicable to M. PIETA, but whether it be identical with that species I am of course at present unable to determine; or again, it may be only another of the endless variations of M. Pratensis.


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**Larva on Actinomeris Helianthoides.**

The dark colour predominating and the normal style of ornamentation being entirely changed.

In Hubner's Sam. Ex. Schmett., I, on first page in the index is cited "Dryades A. Reticulate a. Liriote, b. Gorgone," on the plate of "Dryades A. reticulate a.," which is the fourth in the vol., though none are numbered, are four good figures of Lirote, designated by that name (Dryades reticulata Liriope).

Dr. Herr—Schnaef, in his Ind. Syst., p. 104, Reg. Corr.—Blatt, (1865), quotes this by the index name (Gorgone) as a synonym of Thara, which is curious, as said Gorgone of index—Liriote of plate—is a quite distinct S. American spe-
cies, bearing no resemblance to *Tharos* in particular; on the same page he cites, under its name *Laripe*, Cramer's *C. D. t. 1. (Vol. 1)*, as a separate species from Hubner's, above quoted, when it is apparent that both authors represented the same insect and also denoted it by the same name, *Laripe*. Hubner's figures are, as usual, good, and Cramer's are recognizable, and both are so good that any one at all acquainted with the common tropical species *Laripe* could immediately identify it from either. Mr. Scudder cites two of the figures of Hubner's plate (Nos. 1, 2) as representing *Ismeria* (Cariola, Reak.), from which they are even farther removed than from *Tharos*, and the other two (Nos. 3, 4) he regards as distinct and retains for them Hubner's index name of *Gorgone*.


Mesial band broader and in common with the marginal lunules, above and below, on all wings pale yellow or whitish, more especially so in the ♀. Secondaries beneath pale.


A white or Albino aberration of the var. *Pallida*. Analogous examples sometimes occur in the European *M. Cinia* in which the fulvous is entirely replaced on both surfaces by yellowish white.


Upper surface very heavily suffused with blackish; reticulations of under surface more sharply defined than is generally the case with *Pratensis*.


**Mel. Epula, Bdl.,** Lep. Cal., p. 54, (1869).


Larva on various species of thistle (*Carduus*).


Larva on *Helianthus Divaricatus* (sun-flower), *Actinomeris Helianthoides*, *A. Squarrosa*.


Larva on *Helianthus Trachelifolius*.

From Virginia southward to the Gulf of Mex. and westward to the Rocky Mts.
There has been some uncertainty as to what Bdl.-Lec.'s figures really represent. These Mr. Scudder ascertainment were copied from Abbott's unpublished drawings, and poorly enough copied at that. No one will dispute that they are caricatures, but nevertheless there can no longer be any doubt that they were intended to illustrate this species.


**Larva on** *Diplopappus Umbellatus.*

The figure (187 on p. 258) in Packard's Guide, purporting to be the larva of this insect, does not represent the larva of any species of diurnal Lepidoptera.

Messrs. W. H. Edwards, and Scudder both cite the *Ismeria* of Harris (p. 288, Ins. Inj. Veg.) as a synonym of *Nyctis,* Ddby. & Both authors are in the wrong. First, Harris' description plainly and unmistakably applies to the species subsequently described by Scudder as *Harrisi,* and not at all to *Nyctis.* Dr. Harris remarks, after his description, "the only specimen which I have seen was sent to me by Dr. D. S. C. H. Smith of Sutton." I have seen this specimen, which is still in the Harris collection (now in the keeping of the Boston Mus. Nat. Hist.). It is a specimen of *Harrisi,* Scud., and is No. 314 in the collection. On referring to Dr. Harris' MSS. catalogue, which is with the collection, I find No. 314 to be "Melitaea, Sutton, Dr. Smith."


**Larva on** *Cablea Brevispora.*


Submarginal lunules, and sometimes mesial band of under side of secondaries, silver or silvery white.
CATALOGUE OF THE

The black lines on outer half of upper surface of primaries partially obsolete, the red ground colour prevailing. On under side of secondaries the small ocelli in the space between the marginal lunules and mesial band is wanting.

Paler on both surfaces, black lines less diffuse; the small round spots on space between marginal lunules and mesial band of under side of secondaries obsolete or nearly so.

Not known to be in any N. Am. collection, and doubtless is one or the other of the above cited forms of Palla.

I am entirely unacquainted with this insect in nature, but from the description I should surely suppose it to be identical with M. Whitneyi.

This is also unknown to me, but from the description it seems impossible that it can be anything else than the black form of M. Palla.


An Alpine variety presenting no very considerable differences from the stem form.


Larva on "Erodium Cicutarium, various species of Trifolium and Viola." Hy. Edwds.

Larva on Scrophularia.


Larva on Chelone Glabra, Lonicerca Ciliata.


Under surface of primaries without the abbreviated apical black submarginal band. Under side of secondaries uniform whitish yellow, destitute of all the black marks and bands of normal form.

**Larva** on *Cordylenthus Pilosus.*


The first fifteen species constitute a group unknown to the old world fauna, but abounding in tropical America where many of the forms are most remarkable, wonderfully counterfeiting in appearance the various Acroidea and Heliconiidae, with which they associate. Various authors have placed them in Hubner’s genus Physiodes, equivalent to Bdl’s *Eriades,* but I think the grounds are too insufficient to entitle them to any higher position than that of a group.

*M. Harrisii* forms a very natural transition from this to the *Athalia* group here represented by *Palla* and varieties. *M. Whitney* has an amazing resemblance to the S. Eur. *Dione,* H-G. *Minuta* is exceedingly close to the Russian *Arduina,* Esp., v. *Atheria,* Hub., and allied species.

*Anicia, Quino* and *Chalcedona* are near to *Maturna, L. Artemis,* Hub., etc.

*Leumira* and allies have no old world representative, though in appearance, especially of under surface, *M. Iduna,* Dalm., bears a close resemblance indeed in the disposition of the markings.

The group of *Thrasis,* etc., is represented most abundantly east of the Rocky Mts., whilst of the group of *Anicia* and *Chalcedona* we have only the one eastern representative, *Phaeton.*

*M. Eurytion* and *M. Calydon,* mentioned by Mr. Mead on pp. 759, 760 of Wheeler’s Rep., V, (1875), were from MSS. of W. H. Edwds., but the description has never been published.

(Euryton—*Nubigena,* and *Calydon*—some one of the forms of *Palla.*

**GENUS 6. SYNCHLOE, BDL.**


Between Saundersii, Dbdy., and Lacinia, Geyer.

256. Erodyle, Bdl., Bates, Ent. Mon. Mag., I, p. 84, (1864); Texas; Cent.


GENUS 7. EUREMA, Dbdly.

258. Lethe, Fabr., (Pap. L.), Ent. Syst., III, I, p. 80, (1793); Texas; Mexico; Cent.
   Don., Ins. Ind., t. 23, (1800); (Vanessa L.) Godt., Am., Brazil, etc.
   Enc. Metn., IX, Sup., p. 818, (1823); (Eur. L.)
   Dbdly.-Hew., Gen. Diur. Lep., p. 194, (1846–1850); (Hypnartia L.) Kirby, Cat., p. 180, (1871);

GENUS 8. VANESSA, Fabr.

(Grapta, Kirby, Faun. Am. Bor.)

   Min., etc., Mass., Ed. 1, p. 590, (1833); (Grapta L.)
   Dbdly.-Hew., Gen. Diur. Lep., p. 197, (1846–1850); Morris, Syn., p. 53, (1862); (Vanessa L.)
   Harris, Ins. Inj. Veg., Flint's Ed., p. 298, f. 124, (1862); Pack. Guide, p. 259, (1839); (Grapta L)
   c., III, p. 197, (1870); W. H. Edwds., Butt. N.
   Am., I, t. V, Grapta, (1871); (Vanessa L.) Kirby,
   Cat., p. 181, (1871); (Polygonia L.) Send., Syst.
   251, (1875).
   Soc., III, p. 5, (1870); Lint., I. c., p. 197, (1870);
   (Van. F.) Kirby, Cat., p. 191, (1871).
   Grapta Interrogationis var. Fabricii, W. H. Edwds.,
   Soc., II, p. 313, (1869); W. H. Edwds., Butt. N.
   Am., I, t. 4, Grapta, (1871); (Van. U.) Kirby,
   Cat., p. 648, (1871); (Polygonia U.) Send., Buff.
   Pap. C Aureum, Cram., Pap. Ex., I, t. 19, E, F,
   (1779); Herbst, Natursyst. Ins. Schmett., VII, t.


Upper surface of inferior bluish black.

Larva on nettle, hops, elm.

There has been any amount of confusion in regard to this species, all evidently having its origin in the fact of Fabricius' apparent non-acquaintance with the true C. Aureum of Linn. (Angelica, Cram.), Linn.'s diagnosis of the latter species in Syst. Nat., is "C. aureum, 169, P, N, alis angulatis fulvis nigro-maculatis: posticae subitus C. aureo notatis."

Habitat in Asia.

Similimus P. C. albo, sed duplo major, subitus magis luteo nebulosus C. aureo minori notatis."

This is plain enough; neither Interrogationis nor var. Umbrota are cloudy yellow beneath, but C. Aureum most undoubtedly is.


In the Sp. Ins., II, p. 24, he again gives it as Linn.'s Asiatic species from Syst. Nat., p. 778, (Angelica, Cram., t. 388, Vol. IV), and cites as a synonym Cramer's other figure (C. Aureum, Cram., t. 19, Vol. I), which represents the var. of the N. Am. Interrogationis, now known as Umbrota.

In Mant. Ins., II, p. 50, he again quotes from the Syst. Nat. Linn.'s description of the Asiatic species, substituting, however, the words "alis dentato caudatis" for "alis angulatis."

In Ent. Syst., III, I, p. 73, he quotes Linn. altered in the same way, and refers again to Cramer's N. Am. C. Aureum (t. 19, Vol. I) as a synonym.

Cramer in his text to the figure of our N. Am. species (t. 19) also makes the same mistake and cites it as Linn.'s Asiatic species, i. e., "Linn., Syst. Nat., XII, p. 778, n. 169 Pap. Nymph. phalerat. C. aurem," whilst the real species described by Linn., in the foregoing, Cramer figured on his t. 388 as another species under the name of Angelica.

Herbst in Vol. 7, t. 142, has copied Cramer's figure of our N. Am. species, but in the text he quotes Linn.'s diagnosis of the Asiatic species as altered by Fabricius in the Mant. Ins. and Ent. Syst. He also cites Fabricius' various works and Cramer's t. 19. Its fatherland he gives as Asia.

Abbot's upper figure (t. 11, Vol. I) C. Aureum is Umbrota without doubt. The lower figure will do for either Umbrota or Interrogationis equally as well, as it is equally as like and unlike either.

Hubner's figures (II, Sam. Exot. Schmett.) are first-rate representations of Umbrota.

Bdl.-Lec.'s figure 1 represents a form between Interrogationis and its var Umbrota, of which I have an example that is near one as the other.

In Constable's Miss. Butt., III, t. 11, is figured the "American Comma butterfly, Papilio Aureum, Virginia." It is evidently an atrocious figure of Faunus, or perhaps of Comma, certainly not Interrogationis. He cites "Abbot, t. 11," but there is no semblance to the latter figure.
260. **Comma, Harris, Ins. Inj. Veg., Ed. 1, p. 221, (1842).**


Upper surface inferior blackish.

Larva on hops, elm, nettle.


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Seba, Thes., IV, t. 1, f. gi—g5, (1765).

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After continued and most careful examination of great numbers of C. Album from various parts of Europe, and also of the so-called species Faunus from the United States and Canada, as well as examples from the Amoor region and Japan, I cannot pronounce them distinct. The American examples are apparently less subject to variation than their European congenera, but there is no certain point of sufficient stability to entitle them to specific distinction.

The dark exterior border on upper surface of wings is generally deeper in colour and more inclin to blackish in the N. Am. examples, and the spots ends in that of secondaries are inclined to be smaller, but nearer of these are constant distinctions, as those of the European examples having the borders of outer margins darkest are precisely identical with those of the American examples in which said borders are lighter than the average.

The examples from Japan are notably like the average of those from Canada and N. York, all having that same greenish-blue tinge of under surface which is more peculiar to the latter.

My hope was that Faunus might prove constant enough in depth of colour of outer margins of upper surface to allow it being cited as a form or variety of C. Album, but as I before said, when the darker European examples are placed beside of the paler American ones, this ceases to be a distinction at all, as we know not where C. Album ends or Faunus begins. Besides, there are in Europe forms of C. Album that are yellow below, presenting far greater differences from the darker forms of the same than do the most aberrant of the latter from the N. American examples; these yellow examples have analogues in some of the variations of Comma and Satyris, which on under side are yellow of various shades from pale ochre to dark orange tawny. As to the before mentioned Japanese examples, they are almost fac-similes of those from America save that they are of average larger size though not larger than the largest of the latter.

Larva on willow (Salix Humilis).


Smaller, otherwise differing little from the Eastern form.

California, Vancouver's Island.

I cannot, by the description, separate this from the preceding species, with which it is probably identical.


Colorado, California, Oregon, British Col., Canada.


Rocky Mts.

Under surface dark reddish.

**Larva on nettle (Urtica).**


California, Oregon, Vancouver's Island.


**Larva on Urtica.**


California.


North Carolina, Nevada, Montana, California, Oregon, Utah.


**Larva on Azalea Occidentalis.**


Canada, Maine, White Mts., N. Hampshire.


**Larva on willow (Salix Humilis).**

Basal third of under surface of wings deep reddish brown or claret coloured.


Van. Album, Bdl.-Lec., Lep. Am. Sept., p. 185, t. 50, (1833); Morris, Syn., p. 56, (1862); Harris, Ins. Inj. Veg., Flint's Ed., p. 298, (1862); (Grapta


Larva on willow.

There is a slight tendency to suffusion in the black marks of upper surface in the American examples; and towards the exterior margins of upper surface of secondaries the colour is a little paler, but these incidental and scarce constant differences can be considered by no means sufficient to separate them specifically from the European examples.


Larva on Ceanothus Thrysiflorus.


Larva on nettles (Urticae).

Emmons, in Agr. Nat. Hist. N. Y., V, p. 209, t. 46, (1854), describes and figures V. Urticae, stating that it occurred in N. York,—of course erroneously, as no authenticated instance of its capture in this country is known.


Seba, Thes., IV, p. 39, t. 32, f. 1, 2, (1765).


The yellow border much broader, extending over the space that in the normal form is occupied with the row of blue spots, these latter either entirely wanting or else faint traces of them are on the secondaries only, as in Hubner's and Milliere's figures. In one example I have seen the yellow border encroached to such an extent as to cover nearly the whole outer half of all wings.

Tab. b. 2—With the border on upper side of primaries black instead of yellow. Mus. Streck.

Herbst, on t. 168, Vol. VII, figures another aberration of great size with white border to the wings and the blue spots enormously large.

In Seba, Vol. IV, (1765), t. 32, f. 5, 6, another is represented in which the white marks on outer part of primaries at costa are entirely wanting, and on the under surface the dark color of all wings is uniform, devoid of all marbling or reticulation; this example, I believe, still in existence in the St. Petersburg Museum.

Larva on willow, elm, poplar.

GENUS 9. PYRAMEIS, Hub.


Larva on nettles (Urtica), hops (Humulus Lupulus), Boehmeria Cylindrica.

This species is very seldom subject to any great variation. I have seen no example in this country showing any remarkable aberrancy.

On t. 86, f. 4, Esper figures a most wonderful variety which was taken in Tyrol. This figure has been copied by Herbst in his Vol. VII, t. 180, and also by other European authors. Herr–Sch. also figures a most extraordinary form (in Vol. I, t. 547, 548). In the figures above cited the whole style of ornamentation is changed.

Milliere, in his Icon., X, t. 86, (1867), figures a curious form in which all the bands that are orange, normally, are here brownish or greyish white and semi-transparent.

Berger, Schmett., p. 100, t. 45, (1842); (Van. C.)
(1846-1850); Chenu, Enc. Hist. Nat. Pap. Diur.,
I, f. 215, (1862); (Van. C) Bdl., Ann. Ent. Fr.,
2me Ser. X., p. 307, (1852); (Cynthia C) Emm.,
(1857); (Cynthia C) Harris, Ins. Inj. Veg., Flint's
Ed., p. 291, f. 118, (1862); (Pyram. C) Morris,
Syn., p. 59, (1862); Trim., Rhop. Afr. Austr., I,
III, p. 125, (1864); Pack., Guide, p. 261, (1869);
Saund., Can. Ent., I, p. 93, Lar., (1869); Kirby,
Cat., p. 185, (1871); (Van. C) Stgr., Cat., p. 17,
Nat. Sc., V, Lar., (Oct. 6, 1873); Mead, Wheeler's

Pap. Belladonna, Petk., Pap. Brit., p. 2, t. 4, (1717);
Godt., Hist. Nat. Lep., 1, p. 102, t. 5, (1820); Lucas,

Pap. Carduelis, Seba, Thes., IV, p. 6, t. 1, (1765);
5, f. 1, 2, (1829); Kirby, Cat., p. 186, (1871);
Stgr., Cat., p. 17, (1871).

Van. Cardui, var., H-S, Schmett. Eur., I, f. 157,
158, (1843).

Normal form of ornamentation obliterated. Upper side of
primaries has the basal half covered with an orange yellow
biotch; subapical white spots confluent. Secondaries orange
yellow; on costal parts blackish, this colour extending along
the veins to outer margin; before it reaches the latter this
colour broadens into diamond-shaped marks; a submarginal
row of white spots. Under side of primaries much as above,
but with a broad white submarginal band. Secondaries mottled
dark greyish, with a broad white marginal band; in some
instances nearly the whole surface of secondaries beneath is
white, in others the white predominates on the upper surface
to the greater exclusion of the black. Two examples, Mus.
Mrs. Bridgham, taken in N. Jersey.

†ab. b. AEP, NOB.—Upper surface primaries suffused heavily with
blackish, the normal markings entirely gone, the orange
confined to a biotch on disc on half of wing towards the
inner margin, said biotch merging into the blackish on
all sides; the large subapical white bar entirely wanting.
Secondaries obscured with blackish, the row of black spots
faintly discernible and pupilled with white points. Under
side primaries much as on upper side, secondaries black ex-
cept along the abdominal margin where the ordinary coloura-
tion and marking is retained; veins white; the six ocelli
as in ordinary form; a narrow yellowish or clay coloured
Taken in Summit Co., Ohio.
Trimen, in Rhop. Afr. Anstr., p. 184, cites an example taken at King William's Town, S. Afr., which, according to his description, agrees with the above var., in almost every particular.

Larva on thistles (Cirsium, Chicus, Cylindrum), nettle (Urtica), Althaea Roso, Helianthus, Malva, and some other plants.


Larva on Malvae and Urtica.


Pyrameis Virginiensis, Kirby, Cat., p. 186, (1871).

Larva on the various species of Gnaphalium.

GENUS 10. JUNONIA, HUB.


_Larva on Plantago Lanceolata, Gerardia Purpurea, Antirrhinum Canadensis._

Subject to much variation on under side, especially of secondaries, some examples being whitish ochraceous, others chartreuse, some immaculate, others reticulated and with ocelli.

_Pap. Lavinia, Crum._, I, t. 21, c. D, (1779), is the form found in S. Am. and the Antilles. _Pap. Evorete, III_, t. 203, c. D, (1782), is another S. Am. var. of the same. _Pap. Genoveva, IV_, t. 290, e. F, is also a S. Am. form of same. _Hamadryas decora Evorete, Hub._, Sam. Ex., I, is the same S. Am. form as Crum's Evorete, I, t. 21. The fig. 28, 29, t. 239, Sloane's Jamaica, (1725), represents the same form, or something near it at least, as the one above cited in Crum., I, t. 21.

**GENUS 11. ANARTIA, HUB.**


———, _Merian, Met. Ins. Sur., t. 4, (1719)._  
———, _Gronov, Zooph., 2, p. 197, (1763)._  
———, _Seba, Thes., IV, p. 38, t. 30, f. 19, (1765)._

**GENUS 12. AGERONIA, HUB.**

CATALOGUE OF THE


————, Seba, Thes., IV, p. 46, t. 38, f. 10, 11, (1765).

Cram's figures A, B, t. 362, Vol. IV, which he has cited as Feronia, are not that species, but Feronia.


GENUS 13. EUNICA, HUB.


Eun. Modesta, Bates, Ent. Mo. Mag., I, p. 113, (1864); Kirby, Cat., p. 200, (1871).

Eun. (Pap.) Orphize, Cram., I, t. 42, f. E, F; Eun. Hyperipite, Hub, Samm. Ex.; and E. (Lytythae) Cuvier'i, Lucas, Pap. Ex., t. 61, are all different species from ours, none being identical, as has been sometimes supposed.

GENUS 14. CALLICORE, HUB.


In the copies of Lucas that I have seen, the extra discal band on upper side of primaries is painted crimson, which of course was a diversion of the colourist's, as nothing in nature or the text warrants it.

GENUS 15. CYSTINEURA, BDL.


GENUS 16. TIMETES, BDL.


——, Stoane, Hist. Jamaica, t. 239, f. 1, 2, (1725).

——, Seba, Thes., IV, p. 42, t. 34, f. 13, 14, p. 43, t. 35, f. 3, 4, (1765).


Hubner's figures 197, 198, in the Zutr. blatt, evidently represent a different species, or at least a variety. I have not seen in nature anything that resembles it.


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 catalogs of the


Larva on the Cashew (Anacardium Occidentale).

GENUS 17. VICTORINA, BLANCH.


-----, Petiv., Gazoph., 20, t. 13, (? 1702).


GENUS 18. LIMENITIS, FABR.


var. a. Flordidenis, nob.—The form found in Florida and other parts of the extreme south. Whilst our more northern form is of the same colour as Danais Plexippus, this southern variety exactly mimics in its dark colouration Danais Bere- nice, with which it associates.

♀ab. b. ♀ Nig.—Whole upper surface deep blackish brown, the venation only a shade darker and only distinguishable from rest of ground colour on close inspection; the usual submarginal row and other white spots conspicuous visible by contrast with the blackness of the rest of wings. Under surface but a trifle less dark than the upper. Taken by Mr. Jacob Doll in Florida in 1874. Miss. Streecker.

♀ab. c. ♀ Pseudodorippus, nob.—Can. Ent., IV, p. 216, (1872). The mesial black stripe of secondaries wanting; the subapical black patch almost gone, only indicated by a darkish shade devoid of the usual three white spots. Under surface same as above, save that the submarginal row of white lunules have no intervening black line between them and the reddish ground colour. Taken in Catskill Mts., N. York, in 1872, by Mr. T. L. Mead, in whose museum it now is.

I have also an example which differs from the above in the total obsolescence of all white lunules in margins of both surfaces; in this the mesial line of secondaries is very faintly visible, in all other points it agrees with the other example just described. It is a ♀ and was taken near Holyoke, Mass., in 1871, by Mr. Jos. E. Chase.

Larva on various species of willow (Salix), plum (Prunus), poplar (Populus) and oak (Quercus).


Pap. Astyanax, Fabr., Syst. Ent., p. 447, (1775);

Pap. Ursula, Fabr., Ent. Syst., III, 1, p. 82, (1793);

var. a. Viridis.—The blue of upper surface replaced by green.


Larva on willow, wild gooseberry, wild cherry, apple, plum, hawthorn, oak, Vaccinium Stramineum, Carpinus Americana.

Fabricius, in his Syst. Ent., (1775), had used for this insect the name of Anthaxia, but in the Ent. Syst., (1793), he changed it to Ursula in consequence of the previous name already having been used to designate one of the a varieties of Pap. Pammon (figured in Don., Ins. Ind., t. 19), both insects being in the genus Papilio as then defined; his action in making this change, and thus, as he supposed, avoiding synonymy, was of course right, and his later name would have stood had not Stoll, (in 1790), in his Supplement to Cram., three years prior to this change, figured and cited the species as Ephestia, and as, at the time of his doing, Anthaxia was a synonym, his name will have to be retained, and the later one of Ursula, even though applied by Fabricius, should be dropped.


On upper surface the white band of primaries either partially obsolete or entirely so; secondaries entirely wanting. Below sometimes obsolete on all wings and sometimes partially present.

Larva on willow and hawthorn.


Larva on willow (*Salix*).


This species connects *Limenitis* with the subgenus *Heterochroa*, *Bull.* *(Adelpha, Hub.)*

**GENUS 19. APATURA, FABR.**


A form occurring sometimes, in first generation, with the ground colour of both surfaces white.

Much larger. Ground colour of upper surface inclined to reddish tawny.


More reddish in tint of upper surface than the preceding, less fuscous on apical parts of primaries, and with three ocelli on upper and under surface of primaries instead of but two in all the other forms.

Larva on Celtis Occidentalis (hackberry).


Apatura Idyja, Kirby, Cat., p. 262, (1871).


Entire upper surface of secondaries obscured with blackish, ocelli obsolete.

†ab. b. & NIG.—Upper surface of all wings obscured with blackish. Mus. Streek.


Larva on Celtis Occidentalis.

There is strong doubt as to whether Fabricius’ descriptions of Lycops and Herse were meant to apply to the species since designated as Celtis and Clyton by Bdl. as there is disagreement in many particulars; besides it would appear that the said descriptions of Fabricius were not taken from real insects, but from the pictures of insects, in which case all claim to priority for his names would fail; and, at any rate, as the species have been known by Bdl.’s names for over forty years, there can be nothing gained by suppressing them in favor of those of Fabricius.

Fabricius’ Herse I really believe to be identical with Idyja, Hub., a Cuban species.

GENUS 20. AGANISTHOS, BDL.

295. ORION, Fabr., (Pap. O.), Syst. Ent., p. 485, n. 185, (1775); Sp. Ins., II, p. 62, (1781); Mant. Ins., II, p. 29, (1787); Ent. Syst., III, 1, p. 55, (1793); Cent. and (Nym. O.) Godt., Enc. Meth., IX, p. 368, (1825); S. Florida, Antilles, Georgia, Florida; Gulf States from Florida to Louisiana, Arizona; Estralcedo, New York westward to Kansas and southward to the Gulf of Mexico.

Berks Co., Penna.

Florida.


Pap. Danai, Grab., I, t. 84, (1779).


GENUS 21. MEGISTANIS, WESTW.


GENUS 22. PAPHIA, WESTW.


Larva on wild sage (Croton Capitatum).

Paph. Glycerium, Dblld., (in Gen. II, p. 319, n. 10, t. 50, f. 1, 1850–1852), is a Mexican species, differing decidedly, not only in markings but even in shape of wings, especially of the primaries.

Paph. Astinae of Cram.'s t. 337 recognizably represents the $\Phi$ of our species, though the tails are a little exaggerated in length and the red colour of upper side is too deep for the $\Phi$, being nearer that of the male. Cram. says the original of his figures was from the island of St. Thomas, in the W. Indies.

Herbst's fig. (vol. IV, t. 57) is a copy of Cramer's.

Hamadryas undata Astinae, in Ex. Schmett., I, also represents, I think, the $\Phi$ of our species, though it differs in some slight respects from Cram.'s figure.

FAMILY IX. SATYRIDÆ.

GENUS 1. PRONOPHILA, WESTW.


GENUS 2. DEBIS, WESTW.


Larva on grass.

†ab. a. $\Phi$—Spots on upper surface of primaries very small and almost obsolete, the transverse lines entirely wanting. In the cells (excepting the discoidal) accompanying the veins are broad furry fuscous lines connected inwardly, open outwardly, leaving sagittate spaces of the brown ground colour in the middle of each cell. Mus. Strecker.

GENUS 3. NEONYMPHA, HUB.


†ab. a.—With all the ocelli of enormous size.

Larva on grass.


Larva on Andropogon Nutans, Panicum Sanguinale.

Fabr.'s diagnosis in the Sp. Ins. is not so plain, but in the Ent. Syst. it is more to the point: "Alis integerrimis supra fuscis immaculatis, posticis subtilis strigis flaevi ocellisque tribus oblongis. Habitat — — —. Mus. Britann. Parva. Alae omnes supra fuscae, immaculatae. Subtus anticae fuscae, immaculatae, posticae strigis quatuor flavis, quorum 2-3 utrique coerunt & inter has ocelle tres valde oblongi, atri iride flavae punctisque plurimus pupillaribus, argentaein."

Also Herbst's version from Vol. VIII, p. 147: "Die Fluegel sind oberhalb braun, ungefleckt; unten sind die Oberfluegel gleichfalls ungefleckt braun, die Unterfluegel aber haben vier gelbe linien, von welchen die zweyte und dritte an beyden Seiten zusamenstossen, und zwischen diesen sind drei sehr langlich runde schwarzg Augen mit gelben Ringen und mehreren silbernen Pupillen."

These descriptions point undeniably to this species, and loth as we are to ignore the more familiar name of Aretolus, we must nevertheless allow that, according to the law of priority, it is untenable.


Larva on grass.

Whether this be identical with the Cornelius of Fabr. I am unable to determine from the doubtful and unsatisfactory diagnosis of the latter; though it is possible that such may be the case. But as Hubner has given most excellent figures, and moreover it is supposed that Fabr. was unacquainted with the insect in nature and that he drew his description from a picture, it is probably best to retain Hubner's name of Gemma, by which the species has so long been generally known.

I here append Fabricius' description of Cornelius, also the same from Herbst published three years later.


GENUS 4. EREBIA, DALM.

(Maniola, Schrk.)


This is probably a form of Embia, Thnh.

†311. Disa, var. Mancinus, Dbdly.-Hew., (Erebia Man-


This may be identical with Discoidalis, but I have had no opportuni-
ty of examining Butler's figure, hence cannot speak with any certainty.

GENUS 5. CHIONOBAS, Bdl.


**Oeneis Oeno, var. b. Crambus, Kirby, Cat.,** p. 70, (1871).

**Oeneis Assimilis, Bull.,** Cat. Sat. B. M., 163, t. 2, f. 10, (1868); Kirby, Cat., p. 70, (1871).


Very close to the Lapland Norma, Thnb.


Very closely allied to the Siberian Scula, Ev.


It is nearer to Aello than any other old-world species.

There are no possible grounds for considering Gigas, Californica and Iduna as distinct species from Nevadennis. Mr. W. H. Edwds. in his Butt. N. Am. dwells at considerable length on what he imagines are many differences of specific value, but which I consider nothing more than the slight differences usually found between different individuals of the same species. Much stress has been laid by both Scudder and W. H. Edwds. on the shape of the discal band of under side of secondaries in the various species of this genus. To show the fallaciousness of any distinction founded on such a basis, I would say that all seven original examples that furnished W. H. Edwds.' types of Iduna, received by me from Jas. Behrens, the inner edge of this band is not at all like the figures in W. H. Edwds.' work, but is almost the same as in the figure of Nevadennis in the great work of the Novara. Farther, Scudder in Proc. Phil. Soc., 1865, held Chrysas and Calais as different species, attempting to prove their distinctness by the different outline of the discal bands, of which he gave figures. Nevertheless, he himself afterwards (though wrongly) united the two, placing Calais as the ♀ of Chrysas; Calais, however, really is Taygote, Hub., from which Scudder in same article also separated it by outlines of discal band. This same Taygote, in a long suite of examples now before me, presents as great differences in the outline of the discal bands as is seen between any of the figures of Iduna, Gigas, Californica and Nevadennis. In various examples of Uleri the difference is yet greater; in some the band is distinctly defined on its outer edge, in others it has no limit, but the marbling continues indiscriminately to the outer margin of the wing.

The number of ocelli or spots on upper side vary in different examples of the same species very much; of Norma I have examples with two spots on primaries and none on secondaries, with two on primaries and one on secondaries, with one on primaries and one on secondaries, with one on primaries and none on secondaries, and with three on primaries and two on secondaries; of Uleri one of the types has three on primaries and four on secondaries, the other has four on primaries and five on secondaries, one of which (the sub-apical) is quite small and was overlooked by Reakirt in his description; other examples have only one spot on primaries and two or three on secondaries. Chrysas I have with one spot on primaries and none on secondaries, and another with two on primaries and one on secondaries.

Chion. Tarpeia, an Altaian species, has been by some authors placed with the N. Am. fauna, but without doubt erroneously; I do not believe it ever has been or ever will be found to occur in this country; but as some may feel further interested in the matter, I here give its nomenclature.

Tarpeia, Pall., Reis., I, p. 18, n. 59, (1771); Esp., Schmett., I, 2, p. 190, t. 83, (1783); Brk., Schmett., I, p. 101, (1788);


Pap. Celimena, Gram., Pap. Ex., IV, t. 375, (1782); (Oeneis C.) Kirby, Cat., p. 69, (1871).

**GENUS 6. SATYRUS, LATR.**


**Hipp. Silvestris**, Kirby, Cat., p. 81, (1871).

There is some confusion in regard to Oetus. Kirby, in his Cat., places it as a synonym of Silvestris, W. H. Edwds., whilst Scudder in Buff. Bull. provisionally cites Charon, W. H. Edwds., as a synonym of Oetus. No American lepidopterist, as far as I am aware of, is acquainted in nature with Oetus, Bdl.; but I feel fully assured that the three names, Silvestris, Oetus and Charon, belong to two species only; but whether Oetus be a synonym of Silvestris, or Charon of Oetus, can only be known by comparison of types.


Larva on grass.


With the exception that the under side is a little paler and the stripe not as sharply defined, this presents scarcely any difference from the stem form. Sometimes the black spot at inner angle on upper side of primaries is accompanied by a contiguous smaller one.


Devoid of ocelli on under surface of secondaries.


I have had no opportunity of examining the types of this insect; from the description I cannot separate it from Nephele or Ariane.


Larva on grass.
With a broad buff or ochraceous yellow band across outer half of primaries on both surfaces; within this band are the two black ocelli.

†ab. a. \( \varphi \) — On the upper surface of primaries there are not the slightest traces of the two ocelli, neither any evidence of the one usually on secondaries not far from anal angle. Beneath, on the primaries the ocelli are indicated by two mere points, on secondaries there is only one small one not far from the anal angle. Mus. Streck.

†ab. b. \( \varphi \) — With three ocelli on upper side of secondaries, otherwise normal. Mus. Streck.


Larger size than any of the preceding forms. \( \varphi \) with only one ocellus on primaries (towards the apex); \( \varphi \) with two ocelli. On under surface of secondaries the ocelli are large and conspicuous; the striation of under surface sharply defined.

Bdl.—Lec.'s figures undoubtedly represent \( \varphi \) of this form, and not Alope as they have cited it.


Satyrus Hoffman, Streck., Lep., Rhop.—Het., p. 31, t. 4, \( \varphi \), p. 66, t. 8, \( \varphi \), (1873).

This is one of those wonderful aberrant forms peculiar to Arizona and adjacent region. The \( \varphi \) is dark, much the same colour as Nephele, Boopis, etc., but the \( \varphi \) (which Mr. W. H. Edwards so curiously mistook in his description for the \( \varphi \)) is very pale on upper surface and white beneath. Both sexes are devoid of the broad yellow band of Alope and Pegala, but have two ocelli on primaries, the one nearest the apex is always double; on under side of secondaries are six ocelli in two different rows of three each, the middle one of the three nearest to apex oblong and sharply pointed outwardly.

The \( \varphi \) figure in Wheeler's 5th Rep. is far too pale in colour.

Dr. Behr, speaking of Sat. Ariane, says in Proc. Cal. Acad., III, p. 164: "I confess I cannot find any constant mark of difference between this species and S. Alope, Nephele, and Pegala, however different at first glance their forms may appear, I am very much inclined to consider them local aberrations of one far spread species that gradually slopes from S. Pegala, Fabr., through S. Ariane, Bdl., to S. Nephele and
S. Alope, Fabr., in a similar way as the Gerontogale P. Egeria, L., looks very different from its African form P. Xiphius, Fabr., with which, nevertheless, it is insexdly united by its intermediate form P. Moone." I differ from the above only in that I think the more northern Nepale was the stem form from which originally emanated Ariane and Boopia in the west and Alope in the east, and through the latter the splendid Pegala in the south, whilst acclimatization in the dry salt regions of Utah and Arizona resulted in the widely abnormal Webberi.

GENUS 7. PARARGE, HUB.

329. CANTHUS, Tall., (see Linn.), (Satyrus C.) Lep. Am. Sept., t. 60, (1833); (Neau. C) Morris, Syn., p. 73, (1862); (Euph. C.) Kirby, Cat., p. 55, (1871).


Larva on grass.

The Eurydice, L., (Amann, Acad. Cent. Ins., VI, p. 406, n. 65, 1764), of which Cantthus, L., (Syst. Nat., Ed. XII, p. 708, 1767), is a synonym, seems to be an entirely different insect from this, and is most probably Pap. Arganthe, Cram., (Pap. Ex., III, t. 204, C, D), a 8. Am. species which is on the upper surface uniform brown devoid of all spots. The following is all the description of Cantthus given by Linn. in the Syst. Nat., Ed. XIII: "Alis integerrimis fuscis; subinis primoribus ochellis quattuor, posticos sexis. Ammon. Acad., 9, p. 406, n. 65. Papilio Eurydice. Habitat in America septentrionalis."

The description of "Eurydice" in Amann, Acad., referred to in the preceding, is:

"Papilio Eurydice D. alis fuscis; subinis primoribus ochellis quattuor, posticos sexis.


Herbst (Naturwiss., VIII, p. 70, t. 192) has figured as Cantthus Cramer's Arganthe, which he also refers to Eurydice, Linn. Also Fabricius in Ent. Syst., III, p. 157, gives Eurydice, Cantthus, L., and Arganthe, Cram., as synonymous.

GENUS 8. COENONYMPHA, HUB.


This is a very variable species on the under side, in some instances being yellowish white, in others obscured or dusted heavily with grey. It is one of the commonest of the Californian butterflies.

C. Typhon, var. h. Inornata, Kirby, Cat., p. 100, (1871).


I possess Reakirt's original type from California, which differs in nowise from the ordinary European form.

I have no doubt but this is a variety of Typhon, Rott., (Natuir., VI, p. 15, 1775), a species ranging all over Europe and Northern Asia, and of which Danaus, Fabr., is a synonym.

Cen. Kodiak, Kirby, Cat., p. 100, (1871).
FAMILY X. HESPERIDÆ.

GENUS 1. EUDAMUS, Swains.

\{ Goniurus, Hüb. \\
\{ Goniurus, West. \\
\{ Gonioloba, West. \\


338. SIMPLICIUS, STOLI., (Pap. S.), Suppl. Cram., t. 39, 6, 6, E, Texas, Arizona, Mexico, co, Cent.

339. LYCIDAS, ABH.-SM., (Pap. L.), Ins. Ga., I, t. 20, (1797); Pennsylvania southward to the gulf, westward to Louisiana and Texas.

Larva on Desmodium.


Larva on Robinia Pseudacacia, R. Viscosa, R. Hispidula.

From Virginia southward to Gulf of Mexico.


From Texas, Mexico.


Larva on wild bean, Desmodium Dilenii.


From Pennsylvania via south to the Gulf of Mexico, and west to the Pacific; Antilles.

Canada; U. S. and Ter. from Atlantic to Pacific.


Larva on various species of Glycine and Hedysarum.
The white marks on primaries much smaller, sometimes obsolete.


GENUS 2. PYRRHOPYGE, Hub.


GENUS 3. ERYCIDES, Hub.


GENUS 4. ÆGIALE, Feld.

(Megathymus, Scud.)


Larva burrows in the stems of Yucca Aloifolia, Y. Gloriosa and Y. Filamentosa.


GENUS 5. PAMPHILA, FABR.


I doubt if Emmons was acquainted with the true Phyleus, from his asserting that it "is a very common butterfly in western Massachusetts," so I merely add his citation for what it may be worth.

Larva on Panicum Sanguinale.

In Dbldy.-Hew., Gen., Pap. Colon, Fabr., is cited with a 9 as a synonym of Phyleus, also in La Saga, Hist. Cuba, Am. Art., on what grounds I do not know; Fabr.'s description does not
agree with *Phylaeus*, and he further says *Colom* is from India, though this locality with Fabr. might have meant differently either the West or East Indies. I append here the description of *Colom* from Syst. Ent., p. 591, (1755):

"*Alis divaricata*, fulvis: macula media marginaque striato fusci.

Habitat in India. *Mus. Tuttianum.*

Summa affinitas P. Commnatis. Antenne nigro fulvoque annulate, clava uncinata, basi fulva, apice nigra. Alae omnes fulvae, anticos, macula magna media marginaque postico fuscia. Postica marginae exteriori et postico fuscia; subitus alae fulvae, immaculato."

It is also cited in Sp. Ins., II, p. 131, (1781); Mant. Ins., II, p. 84, (1877); Ent. Syst., III, 1, p. 327, (1793).


Colorado.


Colorado.


Bdl.'s figures 3, 4 are incorrectly cited as males; all three of his figures are females.


Larva on *Panicum Sanguinale*.


Atlantic States from Massachusetts to Georgia; Canada, New England and Middle States.

*Pam. Peckii, Morris, Syn., p. 120, (1862).*


Larva on grass.


Pap. Minor ex aureo & fusco mixtus stria nigra;
Streakt cloudy Hog. ♀, cloudy Hog. ♀; Petiv., Gaz., t. 4, f. 7, 8, (1702); Pap. Brit., p. 2, t. 6, f. 16, 17, (1717).

I have never seen an American example of this species, but have placed it in our fauna on the authority of Dr. Boisduval.


*Pam. Manitoba*, Scud., l. c., p. 351, t. 10, f. 8-11.


Larva on *Coronilla Varia* in Europe.


Under surface secondaries very dark greenish, spots conspicuous and of silvery whiteness.


Somewhat larger; less obscured with fuscous on upper surface, especially in ♀.


Smaller; ♀ has on upper surface a brown furry patch joining the inner side of the discal dash. Silver marks of under side of secondaries in both sexes small and placed somewhat differently from any of the above forms; they consist of a chevron-shaped discal spot, an abbreviated mesial bar, formed of confluent spots, with a small isolated spot near its apical end, but not in a line with it, being somewhat inferior thereto.

This may perhaps be a distinct species.


Only known by the unique ♀ type formerly in Mus. Reak. Though of greater size, it approaches *Comma* somewhat in the markings, especially of under surface; and it may possibly prove to be a melanotic aberration of that species. It bears also, on both surfaces, more particularly the lower, a striking resemblance to *Metis* ♀.


Darker on under surface. Pale spots of upper surface all smaller.


CATALOGUE OF THE

1852); Morris, Syn., p. 117, (1862); Kirby, Cat., p. 599, (1871); (Limochores T.) Scud., Syst. Rev. Am. Butt., p. 80, (1872).


I am doubtful whether Origenes be the same as our species. Neither Fabricius' description nor Donovan's figure agree with it in several respects, but we must bear in mind that Donovan was somewhat careless in his delineations, often depending on rough sketches or even his memory in finishing his figures. Fabricius' description is:

"Alia divaricatus concoloribus fuscis: striga punctorum albo-
rum, antice baii testaciorum.

Pap. Origenes. Jon. fig. pict. 8, tab. 74. f. 2.

Habitat in India, Dom. Jones.

Statura omnino praecedentium. Alae omnes fuscæ striga-
punctorum albo-rum. Anticæ baii oblique testaciorum."


Gulf States from Ga. to Texas.

384. OTHO, Abb.-Sm., (Pap. O.), Ins. Ga., I, p. 31, t. 16, (1797); (Pam. O.) Kirby, Cat., p. 603, (1871).

Larva on Panicum Sanguinale.


In both sexes the entire ground colour above and below is dark brown.


Gulf States.


Pam. Pilalka, Kirby, Cat., p. 602, (1871).


Only known through the unique c type which passed into my keeping. It is the size and colour of Metacomct but the interiors are smaller and both surfaces of all wings are uniform blackish brown, totally devoid of every vestige of marking save the black discal line on upper side of primaries.


Larva on Indian corn, Wisteria Frutescens.


Canada; Northern United States from Maine to Kansas.
“Rocky Mts.”

Mendocino, Califa.
Gulf States.

Arizona.
California.
Texas.

Pa. south to the Gulf of Mex. and west to Rocky Mts.

States.

States.

States.

States.

States.

States.

States.

States.


Has been frequently confounded with _Hobomok_, Harr., but is entirely distinct.


Larva on grass.


This and the following are melanotic forms of _Hobomok_, having both surfaces obscured with dark brown.


Mr. W. H. Edwds, in Trans. Am. Ent. Soc., VI, Feb., 1877, cites this as a "dim. var. ♀ of Napa. This is curious, as
he described *Melana* himself from "*♂, 1 ♀, collection
Tryon Reskit, Esq." There "ι in this coll., including
Edwa.' types, *♂, 1 ♀, all of which are now in my posses-
sion. They are indubitably *♂* and ♀; in that there is a
mistake, and Edwa. properly described both sexes in Trans.
II, 312; and what makes it still more strange that he should
later place it as a var. of *Napa*, is that the *♂* is entirely
desitute of the raised discal bar or stigma so conspicuous in
*Napa* ♀ and allies.

*Melana* is a dark brown species. *Napa* a yellow one.

| 403. IOWA, SCUD. (HESE L.), TRANS. CHICAGO ACAD., p. 336, 34, (1868); (ATRYTONE L.) Syst. Rev. AM. BUTT., p. 77, (1872); (THYM. L.) KIRBY, CAT., p. 610, (1871). | Gulf States; IOWA, NE-BRASKA. |
| OCOLA, W. H. EDWDS., (HESE O.), PROC. ENT. SOC., PHIL., II, p. 20, t. 11, f. 4, (1863); (Pam. O.) Kirby, Cat., p. 607, (1871); (Preneis O.) Scud., Syst. Rev. AM. BUTT., p. 81, (1872). | Gulf States; S. AM. TO BUENOS AIRES. |
Eufola was sent to me from Apalachicola, Fla., by Dr. A. W. Chapman, who also furnished Mr. W. H. Edwds. with the example from which the latter made his description. Later I obtained examples of Oskya taken in Texas and identified by Mr. Edwds. himself, and I cannot, with my best will, find any characteristics by which to separate them into two species.


Larva on Andropogon Aracnaceum.


E. R. Kirby, Cat., p. 613, (1871).


The earlier stages of but few of the species of Pamphila are known, but it is presumed that the larva of most of them feed on grass.


Texas.

Destitute of the white streak which runs from base to middle of outer edge on under side of secondaries in Procris.


GENUS 7. CARTEROCEPHALUS, LED.


CATALOGUE


Syrichtus Oileus, Morris, Syn., p. 121, (1862).


Larva on wild tea (Seda).


**GENUS 9. SPILOTHYRUS, DUP.**


**GENUS 10. NISONIADES, HUB.**

(Thanaos, Bdl.)


Ground colour not so dark; the marks on upper surface primaries more distinct.

Larva on Scarlet Columbine, (Aquilegia Canadensis).


From Mass. south to the Gulf and west to Texas and Nebraska.


Larva on Oaks, Wild Indigo.


GENUS 11. ACHLYODES, HUB.


APPENDIX.

Since the preceding has gone through press, the following additional citations have been noted and new species described:

GENUS PAPILIO, L.


I have on p. 68 cited Merian's upper fig. plate 31 to this species, inasmuch as Linne himself refers to the same figure in Syst. Nat., Ed. X; but on re-examination of said figure I am fully assured that it does not represent Polydamas, or even agree with 'linne's short diagnosis, but represents *P. Androgeos, Cram.*, which is a form of *P. Polyedon, Cram.*; the latter is also represented on the lower part of the same plate.


On t. XLIV, vol. III of Herbst's Natursyst. the figures (1, 2) of *P. Mitidae*, copied from Aubenton, had for their original an example of *Demoleus* in which the hind wings had been replaced by those of Ajax.


**Papilio caudatus Carolinianus**, Catesby, Car. II, p. 100, t. 100, (1731); also same p. and t. in Ed. of 1754 and of 1771.


7. **Cresphontes, Cram.** (p. 69); Goeze, Ent. Beyt. III, p. 86, n. 64, (1779); Herbst, Natursyst. Schmett. III, p.


Pap. caudatus max. etc., Catesby, Car. II, t. 83, (1731).


Pap. diurna, prima etc., Catesby, Carol., p. 97, t. 97, (1731)


Herbst's figures represent one of those curious G aberrations that are intermediate between the black and yellow forms—neither as dark as one nor as light as the other.

11. Rutulus, Bdl. (p. 70); & var. or ab.? Streek., Lep. Arizona.


   Differs from the normal form mainly in the anal ocellus.

   Troitus, Herbst, l. c., p. 242, t. 17, f. 3, 4, (♀); Shaw-Nodd., XXIII, t. 1003, (1790-1813).


19. Palamedes, Dru. (p. 73).
   P. Chalces, Fabr., Sp. Ins. II, p. 18, n. 70, (1781);
   P. Chalcas, Fabr., Ent. Syst. III, 1, p. 31, n. 90, (1793).
   ——— Seba, Thes. IV, t. XLIII, f. 3, 4, (1765).
   ——— Encyc. Meth. Insects, Plates, t. 9, fig. 1, (1797).

GENUS PARNASSIUS, LATR.

20. var. Smintheus, Dbl.—Hew. (p. 73).

   Smaller, and with the red spots of secondaries very small.


GENUS NEOPHASIA, BEHR.


GENUS LEPTALIS, DALM.

25. Melite, Linn. (p. 73); Amen. Acad. VI, p. 403, n. 56, (1763); Fabr., Syst. Ent., p. 460, n. 71, (1775); Spec. Ins. II, p. 27, n. 108, (1781); Mant. Ins. II,
APPENDIX.


--- Seba, Thes. IV, t. XXXV, f. 5, 6, (1765).

GENUS PIERIS, SCHRANCK.


var. a. NOVANGILIE, SCUD., (p. 76); Bull. Soc. Ent. Fr. (5) II, p. 57, (1873).


33. CHLORODICE, HUB. (p. 76).


There is very little doubt that this is the first or spring generation of P. Occidentalis, Reak. (No. 31).

GENUS ANTHOCARUS, BDL.


Evidently allied to Cathura, Feld.; perhaps a var. of that species, or else = to A. Julia, W. H. Edwds.
APPENDIX.

GENUS CALLIDRYAS, BDL.


Pap. Eubule, Herbst, l. c., p. 202, t. CXII, f. 3, 4 (?).

47. Cipris, Fabr. (p. 79); (Call. C.) But., Lep. Ex., p. 69, t. 26, (1871).

GENUS GONEPTERYX, LEACH.


GENUS MEGANOSTOMA, REAK.


GENUS COLIAS, FABR.

53. Palesno, Linn. (p. 80).


GENUS TERIAS, S W A I N S.


73. Elathea, Cram. (p. 85); Fabr., Mant. Ins. II, p. 20, n. 209, (1787); Herbst, Nat. Schmett., p. 229, t. CXVII, f. 5, 6, (1792).


GENUS THECLA, FABR.


84. Cecrops, Fabr. (p. 86); Herbst, Nat. Schmett. XI, p. 144, (1804).


92. Acis, Dru. (p. 88); Cram., II, t. 175, f. C, D, (1779).


113. Augustus, Kirby (p. 91).


The naming of this insect after a military celebrity is a most lamentable piece of sycophancy which cannot be too much deplored. Lieut.-Gen. P. H. Sheridan may have been and doubtless was a good soldier and an efficient officer—though being nothing of a polit' an myself, and consequently not interested in the late war, I am not likely to be much of a judge as regards the question of his military greatness—but I think I may safely venture to doubt whether the General knows more of entomological science than does the horse he rides; and the designating of an insect by his name is under such circumstances an insult instead of an honour—an insult to the General and a greater one to science.

GENUS LYCAENA, FABR.


130. Optilete, Knoch (p. 94); Fabr., Ent. Syst. III, 1, p. 297, n. 131, (1793); Herbst, Nat. Schmett. XI, p. 255, t. CCCXVI, f. 8, 9, 10, (1804).


GENUS FENISECA, GROTE.

169. Tarquiniius, Fabr. (p. 103); Herbst, Nat. Schmett. XI, p. 376, (1804).

GENUS EURANUS, HUB.


GENUS CHARIUS, HUB.


GENUS LIBYTHEA, FABR.


GENUS DANAIS, LATR.


GENUS HELICONIUS, LATR.

183. Charithonia, Linn. (p. 107).

GENUS COLENSIS, HUB.

P. Nigromarginatus, Goeze, l. c., p. 122, n. 64, (1779).
——, Seba, Thes. IV, t. IV, f. 19, 20, t. XXVIII, f. 13, 14, (1765).

Pap. Cithene, Herbst, Nat. Schmett. IV, p. 93, t. LXXVII, f. 8, 9, (1790).
GENUS AGRAULIS, BDL.-LEC.


GENUS EUPTOIETA, DBLDY.


GENUS ARGYNNIS, FABR.


196. \textit{Aphrodite}, Fabr. (p. 111); Herbst, Nat. Schmett. IX, p. 181, (1798).


217. \textit{Chariclea}, Schneider (p. 115); (Brenthis C) Scud., l. c., p. 297, (1875).


†222. Columbia, W. H. Edwds., l. c., p. 102, (1877).

GENUS MELITÆA, FABR.

231. Tharos, Dru. (p. 120).


GENUS VANESSA, FABR.

259. var. a. Umbrosa, Lint.


261. C–Album, Linn.

Le, P. Gamma, Enc. Meth. Ins. Plates, t. 54, f. 9–11, (1797).


GENUS PYRAMEIS, HUB.


P. Vulcain, Enc. Meth. Ins. Plates, t. 59, f. 1, (1797).


GENUS JUNONIA, HUB.


GENUS CALLICORE, HUB.

280. Clymena, Cram. (p. 140).


GENUS TIMETES, BDL.


GENUS LIMENITIS, FABR.


GENUS APATURA, FABR.

293. Celtis, BDL.–LEC. (p. 145).


San Antonio, Texas.

GENUS EREBIA, DALM.

APPENDIX.


GENUS SATYRUS, FABR.


GENUS COENONYMPHA, HUB.


GENUS EUDAMUS, SWAINS.


GENUS AEGIALE, FELD.


GENUS PAMPHILA, FABR.


++416. Similis, Streck. (p. 174).

APPENDIX.


Forest III, p. 118, (1877).

GENUS ANCYLOXYPHA, FELD.

CORRIGENDA.

In alluding to "sixth line," "eleventh line," etc., etc., it is (with the exception of the first correction of all—on p. 3) always to be understood as counting from the name that comes after the No., and under which the correction is to be made, and not from the top of the page.

Page 3. On termination of tenth line read "Gorilla Castaniceps" instead of "Gorilla Caniceps."

22. In regard to the Post-Office regulations alluded to on lower half of this page, I would say these are constantly undergoing changes; even since the foregoing was printed the weight allowed for packages has been increased from 12 oz. to 4 lbs.; in order to keep informed on these points it is always best to inquire at your Post-Office for particulars.


68. No. 5. AJAX. On first line read "AJAX, Linn., Syst. Nat. I, 2 p. 750, (1767)," instead of "(1867)."

70. No. 13. MACHAON. The "(1816)" that comprises the eleventh line should terminate the twelfth, which latter would then properly read "Jasoniades Machaon, Hüb., Verz. Bek. Schmett., p. 83, (1816)."

71. On second line from top of page, add after first two words "Vol. XII, p. 407," so that it reads "Nat. Hist., Vol. XII, p. 407, (1869)."

71. No. 17. ASTERIUS. The last word on the fifth line, and the first on the sixth line, should be transposed to read "Ent. Syst." instead of "Syst. Ent."

80. No. 50. CLORINDE. On beginning of fourth line after "599," place "t. 19, f. 4," so that it will read "599, t. 19, f. 4, (1836)."

80. No. 52. CAESONIA. End of eleventh line "(1702?)" instead of "(1767)."

80. No. 53. PALÉNO. On first line after "PALÉNO, LINN." place "(Pap. P.)."

95. No. 134. LUPIN. Add to the end of the sixth line, "(1874)."

96. No. 138. SAGITTIGERA. On commencement of fifth line read "Catalina" instead of "Catilina."

96. No. 139. LYGDAMUS. Make first word on second line "(1841)" instead of "(1842)."

99. No. 149. ORBITULUS. Read last word on first line "Pedemontana" instead of "Piedmontana."

100. No. 150. AQUILO. End of eighth line read "(1876)" instead of "(1874)."


102. No. 165. GORGON. The locality of this species, which was accidentally omitted, is California.
194

CORRIGENDA.

108. No. 184. JULIA. On tenth line, after “Schmett.” place “IV;” and on eleventh line place “(1790)” instead of “(1783–1804).”

108. No. 186. VANILLAE. On eighth line, after “Naturyst,” place “IX;” and in place of “(1783–1804)” read “(1798).”

109. No. 187. CLAUDIA. Place “Pap. Daunius, Herbst,” as a synonym of this species instead of as a synonym of “188. EUPT. HEGESIA, CRAM.,” as I have it on sixth line from No. 188, same page.

110. No. 190. ab. a. ASHTAROTH. On second line after “Phil., p. 352,” read “(1859)” instead of “(1852).”


120. No. 231. ab. b. PACKARDII. The fourth line, which reads “Larva on Actinomeris Helianthoides,” should be taken out and replaced below the next two lines (which begin, “The dark colour,” etc., etc.), as the food-plant designated is not meant to be that of ab. Packardii, but of the stem forms Tharos and Marcia.

125. No. 250. LEANIRA. On eighth line read “var. a. OBSOLETA,” instead of “var. a. OBLITERATA.”

129. No. 260. After “var. a. DRYAS, W. H. EDWDS.,” place “(Graptata).”

140. No. “289” should be “279.”

160. No. 330. (California) var. c. ERYNGII. On second line read “Sc. VI, (1876)” instead of “Sc. V, 6, (1876).”

190. No. 285. After “PELEUS, SULZ.,” place “(141).”

190. No. 288. “EPHESTRION” should be “EPHESTION.”
INDEX

TO

CATALOGUE OF MACROLEPIDOPTERA.

RHOPOLOCERES.

Species and varieties are in Roman letters.
Genera are in Roman capitals.
Synonyms are in italics.
The No. immediately following the name, and preceding the No. of the page, corresponds with that prefixed to the same name in the Catalogue; thus, "Acadica 99, 88," means that Acadica is No. 99 on page 88.
The synonyms are numbered with the same numbers as the species with which they are identical.
To each species or variety is always affixed the name (abbreviated) of the author of the species.
To each species is affixed the name (abbreviated) of the genus to which it belongs, regardless of that in which it may have been first placed by its author; thus, "Arthemis Drus Lim." is Limenitis Arthemis, Drus, although Drus placed it in Papilio.
The generic names attached to the synonyms are always those in which the authors of said synonyms originally placed them; thus, "Argiolus Abb.-S. Pap." does not mean that Argiolus belongs to Papilio (Pap.), but only that it was placed there by Abbott and Smith when they published the species.

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BIBLIOGRAPHY.

List of authors and their works cited; elucidating the abbreviations used in this Catalogue, with short biographical or autobiographical notes.†

In citing the publications of those authors who have treated of the Lepidoptera of various parts of the world, I have not confined myself to the titles of such of their articles as relate to the N. American fauna alone, but have given all others as well, in the order in which they were published. Nor is any excuse required for so doing, as no one can be the loser by the perusal of anything that has been written by Hewitson, the Fielders, Moschler, etc.

The works of those authors who have treated solely on the Heteroceres will be given in a continuation of the Bibliography which will be appended to the Catalogue of the Heteroceres to be issued as the second series of this work.

All those works which I have myself examined have an * prefixed.

*ABB.-SMTH. INS. GA.
John Abbot and James Edward Smith. The latter was born in Edinburgh Dec. 2, 1759; died in London March 17, 1828.

The Natural History of the rarer Lepidopterous Insects of Georgia, including their systematic characters, the particulars of their several metamorphoses and the plants on which they feed. Collected from the observations of John Abbot, many years resident in that country. London, 1797.

2 vol. Illustrated with 104 coloured plates representing the larva, chrysalis and perfect insect, as well as the food-plant; engraved from the original drawings of John Abbot. In English and French.

*BATES. ENT. MON. MAG.
Henry W. Bates, in London. Studied and collected Lepidoptera on the Amazons, S. Am., for a number of years.


Contains following papers on Lepidoptera:


New Species of Butterflies from Guatemala and Panama, p. 49-52; 85-88; 133-136; 152-157; vol. III, 1866-1867.


On a collection of Butterflies made by Mr. John Milne in Newfoundland, p. 244-246, vol. XI, 1874-1875.

† For some of these I am indebted to Oken's Isis, Hagen's Bib. Ent. & Ferussac's Bull.
*BATES. JNL. ENT. I.
of the Amazon Valley: Lepidoptera, Papilionidae, p. 218-245.

*BDL. ICON. DU REG. AN. PAR GUER.
Jean Alphonse Boisduval, Doctor of Medicine, in Paris: Born in Ticheville
June 17, 1801.
Iconographie du Règne Animal de G. Cuvier, ou représentation d'après
nature de l'une des espèces les plus remarquables et souvent non en-
core figurees, de chaque genre d'animaux avec un texte descriptif mis
au courant de la science. Ouvrage pouvant servir d'atlas a tous les
traites de Zoologie par M. F. E. Guérin-Méneville. Paris. J. B.
Bailliere, 1829-1844. 2 vol.

*BDL. GRIFF. CUV. AN. KING.
The Animal Kingdom arranged in conformity with its organization,
by the Baron Cuvier, etc. The Class Insecta, with Supplementary Addi-
tions to each order by Edward Griffith, Edward Pidgeon and George

*BDL. ICONES.
Icones historique des Lépidoptères d'Europe, noveaux ou peu connus.
Collection avec figures coloriées des Papillons d'Europe nouvellement
de couverts. Ouvrage formant le complément de tous les auteurs icono-
graphes. Paris, Roret, 1832-1843.

*BDL. FAUNE ENT. MAD.
Faune entomologique de Madagascar, Bourbon et Maurice, Lépidoptères.
Col. plates 1-16.

*BDL. SP. GEN.
Histoire Naturelle des Insectes. Species général des Lépidoptères. Tome
premier Paris, Roret, 1836.
Contains 690 pages text and 24 (4 of them larvæ) fine coloured plates of Lepidoptera
from various parts of the world.

*BDL. CUV. REG. AN. INS.
Le Règne Animal distribue d'après son organisation, pour servir de base
à l'histoire naturelle des animaux et d'introduction à l'anatomie com-
2 vol. text, 2 plates.

*BDL. GEN. IND. METH. (OR GEN. ET IND.).
Genera et Index methodicus europaeorum Lepidopterorum. Paris, Roret,
1840.

BDL. APP. VOF. DE DELEG.
Voyage dans l'Afrique Australe notamment dans le territoire de Natal dans
celui des Cafres Amazonous et Makatise et jusqu'au Tropique du
Capricorne, exécuté durant les années 1838-1844, par M. Adulphe
Delegorgue (De Douai) avec une Introduction par M. Albert-Mon-
The Lepidop. are p. 585-602, vol. II.

*BDL. ANN. SOC. ENT. FR.
Lépidoptères de la Californie. p. 275-324 of the Annales de la Société
Entomologique de France 2d ser. vol. X, 1852.

*BDL. LEP. CAL.
Lépidoptères de la Californie. p. 8-94 in the Annales de la Société
Entomologique de Belgique. Vol. XII, 1868-1869.

Boisdouval (Dr. Jean Alphonse) and Leconte (Major John E.). The latter born in New Jersey Feb. 22, 1784; died in Philadelphia Nov. 21, 1860.


Contains 78 coloured plates of larva, chrysalis and perfect insect.

*Beauv. (De) Ins. Afr. et Am.


Completed after De B.’s death by Audinet Serville. Large folio. 90 col. plates.


Hermann Behr, Doctor of Medicine, in Cöthen; now in San Francisco, California.

Zeitung Herausgegeben von dem Entomologische Vereine zu Stettin. Contains:

Correspondence p. 210, 211, vol. VI, 1845.


Description of a new species of Chrysophanus, p. 208, vol. VI, 1866.


The following papers are in the Transactions of the American Entomological Society:


Contains the following on Lepidoptera:

Description of native Silk Worm, p. 46.
Saturnia Ceanothi Behr, p. 72, vol. I, 1855.


On Californian Lepidoptera, No. III, p. 84-93; No. IV, p. 123-127.
Notes on Californian Satyridae, p. 163-166.

On Californian Lepidoptera, p. 178-179.

*BERGE. SCHMIDT.
Fr. Berge, in Stuttgart.


48 plates filled with coarsely executed and coloured figures of Lepidoptera and their larva and pupae.

A later improved edition was issued in 1851.

*BERGS. NOM. U. BESCH. INS.

Johann Andreas Benignus Bergstrasser, Rector in Hanover. Born 1732; died 1812.


(First part, 1778, is Coleoptera.)

*BLANCH. GAY, FAUN. CHIL.


Gay historia fœsia y politica de Chile Zoologia vol. VII, 1852.

The Lepidoptera are on page 1—112. In the Atlas (1854) plates 1—7 are Lepidoptera.

BLANCH. HIST. NAT. INS.

Histoire naturelle des Insectes Orthoptères, Neuroptères, Hemiptères, Hyménoptères; Lépidoptères et Diptères; avec une introduction par M. Brulle. Paris, Duménil, 1840.

*BROWN. CONST. MIS. BUTT.

Captain Thomas Brown.


These are vols. 75, 76, 80 of Constable's Miscellany.

*BRK. NATUR. SCHMIDT. I—V.

Moriz Balthasar Borkhausen. Born in Giessen 1760; died in Darmstadt Nov. 30, 1806. Forstrath† in Darmstadt.


*BUNKER. CAN. ENT.


Canadian Entomologist contains the following:

Notes on Collecting Catocalas, p. 25, 26, vol. VI, 1874.

Hints on Collecting Cocoons of the Luna Moth—Tropaea Luna, p. 63.


Correspondence, p. 120.


Notes on the Food Plant of Hemileuca Maia, p. 119.

Effect of hot weather upon the transformation of the Sphinxes, p. 120.

† Literally, Forest Counsellor; we have no public office in America analogous to it.
BUTLER.


**BUTL. CAT. SATYR. B. M.**


Catalogue of the Satyridd in the British Museum, 1868.

**BUTL. CIST. ENT.**


*Butl. Lep. Exot.*

Lepidoptera Exotica, or Descriptions and Illustrations of Exotic Lepidoptera.

Published in 20 parts, 1869–1874. 4to, 64 coloured plates (chromo-lithographs).

*Butl. ENT. MON. MAG.*


Description of a new species of Morpho (M. Thetis), p. 81.

Description of a new species of Butterfly belonging to the Lyceenidae, p. 169, 170.

Description of some curious variations in the genus Morpho, p. 202–204.

Biston Hirtaria, p. 211.


Observations on two species of Harma, p. 19.

Remarks on the distinctiveness of certain species of Erycina.

Description of some new species of Diur. Lep. in the B. M., p. 76–78.

Notes on two forms of Mesene hitherto considered to be sexes of one species, p. 165.


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Description of a new species of West African Papilio hitherto considered to be the P. Zenobia of Fabricius, p. 60.

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On new or recently described species of Diurnal Lepidoptera, p. 250–252, vol. VI, 1869–1870.
The genera of Hesperidæ in the Collection of the British Museum, p. 56-58; p. 92-99.
Note on the identity of Argytnnis Adippe and A. Niobe, p. 166.
The Nomenclature of Rhopalocera as affected by the names given in Perry's Arcana, p. 167.
Vanessa Antiopa at Great Yarmouth, p. 88.
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Answer to Mr. Kitsema's note on Crinodes Sommeri, p. 198, 199.
Description of a new species of Brahmeæ in the Collection of the British Museum, p. 56, 57.
Notes on a collection of Butterflies recently brought from Cape Coast, West Africa, with description of a new species from Natal, p. 57, 58.
Description of two new species of Heterocerous Lepidoptera in the Collection of the British Museum, p. 77, 78.
Notes on Mr. Scudder's Historical Sketch of the generic names proposed for Butterflies, p. 15-17.
Revision of the Lepidopteronous genus Eusemia, with descriptions of new species, p. 116-125.
Note on Mr. Scudder's Remarks on the old genus Callidryas, p. 206, vol. XII, 1875-1876.
Description of three new species of Papilio from the Collection of Mr. Herbert Druce, p. 56, 57.
Observations on Mr. Hewitson's note respecting Mr. Buxton's Collection of Orange-tipped Butterflies, p. 89, 90.
Description of a new species of Argyttnnis from Arctic America, p. 206, vol. XIII, 1876-1877.
List of Heterocerous Lepidoptera recently collected by the Rev. T. Blackburn in the Hawaiian Islands, p. 47-50.
Description of three Lepidopteronous insects from Queensland, p. 108-110.
On Lepidoptera from the Hawaiian Islands, p. 185.

A list of the Diurnal Lepidoptera recently collected by Mr. Whitely in Hakodadi (North Japan), p. 50-59.
A Monograph of the genus Lemonias, with descriptions of new species in the Collection of the British Museum, including other forms sometimes placed in that genus, (2 plates,) p. 213-229, vol. IX, 1868.

Notes on the Lepidoptera of the Family Zygdeniidae, with descriptions of new genera and species, (2 plates, p. 342-407.

On the sub-families Antichlorine and Charideinae of the Lepidopterous families Zygdeniidae and Arctiidae, (1 plate,) p. 408-433, vol. XII, 1876.


On new species of the genus Euptychia, with a tabular view of those hitherto recorded, p. 116-128.

The Butterflies of Malacca, p. 196, 197. vol. XIII, 1877.


In the above are the following on Lepidoptera:

Description of six new species of Diurnal Lepidoptera in the B. M. Coll., p. 430, 1865.

Description of six new species of Exotic Butterflies in the Coll. of the B. M., p. 455, 1865.

Description of the characters of six new species of Rhopalocerous Lepidoptera in the Coll. of B. M., with notes on allied species, p. 481, 1865.

Monograph of the species of Charaxes, a genus of Diurnal Lepidoptera, p. 622, 1865.

Description of six Butterflies new to science, belonging to the genera Heterochroa and Romaleosoma, p. 667, 1865.

Description of some new Exotic Butterflies in the National Coll., p. 39, 1866.

Monograph of the Diurnal Lepidoptera belonging to the genus Danais, being a revision of the insects of that genus, with descriptions of new species in the National Coll., p. 43, 1866.

Notes on the genus Brahmea of Walker, p. 118, 1866.

Supplement to a Monograph of the genus Danais, founded on specimens in the coll. of Mr. Osbert Salvin, p. 171, 1866.

A Revision of the genus Hympa, with descriptions of new species, p. 206, 1866.

A Monograph of the Diurnal Lepidoptera belonging to the genus Euphleba, with descriptions of many new species founded principally on the specimens in the Coll. of the B. M., p. 268, 1866.

Corrections and Addenda to certain papers on Lepidoptera published during the years 1865-'66, with additional notes on some of the species described, p. 451, 1866.

A Monograph of the genus Euptychia, a numerous race of Butterflies belonging to the Family Satyridae, with descriptions of sixty species new to science and notes on their affinities, &c., p. 458, 1866.
Note on some species of Butterflies belonging to the genus Catogramma, p. 578, 1866.

Note on the identity of certain species of Lycaenidae, p. 34-36, 1867.


Description of some new species of Satyridæ belonging to the genus Euptychia, p. 104-110, 1867.

Remarks upon the Fabrician species of the Satyride genus Mycalesis, with descriptions and notes on the named varieties, p. 718-721, 1867.

Note on the Nymphalis Caledonia of Hewitson, p. 873, 1867.

Description of new or little known species of Lepidoptera, p. 221-224, 1868.

A Monographic Revision of the Lepidoptera hitherto included in the genus Adolias, with description of new genera and species, p. 599-615, (1 coloured plate,) 1868.

Description of a new genus of Heterocerous Lepidoptera founded upon the Papilio Charmione of Fabricius, p. 43-45, 1869.

List of Diurnal Lepidoptera collected by Mr. Spaight in Northern India, p. 724-728, 1870.

Note on the Abnormities in the Neuration of the hind wings in Acraea Andromachia, p. 777, 778, 1870.

Description of some new species of Exotic Lepidoptera, p. 79-83, 1871.

Description of some new species and a new genus of Pierines, with a monographic list of the species of Ixias (with plate), p. 250-254, 1871.

A Monograph of the Lepidoptera hitherto included in the genus Elymnias, p. 518-525, 1871.

A Revision of the species formerly included in the genus Terias (Pierinae) p. 526-541, 1871.

On a small collection of Butterflies from Angola, p. 721-725, 1871.

Description of a new genus of Lepidoptera allied to Apatura, p. 725, 726, 1871.

A Synonymic list of the species formerly included in the genus Pieris, with all others described since the sub-division of the group by recent authors, p. 26-67, 1872.

Revision of the genus Protogonius, p. 772-775, 1873.

List of the Diurnal Lepidoptera of the South Sea Islands, p. 274-291, 1874.


Description of 33 new or little known species of Sphingidae in the Coll. of the B. M., p. 3-16, 1875.

Description of four new species of Protogonius, p. 35, 36, 1875.

Description of new species of Sphingidae, p. 238-261, 1875.
Notice of a Memoir on the Heterocerous Lepidoptera of the family Sphingidæ, p. 269, 1875.

Description of several new species of Indian Heterocerous Lepidoptera, p. 391-393, 1875.

On a coll. of Butterflies from the New Hebrides and Loyalty Islands, with description of new species, p. 610-619, 1875.

On a small coll. of Butterflies from Fiji, p. 619, 620, 1875.

Description of several new species of Sphingidæ, p. 621-623, 1875.

Revision of the Lepidopterous genus Teracolus, with description of new species, p. 126-165, 1876.

On a small coll. of Butterflies from the New Hebrides, p. 251-253, 1876.

Description of Lepidoptera from coll. of Lt. H. Roberts, p. 308-310, 1876.

Description of new species of Lepidoptera from New Guinea, with notice of a new genus, p. 765-768, 1876.

Description of new species of Heterocerous Lepidoptera in the coll. of the B. M., p. 168-170, 1877.


Transactions of the Entomological Society of London, 1865-1876.


Description of a new species of Hestina which mimics a Danais, p. 9, 10. Remarks upon certain Caterpillars, &c., which are unpalatable to their enemies, p. 27-29.

Description of new and little known forms of Diurnal Lepidoptera, p. 273-276, 1869.

Descriptions of six new species of Callidryas, p. 9-12.

Notes on the species of Charaxes described in the "Reise der Novara," with descriptions of two new species, p. 119-122.

On Butterflies received by Mr. Swanzy from West Africa, p. 123, 124.

Descriptions of some new Diurnal Lepidoptera, chiefly Hesperiæ, p. 485-520, 1870.


Descriptions of five new species and a new genus of Diurnal Lepidoptera from Shanghai, p. 401-403, 1871.

On certain species of Pericopides in the collection of Mr. W. W. Saunders, with a list of the described species belonging to that group, p. 49-58.

Notes on certain species of Pericopides omitted in a list of species recently read before the Society, p. 255-257, 1872.

Contributions towards a knowledge of the Rhopalocera of Australia, p. 1-10.

A list of the Lepidoptera referable to the genus Hypsa of Walker's List, with a description of new genera and species, p. 315-329, 1875.


Mark Catesby, of London. Born 1679; died 1749.
The Natural History of Carolina, Florida and the Bahama Islands, containing the figures of Birds, Beasts, Fishes, Serpents, Insects and Plants, particularly the Forest-trees, Shrubs and other Plants, not hitherto described, or very incorrectly figured by authors. Together with their observations in English and French. To which are added observations on the air soil and waters, with remarks upon Agriculture, Grain, Pulse, Roots, etc. To the whole of which is prefixed a new and correct Map of the Countries treated of. By Mark Catesby, F.R.S. London, W. Innys and R. Manby. Vol. I, 1731; vol. II, 1743. Appendix, 1748. In English and French.

Some of the figures of Lepidoptera are curious exaggerations. Others are quite good. A second edition was issued in 1754, and a third in 1771.


Frank B. Caulfield, in Montreal, Canada.

In Canadian Entomologist are the following relating to Lepidoptera:

Pieris Rapae, p. 59.
Rare Captures, p. 155, vol. V, 1873.

Notes on the Larva of Catocala Ilia, Cram., p. 208, 209.

On Platysamia Columbia, Smith, p. 77-80; 95-98; vol. VIII, 1876.

Notes on Hyberating Butterflies, p. 40.


*Chenu. Pap. Diur.

Dr. Jean Charles Chenu. Born in Metz 1808.

Encyclopédie d'Histoire Naturelle, ou traité complet de cette science d'apres les travaux des naturalistes les plus éminents de tous les pays et de toutes les époques Buffon, Daubenton, etc., etc., par le Dr. Chenu, Paris. Vol. of Papillons, 1851-1853; vol. of Papillons Nocturnes, ?1857.

Clerck. Icones.


Text in Swedish and Latin.

Owing to this work having been privately distributed, and not sold, it has become exceedingly rare. Old Gottlob Wilhelm in his "Unterhaltungen," Ins. II, (1779), p. 16, relieves himself in this wise: "Fifty-five pages large 4to, a simple Register, to-
gether with a Dedication and Preface, compose the whole work, which at auction was sold for 600 Swedish dollars."

*CRAM. PAP. EXOT. I-IV.

Pierre Cramer.


*CURTIS. APP. TO NARR. ROSS' 2D VOY.


Description, &c., of the Insects brought home by Commander James Clark Ross, 1835.

In the "Appendix to the Narrative of a second voyage in search of a north-west passage, and of a residence in the Arctic Regions during the years 1829-1833, etc., etc. London, A. W. Webster."

Lepidoptera are on pages lxxv-lxxv.

*DALM. VETENSK. ACAD. HANDL.

Johann Wilhelm Dalman. Born at Hinseberg in Westmanland Nov. 4, 1787; died at Stockholm July 11, 1828. Professor at and Inspector of the Museum of the Academy.

Försök till systematisk Uppställning af Sveriges Fjärilar.


*DBLDY. ENTOM.


The Entomologist, conducted by Edward Newman. London. I, 1841. Contains the following on N. American Lepidoptera:

Remarks on some North American Lepidoptera; including a communication from T. W. Harris, p. 97-101.

Description of a new North American Polyommatus, p. 209-211.

*DBLDY. LIST (OR CAT. LEP.) B. M.


*DBLDY.-HEW. GEN. DIUR. LEP.

Edward Doubleday and William C. Hewitson.


With atlas of 79 magnificent coloured plates.

With the above was also associated Prof. J. O. Westwood in the completion of this work.

*DOdGE. CAN. ENT.

G. M. Dodge, in Glencoe, Nebraska.

In Canadian Entomologist are the following relative to Lepidoptera:

An Error Corrected, p. 198.


Hesperia Pawnee, n. sp., p. 44, 45.

Notes on collecting Lepidoptera, p. 114, 115.

Catocala Whitney, n. sp., p. 125, 126, vol. VI, 1875.


*DON. BRIT. INS. (or NAT. HIST. INS.).


The Natural History of British Insects, explaining them in their several states, with the periods of their transformations, their food, economy, etc., together with the history of such minute Insects as require investigation by the microscope. London: Rivington, 1813.

In 16 volumes; each year one vol.

*DON. INS. IND.


58 coloured plates.

*DON. NAT. REP.

The Naturalist's Repository, or monthly miscellany of exotic natural history, consisting of elegantly coloured plates with appropriate scientific and general descriptions of the most curious, scarce and beautiful productions of nature that have been recently discovered in various parts of the world; and more especially such novelties as from their extreme rarity remain entirely undescribed, or which have not been duly noticed by any preceding naturalist. The whole composed according to the latest improvements in the various departments of the science, and forming collectively a truly valuable compendium of the most important discoveries of Quadrupeds, Birds, Fishes, Insects, Shells, marine productions, and every other interesting object of natural history, the produce of Foreign Climates. Printed for the author and W. Simpkin and R. Marshall. London.

Vol. I, 1823; II, 1824; III, 1825; IV, 1826; V, 1827.

Coloured plates.

*DRU. ILL. EX. ENT.

Dru Drury, Goldsmith, of London. His collection, the largest of his time, containing 11,000 species, was sold at auction during his life, owing to pecuniary embarrassments, the result of his expenditures in pursuit of his beloved science.

Illustrations of Natural History, wherein are exhibited upwards of two hundred and forty figures of exotic insects, according to their different genera; very few of which have hitherto been figured by any author, being engraved and coloured from nature, with the greatest accuracy and under the author's own inspection, on fifty copper plates; with a particular description of each insect, etc. London: White.

Vol. I, 1770; II, 1773; III. 1782.

The plates were engraved by Moses Harris, the best entomological artist of his day.

The text is in English and French.

*DUNCAN. NAT. LIB. ENT. III.

James Duncan.


*DUNCAN. NAT. LIB. ENT. IV.
The Natural History of British Moths, Sphinxes, etc. Edinburgh, 1836. With thirty-two col. plates, and portrait and memoir of Madame Merian.

Vol. IV Ent. of the Nat. Lib. and vol. XIV of the whole series.

*DUNCAN. NAT. LIB. ENT. V.
The Natural History of Foreign Butterflies, etc. Edinburgh, 1837. With thirty-three col. plates, and portrait and memoir of Lamarck.

Vol. V Ent. of the Nat. Lib., and vol. XVIII of the whole series.

*DUNCAN. NAT. LIB. ENT. VII.
The Natural History of Exotic Moths, etc. Edinburgh, 1841. With thirty-four col. plates, and portrait and memoir of Latreille.


*DUP. VI-XI.


*DUP. ICON.

*DUP. LEP. FR. SUPPL. I-IV.


*EDWDS. (W. H.) PROC. ENT. SOC. PHIL. I-VI.

Papers in the Proceedings of the Entomological Society of Philadelphia:
Notes upon Grapta Comma, Harris, and Grapta Faunus, Edwards, (C-album of some authors,) p. 182-184.

Descriptions of certain species of Diurnal Lepidoptera found within the limits of the United States and British America. No. 1, p. 14-22; No. 2, p. 78-82; No. 3, p. 501-507.

Description of the female of Argynnis Diana, p. 431–434.


Descriptions of certain species of Diurnal Lepidoptera found within the limits of the United States and British America. No. 4, p. 201–204.

Notes upon Papilio Asterias and Saturnia Promethea, hermaphrodites, p. 390, vol. IV, 1865.


Descriptions of certain species of Diurnal Lepidoptera, etc., etc. No. 5, p. 200–208, vol. VI, 1866–1867.

*EDWDS. (W. H.) TRANS. AM. ENT. SOC. I–V.*

The following Papers in the Transactions of the American Entomological Society:


Description of a new Hesperian, p. 122.

Notes on a remarkable variety of Papilio Turnus, and descriptions of two new species of Diurnal Lepidoptera, p. 207–210.

Descriptions of certain species of Diurnal Lepidoptera found in the United States, p. 311–312.


Notes on Graptaes C Aureum and Interrogationis, Fab., p. 1–9.

Descriptions of new species of Diurnal Lepidoptera, etc., etc., p. 10–22.

Descriptions, etc., etc., etc., p. 205–216.


Descriptions of new species of Diurnal Lepidoptera, etc., p. 61–70.

Descriptions, etc., etc., etc., p. 343–348, vol. IV, 1872–1873.

Descriptions of new species of Diurnal Lepidoptera, etc., p. 13–19.

Descriptions, etc., etc., etc., p. 103–111.

Description of a new species of Catocala from Arizona, p. 112.


*EDWDS. (W. H.) PROC. ACAD. NAT. SC. PHIL.*


In the above are the following papers:


*EDWDS. (W. H.) BUTT. N. AM. I, II.*

*EDWDS. (W. H.) SYN. N. AM. LEP.


*EDWDS. (W. H.) CAN. ENT.

In the Canadian Entomologist are the following:

Papilio Machaon in British America, p. 22.
Habits of Melitaea Phaeton, p. 59, 60.
Melitaea Phaeton, p. 80.
Melitaea Phaeton, Cram., p. 36.
Rearing Eggs of Butterflies, p. 115.
Rearing Butterflies from the Egg, p. 133.
Food-plant of Darapsa Versicolor, p. 134.
Rearing Butterflies from the Egg, p. 162-164.


Some remarks on changes in names of certain Butterflies, p. 8-10.
Some remarks on Entomological Nomenclature, p. 21-36.

On the identity of Grapta Dryas with Comma, p. 184.

Larva of P. Brevicauda, p. 20.

Notes on the Larva of Argynnis Cybele, Aphrodite and Diana, p. 121-125.


Some notes on Lycaena Pseudargiolus, p. 81-83.
Notes on Butterflies, p. 150, 151.
Argynnis Myrina and its alleged abnormal peculiarities, p. 189-195.


Notes on Entomological Nomenclature. Part I, p. 41-52; Part II, p. 81-94; Part II concluded, p. 113-119.

Notes on Preparatory Stages of Danaus Archippus, p. 119, 120.
No. of Broods of Danaus Archippus, p. 148.
Correspondence, p. 160.
Further notes upon Argynnis Myrina, p. 161-163.

History of Phyciodes Tharos, a Polymorphic Butterfly, p. 1-10.
Correspondence, p. 17.

Description of a new species of Pamphila from Colorado, p. 29, 30.
Supplementary Notes upon Argynnis Myrina, with mention of the species Bellona, Atlantis and Cybele, p. 34-36.
History of Phyaciodes Tharos, a polymorphic Butterfly, continued from p. 10, p. 51--58.
Description of a new species of Hesperian from Texas, p. 58, 59.
Notes on Limenitis Proserpina and Arthemis, p. 114.
Correspondence, p. 120.
On the Preparatory Stages of Satyrs Nepehe, p. 141--143.
Description of the Preparatory Stages of Phyaciodes Harrisii, Scudder, p. 165--168.
Butterflies on Martha's Vineyard, p. 178.
Description of new species of Butterflies belonging to the N. American Fauna, p. 189--192.
An account of some farther experiments upon the effect of cold in changing the form of certain Butterflies, p. 203--206.
Description of the Preparatory Stages of Neonympha Sosybius, p. 229--231, vol. IX, 1877.


*EDWDS. (W. H.) HAYDEN'S REP. EXP. MONTANA.

List of Species of Butterflies collected by Campbell Carrington and William B. Logan, of the Expedition in 1871.

*EDWDS. (W. H.) FIELD AND FOREST.

Field and Forest, a monthly journal devoted to the Natural Science.
Charles R. Dodge, Editor, Washington.
In vol. III of the above are the following:
Lepidoptera of the Big Horn Mountains, p. 48, Sept., 1877.
Descriptions of new species of Diurnal Lepidoptera found in North America, p. 86--89, Nov., 1877.
Descriptions, etc., etc., etc., p. 101--105, Dec., 1877.

*EDWDS. (H.Y.) PROC. CAL. ACAD.


Pacific Coast Lepidoptera.
In the Proceedings of the California Academy of Sciences:

Article No. 1. Description of some new or imperfectly known Heterocera, p. 109, July 7, 1873.
No. 3. Notes on some Zygenidæ and Bombycæ of Oregon and British Columbia; with descriptions of new species, p. 183, Nov. 3, 1873.
No. 5. On the Earlier Stages of some species of Diurnal Lepidoptera, p. 325, July 6, 1874.
No. 8. On the Transformations of some Species of Heterocera not previously described, p. 367, Sept. 7, 1874.
No. 9. Description of a New Species of Thyris, from the Collection of Dr. Hermann Behr, p. 413, Nov. 2, 1874.
No. 11. List of the Sphingidae of California and adjacent Districts, with Descriptions of New Species, p. 86, Apr. 19, 1875.
No. 15. Description of a New Species of Catocala from San Diego, p. 185, Oct. 18, 1875. Vol. VI.
No. 16. Notes on the Transformations of some Species of Lepidoptera, not hitherto recorded, p. 19, Apr. 19, 1876.
No. 18. Description of a New Species of Heterocampa, (Larva and Imago), p. 121, Oct. 16, 1876.
No. 20. Notes on the Case-Bearing Moths, (Psychidae,) with notices of Californian Species, p. 140, Nov. 20, 1876.
No. 22. Notes on some Diurnal Lepidoptera, with descriptions of New Varieties, p. 163, Dec. 18, 1876.
No. 23. Description of a New Species of Catocala, and a List of the Californian Specimens of the genus known to occur in collections, Jan. 15, 1877.
No. 25. Description of a New Species of Plusia from Arizona, March 5, 1877. Vol. VII.

Of these last three papers the advance sheets (author's proofs) have so far only been issued.

*EMMONS. AGR. NAT. HIST. N. Y. V.
Ebenezer Emmons, Doctor of Medicine, in Albany.
Vol. V, p. 198-256, and plates 35-47 relate to the Insects. The plates are mostly execrably drawn and as badly coloured, and the text abounds in errors of all sorts.
*Enc. Meth. Ins. Plates.*


Johann Friederich Eschholz, Doctor of Medicine and Professor of Zoology. Born in Dorpat, Russia, Nov. 1, 1793; died in same place May 19, 1831. He made the voyage around the world twice with Krusenstern and Kotzebue. Lesebeschreibung exotischer Schmetterlinge with 6 plates. In Kotzebue’s Reise um die Welt. Weimar, 1830.

*Esp. Aus. Schmett.*


*Eversm. Ent. Russ. V.*


*Fabr. Gen. Ins.*


*Fabr. Syst. Ent.*

Systema Entomologiae sistens Insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus. Flensburgi et Lipsiae, 1775.

In Latin; 1 vol, pages 832.

*Fabr. Sp. Ins. II.*

Species Insectorum exhibentes eorum differentias specificas, synonyma autorum, loca natalia, metamorphosin adiectis observationibus, descriptionibus. Tom. II, Hamburgh et Kilonii, 1781.

Latin. Pages 494. (With Appendix p. 510)

*Fabr. Mant. Ins. II.*

Mantissa Insectorum sistens species nuper detectas adiectis synonymis, observationibus, descriptionibus, emendationibus. Tom. II, Hafniae, 1787.

Latin. Pages 382.
*FABR. ENT. SYST. III.
Entomologia Systematica emendata et aucta, secundum classes, ordines, genera, species, adiectis synonymis, locis, observationibus, descriptionibus. Tom. III, pars I et II. Hafniae, 1793-1794.

*FABR. ENT. SYST. SUPPL.
Supplementum Entomologiae systematiae. Hafniae, Proft et Storch, 1798.
Pages 572. (Index Alphabeticus, p. 53.) Latin.

FABR. ILL. MAG.
Systema glossatorum.

*FABR. (OTTO). FAUN. GROEN.
Otto Fabricius, Missionary in Frederikshaab, Greenland, from 1768 to 1774.
Born in Rudkjoebing March 6, 1744; died May 20, 1822.

Fauna Groenlandica, systematice sistens animalia groenlandiae occidentalis hactenus indagata, quoad nomen specificum, triviale, vernaculique, synonyma auctorum plurium, descriptionem, locum, vicitm, generationem, mores, usum, capturamque singuli; prout detegendi occasio fit, maximaque parte secundum proprietates observationes. Hafniae et Lipsiae, Rothe, 1780.
Insects, pages 184-221.

*FELD. REISE NOV. LEP.
Dr. Cajetan Felder, Vice-President Zoological—Botanical Society of Vienna, Lord Mayor of Vienna, etc., etc., etc.
Dr. Rudolf Felder, son of the above, died in 1871, in his 28th year.


Lepidoptera von Dr. Cajetan Felder, Dr. Rudolf Felder and Alois F. Rogenhofer. Atlas von 140 Tafeln, mit 2,500 Abbildungen Wien, 1864—Juli 1875.

Text in German and Latin, 549 pages. Plates of the most sumptuous description possible, and comprise 2,500 coloured figures of all families and genera of Lepidoptera.

*FELD. VERH. ZOOL. BOT. GES.

Contains the following:


*FELDER. WIEN. ENT. MON.

Wiener Entomologische Monatschrift. Verantwortliche Redacteure:
Julius Lederer und Ludwig Miller. Wien. vol. I, 1857; II, 1858;
III, 1859; IV, 1860; V, 1861; VI, 1862; VII, 1863; VIII, 1864.

The following papers of Drs. C. and R. Felder are contained in the above work:

Lepidopterologische Fragmente von C. u. R. Felder. No. 1, p. 178-
186; No. 2, p. 263-273; No. 3, p. 321-328; No. 4, p. 390-405,
vol. III, 1859.

No. 5, p. 97-112; No. 6, p. 225-251.
Lepidoptera nova in paeninsula Malavica collecta diagnosibus instructa
Lepidoptera nova Columbicae diagnosibus collustrata a C. et R. Felder.
Lepidoptera nova a Dre. Carolo Semper in insulis Philippinisc collecta
diagnosibus exposuerunt C. et R. Felder. Series prima, p. 297-306,
vol. V, 1861.

Observationes de Lepidopteris nonnullis Chinae centralis et Japoniae,
Specimen faunae lepidopterologiae riparum fluminis negro superioris
in Brazilia septentrionali anctoribus C. et R. Felder, p. 65-80; 109-
126; 175-192; 229-235.
Lepidoptera nova a Dre. Carolo Semper etc., etc., etc. Series secunda,
p. 252-294.
Lepidoptera nova Columbicae etc. Series tertia, p. 409-427, vol. VI,
1862.

Lepidoptera nova a Dre. Carolo Semper etc., etc., etc. Series tertia, p.

FELD. (DR. CAJETAN). NEU. LEP.

Ein Neues Lepidopteron aus der Familie der Nymphaliden und seine
Stellung im natürlichen Systeme, begründet aus der Synopse der übrigen


*FISHER. PROC. ACAD. NAT. SC. PHIL.
James C. Fisher, Doctor of Medicine.

Proceedings of the Academy of Natural Sciences of Philadelphia.

Description of a new species of Argynnis, p. 179, 180, t. 2, v. X, 1858;

*FITCH. REP. N. Y. STATE AGR. SOC.
Asa Fitch, M. D., formerly Entomologist of the New York State Agricultu-
ral Society.

First Report on the Noxious, Beneficial and other insects of the State of
New York, made to the State Agricultural Society, pursuant to an an-
nual appropriation for this purpose from the Legislature of the State.
P. 705-880, in vol. XIV of the Transactions of the New York State
Agricultural Society, 1854.

Second Report, etc., p. 409-559 in Trans. vol. XV, 1855.
The Hang Worm, p. 551–554, 1859.
Entomological Exhibition in Paris, p. 88–102, 1865.

*Glov. Ind.
Manuscript Notes from my Journal or Entomological Index to names, &c., in Agricultural Reports. With list of Vegetable and Animal substances injured or destroyed by Insects, &c. Written by Townend Glover. Transferred to and printed from stone by F. C. Entwisle. Washington, 1877.

Only fifty copies printed.

*Gmel. Syst. Nat. I.
Johann Friederic Gmelin, born in Tubigen Aug. 8, 1748; died in Gottingen Nov. 1, 1804.


*Godt. I–V.
Jean Baptiste Godart (or Godard). Born at Origny-Sainte-Benoit, Picardy, Nov. 25, 1775; died July 27, 1825.

Continued by Duponchel. See "Dup. VI–XI."

*Godt. Enc. Meth. IX.
*GODT. ENC. METH. IX SUP.

Encyclopédie Méthodique. Supplement. 1823.

Being the last pages, 804-828, of the above vol. IX of the Enc. Meth.

*GOEZE. ENT. BEYT. I-III.


*GOSSE. CAN. NAT.

Philip Henry Gosse, born in Worcester Apr. 6, 1810.

The Canadian Naturalist, a series of conversations on the Natural History of Lower Canada.

"Every kingdom, every province should have its own monographer." Gilbert White.

London: John Van Voorst, 1840.

*GOSSE. NEWM. ENT.


*GOSSE. ANN. NAT. HIST. SER. 2.

On the Insects of Jamaica.

Is contained in the following pages of—

The Annuals and Magazine of Natural History, including Zoology, Botany and Geology (being a continuation of the 'Magazine of Botany and Zoology,' and of London and Charlesworth's 'Magazine of Natural History,' conducted by Sir W. Jardine (and others). London, R. & J. E. Taylor, 1848.


Lepidoptera on p. 111-114; 176-181; 268-273. The previous pages are on Coleoptera. On the last cited page it is stated that the article is "to be continued," but the continuation never appear d.

*GRAY. GRIFF. AN. KING.

George Robert Gray, born July 8, 1808; Sen. Assistant in the Zoological Department of the British Museum.

Notices of new genera and species (of Insects).

Contained in


Lepidoptera are on p. 577-680, plates 1-137, vol. II Insecta (vol. XV of whole work.)

*GRONOV. ZOOPH.

Lorenz Theodore Gronov, born 1730; died 1778. Municipal officer in Leyden.

Zoophylacium Gronovianum, Exhibens Animalia quadrupeda, Amphibia, Pisces, Insecta, Vermes, Mollusca. Testacea, et Zoophyta, Quæ in

Zoophylaci Gronoviani fasciculus secundus exhibens enumerationem Insectorum, quae in Museo suo adservat, examini subjicit, systematice disposit atque descriptis Laur. Theod. Gronovius, etc. Lugduni Batavorum, Haak, par II, 1764.

Insecta on p. 141-236. Lepidoptera p. 187-212, part II.

Zooph. Gron., etc. Vermes, Mullusca, etc., etc., part III, 1781.

*GROTE. ANN. N. Y. LYC. NAT. HIST.

Augustus Radcliffe Grote, in Buffalo, New York.

Annals of the New York Lyceum of Natural History:


Note on a name in Entomology proposed by the late Coleman Townsend Robinson, p. 128, 129, vol. XI, 1875.

*GROTE. ACAD. NAT. SCI. PHIL.

Proceedings of the Academy of Natural Sciences of Philadelphia:


*GROTE. BUFF. BULL. I-III. (Or Buff. Buff. Soc. I-III.)


The following papers on Lepidoptera, by A. R. Grote, are in the above:

Catalogue of the Zygaenidae of North America, p. 29-36.
Contributions to a knowledge of North American Moths, p. 73-94.
Descriptions of Noctuidae principally from California, p. 129-155.
Description of the genera Argyrophyes and Condylolomia and of a species of Deuterollyta, p. 175-177.
Description of a Butterfly new to the Lower Lake Region, p. 178-179.
Description of three genera of Noctuidae, p. 180-182.
On the Butterflies of Anticosti, p. 185.
On Eight Species of Noctuidae, p. 190-194.

List of the Noctuidae of North America, p. 1-77.
On the species of Helicopis inhabiting the Valley of the Amazon, p. 106–108.
New Noctue, p. 143, 144.
Notes on American Lepidoptera with Descriptions of Twenty-one New Species, p. 145–163.


Canadian Entomologist contains the following:
Notice of the Species of Drepanodes, p. 114, 115.

On a New Checkered Hesperia, p. 69, 70.
Descriptions of Lepidoptera from Alabama, p. 101, 102.
Descriptions of Gelechia Aduncella and Gelechia Labradorica, p. 125, 126.
Cirrhophanus Triangulifer, nov. gen. et sp., p. 187.
On Mr. Scudder's Systematic Revision of some of the American Butterflies, p. 214–216.

On Mr. Scudder's Systematic Revision of some of the American Butterflies, p. 62, 63; 143–145.
Notes on Cosmia Orina, Guenee, p. 205, 206.
Description of New Deltoids, p. 225–228.
Synonymical note on Adelocephala Albolineata, p. 228.

Notes on Noctuidae, p. 13–16.
On Mr. Couper's collections of Lepidoptera made on Anticosti Island in 1873, p. 69–72.
New Canadian Noctue, p. 115–118.
On two species of Agrotis, allied to A. Triangulum, p. 131, 132.
Note on the "List" of 1868, p. 170, 171.
Correspondence, p. 178, 179.
Correspondence, p. 199.

Note on Catocala Nebraskei, p. 2, 3.
Colias Philodice, p. 18.
Preliminary List of the Noctuidae of California, p. 25—28; 44-49.
Correspondence, p. 57—60.
Preliminary List of the Noctuidae of California, p. 67—72.
On three New Species of Noctuidae, p. 83—85.
Preliminary List of the Noctuidae of California, p. 101—104.
On Genera in the Moths, p. 113—115.
Correspondence, p. 138, 139.
Description of a New Californian Agrotis, p. 144.
Description of Pachnobia Orilliana, p. 154, 155.
On a Canadian Species of Agrotis, p. 172, 173.
On Catocala Verrilliana, with notes on Catocala Relicta, p. 185, 186.
On New Species of Agrotis, p. 186—188.
On a new Canadian Lithophane and Scopelosoma, p. 188, 189.
Notes on Certain Species of Arctia, p. 196, 197.
On a New Euchaetes, p. 200.
On Scopelosoma and allied genera, p. 205—207.
Agrotis Rubifera, n. s., p. 207.
On Choephora and allied genera, p. 17, 18.
Descriptions and Notes on Certain Moths, p. 25—29.
New Pyralids, p. 98, 99.
Larvae of Thyreus Abbotii, p. 100.
New Moths, p. 111, 112.
On a New Canadian Bombycid Moth, p. 125, 126.
On Jacob Hübner and his Works on the Butterflies and Moths, p. 131—135.
Notes on Geometridae, p. 152—154.
New Pyralides, p. 156—158.
Notes on Noctue, p. 188—190.
Notes on Certain Species of Moths, p. 205—208.
Description of a New Botis allied to Flavidalis, p. 10.
New Noctue, p. 21, 22.
Six New Noctum, p. 67—71.
Notes and descriptions of New Moths, p. 84—90.
On Pseudohazis Hera, (Harris), p. 96.
On a New Canadian Crambus allied to Conchellus, p. 101, 102.
New Pyralides, p. 103—107.
Correspondence, p. 119, 120.
Notice of Mr. Butler's Revision of the Sphingidae, p. 130—133.
New Species of Lepidoptera, p. 156—158.
A new Lepidopterous Insect injurious to vegetation, p. 161—163.
Notes on Lepidoptera, p. 213—215.
Correspondence, p. 220.
A new genus of Tortricidae, p. 227.
Description of a new Drepanodes, p. 17.
A new Hepialus from New York, p. 18.
Note on the Structure of Nephoptyryx Zimmermani, p. 19.
Description of a new Grapholitha, p. 54, 55.
Correspondence, p. 59, 60.
New Species of Acopa and Heliothis and note on Hamadryas, p. 67—69.
A new Arctic from Florida, p. 78.

*GROTE.  Noct.  Cal.

Descriptions of Noctuidae, chiefly from California.


*GROTE.  Proc. Ent. Soc. Phil. I—VI.

The following papers on Lepidoptera in the Proceedings of the Entomological Society of Philadelphia:

Additions to the Catalogue of U. S. Lepidoptera: No. 3, p. 30, 32; No. 4, p. 64—68; No. 5, p. 273—276.
A Revision of the Species of Cymatophorina, found in the United States and British America, with descriptions of New Species, p. 54—59.
Descriptions of North American Lepidoptera: No. 1, p. 334—344; No. 2, 433—441.
Description of a New Species of North American Gortyna, p. 431, 432.
Description of a New Species of North American Papilio, p. 441, 442,
vol. II, 1863–1864.


Descriptions of North American Lepidoptera: No. 3, p. 73–92; No. 4,

List of a Collection of Lepidoptera Heterocera taken near Williamsport,

Notes on Certain Species of North American Lepidoptera, p. 535–542,
vol. III, 1864.

On the Synonymy of Parathyris Angelica, Grote, p. 207.

IV, 1865.

Notes on Cuban Sphingidae, p. 33–84.


The following Papers on Lepidoptera in Transactions of the American
Entomological Society:


On the Synonymy, etc., of certain species of American Lepidoptera, p.
115–122.

On the Structural Characters of Polyommatus Tarquinius, p. 307, 308.

On a new genus of Noctuidae allied to Dyops, with remarks on certain

List of the Sphingidae, Ægeridæ, Zygænidæ and Bombycidæ of Cuba, p.


89–108; No. 3, p. 293–310.


Remarks on North American Noctuidæ with descriptions of new species,
p. 89–98.

Descriptions of North American Moths, p. 113–118:


Report Peabody Academy of Sciences, 1873, contains:

Noctuidæ of North America, p. 21–53.


Entomologische Zeitung herausgegeben von dem Entomologische Vereine

XXXVI, 1875.

The latter, a stockbroker in New York, was born in Putnam Co., New York, in 1888, and met his death May 1st, 1872, through injuries caused by being thrown from his carriage. A list of such writings as he was alone responsible for may be found in the Canadian Entomologist, vol. V, p. 109, 111. They are almost solely on the Microlepidoptera.

Annals New York Lyceum Natural History.

Contain the following:

Lepidopterological Contributions, p. 351—387.

Notes on the Lepidoptera of America, p. 432—466, vol. VIII, 1867.


Contain the following:

Description of a new species of Citheronia, and remarks on Anisota Rubicunda, p. 222, 223.


Transactions of the American Entomological Society.

Contain the following:


Notes on the North American Lepidoptera in the British Museum and described by Mr. Francis Walker, p. 67—88.

Descriptions of American Lepidoptera: No. 4, p. 179—206.


*Hagen. Bib. Ent.

Dr. Hermann August Hagen. Born in Konigsberg May 30, 1817; now in Cambridge, Massachusetts.

*HAGEN. CAN. ENT.*

In Canadian Entomologist are the following:

*HAGEN. BUFF. BULL.*

In Bulletin of the Buffalo Soc. Nat. Sc. is the following:

*HARRIS. AGASS. LAKE SUPERIOR.*

Thaddeus William Harris, M. D., in Cambridge, Massachusetts. Died in 1856. His Collection is in the Boston Museum of Natural History.

Descriptions of some species of Lepidoptera from the Northern Shores of Lake Superior.
P. 386–394, & t. 7, in, Lake Superior; its physical character, vegetation, and animals, compared with those of other and similar regions. By Louis Agassiz. With a Narrative of the tour by J. Elliot Cabot, and contributions by other scientific gentlemen. Boston: Gould, Kendall and Lincoln, 1850.

*HARR. AM. JNL. SC.*

American Journal of Science and Art has:


HARR. BOST. CULT.

Boston Cultivator.

Canker Worms (Anisopteryx Vernata), XI, p. 376, 1849.

HARR. DNG. HORT.

Downing's Horticulturist.
The rosy Hispa and the Drop-Worm (Hispa rosea, Oiketicus Conifera-rum,) VIII, p. 461–464, 1853.

*HARRIS. HITCH. REP. GEOL. MIN., ETC., MASS.*

List of the Insects of Massachusetts.

HARR. HOV. MAG.

Hovey's Magazine of Horticulture:
Some account of the insect that attacks the grape vine (Procris Americana) X, p. 201–205, 1844.
The currant-tree borer (Egeria Tipuliformis), XVII, p. 241–244, 1851.
The Measure-Worm (Geometra Niveosericearia), XXI, 418–423, 1855.
*HARRIS. Ins.
A Report on the Insects of Massachusetts which are injurious to vegetation, published agreeably to an order of the Legislature, by the Commissioners of the Zoological and Botanical Survey of the State. Cambridge, 1841.

A Second Edition was issued by the author in 1842, and another in 1852.

*HARRIS. Ins., FLINT's Ed.
A later revised, improved and illustrated edition of the above, with the title as follows:
A Treatise on some of the Insects Injurious to Vegetation. By Thaddeus William Harris, M. D. A new Edition, enlarged and improved, with additions from the author's manuscripts and original notes. Illustrated by engravings drawn from nature under the supervision of Professor Agassiz. Edited by Charles L. Flint, Secretary of the Massachusetts State Board of Agriculture. Boston, 1862.

640 pages of text, eight finely coloured steel plates and numerous excellent wood cuts representing insects of various orders, and is a book that no American Entomologist can well be without.

HARR. MASS. REP.
Massachusetts Agricultural Repository and Journal contains:

Upon the Natural History of the Salt Marsh Caterpillar (Arctia Pseuderminea), vol. VII, p. 322--331, 1823.

HARR. MASS. PLough.
Massachusetts Ploughman.
Canker Worms (Anisopteryx Vernata), X, No. 8, 1850; No. 33, 1851.

*HARRIS. NEW ENG. FARMER.

New England Farmer.
In the above are the following papers on Lepidoptera:

Description of any remedy against the Catterpillar which destroys grass in Salt-Meadows, I, p. 258, 1823.

Natural History of the Salt-Marsh Caterpillar (Arctia pseuderminea), I, p. 385-386, 1823.

Caterpillars (Clisiocampa Americana), IV, p. 354, 1826.

On (Aegeria exitiosa) the peach tree insect, V, p. 33, 1826.

Description of Aegeria cucurbitae and Arctia textor, VII, p. 33, 34, 1828.

American turnip butterfly (Pontia Oleracea), VII, p. 402, 1829.

Ægeria pyri, Ichneumon hordei, IX, p. 1, 2, 1830.

On the Wheat Insects (Calandra granaria, Tinea granella, Oecophora cerealella), XIX, p. 300, 1841.

On the Squash vine destroyer (Aegeria cucurbitae), XX, p. 260, 1842.

On the Apple Worm, Plum Grub, (Carpocapsa pomonella, Conotrachelus nenuhar) XXII, p. 13, 1843.

On Clisiocampa sylvestra, a new depredator of the orchard; the Wheat worm, etc., XXII, p. 412, 1844.

Injurious insects (Conotr. nenuhar, Carpocapsa pomonella, Aphides,

Canker-Worms, (A. Vernata,) IV, ser. 4, p. 155, 156, 1852.


HARR. PR. FAR.

Prairie Farmer.

Canker Worms (Anisopteryx Vernata), VIII, p. 172, 173, 1848.

*HERBST. NAT. SCHMETT. I–XI.

Johann Friederich Wilhelm Herbst, Preacher in Berlin, and Carl Gustav Jablonsky. Herbst was born in Petershagen Nov. 1, 1743; died in Berlin Nov. 5, 1807. Jablonsky was born in 1756; died May 25, 1787.


Vol. I, 1783; II, 1784; III, 1788.

Jablonsky dying before the completion of the last mentioned vol. (III), it and the remaining eight were continued and finished by Herbst.

Vol. IV, 1790; V, 1792; VI, 1793; VII, 1794; VIII, 1796; IX, 1798; X, 1800; XI, 1804.

The figures of Exotic Lepidoptera in the eight volumes edited solely by Herbst are nearly all fac-similes of Cramer’s and represent nearly all the diurnals of that author excepting the Hesperides. The above does not apply to the figures in the first volumes by Jablonsky. In the eleven volumes, besides an antique frontispiece and a plate of Collecting Instruments, etc., there are 327 plates of coloured figures. There are many misprints among names and references, and the errors of previous authors are repeated.

*HEW. ANN. & MAG. NAT. HIST.

William Chapman Hewitson, born in 1806; died at his residence, Oatlands, Walton-on-Thames, Surrey, England. May 28, 1878; was interred in the little country churchyard about half a mile from his home. His collection, probably the finest and largest extant of Diurnal Lepidoptera, was bequeathed to the British Museum on the condition that it was to remain intact for 21 years.

The Annals & Magazine of Natural History (including Zoology, Botany and Geology).


On a new species of Butterflies from the Andaman Islands, p. 356–358.


The Entomologist's Monthly Magazine.

Description of a new species of Leptalis, (Lepidopt. Rhopaloceres,) p. 68, 69.
Description of a new species of Epitola, (Lycenad.) p. 86.
Curious occurrence of the Wood Leopard, p. 96.
Descriptions of new species of Lepidoptera Rhopalocera from old Calabar and Ecuador, p. 97–99.
Descriptions of two new species of Lepidopt. Rhopalocera, p. 177, 178.

Description of seven new Exotic Rhopalocera, p. 83–86.
Description of new species of Papilio from Lagos, p. 146, 147.
Vanessa Antiopa in November, p. 161.

Description of three new species of Rhopalocera from Angola, p. 57, 58.
Description of nine new species of Lycaenidae from the west coast of Africa, p. 122–125.
Description of six new species of Epitola from the west coast of Africa, p. 149–151.
Description of four new African Butterflies, p. 205, 206.
Description of a new species of Charaxes from the west coast of Africa, p. 247, 248.


Note on Rhopalocera from Africa, p. 16.
Descriptions of new Lycaenidae from West Africa, p. 36.
Description of new species of Butterflies, p. 56.

Note on Bolivian Rhopalocera, p. 65.
Descriptions of new species of Lycaenidae from South America, p. 104–107.

Note on the Capture of Papilio Antimachus, p. 113.
Description of five new species of Acraea from West Africa, p. 130–132.
Descriptions of six new species of Butterflies from South America, West Africa and Borneo, p. 182–184.


Descriptions of three new Butterflies, p. 9, 10.
Description of three new species of Lycaenidae, p. 38, 39.
Description of a new species of Myrina from West Africa, p. 106.


Note on Mr. Buxton's Collections, p. 57.
Notes on Mr. Atkinson's Collection of East Indian Lepidoptera with descriptions of new species of Rhopalocera, p. 149-152.
Descriptions of two new Butterflies from the Philippine Islands, p. 178-179.
Notes on Rhopalocera from Angola with description of a new species of Deudorix from Zanzibar, p. 205.
Note on Mr. Buxton's Eastern Butterflies with a description of a new species of Poritia, p. 223.
Description of a new Harma from West Africa, p. 277, 278, vol. XII, 1876-1877.
Description of a new Butterfly from Lake Nyassa, p. 5, 6.
Descriptions of four new species of Acraea from Lake Nyassa, p. 51, 52.
Descriptions of three new species of Butterflies from Delagoa Bay, p. 81-83.
Description of new species of Rhopalocera, p. 107, 108.
Description of a new Leptalis from Ecuador, p. 180.
Description of the male of Charaxes (Philognoma) Azota, p. 181.

HEW. DESCRIP. HESP.

Description of New Species of Hesperidae. Van Voorst, 1867-1869.

*HEW. ILL. EX. BUTT.


One of the grandest works ever published on Lepidoptera.

*HEW. ILL. DIUR. LEP.


*HEW. JNL. LIN. SOC. LOND.


*HEW. PROC. ZOOL. SOC. LOND.

Description of a new species of Butterfly of the genus Agrias, p. 45-47.
Description of some Butterflies from the collection of Mr. Wallace, p. 464-466, vol. XXVI, 1858.
Description of Butterflies from the collection of Mr. Wallace, p. 422-425, vol. XXVII, 1859.
Description of some Butterflies from the collection of Mr. Wallace, p. 50-53, vol. XXIX, 1861.
Description of Butterflies from the collections of Messrs. A. R. Wallace and W. C. Hewitson, p. 87-91, 1862.

A list of Diurnal Lepidoptera taken in Madagascar by Mr. Caldwell, p. 64, 65, 1863.


The Transactions of the Entomological Society of London.


On Pronophila, a genus of Diurnal Lepidoptera, with figures of new species and references to all those which have been previously figured and described, p. 1-17.


Description of a new species of Diurnal Lepidoptera, p. 245-249.

A monograph of the genus Ypthithma with descriptions of two new genera of Diurnal Lepidoptera, p. 291-293.


Remarks on Mr. A. R. Wallace's Pieridae of the Indian and Australian regions, p. 97-100, 1868.

Description of two new species of Papilio from Ecuador, p. 31, 32.

Description of six new species of Diurnal Lepidoptera from Nicaragua, p. 33-35.

Description of new species Diurnal Lepidoptera, p. 71-75, 1869.

Description of twenty-two new species of Equatorial Lepidoptera, p. 153-163, 1870.

New species of Diurnal Lepidoptera from South and Central America, p. 165-167, 1871.

Descriptions of some new species of Lycaenidae from his own collection, p. 343-355, 1874.


The Zoologist, (a popular Miscellany of Natural History,) London.


Berliner Entomologische Zeitschrift.

*H—S. CORR.—BLATT, ZOOL. MIN. GES.
Correspondenz Blatt des Zoologisch Mineralogischen Vereins in Regensburg.
Die Lepidopteren Fauna der Regensburg Umgegend, p. 57-88; 133-149, vol. IX, 1855.

Dritter Nachtrag zur Lepidopteren Fauna von Regensburg, p. 177-193, vol. XII, 1858.

Kritischer Anzeiger, p. 67-82; 154-168.
Revision der Lepidopteren mit besonderer Berücksichtigung der Ausser- europäer, 9, 10; 29, 30; 60-62; 143-151.

Die geographische Verbreitung der Schmetterlinge Europas, p. 54-56; 103-107, vol. XVII, 1863.

Criticism on Morris' Synopsis, p. 132-137.
Eine für Deutschland neue Geometrine, p. 90, vol. XX, 1866.

*H—S. IND. SYST. REG. CORR.—BLATT.
Lepidopterorum Index systematicus.
In Correspondenz Blatt des Zool.-min. vereines, in Regensburg.
See the following.

*H—S. PRODR. LEP. REG. CORR.—BLATT.
Prodromus Systematis Lepidopterorum. Versuch einer systematischen anordnung der Schmetterlinge.
In the Correspondenz—Blatt des Zool.-min. vereines, in Regensburg:
Continued under the title of Lepidopterorum index Systematicus.
P. 100-106; 124-128; 138-144; 161-172, vol. XXI, 1867.
Schmetterlinge aus Cuba. In the Correspondenz—Blatt des Zool.—Min. Vereins in Regensburg.
P. 103–109; 113–120; 130–136, vol. XX, 1866.

*H.-S. Samml. Ausseur. Schmett. (or Exot. Lep.)
Sammlung neuer oder wenig bekannter aussereuropäischer Schmetterlinge. Regensburg, 1850–1858.
1 vol. 4to. 120 fine coloured plates.

Vols. V and VI I have not been able to examine.
Published as supplement and revision to Hübners Sammlung Europäischer Schmetterlinge.

Entomologische Zeitung herausgegeben von dem Entomologischen Vereine zu Stettin.
Bezüglich der Gastropacha Arbusculae, p. 55–57, 1861.

The Zoologist, London.

Frederick Moore, in London.

*HUEB. BEITR.

Jacob Huebner, a designer in a cotton-print factory. Born at Augsburg June 20, 1761; died Sept. 13, 1826.

Beiträge zur geschichte de Schmetterlinge, Augsburg.


*HUEB. EUR. SCHMET.

Sammlung Europäischer Schmetterlinge. Augsburg, 1805--1832.


Contains 700 excellent coloured plates.

*HUEB. EUR. SCHMET.

Geschichte europäischer Schmetterlinge gesammelt von Jacob Hübner in Augsburg, 1806--1834.


406 excellently executed coloured figures, all Larve, Pupae and food-plants.

In my present Catalogue the above work has been cited along with the preceding (Eur. Schmett.) and further indicated by the word "Lar." (Larva) following No. of vol. or fig.

*HUEB. EX. SCHMET.

Sammlung Exotischer Schmetterlinge errichtet von Jacob Hübner. Augsburg, 1806--1824.

In 3 vols. 4to.

Contains 493 coloured plates; these plates are beautifully drawn and coloured true to nature.

*HUEB. IND. EX. LEP.

Index exotiorum Lepidopterorum in foliis 244 a J. Huebnero hactenus effigiatorum. Augustae Vindelicorum, 1821.

*HUEB. VERZ. BEK. SCHMET.


In German. 431 pages, exclusive of Index.

*HUEB. ZUTR. EXOT. SCHMET. (& HUEB.--GEY., EUR. SCHMET.).

Zuträge zur Sammlung exotischer Schmetterlinge, bestehend in Bekundigung einzelner Fliegmuster neuer oder rarer nicht europäischer Gattungen. Augsburg, 1818--1823; 1825--1832.

Continued by Carl Geyer, 1832--1837.

170 fine coloured plates.

HUFN. BERL. MAG.

Hufnagel.

In the Berlinisches Magazine:
Tabellen von den Tagvögeln der Gegend Berlin, p. 54--90.
Abendvögeln, p. 174--196.


HUMPHREYS—KIRTLAND.

*HUMPH., WEST. BRIT. BUTT.

H. N. Humphreys.


*IILL. MAG. INS.


Magazin für Insektenkunde. Braunschweig.

Vol. I, 1801-1802; II, 1803; III, 1804; IV, 1805; V, 1806; VI, 1807.

*KIRBY. FAUN. BOR. AM.

William Kirby, Preacher, born in Wintnesham Hall 1759; died in Barham, near Ipswich, July 4, 1850.

Fauna boreali--Americana, or the Zoology of the Northern Parts of British America, containing descriptions of the objects of natural history collected on the late northern land expeditions, under command of Captain Sir John Franklin, by John Richardson. Part IV. The Insects by W. Kirby. London, Longman, 1837.

Lep., p. 286-308, plates III, IV.

*KIRBY. MAN. EUR. BUTT.


Containing descriptions of all the known Species and Larvae; with times of appearance, Tables of Genera, Appendices of Geographical Distribution, Synonymy, and Bibliography, and a copious Index.

*KIRBY. CAT.


Pages 690. Contains names and synonyms of all the Rhopalocerous Lep. described to that time.

Supplement. March, 1871,—June, 1877.

Contains all species described after issue of Catalogue of 1871, and additional citations of numerous species.

*KIRTLAND. SILL. JNL. SC., 2D ED.


American Journal of Science and Art, Ed. 2.

Method of preserving Lepidoptera, p. 286, 287.


*KIRTLAND. PROC. ACAD. NAT. SC. PHIL.

Proceedings of the Academy of Natural Sciences of Philadelphia.


*KIRTLAND. PROC. CLEV. ACAD. SC.

Proceedings of the Cleveland Academy of Natural Science. 1845–1859. Published by a gentleman of Cleveland, Ohio, 1874.
Diurnal Lepidoptera of Northern and Middle Ohio, p. 17–25.
Description of a new species of Libythea and of Macroglossa, p. 171–173.
Letters from Dr. Harris, p. 189–194.

*KNOCH. BEITR. INS. I–III.

August Wilhelm Knoch, Professor in Braunschweig. Born in Braunschweig June 3, 1742; died June 2, 1818.
Beiträge zur Insectengeschichte. Leipzig, Schwierkert.
Part I, 1781; II, 1782; III, 1783.

*LEACH. ZOOL. MIS.

William Elford Leach, Curator at the British Museum. Died of cholera at Genoa Aug. 25, 1836.
The Zoological Miscellany, being descriptions of new or interesting animals, illustrated with coloured figures, drawn from nature by R. P. Nodder. "Plus nos noms sont générae plus nos idées sont incomplètes." London, McMillan.

*LAMARCK. HIST. ANIM. SANS VERT.

Jean Baptiste Pierre Antoine de Monet, Chevalier de Lamarck. Born in Picardy Aug. 1, 1744; died in Paris Dec. 19, 1829. Prof. of Zoology in the Jardin des Plantes. He was blind for a number of years previous to his death.

*LATR. HIST. NAT. CRUST. ET INS.

Pierre André Latreille. Born in Brives, province of Limosin, Nov. 29, 1762. Died in Paris Feb. 6, 1833. His tomb is Père la Chaise.
Vol. I–IV, 1802; V, VI, 1803; VII–XII, 1804; XIII, XIV, 1805. Lep. in vol. XIV.

*LATR. GEN. CRUST. ET INS.

Genera Crustaceorum et Insectorum secundum ordinem naturalen in familias disposita, iconibus exemplisque pluriis explicata. Parisiis et Argentorat., Amand Koenig.

*LATR. ENC. METH. IX.

Encyclopédie Méthodique IX, 1823.
See "Godt. Enc. Meth. IX Sup."

*LEDR. VERH. ZOOL. BOT. VER.

Julius Lederer, Merchant in Vienna. Died in 1870.
Verhandlung des Zoologisch-Botanischen Vereins in Wien. 1851–1876.
Die Europäischen Lepidopteren:


Grapholitha Hornigiana, n. sp., p. 77-80.

Weiterer Beitrag zur Schmetterlings-Fauna des Altai-Geberiges in Siberien, p. 97-121.

Beitrag zu einer Schmetterlings-Fauna von Cypern, Beirut u. einem Theile Kleinasiens, p. 177-254.


Ueber die Lycaeniden-gattungen der europaischen Fauna, p. 25-32.

Die Korperlichen Auszeichnungen der europ. Hesperien, p. 75-80.

Vier neue europaische Schmetterlinge, p. 80-83.


Erebia Arete F. wieder aufgefunden, p. 36, 37.

Noch einige syrische Schmetterlinge, p. 135-152.


Albert Kindermann (Sohn) Necrolog., 251-255.

Lepidoptera, p. 284, 285.

Die Raupen von Agrotis luepeta S. V. und Eccrita ludicra Hbn., p. 310-313.

Cremor Tartari für Herrn Dr. O. Staudinger, p. 318-328.

Ueber anerkennenswerthe Unpartheilichkeit moderner Kritik, p. 112—136.
Ueber Albert Kindermann’s letzte lepidopterologische Ausbeute, p. 144—155.
Nur logisch! p. 94—96.
Ein Zwitter von Bombyx Pini, p. 28.

**LEE. COLOURED SPEC. ILL. ETC.**

*James Lee, of Hammersmith.*

Coloured Specimens to illustrate the natural history of butterflies. London, 1806.

**LEFEB. ANN. SOC. ENT. FR.**

*Alexandre Lefebvre,* born in Paris 1797.


Has the following papers on Lepidoptera:

Description de quelques Lépidoptères nocturnes hyperboréennes, p. 389—401.

Description d’une nouvelle espèce de Coliade, p. 383—387.

**LEWIN. PAP. GT. BRIT.**

*John William Lewin.*

The Papilios of Great Britain systematically arranged, accurately engraved, and painted from nature, with the natural history of each species, from a close application to the subject and observations made in different counties of this kingdom; as well as from breeding numbers from the egg, or caterpillar, during the last thirty years; the figures engraved from the subjects themselves by the author, W. Lewin, and painted under his immediate direction. London, Johnson, 1795.

In English and French. 46 coloured plates of Lepidoptera.

**LINN. FAUN. SUEC.**

*Carl von Linne,* born May 24, 1707; died Jan. 10, 1778.

Fauna Suecica sistens Animalia SUECLE Regni; quadrupedia, aves, amphibia, pisces, insecta, vermes, distributa per classes, & ordines, genera & species, cum Differentiis Specierum, Synonymis Autorum, Nominibus Incolarum, Locis Habitationum, Descriptionibus Insectorum. Stockholme, Laurentii Salvii, 1746.

Another and enlarged edition was published in 1761.

Editio altera auctior. Stockholme, Laurentii Salvii, 1761.

**LINN. SYST. NAT. X.**

Systema Naturae Per Regna tria naturae Secundum classes, ordines,

This is the first edition of the Systema Naturae which contains descriptions of species with the addition of the synonymy.
The next edition was published in 1760:
Ad editionem Decimam Reformatam Holmiensem. Halae Magdeburgi- cae, Johannes Ioachimus Langius. MDCCLX.

*LINN. JOH. AMEN. ACAD.
Amoenitates Academicae, Seri Dissertationes variae Physicae, Medicee, Antehac seorsim edita nunc collecte et aucte cum tabulis reseis. Lugduni Batavorum Haak.
Insects in vol. VI, p. 384-415.

*LINN. MUS. LUD. ULR.
Part I, 482 pages, contains descriptions in Latin of Insects of all orders from various parts of the world. Part II, p. 427-720, is on Conchology.

*LNN. SYST. NAT. I, 2.
P. 533-1327, Latin descriptions of Insects of all orders.

*LNN. MANT.
Mantissa Plantarum Altera Generum editionis VI & Species editionis II. Holmiae, Laurentii Salvii, 1771.

*LINN. 23D, 24TH AND 26TH REP. N. Y. STATE CAB. NAT. HIST.
J. A. Lintner, of the New York State Museum of Natural History, Albany, New York.

Entomological Contributions:

Entomological Contributions No. II:
P. 110-170 of the 24th Report N. Y. State Mus. for 1870.

Entomological Contributions No. III:
P. 117-119 of the 26th Report N. Y. State Mus. for 1872.

Entomological Contributions No. IV:
*LINT. PROC. ENT. SOC. PHIL.
In Proceedings of the Entomological Society of Philadelphia are:
Notes on some of the Diurnal Lepidoptera of the State of New York, with descriptions of their Larvae and Chrysides, p. 50–64.
Notes on some Sphingidae with descriptions of their larvae and pupae, p. 645–672, vol. III, 1864.

*LINT. TRANS. AM. ENT. SOC.
Transactions of the American Entomological Society contains:

*LINT. CAN. ENT.
In the Canadian Entomologist are the following:
Hypena Scabra (Fabr.) and H. Erectalis, Guen., p. 81, vol. V, 1873.
On Lycaena Neglecta, Edw., p. 122, 123.
On Catocala Pretiosa, n. s., p. 121, 122, vol. VIII, 1876.

*LINT. BUFF. BULL.
In Bulletin of the Buffalo Soc. of Nat. Sc. is the
Description of a new species of Calocampa, p. 188, 189, vol. II, 1874.

LOCHE (De). MEM. ACAD. TUR.
Conte François Mouny De Locke, born in Aix les Bains. Major-General in Sardinia.

*LUC. PAP. EUR.
Hippolyte Lucas.
79 coloured plates.
A second edition in 1845.

*LUCAS. LEP. EXOT.
Contains 80 coloured plates of Lep. from various parts of the world.

*LUCAS. REV. ZOOL.
Description de nouvelles espèces de Lépidoptères appartenant aux collections entomologiques du Musée de Paris.
**LUCAS. SAGRA HIST. NAT. CUBA.**


The Lepidoptera by Lucas in above volume comprise pages 475-750, and illustrated in the atlas with four coloured plates (14-17).

**MARTYN. PSYCHE.**

Thomas Martyn. Born in Chelsea 1735; died in Paten hall, Bedford, June 3, 1825.

Psyche: figures of nondescript Lepidopterous insects or rare Moths and Butterflies from different parts of the World. London, 1797.

Hagen says, Bib. Ent. 523, according to Westwood but 10 copies were published.

**MAYNARD. AM. NAT. VII.**

C. J. Maynard.

American Naturalist has the following:

A new species of Butterfly from Florida, p. 177, 178, 1873.

**MEAD. CAN. ENT.**

Theodore L. Mead, in New York.

In the Canadian Entomologist are the following:


Extension of habitat of Pieris Rapae, Linna., p. 36.


Generic Nomenclature, p. 18.


Interesting Captures, p. 39, 40.


Notes on some of the genera of Mr. Scudder's "Systematic Revision," p. 232-238, vol. VIII, 1876.

**MEAD. WHEELER'S REP. V.**

Report upon the Collections of Diurnal Lepidoptera made in portions of Colorado, Utah, New Mexico, and Arizona, during the years 1871, 1872, 1873, and 1874, with notes upon all species known to inhabit Colorado, by Theodore L. Mead; and a list of all species collected by W. H. Edwards.


**MEIGEN. HANDBUCH.**

Johann Wilhelm Meigen, born 1763; died July 11, 1845.

Handbuch für Schmetterlingsliebhaber besonders für Anfänger im Sammen. Aachen, La Ruelle, 1827.

**MEIGEN. EUR. SCHMETT.**


**MEN. NOUV. MEM. SOC. MOSC.**

E. Menétries, Director of Entomology in the St. Petersburg Museum. Died in 1861.
Notice sur quelques Lépidoptères des Antilles avec la description de plusieurs espèces nouvelles.

Being pages 115-133 of


Part I, 1855, 6 coloured plates. Part II, 1857, 8 plates.


Maria Sibylla Merian. Born April 12, 1647, in Frankfurt-on-Main; died Jan. 15, 1717, in Amsterdam. Lived in Surinam from 1699 to 1702, where she collected the material for her great work. The drawings of the various insects were made and the plates coloured by herself.

De Europische Insecten, Nauwkeurig onderzocht, na 't leven geschildert, en in print gebragt door Maria Sibylla Merian: Met een Korte Beschrywing, war in door haar gehandelt word van der Rupzen begin, Voedzel en wonderbare Verandering, en ook vertoont word De Oorspronk, Spys en Gestalt-verwisseling, de Tyd, Plaats en Eigenschappen den Rupzen, Uiltjes, Vligen en andere dieergelyk bloedeloos Beesjes. Hier is nog bygevoegd Een nauwkeurige Beschryving van de Planten, in dit Werk voorkomende; en de Uitlegging van agtien nieuwe Platen, door dezelve Maria Sibylla Merian geteekent, en die men na haar dood gevonden heeft. In't Frans beschreven door J. Marrat, Medicinae Doctor, En door een voornaam Liefhebber in 't Uederduits vertaalt. Tot Amsterdam, by J. F. Bernard, 1730.

Large folio. 8° p. text, in Hollandish, 184 coloured copper-plates; always four plates on one sheet.

Also in French:

Histoire des Insectes de l'Europe, dessinée d'après nature & expliquée par Marie Sibille Merian : Où l'on traite de la Generation & des différentes Metamorphoses des Chenilles, Vers, Papillons, Mouches & autres Insectes ; & des Plantes, des Fleurs & des Fruits dont ils se nourrissent, Traduite du Hollandeis en François Par Jean Marret, Docteur en Medicine ; Augmentée par le mene d'une Description exacte des Plantes, dont il est parlé dans cette Histoire ; & des Explications de dix-huit nouvelles Planches, dessinées par le mene Dame, & qui n'ont point encore paru. Ouvrage qui contient XCIII Planches. A Amsterdam, Chez Jean Frederic Bernard, 1730.

To the plates of this work is the additional title:

Histoire Generale des Insectes de l'Europe par Mad. De Merian.


Maria Sibylla Merianen Over de Voortteeling en Wonderbaerlyke Veranderingen der Surinaemische Insecten, waer in de Surinaemsche Rupsen en Wormen, met alle derzelver Veranderingen, naer het leven afgeweeld, en beschreven worden; zijnde elk geplaat op dezelfde Gewassen, Bloemen, en Vruchten, daer ze op gevonden zijn; Benefens de Beschryving dier Gewassen. Waer in ook de wonderbare Padden,

Large folio. 72 pages text in Hollandish, 72 coloured copper-plates, and an illuminated frontispiece.

Another edition in Latin and French with following title:


The same title also repeated in French.

Large folio. 68 pages text. 72 coloured copper-plates.

The above two editions I have examined myself. The first edition of 1705 I have never seen. It has 60 pages text and 60 copper-plates, mostly coloured by Mad. Merian herself, and bears the title—

Metamorphosis Insectorum Surinamensium. In qua Erucae ac Vermes Surinamensis, cum omnibus suis Transformationibus, ad vivum delineantur et describuntur, singulis eorum in Plantas, Flores et Fructus collocaulis, in quibus reperta sunt; tunc etiam Generatio Ranae, Bufonis ararorum, Lacertarum, Serpentum, Aranearum, et Formicarum exhibetur; omnia in America ad vivum naturali magnitudine picta atque descripta per Mariam Sibyllam Merian. Amstelodami, Sumtibus auctoris venduntur et apud Gereordum Valk, 1705.

(Magen's Bibl. 1. p. 335.)

**Meyer-Duer—Schmett. Schweiz.**

L. R. Meyer-Duer. in Burgdorf, Switzerland.

Verzehniss der Schmetterlinge der Schweiz. I Tagfalter; mit Berücksichtigung ihrer Klimatischen Abweichungen nach horizontaler und vertikaler Verbreitung bearbeitet, 1852.

**Mili**

*Brit. Ent.*

Simeon Werner Millard.

Outlines of British Entomology, in prose and verse. Bristol, 1821.

*Mili*.

*Icon. Chen. et Lep.*

Pierre Milliere, in Lyons.

Iconographie et Description de Chenilles et Lépidoptères inédits.

In Annales de la Société Linnéenne de Lyon, 1858-1870.


Rev. Dr. John G. Morris, of Baltimore, Lutheran Minister.

The Ailanthus Silkworm.


*MORRIS. Syn.


Contains descriptions of most of the then known Diurnae, Sphingidae and Bombycidae. 358 pages.


H. K. Morrison, formerly a shoemaker in Boston; now a dealer in Insects in North Carolina.

In the Bulletin of the Buffalo Society of Natural Sciences are the following of his articles:

Notes on North American Lepidoptera, p. 186-189.
Description of two new Noctuidae from the Atlantic District, p. 274, 275, vol. I, 1873-1874.


Canadian Entomologist:
Specific Nomenclature, p. 70-71.
Notes on an Interesting Specimen of Pamphila Zabulon, Boisd. & Lee, p. 164.
Remarks on recent names given to some Lepidopterous Insects, p. 204-205, vol. V, 1873.
On Anisopteryx Vernata and Porasteria, p. 29-32.
On two new Species of Noctuidae, p. 105, 106.
A new Species of Ceramicia, p. 249-251.
On the Species referred to Orthodes by Guenee, p. 251-254.
Correspondence, p. 259, 260, vol. VI, 1874.
Correspondence, p. 15-17.
On two new Species of Homoptera, p. 148, 149.
Description of a new Hadena from the White Mountains, p. 198.
Notes on an interesting variety of Oncocnemis Chandleri, p. 213, 214.


Proceedings of the Academy of Natural Science, Philadelphia:

*Morrison. Psyche.

Interesting Capture, p. 4.
An Appendage of the male Leucadria Aernea, p. 21, 22.
Summer Butterflies at the White Mountains, p. 25, 26; 34, 35, vol. I, 1874.
Notes on White Mountain Noctuidae, p. 41-43.
Varieties of Cleora Pulchraria Minot, p. 68-70.

*MOESCH. STETT. ENT. ZEIT.
Heinrich Benno Moeschler, in Kronforstchen bei Bautzen, Saxony.
Stettiner Entomologische Zeitung.
Contains the following articles:
Ein Neuer Spanner, Pericallia (Ennomos) Freitagaria, p. 143-145.
Beiträge zur Schmetterlingsfauna von Labrador, p. 113-125; 251-254; 265-272; 364-375, vol. XXXI, 1870.
Beschreibung des Mannes von Lomalosticha Nigrostriata, p. 148, 149.
P. 32-41; 293-315, vol. XXXVII, 1876.
Deutsch Exotisches, p. 121, 122.
Nordamerikanisches, p. 414-426.

*MOESCH. VERH. Zool.-B. Ges.
Verhandlungen Zoologisch-botanischen Gesellschaft.
Beiträge zur Schmetterlings-Fauna von Surinam, p. 293-352, (2 plates), vol. XXVI, 1876.

*MOESCH. WIEN. MONAT.
Wiener Entomologische Monatschrift. Verantwortliche Redacteure:
Julius Lederer und Ludwig Miller. Wien. vol. I, 1857; II, 1858;
III, 1859; IV, 1860; V, 1861; VI, 1862; VII, 1863; VIII, 1864.
Contains the following papers on Lepidoptera:
Acentropus latipennis, Möschler, p. 55.
Vier neue südrussische Schmetterlinge, p. 273-276.
Beiträge zur Lepidopteren-Fauna von Labrador, p. 129-139.
Neue südrussische Schmetterlinge, p. 139-143.
Bemerkungen zu einigen Sareptan Schmetterlingen. p. 63, 64.
Bemerkungen zu einigen Arten der Gattung Atychia Latr. p. 77-79.

MUELL. VOLL. NATURS.
Philip Ludwig Statius Müller, Professor in Erlangen. Born in Esens, Eastfriesland, April 25, 1725; died in Erlangen Jan. 5, 1776.


*Ochs. I, 1, 2; II, III, IV.
Ferdinand Ochsenheimer, Comedian in the Royal Theatre. Born in Mainz 1767; died in Vienna Nov. 2, 1822.

The work was continued by Friederich Treitsche as

A. S. Packard, Jr., Doctor of Medicine, in Salem, Massachusetts.

Monograph of the Geometrid Moths.

Guide to the Study of Insects and a treatise on those Injurious and Beneficial to Crops, etc. By A. S. Packard, Jr., M. D. Salem: Naturalist's Book Agency, 1869.


View of the Lepidopterous Fauna of Labrador, p. 32-63.


Synopsis of the Bombycideæ of the United States.


Record of American Entomology:
Descriptions of N. A. Phalænideæ, p. 52-81.

*Pall. Reis. 1.

Peter Simon Pallas, born in Berlin Sept. 22, 1741; died in Berlin Sept. 8, 1811.
Large 4to, 5 vol.

*Panz. Syst. Nom.

Systematische Nomenclatur über weiland Herrn Dr. Jacob Christian Schäffer's natürlich ausgemalte Abbildungen regensburgischer Insekten. Erlangen, bey Johann Jacob Palm, 1804.
See Sheaf, Icon. Ina.


H. W. Parker, Professor at Amherst, Massachusetts.
Canadian Entomologist contains the following:
Description of Hesperia Conspicua, (Edw.) p. 51, 52.

*Parker. Am. Ent.


Titian Ramsay Peale, Naturalist and Artist. Born in the Philosophical Hall, Philadelphia, Oct., 1779. Member of the first Scientific Corps for exploration of Territories by the U. S. Government, and accompanied Major S. H. Long's Expedition to the Rocky Mountains in
1819–20, and the U. S. Exploring and Surveying Expedition to the South Sea in 1838–42.


*PEARSON. CAN. ENT.
C. W. Pearson, in Montreal, Canada.

Canadian Entomologist contains:


Rare Captures, p. 80.


List of Bombycidae, etc. (Caulfield and Pearson) p. 90–92, vol. IX, 1877.

PERRY. ARCANA.


PERTY. DEL. ANIMAL.

Maximilian Perty, Professor in the University of Berne.

Delectus animalium articulorum, quae in itinere per Brasiliam annis 1817, 1820 jussu et auspiciis Maximilianis Josephi Bavariae regis augustissimi peracto, collegerunt Dr. J. B. de Spix et Dr. C. F. Ph. de Martius; digessit, descriptis et pingenda curavit Dr. M. Perty. Monachii, 1830–1834.

*PETIV. MUS.

James Petiver, Apothecary in London. Died in that city April 20, 1715.


*PETIV. GAZON.


*PETIV. PAP. BRIT. ICON.

Papilionum Brittanicae Icones, nomina, &c., containing the Figures, Names, Places, Seasons, &c., of above eighty English Butterflies, being all that have hitherto been observed in Great Britain. London, 1717.

POD. INS. MUS. GRAEC.


*POEY. CENT. LEP. CUBA.
Prof. Felipe Poey, of Havana, Cuba.


Latin and French.

*POEY. MEM. NAT. HIST. IS. CUBA I.

*POEY. CAT. MET. ETC. MEM. SOC. ECON. HAB. 2 SER.


POLL. BEMERK. CHURPF. OEK. GES.
Johann Adam Pollich, born Jan. 1, 1740, at Lantern in the Pfalz; died Feb. 24, 1780.

Beschreibung einiger Insekten die in des Ritters v. Linne Natursystem nicht befindlichen sind.


*PRUNNER (DE). LEP. PEDEMONATA.

Leonardo De Prunner.

Lepidoptera Pedemontana. Turin, 1798.

*PUTNAM. PROC. DAVENPORT ACAD. SC.
J. Duncan Putnam, in Davenport, Iowa.

The following Lepidopterological papers are in the Proceedings of the Davenport Academy of Natural Sciences, Vol. I, 1867-1876:

No. 1. List of Lepidoptera collected in the vicinity of Davenport, Iowa, p. 174-177.

No. 2. List of Lepidoptera collected in Colorado during the summer of 1872, p. 182-187.


*QUENS. ACT. HOL.

Conrad Quensel, born Dec. 10, 1767, at Leyda in Schonen; died at Carlberg Aug. 2, 1806. Prof. of Natural History in Stockholm.


*RAY. HIST. INS.

John Ray (or Wray), Preacher. Born in Blacknotley, Essex, Nov. 29, 1628; died Jan. 7, 1704.

Rambur—Retzius.


*RAMB. ANN. SOC. OBS.
J. Pierre Rambur, Doctor of Medicine in Fontainbleau.

Notice sur plusieurs espèces de Lépidoptères nouveaux du midi de la France.

*RAMB. FAUN. ENT. AND.

RAMB. CAT. LEP. AND.

*RATH. AGR. REP.
S. S. Rathvon, Editor, in Lancaster, Penna.

In United States Agricultural Reports:
Entomology and its relations to Agriculture, p. 585-620, 1861.
Entomology, p. 372-390, 1862.

*REAK. PROC. ENT. SOC. PHIL. II-VI.
Tryon Reakirt, born in Philadelphia, Penna.

The following papers in the Proceedings of the Entomological Society of Philadelphia:


*REAK. PROC. ACAD. NAT. SC. PHIL.
The following papers in the Proceedings of the Academy of Natural Sciences of Philadelphia:

Descriptions of some new species Diurnal Lepidoptera, p. 238-249; 331-342, vol. XVIII, 1866.
Continued p. 87-91, vol. XX, 1868.

Retzius. GEN. ET SP. INS.
Andreas Johann Retzius, Prof. of Natural History. Born in Christianstadt Oct. 3, 1742; died in Stockholm Oct. 6, 1821.

Caroli De Geer genere et species insectorum et generalissimi auctoris
scriptis extraxit, digessit, latine quand. partem reddidit, et terminologi-
giam insectorum Linneanam addidit. Lipsine, Cruse, 1783.

Description of a supposed new species of Ageridae from Virginia, and
observations upon Papilio Daunus, Boisd., p. 277, 278.

Charles V. Riley, formerly State Entomologist of Missouri; now, Entomolo-
gist to the U. S. Department of Agriculture at Washington.
First Annual Report on the Noxious, Beneficial and other Insects of the
State of Missouri, made to the State Board of Agriculture, etc. Jeffer-
sion City, Missouri, 1869.
Second, 1870; Third, 1871; Fourth, 1872; Fifth, 1873; Sixth, 1874;
Seventh, 1875; Eighth, 1876; Ninth, 1877.

*RILEY. Am. Ent.
American Entomologist, an Illustrated Magazine of Popular and Practical
Entomology. Edited by Benj. D. Walsh and Charles V. Riley.
Vol. I, St. Louis, 1868–1869. Vol. II, by Charles V. Riley and
Dr. George Vasey, 1870.

Description of a new Agrotis (A. Morrisoniana), p. 286–288, vol. XVII,
1875.

*RILEY. Can. Ent.
In the Canadian Entomologist are the following relative to Lepidoptera:
How to distinguish between Limenitis Disippus, Godt., and L. Ursula,
Fab., in their preparatory states, p. 52, 53.
Notes, p. 117–119.
The Acorn Moth, Holocera glandulrella, n. sp., p. 18, 19.
“Polyhistor?” p. 38, 39.
On the Insects more particularly associated with Sarracenia Variolaris

*RILEY. Trans. St. Louis Acad.
The Transactions of the Academy of Science of St. Louis, vol. I–III,
1856–1878.
On a new genus in the Lepidopterous family Tineidae, with remarks on
the fertilization of the Yucca, p. 55–64.
Descriptions and Natural History of two Insects which brave the dangers of Sarracenia vulgaris, p. 235–240.
Notes on the Yucca-borer, Megathymus Yuccae, p. 323–344.
Further remarks on Pronuba luccasella, p. 668–573.

Proceedings American Association for the Advancement of Science:
On the Insects more particularly associated with Sarracenia Variolaris, p. 18–25.

Biological Notes on the Army Worm, p. 279–283, vol. XXV, 1876.

*RILEY. Am. Nat.
Controlling Sex in Butterflies, (a review of an article by Mrs. Mary Treat, p. 129, &c.) p. 513–521.

*ROSS. Faun. Etr.
Peter Rossi, Professor in Pisa.

Ramon de la Sagra, Director of the Botanical Gardens of Havana. Born in Coruña 1798.

*SAUNDERS. Can. Ent.
The Canadian Entomologist contains the following articles on Lepidoptera:
Entomological Notes during a trip to Saguenay, p. 11–13.
Description of the Larva of Callimorpha Lecontei, p. 20.
On a supposed new Arctian, p. 4, 5.
Notes on Alaria Florida, Guén., p. 6, 7.
Notes on Hadena Xylinoides, p. 33, 34.
On the Larva of Thecla Inorata, G. & R., p. 61--64.
On the Larvae of some Lepidoptera, p. 74--76.
Hints on describing Caterpillars, p. 94.
Entomological Gleanings: Paper No. 1, p. 111--113; No. 2, p. 126--129; No. 3, p. 144--149.
Notes on the Larva of Ophiusa Bistriaris, Hübner, p. 130.
On Neonympha Eurythris, Fab., p. 139--142.
Hints to Fruit Growers: Paper No. 1, p. 12, 13; No. 2, p. 25--27; No. 3, p. 66--70; No. 4, p. 149--155.
Entomological Gleanings: Paper No. 4, the eggs of the Vaporer Moth, Orgyia leucostigma, p. 14, 15.
On the Larva of the Peach Borer (Egeria Exitiosa), p. 22, 23.
Notes on Lepidopterous Larvae, p. 85--37; 225--227.
Notes on the Egg and young Larva of Alaria Florida, p. 76.
Notes on the Larva of Priocycula Armatoria, Herr.-Sch., p. 130, 131.
Notes on the Larva of Halesidota Maculata, Harris, p. 186.
Notes on the Larva of Agrotis Depressus, Grote, p. 193.
Smerinthus Modestus, p. 36.
Notes on the Larva of Acronycta Occidentalis, Grote, p. 49--52.
Notes on Argyphis Cybele, p. 121--123.
Hints to Fruit Growers: Paper No. 5, p. 133--136.
Notes on the Eggs and young Larvae of Melitaea Harrisii, p. 161--163.
On the Larva of Plusia Balluca, p. 10, 11.
The Isabella Tiger Moth, Pyrrharia (Spirosoma) Isabella, p. 75--77.
The Grape Vine Plume, Pterophorus pereisceldactylus, p. 99, 100.
Notes on the Larva of Cosmia Orina, Guen., p. 206.
The Tiger Swallow Tail, Papilio Turnus, Linn., p. 2--5.
The American Copper Underwing, Amphiopyra Pyramidois, Guen., p. 27, 28.
Notes on the Larva of Boarmia Larvaria, Guenee, p. 32, 33.
The Disipus Butterfly, Limenitis disipus, Godt., p. 46--49.
The Currant Geometer or Measuring Worm, Elyopia (abramis) ribarea, Fitch, p. 138, 139.
The Beautiful Wood Nymph, Eudryas grata, p. 41--44.
The Beautiful Deiopeia, Deiopeia bella, p. 85, 86.
Drasteria erichthea, Craw., p. 115--117.
Insect Captures, p. 139, 140.
Meetings of the Entomological Club of the American Association for the Advancement of Science, p. 177--185, vol. VII, 1875.
Notes on Catocalas, p. 72-75, vol. VIII, 1876.
The Luna Moth, Actias Luna, Linn., p. 32, 33.
Clisiocampa Sylvatica, the forest tent Caterpillar, p. 158, 159.
Cisthene Subjecta, p. 160.

*SAUNDERS. Packard’s Guide.
Describes Papilio Brevicauda in a foot-note on p. 245-246 in Guide to the Study of Insects, by A. S. Packard, Jr., 1869.

*SAUNDERS. CAN. NAT. & GEOL.

*SAY. AM. ENT.


There was a previous edition published in 1817 which is scarcely known, being very rare. A later edition was issued by Dr. LeConte under the title of


*SCHAEP. ICON. (OR ICON INS.).


I have not been able to see the first edition cited by Hagen (Bib. Ent. I, p. 114) under the title


*SCHR. SYST. BESCH.
David Heinrich Schneider, Lawyer in Stralsund.
Systematische Beschreibung der Europäischen Schmetterlinge. Halle, Hemmerde, 1787.

*SCHNEIDER. NEU. MAG.
*Scop.  Ent. Carn.

Johann Anton Scopoli, born at Cavalese in Tyrol June 13, 1723; died in Pavia May 8, 1788. Professor of Chemistry and Botany in Pavia. Was blind the last year of his life.

Entomologia Carniolica exhibens insecta Carnioliae indigena et distributa in ordines, genera, species, varietates, methodo Linneana. Vindobonae, Trattner, 1763.

*Scud.  Ent. Notes, etc.

Samuel H. Scudder, in Cambridge, Massachusetts.

Entomological Notes in Proceedings of the Boston Society of Natural History:

A chronological index to the Entomological Writings of Thaddeus William Harris, p. 213-222, vol. VII, 1859-1861.


Supplement to a list of Butterflies of New England, p. 375-384.

Notes on Crysophanus Dione, &c., p. 401.


Remarks on the old genus Callidryas, p. 206-209.


On the Butterflies of Cape Breton Island, p. 188-190, vol. XVIII, 1875.


Proceedings of the Essex Institute, vol. I-IV, 1848-1869:


Species of the Lepidopterous genus Pamphila, p. 341-353.


*Scud.  Trans. Chicago Acad. Sc.


The Curious History of a Butterfly, p. 513-518.

The Canadian Entomologist, Edited by the Rev. C. J. S. Bethune, M. A., etc. Vol. I, 1869; II, 1870, in Toronto, Canada. Vol. III, 1871; IV, 1872; V, 1873, in London, Canada. The following five volumes were edited by W. Saunders, and also published in London, Canada: Vol. VI, 1874; VII, 1875; VIII, 1876; IX, 1877; X, 1878.

In the above are the following articles relating to Lepidoptera:
Abbott’s Notes on Georgian Butterflies, p. 73-77.
A variety of Pieris Rapae unknown in Europe, p. 79.
Abbott’s Notes on Georgian Butterflies, continued from page 77, p. 84-87, vol. IV, 1872.
The Food-plants of European Butterflies, p. 21-25.
The Preservation of Caterpillars by Inflation, p. 107-111.
The Food-plants of European Butterflies, Second Notice, p. 126, 127.
The Relationship of the early spring Blues, p. 61-65.

Historical Sketch of the generic names proposed for Butterflies, p. 91-293, vol. X, 1874-1875.
Antigeny or Sexual Dimorphism in Butterflies, p. 150-158, vol. XII, 1876-1877.

Reports of the Peabody Academy of Science, Pamphlet, 1869-1877.

*SCUD. SYST. REV. AM. BUTT.


It was also printed separately in pamphlet form, p. 1-62. Salem, Mass., 1872.

*SCUD. BUFF. BULL.

Bulletin of the Buffalo Society of Natural Sciences:

Has the following articles:

The two Principal Groups of Urbicolae (Hesperidae auct.) p. 195, 196.


*SCUD. HIST. SKETCH GEN. NAMES, ETC.


*SCUD. PSYCHE.

Psyche: Organ of the Cambridge Entomological Club.

English Names of Butterflies, p. 2, 3; 10, 11; 31; 40; 43, 44; 56.

Collecting in the White Mountains, p. 7.

Arrest of Development, p. 12.

Early spring Butterflies at the White Mountains, p. 13, 14; 18, 19.

Butterflies attracted by Lamp-light, p. 28.

A North Greenland Butterfly, p. 57-59.

On Eumenia Atala, p. 120, vol. I, 1875.

Chrysalis with Attached Larval Head, p. 131, 132.

Pieris Rapes in mid-ocean, p. 152.

Mimicry, p. 160.

Prothoracic Tubercles in Butterfly Caterpillars, p. 168.


*SCUD. PROC. ENT. SOC. PHIL.


*SCUD. TRANS. AM. ENT. SOC.

Transactions of the American Entomological Society.

On the Classification of Butterflies, with special reference to the position of the Equites or Swallow-tails, p. 69-80, vol. VI, 1878.

*SCUD. HAYDEN'S BULL. U. S. GEO. SUR.

Notice of the Butterflies collected by Dr. Edward Palmer in the arid regions of Southern Utah and Northern Arizona during the summer of 1877.

*SEBA. Thes. IV.

Albert Seba, Apothecary in Amsterdam. Born May 2, 1665, in Etzeln; died in Amsterdam May 3, 1736.

Description exakte des principales curiosités naturelles du magnifique Cabinet d'Albert Seba. Tome quatrième et dernier.

Locupletissimi Rerum Naturalium Thesauri accurata descriptio et iconibus artificialissimis expressio per universam physics historiam. Opus, cui, in hoc rerum genere, nullum par est, ex toto terrarum orbe collocit, digessit, descripsit, et deingendium curavit Albertus Seba, etc., etc. Tomus IV. Amstelaedami, apud H. C. Arksteum et H. Merkum, et Petrum Schouten, 1765.

Large folio; pages 228; plates 108; text Latin and French. This fourth vol. is the only one devoted to Insects. The three previous volumes treat and illustrate Birds, Mammals, Plants, etc., etc., etc.

SEPP. Surin. Vlind. III.

Christian Sepp, copper-plate engraver. Born in Goslar; died in Amsterdam.


*SHAW-NODD. Nat. Miss.

George Shaw, born in Berton Dec. 10, 1751; died in London July 22, 1813. Librarian in the British Museum.

The Naturalist's Miscellany: or Coloured Figures of Natural Objects; drawn and described immediately from nature.

Vivarium Nature, sive Rerum Naturalium variae et vividas icones ad ipsam naturam depictae et descriptae.

George Shaw. Copper-plates by Frederick Nodder, 24 vol., 1790–1813.

*SHAW. Zool.

General Zoology of Systematic Natural History. With plates from the first authorities and most select specimens engraved by Mr. Heath & Mrs. Griffith.


Vol. VI, 1806, contains the Insects.

*SLOANE. Jamaica (or Hist. Jamaica).

Sir Hans Sloane. Born in Killileagh, Ireland, April 16, 1660; died at Chelsea, Eng., Jan. 11, 1752. Sojourned some time in the West Indies.

A Voyage to the Islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the Natural History of the Herbs and Trees, Four-footed Beasts, Fishes, Birds, Insects, Reptiles, etc., of the last of those Islands; to which is prefixed An Introduction, wherein is an account of the Inhabitants, Air, Water, Diseases, Trade, &c., of that Place, with some Relations concerning the Neighboring Continent, and Islands of America. Illustrated with The Figures of the Things described, which have not been heretofore engraved; In large Copper-Plates as big as the Life. By Hans Sloane, M. D.; (in vol. II. By Sir Hans Sloane, Bart.) In Two Volumes. Many shall run to and fro, and knowledge shall be increased. Dan. xii. 4. London, vol. I, 1707; II, 1725.
*SPYER. ISIS.

Dr. Adolph Speyer.


Lepidopterologische Beiträge:
II. P. 89-126, vol. XXXII, 1839.

*SPYER. STETT. ENT. ZEIT.


Verzeichnisse der im Fürstenthume Waldeck im geflügelten zustande überwinterden Schmetterlinge, p. 74-83, vol. XIX, 1858.


Lepidopterologische Mittheilungen:
2. Erebia Triopes Gorge: var., p. 248, 249.

Lepidopterologische Mittheilungen:
3. Zonosoma (Cabera) Subpunctaria, Zell., p. 73.
4. Cilix rufa L. (Spinula W. V.) p. 73.


Lepidopterologische Mittheilungen:


Anzeige von Grote's Check List, p. 198–204, vol. XXXVII, 1876.


A Systematical Catalogue of British Insects, being an attempt to arrange all the hitherto discovered indigenous insects in accordance with their natural affinities; containing also the references to every English writer on Entomology, and to the principal foreign authors; with all the published British genera to the present time. London, Baldwin, 1829.


Microlepidopteren von Dr. Wocke, p. 30-78; 233-257, vol. XXIII, 1862.


Bemerkungen über die Arten gattung Colias, p. 44-50, vol. XXVII, 1866.

Drei neue Sesien und Berichtigung ueber Einige älten Arten, p. 50-55, vol. XXVII, 1866.

Zur gattung Heliodes, p. 56, 57, vol. XXVII, 1866.

Einige neue Lepidopteren, p. 310, 311, vol. XXVII, 1866.


Bermerkung über Einige Zweifelhafte oder verkannte Lepidoptera, p. 84-93, vol. XXX, 1869.


CATALOG DER LEPIDOTEREN DES EUROPEISCHEN FAUNENGEBIETS. I, MACROLEPIDOPTERA BEARBEITET VON DR. O. STAUDINGER. II, MICROLEPIDOPTERA BEARBEITET VON DR. M. WOCKE. DRESDEN, JAN., 1871.
PAGES 426. IN GERMAN AND FRENCH.

STOLL. SUP. CRAM.
Casper Stoll, died in 1795.

AANHAAGSEL VAN HET WERK, DE UITLANDSCHE KAPPELLEN, VOORCOMENDE IN DE DRIE WAERELD-DEELLEN ASIA, AFRIKA EN AMERIKA, DOOR DEN HEERE PIETER CRAMER, VERVATTENDE NAAUWKEURIGE AFBEELDINGEN VAN SURINAMSCHEN RUPPEN EN POPPEN; ALS MEDE VAN REELLE ZELZAME EN NIEUWE ONTEDEKTE UITLANDSCHE DAG EN NAGT-KAPPELLEN. BY EEN VERZAMELD EN BESCHREVEN DOOR CASPAR STOLL LID VAN HET NATUURONDERZOEKEND GENODDSCHAP TE HALLE ONDER DEZELFS OPZIET ALLEN NAAR HET LEVEN GETEKEND, IN HET KOPER BEBRAGT EN MET NATUURLYKE KOLEUREN AFGETEKEND. AMSTERDAM, CHEZ NIC. TH. GRAVIUS, 1791.
PUBLISHED AS SUPPLEMENT TO CRAMER'S PAPILLONS EXOTIQUES. IN HOLLANDISH AND FRENCH.

STRECKER. LEP. RHOP.-HET.
Ferdinand Heinrich Herman Strecker, Sculptor, in Reading. Born in Philadelphia March 24, 1836.

LEPIDOPTERA RHOALOCERES AND HETEROCERES, INDIGENOUS AND EXOTIC.
WITH COLOURED ILLUSTRATIONS. READING, PA.: PRINTED FOR THE AUTHOR.
VOL. I, PARTS 1-15, 1872-1878.

PART 1. SAMIA GLOVERI, N. SP., (10 FIGS.) P. 1-7.
NOTES RELATIVE TO SOME VARIETIES OF LEPIDOPTERA, P. 8, JAN., 1872.

2. DESCRIPTIONS AND (8) FIGURES OF FOUR SPECIES (ONE NEW) OF DIURNAL LEP., P. 9-15.
NOTES ON SOME SPECIES, P. 15, APRIL, 1873.

3. DESCRIPTIONS AND (11) FIGURES OF TEN (TWO NEW) SPECIES OF CATOCALAE, P. 17-23.
NOTES ON SOME SPECIES, P. 23, 24, MAY, 1873.

4. DESCRIPTIONS AND (15) FIGURES OF SEVEN (ONE NEW) SPECIES OF DIURNAL LEP., P. 25-32, JUNE, 1873.

5. DESCRIPTIONS AND (12) FIGURES OF ELEVEN (ONE NEW) SPECIES OF CATOCALAE, P. 33-40.
IDENTITY OF ANARTA LUTEOLA, G.-R., WITH A. CORDIGERA, ThHN., P. 40.
PERSONAL, P. 41-44, JULY, 1873.

6. DESCRIPTIONS AND (13) FIGURES OF FIVE SPECIES OF DIURNAL LEP., P. 45-50, AUG., 1873.

7. MONOGRAPH OF THE KNOWN SPECIES OF SMERINTHUS IN N. AMERICA, (WITH 15 FIGURES), P. 51-60, SEPT., 1873.

8. DESCRIPTIONS AND (24) FIGURES OF TEN SPECIES AND VARIETIES OF DIURNAL LEP., P. 61-68.
ENTOMOLOGICAL NOTES: EUDRYAS; ANTICOSTI LEPIDOPTERA; LIMENITIS PROSERPINA; PIERIS BECKERII; CATOCALA MESEKEI, P. 68-70, 1874.

A few words on the Catocala Nomenclature, p. 77, 78.

Entomological Notes: Polar Lepidoptera; Northern Lepidoptera; Ne- meophila Plantaginis and its N. Am. Varieties and Synonyms; Par- nassius Smitebus, p. 78—80, March, 1874.


Notes on some species, p. 93.


11. Descriptions and (16) figures of twelve species and one variety (ten new) of Catocalae, p. 96—99.

Notices of some new species of Western Catocala, p. 99—100.

Note on Colias Chrysotheme, p. 100, Aug., 1874.

12. Descriptions and (10) figures of five (two new) species of Bombyci- dae, p. 101—105.

Notes on various species and varieties: Lycaena Regia, Bdl., a synonym of L. Sonorensis, Fedl.; L. Rhana, Bdl., a synonym of L. Catalina, Reak.; Catocala Levettei, Grote, a synonym of C. Judith, Streek.; C. Anna, Grote, a synonym of C. Amestris, Streek.; C. Adoptina, Grote, a syno- nym of C. Delilah, Streek.; Gorgopis Quadrivittatus, Grote, a syno- nym of Hep. Argenteo-maculatus, Harr.; Arctia Anna, Grote, a var. of A. Persephone, Grote; Catocala Simulatilis, Grote, the f of C. Obscura, Streek.; a variety of Catocala Cuumbena, p. 105, 106.

Meagre descriptions of some (6) new species, to be followed in a subse- quent part by what is infinitely better—good representations, p. 108, 107.


On the Generic Phantasies of S. H. Souder, p. 118—120.

Notes, new species, etc.: New sp. Melinacea Dora, Aegeronia Anoma- la, Catocala Herodias, C. Ciro, Bunaea Eblis, Heliothis Regia, Fastidiosa, Siren, Inclara, Nubila, Rubiginosa, Imperspicua, Ultima, Spectanda, Aenigma Mirificum, p. 120—122.


14. Descriptions and (9) figures of eight (two Sph. new) Sphingidae and Bombycidae, p. 125—128.


On some Lepidoptera from the regions west of Hudson’s Bay, between the latter and Lake Athabasca, p. 132—134, Sept., 1877.
15. Descriptions and (19) figures of sixteen species and varieties of Lep., two diurnals (one new); two (new) Sphingidae; eleven Bombycidae (two species and five varieties new), p. 135–139.

On the N. Am. Sphingidae in Mr. A. G. Butler’s Revision of that family, p. 139–143, Nov., 1877.

*STRECK. PROC. ACAD. NAT. SC. PHIL.


*STRECK. RUFF.


*SULZER. ABB. GESCH.

Johann Heinrich Sulzer, born in 1735; died in Winterthur Aug. 10, 1813.


*SWAIN. ZOOL. ILL.

William Swainson, born in England; died in New Zealand in 1856.

Zoological Illustrations, or original Figures and Descriptions of new, rare or interesting Animals, selected chiefly from the Classes of Ornithology, Entomology and Conchology, and arranged on the principles of Cuvier and other modern Zoologists. London, Baldwin & Co. 


The figures beautifully drawn and coloured.

*THUN. DISSENT. SUEC. I–VII.

Carl Peter Thunberg. Born Nov. 11, 1743, in Jonkoping; died Aug. 8, 1828, at his country-seat Tunaberg. The successor of Linnaeus as Professor of Natural History in the University of Upsala. From 1772 to 1775 he was a Physician in the service of the Dutch East India Company. In 1775 he lived in Batavia and Japan.


*TREITS. V–X.

Friedrich Treitscheke, born in Leipzig 1776; died in Vienna 1842.

Die Schmetterlinge von Europa (Fortsetzung des Ochsenheimer’schen Werks) Leipzig.


**TRIM. RHOP. AFR. AUSTR. I.**

Roland Trimen.


**D'URBAN. CAN. NAT.**

William Stewart D'Urban, Newport, Rhode Island.


Has the following:

Notes on Insects now injuring the crops in the vicinity of Montreal, p. 161–170.

On the order Lepidoptera, with the description of two species of Canada Butterflies, p. 215–226.


Description of two species of Canada Butterflies, p. 346–351.


**Uhler. Pat. Office Report—Agriculture.**

Philip R. Uhler, Librarian of the Peabody Institute, Baltimore.


**Walker. List Lep. B. M.**


Lepidoptera Heterocera, Parts i, ii, 1854; p. iii, iv, v, vi, 1855; p. vii, 1856; p. viii (Sphingidae), 1856; p. ix, x (Noctuidae), 1856; p. xi, xii, xiii (Noctuidae), 1857; p. xiv, xv (Noctuidae), 1858; p. xvi (Deltoides), 1858; p. xvii, xviii, xix (Pyrailides). 1859; p. xx, xxi (Geometrides), 1860; p. xxi, xxi (Geom.), 1861; p. xxiv, xxv, xxvi (Geom.), 1862; p. xxvi (Crambites & Tortricites), 1863; p. xxvii (Tortricites), 1863; p. xxxi (Supplement 1), 1864; p. xxii, xxiii, xxxiv (Suppl. 1, 2, 3) 1865; p. xxxv (Suppl. 4), 1866.


H. D. J. Wallengren.

Lepidoptera rhopalocera Scandinaevae disposita ac descripta. Skandinaviens Dagfjärrlar. Malmö, Cronholm, 1853.

**Westw. Trans. Linn. Soc.**


WHITNEY—ZELLER.


Chas. P. Whitney, Storekeeper in Milford, New Hampshire.


Description of Thecla Souhegan, p. 182, 163, vol. XII, 1868–1869.

Description of the male of Limenitis Proserpina, p. 85, vol. XII, 1869–1871.

*WHITNEY. Can. Ent.

In Canadian Entomologist, vol. VIII, 1876, is the following:

Notes on Lepidoptera, p. 75–77.


Systematisches Verzeichiss der Schmetterlinge der Wiener gegen herausgegeben von einigen Lehren am K.:K: Theresianum, Wien. 1776

By Ignaz Schiffermüller and Michael Denis.

Prof. Schiffermüller was born in Helmonttedt, upper Austria, Nov. 2, 1727; died in Linz 1809. Denis, a Jesuit scholar and writer, was born in Schaerding, Bavaria, Sept. 27, 1729; died in Vienna Sept. 29, 1800.

*Wilhelm. Unt. Nat. II.

Gottlob Tobias Wilhelm, died Dec. 10, 1811.


*Wood. Ind. Ent.

William Wood.

Index Entomologicus, or a complete Illustrated Catalogue of the Lepidopterous Insects of Great Britain, containing 1944 figures of Moths and Butterflies accurately engraved and carefully coloured after nature. London, 1845.

*Zett. Ins. Lapp.

Johann Wilhelm Zetterstedt, Professor in Lund. Born May 20, 1785.

Insecta Lapponica descripta. Lipsiae, Voss, 1840.


Philip Christoph Zeller, Prof. in Messeritz. Born April 9, 1808, in Steinheim, Wurtemberg.


Beschreibung der Trichosoma Loweii, n. sp., nebst Bemerkungen über Carreno's insecte dont le ordre est incertain, p. 5–11, vol. VII, 1846.
Lepidopterologische Mittheilungen:


Literarisches:


Einige worte der Sepp'sche Werk nebst proben aus der Fortsetzung desselben, p. 4-21, vol. XXVII, 1866.


Zwei neue Arten der gattung Phymata beschreiben von John Scott, p. 102, 103, vol. XXXI, 1870.


Psyche Gigantea (Kirbyii), p. 49–80; vol. XXXII, 1871.


Graubunder Lepidopteren, p. 27–63; 97–120, vol. XXXIII, 1872.


Lepidoptera der West Kuste Amerika's, p. 423—448, vol. xxiv, 1874.


*Zeller. Isis.
Die Synonymie der Hufnagelschen Falterarten, p. 16—49.
Falter aus der Turkey und Asien, p. 3—39, vol. XL, 1847.

I would request all readers to communicate to me any errors or omissions which they may notice in this Bibliography, in order that the corrections may be made in the Catalogue of the Heteroceres to be issued as a second part of this work.