The Lepidopterists' News

THE LEPIDOPTERISTS' SOCIETY

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THE MIGRATION OBSERVATION GROUP OF SWITZERLAND

by R. Loeliger

Zürich, Switzerland

[Editor's Note: Some months ago we learned of the intensive activity of a group observing migrations in Switzerland. One of the Lepidopterists' Society members, Dr. R. Loeliger, who leads the group, has been sending us regularly the monthly mimeographed circular reports, and we recently urged him to prepare an article on the activities of the group for the Lep. News. The results follow. Dr. Loeliger serves as the "Zentralstelle für die Beobachtung von Schmetterlings-Wanderflügen" (Headquarters for the Observation of Lepidoptera Migrations). The address is: "Schweizer Kamerad", Seefeldstrasse 8, Zürich 8, Switzerland. C.L.R.]

The editor has assured me that there would be among the News readers some interest in the work we do here in Switzerland to get further knowledge about the migration problems of Lepidoptera. Let me first tell you that the thorough work done in Great Britain by Dr. C.B. Williams*, of Rothamsted Station, and by Captain Dannreuther, has very much encouraged our Swiss group to do this work. Our group of observers was founded in 1946, and the organization is a very informal one. There are no statutes; there is only a leading idea: the interest in observing migrating butterflies and moths in order to know the routes they fly, and if possible the reasons why they do so. In the spring of 1946 we started with a group of only a dozen members, living in different parts of Switzerland. Since the beginning, all observations have been carefully noted and reported in machine-written circulars, at first in the German language only, and sent free of charge to all members. The members were mostly amateurs, but included trained entomologists as well.

The very first year we had the great opportunity of observing and describing in our circulars the sensational 1946 immigration of Celerio livornica throughout the country, and this occurrence has furthered our work in most decisive measure. By the beginning of 1947, our group already numbered about 60 members, and beside them there were also entomologists in other countries, who took much interest in our circulars.

Concerning the flights of Vanessa (Pyrameis) cardui or of C. livornica, it would not suffice merely to observe them passing through our country. In order to know the beginning and the end of their migrating flights, we needed to have stations in other countries too, from the coast of North Africa to the Scandinavian countries, Denmark, Sweden, and Norway. Because North Africans speak French, we had to publish our circulars in French, as well as German, which has been done since 1948.

On the other hand we found out that the only real proof of recognizing a certain individual butterfly during its migrating consisted in marking the insect, as birds are marked with rings (bands), but of course in a manner adapted to these delicate fliers. In 1947 we therefore began to mark different species of butterflies, giving them spots of lacquer colours upon their wings. In Switzerland we choose the underside of the hindwings and mark them with white, yellow, blue, red or green spots, according to the different stations in our country. The results were most discouraging, as reports of recognizing them again did not come in. Many of the marked butterflies, such as Nymphalis urticae, N. io, Vanessa atalanta, etc. could still be seen for some days in the vicinity, but then they suddenly disappeared. Similar negative results came from the experiments of entomologists in other countries, such as Austria, Germany, Holland, Denmark, and it was not until 1949 that an English entomologist had a successful marking of about 300 to 400 V. cardui, which he released on the Isle of Canna (Scotland). Half a dozen of them were recognized several days later, about a hundred miles distant, southeast of the Isle of Canna. We know of these results by correspondence only and do not know whether these experiments have been published anywhere in the meantime. In our group we had results too. In 1950 one N. urticae, marked in Berne, was recognized a little later in a village about 75 miles northeast of Berne, and one N. io marked near Basle was seen again about 10 miles south of that place.

But it is evident that the number of these results, although encouraging greatly the confidence of our group (counting now about 250 members), is not sufficient and must be somehow enlarged in the future. We therefore plan to have marking members

*See Dr. Williams' articles on migration in the Lep. News, vol.3: pp.17-18, 39-40; 1950.

Loeliger: MIGRATION OBSERVATION GROUP -cont.

in North Africa in order to mark V. cardui in spring time, before they leave the coast and fly over to Europe. If only one of these quick migrators is recognized anywhere in Europe, it will be the first real proof that a known butterfly specimen has flown the distance from the start where it was marked to the station where it has been recognized. For now, if we see V. cardui fly through our country, we can presume only that they might come from the far south but it might also be that the cardui coming from Africa only fly a certain distance and then are relieved by others which were already further north, and these again by others, and so on. The whole flight of perhaps 1000 miles might consist of different parts of flights of only about 200 to 300 miles each. If the insects are not marked, nobody can find out whether they are specimens coming from as far as 1000 miles.

Everyone will obviously conclude that there is much work to be done. If any reader of these lines, living in the region of our observations, and being interested in these problems of migration of Lepidoptera, will join our ranks he may address himself either to the Lep. News editor, who will forward it to us, or to the writer directly. He will receive our circulars regularly, and may be assured that his help is very much appreciated.

AMERICAN MOTHS IN BRITAIN

Dr. C.B. Williams, Head of the Dept. of Entomology of Britain's great Rothamsted Experimental Station, recently wrote of the rather surprising captures of two American species of moths in Great Britain. His son, M.C. Williams, caught one specimen of the pink diurnal arctiid, Utetheisa bella (L.), on Skokholm Island, Pembrokeshire, Wales, in August 1948. The next year Dr. Williams took a specimen of the noctuid, Raphia frater Grote, in a light trap at Harpenden, Herefordshire, England, on July 3rd. He adds: "There is of course no clue as to how either of them got here!"

ADDITIONS TO "THE BUTTERFLIES OF GEORGIA"

After receiving a copy of "Butterflies of Georgia" [see Lep. News, vol.4: p.42] I sent Lucien Harris, Jr., a list of species taken by me in John Abbot's old hunting grounds (Screven Co., Georgia) from March to September, 1946. At his request I am sending this abbreviated list for publication.

Thorybes confusis Bell
Erynnis brizo somuus Lint.
Erynnis baptisiae Forbes
Hesperia meskei Edw.
Atrytone arogos Bdv. and Lec.
Atrytone palatka Edw.
Atrytone berryi Bell
Amblyscirtes alternata G. and R.
Amblyscirtes carolina Skin.

Otto Buchholz
Roselle Park, N.J.

HÜBNER'S "FLORIDA"

Jacob Hübner gave the locality "Florida" or "Florida in Georgia" for some of his species the specimens of which were presumably received from John Abbot. In 1763 the northern border of Florida, then English, was the Altamaha River. In 1783 Florida was returned to Spain and the northern border (definitely fixed in 1795) became lat.31° N. and the lower St. Mary's River.

After Florida was returned to Spain the Spaniards made it very uncomfortable for the English, and it is most unlikely that Abbot ever ventured into the area. The "Florida" referred to by Hübner was undoubtedly the region between the Altamaha and St. Mary's Rivers, or "Florida in Georgia," not the present Florida.

It is worthy of note that several of Hübner's species -- Calanus, Gema [= gemma], Gorgonia, Melinus, and Niphon -- are listed by Johan Karl Megerle in 1804 (Catalogus insectorum quae Viennae Austriae ...distrahuntur, Nos.1-11, 1801-1805) as identified under those names by Ziegler, and with the locality "Ex Georg[ia]." Megerle's specimens probably came indirectly from Abbot. As Hübner used Ziegler's names listed by Megerle, it is possible his specimens were received from Megerle. The names, being nomina nuda, are of no taxonomic interest, but the locality, Georgia, fixes the type locality. In 1803 Megerle listed Andromacha M. This is probably Hübner's Andromacha, and was presumably from Georgia. The specimen figured could well have come from Georgia.

Austin H. Clark
Washington, D.C.

Entomologisches Nachrichtenblatt commenced in the spring of 1947, with Herr Adrian J. Lüthi, Burgdorf, Switzerland, as editor and publisher. [See Lep. News, vol.2: p.78; 1948]. A monthly mimeographed periodical primarily for the field entomologist, it has always featured a variety of authors from several countries. Beginning with the issue of August 1950, it became in part the official organ of the Arbeitsgemeinschaft österreichischer Entomologen, of Vienna, which had been issuing the short-lived Wiener Entomologisches Rundschau. At that point mimeographing and the 30 x 21 cm. size were replaced by type-set printing and 15.75 x 23.65 cm. size. The Rundschau and the Nachrichtenblatt, combined, now bear the title ENTOMOLOGISCHES NACHRICHTENBLATT Osterreichischer und Schweizer Entomologen, with the numbering and pagination precisely continuing where the Rundschau ended (Vol.2: p.45). Thus, the last mimeographed number of E.N.B. was Vol.4, no.4 (July 1950), with pp.28-35, and the first type-set number was Vol.2, no.3 (Aug. 1950), which has pp.46-68. The new style is of course better looking and permits good illustrations, as the first article, "Der Kopulationsapparat der Schmetterlinge und seine Bedeutung für die Systematik", by Wilhelm Kühnelt, shows. We wish Herr Lüthi and the A.O.E. success in the new merger of Swiss and Austrian entomologists.

C.L.R.

THE AMERICAN PAPILIOS

(continued from page 41)

by F. Martin Brown
Colorado Springs, Colorado

SECTION II - The FLUTED Papilios

This is by far the largest and most widely distributed section of the American Papilios. It is found everywhere except in the Antarctic. There is no clear-cut division among the species of FLUTED Papilios as there is among those belonging to the ARISTOLOCHIA and KITE Papilios. Because of this it is difficult to construct a key for the two subsections into which Rothschild and Jordan divide the FLUTED Papilios. Rothschild and Jordan say of the Subsections, "The American species fall into two Subsections, which, taken each as a whole, are characterized, the one by the prevalence of yellow colour and the softness of the costal edge of the forewing, the other by the prevalence of black on the body and wings and the hardness of the costal margin of the forewing, ... However, in the second Subsection there is a mimetic group of soft-winged species (Zagreus Group), which appears to have acquired secondarily the soft costal edge and a great amount of yellow on the wings and body." The two Subsections may be distinguished as follows:

Palpus yellow at sides; frons yellow, or with black mesial stripe, rarely all black; abdomen at least with yellow dots at sides, usually with yellow stripe or for greater part yellow ..... SUBSECTION A

Palpus with white (rarely yellow) dot, sometimes quite black; frons black, or with yellow central line, never yellow along eyes; abdomen black, or with creamy stripe, or orange-buff with black mesial stripe, never dotted with yellow or white...SUBSECTION B

SUBSECTION A OF THE FLUTED PAPILIOS

There are six rather well defined groups of species in this subsection of the Papilios in America. The majority of the Nearctic species fall here. I have found the key presented by Rothschild and Jordan adequate for separating these groups and give it here in a modified form.

1. Hindwing on underside with a subbasal and a submedian band which unite near anal angle forming large black V ..... GLAUCUS Group (III)

   No such bands 2

2. Pronotum and underside of thorax with red or orange dots; no metallic blue spots on underside of hindwing ..... ANCHISIADES Group (V)

   No red or orange spots on pronotum and underside of thorax 3

3. No metallic blue spots on underside of hindwing ..... TORQUATUS Group (VI)

   With metallic blue spots on hindwing 4

4. Abdomen entirely yellow beneath and at sides; or all black, except for a row of yellow dots situated laterally on sternites (no dots on tergites); or in case of some females abdomen black with yellow line at lower edges of tergites ..... THOAS Group (II)

   Abdomen striped with black and yellow beneath or on sides; or, black spotted with yellow on tergites 5

5. Discocellular nervules of forewing with yellow bar, at least on underside; if abdomen black with yellow dots, then two rows of dots on tergites ..... MACHAON Group (I)

   Discocellulars not so decorated; if abdomen black with yellow dots then only one row on tergites ..... TROILUS Group (IV)

I. MACHAON Group

The majority of the Nearctic species of Papilio belong to this group. Only one species, ajax Linné, extends into the Neotropics, following the mountains southward as far as Ecuador. There is some question as to how many species of this group are found in the American fauna. Rothschild and Jordan recognize six - ajax Linné, (as polyxenes Fabricius), bairdi Edwards, nitra Edwards, zelicaon Lucas, indra Reakirt, and machaon Linné.

II. THOAS Group

There are twelve species in this group. It should be considered a neotropical group that sends species into the peripheral temperate regions. Although several of the species are widespread and common, the greater number are very local and tend to be uncommon in collections. Of the species found in the Antilles, a far greater percentage are of this group than of any other group of Papilios. Only three of the twelve are not known from the Islands.

Two of the species are so close in pattern that there is no constant design-characteristic by which they can be separated. Since both are found in the United States, much of the literature confuses the two. These confusing species, thoas Linné and cresphontes Cramer, can be separated in the male sex quickly and with certainty. In cresphontes Cramer there is an open space dorsally between the claspers

that can be seen or felt; this space is closed on thoas Linné by the long, spatulate process on the tenth tergite.

The species found in the various areas are as follows:

United States: thoas, cresphontes, aristodemus Esper.
Mexico and Central America: thoas, cresphontes, ornythion, lycophron, androgeus.
Antilles: thoas, cresphontes, caiguanabus Poey, aristor Godart, aristodemus, andraemon Hübner, machaonides Esper, thersites Fabricius, androgeus, and possibly lycophron.
Tropical and subtropical South America: thoas, lycophron, androgeus.
Restricted to northern South America: homothoas Rothschild and Jordan.
Restricted to northern and western South America: paon Boisduval.

III. GLAUCUS Group

The six species are found in Central and North America. I believe that it should be considered a temperate climate group with outliers into the tropics. With the exception of glaucus-rutulus, the species are easily recognized. The two mentioned may well be nothing more than geographic subspecies of glaucus. The species in the group are:

glaucus Linné - eastern and central North America
rutulus Lucas - western North America
daunus Boisduval - western Canada south to Guatemala
eurymedon Lucas - western North America
alexiares Hopffer - eastern Mexico
pilumnus Boisduval - southern Arizona to Guatemala

IV. TROILUS Group

Structurally this small group is very close to the Anchisiades Group. The two species, troilus Linné and palamedes Drury, are easily recognized. These are insects of the southeastern part of the United States, the former extending northward to Canada, the latter westward to northwestern Mexico.

V. ANCHISIADES Group

Some of the members of this group are difficult to determine properly. This is particularly true of the species that fly in northwestern South America - anchisiades, isidorus, and rhodosticta. Some of the species at times have been erroneously associated with the ARISTOLOCHIA Papilios! In general the patterns of the individual species are quite variable. This has led to the recognition of numerous subspecies that may or may not be valid. The three confusing species from the northwestern part of South America may be separated by these characteristics:

anchisiades: generally with no "tail" on M_3, sometimes with the margin projecting at this point. Hindwing noticeably longer anteriorly-posteriorly than on either rhodosticta or isidorus.

isidorus: a distinct narrow tail on M_3; hindwing much shorter than on anchisiades; forewing below without a buffish white patch across the cell.

rhodosticta: like isidorus but with a white patch across the cell near the apex, often on both sides but always on the underside.

The areas occupied by the species are:

hyppason Cramer - all of tropical America east of the Andes
pelaus Fabricius - islands of the Greater Antilles
oxynius Hübner - Cuba
epenetus Hewitson - western Ecuador
chiansiades Westwood - upper Amazon to the foothills of the Andes
pharnaces Doubleday - tropical Mexico
erostratus Westwood - Central America
rogeri Boisduval - Yucatan and British Honduras
anchisiades Esper - all of tropical America except the Antilles
isidorus Doubleday - Panama to Bolivia along the eastern flank of the Andes
rhodosticta Butler and Druce - Costa Rica to Ecuador

VI. TORQUATUS Group

Several of the species of these tropical FLUTED Papilios are quite restricted in range and rare in collections. Of some species only males have been found. Two species, tasso Staudinger and peleides Esper are known only from the types, in the latter case only from the figure given in 1784 by Jablonsky and Herbst! Both Boisduval and Kirby suggest that peleides is synthetic and does not exist in nature. Rothschild and Jordan do not agree with this point of view. The other species in the group seem to center in southern and southeastern South America, with only torquatus ranging through most of the tropical parts of the continent. The female of torquatus is highly variable, Rothschild and Jordan recognizing five nameable forms!

The five best known species in the group are:

himeros Hopffer - southeastern Brazil
lamarchei Staudinger - northern Argentina and eastern Bolivia (males only)
hectorides Esper - southeastern Brazil and Paraguay
garleppi Staudinger - eastern foothills of Peru and Bolivia (males only)
torquatus Cramer - from Mexico to southeastern Bolivia and there eastward to the coast of Brazil

SUBSECTION B OF THE FLUTED PAPILIOS

This is a "nasty" Subsection to recognize for students not familiar with it. As has already been stated, one group in this Subsection mimics the insects of Section I. It is the Zagreus Group that makes keying Subsection B difficult. However, the yellow central line on the frons is found only in the ZAGREUS Group. That character in the key to the subsections of the FLUTED Papilios should properly place the confusing species.

The separation of Subsection B into its three groups may be accomplished by this key:

1. Frons with a central yellow line .... ZAGREUS Group (VII)

   Frons wholly black 2

2. Costal margin of forewing almost smooth, serration at most vestigial...SCAMANDER Group (VIII)

   Costal margin of forewing serrate .... HOMERUS Group (IX)

VII. ZAGREUS Group

The three species in this mimetic group are not common in collections, or, so far as my experience goes, in nature. These insects center in northwestern South America. Zagreus Doubleday is the commonest of the three and is found throughout the western periphery of the Amazon basin from Venezuela to Bolivia. Ascolius Felder is found in the wet forests from northern Panama to western Ecuador and throughout Colombia. Bachus Felder, the rarest of the three, is found in essentially the same area as is zagreus.

VIII. SCAMANDER Group

None of the four species are common in collections. I have never collected a specimen in the group myself, so I know nothing of the field behavior. Hellanichus Hewitson may represent more closely than any other species in the Subsection the ancestral form from which the Subsection developed. Hellanichus is found in Uruguay and adjacent areas in Brazil and Argentina; scamander Boisduval is found in southeastern Brazil; birchalli Hewitson comes from Panama and Colombia; and xanthopleura Godman and Salvin is known from the region around Iquitos, Peru, and the lower Rio Huallaga.

IX. HOMERUS Group

These are generally large Papilios. Some of the species are difficult to separate on the basis of pattern. Many are very rare in collections, some known only from the types. The distribution of the group is rather interesting. All of the species are found in the northern part of the American tropics, but two of the species, cleotas Gray and aristeus Cramer, also appear in southeastern Brazil with a large gap in their known distribution.

There are four species found in the Mexico-Central America subregion of the neotropics: victorinus Doubleday, cephalus Godman and Salvin, cleotas, and garamus Hübner. Of these, cephalus from Chiriquini is known only from the type; the others are not uncommon. A single rather rare species, homerus Fabricius, lives in Jamaica and possibly Hispaniola. In the northern and western periphery of the Amazon Basin are found cleotas, aristeus, warscewiczi Hopffer, and cacicus Lucas. In the same region flies the exceedingly rare euterpinus Godman and Salvin. In the dry Maranon valley of northern Peru is found judicaël Oberthür, known to Rothschild and Jordan only from the type. As has been pointed out, cleotas and aristeus are found in southeastern Brazil in addition to their northwestern range.

SECTION III - The KITE Papilios

A great variety of shape and pattern is exhibited by the American members of the KITE Papilios. This diversity is greater than is found in any of the other faunal regions, and the two divisions into which the KITES are divided are not so clear-cut in America as elsewhere. The two types of hindwing, the triangular, long-tailed kind and the rounded, tailless kind, are connected by a third form in the Americas which is closer to the rounded group in shape, but bears long, slender tails. Several members of the KITES show a modification of the normal Papilio neuration in the forewing. On these the first (or first and second) radial branches fuse with the subcostal. In one case, bellerophon, the first radial is lost entirely. This is the only example of a true Papilio with a reduction in nervules. The presence in America of neurational types of KITES that are both more "primitive" and more "modern" than any found in the Old World poses interesting problems for the student of Papilio phylogeny.

The two subsections of the KITES may be separated by the following key:

Underside of wings with red spots at base, or, hindwing with red line parallel to abdominal margin, extending from costal margin in its basal half toward anal angle; radial branches always free ..... SUBSECTION A

Underside with no red or tawny band or spots on hindwing, or, with a red or tawny band across disc parallel to distal margin; radial branches either free or the first, or first and second, anastomosed with subcostal ..... SUBSECTION B

SUBSECTION A OF THE KITE PAPILIOS

The species of this Subsection are divided among three groups. Two of these, the MARCELLUS Group and the PROTESILAUS Group, are the typical long-tailed, black-and-white butterflies easily recognized as KITE Papilios. The other, the LYSITHOUS Group, is quite different and its species mimic the ARISTOLOCHIA Papilios. The abdominal margin of the hindwings will give the clue to which Section a specimen belongs, the LYSITHOUS Group of the KITES or the ARISTOLOCHIA Papilios. [See the Key to the SECTIONS on page 40, above.] The three groups are easily separated by the following key:

1. Underside with red basal spots either on both wings or on hindwings ..... LYSITHOUS Group (I)

   Underside lacking red basal spots but with red line more or less parallel with abdominal margin 2

2. Red line referred to is bordered on both sides with black, at least toward costal margin .... MARCELLUS Group (II)

   Red line referred to is bordered with black on one side ..... PROTESILAUS Group (III)

I. LYSITHOUS Group

The presence of red basal spots on the underside is the distinguishing character of these mimics. Nearly every author who has written on the American Papilios has confused some of these species with the ARISTOLOCHIA Papilios. Structurally, the members of this group are very much alike. Unlike most Papilio species, here the male genitalia are so similar as to be of little or no use for taxonomic purposes. The species align themselves geographically into two groups, those found in the Central American - Andean areas and those from southeastern Brazil and adjacent areas. Only one species, pausianus, is found in both regions. Another, ariarathes, is found only in the intermediate Amazon Basin.

The species of the group by geographic areas are as follows:

Mexico: phaon Boisduval, branchus Doubleday, belesis Bates, thymbraeus Boisduval.
Central America: pausianus Hewitson, phaon, euryleon Hewitson, ilus Fabricius, branchus, belesis.
Northern Andean region: pausianus, phaon, euryleon, hipparchus Staudinger, harmodius Doubleday, trapeza Rothschild and Jordan, ilus.
Central Andean region: pausianus, harmodius, xynias Hewitson.
Amazon Basin and its periphery: ariarathes Esper.
Southeastern Brazil and adjacent southern areas: pausianus, microdamus Burmeister, protodamus Godart, lysithous Hübner, asius Fabricius.

II. MARCELLUS Group

There are ten species in this group. It is typically a Middle American group with outliers in the United States and South America. The species seem to me to separate well by the key published by Rothschild and Jordan. Some of the species are exceedingly common in certain regions and at the right season. In Yucatan I have dropped a net over more than a hundred specimens of epidaus at one small puddle of soapy water! Many times in Central America I have collected members of this group with a forceps rather than a net.

The distribution of the species among geographic areas is as follows:

United States: marcellus Cramer and possibly celadon Lucas.
Mexico: philolaus Boisduval, epidaus Doubleday.
Central America: philolaus, xanticles Bates, oberthueri Rothschild and Jordan, epidaus.
Antilles: marcellinus Doubleday, celadon, zonaria Butler.
Venezuela and Colombia: arcesilaus Lucas.
Southeastern Brazil: bellerophon Dalman.

III. PROTESILAUS Group

Unlike the foregoing group the members of this group are very difficult to separate on the basis of pattern. Only agesilaus is easily recognized. On this species the red line on the underside of the hindwings is bordered exteriorly with black, whereas in all others the red is exterior to the black. It is possible that there are many more than the now recognized species in this group. Almost fifty years ago Rothschild and Jordan listed nine species, several of which have many subspecies. A dozen or so additional names have been proposed for specimens that belong in the group. Unfortunately I cannot say much about these since I have seen very few of them from their type-localities. I suspect that most are at best subspecies of the species accepted by Rothschild and Jordan.

Throughout tropical America except the Antilles: agesilaus Guérin and Percheron, protesilaus Linné.
Throughout tropical South America: molops Rothschild and Jordan, telesilaus Felder.
Paraguay and southeastern Brazil: stenodamus Rothschild and Jordan, orthosilaus Weymer, helios Rothschild and Jordan.
Panama and Colombia: glaucolaus Bates.
Southeastern Ecuador: earis Rothschild and Jordan.

SUBSECTION B OF THE KITE PAPILIOS

This subsection is more cohesive than the preceding, from which it differs rather strongly in both pattern and structure. The two groups of Subsection B differ structurally and in pattern but not strikingly. The patterns of some of the species, especially in the DOLICAON Group, are quite unlike those generally found on American Papilios. The females of the species are exceedingly rare in collections. I suspect that this indicates a marked difference in the habits of the sexes. Rothschild and Jordan's key to the two groups is this:

1. Hindwing below with red or tawny line (or row of spots) parallel with distal margin; first radial of forewing free.....THYASTES Group(IV)

   Hindwing below without red line; first radial* of forewing anastomosed with subcostal* ... . DOLICAON Group (V)

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* Rothschild and Jordan use the term "first subcostal" for first radial, and costal for subcostal in their system of vein nomenclature.

Brown: THE AMERICAN PAPILIOS - concl.

IV. THYASTES Group

The six species are not very common in collections. In the field they seem to be locally common at the proper season. The species that are recognized have the following geographic ranges:

marchandi Boisduval - Mexico to western Ecuador
thyastes Drury - Ecuador to Bolivia and eastward to southeastern Brazil
dioxippus Hewitson - central Colombia
lacondones Bates - Guatemala to Bolivia
calliste Bates - Mexico to Costa Rica
leucaspis Godart - Colombia to Bolivia.

V. DOLICAON Group

Seven species are credited to this group. Two of them, serville and columbus, are so close that I doubt strongly their independence. Butler's species orabilis may also belong with these. The species composing this group are much more common in collections than are those of the preceding group, although, curiously, I have found them no more abundant in the field. The males of Group V have the woolly scent patch much like that found among the ARISTOLOCHIA Papilios.

The species of the group have the following ranges:

serville Godart - northern Venezuela, eastern Colombia to eastern Bolivia
columbus Kollar - central and western Colombia and western Ecuador
orabilis Butler - Guatemala to western Colombia
salvini Bates - Mexico, Guatemala, British Honduras
callias Rothschild and Jordan - Amazon valley and eastern Ecuador and Peru
dolicaon Cramer - Amazon Basin and southeastern Brazil
iphitas Hübner - southeastern Brazil.

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Lepidopterists interested in spending the summer of 1952 in the Alaskan Arctic working on Lepidoptera and other insects, under the sponsorship of Yale University and with all expenses paid, should get in touch with the editor of the Lepidopterists' News during the next few months.

SOME NOTES ON TROPICAL BUTTERFLIES

The following notes are excerpts from a letter written by William Clark-Macintyre now living at Cojimies on the west coast of Ecuador. Some years ago I had the pleasure of spending almost a year in the field on the Amazon slopes of Ecuador with "Mac". His letter is in reply to a casual inquiry about collecting on the other side of the Andes.

"Please do not judge W. Ecuador from the material that I've been getting from the sandy, narrow peninsula of Cojimies where everything that isn't sand is salt marsh or mangrove swamp. There's really good stuff over on the other shore where the land is higher - where there abound fresh-water streams and the flora is different. Here, on the peninsula, I've never seen anything even distantly related to the Catagrammas; nor Eunicas; never a Megalura nor Anaea; a few - very few - Adelphas which are all A. cytheris L. or one of its subspecies; only three species of Papilio; Ageronia iphthime Bates and amphinome L.; a very few Morpho and Prepona which I haven't as yet attempted to identify; a few Lycaenids and an abundance of fairly diverse Hesperiids, and that's about all.

"In September I took a rather battered Siderone that seems nearest to S. nemesis Ill. but does not check up with any figure in Seitz. My wife saw another one near the edge of the mangrove swamp. I don't believe that they are indigenous but are stragglers carried by the wind from across the bay. The Danaids are poorly represented here. The Pierids are Phoebis eubule L. and argante F. and the Gonepteryx I thought was menippe Hbn. but you say is maerula F. There are also a few 'Pieris' and Appias but not much more. Satyrids are poorly represented -- only a couple of species of Euptychia. A few Heliconiids and Colaenis julia F. This morning I took a Dione vanillae L. Anything else that I have sent you labelled Cojimies, sea level, is rare.

"If the mass flight of Urania again takes place this spring as I observed it in the springs of 1948 and 1949 I'm going to observe carefully and compose a note about it for the Lep. News. They come from someplace up the peninsula and seem to head straight out to sea by the thousands - millions I might say. Strange to say there seems to be a rather weak and smaller return flight about one month later."

F. Martin Brown
Colorado Springs, Colo.

ENTOMOLOGICAL SOCIETY OF CANADA

A new national society called the Entomological Society of Canada was formed at the annual meeting of the Entomological Society of Ontario at Guelph on November 1-3, 1950. The new society will serve as a link between the various regional societies: the Acadian Entomological Society; the Entomological Society of Ontario; the Entomological Society of Manitoba; the Entomolcgical Society of British Columbia; and the projected Entomological Society of Quebec. The first President is W.A. Ross of the Division of Entomology in Ottawa, and the Secretary is R.H. Wigmore, a member of the Lepidopterists' Society.

CURSO DE ENTOMOLOGICA FROM ARGENTINA

The Museo Argentino de Ciencias Naturales in Buenos Aires, under the direction of Prof. Dr. Agustín E. Riggi, is issuing a series of publications entitled "Curso de Entomologia". The series is being prepared by the Sociedad Entomologica Argentina for publication by the Museum. It is intended as a careful treatment of entomology in the Spanish language and with emphasis on the Latin American fauna. General works of the text type in the Spanish language were notably lacking.

The first part, "Introduccion e Historia de la Entomologia" (pp.1-52; 1947), is by Carlos A. Lizer y Trelles. It is a biographical history rather than an analysis of development of the science. The first section is a cursory and perhaps undiscriminating summary of world entomological history, beginning of course with Aristotle. Of exceptional interest and value is the last half, devoted to a series of brief notes on the contributions of the entomologists of South America. Included are 10 from Brasil, 12 from Chile, 2 from Cuba, 1 from Paraguay, 1 from Uruguay, and 23 from Argentina.

Part II, "Morfologia Externa" (pp.53-101; 1948), also by Señor Lizer, is an adequate summary of general insect morphology, based on standard and classic works by Snodgrass, Imms, Tillyard, Comstock,etc.

Part III has not yet been received for review.

Part IV, "Fundamentos de Fisiologia" (pp.163-210; 1949), is by Pablo Köhler. Necessarily limited by space,this general account of insect physiology is surprisingly comprehensive.

Part V, "Metamorfosis" (pp.211-256; 1949), is by Señor Lizer. It is a rather detailed discussion of this outstandingly interesting aspect of entomology and is well illustrated.

Further parts are expected to appear at a steady rate, with several Argentinian specialists responsible for various subjects in which they specialize.

These parts are handsomely printed on fine paper and have numberous first-quality figures taken from a wide range of reference sources.

C.L. Remington

The American Museum of Natural History, New York 24, N.Y., has recently published a series of "Direction Leaflets", prepared by Miss Alice Gray of the Department of Insects and Spiders. Detailed, clearly written, and well illustrated, they will be of value to collectors anywhere. Apparently the Museum distributes them to anyone requesting them. We have seen the following:

No.1: "How to Make and Use Safe Insect-Killing Jars"
No.2: "How to Make and Use Insect Nets."
No.3: "How to Collect Insects and Spiders for Scientific Study."
No.4: "How to Mount and Label Hard-bodied Insects."
No.5: "How to Make and Use Spreading Boards for Insects."
No.6: "How to Preserve a Collection of Soft-bodied Insects and Spiders."

C.L.R.

THE NOMENCLATURE CONTROVERSY - A REPLY

Readers of the Lep. News are familiar with a debate which has been carried on feelingly in and out of print over events at the meeting of the International Commission on Zoological Nomenclature in Paris in 1948. The most extensive published statements have appeared in Science. The first was by a group of taxonomists in Washington, protesting procedures and actions at the Paris meeting. The second was a collection of letters, all defending some aspects of the Paris proceedings. A third statement has appeared in Science (vol.112: pp.27-30; 1950), this a reply by the Washington group to the letters by Mr. Hemming, et al.

The Washington Group states in explanation of this reply: "It is also our duty, particularly as we are charged with misstatements of fact, to reexamine our position carefully in the light of the comments, to admit any errors, and to reaffirm our beliefs if we are still convinced they are sound." The Group points out that the attempt to be generalized and brief allowed some misunderstandings, and the questioned points are explained in some detail in the new article. The Group deals only with defending its paragraph summarizing the Paris meeting.

Most of the reply is devoted to a carefully documented refutation of each charge against the Washington Group. The matters most extensively reaffirmed are: 1) that there were at Paris "numerous amendments involving almost every article" and that there were "basic alterations in fundamental principles of the code"; 2) that no amendment had been voted on before the Paris Congress by the International Commission, although such is required by the by-laws; 3) that the actual wording of the new text is "entrusted to jurists"; 4) that the amendments should have been, but were not, given "preliminary consideration by the commission for at least one year" prior to final adoption by a congress and that some advance notice to taxonomists in general should have preceded the 1948 Congress; 5) that the Group does "not oppose reform per se" but does oppose "the failure to utilize the normal procedures of consideration by the regular commission, and the haste with which decisions were made at Paris."

The general views of the Washington Group appear to be epitomized by the following quotations: "Having now compared our summary of the facts with the comments, and believing that in no essential particular were we shown to be in error, we reaffirm the position taken in our previous statement. ... it should be reemphasized that in our statement we were not primarily concerned with what was done, but how. ... It is quite true -- and it may be made clear at this time -- that we dislike some actions that were taken at Paris. Some we regard as catastrophic. On the other hand, some we approve. ... [But] had all these matters... been considered in line with the established and customary procedures of the International Commission, we should have felt ... morally obliged to follow the decisions even though in many cases they were not to our liking. ... In the long view, no problem in zoological nomenclature is ever so urgent that confidence in the commission need be sacrificed solely to produce an immediate decision."

C.L. Remington

PERSONALIA

It is with deepest regret that we report the death of Dr. WALTER R. SWEADNER, Curator of the Division of Entomology of the Carnegie Museum in Pittsburgh, Pennsylvania, on 13 January 1951. Dr. Sweadner was only 47 years old. His passing is a very great loss to lepidopterology. A biographical article on Dr. Sweadner will appear in an early issue of the Lep. News.

Dr. LANCELOT A. GOZMÁNY has been appointed Keeper of Microlepidoptera in the Hungarian Natural History Museum in Budapest and is concentrating at present on the Tortricoidea.

Major S.S. NICOLAY, now of Orange, California, has for some time been in Korea with the United Nations forces.

The Society has been most unfortunate in losing one of its ablest field observers, HAROLD I. O'BYRNE, of St. Louis and New Iberia, Missouri. Mr.O'Byrne's untimely passing was in January, 1951. A biographical article is being prepared by Dr. E.P. Meiners.

Another serious loss has been sustained in the unexpected passing, near Pullman, Washington, of Mrs. GRACE H. SPERRY. She and her husband, John L. Sperry, have for many years been a husband and wife team the like of which is seldom seen. Specializing in Geometridae, they have investigated the Lepidoptera of many previously unstudied areas of the Southwest. Recently they were developing a new home in some fine country near Pullman.

DONALD J. LENNOX has arranged his business affairs so that he spends his winters in southern Florida and his summers in his home country, the White Mountains of New Hampshire. Long a skillful rearer of Lepidoptera, he is now working this winter on the early stages of subtropical species.

Prof. KENNETH J. HAYWARD, of the Universidad Nacional de Tucumán, Argentina, was awarded the degree of *Doctor Honoris Causa in Biological Science* by his University in December. Lepidopterists' Society members will recall that shortly thereafter he was elected a Vice President of the Society. Dr. Hayward has recently completed a small textbook of agricultural entomology in Spanish. The second volume (Hesperiidae - II) of his monumental work on the Rhopalocera of Argentina was published at the end of December but has not yet been received outside of Argentina.

Dr. A. DIAKONOFF, noted specialist on Microlepidoptera and the East Indian fauna, has left the Museum Zoologicum Bogoriense in Bogor, Java (long famous as the Zoölogisch Museum of Buitenzorg), to take up residence in Europe. Dr. Diakonoff was a prisoner of the Japanese occupation forces during the last war but succeeded in making notable field observations of Lepidoptera biology in spite of extremely unfavorable circumstances.

LELAND OSSIAN HOWARD died 1 May 1950 at his home in Bronxville, New York, at the age of nearly 93 years. One of the world's most distinguished entomologists, he reached the peak of his influence as Chief of the U.S. Bureau of Entomology and Plant Quarantine. He headed the Bureau from 1894 to 1927, during almost the entire period of its great development. His honors and high offices are too numerous for listing in this short notice, and interested readers are referred to the many extensive biographies appearing in a number of entomological periodicals. He was the author of over 900 books and papers, and several of these were on Lepidoptera. His work was primarily on problems of economic entomology, but unlike many of his colleagues, he did outstanding work in the field of pure science, notably with the taxonomy of parasitic Hymenoptera.

RESEARCH NOTICES

Dr. J. McDunnough, Nova Scotia Museum of Science, Halifax, Canada, is specializing at present on the geometrid genus Hydriomena with a view to future revisionary publication. He would be glad to purchase or exchange series of specimens of this genus, especially from the Pacific Coast of North America and the southwestern States. He will also make determinations if permitted to retain duplicates.

Living chrysalids of Papilio glaucus (the Tiger Swallowtail) from the Southeastern States urgently needed for genetical studies. I will be glad to purchase any number of these pupae or offer in exchange pupae of many species of Connecticut Lepidoptera or papered adults from Colorado. Write to: Dr. C.L. Remington, Osborn Zoological Lab., Yale University, New Haven 11, Conn.

Recently I have been doing a paper on Skinner's types and have run into a problem. The only ♀ that was in the type series of Papilio arcticus Skinner (= canadensis R.&J.) is missing from the collection. Holland figured a "female paratype" of arcticus in his Butterfly Book (Rev.Ed.,Pl.LXX: fig.3). [Dr. Sweadner informed me that the specimen was not from the type series.] If the ♀ can be located, the Academy of Natural Sciences of Philadelphia will gladly give a ♂ paratype of arcticus in exchange for it. Write to: Paul R. Ehrlich, Dept. of Insects, Academy of Nat'l Sciences, 19th and The Parkway, Philadelphia 19, Pa.

Herr Josef Richter, Christian Dopplerstrasse 12, Salzburg, Austria, is trying to obtain a few healthy pupae of Pachysphinx modesta and its western race, occidentalis. He will gladly give in exchange fine specimens of Parnassius apollo and mnemosyne and other Austrian species.

THE CARE OF LARVAE IN DIAPAUSE

by William H. Evans
Sun Valley, California

The key to success in bringing butterfly larvae through hibernation or aestivation lies in the proper control of moisture. I keep my hibernating caterpillars in cottage-cheese boxes, or in other small cylindrical cardboard containers, which I cover with pieces of nylon stockings, then place on a shelf in my rearing house. Even in this dry climate there is enough moisture in the air at night to keep most of the larvae alive through the summer and fall. However, I usually sprinkle a few drops of water on them with a medicine dropper every three or four weeks.

I shall describe the procedure used in caring for each species which I have reared.

Minois silvestris Edw.: (Eggs laid by female from La Tuna Canyon, elevation 1200 feet, Los Angeles County, California.) Immediately after hatching and consuming their egg shells, the larvae settled down on the small stems of dried grass on which the eggs had been laid, and remained dormant until fall. When the first rain came, November 9 and 10, 1949, some of the caterpillars moved slightly, then went back to dormancy. Every time it rained during the winter, they behaved this way. In early March, when the days were fairly warm, I gave the larvae a thorough watering. Within half an hour some began to crawl around and nibble the tender blades of fresh grass to which I had transferred them. A few required three or four moistenings to arouse them. Half the larvae died during hibernation.

Coenonympha california Westw. and Hew.: (Eggs laid by female from La Tuna Canyon.) Although given the same treatment as the preceding species, less than one-third of these larvae survived hibernation. Apparently my failure to control the moisture properly in this unusually dry year accounts for such a small percentage of survivals.

Speyeria callippe comstocki Gund.: (Eggs laid by female collected in San Gabriel Mountains, Los Angeles County, California, elevation 6,000 feet.) Within 24 hours after eating their egg shells, the larvae came to rest on the under sides and curled edges of dried violet leaves, and remained inactive from July until the following March, when, with a small camel's-hair brush, I removed them from their resting places, laid them on a small piece of paper towel, and drenched them with several drops of rain water. They either drank or absorbed water until they swelled up to almost twice their former size, and then walked off the damp paper in search of hiding places. I transferred them to tender leaves of cultivated perennial violets. By the next day, they had crawled to the under sides of the leaves and returned to their dormant state. Again using the brush I returned the larvae to the paper towel, and watered them well every day for over a week. After this, they started to feed. A few days later, when furnished with blossoms and new leaves of cultivated Violas, they began to eat ravenously and required no more special attention. Of the 180 caterpillars, 115 lived through hibernation.

Speyeria coronis semiramis Edw.: (Female collected June 22, 1950, elevation 6,000 ft., San Gabriel Mountains, laid 245 eggs between June 30 and July 6.) From July 11 to 21, 240 eggs hatched, and the larvae aestivated within a day or two. By the end of August over half the larvae had died, but the others were alive though dormant. On September 3, a very hot day with thunder showers, many caterpillars began to crawl around rapidly, and after being watered, took a few bites from the fresh violet leaves. However, they did not thrive until I bought some Viola plants and gave them blossoms and tender leaves. The remaining larvae did not come out of hibernation until I moistened them during late September.

Melitaea gabbii Behr and M. wrightii Edw.: These larvae went into diapause in the third instar and remained inactive from June 1949 until March 1950, when I drenched them with rain-water and placed the rearing container in the sun. They walked around awhile, then settled down on the under side of a dry piece of paper towel. Each day they were watered and sunned, but they were preparing to molt and did not crawl off the paper. After completing the molt, they hid in the shade of the fresh leaves of the food-plants. With a camel's-hair brush I moved them to the sunny sides of the leaves. After being exposed to sunshine for half an hour, they began to feed. The larvae which received an hour or two of sunshine every clear day fed readily; those kept in the shade had to be disturbed several times a day to keep them active. In a few weeks all the caterpillars made the fourth molt. In the fifth instar the larvae which did not get enough sunshine went back into hibernation, and are still dormant at this time (November 22). Recently I sprinkled them, causing them to walk around; therefore I assume they will soon arouse. All larvae which were given sufficient sunshine last spring completed the fifth molt and fed through to maturity.

MAKING VENATION VISIBLE

The lepidopterist who desires a simple and effective way to render the venation of his specimens temporarily visible while running them through a key may find an ordinary hypodermic needle of use. Fill the instrument with carbon tetrachloride, chloroform, or whatever volatile liquid you prefer to use, and a small drop can easily be placed on the wing exactly where wanted, with the added advantage that the needle is immediately handy to arrange any disturbed part.

Edward G. Voss
Ann Arbor, Michigan

I cover my spreading boards with ordinary cross-section paper (10 blocks per inch). A soft resinous adhesive is preferred, to facilitate pinning through the paper. This takes the guesswork out of mounting.

Anonymous

FIELD NOTES ON DIURNAL MOTHS OF THE GENUS ANNAPHILA

by Frank P. Sala
Los Angeles, California

The genus Annaphila Grote includes a group of tiny, highly colored, diurnal noctuid moths. According to the check list of Dr. J. McDunnough, published in 1938, the genus is placed immediately ahead of the Heliothiinae in the subfamily Amphipyrinae.

Very little is known about this genus, and most of the taxonomic work was done long ago, with most of the types either lost or nearly worthless. Two years ago, the late Claude I. Smith undertook to work out a monograph on the genus, but an unfortunate accident halted this work before it was completed.* This summary has as its purpose the accounting of some of the general traits of the genus.

As was stated, very little is known about the genus, but for the past ten years, four of us -- Christopher Henne, William H. Evans, C.I. Smith, and the writer -- have made the study of this group one of our special interests. The four of us, I believe it is safe to state, have taken the majority of the specimens in collections.

First of all, let us consider how one becomes familiar with the elusive Annaphila. They are among the earliest of the spring fliers for any given locality. In southern California, A. arvalis H.Edw. is on the wing in the middle of February, the exact time varying with the break in the cold weather that announces the arrival of spring. An unmistakable sign of the impending flight is the first blooms of the local Salix (Willow). This tree is a powerful attractant of Annaphila, as well as many other spring insects. For any given spot, the time of flight will vary with the break in the cold, wet weather that comes in spring and will run through to the middle of July for the high altitudes (10,000 ft. or more). They have been missed because of the early flight and the short duration of it.

Even if one is at the right place at the right time, he must learn to see an Annaphila. The average wingspan of the various species is less than one-half inch (10 to 16 mm.). For me, these little moths are the last word in net collecting. They are tiny, but very beautiful and elaborate in design. Their flight is rapid and erratic, and even when one is familiar with an Annaphila, he must be cautious and accurate to be successful. To have any amount of luck at all, one must find the plant that is attracting or he will walk miles for naught. At the plant (and many plants will draw when in full bloom), one may see the little moths stop and feed, and note the nervous spasmodic raising of wings that identifies the genus.

The spot where one may collect this group may look bleak, barren, and totally devoid of active insect life. Often the moth will apparently precede its foodplant in appearance. It is necessary to be there on the first warm day to take fresh specimens. An interesting fact also is that one year there will be a heavy flight, and for the next several years there are no apparent specimens to be seen. This leads one to believe that some years the moths will remain dormant as eggs or pupae over an entire year, as do many insect species in this area.

The type of country where these moths may be expected is usually irregular in contour. As Mr. Henne stated it, "Near the head of a canyon and usually on the protected side". This may be due to the type of food-plant that the genus prefers. All of the species that have been reared, either in part or completely, have been on small annuals with brightly-colored blossoms. The larva is, in all cases thus far noted, a blossom and seed feeder. These plants live in the protection of a larger plant, and it is here one may find larvae.

The larvae are of a rather ordinary-looking noctuid type, in general, and in the early instars are green and translucent, resembling Autographa larvae. The final instar usually shows a change in the color of the larvae, either to brown or gray. There is usually at least one white or cream lateral stripe, with some species being multi-striped.

Pupation occurs at the surface, with possibly a small crevice serving as an anchor for the thin earthen cell. I have reared only one species, this near to A.astrologa B.&McD., but the others I have seen are similar in habit.

We have found species of Annaphila in many areas of southern California and specimens are recorded from northern California and Oregon in the north and through Arizona in the south and Colorado in the east. It is safe to assume that all the intervening territory is fertile Annaphila country, at the right season.

McDunnough lists 15 species, and our research so far seems to indicate that we may have three or four more. As the material available becomes plentiful, it is my belief that this number will be close to forty; each new area so far shows its own separate species.

A new Japanese entomological periodical has been brought to our attention by Mr. T. Shirôzu, a newly elected member of the Lepidopterists' Society Executive Committee. This is the Transactions of the Shikoku Entomological Society, of which Vol.1, pars 1, dated "January 1950", was issued April 4, 1950. Pars 2 is dated "March, 1950". Each pars has one large paper, on Buprestid beetles in the first issue, on immature bugs (Hemiptera) in the second. The sponsorship and subscription price are not given in any western language.

C.L.R.

*[Dr. F.H. Rindge is now completing a revision of this genus, based on Mr. Smith's notes and specimens. - Ed.]

HETEROPTERUS MORPHEUS (Hesperiidae) A DEFINITE DUTCH SPECIES AGAIN.- It does not often happen that a butterfly completely escapes the attention of the eager collectors in an over-peopled country like the Netherlands. Yet, as far as I can see, this must have happened to Heteropterus morpheus (Pall.), a little brown Hesperiid. In the 19th Century the species was caught in various localities in the province of Guelderland, in the neighborhood of Zutphen. After 1860 no collector is known to have captured a specimen. It was considered an extinct butterfly.

In Belgium it occurred very locally at a place near the Dutch border, but few collectors paid any attention to this area. Then suddenly, in April, 1950, the Entomologische Berichten announced the capture of morpheus in July, 1949, near the Belgian frontier ("Heteropterus morpheus Pall. opnieuw in Nederland gevonden", by W. Verhaak, Ent. Ber.,vol.13).

On July 13, 1950, I happened to be collecting Coenonympha tullia Müller in a moorland near Zutphen. When returning from this trip I found in an adjoining meadow a small brown butterfly hurrying away over the grass. When I saw its pale underside with oval brown rings, I realized I had found the habitat of H. morpheus; it was exactly the same place where it occurred a hundred years ago. Soon I saw other specimens flying above the marshy meadow.

With a collector who turned out to have had the same experience, I discussed the case. We agreed that the only theory which would account for a recapture at the same spot after one century is that the butterfly has indeed escaped attention. No collector ever pays attention to these inconspicuous meadows adjoining some interesting moorland. The period during which the butterfly is to be found is very short: within a few weeks after the first appearance all specimens are gone. We must also consider the possibility that morpheus had a particularly good season, like many other species in this country. That would have enlarged our chance of meeting it. The place is isolated from the border habitat, the distance being 75 miles, and I do not believe that morpheus has re-established itself in this very locality.

Kees Lems
Leidschendam, Netherlands

ADDITIONS TO "A LIST SUPPLEMENTING BATES' 'BUTTERFLIES OF CUBA' "*

by S.L. de la Torre y Callejas
Matanzas, Cuba

29. Echelatus sempiternus dilloni Bell & Comstock
One female collected in Santiago de Cuba.
30. Calisto herophile parsonsi Clench
New subspecies described by Harry K. Clench from Buenos Aires, Western Trinidad Mts., prov. Las Villas, 3000 ft. (June 19-21, 1939).
31. Nathalis iole alayoi S.L. Torre
New form described by the writer from Bellamar Beach, prov. Matanzas. (December, 1949).

*See Lep. News, vol.3: p.65; 1949.

MIGRATION IN THE ATLAS MTS. OF MOROCCO.- À propos of the pierid migration in Japan mentioned by Mr. Taro Iwase in the Lepidopterists' News (Vol.4: p.43; 1950), in which he suspects the species to be Pieris daplidice (L.), I would like to mention a migration I noticed this spring at 13,000 ft. in the m'Goun Range of the High Atlas Mountains of Morocco. I was crossing the Range as an alpinist, on skis, on April 21st, and at 13,000 ft., P. daplidice was passing over from the Sahara, from south to north, at the rate of roughly one specimen every 20 seconds. I picked up a fine series of 20 ♂♂ and ♀♀ on the snow, where they were falling, apparently exhausted, in about fifteen minutes. With them were a very few Anthocaris belia (Cram.), and one solitary female, dead in the snow at 12,000 ft., of Anthocaris charlonia (Donz.). At the same time Vanessa cardui (L.) was passing from south to north at the rate of one every 10 seconds. Two days later, on the southern (Sahara) side of the divide, at about 6,000 ft., the sphingid Deilephila livornica (Esp.) was flying in hundreds on flowers of Ragwort (Senecio sp.) also moving south to north. In all these species I assume the primary migratory impulse to be due to lack, or depreciation, of the respective foodplants in the desert areas of the Sahara south of the High Atlas Mts. At a considerably later date, the desert pierid, Teracolus nouna Luc., was noticed at 6,000 ft. in the Middle Atlas Mts., moving from south to north.

Colin W. Wyatt
Farnham, England

A NEW WAY TO COLLECT SPEYERIA DIANA.- Arriving on the 3rd of July in North Carolina at my favorite Speyeria diana hunting ground, I noticed at once that I had come too late for easy capture of the bulk. They no longer would settle on dirt roads; on their wings they flitted through the woods. When practically on top of the ridge I noticed a footpath going up to a little higher altitude of about 300 feet. This I took with some expectation. On each side is impenetrable wood and on the right side of the path is a rain groove of about a foot wide. Following this path up to about 100 feet just coming around the bend I saw a male diana coming towards me hugging the gully closely. For the first time using a GREEN net, an idea struck me, and hoping that it would work I dipped the open net in the gully and what I suspected came to reality. The diana flew right in. Others came down that groove the same way; I just stood still with the net in the gully and like the first one they flew right in. In this manner I collected 22 males, the biggest haul I ever made within 3 hours, but I did not get any females this way.

Theodore Bock
Cincinnati, Ohio

Field lepidopterists who are interested in spending a little time during the season collecting for sale mass lots of specimens of larvae, pupae, and adults of Monarch and Cabbage Butterflies and adults of the Cecropia Moth should get in touch now with: Mr. V.A. Van Eyck, United Scientific Co., Inc., 200 N. Jefferson St., Chicago 6, Illinois.

FIRST PRELIMINARY DISTRIBUTION REPORTS ISSUED

Toward the middle of October the collaborators for THE NEARCTIC BUTTERFLIES received their first dividend for collaboration. Two 11-page reports were sent to each collaborator who contributed data on ENODIA and NEONYMPHA. These reports detail all specimens reported and are accompanied by distribution maps for each species. Collaborators to the project who did not send data on the two genera reported may receive both for 25¢; other Society members can purchase them for 25¢ each.

Preliminary reports 3 and 4 on MEGISTO and PARAMEGERA were ready for distribution about the first of December and were mailed after the Christmas postal rush. They are available to non-collaborators for 30¢ and 5¢, respectively.

The last set of Data Sheets for the Satyridae will be mailed to collaborators early in 1951. During the spring of 1951 members who are not now enrolled as collaborators will have the opportunity of joining in for the distributional studies of the Nymphalidae. It is estimated that this will take about two years to complete.

F. Martin Brown
Coordinating Editor
THE NEARCTIC BUTTERFLIES

[Ed. Note: - These fine "preliminary" reports are important documents indeed - the first detailed records of geographical distribution for the Satyridae of North America. C.L.R.]

TWO LEPIDOPTERA COLLECTIONS FOR SALE

Theodore Bock, 70 Ehrman Ave., Cincinnati 20, Ohio, wishes to sell a collection of 3000 mounted butterflies, moths, and beetles housed in 7 Ward's Display Cabinets (consisting of 28 drawers), 10 extra Cornell type glass-topped drawers, and 31 Schmidt boxes. About 1/2 of the specimens are Lepidoptera (1000 tropical "Ornithoptera", Papilio, Morpho, etc. - 350 N.Am. Rhopalocera, 100 N.Am. moths, 100 European, 50 diff. N.Am. Catocala-sappho, etc.) and one-half Coleoptera (1000 tropical - Buprestids, Cerambycids, etc.- , 150 N.Am. Buprestids). Also for sale is literature, including Staudinger and Schatz' 3 volume work and Vols. 3, 10, 14 of Seitz' Macrolepidoptera of the World.

Kurt Hobert, Rivera Placenda, Greene, N.Y., wishes to sell a fairly complete mounted collection in fine condition of North American Rhopalocera, Sphingidae, and Catocala, with large numbers of exotic Lepidoptera. Many of the N.Am. specimens were reared. The collection is in one two-row cabinet with 32 glass-topped drawers, one one-row cabinet with 30 solid-topped stock boxes. He also has many specimens in envelopes. Mr. Hobert has no time to pack the voluminous material for shipment and hopes to arrange the sale to a purchaser near Greene who can pick up the cabinets personally.

C.L.R.

REMARKS ON KILLING METHODS

Winter is the time of year when we get a fair chance to read up on accumulated literature, and that is the excuse I offer for sending at this late date my comments on F.M. Brown's "Field techniques for butterfly collecting", [Lep. News, vol.4: p.10].

The main point of interest, for me, in this article is the author's killing method. Now I have surreptitiously pinched a butterfly now and then, when it was a prize catch that simply would not lie still and be introduced to the killing jar. But I always thought collectors did this sort of thing on the sly, a little ashamed of such crude methods. I was surprised, and also pleased, to see so noted a collector as Mr. Brown come right out in the open and admit that he pinches his butterflies. Still, I have not started to pinch my captures. The reason is plain -- I retain only very few of the butterflies I collect. Before I can adopt any method of killing, I must be sure that it is acceptable to those who get the specimens from me. I would be very grateful to any readers of Lep. News who care to send in their views on pinching.

I notice that Mr. Brown complains of stiff specimens resulting from the use of a killing jar. I also note that he uses carbon tetrachloride. I have used this killing agent for beetles and find it kills far too quickly, and often results in excessively rigid specimens. Though little attention is given to the setting or spreading of Coleoptera I have found that even for these, "Carbona" is hardly satisfactory. I now use it only for killing beetles of little value.

Cyanide is the only thing for Lepidoptera. There are a few tricks connected with this latter poison, which have come to my notice, and which may be worth mention here. Cyanide jars have a nasty habit of quite suddenly and unexplainably ceasing to function. For this reason I keep several going at once and before starting a trip, test some of the jars I intend to take, with a house fly or some other victim that comes handy. Cotton or any padding used in cyanide jars absorbs all the gas, and the jar will not kill for some time afterwards, often as long as twelve hours. Thereafter, most of the killing power may be concentrated in the padding. Don't change padding just before starting on a collecting trip.

Insects will always flop around for awhile in a cyanide jar; the danger of their suffering damage from this is usually exaggerated. Specimens that turn inside out, if they are worth the trouble, can be rescued by placing them in a relaxing jar, with very little moisture, for 24 to 48 hours. They will then turn back easily.

The smaller the jars, the more one can carry conveniently, and the less danger of insects damaging themselves. I use plastic shell vials 1 x 3 1/2 inches for anything with wing-spread less than Pieris rapae. This includes the great bulk of moth species.

Richard Guppy
Wellington, B.C.

COLLECTING ON THE PELOPONNESOS OF GREECE

by Johannes Reichel
Wetzlar, Germany

The calendar showed the 23rd of May 1938 when a cog-wheel train took me uphill through a narrow ravine on the bottom of which a small river roared. Kalavryta, a small town situated at the foot of the Chelmos Mountain, a former volcano, was the primary aim of my trip. The purpose of it was to hunt Parnassius mnemosyne athene and other rare species. During the next days I roamed the entire vicinity of Kalavryta, always hoping to locate the beautiful athene. I sighted a few Papilio alexanor Esp., the South European swallowtail, and a late female of Zerynthia polyxena (Schiff.) was still flying about, completely worn. Although my hopes to get P. mnemosyne were disappointed during the next 16 days, the area hemming the foot of Chelmos at 2000-3000 ft. altitude proved to be good hunting grounds. Among my catch were 7 specimens of the rare Pieris krueperi Stgr., most of them in fresh condition. Most of the Polyommatus semiargus var. staudingeri (Chr.), the Peloponnesian subspecies of P. semiargus (Rott.), were worn and battered around Kalavryta. However, 1000 feet higher, in areas of 3500' and more altitude, this pretty butterfly with the large orange spots on the underwings was just in its prime, and several freshly emerged specimens rewarded me for climbing up and down the steep hills.

On 9 June I was about to give up my hopes for P. mnemosyne. It became high time now to start hunting in the Parnassos Mountains where Colias aurorina var. heldreichi Stgr., another species which I was most eager to obtain, was supposed to wing about. A last attempt to locate P. mnemosyne brought me up to a large plain at the foot of the inner cone of the former crater. It bordered on large forests through which I had ascended. These forests mainly consisted of firs, mixed with oaks, and other broad-leaved trees. I just had emerged from the forest when I saw white-and-black butterflies flying around in fair abundance: - Parnassius mnemosyne var. athene! Finally, I had located them! All of the specimens were in fresh condition, and they were easy to catch.

After two or three hours, when dark was approaching, I turned back towards Kalavryta. A large Colias in the grasses suddenly caught my eye, just before I was going to reënter the forests. It could not have emerged from the pupa more than three or four hours ago. When it spread its wings in the killing jar I found my supposition confirmed: Colias var. heldreichi! Now the Parnassos Mountains did not attract me any longer, since both species which I was most eager to get, I found on that big plain on the Chelmos.

On the next day I abandoned my room at Kalavryta and moved up to the Chelmos in order not to lose five or six hours each day for the ascent and descent. The open sky became my roof and the plain ground my floor. However, what did that matter to me under such circumstances? A thick comforter protected me from the cold. Although it was mid-June the thermometer sometimes dropped below zero (Celsius) at night, turning the snow water into ice. The altitude of this area was about 5500-6000 feet.

During the next days both species, P. mnemosyne and C. heldreichi, became more and more abundant. In respect to mnemosyne I had not expected differently, but Colias var. heldreichi was known as one of the rarest species, which no former collector had met with in large numbers. This year must have been an exceptional occasion - a year of weather conditions which exceptionally supported the development of this species. One day, I netted 37 males within a single hour on a small slope. On or about 19 June (since I have lost all my field-notes during the war when my house burned down I cannot give the exact date), I viewed and caught the first two females of heldreichi. Two days later I netted the first white female, form fontainei, one of the most expensive European butterflies. Most of the males were worn now but all the females were in perfect condition.

P. mnemosyne settled on grasses, flowers, or shrubs on rainy days or after the last sun-ray had been checked by the cone of the Chelmos. They could be taken easily by hands and none of them tried to escape. By the 20th most P. mnemosyne were worn.

The last week on the Chelmos brought me exceptional success. I netted more white females (ab. fontainei) than had ever been caught before. Since they varied considerably - broad or narrow black markings, yellowish, greenish, rosish-white or even light-yellow color of the wings - I took them all. When I left on the 30th I counted 99 ab. fontainei in my boxes. On the 29th I viewed a big bluish butterfly winging up a slope. Fortunately, he settled on a flower, allowing me to approach. It turned out to be a white male of Colias heldreichi, never found before. The bluish color was caused by the blue glimmer which is characteristic for the males of the form heldreichi of Colias aurorina. I took this catch home with me, although it was badly worn, and repaired it as well as possible.

After dark fell, I used to kindle a Petromax-lamp which I placed before the entrance of the cavern which I had discovered after a few days, and where I had set up "headquarters". A steep slope was in front of the cavern, and forests consisting of firs and oaks were approximately 200 yards distant. The catch was very satisfactory. Mainly, Noctuids were attracted by the light, among them about 80 specimens of the rare Plusia beckeri var. italica Stgr., a form which previously had not been caught in Greece except on very few occasions. When I placed the lamp on the open plain, success was lacking completely. Not more than one or two Noctuids were attracted within an hour, although the spot where I had placed the lamp was not far from the cavern.

On the 30th of June I left the Chelmos Mountain since most of the Lepidoptera were battered now. Neither before nor thereafter have I been lucky enough to run into such an eldorado of Lepidoptera.

REMARKS ON F. MARTIN BROWN'S "MEASUREMENTS AND LEPIDOPTERA"

by Vladimir Nabokov
Ithaca, New York

Mr. Brown has devoted most of his article on "Measurements and Lepidoptera" (Lep. News, vol.4: p.51) to criticizing from the point of view of statistics the measurements used in my paper on "The Nearctic Members of the Genus Lycaeides" (Bull. Mus. Comp. Zool., vol.101: 479-541; 1949). I wish to say a few words in reply.

Under the name of sublivens (l.c.: p.513) I described on the basis of nine males a subspecies of argyrognomon (Bergstr.) [= idas auct.] from the St. Miguel Mts., S.W. Colorado, and, for the sake of completeness, listed the measurements of all the specimens (uncus parts and forewing). This was followed (pp.516-520) by a description of another, much more complicated, form from the Teton Mts., argyrognomon longinus. [See supplementary notes at end.]

"Although a table of data is not presented for [longinus]", writes Mr. Brown (who consistently misspells the name of the thing), "measurements on seven specimens are scattered in the text." Of these DELIBERATELY scattered measurements, Mr. Brown gathers into a tidy column the "F" ones (mean length of falx) in order to compare them with my "F" column under sublivens.

Now this is the danger of statistics (and "keys", and those jagged lines that are so amusing to plot). Only three of the seven males belong to typical longinus (p.516) in the qualitative sense in which the nine sublivens males are typical. The other four specimens I discussed (p.519) under longinus are more or less definite transitions to melissa, and I pointed out that the matter is a systematist's nightmare. Nightmares cannot be statistically treated, but they can be very precisely described. If, moreover, Mr. Brown turns to my "Introduction", he will see (pp.480-481) that I took great pains to define in qualitative terms the specific differences between melissa and argyrognomon. These specific formulas and the whole of the distal part of the uncus in ventral view ("FHUE") should be taken into account when comparing the seven specimens of sublivens with the three typical and four "melissoid" specimens of longinus; whereas Mr. Brown jumbles up the all-important qualitative values with quantitative ones and enforces upon me a statistical procedure that I never intended, or intend, to follow.

In explaining his misleading table, Mr. Brown refers to something he calls a "typical population" of sublivens. At the moment of description I had only nine old specimens, all males, preserved in a museum collection. In its habitat, sublivens during the last fifty years may have become extinct, for all I know, or taxonomically blurred by hybridization. Experience tells me that when I study a series of nine specimens that closely resemble each other, differ from allopatric conspecific sets sufficiently to be assigned to a new subspecies, and come from a region where the species has not been detected before, the specimens may be said to belong to a monoform race (l.c.: "Introduction"), probably represented at the station that the series comes from by a certain number of live individuals; but this is as far as I desire to go in this business of "population" -- a term the lax use of which leads to the notion that a population IS a subspecies (or species), whereas, in point of fact, a population only represents a subspecies or BELONGS to it.

"The question then is", Mr. Brown continues, "is the apparent difference [between the F means of sublivens and longinus] real or only a result of a small size of the samples used?" There is no such question here -- for the simple reason that F, alone and unqualified, is not what separates the two forms. To estimate the chances of the two series being "samples drawn from the same general population" as Mr. Brown proposes to do "mathematically", would be a loss of time. The term "general population", if it has any meaning at all, presupposes a more or less continuous stretch of inhabited space; but between the St. Miguel Mts. and the Tetons, the only known habitats of argyrognomon sublivens and argyrognomon longinus respectively, there is a 500 miles gap where nobody has yet found argyrognomon; and, anyway, the problem to be solved is not whether sublivens and longinus overlap in F, but what is the true significance of the alar resemblance between argyrognomon sublivens and melissa pseudosamuelis (l.c.: p.530).

In conclusion I must object to Mr. Brown's casual condemnation of my "time-consuming counts of scale rows" which to him "mean nothing until the statistical parameter of the data on each subspecies is established". I was not concerned with "statistical parameters" when writing my paper. I was concerned with presenting what my scale-line method allowed to present -- an exact description of taxonomic types. I was also concerned with giving examples of its application to the description of phases selected at random within the variational range of a racial wing pattern and of such extremes as complete obliteration of this or that component. I cannot see what part "parameters" could have played here, and how they affect the description of holotypes. Mr. Brown also suggests that future revisers measure a thousand, or more, unci of sublivens -- a nice batch that the miracle of statistics is somehow supposed to produce. I have dissected, drawn and measured many more specimens of Lycaeides than that, and have arrived at the conclusion that the kind of genitalic ranges I have computed illustrate with sufficient clarity racial characters, despite small samples of each race; and that structural (uncal) fluctuation in connection with intra-racial wing-size variability is (if obviously stunted individuals are omitted) a negligible factor. And, finally, I have been concerned with "qualitative" subspecies (since I consider that merely "quantitative" phenomena have no taxonomic status) and with trying to restore the qualitative approach to its position of honor, while placing at its service quantitative values to guide the next man armed with a microscope, a camera lu-

cida, and a finely nibbed pen. After all, natural science is responsible to philosophy -- not to statistics.

POSTSCRIPT

In July and August, 1949, I searched diligently but in vain, at the sagebrush level in Jackson Hole, for colonies or wandering individuals of the bright-colored, alfalfa-and-Hedysarum-feeding melissa form that is common in Utah at 6000 ft. alt. [see my discussion of its intergrades with the alpine melissa annetta (Edw.) in the Wasatch Mts., l.c.: p.535]; but I did find, in some numbers, the "melissoid" form of argyrognomon longinus Nab., which I already knew, on an isolated, well-timbered hill [Blacktail Butte] that rises to about 700 ft. above the floor of the upland valley [6000-7000 ft.alt.] immediately east of Moose, between Jackson and Moran. From July 15 to the end of August I studied typical longinus in the mountains west of Jackson (it was especially abundant in the vicinity of Teton Pass, on slopes between 7500 and 9500 ft. alt. where I ascertained its foodplant) and eastward along the Hoback R., at the foot of Battle Mt., from about 6500 ft. up, flying in company with such butterflies as Speyeria atlantis tetonia dos Pas.& Grey, S. callippe meadii (Edw.), S. egleis macdunnoughi (Gund.), S. hydaspe purpurascens (H.Edw.), S. mormonia clio (Edw.), and S. zerene garretti (Gund.) [one of the males I took has the scintillant macules reduced and conspicuously rimmed with fine black]; Boloria rossicus ingens (B.&McD.) and kriemhild (Stkr.); Euphydryas anicia ssp. and E. gillettii Barnes [a very sluggish insect in comparison to its vivacious palearctic ally maturna (L.)]; Oeneis jutta ssp. and norna ssp. [one almost typical, others transitional to ssp. chryxus (Dbldy.& Hew.)]; "Coenonympha" haydenii Edw.; "Philotes" enoptes (Bdv.); and "Pieris" callidice occidentalis (Reak.). I saw nothing of longinus above timberline in the Grand Tetons [around Amphitheatre Lake] where B. rossicus grandis (B.& McD.), Lycaena phlaeas ssp. [near ssp. fieldeni (McLach.), and very much like snowi (Edw.) on the wing], Colias skinneri Barnes and Pyrgus centaureae freija Warr. were taken. Among other things incidentally picked up I may mention the following from around Jackson at about 6500 ft.: Speyeria cybele letona dos Pas.& Grey, Boloria selene ssp. [between ssp. albequina (Holl.) and ssp. tollandensis (B.& Benj.) and toddi (Holl.) [=? frigga (Thun.)] ssp. [hindwing below suffused with bolorian purple]; a colony of darkish Apodemia mormo F.& F. on a very dry slope above Wilson at 7500 ft. alt.; Strymon saepium (Bdv.), itys (Edw.), and edwardsii (Saund.); Mitoura spinetorum (Hew.) near johnsoni (Skin.); Callipsyche behrii (Edw.); Strymon titus ssp.; "Phaedrotes" piasus (Bdv.); Lycaena thoe ssp. and mariposa (Reak.); and Polites sonora utahensis (Skin.) and peckius (Kby.). The combination selene-toddi-thoe-peckius on a marsh north of Jackson reminded one uncannily of, say, West Wardsboro, Vermont.

My material is now in the Cornell University Museum, Ithaca, New York.

V. Nabokov

IN REPLY TO PROF. NABOKOV

Dr. Remington has allowed me to see Prof. Nabokov's article before publication so I may briefly reply to it at this time. First let me say that the reason I used his paper as an example to make my point was because in every other way it is excellent. I believe I implied that, in the article "Measurements and Lepidoptera".

Taking up his comments point by point: If the subspecies of the American Lycaeides are so evanescent that there is some question that they will survive so short a time as 50 years in so undisturbed an area as the San Miguel (not St. Miguel) Mountains in southwestern Colorado I, for one, question the advisability of naming them.

I accept his criticism of my table pulled together from bits here and there in his paper. I thought that his subspecies was a good one.

We are in complete agreement on the definition of a population. So far as I can see our apparent disagreement is upon my use of the term "general population". I use it to define an aggregate of local populations which in turn are each composed of many more or less geographically united colonies. That Prof. Nabokov's samples of longinus and sublivens came from points about 500 miles apart along an almost continuous chain of high ranges does not of necessity mean that they cannot represent fragments of a single subspecies.

I am surprised by Prof. Nabokov's interpretation of my statement about "1000 measurements". I deliberately capitalized the word STATISTICALLY to point up the folly of depending solely upon measurements to set up subspecies. I am dead set against it. I favor very strongly the use of statistics to help avoid taxonomic errors.

As for scale-line counts, as important as they may become, I still think them a waste of time AS THEY STAND IN PROF. NABOKOV'S PAPER -- without parameters and no evidence of their stability from colony to colony of the SAME SUBSPECIES.

Since Prof. Nabokov "consider[s] that merely 'quantitative' phenomena have no taxonomic status" it is odd that he places so much stress on scale-line counts and measurements, both of which are quantitative. I suspect that he uses much quantitative data in forming his judgments concerning species and subspecies; we all do. My plea is for proper treatment of such information.

Prof. Nabokov concludes: "After all, natural science is responsible to philosophy -- not statistics". Quite right, but to the philosophy of no one person. This philosophy has been painfully built upon the work of many men using all of the tools available. I might say that natural science would not be greatly changed if all of our modern taxonomy and statistics were tossed into the wastebasket. It would be less well organized without taxonomy and less well understood without statistics. Both are tools, not ends in themselves. Unfortunately many taxonomists and statisticians forget this.

F. Martin Brown

RECENT LITERATURE ON LEPIDOPTERA

Under this heading are listed each month papers on Lepidoptera from all the scientific journals which are accessible to us and our cooperating abstractors. It is hoped eventually that our coverage of the world literature will be virtually complete. It is intended that every paper published since 31 December 1946 will be included. In the first three volumes of the Lep. News 886 were listed. Abstracts give all new subspecies and higher categories with generotypes and type localities. Papers of only local interest are merely listed. Papers devoted entirely to economic aspects will be omitted. Reprints are solicited from all publishing members, and the many recently received are gratefully acknowledged. Initials of cooperating abstractors are as follows: [P.B.] - P.F. Bellinger; [A.D.] - A. Diakonoff; [C.dP.] - C.F. dos Passos; [L.G.] - L.A. Gozmány; [G.dL.] - G. de Lattin; [C.R.] - C.L. Remington; [T.S.] - T. Shirôzu. A complete set of these pages, for clipping and filing, may be obtained for Vol.4 for $0.50.

395. Abercrombie, R.G., "The Brown Argus (Aricia agestis) in the Peak District." Entomologist, vol.83: p.128. June 1950.

396. Amiot, Ph., "Elevage de Graelsia isabellae Graell" [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.26-27. 1 April 1950.

397. Autrum, Hansjochem, and Wilfriede Schneider, "Vergleichende Untersuchungen über den Erschütterungssinn der Insekten" [In German]. Zeits. vergl. Physiol., vol.31: pp.77-88, 3 figs. 1 July 1948. Sensitivity to vibration is much greater in orders (including Lepidoptera) having the 'subgenual organ' on the tibia than in those lacking it. [P.B.]

398. Baynes, E.S.A., "Irish Argynnis euphrosyne, Linn." Entomologist, vol.83: pp.105-108. May 1950.

399. Beck, S.D., N.M. Bilstad, and J.H. Lilly, "Prepupal Changes in the Ventricular Epithelium of the European Corn Borer, Pyrausta nubilalis (Hubn.)." Ann. Ent. Soc. Amer., vol.43: pp.305-310, 1 pl. Sept. 1950.

400. Bentinck, G.A., "Gevaar van paradichloorbenzol voor collecties" [In Dutch]. Verslag 104 Zomervergadering Nederl. Ent. Ver.: p.xxv. 1 May 1950. Warns against use of paradichlorbenzol ($C_6H_4Cl_2$) in collections. [A.D.]

401. Berg, Clifford O., "Biology of Certain Aquatic Caterpillars (Pyralidae: Nymphula spp.) Which Feed on Potamogeton." Trans. Amer. Micr. Soc., vol.69: pp. 254-266. July 1950. 4 spp. treated. An excellent paper, unfortunately without figures. [P.B.]

402. Bernardi, G., "Une nouvelle sous-espèce de Zegris eupheme Esp. (Lep. Pieriididae)" [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.1-2, 2 figs. 1 Jan. 1950. Describes as new Z. e. maricana (Morocco). [P.B.]

403. Bernardi, G., "La variation géographique des Leptidea sinapis français (Lep. Pieridae)" [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.41-44, 1 map. 1 June 1950. Distribution of the two subspecies in France. [P.B.]

404. Bourgogne, Jean, "Expériences d'hybridation dans le genre Fumea (Lep. Psychidae)" [In French]. Bull. Soc. Ent. France, vol.55: pp.68-73. 24 May 1950. In cross F. casta x F. crassiorella males develop more rapidly than in parental species and are fertile; females die as larvae. [P.B.]

405. Bourgogne, J., "Les secretions odorantes chez les Lépidoptères (à propos d'un article récent)" [In French]. Bull. Soc. Ent. Mulhouse, 1949: pp.28-29. 1 April 1949.

406. Bryk, Felix, "Eine kleine Ausbeute von nordindischen Spinnern" [In German]. Ent. Tidskr., vol. 71: pp.55-59. 28 May 1950. Describes as new: Desmeocraera perdicula, Notodonta bhasini (Notodontidae); Eupterote geminata gardneri, E. fabia asemos (Eupterotidae); all from Dehra Dun, India. Notes on some other species. Reared specimens; food plants listed. [P.B.]

407. Bryk, Felix, "Warum muss der Linnésche Name für die schwedische 'Cydippe' fallen?" [In German]. Ent. Tidskr., vol.71: pp.60-62. 28 May 1950. Taxonomic difficulty in Argynnis. [P.B.]

408. Carpenter, G.D. Hale and T.H.E. Jackson, "New butterflies from East Africa and the Ituri Forest." Proc. R. Ent. Soc. Lond. (B), vol.19: pp.97-108, 1 pl. 15 Aug. 1950. Describe as new: Charaxes etheocles suk (Uganda); Pseudathyma lucretioides (Kenya); Euptera mirifica (Belgian Congo); Bematistes quadricolor morogoro (Tanganyika); Acraea chilo magnifica (Kenya); Mimacraea krausei karschioides (Sudan); Colotis fausta somalica (Italian Somaliland). Descriptions of some other little-known species. Also names a number of forms. Patterns described and some figured; structural characters not mentioned. [P.B.]

409. Chauvin, Rémy, Physiologie de l'Insecte [In French]. 619 pp., 83 figs. W. Junk, The Hague. 1949. Considerable material on the Lepidoptera is included. Extensive bibliographies follow each chapter. [P.B.]

410. Cockayne, E.A., "Aberrations of British Macrolepidoptera." Ent. Mo. Mag., vol.84: pp.265-267, 1 pl. Dec. 1948. 16 named, 15 figured (Arctiidae, Geometridae). [P.B.]

411. Cockayne, E.A., "Thera juniperata, L., ssp. orcadensis." Ent. Rec. Journ. Var., vol.62: pp.27-28. Mar. 1950. New ssp. from Orkneys. [P.B.]

412. Cockayne, E.A., "Sarrothripus degenerana Hübner (Lep.: Sarrothripinae): a Species New to Britain." Entomologist, vol.83: pp.123-124, 1 pl. June 1950.

413. Cockayne, E.A., "A note on the nomenclature of Philudoria potatoria L." Ent. Rec. Journ. Var., vol.62: pp.65-66. July-Aug. 1950.

414. Cockayne, E.A., "Apamea furva, Schiff., ssp. britannica, ssp. nov." Ent. Rec. Journ. Var., vol. 62: p.67. July-Aug. 1950.

415. Dannreuther, T., "Migration Records, 1949." Entomologist, vol.83: pp.109-114, 129-133. May, June 1950.

416. Denninger, E., "Singulier comportement des chenilles de Scoparia crataegella Hbn." [In French]. Bull. Soc. Ent. Mulhouse, 1949: p.81. 1 Dec. 1949.

417. Diakonoff, A., "Klinische Lepidopterologie" [In Dutch; Clinical Lepidopterology]. Idea, vol.8: pp. 9-11. 8 May 1950. Two cases of moths causing annoyance and even injury to man are reported, viz. injury to human skin by contact with Scirpophaga innotata Wlk. (Pyralidae) resulting in violent itching and even inflammation, well-known and feared in S. Celebes, but also recorded from Singapore and Rangoon; and the peculiar and troublesome "habit" of Hyblaea puera Cr. (Hyblaeidae) when occurring large flights to penetrate into human ears! [A.D.]

418. Gibb, John, "The breeding biology of the Great and Blue Titmice." Ibis, vol.92: pp.507-539. 1 Oct. 1950. Includes data showing that the exact breeding season of these two birds in England is linked to the brief period of abundance of geometrid larvae Cheimatobia brumata and Hibernia defoliaria and that egg clutch size is proportional to larval abundance. [C.R.]

419. Eckholm, Svante, "Lepidopterologiska iakttagelser på Karlö-Hailuoto (Ob) sommaren 1947" [In Swedish]. Mem. Soc. Fauna Flora Fennica, vol.24: pp.65-69. 31 Dec. 1948. List of spp. collected. [P.B.]

420. Elofson, Olof, "Några intressanta insektfynd från Medelpad" [In Swedish]. Ent. Tidskr., vol.71: pp. 43-45. 28 May 1950. Notes on four Lepidoptera. [P.B.]

421. Fischer, Ch., "Quelques indications concernant l'élevage et l'hivernage de Odonestes pruni L." [In French]. Bull. Soc. Ent. Mulhouse, 1949: p.7. 1 Jan. 1949.

422. Fischer, Ch., "Colias hyale L. et C. alfacariensis f. calida Vrty." [In French]. Bull. Soc. Ent. Mulhouse, 1949: p.45. 1 June 1949.

423. Fearnehough, T.D., "Aberrant specimens of P. megera and P. aegeria." Ent. Rec. Journ. Var., vol.62: p.65, 1 pl. July-Aug. 1950. 2 specimens figured but not named. [P.B.]

424. Fischer, Ch., "Listes mensuelles pour la recherche des chenilles d'Eupithecia avec indication des plantes nourricières" [In French]. Bull. Soc. Ent. Mulhouse, 1949: pp.70-72, 80, 85-88; 1950: p.7. 1 Oct., 1 Nov., 1 Dec. 1949; 1 Jan. 1950.

425. Fischer, Ch., "Papilio machaon Linné" [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.34-37, 1 pl. 1 May 1950. Summary of races and 'forms'. [P.B.]

426. Fischer, Ch., "Chasse et élevage des Psychidae" [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.37-39. 1 May 1950.

427. Fischer, Ch., "P. podalirius Linné" [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.44-50, 1 pl. 1 June 1950. Summary of races and 'forms'. [P.B.]

428. Flaschentrager, B., and El Sayed Amin, "Chemical Attractants for Insects: Sex- and Food-Odours of the Cotton Leaf Worm and the Cut Worm." Nature, vol.165: p.394. 11 March 1950.

429. Forbes, William T.M., "Lepidoptera of New York and Neighboring States. Part II." Cornell Univ. Agr. Exp. Sta. Memoir, no.274: 263 pp., 265 figs. June 1948. See review in Lep. News, vol.3: pp.5-6.

430. Ford, E.B., "Industrial melanism." Proc. 8th Int. Genet. Congr., p.571. 1949. Abstract.

431. Gabriel, A.G., and A. Steven Corbet, "Results of the Armstrong College Expedition to Siwa Oasis (Libyan Desert), 1935, under the Leadership of Prof. J. Omer-Cooper. Lepidoptera Rhopalocera." Bull. Soc. Fouad Ier Ent., vol.23: pp.373-379. 1949. Notes on 12 spp. [P.B.]

432. Geiler, Ch., "Élevage de Philosomia canningii" [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.12-13. 1 Feb. 1950.

433. Geiler, Ch., "Comment éviter l'hivernage des chenilles? Un essai sur G. quercifolia L." [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.21-22. 1 April 1950.

434. Gorter, A.J., "Nieuwe Macrolepidoptera voor de Nederlandse fauna" [In Dutch; M. new for the N. fauna]. Ent. Berichten, vol.13: p.34, fig. 1 Mar. 1950. The capture in Holland of Apamea zollikoferi Freyer and Sedina büttneri Hering (Noctuidae) is recorded. [A.D].

435. Green, G.W., and C.R. Sullivan, "Ants Attacking Larvae of the Forest Tent Caterpillar, Malacosoma disstria Hbn. (Lepidoptera: Lasiocampidae)." Can. Ent., vol.82: pp.194-195. Sept. 1950.

436. Haggett, H.G., "The Life History and Habits of Zeuzera pyrina Linn. (aesculi Linn.) in Britain." Entomologist, vol.83: pp.73-81, 1 pl. Apr. 1950.

437. Hardonk, M., "Over de vleugelpigmenten der Pieriden en verwants stoffen (Lep.)" [In Dutch; on pigments in wings of Pieridae and on allied matter]. Verslag 81ste Wintervergadering Nederl. Ent. Ver., pp.xi-xv. 1 Mar. 1950. A short review of pigments occurring in wings of Lepidoptera is given, with especial reference to pterins, being white, yellow and red pigments in wings of Pieridae. Pterins are biologically and physiologically active and are related with vitamins of the B-group, especially with folic acid; they have an important role in blood metabolism and may cure several forms of anaemia. They are also necessary for normal growth and development of certain bacteria and also of insects. [A.D.]

438. Harman, A.C., "Champaran Butterflies - North Bihar." Journ. Bombay Nat. Hist. Soc. vol.49: pp.93-100. Apr. 1950. Annotated list. [P.B.]

439. Harper, G.W., "Lepidoptera of West Sussex, 1949." Ent. Rec., vol.62: pp.25-27. Mar. 1950.

440. Harper, G.W., and W.E. Waller, "Notes on Breeding the First Generation of Polygonia c-album." Entomologist, vol.83: pp.145-148. July 1950. Color of adult determined by diet and rate of feeding. [P.B.]

441. Harrison, J.W. Heslop, "Observations on the ranges, habitats and variation of the Rhopalocera of the Outer Hebrides." Ent. Mo. Mag., vol.86: pp. 65-70. Mar. 1950. [P.B.]

442. Hedges, A.V., "A Note on the Life History of Madopa salicalis." Entomologist, vol.83: pp.97-98, 1 pl. May 1950.

443. Heller, J., St. Karpiak and I. Zubikowa, "Inorganic Pyrophosphate in Insect Tissue." Nature, vol. 166: pp.187-188. 29 July 1950. Deilephila euphorbiae. [P.B.]

444. Henstock, H., "Experiments with a Light Trap at Caerwys, North Wales, During the Years 1947, 1948 and 1949." Entomologist, vol.83: pp.175-188, 1 fig. Aug. 1950. Discusses relation of catch number to temperature and moonlight. [P.B.]

445. Heqvist, Karl-Johan, "Fjärilar från Vindelälvens dalgang inom Degerfors socken i Vasterbottens län" [In Swedish, German summary]. Ent. Tidskr., vol.71: pp.33-42, 2 figs. 28 May 1950. Annotated list of 279 spp. of macros from Hälnas in N. Sweden. Names two aberrations. [P.B.]

446. Hering, M., "Weiteres zur Raupenbiologie von Xanthoecia flavago (Schffm.) (Gortyna ochracea Hbn.)" [In German]. Ent. Zeitschr., vol.60: pp.17-18. 1 May 1950. Larvae of X. f. were found mining in leaf-stalk of Caltha palustris; the species is therefore considered as a facultative leaf-miner. [G.dL.]

447. Hirata, Y., K. Nakanishi, and H. Kikkawa, "Xanthopterin Obtained from the Skins of the Yellow Mutant of Bombyx mori (Silkworm)." Science, vol.111: pp. 608-609. 2 June 1950.

448. Holmes, J.W.O., "A Pale Variety of Lycaena phlaeas of Genetic Origin, and the Effect of Light Thereon." Entomologist, vol.83: pp.90-91. April 1950. Copper replaced by gold, which fades rapidly. [P.B.]

449. Horke, Arvid, "Cidaria berberata Schiff. i Sverige" [In German]. Ent. Tidskr., vol.71: pp.88-89. 28 May 1950.

450. Huggins, H.C., "Migrant Lepidoptera in 1949." Entomologist, vol.83: pp.88-89. Apr. 1950. Notes on 7 species. [P.B.]

451. Humbel, Emil, "Ergebnisse aus der Kreutzung parthenogenetischer und zweigeschechtlicher Schmetterlinge. IX. Analyse männchenahnlicher Intersexe von Solenobia triquetrella F. R." [In German]. Rev. Suisse Zool., vol.57: pp.155-235, 20 figs. Feb. 1950. Description of structure and development of chiefly ♂ intersexes from the cross diploid x tetraploid (parthenogenetic); presented as evidence for Seiler's theory of intersex formation.

452. Jacobson, L.A., P.E. Blakeley, and C.W. Farstad, "Observations on Feeding Habits of First-instar Larvae of the Pale Western Cutworm, Agrotis orthogonia Morr. (Lepidoptera: Phalaenidae)." Can. Ent., vol. 82: pp.181-185, 2 figs. Sept. 1950.

RECENT LITERATURE ON LEPIDOPTERA - cont.

453. Jucci, Carlo, "Physiogenetics in silkworms (Bombyx mori)." Proc. 8th Int. Genet. Congr., pp.286-297, 4 figs. 1949. Summary of research on artificial parthenogenesis, disease-resistant strains, etc. [P.B.]

454. Judd, W.W., "An assemblage of monarch butterflies (Danaus plexippus L.) on the north shore of Lake Erie." Journ. N.Y. Ent. Soc., vol.58: pp.169-171. Sept. 1950. [C.dP.]

455. Kalis, J.P.A., "On two Pieridae from Indonesia." Idea, vol.8: pp.45-46. 8 May 1950. Gives notes on Anaphaeis java java (L.) and Ixias reinwardtii balicensis Fruhst., both in Bali. [A.D.]

456. Kanervo, Veikko, "On the Epidemiology of the Diamond Back Moth (Plutella maculipennis Curt.)" [In English, Finnish summary]. Ann. Ent. Fennici, vol. 14, suppl.: pp.154-159, 4 figs. 1949. Summarizes factors affecting outbreaks; a correlation with the sunspot cycle is suggested. [P.B.]

457. Kauffman, G., "Pyrgus centaureae Rbr. lineolata nov. (Lep. Hesperiidae)" [In German]. Ent. Zeitschr., vol.59: pp.177-180, 1 fig. 1 Mar.1950. Describes a new aberration of P. centaureae. [G.dL.]

458. Kettlewell, H.B.D., "Spilosoma lubricipeda L. ab. godarti Oberthür (Lep., Arctiidae) in Kirkudbrightshire." Ent. Mo. Mag., vol.84: p.128. June 1948. List of references to this genetic form. [P.B.]

459. Khalifa, A., "Spermatophore production in Galleria mellonella L. (Lepidoptera)." Proc. R. Ent. Soc. Lond. (A), vol.25: pp.33-42, 7 figs. 15 June 1950. Structure and function also described. [P.B.]

460. Kikkawa, Hideo, "Tryptophane Synthesis in Insects." Science, vol.111: pp.495-496. 5 May 1950. Bombyx mori. Process analogous to that in mammals. [P.B.]

461. Kiriakoff, S.G., "Recherches sur les organes tympaniques des Lépidoptères en rapport avec la classification. IV. Notodontidae." Biol. Jaarboek, vol. 17: pp.66-111, 12 figs. 1950. Continuing series of studies, describes the tympanal organs of 80 genera of Notodontidae, figuring 11. Evaluates various structures as of specific, generic, or suprageneric value. Concludes the family can be classified as follows: subfamily TARSOLEPIDINAE (nom.nov.), with genera Tarsolepis and Dudusa (which should probably each constitute a full tribe); subfamily Notodontinae, with tribe Pygaerini (only Pygaera), Gluphisia (position uncertain), and tribe Notodontini (all others studied). [C.R.]

462. Klein, A., "Colias F. alfacariensis Ribbé, forme calida Verity. Un gynandromorphe biparti" [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.33-34, 1 fig. 1 May 1950.

463. Kühn, Alfred, "Über die Determination der Form-, Struktur- und Pigmentbildung der Schuppen bei Ephestia kühniella Z." [In German]. Arch. Entwicklungsmech., vol.143: pp.408-487, 46 figs. 5 Jan. 1949.

464. Lederer, G., "Ein Beitrag zur Lebensweise und Verbreitung von Dichonia areola Esp. in der Umgebung von Frankfurt am Main" [In German]. Ent. Zeitschr., vol.59: pp.185-187; vol.60: p.8. 15 Mar., 1 Apr. 1950. A short description of the distribution, biology, and ecology of D. areola in the neighborhood of Frankfurt/Main. [G.dL.]

465. Lempke, B.J., "Trekvlinders in 1949" [Migratory Lepidoptera in 1949, in Dutch]. Ent. Berichten, vol.12: pp.129-134, figs. 1-5. 1 Sept. 1950. In this tenth annual report 9 species are recorded and diagrams on flights of Colias hyale, C. croceus, Vanessa atalanta, V. cardui, and Issoria lathonia are given. [A.D.]

466. Lempke, B.J., "Een opvallende reactie van Pierismijfjes" [In Dutch; Conspicuous reaction of females of Pieris]. Ent. Berichten, vol.13: pp.20-21. 1 Feb. 1950. Very little is known about the behavior of common butterflies. Reaction of female Pieris upon the approach of a male by clapping the wings down and lifting the abdomen is generally regarded as a prelude to the mating. The author remarks, however, that the female insect reacts upon any disturbance in the same way. [A.D.]

467. Lempke, B.J., "Sedina büttneri Hering" [In Dutch; English summary]. Ent. Berichten, vol.13: pp.34-36, figs.1-2. 1 Mar. 1950. The first Dutch specimens of Sedina büttneri Hering, were taken in Oct. 1948 on a damp meadow near Eindhoven (Prov. of N. Brabant); two other specimens were captured in Sept. 1949 near Swalmen (Prov. of Limburg). Sketch map with collecting localities is added. [A.D.]

468. Lempke, B.J., "Nomenclatuur" [In Dutch; Nomenclature, with an English summary]. Ent. Berichten, vol. 13: pp.53-54. 1 Apr. 1950. The specific nomenclature of the "scarce vapourer" is greatly confused. The first valid name appears to be Gynaephora recens Hübner 1819. The name used in the modern English nomenclature, Orgyia recens Hbn., is correct as far as the trivial name is concerned. [A.D.]

469. de Lucca, C., "Casual Immigrant Rhopalocera in Malta." Entomologist, vol.83: pp.64-65. Mar. 1950.

470. McCreary, Donald, and Paul L. Rice, "Parasites of the European Corn Borer in Delaware." Ann. Ent. Soc. Amer., vol.42: pp.141-153. June 1949. Mainly devoted to recoveries of 5 spp. of released parasites. 3 native spp. recorded. [P.B.]

471. McGuffin, W.C., "Descriptions of Larvae of Forest Insects. Plagodis, Anagoga, Hyperetis (Lepidoptera: Geometridae)." Can. Ent., vol.82: pp.205-210, 1 fig. Oct. 1950. Describes larvae of three spp. of Plagodis and of one of each of the other genera. Key to genera. [P.B.]

472. Madsen, F., "Light-trap catching by ultraviolet rays." Ent. Meddelelser, vol.25: pp.221-225, 3 figs. 15 June 1948. Reports automatic trap more effective with UV than with visible light. [P.B.]

473. Menesse, N.H., "Butterflies of Sind." Journ. Bombay Nat. Hist. Soc., vol.49: pp.20-24. Apr. 1950. Annotated list. [P.B.]

474. Merritt, James R., "List of the Butterflies of Jefferson County, Kentucky." Annals Kentucky Nat.Hist., vol.1: pp.27-32. 30 Oct. 1948. Preliminary checklist of 64 spp. with dates and localities. [C.R.]

475. van der Meulen, G.S.A., "Zeldzame of bijzondere Macrolepidoptera" [In Dutch; Rare and noteworthy L.]. Verslag 81ste Intervergadering Nederl. Ent. Ver., pp.iv-v. 1 Mar. 1950. Occurrence in the Netherlands in 1948 of seven rare or noteworthy Macrolepidoptera is recorded. [A.D.]

476. Milne, Lorus J., and Margery J. Milne, "Camouflage in Nature." Natural Hist., vol.59: pp.156-163, 24 figs. April 1950. Good figures of several Lepidoptera with concealing coloration. [P.B.]

477. Milne, Lorus J. and Margery J., "Hoax or Fair Warning." Natural History, vol.59: pp.222-227, 239, 13 figs. May 1950. Popular account of mimicry and concealing or warning structure in insects. [P.B.]

478. Munroe, Eugene G., "The dina group of the genus Eurema in the West Indies (Lepidoptera, Pieridae)." Journ. N.Y. Ent. Soc., vol.58: pp.172-191. Sept. 1950. Contains a key to the species and describes as new Eurema chamberlaini inaguae (Great Inagua, Bahama Is.). Types in Museum of Comp. Zoology.

(cont. next page)

These difficult butterflies have seasonal and sexual forms each of different shades or colors, and some names have been proposed from one or two specimens or very short series. The shuffling of names continues. The North American representative of this group, (so.Florida and so.Texas), is E. neda neda Latr., according to Munroe. It is a pity that such a careful work should have no illustrations, thus losing much of its value. [C.dP.]

479. Musgrave, A., "Some Butterflies of Australia and the Pacific. The Swallowtails - V." Australian Mus. Mag., vol.9: pp.104-108, 7 figs. 1947. Brief account of the eurypylus group. [P.B.]

480. Newton, J., "Prolonged duration of the pupal stage in certain moths." Ent. Rec., vol.62: pp.49-50. May 1950.

481. Nixon, G.E.J., "New Indian Braconidae bred from Lepidopterous defoliators (Hymenoptera)." Ann. Mag. Nat. Hist., 12th ser., vol.3: pp.453-474, 19 figs. June 1950. 8 parasite spp. described. [P.B.]

482. Nüesch, H., "Zur Entstehung des Sexualdimorphismus bei Psychiden" [In German]. Arch. Julius Klaus-Stiftung, vol.23: pp.577-581, 1 fig. 28 Feb. 1949. Eye and antennal development described in both sexes of Fumea casta. [P.B.]

483. Obraztsov, N., "Über die arabescana (Ev.) - Gruppe der Gattung Pseudeucosma Obr." [In German]. Mitt. Münch. Ent. Ges., vol.35/39: pp.213-224, 7 figs. 1 Aug. 1949. Discusses the species of this group and figures ♂ genitalia of most of them. Describes as new: P. dagestana (Ussuch-tshaj, Achty, Dagestan). [G.dL.]

484. Olivier, R., "Sur l'hivernage et l'élevage de deux chenilles de Gastropacha populifolia Esp." [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.5-7. 1 Jan. 1950.

485. Olivier, R., "A propos de Zygènes qui apparaissent à des époques différentes." [In French]. Bull. Soc. Ent. Mulhouse, 1950: p.17. 1 Mar. 1950.

486. Owen, D.F., "The Butterflies of Greenwich Park." Ent. Rec. Journ. Var., vol.62: pp.15-16. Feb. 1950.

487. Ozorski, E., "A propos d'une seconde génération de G. quercifolia L." [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.25-26. 1 April 1950.

488. Ozorski, E., "A propos du phénomène d'appel chez certaines femelles de papillons" [In French]. Bull. Soc. Ent. Mulhouse, 1949: pp.36-39. 1 May 1949.

489. Palmén, Ernst, "A migration of Vanessa io (Lep., Nymphalidae), with remarks on its occurrence in Finland" [In English, Finnish summary]. Ann. Ent. Fennici, vol.14, suppl.: pp.160-168, 2 maps. 1949.

490. Peking, F., "Ein praktischer Zucht - und Anflugbehälter" [In German]. Ent. Zeitschr., vol.60: pp. 21-22. 1 May 1950. Gives a short description of a cheap rearing-box which can be folded up. [G.dL.]

491. Piepho, Hans, "Uber das Ausmass der Artunspezifität von Metamorphosehormonen bei Insekten" [In German]. Biol. Zbl., vol.69: pp.1-10, 2 figs. 1950. Implantation of corpora allata from 5 insects of 3 orders in Galleria larvae produced similar suppression of metamorphosis; the hormone produced is probably similar or the same in all these insects. [P.B.]

492. Piepho, Hans, "Uber die Hemmung der Falterhäutung durch Corpora allata. Untersuchung an der Wachmotte Galleria mellonella l." [In German]. Biol. Zbl., vol.69: pp.261-271, 5 figs. 1950. Implantation of corpora allata antagonizes differentiation of pupal and imaginal integument, resulting in animals with integument modified toward the larval or pupal condition. [P.B.]

493. van Regteren Altena, C.O., "Is Melitaea didyma (Esper, 1779) in Nederland gevangen?" [In Dutch]. Ent. Berichten, vol.12: pp.374-375. 1 May 1949.

494. Rindge, Frederick H., "A Revision of the Geometrid Genus Sericosema (Lepidoptera)." Amer. Museum Novitates, no.1468: 30 pp., 7 figs. 18 Oct. 1950. Describes in detail the structure, wing pattern and ♂ and ♀ genitalia of this western American genus and its 4 species: juturnaria; immaculata; wilsonensis; and simularia. Figures clearly the ♂ and ♀ genitalia of all 4 spp. Describes as new: subsp. macdunnoughi (Lillooet, B.C.) of wilsonensis. Shows distribution of all spp. and subspp. on maps. Sinks californiaria Pack. as synonym under juturnaria; reduces argentata C. and S. to subsp. of immaculata, and meadowsaria Sp. to subsp. of wilsonensis. A model paper! [C.R.]

495. Rindge, Frederick H., "A Revision of the North American Species of the Genus Syrrhodia (Lepidoptera, Geometridae)." Amer. Museum Novitates, no.1469: 26 pp., 6 figs. 20 Oct. 1950. Sinks Catopyrrha Hbn. as generic synonym. Describes in detail the structures, wing pattern, and ♂ and ♀ genitalia of the genus and the spp.: decrepitaria esperanza; viridirufaria; cruentaria; and sphaeromacharia. Figures clearly the ♂ and ♀ genitalia of all 4 spp. Gives maps of distribution. Describes in detail larva of cruentaria (food - Ceanothus americanus). Another thorough paper! [C.R.]

496. Risler, Helmut, "Kernvolumenänderungen in der Larvenentwicklung von Ptychopoda seriata Schrk." [In German]. Biol. Zbl., vol.69: pp.11-28, 15 figs. 1950. Cyclic changes and increased nuclear size due to polyploidy (polyteny?) in various tissues of P. seriata larvae are described. [P.B.]

497. Roepke, W., "Aantekeningen over Synonymie" [In Dutch; Notes on Synonymy; with an English summary]. Ent. Berichten, vol.13: pp.25-28. 1 Feb. 1950. The synonymy of Malayan Heterocera is settled as follows: Chadisra madena Schaus = Fentonia (?) orbifer Hps.; Spatalia bronacha Schaus = Spataloïdes gemmifera Moore; Turnaca straminea Rpke. = T. acuta Wlk.; ♂ Pygaera capucina Rpke. = P. angularis Sn.; Brahmaea hearseyi luchti Dup. = B. h. ardjoeno Kalis; Suana riemsdijki Heyl. = S. concolor Wlk. (auct.); Actias selene miae Tox. = A. s. seitzi Kalis; Bombyx (Lebeda) rotundata Heyl. = Metanastria aequizonata Grünb. = M. rotundata Heyl. [A.D.]

498. Ross, H.H., "How to Collect and Preserve Insects." Ill. State Nat. Hist. Survey Circ. no.39: 59 pp., 65 figs. July 1949. Convenient handbook. Includes brief description of each order. [P.B.]

499. van Rossem, G., "Verslag over het optreden van enige schadelijke insecten in het jaar 1948" [In Dutch; Report on occurrence of some injurious insects in 1948]. Verslag 8e Herfstvergadering Nederl. Ent. Ver., pp.xcii-cviii. 1 Aug. 1948 (Also in Tijdschr. van Entom., vol.91). On pp.xcii-xciv is discussed the occurrence in the Netherlands of two Gelechiids: Sitotroga cerealella Oliv., a notorious pest of stored seeds and grain is recorded for the first time from a field crop of oats; and Anarsia lineatella Zell., new for the fauna, appears to be a serious pest in greenhouses of prunes and peaches. [A.D.]

500. Russell, A.G.B., "Records of Dorset Lepidoptera for the year 1945." Journ. Soc. Brit. Ent., vol.3: pp.92-96. 5 Mar. 1949.

501. Sanborn, Richard C., and Carroll M. Williams, "The cytochrome system in the cecropia silkworm, with special reference to the properties of a new component." Journ. Gen. Physiol., vol.33: pp.579-588, 3 figs. 20 May 1950. Discusses 'cytochrome x' which apparently replaces cytochromes b and c in most larval tissues. [P.B.]

502. Saundby, Robert, "Collecting in 1947." Proc. and Trans. So. London Ent. and Nat. Hist. Soc., 1947-48: pp.196-202. Mar. 1949. Lepidoptera in England. [P.B.]

RECENT LITERATURE ON LEPIDOPTERA - cont.

503. Schaller, F. and C. Timm, "Das Hörvermögen der Nachtschmetterlinge" [In German]. Zeits. vergl. Physiol., vol.31: pp.468-481. 19 June 1950. Studies of 38 spp. of nocturnal moths revealed in all of them sensitivity and defence reactions to sounds in the frequency range of the sounds bats make to orient themselves. An exciting discovery of a generally unsuspected adaptation in moths! [P.B.]

504. Schultz, V.S.M.,"Neue Beiträge zur Schmetterlingskunde. 2. Die Raupe von Cacoecia reticulana Hb. als Phirsichmade" [In German]. Entom. Zeitschr., vol.59: pp.9-12. 15 Apr. 1949. C. reticulana once was found mining in a peach. Description of the larva and pupa. [G.dL.]

505. Seiler, J., "The origin of parthenogensis in the Psychids (Lepid.)." Proc. 8th Int. Genet. Congr., pp.659-660. 1949. Abstract.

506. Sevastopulo, D.G., "Recent Changes in the Names of Some East African Butterflies." Nature in E. Africa, ser.2, no.1: pp.9-10. May 1949.

507. Sevastopulo, D.G., "Specific Names of the Two Common Indian Colias Butterflies." Journ. Bombay Nat. Hist. Soc., vol.49: p.131. Apr. 1950.

508. Sevastopulo, D.G., "Notes on the Genetics of Some East African Lepidoptera." Entomologist, vol. 83: p.164. July 1950. Note on a brood of Mylothris chloris clarissa. [P.B.]

509. Shakhbazov, V.G., and M.D. Sirotenko, "Metodika izucheniia sutochnoĭ aktivnosti lichinochnoi stadii babochek (Lepidoptera)" [Methods for studying the diurnal activity of butterfly larvae][In Russian]. Doklady Akad. Nauk SSSR, vol.65: pp.585-588. 1949.

510. Slabý, Otto, "Quelques dates faunistiques de la Bohême" [In Czech, French summary]. Acta Soc. Ent. Čechosloveniae, vol.46: pp.65-72, 6 figs. 1 Feb. 1949. Notes on 47 spp. Names 1 aberration. [P.B.]

511. Smith, Stanley G., "Isolation mechanisms operating between populations of Choristoneura fumiferana on different host trees." Proc. 8th Int. Genet. Congr., pp.667-668. 1949. Abstract.

512. Snyman, A., "The influence of population densities on the development and oviposition of Plodia interpunctella Hübn. (Lepidoptera)." Journ. Ent. Soc. So. Africa, vol.12: pp.138-171, 5 figs. Sept. 1949. Also describes a protozoan disease found in the cultures. [P.B.]

513. Soures, B., "Contribution à l'étude des Lépidoptères de la Tunisie. Biologie des espèces nuisibles ou susceptibles de la devenir." Ann. Service Bot. et Agron. Tunisie, vol.21: 213 pp., 44 pls., 2 figs. 1948. Account of macro-lepidoptera actually or potentially injurious to agriculture. Describes egg, larva, cocoon, adult, and biology, if known, of 63 spp., mostly Noctuidae, with large photographs of wings of each. [C.R.]

514. Steeg, M., "Neu für die Fauna Frankfurt am Main" [In German]. Ent. Zeitschr., vol.60: p.24. 1 May 1950. Records the nigristic mutation ferenigra of Aglia tau from Frankfurt/M. [G.dL.]

515. Steinberg, D.M., "Sravnitel'naia otsenka regenerativnykh vozmozhnostei u nacekomyk (Comparative evaluation of regenerative possibilities in insects)" [In Russian]. Zool. Zhurn., vol.29: pp.267-276, 1 pl., 2 figs. 1950.

516. Steinberg, D.M., "Massovye vidy nasekomykh i gryzunov kak vozmozhnye vrediteli lesnykh polezashchitnykh polos v priural'e" [Species of insects and rodents, occurring in great numbers, possibly injurious to forest strips used as protection for fields in the pre-Ural area; In Russian]. Zool. Zhurn., vol.29: pp.7-15. 1950. Some Lepidoptera mentioned.

517. Stempffer, H., "Contribution à l'étude des Lycaenidae de la faune éthiopienne." Ann. Soc. Ent. France, vol.114: pp.77-84, 12 figs. "1945" (1949?). Reports on studies of types of Aurillius' spp. of African Lycaenidae in Stockholm. Describes and figures ♂ genitalia of types of: Lachnocnema magna; Deudorix violetta; Iolaus laonides; I. bryki (becomes race of Epamera hemicyanus); I. agnes; I. bicaudatus; I. obscurus; I. scintillans; Poecilmitis osbecki (becomes form of Phasis thysbe); Cupidesthes robusta; Cupido loveni (becomes synonym of Lepidochrysops parsimon). States that Aphanaeus spindasoides is a race of Spindasis aderna. Figures ♂ genitalia of I. australis Stev. [C.R.]

518. Stempffer, H., "Contribution à l'étude des Lycaenidae éthiopiennes" [In French]. Rev. Franc. Ent., vol.17: pp.135-149, 7 figs. 30 June 1950. Describes as new: Eresinopsides bichroma jefferyi (Kenya); Epamera jacksoni (Kenya); Neurypexima kalinzu (Uganda); also one form. Descriptive notes on other spp. [P.B.]

519. Stroyan, H.L.G., "Spiders and Melitaea athalia." Entomologist, vol.83: pp.231-233. Oct. 1950.

520. Ter Laag, H., "Phalanta phalantha (Drury) in West Java" [Lepid., Nymphal.]. Idea, vol.8: p.12. 8 May 1950. This butterfly, characteristic for warm plains, is reported from Bandung (West Java) at 900 meters altitude where caterpillars were found on a Salix sp. [A.D.]

521. Tindale, Norman B., "New Satyridae of the Genus Oreixenica from South Australia and New South Wales, together with Notes on the Recent Climate of Southern Australia." Records S. Australian Mus., vol.9: pp. 143-156, 1 pl. 31 May 1949. Describes as new: O. kershawi kanunda (S. Australia); O. k. phryne (N. S. Wales). [P.B.]

522. Toumanoff, Constantin, "Réactions de défense chez les chenilles de Fausses teignes des ruches, parasitées par un Sporozoaire (Coelogregarina ephestiae Ghél)." C.R. Acad. Sci., vol.228: pp.506-508, 3 figs. 7 Feb. 1949. Reactive tissues, probably phagocytic, in infected larvae of the wax moths Achroia and Galleria. [P.B.]

523. Toxopeus, L.J., "Hybridisatie op Krakatau" [In Dutch; Hybridization in the Krakatau Islands]. Idea, vol.8: pp.12-13. 8 May 1950. Collecting during a short stay in this group of islands corroborated the view that this region represents a mixture of Javan and Sumatran faunas. It is probable, however, that immigration of Javanese elements in these islands took place not directly but via South Sumatra. [A.D.]

524. Toxopeus, L.J., "Entomologische notities uit Nieuw-Guinea 21" [In Dutch]. Idea, vol.8: pp.24-30, 1 pl. 8 May 1950. Field notes of 3rd Archbold Expedition, continued. [A.D.]

525. Toxopeus, L.J., "Onthe distribution of Delias crithoë (Boisd.) in Java (Lep. Pieridae)." Idea, vol. 8: pp.30-45, 1 fig., 1 pl. 8 May 1950. Gives elaborate account of distribution, key, zoogeographical considerations and redescriptions of the following subspecies: crithoë (Boisd.), with varieties fastosa Fruhst. and funesta Fruhst., cherima Tox., centralis Tox., radiata Tox., dymas Nic., bromo Fruhst.; describes new subsp. perextensa (West Java). [A.D.]

526. Travassos, Lauro, "Contribução ao conhecimento dos 'Arctiidae'. XXI. Sóbre as espécies de coloracão semelhante a 'Idalus admirabilis' (Cramer, 1777)." [In Portuguese]. Rev. Brasil. Biol., vol.10: pp. 217-240, 61 figs. July 1950. Deals exhaustively with 6 similar-appearing spp. of Idalus and Rhipha. [P.B.]

527. Travassos, Lauro, "Contribução ao conhecimento dos 'Arctiidae'. XIX. (Lepidoptera, Heterocera)" [In Portuguese]. Rev. Brasil. Biol., vol.9: pp.443-462, 53 figs. Dec. 1949. Describes as new: PSEUDOTESSELARCTIA (type Phaegoptera ursina); LEPIDOZIKANIA (type Tesselarctia cinerascens); L. similis (Brazil). Redescribes Tesselarctia, T. semivaria, and the above two types; all descriptions complete and beautifully illustrated. [P.B.]

528. Tronícek, Edvard, "Contribution à la connaissance des Lépidoptères de la Tchécoslovaquie" [In Czech, French summary]. Acta Soc. Ent. Čechosloveniae, vol. 46: pp.50-51. 1 Feb. 1949. Records 2 aberrations. [P.B.]

529. Ureta, Emilio, "Lepidopteros de Chile (Rhopalocera). IV Parte. Familia Lycaenidae." [In Spanish]. Bol. Mus. Nac. Hist. Nat., Chile, vol.24: pp.93-123, 2 pls. 1949. Lists 19 forms. For each, gives original description (amplified in some cases), distribution, source and present location of type specimens, and larval food plants (where known); also an artificial key to the species. All but one are illustrated in color. Describes as new: Thecla kuscheli; Leptutes trigemmatus borealis; Scolitantides andina f. horsti; also names 1 aberration. [P.B.]

530. Verhaak, W., "Heteropterus morpheus Pall. opnieuw in Nederland gevonden" [In Dutch; H.m. found in Holland again]. Ent. Berichten, vol.13: p.49. 1 Apr. 1950. This lepidopteran, not recorded since 1860, is found again in Prov. of North Brabant. [A.D.]

531. Viette, P., "Contribution à l'étude des Hepialidae. (15e Note). Genres et espèces de l'Amerique latine" [In French]. Rev. Franç. Ent., vol.17: pp. 52-62, 11 figs. 31 Mar. 1950. Describes as new: ROSEALA; R. bourgognei (Brazil); MACULELLA (type M. noctuoides); M. chilensis (Chile); M. variabilis (Chile); SCHAEFFERIANA (type Troidia epigramma); S. jeanneli (Brazil); S. biedermanni (Brazil). Notes on several other spp. [P.B.]

532. Viette, P., "Contribution à l'étude des Hepialidae. (19ème note)" [In French]. Ent. Tidskr., vol. 71: pp.144-146, 4 figs. 13 Oct. 1950. Erects BLANCHARDINA (type Hepialus venosus) and EUDALACA (type exul Walker). [P.B.]

533. Warnecke, G., "Wie stark kann die Einschränkung eines Lebensraums für eine bestimmte Schmetterlingsart ohne Gefährdung des Bestands werden?" [In German]. Ent. Zeitschr., vol.60: pp.9-13, 18-21. 15 Apr., 1 May 1950. Discusses problem of connection between Lepidoptera and size of their biotopes. For every species this question has to be answered differently. Beside a number of species which need a larger biotope (Colias spp.), many others are known which can exist in a very restricted area (e.g., Erebia christi, Pararge roxelana). Discusses as an example a population of Cyaniris argiolus near Hamburg and analyses conditions which determine range of its biotope. [G.dL.]

534. Warren, B.C.S., Supplementary Data on Problems Relating to Erebiid Butterflies." Entomologist, vol.83: pp.225-230. Oct. 1950. Describes as new: Erebia cassioides transcaucasica (Caucasus). Two other notes. [P.B.]

535. Weidman, Margot, "An Interesting Abnormality in a Polyphemus Moth." Chicago Acad. Sci. Nat. Hist. Misc., no.31: 2 pp., 1 fig. 21 Oct. 1948.

536. Weiss, Harry B., and William M. Boyd, "Insect feculae." Journ. N.Y. Ent. Soc., vol.58: pp.154-168, pls.14-16. Sept. 1950. This interesting paper on the excrement of insects is devoted mostly to Lepidoptera. It opens a wide field for further research. [C.dP.]

537. Wigglesworth, V.B., "The insect cuticle ." Biol. Revs., vol.23: pp.408-451. Oct. 1948. Review article. Covers chemical and physical properties of the cuticle , its formation and moult, and its relations with the epidermis and other tissues. [P.B.]

538. Wilkes, A., H.C. Coppel, and W.G. Mathers, "Notes on the insect parasites of the spruce budworm Choristoneura fumiferana (Clem.) in British Columbia." Canad. Ent., vol.80: pp.138-155, 1 fig. 1948. Lists 64 spp., 18 new for this host. [P.B.]

539. Wiltshire, E.P., "Middle East Lepidoptera, IX: Two New Forms or Species and Thirty-five New Records from Cyprus." Ent. Rec. Journ. Var., vol.60: pp.79-87, 1 pl., 3 figs. July-Aug. 1948. Describes as new: Cochlidion creticum dravi; Hemerophila trypaneria. Considers Pseudoterpna 'ab.' rectistrigaria a good species. Figures specimens and ♂ genitalia of all three. New records and notes on other spp.; some food plants listed. [P.B.]

540. Wiltshire, E.P., "Some notes on the Shatt el Arab oasis and its insects." Ent. Rec., vol.62: pp. 37-40, 45-49. Apr. May 1950. Mainly Lepidoptera. [P.B.]

541. van Wisslingh, T.H., "Macrolepidoptera in 1949" [In Dutch]. Ent. Berichten, vol.13: pp.18-20. 1 Feb.1950. Faunistic and phenological notes on Macrolepidoptera in Holland in the summer of 1949. [A.D.]

542. van Wisselingh, T.H., "Vangsten van Macrolepidoptera in 1948" [In Dutch; Captures of M. in 1948]. Verslag 81ste Wintervergadering Nederl. Ent. Ver., pp.xiii-x. 1 Mar. 1950. The summer of the year 1948 has been unfavorable for collecting; wet and cold. Still several rare species were collected of which eleven are recorded. [A.D.]

543. Wolff, Paul, "Quelques observations biologiques relatives à l'espèce Lasiocampa quercus L." [In French]. Bull. Soc. Ent. Mulhouse, 1950: pp.51-52. 1 July 1950.

544. Wolsky, Alexander, "The Physiology of Development in Insects." Proc. Nat. Acad. Sci. India, vol.15: pp.67-72. Feb.-Mar. 1949. Outlines changes in metabolic rate during development of Bombyx. [P.B.]

545. de Worms, C.G.M., "British Lepidoptera Collecting 1948." Entomologist, vol.82: pp.121-129. June 1949. A 'season summary'. [P.B.]

546. de Worms, C.G.M., "British Lepidoptera Collecting, 1949." Entomologist, vol.83: pp.99-104, 134-140. May, June 1950.

547. Wright, D.W., and Q.A. Gearing, "The Biology and Control of the Pea Moth, Laspeyresia nigricana, Steph." Bull. Ent. Res., vol.39: pp.57-84, 1 pl., 6 figs. May 1948.

548. Yamafuji, Kazuo, "Conversion of Nitrites into Oximes in Silkworms and its Relation to the Experimental Production of Virus Disease." Nature, vol.165: pp.651-652. 22 April 1950. Addition of nitrites to diet increased oxime content of larvae and was correlated with high mortality of uninfected larvae from 'virus' disease. Utilization of inorganic nitrogen salts not previously reported for Metazoa. [P.B.]

549. Youden, G.H., "Hadena compta at Dover (Lep.: Noctuidae)." Entomologist, vol.83: pp.121-122, 1 pl. June 1950.

550. Zolotarev, E.Kh., "O razvitu gusenits boiar'-shnits' (Aporia crataegi L.) v period zimovki (On the development of the larva of the Black-veined White)" [In Russian]. Zool. Zhurn., vol.29: pp.152-158. 1950.

551. Zukowsky, B., "Zwei neue südamerikanische Aegeriiden" [In German]. Ent.Zeitschr.,vol.60:pp.22-23. 1 May 1950. Describes as new from S. America: Chamaesphecia atramentaria (Vulcan Colima, Peru) and Gaea erasmia (Chile). Very short descriptions; no figs. [P.B.]

NOTICES BY MEMBERS

Wanted: Rhopalocera from Africa, Asia, and Oceania in exchange for Rhop. and larger moths from Spanish and European faunas. Very particularly desire all Papilionidae, Delias, Euploea, Cethosia, Charaxes, Kallima, Euphaedra, Euxanthe, and Appias. All correspondence welcomed and answered. A. Varea de Luque, 13 Ibiza, Madrid, SPAIN.

I am considering a collecting trip to the Hudson Bay region of Canada next summer but it will be necessary to sell part of my catch to defray expenses. Write me if you would be interested in purchasing Lepidoptera, Odonata, or Coleoptera from this area. C.S. Quelch, Transcona, Manitoba, CANADA.

Western U.S.A. Lepidoptera offered in exchange for tropical spp., esp. from India, and for Speyeria diana and Anaea spp. Mrs. Emily Henriksen, Route #1, Sunnyside, Washington.

For sale or exchange: approximately 300 Manitoba moths especially Arctiidae and Noctuidae. All are pinned. What offers? Charles D. Bird, 1930 Rosser Ave., Brandon, Manitoba, CANADA.

Speyeria diana ♂♂ caught this season for sale or exchange for tropical Lepidoptera or Coleoptera. Also have a limited number of Mitoura damon. Theodore Bock, 70 Ehrman Ave., Cincinnati 20, Ohio.

For exchange or sale: the very rare Strymon "auretorum" (Bdv.). Also Speyeria. Wm. T. Meyer, 4450 Kingswell Ave., Los Angeles 27, Calif.

Far Eastern Rhopalocera (Japan, Formosa, Korea, etc.) Wish to exchange with all parts of the world. Have interest in Papilionidae (esp. Parnassius, Archon, Hypermnestra, Zerynthia, etc.), Pieridae, Nymphalidae, and Lycaenidae, etc. Inquiry invited. Yoshihiko Hata, No.594, Aburanocouji Buccouji,Kyoto,JAPAN.

For sale: THE BUTTERFLIES OF GEORGIA, 1950 revised edition with annotated list, complete bibliography. Limited number, just published, $1.00. Order from Lucien Harris, Jr., President, Georgia Society of Naturalists, 61 Clarendon Ave., Avondale Estates,Ga.

Amazon Butterflies from Santarém, Obidos, Manaos, and Tefé. Young Swiss on collecting trip wishes to sell his duplicates to help defray expenses. Will be on home leave in Switzerland from December 1950 on. Please let me know your wishes. Jorge Kesselring, Weinbergstr. 166, Zürich 6, SWITZERLAND.

Complete set of BULL. LEP. SOC. JAPAN, vol.1, nos. 1,2,3, and 4 (108 pp.) (1946) - for sale, 70 cents, including postage. Hiroshi Inoue, 290 Miyamae, Okamachi, Minami-ku, Yokohoma, JAPAN.

Butterflies from Ecuador and Argentina. If you are interested as an amateur or a specialist in material collected by William Clark-Macintyre in Ecuador or Juan Foerster in Argentina and Paraguay, write for information and price-lists from F.M. Brown, Fountain Valley School, Colorado Springs, Colorado.

Young man, 22, seeking a position collecting or preparing entomological material. Will travel to desired localities to collect your needed species.

* * *

Duplicates of many groups of insects for exchange (full data, papered), from Panama, Cuba, Japan. Large no. Japan Lycaenidae. Want tropical Lycaenidae, esp. from remote countries; list made up on request. Raymond Jablonski, 920 E. Knapp St., Milwaukee 2, Wis.

Speyeria specialists! Rare endemic species from Atlas Mts. of Morocco, S. (Argynnis) lyauteyi Obth. 2♂♂ 1♀ $5.00, ♂♂ $1.50 each. Also many other rarities - Satyrus abdelkader, S. atlantis (mniszechii), Epinephele maroccana, Coenonympha vaucheri, C. fettigii, Cigaritis allardii, Heodes alciphron herakleana, H. phoebus, etc. Exchange for arctic U.S. Rhopalocera also considered. Colin W. Wyatt, Cobbetts, Farnham, Surrey, ENGLAND.

For exchange: The Periodic Cicada, Tibicina septendecim, with all data, for Lepidoptera, particularly Papilionidae and Sphingidae. Large number of cicadas available. Will also sell. J.W. Morris, 2704 W. Genesee St., Syracuse 9, New York.

For sale: Rhopalocera from Africa. Have Papilio, Charaxes, and other genera. Send for list. Prices are low. Charles Seydel, B.P. #712, Elisabethville, Belgian Congo, AFRICA.

Austrian insect pins for sale, excellent quality. Sizes 2,3, and 4. 55¢ per 100 of a size, $4.00 per 1000 of a size. L.S. Phillips, 1839 S. Hamlin Ave., Basement Apt., Chicago 23, Illinois.

Wanted: Volumes 5, 7 and 9 of Seitz' "Macrolepidoptera of the World" (English Transl.). Bro. J.J.Renk, Regis College, W. 50th at Lowell Blvd.,Denver 11, Colo.

For sale: Cisseps fulvicollis, Ateva aurea, 10¢ each, with full data. Also unnamed moths, 6¢ each; will exchange for exotic Rhopalocera with full data. James Unseld, Jr., Gravel Switch, Kentucky.

LIVING MATERIAL

Hyalophora cecropia, H. promethea and Antheraea polyphemus cocoons for exchange for living, mounted, or papered Lepidoptera, esp. Papilionidae and Sphingidae. Will sell H. cecropia only. J.W. Morris, 2704 W. Genesee St., Syracuse 9, N.Y.

Large quantities of wild (Conn.) cocoons of Samia walkeri ("Cynthia") and other Heterocera offered in exchange for living pupae of Lepidoptera from outside New England, especially from Europe or Asia. R.W. Pease, Jr., Yale Station, New Haven, Conn.

For sale or exchange: Eupackardia (Callosamia) calleta cocoons. Robert J. Ford, 3266 Ardmore Ave., South Gate, Calif.

Desire to correspond about rearing with view to exchange of ova next season, esp. Sphingidae and Saturniidae. Mrs. Hazel Chase, 272 N. Union St., Galion, Ohio.

QUESTIONS AND ANSWERS

Q. "Where may I find directions for the preparation of Lepidoptera ♂ and ♀ genitalia for study?"

A. See J.F. Gates Clarke in Bull. Brooklyn Ent. Soc., vol.36: pp.149-161; 1941. As he notes, many make variations in the process he uses, though none in the principles stated there. My preferences are:

Put label (if only one) at left, leaving right end clear for handling the slide, and attach it to read from the side. Hollow-ground slides are too expensive for anyone without the government behind him. I prefer posts of hard thick card or celluloid to rings, - the balsam dries better. They should be well soaked in clearer before using.

In many cases, especially Noctuidae on account of the tufting, I prefer to remove only the posterior half of abdomen if possible (i.e. males, where the genitalia are short), to save the basal structures at least in recognizable form. One can often put a small drop of alcohol on the end of the abdomen, and add a drop of water when it has spread half way to the base. But sometimes it spreads too far and relaxes the specimen, or a decomposed specimen refuses to soften enough for cutting. I prefer oil of lavender to clove oil, as it is less volatile, and is clear on the slide. There is less danger of the positioning of the structures being lost. I write the permanent label for the slide at the start, eliminating the risk of error in copying a temporary label. Then I carry it along with the specimen in a dry watch-glass. I prefer eosin to mercurochrome, and would give a warning that in males where the membranous structures rarely show significant characters it is usually best not to stain.

For the potash stage I prefer to use it pretty hot but not boiling, and often put the specimen on a hot steam radiator. Then instead of the minute or two for boiling KOH or several hours for cold, the best time is usually some minutes to an hour or so. If boiling potash is used, the specimen should be boiled up first in water till well softened.

It is best not to clean the outer surface of the pelt too thoroughly, but leave a few scales here and there (they may be of interest). I prefer to flatten somewhat, to get a better view, but never to the point of real distortion. If the pelt shows any obvious features I slit it down one side and mount it spread out.

In lateral mounts (which are usually best for butterflies) I prefer to disarticulate the upper valve, so as to expose the important inner face of the other without confusion. On the other hand, in many forms (e.g., some Tortricidae and Lasiocampidae) the aedoeagus is firmly articulated and cannot be removed without smashing something.

I prefer thick balsam for thick mounts, - it shrinks less. I like to use small bits of thin microscope slide as weights. I would emphasize more that slides, even if pretty old, should not be stored on edge; if boxes are used they should be filed upright.

W.T.M. Forbes

CHANGES OF ADDRESS

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