

The Lepidopterists' News

THE MONTHLY NEWSLETTER OF THE LEPIDOPTERISTS' SOCIETY
c/o Osborn Zoological Laboratory, Yale University, New Haven 11, Connecticut, U. S. A.

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BOOKS ON LEPIDOPTERA IN PRINT

LARVAE OF INSECTS. Pt. I. LEPIDOPTERA AND HYMENOPTERA. By Alvah Peterson. Published by author; Columbus, Ohio. 1948. 315 pp., 84 full page figs. (Litho-printed, cloth bound, 8" x 10 1/2"). Available from: Prof. Alvah Peterson, Dept. of Zoology-Entomology, Ohio State University, Columbus 10, Ohio, U.S.A., for \$5.00, postpaid.

This is the first of two projected volumes on the larvae of all the orders of holometabolous insects (see *News*: p.46) in the Nearctic Region. Pt. I contains three sections: the introduction to the immature insects of all orders; detailed treatment of the Lepidoptera; and detailed treatment of the plant-feeding Hymenoptera (Sawflies and a few Chalcids).

The general section describes techniques for collecting, killing, preserving, and inflating larvae and gives keys to the immature stages of the orders of insects. The keys throughout the volume are well illustrated with large, simple drawings. There is a general bibliography on immature insects with 87 titles.

The second section, on Lepidoptera, occupies pages 60-236 of which 58 pages are filled with figures and 58 with explanations of figures. A lucid introduction to the characters of larvae of Lepidoptera is followed by a tabular comparison of the systems of S.B. Fracker, W.T.M. Forbes, and Carl Heinrich for naming the setae. The keys, which include nearly all Nearctic families of Lepidoptera, are based on those of Fracker (1930) and of course rely entirely on structural characters, such as setae, horns, spiracles, glands, crochets, and relative sizes. No attempt is made to cover early instars. After the keys the families, in alphabetical order, are described and their habits noted. A list of "Some Common, Important or Unusual Species" shows the species actually studied in preparing the book. The excellent, practical drawings illustrate essential characters of a very large number of species in nearly all families. The bibliography of Nearctic Lepidoptera larvae contains over 200 titles.

The final section (pages 237-277 and 12 plates) deals with Hymenoptera larvae found on plants.

The end of the volume has an extensive glossary of terms, host indices, and an index of all common and scientific names in the volume.

This is a valuable manual of identification for anyone interested in Lepidoptera larvae and having a microscope available.

BUTTERFLY LIVES. By S. Beaufoy. Collins; London. 1947. 128 pp., 191 photos. Available from: Collins, 14 St. James's Place, London, England; listed at 12s.6d net. (= \$2.50 U.S.A.).

Never before have we found such a large collection of superb photographs of butterflies and their early stages. Mr. Beaufoy exhibits real skill in rearing and finding the stages of the butterflies he figures, but the wonderful photographs make reading this book an exceptional pleasure. It certainly stands far above most popular books on butterflies.

Mr. Beaufoy has chosen for the book 22 species of British butterflies, with representatives of all major groups and with several species having particularly interesting life histories, habits, or distribution. The delightfully written text on each species, on a simple plane, is accompanied by about eight photographs, usually illustrating all four stages of the life history, and often with several views of one stage or of different larval instars. The backgrounds are natural and add to the biological authenticity of the photographs. The scientific accuracy of the entire book has been assured by the collaboration of Dr. E.B. Ford.

Mr. Beaufoy hopes to give impetus to the hobby of photographing living butterflies and their early stages. He presents in the introduction his techniques for finding eggs, larvae, and pupae, for rearing them, and for photographing the insects. "Butterfly Lives" will bring pleasure to collectors and students of butterflies anywhere in the world.

The early signs are that 1949 may be a great migrating year for Lepidoptera in western North America. Commander J.L. Sperry reported (April) that the larvae of *Calerio lineata* "are so plentiful that it makes slippery travelling in parts of the desert" (S. Calif.). D.E. Parker found *Vanessa cardui* "in tremendous numbers" in the desert section around Little Rock, California. The importance of large numbers of observations from many localities during a migration cannot be overestimated. All collectors seeing unusual swarms, especially those moving, of the migrating Lepidoptera are urged to send letters or postcards to the *News* editor immediately, giving all possible details. It may then be possible to alert other potential observers. Consult the article by Dr. C.B. Williams on pp.17-18 of the February *Gen. News* for a list of the known migrant butterflies; these and the moths should be watched carefully. From June 25-July 31 the address of the *News* editor will be Eldora, Colorado.

CATALOGUE DES LÉPIDOPTÈRES DE FRANCE ET DE BELGIQUE: 2 vols. By Léon Lhomme. Published by author; France. Available from: L. Lhomme, Le Carriol (Lot), France.

This catalogue of the Lepidoptera of France and Belgium is a reference work of high quality. Its compiler, one of the world's ablest amateur zoologists, has now nearly completed publication of the final volume.

Volume I (800 pp.) deals with the Macrolepidoptera. It lists 1676 species. All parts have now appeared and the price is 600 francs.

Volume 2 (about 1200 pp.) covers the Microlepidoptera, of which there are 2665 species recorded. It is appearing in six fascicles, of which the first five have been published and the sixth was in press in March. The price for the entire volume is about 2000 francs.

The author, date, and genotype is given for every genus. Under each species is the following information: 1) references to recent works in any language, in which that species is described or figured; 2) detailed records of the distribution in France and Belgium and the periods of flight; 3) the host plants of the larva; and 4) for many species, notes on the habits of larvae and adults.

This is not a synonymical catalogue and the lack of synonymies detracts materially from its value. Presumably practical reasons required their omission.

Anyone interested in the Microlepidoptera will find the second volume frequently consulted. Students of the Macrolepidoptera whose interests include European species will wish to have the first volume on their bookshelves. The prices are reasonable and should be no deterrent.

[Just as this issue of the Lep. News was being made up for the printer we learned of the very recent passing of M. Lhomme. This is a great loss to lepidopterology. An engineer by profession, M. Lhomme has long served French entomology, not only by compiling the above Catalogue, but by his able editing of the Revue française de Lépidoptérologie and his own original work. We have not yet heard who will carry on the Revue or the "Catalogue", but presumably orders addressed as above will continue to receive proper attention.]

THE CATERPILLARS OF THE BRITISH BUTTERFLIES, Including the Eggs, Chrysalids and Food-plants. By W. J. Stokoe & G. H. T. Stovin. Warne; London. 1944. 248 pp., 32 pls., figs. Available from: Frederick Warne & Co., Ltd., London, England, or New York, N.Y., U.S.A. (bound, 10s.6d in England = \$2.10).

This little book was prepared as a companion volume to South's The Butterflies of the British Isles. The species are arranged in phylogenetic sequence, but with the most specialized groups first. For each species there are notes giving: habits and distribution of the adults; the oviposition site; descriptions of the egg, larva (all instars), and pupa; larval habits; and all known food-plants. The descriptions of the life-history of the Monarch are quoted from Skudder (sic!). All the larvae are

figured in color from the water-color drawings of J.C. Dollman and undoubtedly suffice for identification, but they are not very clear in most cases. The figures of the eggs and pupae are in black-and-white. The former are especially clear. A very useful feature of the book is a descriptive list, with simple drawings, of the 140 different food-plants and notations of the butterflies which feed on them.

The introductory chapters, Dr. Stovin's contribution to the book, consider "Instructions and Hints for Rearing Butterflies in Captivity" and "Reasons for Classification of Butterflies into Families."

It will surprise North American collectors to find that only 68 species of butterflies occur in the British Isles, whereas any one locality in the Nearctic Region probably has at least 50% more. Small wonder that British collectors have turned to gathering aberrations enthusiastically!

All European collectors should find this little volume useful, and the close similarity between most Palearctic and Nearctic butterflies makes it of interest anywhere in northern Asia and North America.

THE CATERPILLARS OF BRITISH MOTHS, Including the Eggs, Chrysalids and Food-plants. 2 volumes. By W. J. Stokoe & G. H. T. Stovin. Warne; London. 1948. 408 & 381 pp., 90 & 51 pls., figs. Available from: Frederick Warne & Co., Ltd., London, England, or New York, N.Y., U.S.A. (about \$7.00 U.S.A.).

Like the butterfly book (see notice above) these little volumes will conveniently accompany South's work on the adults. Only the families of larger moths are included. The first volume deals with the families "Sphingidae to Brepidae", and the second volume is devoted to the Geometridae, Zygaenidae, Limacodidae, Cossidae, Sesiidae (Aegeriidae), and Hepialidae.

In the same manner as in the volume on butterfly caterpillars, there is an extensive list of food-plants, with descriptions and figures. Dr. Stovin has contributed a simple chapter on insect genetics.

For each species Mr. Stokoe gives: the habits and distribution of the adult moths; descriptions of the egg, larva, and sometimes pupa and cocoon; and the known food-plants. The figures of larvae are in color and are not very clear. Photographs and drawings of the eggs and pupae are much better.

Any collector of moths, at least in the Northern Hemisphere, will find this a handy reference manual.

C. L. Remington

Some other recent books previously reviewed:

1. BUTTERFLIES, by E.B. Ford (see Lep. News, vol.1: p.3). Available from: Collins, St. James's Place, London, ENGLAND, (about \$5.00).
2. ATLAS DES LÉPIDOPTÈRES DE FRANCE ... HÉTÉROCÈRES, by C. Herbulot (see Lep. News, vol.2: p.88). Available from: Editions N. Boubée, 3, Place St.-André-des-Arts, Paris VI^e, FRANCE, (350 francs).
3. LEPIDOPTERA OF NEW YORK AND NEIGHBORING STATES, Pt. II, by W.T.M. Forbes (see Lep. News, vol.3: pp.5-6). Available from: Roberts Hall, N.Y. State College of Agric., Ithaca, N.Y., U.S.A., (\$1.50).

MIGRANT BUTTERFLIES OUTSIDE NORTH AMERICA

by C.B. Williams, Sc.D.
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In an earlier number of the Lepidopterists' News (vol.3: pp.17-18) I gave a short account of some of the problems facing the student of the Migration of Lepidoptera in North America. We know of migrations of butterflies in almost every country in the world, and the following is a survey of the more important species concerned and some of the problems outside your own continent.

In Britain, where we have had the advantage of a long series of amateur naturalists, in a relatively small area, for a hundred years or more, we know that about 17 of our 68 species of Rhopalocera are migrants. These species with a brief statement of their movements are as follows:-

PAPILIONIDAE:- Papilio machaon L.; we have a British race which is resident and confined to the fenlands of eastern England. At times 'Swallow-tails' are caught along the southern coast, and these have been found to be immigrants of the continental P. m. gorgonius, and not wanderers of our own race.

PIERIDAE:- Pieris brassicae L. migrates in great numbers towards the south in central Germany, usually at the end of July. Off-shoots of this movement cross the North Sea and the Channel and invade our E. and S.E. coast sometimes in millions. The species has also a large resident population in Britain which survives the winter. P. rapae L. has movements similar to the above but on a smaller scale. P. napi L. is only an occasional migrant.

Colias croceus Fourcr. and C. hyale L. are both visitors from the south which may breed here in the summer but do not normally survive the winter. In the first, which is the more frequent immigrant, there is some evidence of a return autumn flight.

Pontia daplidice L. is an occasional wanderer to our shores from France. In 1945 there was the biggest immigration ever recorded; over 500 adults were captured, and eggs, larvae and pupae recorded for the first time.

DANAIDAE:- In the past 80 years over 160 individuals of Danaus plexippus L. have been captured or seen in the British Isles. The food plant does not exist wild in Europe. All specimens examined have been of the North American race (see Williams et al, 1942).

NYMPHALIDAE:- Vanessa cardui L. is our greatest migrant and comes north nearly every year in the spring from the Mediterranean or North Africa. There is a summer breeding generation in Britain but very few survive the winter. V. atalanta L. has similar habits, but a small proportion regularly survive the winter.

Nymphalis antiopa L. is a regular autumn immigrant which comes to us from the east; very few sur-

vive our winter, and there is no record of any larva being found in this country. N. io L. and N. urticae L. have been recorded in migratory flights on the Continent but are regular residents in Britain. Argynnis lathonia L. is an occasional wanderer from the south which seldom if ever breeds here.

LYCAENIDAE:- Cosmolyce boeticus L., Everes argiades Pall., and Cyaniris semiargus Rott. (acis D. & S.) are all occasional immigrants from the south which seldom or never breed here. C. boeticus is a regular migrant in other parts of the world.

No Hesperiid has been recorded migrating in Europe.

About half of our Sphingidae, and an unknown number - probably at least 50 - of our other moths are also migrants.

The British immigrants are a very good representation of the situation in Europe, and I know of no other butterfly which regularly migrates in western Europe which is not on this list.

In North Africa we get conditions somewhat similar to southern Europe and many of our European immigrants have their origin in this area, along the northern or southern edge of the great desert belt. When however we move further south into tropical Africa a new fauna and new migrants are found. The chief of these are the Pieridae: Catopsilia florella Fab. and Anapheis (Belenois) aurota (mesentina) Cram. and A. creona Cram. (severina Cram.). The former migrates chiefly in S. & E. Africa, sometimes reaching Egypt. I have seen it moving to the north in N.E. Tanganyika for 16 weeks. The same species has also been recorded migrating in Ceylon. In West Africa Libythea labdaca Ww. is a regular migrant in Nigeria and the Gold Coast, and has been reported to have flights in different directions at two seasons. More observations on this point are urgently required, here as in all parts of the world.

In Ceylon directional flights of butterflies are frequent and have been known for nearly a century. Nearly one-third of their 250 species have been involved, but of these only about 20 are regular migrants; the others may be accidental imitators. Included in the regular migrants are the following:-

PAPILIONIDAE:- Papilio hector L.*; P. demoleus L.*; P. polytes L.; P. nomius Esp.

PIERIDAE:- Catopsilia crocale Cram.*; C. pomona Fab. and pyranthe L.*; Ixias pyrene L.; Appias albina Bdv.*; A. paulina Cram.*; Hebemoia glaucippe L.*; Huphina nerissa Fab.

DANAIDAE:- Danaus limniace Cram.*; D. septentrionalis Butl.*; Euploea core Cram.*; kollari Feld.; and coreta Godt.

NYMPHALIDAE:- Precis iphita Cram.; Kallima horsfieldi Koll.; Atella phalanta Dru.* (also migrates in E. Africa); Ergolis ariadne L.*.

LIBYTHEIDAE:- Libythea myrrha Godt.

and about half a dozen Lycaenidae and few Hesperidae (see Williams 1927 and 1930: p.291).

In southern India regular migrations have been observed on a large scale by Evershed (Williams 1927) at Kodaikanal in the Pulney hills at a height of over 7000 feet. There was a definite movement of Papilionidae (2 spp.), Pieridae (6 spp.), Danaidae (4 spp.), Nymphalidae (7 spp.), and Hesperidae (1 sp.) and some Dragonflies towards the south from end of August to the middle of November, with a maximum in October. Then between February and June there was a more or less northerly movement of the Pieridae only. The species concerned were chiefly those known to migrate in Ceylon and are marked with an asterisk (*) in the list above.

In North India there are records of movements up the hills at the beginning of the hot season in March and April, and down again to the plains at the beginning of the cooler weather in August to November. The lycaenid C. boeticus, together with Colias fieldi Ménstr., Pieris brassicae and some Catopsilia make up the majority of the recorded flights (Williams 1938).

In Malaya, Java, and other East Indian islands the flights are chiefly of the Catopsilia, Appias, and Euploea. In Cochin China there is a remarkable record by Fisher (1939) of a mixed flight of many species, but particularly the Swallow-tail Papilio aristaeus Cram. which has never been recorded as a migrant elsewhere. In China there are only one or two records; undoubtedly their scarcity is due to the absence of observers.

In Australia the chief migrants are the hesperiid Pedania exclamationis Fab. in Queensland (also recorded as a migrant in Ceylon), and the pierid Anapheis java teutonia Fab. of which there are a number of records chiefly from New South Wales; there is also some evidence of a movement of this species across the sea to Tasmania. The variety kershawi McCoy of Vanessa cardui also occurs at times quite suddenly in great numbers, and may cross the sea between Australia and New Zealand.

To complete our rapid survey, the migrants in tropical South America include a number of species of Catopsilia, Megalura chiron Fab., Goea acheronta Fab., Calpodex ethlius Cram., and several others; while in the southern temperate portion we find Colias lesbia Fab. (first seen in migration at sea by Charles Darwin when on board the 'Beagle'), Danaus plexippus erippus Cram., Precis lavinia Cram., Phoebis sennae L. (eubule L.), Libytheana carinenta Cram., and some others. There is evidence that D. erippus and C. sennae have spring and autumn flights in opposite directions.

The area is so vast, the number of species of Lepidoptera so great and the number of entomologists so few, that everywhere we turn we are held

back by lack of information. We need hundreds more records of these migratory flights from all over the world, and good records made by observers who know to some extent what they want:- records with dates, locality, direction, duration, numbers of individuals, direction of wind - etc. etc. - and many specimens so that species, race, sex, size, food reserves (fat) and other information can be tabulated. One or two specimens is not enough; often there may be several species in the flight, in which case we want to know their relative abundance; from a number of specimens dominant varieties may be recognised which may in turn give a clue to the origin of the movement. A particularly close watch must be kept for thin flights, for they are often in different directions and at a different time of the year from the large gregarious movements.

Butterflies at sea or on oceanic islands are also of great importance. Recently some Painted-Lady butterflies were caught on Tristan da Cunha Island, which is in the South Atlantic about mid-way between South Africa and South America, and about 2000 miles from each. To my surprise they turned out to be NOT V. cardui L. which is a great migrant and fairly common in S. Africa, nor even V. carve Hbn. which is a migrant in Argentina, but V. brasiliensis Moore, a species from tropical America which has not yet been observed in any mass migratory flights.

In Western Europe alone have we plenty of information and here we have made an interesting study of the association of species. The abundance of 35 immigrant Lepidoptera in Great Britain has been estimated for each year in the past 100 years by examination of all old records. We then calculated the correlation between different species in the same year. Some tend to occur together in the same year or to be absent together; others are negatively correlated and when one occurs in numbers the other is more likely to be rare. An account of this work by G.F. Cockbill will be found in Williams et al., 1942: p.254.

I would be glad to hear personally from anyone who is interested in the migration of butterflies in any part of the world.

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THE PHOTOGRAPHY OF TYPES OF LEPIDOPTERA*

by Cyril F. dos Passos
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The importance of photographing type specimens of Lepidoptera with the labels attached is self-evident. Photographs of insects without the labels are of little scientific value. In the natural course of events and even with the best of care, it is doubtful whether types of Lepidoptera will last many hundred years. There are many risks incidental to the handling of types. Other hazards, such as war, fire and various acts of God, tend to render their preservation uncertain. On the other hand, negatives and prints of types should last almost indefinitely. They may be reproduced when necessary, exchanged between museums, and supplied to students for scientific study. In many cases the photographs are as satisfactory as the types. Their use often makes the handling of type specimens unnecessary.

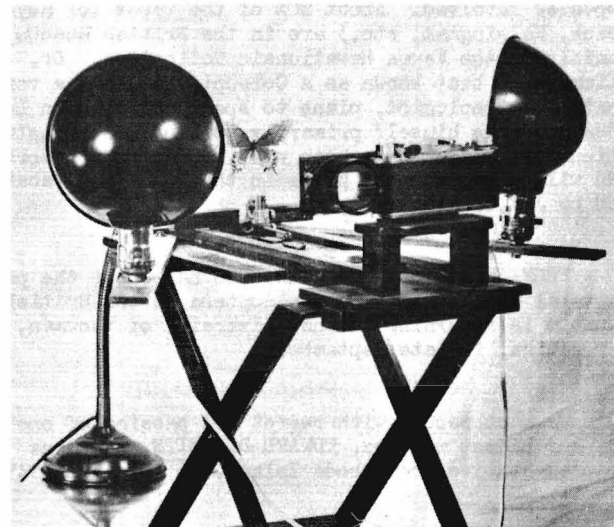
J.D. Gunder appears to have been the first person to design and use a compact, portable outfit to photograph types of Lepidoptera. The Gunder apparatus had certain obvious defects. In the first place, the illumination being very close to the lens of the camera resulted in bad reflections and cast unsightly shadows on the background; secondly, the pin holder was unnecessarily large and clumsy; and thirdly, the label holder could not readily accommodate the large number of labels which are often found on types.

The apparatus herein described and figured obviates all of these difficulties. The two photoflood bulbs in reflectors are mounted on arms folding close to the apparatus when not in use, but extending to any desired angle when photographs are being taken. Thus there are no reflections or shadows behind the insect. Instead of a pin holder, the point or head of the pin on which the insect is mounted (depending upon which side is being photographed) is stuck into a very small lump of modeling clay, affixed to a piece of ground glass. This modeling clay lasts a long while and never loosens from the glass. It is hidden from view by the body of the insect. The piece of ground glass with the smooth side toward the camera fits into a groove and may be removed in order to pin the insect to it. Behind the glass is a white, silk screen and in back of that a gooseneck table lamp with a frosted bulb. The screen is removable and may be replaced by a black screen if a light-colored insect is to be photographed. The back light helps also to kill all shadows and gives an artistic background to the picture. The labels are pinned with minuten needles on a thin piece of balsa wood, painted black or white. This wood, cut into several sizes, easily holds a number of labels. The pins, including

*Editor's note: The substance of this article was published by Mr. dos Passos in 1945 (Bull. Brooklyn Ent. Soc., vol.40: pp.166-169). At our request that he revise it to reach a larger body of lepidopterists through the Lep. News, he prepared this condensed account. (C.L.R.)

the one holding the insect, being head on to the camera, show merely as dots on the photograph. The piece of balsa wood, which is removable for pinning the labels to it, is held by a clip, such as used to hold negatives while drying. In turn, the clip is mounted on an upright column and may be moved up or down to bring the labels directly under the insect.

The camera used is a Leica Model F with an Elmar 50 mm. f:3.5 lens stopped down to f:9 to give greater depth of focus and to allow for minor errors in positioning the insect. With two photoflood bulbs the exposure is usually about 1/30 of a second. The camera and lens are mounted on opposite sides of a Sliding Focusing Copying Attachment, manufactured by E. Leitz, Wetzlar, Germany, which is supported at the proper height by a wooden base. The camera may be slid sideways from the lens for focusing on a ground glass, but it is not necessary to focus each time a picture is taken unless a very large insect is to be photographed. In that case the lens is somewhat retracted and the label holder pushed slightly away from the camera. Otherwise the column holding the label holder, which can be moved backward or forward independently of the glass and screen holder, is placed at a predetermined distance from the camera where the label is in sharp focus, and only the glass and screen need be moved back or forth (because of the different heights of insects on pins) until the insect is directly over the label. Then it too is in sharp focus. The insect, when photographed with the lens fully extended, is about one quarter natural size and the prints are enlarged four times to give a natural sized picture of the insect.



The accompanying figure shows the apparatus better, perhaps, than words can describe it. It will

(cont. next page)

PROF. DR. E. MARTIN HERING, who recently became a member of the Lepidopterists' Society, is one of the world's foremost lepidopterists (see review of his book *Biologie der Schmetterlinge* in *Lep. News* 2: p.95). It is a pleasure to report that he is continuing his notable studies of Microlepidoptera. Prof. Hering has been Chief of the Lepidopterological Department of the Zoological Museum of Berlin since 1921 and has worked on various families of Rhopalocera and Heterocera, but specializing in Zygaenidae, Limacodidae, Lasiocampidae, Pericopidae, and Dioptidae of the world and in the Palaearctic Micros. His primary interests are now in leaf-mining insects and he is preparing a new book on the Leaf-miners of Europe, of which the first part is in completed manuscript. The keys, now in preparation, will allow identification of the insects from their mines alone! Prof. Hering lost a large part of his collection of leaf mines by plundering at the end of the War. He desires to exchange mine specimens with Microlepidopterists, particularly in North America.

J.F. GATES CLARKE has completed a study of the types of American Microlepidoptera in the British Museum, to which he has devoted over two years, and is returning to his place in the U.S. Division of Insect Identification located in the U.S. National Museum, Washington, D.C. The British Museum will publish his prodigious work in several extensively illustrated volumes.

DR. ELWOOD C. ZIMMERMAN, of Hawaii, recently visited New Haven on his way to the British Museum. For several years the curator of insects at the B.P. Bishop Museum in Honolulu, he is producing a fine series which will cover in detail all the insects of Hawaii. The first five volumes appeared in 1948 (University of Hawaii Press). The next two volumes will be devoted to the Lepidoptera, with over 1000 species involved. About 80% of the types (of Meyrick, Walsingham, etc.) are in the British Museum, mainly in the Fauna Hawaiiensis Collection. Dr. Zimmerman, best known as a Coleopterist, but a versatile entomologist, plans to spend one year in London devoting himself primarily to the 3000 illustrations of Lepidoptera which will appear in his work. He will move into the place in the B.M. just vacated by J.F.G. Clarke.

PROF. KENNETH J. HAYWARD, who has spent the past several months studying Lepidoptera in the British Museum is returning to the University of Tucumán, Argentina, in late September.

We must report with regret the passing of one of our oldest members, EDWARD D. KEITH, the lone representative from Rhode Island, on 15 March 1949.

PAUL F. BRUGGEMANN, the able field lepidopterist from Furness, Saskatchewan, is joining the Northern Insect Survey of the Canadian Government for the summer of 1949. He will be at Dawson, Yukon Territory.

DR. BRYAN P. BEIRNE, the author of extensive papers on phenology, faunal origins, systematics, and genitalia of Lepidoptera, is leaving his present post as Lecturer in Entomology in the University of Dublin, Ireland, to take up a post in the Taxonomic Unit of the Division of Entomology of the Canadian Department of Agriculture.

One of the world's leading entomologists, DR. AUGUSTUS DANIEL IMMS, died in England in March, during publication of the seventh edition of his unsurpassed *General Textbook of Entomology*. His passing is a very great loss to entomology.

DR. J.W. TILDEN, 125 Cedar Lane, San Jose, Calif., will be glad to send to interested individuals a reprint of his paper: "An Occurrence of the Pupa of *Glaucopsyche lygdamus behrii* (Edwards) in an Ant Nest." (See *Lep. News*, vol.1: p.16). When writing him, please include a postage stamp.

D.H. KISTNER, 5031 N. Kolmar Ave., Chicago 30, Ill., is willing to send anyone requesting it his checklist of the Rhopalocera caught in the Ohio Valley Region from 1939-48.

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Dos Passos: PHOTOGRAPHY OF TYPES- cont.

be noted that the device rests on a folding support, although it may be set directly on a table. It has been found, however, that it is easier to work standing up; hence the support which raises the apparatus to a convenient height.

Any fine-grain film with a wide color sensitivity may be used. A color film, theoretically, would be ideal but none thus far tried seems to reproduce all colors correctly for scientific work, where the exact colors are of vital importance. Furthermore, it is much more expensive and prints are not easily made.

With this apparatus photographs have been taken already of the types of North American Rhopalocera and some Heterocera in the Academy of Natural Sciences of Philadelphia, the American Museum of Natural History, the British Museum (Natural History), the Canadian National Collection, the Carnegie Museum, the Linnean Society of London, the Museum National d'Histoire Naturelle, the Zoological Museum, Tring, and others. In all, about thirteen hundred types have thus far been photographed. It would be desirable to extend this work to include all Lepidoptera. If every museum would do its share, a collection of photographs, possibly ninety per cent complete, could be gathered together, and by the exchange of prints become available in all parts of the world. The expense is trivial compared with the results obtained. All of the foregoing negatives are now in the possession of the American Museum of Natural History, Department of Insects and Spiders, so that application for any prints should be addressed to the Chairman and Associate Curator of that Department.

HUNGARIAN LEPIDOPTEROLOGY- I. A SHORT HISTORY

by Dr. L.A. Gozmány and Dr. G. Lengyel
Budapest, Hungary

Hungary, in the 15th, 16th, and 17th Centuries, was in a perpetual military turmoil. In this borderland of Europe where German, Turkish, and other inimical forces fought incessantly there remained only a few remote corners where the fire, or rather eandlelight, of science burned. It is easy to understand that only when a Hungarian could have time for other thoughts than the problem of his mere survival was he able to take up that worn thread of culture which was so long lost after the death of King Matthias Corvinus late in the 15th Century.

We can find, however, the first traces of entomological interest in the first half of the 17th Century, when a small paper by one Andrew Horváth was published, - in Latin, according to the time - dealing with insects under the title: "Disputatio Physica de Insectis". This paper is insignificant aside from its earliness in treating the subject. We can skip over other authors, such as G. Miskolczi, I. Segesvári, J. Conrad, to Charles Turzer, who in 1792 published a lepidopterological paper, in Linnaeus' system, on the fauna of his village and its environs in northern Hungary, with the surprisingly modern wish that also other naturalists publish their observations made in other territories in order to have a clear view of our fauna in later times. A year after Turzer's information, the major work of M. Piller and Ch. Mitterspacher, University professors of Nagyszombat, published under the sonorous title "Iter per Posaganam Slavoniae Provinciam mensibus Junio et Julio Anno 1792 Susceptum", described their natural historical explorations in Com. Pozsega, giving an account of the capture of 35 species of butterflies.

John Grossinger, Jesuit, wrote five volumes on "Universa Historia Physica Regni Hungariae Secundum Tria Regna Naturae Digesta", published in 1794-1797. We can note the influence of Linnaeus' immortal activities on the works of these people, writing of their scientia amabilis, issuing scores of books one after the other. Grossinger's work deals with Lepidoptera in its 4th volume, inventing Hungarian names for the commoner species; in this his work is also of linguistic-historical interest.

We turn now to peculiar times. In the Western European states, with their scarcer fauna, the zealous entomological amateurs have also in their ranks collectors who exhibit a more mercenary sense than the others. For a long time men dominated entomology who refused to publish or reveal their "secret" collecting data and methods for fear of competition. These people came to the rich and still mainly unexplored Hungarian entomological Eldorado: Germans, Czechs, and others. Some names for case of reference are: Koy, Böhm, Haberhauer, Kindermann, Dahl, Stentz, and the two Ankers, none of whom contributed anything to real science, with the possible exception of the Ankers brothers.

Turning away from this era we come to our ablest lepidopterist: Imre Frivaldszky. Born in 1799, eventually a physician, he was an indefatigable lover

of Lepidoptera. He showed the way for later collectors and entomologists in Hungary with his discoveries of new collecting places and special Hungarian habitats, his numerous monographs, his descriptions of new species, and his scientific working methods. His great work, a complete informative manual on Hungary's fauna, was never finished, but he did publish a gem: "Characteristic Data in the Hungarian Fauna". He collected in the whole country in the years 1833-1870, organizing and nurturing a host of new acolytes to the science. Member of the Academy of Sciences, and Keeper of the Entomological Department of the Hungarian Natural History Museum, he did more for Hungarian lepidopterology than all his numerous contemporaries and all predecessors.

L. Abafi-Aigner gave the next momentum to Hungarian lepidopterology. He was a great publisher and his quill gave birth to hundreds of articles on every aspect of his science. In 1896 he compiled the "Catalogue of Hungarian Butterflies and Moths" from the 8 zoogeographical regions of the country. He also wrote the first good manual and determining book, with about 50 colored plates. He collected throughout the country, and according to custom described numerous aberrations. At this time the first Hungarian entomological periodical, Rovartani Lapok, was established as a suitable place to exchange observations and to publish papers. As the sole entomological review, it dealt with other insect orders also, but lepidopterists were in absolute majority, and it can be justly called a lepidopterological periodical. Its editor was Abafi-Aigner.

Let us deviate now for a moment to mention the veritable host of foreign scientists and collectors who came to Hungary, sometimes returning yearly to collect and explore her lepidopterous treasures. We can only mention a few celebrities: Hübner, Rebel, Staudinger, names now immortal. Baron Rothschild had his own private collector, Predota, here, specially commissioned to collect in the Great Plains and southern parts of Hungary. M. Fontaine published her diary in the Entomologist, written during her Hungarian collecting in our classical haunts, remembering hospitality and the cordiality of the scientists who accompanied her on the collecting trips.

In 1894, the Entomological Bureau was established, dealing with applied agri-, horti-, and silvicultural entomology. Its chief was J. Jablonowszky, who was also one of the chief tycoons of the Entomological Society, together with A. Schmidt, the successor of Abafi-Aigner as Keeper of the Lepidoptera Department of the Museum. He was chiefly a biologist but also a good faunistical explorer. Jablonowszky was followed by Gy. Kadocsa, still the President of the Society, whose great knowledge and sure judgment made him the natural leader of our circle.

Now, after the war, we are trying hard to resuscitate the life of our esteemed science, with the help of Dr. L. Kovács, specialist of Agrotidae, Dr. L. Issekutz, specialist of Zygaenidae and Parnassiidae, and other zealous colleagues.

14. Butterflies

by Ralph W. Macy and Harold H. Shepard*

This is a book for the collector. It is superior to all other butterfly books covering eastern North America in the following COMBINATION of characters: relatively inexpensive, keys for identification, fairly current nomenclature, numerous figures, synonymies. Alone, it will permit any collector in its range to identify nearly all butterflies he might catch and to find most of the essential life history information known. Purported to be "a guide to all the butterfly species known to occur in that part of the United States and adjacent Canada lying east of Nebraska and the Dakotas and as far south as the northern borders of Missouri, Kentucky, and Virginia", it nevertheless lacks a few of the most interesting species, such as Erora laeta Edw. and Incisalia lanoraicensis Shep. It is certainly little more than a "guide" and not comparable to Scudder's superb, perhaps unexcelled, "Butterflies of the Eastern U.S. and Canada."

The four colored plates show 29 of the commonest species in accurate color but much reduced and with no indication of the actual reduction. The 38 black-and-white photographs (28 of Hesperidae) of mounted adults were taken by Austin H. Clark, and in most cases are clear, but for most species the keys are more effective for identification.

The precise records given are from Minnesota and the book might better have been entitled Butterflies of Minnesota and Eastern North America. For a Minnesota collector it must be invaluable.

There is an extensive introductory section: "About Butterflies", with especially interesting discussions of "Butterflies in Folklore and Primitive Life", "Butterfly Odors and Sense Organs", and "Habitats and Ranges". The list of butterflies which hibernate as adults omits the champion of them all - Nymphalis antiopa! There are too many similar small errors scattered through the text.

The compilation, from many sources, of notes on life history and habits is especially excellent and rivals the keys as the most valuable feature of the book. For nearly every species the host plants are mentioned and there are descriptive notes aiding in finding and identifying the ova, larvae, and pupae.

It is an unhappy reflection on the confusing state of the nomenclature of North American butterflies that very many names in "Butterflies" represent changes from names in Holland's revised "Butterfly Book" published only ten years earlier (1931), and that many more changes are now required less than ten years later. It seems likely that for some time to come it will be necessary to have a new butterfly manual every few years to bring out name changes and additions to the still fragmentary knowledge of life history.

C. L. Remington

*Pp.247, 4 pls.col., 38 photos, 7 figs. 1941. Minneapolis (U. of Minn. Press). Obtainable at bookstores and: University of Minnesota Press, Minneapolis, Minn., U.S.A.

15. The Generic Names of the Holarctic Butterflies. Vol.I - 1758-1863

by Francis Hemming*

This is a book for the taxonomic specialist. It is a valuable work, the result of admirably painstaking search for all the information necessary in fixing generic names — just the kind of legalistic labor so irksome to the taxonomist interested in the insects rather than the names. A sigh of gratitude from European, Asian, and American butterfly students must have greeted the appearance of Capt. Hemming's book.

This "Vol.I", which perhaps will not be followed by others, covers names proposed from 1758 through 1863. Of course, no animal name prior to 1758 is valid nomenclatorially. Hemming chose 1863 because the Zoological Record begins with 1864, and as he states (p.5): "the period already surveyed contains practically all the generic names in regard to the correct use of which there has hitherto been real doubt." Hemming points out (p.5) that: "Scudder's 'Historical sketch of the generic names proposed for butterflies' (1875, Proc. Amer. Acad. Arts Sci., Boston 10: 1-293) is the basis on which any study of the generic names of butterflies must be founded, and the present work is, in effect, for the period covered, a re-examination of the material on which Scudder's work was based, in the light of the present International Code of Nomenclature and of modern bibliographical knowledge."

Exactly 500 generic names are considered, in a taxonomic sequence, with the following families in order: Danaidae; Satyridae; Morphidae; Amathusidae; Nymphalidae; Libytheidae; Riodinidae; Lycaenidae; Pieridae; Papilionidae; and Hesperidae. 145 of the names are for Nymphalidae, 72 for Pieridae, 61 for Hesperidae, 60 for Satyridae, 55 for Lycaenidae, and 49 for Papilionidae. Valid names are printed in bold-faced type; homonyms and synonyms are printed in italics. Each valid name, whose type is (in Hemming's opinion) in the same genus as the type of an earlier proposed valid name, is so indicated in the text. In these instances the lumping of genera is pronounced. Pertinent references are carefully cited under each name. These are followed by a clear statement of the genotype and a terse discussion of the legalities concerned in the treatment of the generic name.

The book is concluded by an appendix giving extracts of pertinent parts of the International Code of Zoological Nomenclature, followed by an alphabetical index of generic names.

C. L. Remington

*Pp.184. 1934. London (British Museum). Available from: The British Museum (Nat. Hist.), Cromwell Rd., London, S.W. 7, ENGLAND, and many dealers.



THE ORDERS OF INSECTS

by Charles L. Remington
New Haven, Connecticut

In order to understand the evolutionary position of the Lepidoptera, one needs to study at least cursorily all the main forms of insects. The Class Insecta (animals with 6 legs on the thorax, distinct head with antennae, and abdomen with 11 segments originally) has been divided into various numbers of orders according to different authors. Linne, in 1758, recognized 6 orders, whereas Handlirsch and Brues & Melander have accepted as many as 34. In the present list we recognize 23 orders. On page 47 is a phylogenetic chart showing the writer's version of the probable relationships of the orders. The orders and higher groups of insects are listed and defined below.

- A. Subclass APTERYGOTA (SYNAPTERA). (True Wingless Insects)
Contains all insects which have never had wings. Moulting continues after reproduction begins. Abdominal styli always present. Small, inconspicuous, nocturnal insects.
1. Order ENTOTROPHI. (Campodeids, Japygids, etc.)
No eyes; whitish cuticle; two tail filaments or forceps; mouthparts concealed; subterranean.
 2. Order THYSANURA. (Silverfish, Rock-jumpers)
Usually with eyes and scales; three caudal filaments; mouthparts exposed; only scaleless forms (nicoletiids) subterranean; some common in houses.
- B. Subclass PTERYGOTA. (True Winged Insects)
Contains all insects with wings or descended from winged ancestors. Moulting stops before reproduction begins. No conspicuous abdominal styli; usually none at all. The most successful members of the Animal Kingdom, occupying nearly every possible habitat; about 600,000 species.
- a. Division PALEOPTERA. (Ancient Winged Insects)
Wings can not be folded back and rested flat on abdomen (primitive hinge mechanism only). Nymphs always aquatic. Once prominent; now only two living orders remain.
 3. Order ODONATA. (Dragonflies & Damselflies)
Nymphs with caudal or rectal gills. Adults predacious; with 2 prs. similar net-veined wings; eyes very large; antennae tiny; copulatory organs of ♂ on 2nd and 3rd abd. segments; no moult after fully winged stage reached.
 4. Order EPHEMERIDA (PLECOPTERA). (Mayflies)
Nymphs with lateral gills. Adults non-feeding, short-lived; with 2 prs. net-veined wings, hind pr. small; eyes large; antennae tiny; copulatory organs of ♂ terminal, paired; 2 or 3 long tail filaments; one moult after fully winged stage (subimago) reached.
 - b. Division NEOPTERA. (Modern Winged Insects)
Wings with special hinge mechanism, permitting them to be laid flat on abdomen at rest. Now the most successful group in the Animal Kingdom, occupying nearly every possible habitat; about 600,000 species known.
 - aa. Section HEMIMETABOLA. (Incomplete Metamorphosis)
Immature stage (nymph) similar in appearance and usually habits to adults (but lacking full wings, of course). No pupal stage. Wings develop externally.
 5. Order PLECOPTERA (PERLARIA). (Stoneflies)
Nymphs aquatic, flat, with long antennae, 2 long tail filaments (cerci). Adults with long antennae; hind wings large, fan-like, carried flat on abdomen at rest; 2 tail filaments (often short).
 6. Order EMBIOPTERA. (Embiids)
Nymphs terrestrial; enlarged front tarsi (for spinning); flattened; chewing mouthparts; cerci short; ♀ wingless; ♂ wings all alike; colonial; under stones, wood, soil, etc.
 7. Order DERMAPTERA. (Earwigs & Hemimerids)
Strong pincers on abdomen. Wings much like Orthoptera but forewings short; eyes present; cuticle hard, not white; nocturnal.
 8. Order ORTHOPTERA. (Grasshoppers, Grylloblattids, Roaches, Praying Mantids, Walking Sticks, etc.)
Fore wings narrow and leathery (many wingless); hind wings large, fan-like, covered by fore wings at rest; chewing mouthparts; cerci short or long, usually segmented; nearly all eat vegetation, mantids carnivorous.
 9. Order ISOPTERA. (Termites)
Social insects, winged only for swarming to found new colonies; workers wingless, soft, whitish; chewing mouthparts; wings all similar; cerci short; galleries connected to vegetable food source, often dead wood.
 10. Order PSOCOPTERA (CORRODENTIA). (Book Lice, Psocids, Zorapterans)
Very small; wings (when present) all membranous, with large stigma and few veins; at rest wings folded roof-like over abdomen; tarsi with 2 or 3 joints; cerci tiny or absent; antennae long; chewing mouthparts; living on plants, in paper, in dead wood.
 11. Order THYSANOPTERA. (Thrips)
Very small, slender; mouthparts forming short, piercing beak; antennae short, thick; all wings narrow straps with fringe of long hairs; wings flat on abdomen at rest; tarsi with exsertile vesicle at tips; on vegetation, fungi, wood. Thrips have pseudo-pupal stage before maturity.

12. Order ANOPLURA. (Bird Lice, Sucking Lice)
Always wingless, but ancestors presumably winged; horizontally flattened; mouthparts for chewing or as short beak for sucking; antennae short; eyes inconspicuous; claws specialized for travel on hairs and feathers; no cerci; all external parasites of mammals & birds.
13. Order HEMIPTERA. (True Bugs, Aphids, Scales, etc.)
Fore wings usually thickened in fore half or entirely; mouthparts as long piercing & sucking proboscis, held backwards under head at rest; many herbivorous, some carnivorous.
- bb. Section HOLOMETABOLA. (Complete Metamorphosis)
Immature active (feeding) stage (larva) not resembling adult at all. Non-feeding maturation stage (pupa) between larva and imago. Wings develop internally.
14. Order COLEOPTERA. (Beetles, Weevils)
Fore wings very hard, entirely shell-like, at rest covering large, much folded membranous hind wings; mouthparts very diverse, sometimes on rostrum, but always of chewing type; in most aquatic & terrestrial habitats.
15. Order STREPSIPTERA. (Stylopids)
Minute; fore wings of ♂ reduced to small club, hind wings fan-like; ♂ antennae finger-like; ♀ larviform, always wingless; internal parasites of bees, wasps, leaf hoppers, silverfish; very rare.
16. Order HYMENOPTERA. (Sawflies, Ants, Bees, Wasps)
All 4 wings membranous; hind wings smaller and with anterior row of hooks for coupling with fore wings; wings often absent; mouthparts for chewing except in bees (sucking); ovipositor always present in ♀, sometimes as sting; larva usually legless; sawfly larvae much like Lepidoptera larvae but lack hooks on abdominal legs; pupae usually in silk cocoon; plant feeders, endoparasites, carnivores, etc.
17. Order MEGALOPTERA. (Alderflies & Dobsonflies)
All wings similar, many-veined, held roof-like or flat over abdomen at rest; long antennae; no cerci; very soft abdomen; larvae aquatic, with biting mouthparts; pupae always terrestrial, in mud cell.
18. Order NEUROPTERA. (Ant-lions, Lacewings, etc.)
All wings similar, many-veined, held roof-like over abdomen at rest; wing veins notably forked near tips; antennae short & knobbed or long; no cerci; abdomen soft; larvae usually terrestrial, with mouthparts for piercing & sucking, highly predacious; pupae in silk cocoon.
19. Order MECOPTERA. (Scorpion-flies)
Chewing mouthparts on tip of long beak; all wings similar, often with markings; antennae long; legs long; cerci short; ♂ genitalia usually conspicuous, often "scorpion-like"; larvae caterpillar-like, in soil, lack hooks on abdominal legs.
20. Order TRICHOPTERA. (Caddis-flies)
Moth-like, but wings hairy (few or no scales); wings always roof-like over abdomen at rest; mouthparts not capable of feeding, much reduced; antennae long; larvae and pupae always aquatic; larvae usually in case, have 1 pr. hook-bearing anal legs; pupae with strong mandibles, often active.
21. Order LEPIDOPTERA. (Moths & Butterflies)
All 4 wings membranous, few cross veins, heavily clothed with scales (wings rarely absent); antennae long; mouthparts usually suctorial, composed of maxillae; mandibles usually absent; larvae usually caterpillar-shaped; abdominal legs with hooks or crochets; pupae essentially inactive.
22. Order DIPTERA. (True Flies, Mosquitoes, etc.)
Only 1 pr. wings; 2nd pr. reduced to club-like halteres with gyroscopic function in flight; wings never heavily scaled nor very hairy; mouthparts very diversified, usually suctorial; metathorax very small; larvae aquatic or terrestrial, plant or animal feeders or parasites, legless, head rarely well-developed; pupa inactive and enclosed in last larval skin or active and free.
23. Order SIPHONAPTERA. (Fleas)
Small, strongly flattened vertically; no wings; antennae short, in grooves along head; piercing and sucking mouthparts; adults external parasites of mammals and birds; larvae long, legless, pale, living in trash; pupae in cocoons.

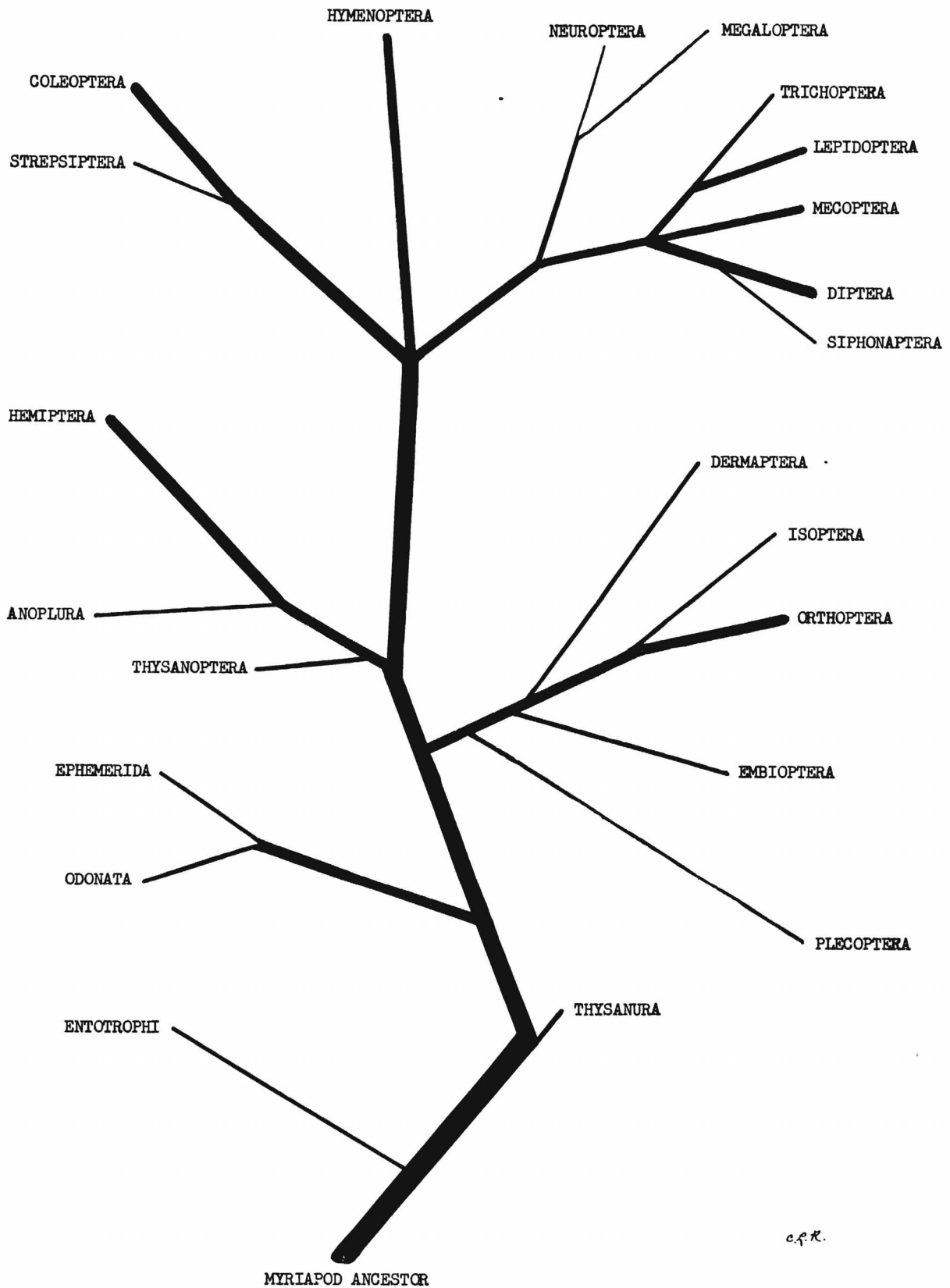
Several groups sometimes considered orders are not so accepted in the above list. The ZORAPTERA fit well in the Order PSOCOPTERA. The PHASMATODEA (Walking Sticks), MANTODEA (Praying Mantids), BLATTARIA (Roaches), and GRYLLOBLATTODEA are satisfactory suborders of the Order ORTHOPTERA. The MALLOPHAGA (Bird Lice) differ in no essential characters from the Sucking Lice and are combined with them in the Order ANOPLURA. The HOMOPTERA (Scales, Aphids, Cicadas, etc.) are not different from the True Bugs in ordinal characters and remain in the HEMIPTERA. The DIPLOGLOSSATA (Hemimerids) are merely highly modified DERMAPTERA. The ZEUGLOPTERA (Micropterygids) do not seem separable from the LEPIDOPTERA.

There is some doubt as to the desirability of separating the STREPSIPTERA from the COLEOPTERA and the MEGALOPTERA from the NEUROPTERA, but the above arrangement is satisfactory for present purposes.

The COLLEMBOLA (Springtails) and the PROTURA (Telson-tails) are usually included in the Insecta, but the evidence seems clear that the COLLEMBOLA are well separated from the insects and must form a group of their own, probably below the Myriapods. The PROTURA are too little known and perhaps too degenerate for definite placement, but they differ from insects in some fundamental ways. Both groups have been included in the Insecta chiefly because they possess three pairs of legs.



PHYLOGENETIC CHART OF THE ORDERS OF INSECTS



PAPILIO GLAUCUS FORMS.- Today April 24 I took off for a little collecting trip to the neighboring woods and took a pair of Papilio in copulation. The ♂ was P. glaucus turnus canadensis whose forewings were only 29 mm. long. The ♀ was P. glaucus glaucus (dimorphic) whose forewings measured 51 mm. and whose wings and body were not hairy (as compared to the very hairy ♂).

T.B. Blevins
Rockville, Md.



PARASITES OF LEPIDOPTERA AT ELSAH, ILLINOIS.- Parasites were reared as listed below from the following species:

- a. Papilio troilus L.: Epiurus alborictus Cresson ♂ from second instar larva of troilus emerged 7 Sept. 1941. E. alborictus was known only from leaf-rolling Tortricidae and its parasitization of P. troilus may have been accidental. Pteromalus vanessae Howard also reared 17 Mar. 1943 from troilus pupa at Van Buren, Mo., by Daniel Starrett.
- b. Anthocharis midea Hbn.: Single Apanteles limenitidis Riley from midea larva emerged 20 June 1942; single Hypopteromalus tabacum Fitch from midea larva emerged 20 June 1942.
- c. Limenitis astyanax Fab.: Mesochorus discitergus Say reared from hibernaculum of astyanax 12 May 1943.
- d. Vanessa virginiensis Dru.: One Spilochalcis albifrons Walsh reared from virginiensis larva emerged 19 June 1943.
- e. Vanessa cardui L.: Amblyteles rufiventris Brullé emerged from cardui pupae 3 and 8 June 1941.
- f. Polygona interrogationis Fab.: large number of Pteromalus vanessae Howard reared from interrogationis pupae 24 Nov. 1942 and 25 Jan. 1943.
- g. ? Strymon cecrops Fab.: Metadontia amoena Say emerged from two pupae probably of cecrops 17 Nov. 1942.
- h. Proteides clarus Cram. (= Epargyreus tityrus Fab.): Several Apanteles argynnidis Riley from clarus larva emerged 30 Oct. 1942.
- i. Celerio lineata Fab.: Hypopteromalus sp. ♂ from lineata larva emerged 15 Jan. 1943.
- j. Telea polyphemus Carm.: One Eremotylus macrurus L. emerged from polyphemus cocoon 3 Feb. 1943.
- k. Walshia amorphella Clem.: Acrolyta empretiae Ashmead (4 Apr. 1943); Calliephialtes graphillthae Cresson (2 Apr. 1943); Pristomerus ocellatus Cushman (20 Apr. 1943); Pr. agilis Cresson (15 Apr. 1943) all reared from amorphella galls on Amorpha fruticosa (False Indigo).
- l. Gnorimoschema gallaesolidaginis Riley: Sesiopterus depressus Viereck reared from this gall on Solidago 6 and 7 March 1942, 2 Apr. 1943.

Several of these are undoubtedly hyperparasites on primary parasites of the Lepidoptera. I gratefully acknowledge determinations of the parasites by C.F.W. Muesebeck (Braconidae), R.A. Cushman (Ichneumonidae), and A.B. Gahan (Chalcidoidea).



C.L. Remington
New Haven, Conn.

THE RICHARD TECHNIQUE FOR SECURING EGGS.- The "electric light and flower pot" system described in the News, June 1948 issue, has worked out so well with Anthocharis reakitii and Euchloe creusa lotta that I now expect to obtain eggs from many other species of butterflies. These species laid so many eggs on each flower stalk that I had to remove newly-hatched larvae to keep them from devouring the unhatched eggs.

William H. Evans
Sun Valley, Calif.

[Editor's Note: S.B. Smalley also reported success with this system for Speyeria. I, too, have had excellent results with Colias philodice, Mitoura damon, and to a lesser degree with Lycaenopsis pseudargiolus; attempts with Vanessa cardui, Erynnis brizo, and E. juvenalis failed. (G.L.R.)]



1948 SEASON SUMMARY ADDITIONS - CENTRAL.- Libythea bachmani was quite common locally in the Chicago area all through the month of July. Previously, they had occurred only occasionally, and then as isolated specimens, but this year, some fellow collectors and I captured over a hundred specimens in a month of collecting. We were not fortunate enough to see if the species did migrate from Chicago at the end of the summer.

A very fresh specimen of Limenitis arthemis male was taken by me on July 25. Two other specimens were reported seen by other collectors. It is normally quite scarce in Chicago.

Lycaena hypophlaeas was unusually scarce, only 5 specimens being found. I captured one aberrant male. The marginal row of spots on the primaries was fused on the upper side to form a wide black band.

Extensive series of Strymon falacer and acadica were taken by Mr. A.K. Wyatt and myself on July 10 at Waukegan, Illinois. I was fortunate enough to capture two aberrant male falacer. One had the marginal spots on the underside of the right primary extended into a wide white band, while the second male had the marginal row of spots of the left secondary (underside) joined into a wide blotch that all but filled the wing.

F.E. Rutkowski
Peru, Illinois



1948 SEASON SUMMARY ADDITIONS - SOUTHEAST.- D.H. Kistner, of Chicago, Illinois, made systematic collections of Lepidoptera in Great Smoky Mts. Nat. Park of Tennessee from July 19-25, 1948. The 23 spp. of butterflies taken included 5 Pieridae and 10 Nymphalidae. Proteides clarus (= Epargyreus tityrus) was the commonest species from "the top of the highest mountain" to "the lowest valleys." On Clingman's Dome (el. 6600') Polygona faunus and Speyeria aphrodite were numerous. Papilio philenor, Euptoieta claudia, Junonia coenia, Agraulis vanillae, and Limenitis astyanax were especially common in lower localities. A single poor Speyeria diana was seen near Elkmont, Tenn. In the locality at Brevard, North Carolina, where diana was found in 1947, none were seen by Kistner in 1948.

TECHNIQUE NOTES

KILLING LEPIDOPTERA QUICKLY

I subscribe to the Swiss periodical "Entomologisches Nachrichtenblatt" and I ran across an article that may be of some interest to the Society members. It is found on page 28 of the July 1948 issue. Here in general is the translation:

"A good way to kill large butterflies and moths, particularly hawkmoths, is by injecting two to three drops of aqueous ammonia into them with a hypodermic syringe. The advantage of this process lies in the fact that the insect dies immediately and can not flutter about for a short time as when dabbed with ether or when confined in a potassium cyanide jar. Large beetles and similar insects can also be killed this way."

Robert Cobb
Cincinnati, Ohio



CREOSOTE HOLDERS

In connection with the article by dos Passos, "The Care of a Collection and Library" (Lep. News, vol.2: p.27), I would like to mention that I have used creosote in small glass cups attached to stout steel pins - which have the advantage that they do not spill their contents, even if held upside down, are easily charged and do not deteriorate. They were purchased from Flatters & Garnett, Ltd., 309 Oxford Rd., Manchester 13, England, at 17/6 (about \$3.50) per gross in 1940. The only pest one has to contend with here is Dermestes and it is comparatively rare. I prefer paradichlorobenzene - which lasts, even in ordinary cardboard boxes, when these are kept in tight cabinets, for about 6 months - because I detest the smell of creosote.

P.F. Bruggemann
Furness, Saskatchewan



A notice of the existence and purposes of the Lepidopterists' Society and the Lep. News appeared in Science for March 4 (vol.109: p.243) and the News was listed in American Scientist for April (vol.37: p.11). The Society has gained in membership and status as a result. We are grateful to Prof. G.A. Baitzell, Editor-in-Chief of Science and editor of American Scientist, for his kind attention. A notice similar to that in Science appeared in Matsumushi (Japan) through the kindness of Dr. Chihisa Watanabe and resulted in a strong response from Japanese lepidopterists.



T.B. Blevins has sent us a supply of reprints of two papers: "Some Butterflies of Sequoia National Park", Bull. So. Calif. Acad. Sci., 1944: "Some Butterflies of the Mountains of Eastern Arizona" (with E. Yale Dawson), Ent. News, 1944, for gratis distribution to Lep. Soc. members. We still have copies of the reprints listed in the Lep. News 3: p.24, except "The Rothamsted Light Trap." U.S.A. members please include postage when writing.

DEALERS IN ENTOMOLOGICAL LITERATURE

Since the accuracy of investigations of Lepidoptera (whether of taxonomy, life history, distribution or otherwise) is partly dependent on having available as good books and periodicals as the lepidopterist can afford, it may be of value to many Society members to know the names and addresses of several dealers in entomological literature. Those known to us at present are listed below:

1. I.C. Adams, Jr., 3 North Glenwood, Columbia, Mo., U.S.A. Occasional mimeo. lists; papers and less expensive books.
2. Antiquarian Booksellers, Postbox 5, Lochem (G.), NETHERLANDS. Very large stock, specializing in old and rare books; prices average.
3. F.N. Bassett, 722 N. Orange Dr., Los Angeles 38, Calif., U.S.A. Occasional lists; papers and less expensive books.
4. Éditions N. Boubée & Cie, 3, Place St. André-des-Arts, Paris (VIe), FRANCE. Many French insect books, including "Atlas des Lépidoptères...".
5. E.J. Brill, Publishers, Leiden, NETHERLANDS.
6. John Q. Burch, 1584 W. Vernon Ave., Los Angeles 37, Calif., U.S.A. Frequent mimeo. lists; fine lots mainly of papers.
7. Henry G. Fiedler, 31-33 E. 10th St., New York 3, N.Y., U.S.A. Occasional catalogues of books; insect offering small but prices fair.
8. Andr. Fred. Host & Son, Bredgade 35, Copenhagen, DENMARK. Occasional catalogues of rare and less expensive books; huge stock, prices reasonable.
9. Dr. W. Junk, Publishers, Van Stolkweg 13, The Hague, NETHERLANDS. Agents for Lepidopterorum Catalogus and other large works; expensive.
10. Bernard Quaritch, Ltd., 11 Grafton St., New Bond St., London, W.1, ENGLAND. Occasional catalogues; many rarities but prices very high.
11. G. Schmidt, 257 Hillside Ave., Leonia, N.J., U.S.A. Occasional lists; prices reasonable.
12. John D. Sherman, Jr., 132 Primrose Ave., Mt. Vernon, N.Y., U.S.A. Occasional catalogues; most extensive entomological stock, but prices often exorbitant.
13. Wheldon & Wesley, Ltd., 83/84 Berwick St., London, W.1, ENGLAND. Occasional catalogues; large stock, esp. rare books. Prices reasonable.

Many of these dealers welcome requests to search for desired literature not listed in catalogues, and all are glad to place on their mailing lists individuals who are potential customers.

C.L.R.



Since this paper sets forth a modified classification and attempts to erect a new name for the order containing the Lepidoptera, it requires more than the routine notice in the Recent Literature section.

The Kiriakoff classification may be summarized as follows:

- Superorder PANORPAEFORMIA
- Order MECOPTERA
- Order AMPHIESMENOPTERA Kiriakoff, *nov.*
 - Suborder ZEUGLOPTERA (Micropterygidae)
 - Suborder TRICHOPTERA (Caddis-flies)
 - Suborder LEPIDOPTERA
 - Supercohors HOPISTOMATOPTERA Kiriakoff, *nov.*
 - Family Eriocraniidae
 - Family Mnesarchaeidae
 - Supercohors APLOSTOMATOPTERA Kiriakoff, *nov.*
 - Superfamily Hepialoidea
 - Supercohors NANNOLEPIDOPTERA Kiriakoff, *nov.*
 - Superfamily Nepticuloidea
 - Supercohors EULEPIDOPTERA Kiriakoff, *nov.*
 - Cohors STEMMATONCOPODA
 - Subcohors INCURVARIIFORMES
 - Superfamily Incurvarioidea
 - Subcohors TINEIFORMES
 - Superfamily Tineoidea
 - Subcohors GELECHIIIFORMES
 - Superfamily Gelechioidea
 - Subcohors PYRALIDIFORMES
 - Superfamily Pyralidoidea
 - Superfamily Hesperioidea
 - Family Hesperidae
 - Family Thyrididae
 - Family Pterophoridae
 - Cohors HARMONCOPODA
 - Subcohors PAPILIONIFORMES
 - Superfamily Bombycoidea
 - Superfamily Papilionoidea
 - Superfamily ?
 - Subcohors SPHINGIFORMES
 - Family Sphingidae
 - Subcohors NOCTUIIFORMES
 - Superfamily Zygenoidea
 - Superfamilies ?

Kiriakoff begins by reviewing the work of some of the authors who have endeavored to classify the Lepidoptera with their true relatives, notably Handlirsch, Krausse & Wolff, and Hinton. He then erects a new order, AMPHIESMENOPTERA, with the suborders Zeugloptera (= Micropterygidae), Trichoptera (Caddis-flies), and Lepidoptera (*sens. str.*). The new "order" is grouped with the Mecoptera (Scorpion-flies, etc.) as the Superorder Panorpaeformia.

The next concern is with the divisions of his Lepidoptera, and Kiriakoff concludes that four groups are necessary (he uses the term "supercohors" for this category). Following Hinton, he accepts the Eriocraniidae and Mnesarchaeidae as one group. Extracting two of the three main lines from Monotrysis of Hinton's phylogenetic tree (see *Lep. News* 1: p.33), he makes the Hepialidae and Nepticulidae each a supercohors. Hinton's third line of Monotrysis (Incurvariidae) Kiriakoff lumps with the remaining Lepidoptera (Ditrysis) as the fourth supercohors,

* See Recent Lit. #129 on p.57, above, for full citation and abstract.

considering the proleg structure more important than the monotreme condition. Similarly based on the prolegs, the fourth group ("Supercohors EULEPIDOPTERA") is divided into two cohors:- the Stemmatoncopoda (most of the "Micros" and the Hesperidae) and the Harmoncopoda (= the "Macrolepidoptera").

For many years the primitive characters exhibited by the Micropterygidae have concerned systematists. The close affinity of the Trichoptera (Caddis-flies) and the Lepidoptera has been recognized by numerous workers and perhaps best demonstrated by J.H. Comstock and R.J. Tillyard, and the annectant position of the Micropterygidae between these two groups has been emphasized often. H.E. Hinton's 1946 paper suggesting a separation of the micropterygids from the Lepidoptera and Trichoptera was reviewed in the *Lep. News*, vol.1: pp.33-34; 1947.

Kiriakoff in the present paper reexamines the whole question. The reviewer's primary criticism is that this elaborate article gives almost no new evidence but rather gives a slight regrouping after repetition of the arguments of previous authors who had studied actual specimens. Nevertheless, it is valuable to have the information collected for us.

The second point of criticism concerns a deplorable nomenclatural procedure:- the blithe erection of new names for higher categories without any heed for application of general nomenclatural principles in treating the names already existing. As long as each new slightly different classification is filled with a new set of names, stability in the nomenclature of higher categories will be impossible. It is not necessary to wait for a formal rule in the International Code to treat this problem sanely.

Kiriakoff's Superorder Panorpaeformia, erected in 1946, is not a tenable group. The evidence from the fossil record is hardly contestable that the Diptera are direct descendants of one line of the Mecoptera. There are Mesozoic Australian insects which are essentially "four-winged Crane-flies". Therefore any "superorder" containing Mecoptera must include also the Diptera (Two-winged Flies) and their close relatives the Siphonaptera (Fleas).

AMPHIESMENOPTERA as a category is quite unnecessary. Why quibble over the controversial rank of Caddis-flies and Moths & Butterflies (order vs. suborder)? They have conveniently been considered orders for so long that such a course seems worth continuing and does little or no violence to the facts.

Kiriakoff here reiterates his view that the Hesperidae are not related to the butterflies, but rather to the Thyrididae and Pterophoridae, a view which needs testing by other morphologists.

Among the papers of Packard, Comstock, Handlirsch, Tillyard, Forbes, Braun, Heymons, Meyrick, Börner, Hinton, and now Kiriakoff, we must have virtually all possible random combinations of the major groups of the Lepidoptera, and with several possible names for each group. We should now be in position to achieve with some permanency a convenient, phylogenetic classification on which general agreement exists.



A BRIEF HISTORY OF LEPIDOPTEROLOGY IN MISSOURI

by Edwin P. Meiners
St. Louis, Missouri

The first entomologist to explore the region of Missouri, of whom we have any record, was Thomas Say. Say was naturalist to Maj. Stephen H. Long's first expedition to the Missouri River and the Rocky Mountains. The expedition left Pittsburgh in May of 1819, sailing down the Ohio River in the steamboat, "The Western Engineer". They then ascended the Mississippi to St. Louis, where they remained about a week, making final preparations for the trip up the Missouri. During this stay Say and his companions explored the region around St. Louis, paddling a canoe up the Meramec River for about 15 miles, making the return trip overland.

Having completed their preparations, the expedition sailed up the Missouri to near Council Bluffs, Iowa, where they remained for the winter. Frequent stops were made on the way for fuel and provisions, permitting the party to make explorations of the surrounding territory. The results of Say's collecting are scattered through his writings. Usually only "Missouri" is given for locality data and, as the State had not yet been outlined as a political division, this may refer to any area along the route of the expedition.

Another member of the Long expedition was Tipton Ramsey Peale, who acted as journalist and assistant naturalist. Peale's diary (Missouri Historical Review 41: pp.147-162, 266-284; 1947) gives a detailed account of the expedition's adventures from Pittsburgh to their arrival at Fort Osage, near the present city of Kansas City, Missouri. His only published work on insects, Lepidoptera Americana, never went beyond the first installment. Many of the illustrations in Say's work were drawn by Peale.

The first notice of any of the Lepidoptera of Missouri was a short account of the ravages of the Army-worm (Leucania unipuncta) which appeared in 1861 (Trans. Academy of Science St. Louis 2: p.159). This article was written by F.A. Wislizenus, the species being referred to as Bombyx graminis. Dr. Wislizenus was a native of Germany and practiced medicine in St. Louis. He was one of the organizers of the Western Academy of Science in St. Louis, the first academy of science west of the Allegheny Mountains, as well as of the Academy of Science of St. Louis, its successor.

In 1868 the Missouri State Board of Agriculture was authorized to establish the office of State Entomologist, this being the third State of the Union to create such a post. Upon the recommendation of B.D. Walsh, State Entomologist of Illinois, C.V. Riley was appointed to this position. Riley remained in office for nine years, after which time he transferred to Washington to head, first, the Entomological Commission, and later the Bureau of Entomology. During this time he published nine Annual Reports which have since become classics in the literature of American Entomology. He also published a journal, The American Entomologist, which was discontinued at the end of the second volume, and numerous papers in entomological and farm journals of the day.

Many of Riley's articles dealt with the Lepidoptera. The large collection of insects of all orders which he built up went with him to Washington, eventually forming the nucleus of the insect collection in the U.S. National Museum. (See Lep. News 1:p.56).

Riley enlisted the help of a number of persons having some entomological knowledge as his assistants. Notable among these was Mary E. Murtfeldt. Miss Murtfeldt (see Lep. News 2: p.83) was chiefly interested in the Microlepidoptera, of which she had quite a considerable collection.

Three papers by R.R. Rowley of Louisiana, Missouri, on the butterflies of this state appeared in Entomological News for 1891. A number of his other articles appeared from time to time in the same journal until about 1913, the later ones treating chiefly of the Catocalae, describing the early stages of many species. Prof. Rowley was Superintendent of Schools at Louisiana. He was interested in both Lepidoptera and invertebrate fossils and had large collections of each. His favorite collecting ground, "Catocala Hollow", became well known to readers of Entomological News of some 35 - 40 years ago, through the frequent references in his articles.

Living in Louisiana, Missouri, at about this same time were two brothers, G.M. and E.A. Dodge, who had come under the influence of Rowley and became great Catocala enthusiasts. G.M. Dodge described Catocala titania in 1900, one of the smaller species of the genus. In about 1909 E.A. Dodge moved to Santa Cruz, California, where he became actively interested in the butterflies, a number of new species and forms being named in his honor.

The first regional list of the butterflies of Missouri appeared in 1894 under the title "A List of the Butterflies found at Marshall, Missouri", by Oliver J. Staley. Staley practiced law at Marshall, collecting butterflies as a hobby. He died at the early age of 24 years by accidental drowning. Frank J. Hall, of Kansas City, Missouri, reported some unusual captures of butterflies in northwest Missouri, in Ent. News for 1898.

Two organizations which came into existence in St. Louis at about the turn of the century did much to foster the study of insect life in this community. The St. Louis Naturalists Club was organized in 1898 and recently celebrated its golden anniversary. The St. Louis Entomological Club, organized in 1906, is no longer in existence.

Another collector, Hermann Schwarz, member of both of the above clubs, deserves more than a passing mention. Possessed of a kindly nature and a dynamic personality (Rau's "Portrait", Bull. Brooklyn Ent. Soc. 39: p.89; 1944, is biased to an extreme), he held a considerable influence over the younger generation of naturalists in his community for many years. He was greatly interested in the Lepidoptera during his earlier years and built up a fine collection of the butterflies of Missouri, containing some

remarkable and unique captures for the State. Later he founded the Mid West Nature Study Supply Co. and designed some rather interesting equipment for the collector, notably, a sectional specimen cabinet and a plastic mount for Lepidoptera. An early paper on "The Art of Collecting Catocalae" (Ent. News 10: p.256; 1899), in which he advocated the use of a small bow and arrow tipped with a needle, may bring a smile from the present day collector, but he insisted that it was practical and that he had become adept in its use. In 1907 (Ent. News 18: p.312) Hermann Schwarz, in collaboration with Henry McElhose, published a "List of 110 species and varieties of butterflies taken by members of the St. Louis Entomological Club in the vicinity of St. Louis, Missouri". In spite of its many inaccuracies, this remains the only published list of the butterflies of Missouri. McElhose was principally interested in the Microlepidoptera. He later moved to Ilion, N.Y.

Several papers on the Catocalae by Ernst Schwarz appeared in Entomological News between 1915 and 1919. A number of new species and varieties were described. Ernst was a brother of Hermann Schwarz; a third brother, Fred Schwarz, was also a collector of Lepidoptera.

Paul A. Schroers published a list of the moths of St. Louis and vicinity in 1913 (Ent. News 24: p. 460; 25: p.59) which also is the only published list of Missouri Heterocera to date. He had a small collection of Lepidoptera, chiefly local species.

Others of this period who had small collections were Richard S. Lange and Frank Malkmus. August Knetzger was especially interested in the Hesperidae and contributed short articles to Entomological News, Lepidopterist, and Lepidoptera. His collection is now in the museum of Pere Marquette State Park, Illinois. Adolph Wilkus had a large collection of the showy Lepidoptera of the world, beautifully mounted in Riker type mounts, but alas! without data. George H. Hosenfelt had a small collection of butterflies and moths which contained some rarities, one of which was a specimen of Samia cecropia with five wings. (Ent. News 24: p.337; 1913).

Phil Rau was chiefly interested in insect behavior, especially of the Hymenoptera, but published a number of articles on Lepidoptera, especially on the Saturniidae (see Lep. News 2: p.62; 1948).

Charles L. Heink was an enthusiastic collector who built up quite a large collection of the butterflies and moths of the world. He began collecting about 1902 and carried on an extensive correspondence and exchange with many of the noted lepidopterists of his day. In 1907 he organized the Heink Entomological Club, which ceased to exist about 1916. His only published work was a short note (Ent. News 14: p.334; 1903) on collecting at Meramec Highlands, Missouri. The major portion of his collection passed into the hands of the writer in 1926.

F. Roy Dean was an amateur lepidopterist and taxidermist. He contributed several short articles to Lepidoptera in 1918, including the description of two aberrant butterflies. Mrs. Vitae Kite, who

lived in Hollister, Taney County, Missouri, in the heart of the Ozarks, had a collection of about 10,000 specimens of butterflies and moths. She published "A Calendar of Ozark Butterflies" in Entomological News for February, 1934. Although many of her determinations are open to confirmation, it is still the only published list of the butterflies of southern Missouri. Her collection is now in The School of the Ozarks, at Point Lookout, Missouri.

It may be a surprise to many to learn that Vance Randolph, the folk-lorist of the Ozarks, was at one time interested in the Lepidoptera. In 1919 he contributed an article on the "Life History and Habits of Dione vanillae" (Trans. Kans. Acad. Sci. 30: p.351) and in 1927 ("On Seasonal Migrations of Dione vanillae in Kansas" (Ann. Ent. Soc. Am. 20: p.242)). A former Ozarkian is Dr. Auburn E. Brower who got his start in Willard, Missouri. In 1930 he published "A List of the Butterflies of the Ozark region of Missouri" (Ent. News 41: p.286). George E. Moore formerly collected butterflies in the vicinity of Lebanon, Missouri. He published, in 1937, "An Annotated List of the Butterflies of Laclede County, Missouri" (Proc. Mo. Acad. Sci. 3: p.108).

There are few lepidopterists remaining in Missouri at the present time. Harold O'Byrne, of Iberia, Mo., resided in Webster Groves for many years. He had an excellent collection of North American Lepidoptera, principally from Missouri. He formerly contributed a number of articles to the literature.

B.H. Pickel resides in Overland, Missouri, a suburb of St. Louis, and is interested in collecting North American butterflies. Oskar Zielinski was at one time an enthusiastic collector of North American Lepidoptera and resided in St. Louis. A few years ago he moved to California.

The Remington collection, formed by P. Sheldon Remington and son, Charles, is outstanding in this section of the United States. It consists principally of North American butterflies, representing a large proportion of the species, many in good series. P.S. Remington received much of his love for entomology from his contacts at the Boston Society of Natural History in his youth and, influenced by such masters in the technique of mounting as the Denton brothers, his collection is a model in the perfection of the specimens and the beauty of arrangement.

The writer's collection of insects is a miscellaneous one consisting, in large part, of Lepidoptera, both butterflies and moths. Other orders are represented to a lesser degree, mainly of the Missouri Ozark fauna, a region which has a fascination for him. No attempt at completeness has ever been made and he cannot say that he has in any way ever advanced the science of entomology to any degree. The lure of the Great Outdoors, contacts with his fellow men of like instincts (and many have been most interesting, believe me!), a knowledge gained of strange forms and curious habits, and the influence that insects have had upon the human race, have been goal enough. Ah-ha! an "escapist"!





Photo Ent. News 40: p. 297, 1921.

W. B. Barnes

BRIEF BIOGRAPHIES

18. William Barnes (1860-1930)

In writing a biography of a comparatively contemporary lepidopterist, the most important source of information, especially on the more personal aspects, lies in the recollections of the subject's associates. This is especially significant since the usual obituaries, or biographies of the person during his lifetime, are understandably one-sided or incomplete. In the present biography, the writer was invaluablely aided by two of Barnes' associates -- men who worked in close contact with him for a number of years, and both of whom are authorities on the Lepidoptera: Dr. James McDunnough, retired Chief of the Systematic Unit of the Division of Entomology of the Canadian Department of Agriculture and now a Research Associate at the American Museum of Natural History in New York; and Dr. Arthur W. Lindsey, head of the Department of Biology at Denison University, Granville, Ohio. The avail-

ability of first-hand information makes it appropriate to devote more than the usual amount of space to this Brief Biography. The quotations contained in this article were taken from letters written by Drs. McDunnough and Lindsey to the writer.

William Barnes was born in Decatur, Illinois, on September 3, 1860. After attendance in the local public schools, he studied at Harvard College, from which he graduated in 1883. While Barnes was in Cambridge, Samuel Hubbard Scudder, the great lepidopterist, was active there, and Barnes undoubtedly became acquainted with him during meetings of the Cambridge Entomological Club. Prof. F.M. Carpenter, of Harvard University, keeper of the records of the Cambridge club, kindly provided us with the following information: "On looking into the Club records, I find that Barnes was elected to membership November 12, 1880. The next few meetings of the Club were held in his room, 31 Thayer Hall, [Harvard College]. He remained an active member, attending about half the meetings, until February, 1884, when he withdrew from membership." As a boy, Barnes had started a collection of Lepidoptera, and the stimulation of such authorities as Scudder during his college years must have further fired his enthusiasm for lepidopterology.

In 1886 Barnes received a diploma from the Harvard Medical School, and then continued special studies in medicine at the University of Heidelberg (Germany) and at a university in Paris. This education provided the thorough training for his career as an outstanding surgeon. The foregoing facts should be kept in mind, for "to understand Barnes completely, it should be recognized that he was first and foremost a successful surgeon and that Lepidoptera was his hobby started in early youth."¹ He was a founder of the Decatur and Macon County Hospital. Barnes married Charlotte Gillett in 1891; a son and daughter completed the family. After a long medical career, Barnes retired in 1929 because of illness. He died in Decatur on May 1, 1930.

Since one of "Barnes' greatest contribution[s] to Entomology might be summed up as consisting in his willingness to spend large amounts in building up a splendid collection of Lepidoptera, adequately named and looked after",¹ it is appropriate to describe in some detail his collection. Dr. McDunnough, who became the first curator of the collection, writes: "The collection as I first knew it (1909) was contained in a narrow annex to the library room of his residence; later (about 1913), the special museum was built." The one-story building was erected at the rear of Barnes' home, and was constructed to be safe against damage by fire and moisture, two great enemies of irreplaceable specimens. The collection contained about 465,000 specimens, as follows: 35,000 butterflies, 170,000 moths, and 250-260,000 duplicates and unworked material. There were over 6000 types (including races, forms, aberrations, etc.). "His main idea was to secure as complete a collection of correctly named N. Am. Lepidoptera as possible, and with this end in view he was constantly exchanging or buying specimens from other lepidopterists and securing by purchase com-

¹ McDunnough, *in litt.*

plete season's catches by collectors in California, Arizona and other S.W. States. ... The main collections purchased in toto were the Merrick; Taylor; and Poling Catocalas; he secured a large portion of the Kearfott Micros...² He also had much of the Oberthur North American material. Barnes "personally collected while at Harvard as material in collection 'Newton Highlands, Mass.' testifies. He also collected with Bruce at Denver and Glenwood Springs, Colorado, in 1893-4 and possibly in other years, but to my knowledge he made no trips after 1909 except one in 1917 to the Lake Tahoe region of California.

... He did however, make many trips to eastern museums (U.S.N.M.; Phil. Acad.; J.B. Smith; Am. Mus., etc.) and donated and received in exchange many specimens from these institutions."² A large entomological library, especially rich in lepidopterological literature, accompanied the collection.

"Anyone was welcome to use the remarkable facilities of his collection and library," wrote Dr. Lindsey, "and he gave freely of his surplus specimens. I well remember my first visit to him when I was a graduate student. Toward the end he told Dr. McDunnough to show me the duplicate collection and let me pick out whatever I needed. That was his common attitude. But if anyone misused the privilege, there was no reinstatement in Dr. Barnes' good opinion. He always suspected Strecker of stealing two types and describing them — the name proved to be a synonym! — and he was a bitter enemy of Dyar because a lot of unworked material lent to him at the U.S.N.M. never came back to Decatur."

In 1920, Barnes deeded the collection to the Decatur and Macon County Hospital, with the understanding that after his death it was to be sold and the proceeds used for child welfare. The collection was obtained by the U.S. National Museum, and it is still a major part of its Lepidoptera collection.

Barnes employed several successive full-time curators, — men who were trained lepidopterists, — "whose main duties, apart from the maintenance of the collection were to straighten out synonymic tangles, prepare revisions of groups and describe the numerous new species constantly met with in the material received from his collectors."² Dr. James McDunnough was the first curator, and was employed there from 1909 to 1919. He was followed by Dr. A.W. Lindsey from 1919 to 1921. Dr. Lindsey remarks: "After I left Dr. Barnes in the summer of 1921 he secured a young man from New York who lasted a very short time." Foster H. Benjamin was employed some time thereafter and remained until 1927. Research results were published during these periods under the joint authorships of Barnes & McDunnough, Barnes & Lindsey, Barnes & Benjamin, and Barnes & Busck. A fair example of the widespread viewpoint about Barnes is J.D. Gunder's statement (Ent. News 40: p.245; 1929): "It can also be said that he has accomplished more general taxonomic work in the order ['Strictly Boreal American...'] than any other living man." Therefore, the light shed on these co-authorships by two of the men concerned is especially revealing, and it has not been published in pre-

vious accounts of Barnes. Dr. McDunnough writes: "With regard to publications, Barnes only prepared papers appeared in Canadian Entomologist 1901, 1904, 1905, etc. and Entomological News, vol.11. After 1909 his curators were entirely responsible for articles in journals and for the entire five volumes of the 'Contributions'. This latter publication was financed by Barnes' sister-in-law, Miss Jessie Gillett. Barnes' name, as owner of the collection, appeared as a courtesy to the man who paid the curators' salaries. A single paper, published under Barnes' name in Pan-Pacific Entomologist, vol.5, no. 1, in 1928 was probably prepared for the most part by Benjamin. The Check Lists were also the work of the curators. Barnes, in my time, never did any lengthy studies on the Lepidoptera; he used to drop in in the morning and usually for a short time in the evening to discuss work, etc., and when time was available, spent it studying Phalaenids, particularly members of the genus Euxoa in which he was greatly interested."

Dr. Lindsey agrees with the above information, saying: "Dr. Barnes' work in entomology was chiefly the lavish support of collectors and the provision of a superb opportunity for the research done by his curators. He described some species, but did no actual taxonomic research as far as I know. From my experience with the revision of the Pterophoridae, I judge that all of the publications from the museum were the work of the curators even though they were published under joint authorship with Dr. Barnes. I do not say this critically, for the opportunity that he provided was itself a major contribution to the science."

The "Contributions" mentioned above were fully titled "Contributions to the Natural History of the Lepidoptera of North America", and were privately published in five volumes. The work included descriptions, revisions, etc., and was well-illustrated. "Probably the most important works published [by Barnes] are the 'Contributions' and 'Illustrations of North American Catocalas' issued as a Monograph by the American Museum of Natural History."² His Check Lists of 1917 and 1926 were widely used at the time, but are now, of course, out of date.

Dr. Lindsey offers a quite thorough and interesting description of Barnes personally in the following comments: "Dr. Barnes was a remarkable man. In appearance he was rather grim and in manner he was gruff and very profane. After my long experience with him I have wondered whether he may not have cultivated such an exterior as a protection, for he was kind hearted and generous and might easily have been susceptible to the demands of a thoughtless world. ... I heard many incidents of his relations with patients in his medical practice which bear out the idea that he had a tender heart, and I can vouch for his generosity in his scientific work."

The writer is very grateful to Dr. McDunnough and Dr. Lindsey for their invaluable assistance in providing biographical material of Barnes so that a true estimate of his place on the scientific scene could be established.

Jeanne E. Remington

² McDunnough, in litt.

RECENT LITERATURE ON LEPIDOPTERA

Under this heading are listed each month recent papers from all the scientific journals which are accessible to us and our cooperating abstractors. It is hoped eventually to make our coverage of the world literature as complete as possible. Members outside North America are urged to send us references of Lepidoptera papers from journals unavailable to us. Papers devoted entirely to economic aspects will be omitted. Reprints are solicited from all publishing members. 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.G. Gozmány; (C.R.)- C.L. Remington; (T.S.)- T. Shirôzu.

86. Beck, W., "Ein missglückter Anlockungsversuch mit *Dasychira fascelina* L." (In German.) *Ent. Tidskr.*, vol.70: pp.111-113. 5 May 1949. Field notes. (C.R.)
87. Beebe, W., "Moth Nights at Rancho Grande." *Animal Kingdom*, vol.52: pp.34-40, 6 figs. Mar.-Apr. 1949. Popular account of fantastic abundance of moths at light at this spot in Venezuela, which is on a migration route. (P.B.)
88. Benoit, Pierre-L.-G., "La faune épiparasitaire des Braconides parasites de *Sylepta derogata* F. (Lépid. Pyral.) au Congo Belge." (In French.) *Bull. & Ann. Soc. Ent. Belg.*, vol.85: pp.28-40, 4 figs. 3 Mar. 1949. Lists 12 species (3 new) of secondary parasites, attacking Braconid parasites of this moth. (P.B.)
89. Blackie, J.E.H., "The Butterflies of the Monks Wood District." *Entomologist*, vol.82: pp.54-58. March 1949. (P.B.)
90. Blackie, J.E.H., "*Coenonympha tullia* Müller: a Postscript." *Entomologist*, vol.82: pp.83-84. April 1949. (P.B.)
91. Bourgogne, Jean, "Les transformations subies par le fourreau de certaine Psychidae pendant la croissance de la chenille (Lep.)." (In French.) *Bull. Soc. Ent. France*, vol.53: pp.130-133, 7 figs. 24 Nov. 1948. Changes made in its case by the larva (*Fumea* sp.). (P.B.)
92. Bourquin, Fernando, "Metamorfosis de *Automeris naranja* Schaus 1898 (*aurantiaca* Weym.) (Lep. Het. Hemileucidae)." (In Spanish.) *Acta Zool. Lilloana*, vol.5: pp.69-79, 2 figs., 1 pl. 1948. Describes entire life history of *A. naranja*; host plants -- *Feijoa Sellowiana*, *Lonicera*, *Ilex paraguariensis*; virus disease discussed. Figs. of pupa and ♂ genitalia; photos of ♂ & ♀, ova, larva, cocoon. Notes in English by Carl Heinrich comprise pp.77-78; *aurantiaca* sunk under *naranja*, "*naranja*" of Seitz becomes *ater* Conte, 1906; best differences in ♀ genitalia; Heinrich gives keys to ♂ & ♀ of *ater* and *naranja*. (C.R.)
93. Bourquin, Fernando, "Notas sobre la metamorfosis de *Megalopyge chacoma* Schaus 1910 (Lep. Het. Megalopygidae)." (In Spanish.) *Acta Zool. Lilloana*, vol.5: pp.113-115, 1 fig., 1 pl. 1948. Describes larva, pupa, cocoon of *M. chacoma*, host plant -- *Aspidosperma Quebracho-blanco*. Parasite is *Plagiotachina aurota*. Figs. of pupa; photos of ♂ & ♀, larvae, cocoon. (C.R.)
94. Bourquin, Fernando, "Metamorfosis de *Morpho caterinarius argentinus* Frühstorfer 1907 (Lep. Morphidae)." (In Spanish.) *Acta Zool. Lilloana*, vol.5: pp.117-130, 1 fig., 1 pl. 1948. Describes entire life history of *M. argentinus*; host plant -- *Scutia buxifolia*. Figs. of pupa, photos of ♂ & ♀, ova, larva, pupa. Larvae are gregarious and colorful. Larval period is 7 1/2 months! (C.R.)
95. Bourquin, Fernando, "Notas sobre la metamorfosis de *Chloropteryx munda* (Warren) 1897 (Lep. Geometr.)." (In Spanish.) *Rev. Soc. Ent. Argentina*, vol.14: pp.137-140, pl.5, 1 fig. 25 Oct. 1948. Describes entire life history of *C. munda*; host plant--flowers of *Baccharis salicifolia*. Figs. of pupa, photos of ♂ & ♀, ovum, larva, pupa. (C.R.)
96. Braun, Annette F., "Elachistidae of North America (Microlepidoptera)." *Memoirs Amer. Ent. Soc.*, no.13: ii & 110 pp., 26 pls. 30 July 1948. 57 spp. in 7 genera recognized. Described as new: genus ONCEROPTILIA (type - *Apheloseia cygnodiella* Busck), *O. aremonoma* (Eureka, Utah); genus HEMIPROSOPA (type - *Eurynome albella* Cham.); *Elachista epimicta* (Cincinnati, Ohio), *E. symmomorpha* (Tulare Co., Calif.), *E. synopla* (Cache Co., Utah), *E. spatiosa* (Loma Linda, Calif.), *E. acentata* (Parrsboro, Nova Scotia), *E. hololeuca* (Penticton, B.C.), *E. purissima* (Summerland, B.C.), *E. lamina* (Peachland, B.C.), *E. coniochora* (San Diego, Calif.), *E. hiberna* (Pike Co., Ohio), *E. fuliginea* (Martha's Vineyard, Mass.), *E. oxytypha* (Bradore Bay, Que.), *E. excelsicola* (Mt. Washington, N.H.), *E. nitidiuscula* (Cincinnati, Ohio), *E. leucosticta* (Constance Bay, Ont.), *E. amideta* (Ottawa, Ont.); *Cosmiotes scopulicola* (Huron Mts., Mich.). Gives *E. adempta* as new name for *Laverna albella* Cham. Figs. of ♂ & ♀ genitalia, venation, pupae, ova, leaf mines include all n.spp. and all but 6 known spp. Keys to all genera and spp. Descriptions thorough, life history notes given where known, largely from Miss Braun's own study. Complete synonymic list and index given at end. A superb revision! (C.R.)
97. Brown, S.C.S., "The Mine of *Stigmella subbimaculata* Haw. (Lep., Stigmellidae)." *Ent. Month. Mag.*, vol.85: p.45. Feb. 1949. (P.B.)
98. Bryk, Felix, "Zur Kenntnis der Grossschmetterlinge von Korea. Pars II." (In German.) *Arkiv f. Zool.*, vol.44a, no.1: 225 pp., 7 pls. 1948. Describes as new: (NOTODONTIDAE) *Stauropus basalis* ssp. *koreharpya*, *Pheosia tremula* ssp. *pernagna*, *Notodonta jankowski* ssp. *varidens*, *Spataloides doerriesi* ssp. *tristina*, *Rosama ornata* ssp. *paupera*, *Lophopteryx camellina* ssp. *signata*, *L. saturata* *hoegi* f. *discalis*, *Euhampsonia splendida* ssp. *chosenadata*, *Semidonta* (?) *bilobona* (Shuotsu), *Pygaera curtuloides* ssp. *ko-recurtula*; (LYMANTRIIDAE) *Dasychira fascelina* ssp. *moto*, *Lymantria dispar* ssp. *korebia* & ssp. *kolthoffi*, *L. monacha* ssp. *chosenibia* & *matuta* & *lateralis* & *idae*, *Porthesia similis* ssp. *variabilina*; (SATURNIIDAE) *Actias artemis* ssp. *sjöqvisti*, *Antheraea yamamai* ssp. *bergmani*, *Caligula boisduvali* ssp. *intermediula*; (BRAHMEIDAE) genus BRAHMAEOPS (type *B. japonica* Butl.), genus BRAHMIDIA (type *B. hearseyi* White), *Brahmaea magnificentia**(Shuotsu); (DREPANIDAE) *Drepana curvatula* ssp. *koreula*, *Albara scabiosa* ssp. *fixeni*, *Oreta pulchripes* ssp. *chosenoreta*; (LASICAMPIDAE) *Malacosoma neustrium* ssp. *chosenensis*, *Dendrolimus segregatus* ssp. *corelimus*, *Metanastria undans* ssp. *chosenicola*, *Gastropacha quercifolia* ssp. *coreopacha*, *G. populifolia* ssp. *clathrata*; (ARCTIIDAE) *Parasiccia altaica* ssp. *coreana*, *Miltchrista rosacea* ssp. *shuotsuensis*, *Arvilla gigantea* ssp. *chosenyella*, *Eilema depressa* ssp. *bergmani*; *E. angustiala**(Shuotsu), *E. calmaria* ssp. *apricina*, *Phragmatobia fuliginosa* ssp. *chosenensis*, *Diacrilia lutea* ssp. *rhododactyla* & f. *luteiformis*, *D. seriatopunctata* ssp. *varians*, *D. jankowski* ssp. *korsarctica*, *Spilosoma menthastri* ssp. *elegans*, *D. sannio* ssp. *rubroventralis* & f. *roseivenata*, *Callimorpha histrio* ssp.

98. (cont.) *chosensis*; (THYATRIDAE) *Saronaga albicostata* ssp. *koreonaga*, *Palimpsestis akanensis* ssp. *koreibia*; (NOCTUIDAE) *Panthea coenobita* ssp. *idae*, *Moma ludifica* ssp. *androtropa*, *Diphthera alpium* ssp. *kolthoffi*, *Acronycta alni* ssp. *korealni*, *A. runcicis* ssp. *runcicina*, *Panthauma egregia* ssp. *koreothauma*, *Metachrostis algae* ssp. *korealgae*, *M. niphadothauma** (Shuotsu), *Euxoa intracta* ssp. *kurilintracta*, *E. oberthürri* ssp. *nominata*, *E. kaolina* (Shuotsu), *E. aquilina* ssp. *kaolicussa*, *E. kaolifeltia* (Shuotsu) & ssp. *anderssoni*, *Chersotis deplanata* ssp. *columbina*, *Agrotis corticea* ssp. *grammomima*, *A. agalmona* (Shuotsu), *Diarsia exusta* ssp. *noli-me-tangere*, *D. ruficauda* ssp. *steni* & ssp. *ottonis-bang-haasi*, *D. baja* ssp. *chosenbaja*, *D. signum* ssp. *melancholina*, *Cerastis sobrina* ssp. *shuotsensis*, *Blepharita amicissima* (Shuotsu), *Polia contigua* ssp. *olivaceula*, *P. persicariae* ssp. *minorita*, *P. conspersa* ssp. *chosensis*, *Harmodia corrupta* ssp. *siculimima*, *Aplecta mongolica* ssp. *koreaegena* & ssp. *chidisana*, *A. differentiata* (Shuotsu), *Hyssia cavernosa* ssp. *korebia*, genus *ERYTHROTIS* (type *E. cedermarki* Bryk), *E. cedermarki** (Shuotsu), *Hyperiodes turca* ssp. *matsumuriana*, *H. grandis* ssp. *coreana* & ssp. *chidisana*, *Monima paramoeta* ssp. *marginipicta*, *Sideridis velutina* ssp. *kukunocorensis*, *S. insecta* ssp. *bergmani*, *S. sinuosella** (Motojondo), *S. incognita* ssp. *draudtiphila*, *S. pallens* ssp. *chosenicola*, *Cucullia maculosa* ssp. *shuotsuensis* & ssp. *japonibia*, *Cosmia fulvago* ssp. *korecosmia*, *Amphipyra livida* ssp. *cupreina*, *A. tripartita* ssp. *parvula*, *Parastichtis funeina* ssp. *geminea*, *P. veterina* ssp. *coreina*, *Oligia arcta* ssp. *tegularis*, *Trachea atriplicis* ssp. *gnosis* & ssp. *tristina*, *Euplexia koreaplexia* (Shuotsu), *Callogonia virgo* ssp. *virginalis*, *Virgo datanidia* ssp. *parthenon*, *Elaphris morosa* ssp. *permorosa*, *Atheitis furvula* ssp. *tristifascia*, *A. grisea* ssp. *kaolina*, *Psilomonodes venustula* ssp. *venerica*, *Apamea lucens* ssp. *motojondensis*, *Xanthoecia flavago* ssp. *koreago*, *Hydroecia micacea* ssp. *viola*, *Ipomorpha contusa* ssp. *pergrandis*, *Dadaica differentiata* (Shuotsu), genus *SPHRAGIDIFERA* (emend. for *Sphragifera* Staud.), *S. biplaga* ssp. *hexagona*, *Lithacodia fasciana* ssp. *coreana*, *Eustrotia candidula* ssp. *leechiana*, *Oruza chalcogramma* (Shuotsu), *Sinna extrema* ssp. *koresinna*, *Earias pupillana* ssp. *paginalis*, *Gelastocera exusta* ssp. *eminentissima*, *Ephesia dissimilis* ssp. *griseata*, *Eccrita mirabilis** (Shuotsu), *Dermaleipa junco* f. *renalis*, *Parallelia mimula* ssp. *postfusca*, *P. algira* ssp. *japonibia* & ssp. *sinica*, *Cauninda annetta* f. *arabesca*, *Phytometra festata* ssp. *yokohamensis*, *P. festucae* ssp. *kurilensis* & ssp. *japonibia* & ssp. *kamtshadala*, *Toxocampa graciosissima* (Gekatsungu), *Chrysorithrum amatum* ssp. *amorina*, genus *CRINISINUS* (type *C. turbo* Bryk), *C. turbo* (Shuotsu), genus *HETEROSCOPTIA* (type *H. stygia* Bryk), *H. stygia* (Shuotsu), *Rivula dubitatrix* (Shuotsu), genus *STEN-BERGMANIA* (type *Herminia albomaculis* Brem.), genus *SINARELLA* (type *S. stigmatophora* Bryk), *S. stigmatophora* (Shuotsu), *Zanclognatha tarsipumalis* ssp. *chosensis*, *Z. tarsicrinata* (Shuotsu), *Z. triplex* ssp. *koreognatha*, *Z. perfractalis* (Shuotsu), *Bocana spacoalis* ssp. *chosenana*, *Rhynchina kengkalis* ssp. *warreni*, *Hydrillodes obscurans** (Shuotsu), *Bomolocha chosenula** (Shuotsu), *Hypana conspersalis* ssp. *koreaena*; (GEOMETRIDAE) genus *HETEROTHALERA* (type *H. chlorosaria chosensis* Bryk), *H. chosensis** (Shuotsu), *Timandra amatoria* ssp. *myokosana*, *Cosymbia albipunctata* ssp. *coreana*, *Problepsis superans* ssp. *coreana*, *Scopula convergens* (Shuotsu), *S. nigropunctata* ssp. *chosensis*, *Baetria tibiale* ssp. *pedicura*, *Heterophleps confusa* ssp. *confusidor*, *Hysterura declinans* ssp. *bergmani*, *Caleulype whitleyi* f. *leechi*, *Lygris fabiolaria* ssp. *korelygris*, *L. ledereri* ssp. *chosensis*, *Eustruma melancholica* ssp. *dü-*
- rereri*, *E. reticulata* ssp. *chosenicola*, *Gandaritis fixseni* ssp. *coreana*, *Loxofidonia muscipata* ssp. *originalis*, *Cidaria postalbida* ssp. *problematica*, *C. minima* ssp. *otregimima*, *Euphyia luctuosaria* ssp. *sinuataria*, *E. unangulata* ssp. *gekatsungensis*, *E. secessa** (Shuotsu) & ssp. *myokosana*, *E. yokohamae* ssp. *colorata*, *Hydromena vidua* ssp. *permagna*, *Ecliptopera chrysozona* (Shuotsu), *Melanthia procellata* ssp. *myokosanthia*, *Venusia cambrica* ssp. *shuotsu*, *Discoloxia blomeri* ssp. *euchloë*, *Diaprepesilla flavmarginaria* ssp. *djakonovi*, *Abraxas suspecta* ssp. *liliput*, *Ephoria aronosa* ssp. *chosenibia* & ssp. *gaby*, *Ennomos autumnaria* ssp. *koreennomos*, *Zethenia albonotaria* ssp. *nonnotata*, *Z. rufescentaria* ssp. *chosenaria*, *Angerona prunaria* ssp. *aquafortis* & ssp. *prouterona* & ssp. *mongoligena*, *Epione vespertaria* ssp. *hespera*, *Buzura superans* ssp. *koreaebia*, *Spilopera debilis* ssp. *chosenibia*, *Semiothisa shanghaiaria* ssp. *wehrlaria*, *Anticypella diffusaria* ssp. *bergmanaria*, *Boarmia athleta*, ssp. *nanaria*, *E. castigataria* ssp. *chosenarmia*, *B. maculata* ssp. *korearmia*, *B. repandata* ssp. *cioccolatina*, *B. extinctaria* ssp. *ferruginaria*, *B. marginata* ssp. *submarginata*, *B. conferenda* ssp. *referendaria*, *B. subdisciplens* (Shuotsu), *E. monochroma* (Shuotsu), *B. seitzii* ssp. *chosenibia*, *B. ornataria* ssp. *chosenicola*, *B. irrorataria* ssp. *specificaria*, *B. selenaria* ssp. *kaolina*, *B. stipitaria* ssp. *kariuzawensis*, *B. crepuscularia* ssp. *bergmanaria*, *B. ignobilis* ssp. *shuotsuensis*, *Itame wauaria* ssp. *koreaebia*, *I. fulvaria* ssp. *coreame*, *I. distinctaria** (Shuotsu), *Chiasma lutearia* f. *confluens*; (ZYGAENIDAE) *Elcysma westwoodi caudata* ssp. *eleganticauda* (sic!); (COCHLIDIIDAE) *Narosoideus flavidorsalis* ssp. *micans*, *Gnidocampa johani-bergmani* (Shuotsu), *Parasa sinica* ssp. *japonibia*. All n.spp. and most n.spp. from Korea. Photos of all n.spp. except those marked with asterisk (*). Photos of many n.spp. Also gives records of many known ssp. and ssp. This paper seems to the reviewer a taxonomic nightmare certain to retard progress of Oriental lepidopterists, since all these names presumably have their types deposited in Europe. Descriptions usually brief, genitalia not mentioned. Location of types not stated, but perhaps Riksmuseum in Stockholm. Some clumsy names, such as ssp. *ottonis-bang-haasi*, ssp. *noli-me-tangere*, and the genus *Sten-Bergmania*. May systematics not be measured by such work! (C.R.)
99. Cockayne, E.A., "Aberrations of *Hemerophila abrupta* (Lep. Geometridae)." *Entomologist*, vol. 82: pp. 49-52, 1 pl. March 1949. Names 3 aberrations and discusses genetics of these forms. Normal and aberrant specimens figured. (P.B.)
100. Cockayne, E.A., "Aberrations of *Abraxas grossulariata*, L." *Ent. Rec. & Journ. Var.*, vol. 61: pp. 33-34. Apr. 1949. Describes and names 4 aberrations. (P.B.)
101. Cockayne, E.A., & H.B.D. Kettlewell, "*Selenia tetralunaria*, Hufn., ab. *pigrescens*, ab. nov., with an account of its genetics." *Ent. Rec. & Journ. Var.*, vol. 61: pp. 9-12, 1 pl. Feb. 1949. (P.B.)
102. Corbet, A. Steven, "Observations on the species of *Rhopalocera* common to Madagascar and the Oriental Region." *Trans. R. Ent. Soc. Lond.*, vol. 99: pp. 589-607, 13 figs. 28 Dec. 1948. Evidence indicates that species common to the two regions colonized Madagascar by migration across the Indian Ocean. (P.B.)
103. Coutin, R., & P. Grison, "Hemichrysalides obtenues par ligature des chenilles de *Laspeyresia pomonella* L. (Lépid. Tortr.) en rupture de diapause expérimentale." (In French.) *Comptes Rendus Soc. Biol.*, vol. 143: pp. 15-17, 1 fig. Jan. 1949. If larvae are ligatured in middle at correct time after raising them from a low to a high temperature, only the front half pupates. (P.B.)

104. Dannreuther, T., "Migration Records, 1948." Entomologist, vol.82: pp.73-78, 105-110. Apr., May 1949. Survey of records, mainly from British Isles. (P.B.)
105. Darlow, H.M., "Insects Taken at Sea in 1948." Entomologist, vol.82: pp.63-68. Mar. 1949. Records of captures in the Mediterranean; mainly migrant Lepidoptera. (P.B.)
106. De Lucca, C., "Further Moth Captures from Malta." Ent. Month. Mag., vol.85: p.96. Apr. 1949.
107. Diakonoff, A., "Microlepidoptera from Indo-China and Japan. 2nd Note." Bull. Mus. Hist. Nat., vol. 20: pp.343-348, 4 figs. June 1948. Describes as new: Syndemis duplex (Tonkin); Eucosma pedisignata (Tonkin); E. fuscicaput (Tonkin). Genitalia figured. (P.B.)
108. Dowdeswell, W.H., R.A. Fisher, & E.B. Ford, "The quantitative study of populations in the Lepidoptera. 2. Maniola iurtina L." Hereditv, vol.3: pp.67-84, 2 figs. Apr. 1949. Study of three more or less isolated populations on small island. Variability, population numbers, and the bearing of the latter on survival of the species are considered. (P.B.)
109. Dufrane, Abel, "Une Acidalide intéressante pour la faune belge." (In French.) Lambillionea, vol.48: pp.50-52. Aug. 1948. New record: Scopula virgulata.
110. Dufrane, Abel, "A propos de la note de Bernard Meier 'Parnassius apollo L. de la Franche-Comté'." (In French.) Bull. Soc. Ent. Mulhouse, 1 Oct. 1948: p.65.
111. Dymond, J.R., "Important advances in Zoological Nomenclature achieved at the Thirteenth International Congress of Zoology, Paris, July, 1948." Can. Ent., vol.81: p.51. Feb. 1949. Summarizes some of the amendments to the Rules adopted last summer and speaks of them with approval. (C.dP.)
112. Evans, W.H., "Some new Hesperidae (Lepidoptera) from Africa." Ann. & Mag. Nat. Hist., (ser.12), vol. 2: pp.54-56, 1 pl. 26 Apr. 1949. Describes as new: Celaenorrhinus kimboza (Tanganyika); Sarangasa aeredesi (S.W. Africa); Gorgyra kalinzu (Uganda); Pelopides fanta bernesii (Rhodesia). Adults and ♂ genitalia of the first three are figured. (P.B.)
113. Evers, Hans, "Zusammenstellung der Literatur über die Kleinschmetterlingsfauna der Nordmark." (In German.) Mitt. Faunistischen Arbeitsgem., vol.1 (n.s.): pp.75-78; vol.2 (n.s.): pp.8-9. Oct./Nov. 1948; 1949. Bibliography of the 30 papers on Microlepidoptera of Nordmark (Germany). (C.R.)
114. Fearnough, T.P., "Variation in reared Heodes (Lycaena) phlaeas." Ent. Rec. & Journ. Var., vol.61: pp.25-27, 1 pl. Mar. 1949. Variation in markings, color, and size described and figured. (P.B.)
115. Fischer, E., "Neue Kreuzungen mit Celerio lineatiliornica Esp." (In German.) Mitt. Schweiz. Ent. Ges., vol.21: pp.201-209, 3 figs., 2 pls. 25 Aug. 1948. Results of a series of crosses, involving also C. euphorbiae, C. galii and C. vespertilio. Adults and larvae are figured in color. (P.B.)
116. Franclemont, John G., "Synonymical notes relating to Menopsimus caducus Dyar (Lepidoptera, Phalaenidae)." Proc. Ent. Soc. Wash., vol.51: pp.74-75. Apr. 1949. Reports that two distinct species have been confused under caducus, i.e., that species and Thalpocharis fractilinea Smith, and distinguishes them. Selects a lectotype for caducus and gives the generic synonymy of Hypenodes, which is ascribed now to Doubleday, and of the species presently included in this genus, both with full references. (C.dP.)
117. Gaál, I., "With Collecting Net in the Upper Valley of the Latorca." (In Hungarian.) Roy. Közl., vol.2: pp.22-27. 1947. An account of a journey into the northeastern Carpathians, with faunistic data on Erebia aethiops-altivaga, Araschnia levana ab. porima, and Pieris bryoniae ssp. neobryoniae. (L.G.)
118. Gaál, I., "The Curious Northern Trend of Libythea celtis (Fuessl.) in the Carpathian Basin." (In German.) Frag. Faun. Hungarica, vol.11: pp.12-14. 1948. Notes on the sole Snout Butterfly of Europe, with special regard to Hungary, where it was formerly known only from the Adriatic seacoast, now pushing north to middle Hungary (Budapest). (L.G.)
119. Gergely, I., "Notes on Caterpillar Distribution." (In Hungarian.) Roy. Közl., vol.2: pp.43-48. 1947. Examples of the "flight" of caterpillars and of Lymantria dispar. (L.G.)
120. Greer, O.T., "Entomological Notes from East Tyrone 1948." Ent. Rec. & Journ. Var., vol.61: pp.27-28. Mar. 1949. Irish Lepidoptera. (P.B.)
121. Harrison, J.W. Heslop, "Rhopalocera in the Scottish Western Isles in 1948, with an account of two new forms of Pararge aegeria (Lep., Satyridae)." Ent. Month. Mag., vol.85: pp.25-28. Feb. 1949. Describes as new so-called subspecies P. a. obliata and P. a. monicae, both from Isle of Rhum. Both forms reared from single female! (P.B.)
122. Hinton, H.E., "On the Origin and Function of the Pupal Stage." Trans. R. Ent. Soc. Lond., vol.99: pp. 395-409, 1 fig. 8 Nov. 1948. Homologizes the pupa with the 'sub-imago' of mayflies; both are regarded as derived from the first imaginal instar, the imago being in reality the second. According to Hinton, the original function of the pupal stage was to permit development of imaginal muscles which could not develop in the larva. (P.B.)
123. Jacobs, S.N.A., "A fortnight's collecting in Switzerland (June/July 1948)." Ent. Rec. & Journ. Var., vol.61: pp.45-49. May 1949. Lepidoptera. (P.B.)
124. Janmouille, E., "Remarques sur la faune belge." (In French.) Lambillionea, vol.48: pp.79-80; vol.49: pp. 19-20. Oct. 1948, Feb. 1949. New Belgian records for various rare moths. (C.R.)
125. Janmouille, E., "Ematheudes punctella Tr. (Anerastinae) espece nouvelle pour la faune belge?" (In French.) Lambillionea, vol.48: p.82. Dec. 1948.
126. Julliard, Charles, "Les parasites de la chrysalide de Vanessa urticae dans la region de Zinal (Valais)." (In French.) Mitt. Schweiz. Ent. Ges., vol.21: pp. 557-565, 4 figs. 27 Dec. 1948. 17 primary and 1 secondary parasites listed. Notes on biology of the parasites and percent of butterflies attacked. (P.B.)
127. Kadocsa, Gy., "The Sunflower-moth and how to Fight It?" (In Hungarian.) Roy. Közl., vol.2: pp. 33-37. 1947. On the biology of, and preventive means against, Homoeosoma nebulellum. (L.G.)
128. Kauffmann, Guido, "Zu Pyrgus alveus Hübn. (Lep. Hesperidae). Seine Flugzeiten und Generationen im Tessin." (In German.) Mitt. Schweiz. Ent. Ges., vol.21: pp.531-546, 12 figs. 27 Dec. 1948. Life cycle of alveus in southern Switzerland fully described. All stages and male genitalia figured. Food-plant is Helianthemum vulgare. (P.B.)
129. Kiriakoff, S.G., "A classification of the Lepidoptera and related groups with some remarks on Taxonomy." (In English.) Biol. Jaarboek, vol.15: pp. 118-143. 1948. Reviews and restates viewpoint that Micropterygidae are more remote from the "Lepidoptera s.s." than are Trichoptera, and therefore accepts term Zeugloptera for them. Then makes all three suborders of new order AMPHIEMENOPTERA. Divides Suborder Lepidoptera into 4 groups which he terms "supercohors" and gives new names: HOPLOSTOMATOPTERA (Eriocraniids); APLOSTOMATOPTERA (Hepialids); NANNOLEPIDOPTERA (Nepticulids); EULEPIDOPTERA (all others). The latter considered to include Cohors Stenmatoncopoda (most "Microlepidoptera") and Cohors Harmoncopoda (all "Macrolepidoptera"). (C.R.)

130. Kovács, L., "Euxoa hastifera (Donz.) and its Occurrence in the Great Hungarian Plains." (In Hungarian.) Rov. Közl., vol.2: pp.3-10. 1947. Account of the habitat of this rare moth in Hungary, with description of two new forms: hungarica; pomazensis. Treats the general problem of E. hastifera and E. obelisca (Hb.). (L.G.)
131. Kovács, L., "A New Roeselia Species from Hungary." (In Hungarian.) Rov. Közl., vol.2: pp.67-68. 1947. Describes as new Roeselia pannonica (Pomáz). Nearest relative: R. strigula. (L.G.)
132. Leeds, H.A., "Butterfly collecting in Wood Walton, Hunts., area, and the Chiltern Hills, during 1948." Ent. Rec. & Journ. Var., vol.61: pp.13-17. Feb.1949.
133. Lorkovic, Zdravko, "Chromosomenzahlen-Vervielfachung bei Schmetterlingen und ein neuer Fall Fünffacher Zahl." (In German.) Rev. Suisse Zool., vol.56: pp.243-249, 4 figs. Feb. 1949. A brief survey of supposed "polyploid series" in Lepidoptera. A case of quintuple polyploidy is reported: Erebia tyndarus, haploid number 8; E. ottomana, 40. Suggests that since these series occur only in closely related species, they have arisen "instantaneously." (P.B.)
134. Lucas, Daniel, "Contribution à la faune des Lépidoptères de l'Afrique du Nord." (In French.) Bull. Soc. Ent. France, vol.53: pp.88-90. 23 June 1948. Describes as new: Ptychopoda parallelolineatella (Tunisia); Syria trifasciatella (Morocco); Heterographis bedocella (Tunisia); H. aequalisella (Sfax); Staudingeria variegatella (Morocco). No figures. Also names 8 aberrations. (P.B.)
135. Owen, D.F., "The Macrolepidoptera of the Moorgate, London, Bombed Sites." Entomologist, vol.82: pp.59-62. Mar. 1949.
136. Picard, J., "Rectifications." (In French.) Rev. franc. Lépid., vol.11: p.335. June 1948. Corrects typographical error and sinks fritillarius Poda as nomen nudum, elevating Pyrgus carthami as name to be used. (C.R.)
137. Picard, J., "Les variations géographiques européennes d'Ochloides venatum Bremer et Gray." (In French) Rev. franc. Lépid., vol.11: pp.338-340. Sept. 1948. Formerly known as Augiades sylvanus. Discusses the 4 races in Europe. (C.R.)
138. Picard, J., "Notes sur trois Pyrgus asiatiques du sousgenre Scolotrix (Lep. Hesperidae)." (In French) Bull. Soc. Ent. France, vol.53: pp.114-118, 3 figs. 27 Oct. 1948. Notes on P. bieti, P. dejeani, and P. oberthürri. ♂ genitalia figured. (P.B.)
139. Rey, W., "Über Schmetterlings-Wanderungen." (In German.) Mitt. Schweiz. Ent. Ges., vol.21: pp.233-248. 25 Aug. 1948. Observations of migration, and a theoretical discussion of the problem. (P.B.)
140. Richardson, Austin, "Crymodes exulis ssp. assimilis and other Scottish Moths." Entomologist, vol.82: pp.79-82. Apr. 1949.
141. Rosentiel, R.G., "Life History and Control of the Orange Tortrix in Oregon." Journ. Econ. Ent., vol. 42: pp.37-40. Feb. 1949. Life history and habits of Argyrotaenia citrana. (P.B.)
142. Seiler, J., E. Humbel, & H. Amann, "Das sexuelle Mosaik diploider Intersexe aus der kreuzung Solenobia triquetrella x S. fumosella (Lepidoptera, Psychidae)." (In German.) Experientia, vol.5: pp.115-116. 15 Mar. 1949. Preliminary report of some experiments which conflict with Goldschmidt's theories of the mechanism of intersexuality.
143. Travassos, Lauro, "Contribuição ao conhecimento dos 'Arctiidae'. XVII. Genero 'Thysanopyrma' Butler 1875." (In Portuguese.) Rev. Brasil. Biol., vol.9: pp.67-78, 31 figs. Mar. 1949. 6 spp. listed, 3 re-described and figured in great detail. (P.B.)
144. Viette, P., "A propos du mimétisme de Trichura cerberus Pall. (Lep. Amatidae)." (In French.) Bull. Soc. Ent. France, vol.53: pp.139-140, 2 figs. 28 Nov. 1948. Resemblance to an Incheumon-fly described and figured. (P.B.)
145. Vintéjoux, Max, "Not sur deux Argynnes du Massif Central." (In French.) Rev. franc. Lépid., vol.11: pp.328-329. June 1948. New records for Clossiana titania and Brenthis hecate. (C.R.)
146. Wakely, S., "Recent entomological notes from South London." Ent. Rec. & Journ. Var., vol.61: pp.37-38. Apr. 1949. Lepidoptera. (P.B.)
147. Warnecke, Georg, "Aufruf zur Beobachtung von Wanderschmetterlingen." (In German.) Mitt. Faunistischen Arbeitsgem., vol.1 (n.s.): p.29-31. Mar. 1948. Lists, in categories, main migratory Lepidoptera of central Europe, outlines information needed in reports and requests records of 1947 migrations. (C.R.)
148. Warnecke, Georg, "Neuerausbreitung von Schmetterlingen in Schleswig-Holstein und in Niederelbegebiet." (In German.) Mitt. Faunistischen Arbeitsgem., vol.1: (n.s.): pp.36-39. Apr. 1948. Discusses all known notable migrations in north-central Germany of 7 butterflies: Melanargia (= Satyrus) galathea, Epinephele (= Pyronia) lycaon; Pararge aegeria; Chrysophanus (= Lycaena) virgaureae; Lycaena amanda; Heteropterus morpheus; and Carterocephalus silvius. Some migrations records as old as 1864. (C.R.)
149. Warnecke, G., "Wichtigere Schmetterlingfunde bei Heide und Umgebung in den Jahren 1946 und 1947." (In German.) Mitt. Faunistischen Arbeitsgem., vol.1 (n.s.): pp.45-46. May 1948. Season summary for 1946 and 1947 for Heide, Germany. (C.R.)
150. Warnecke, G., "Neuerausbreitung von Schmetterlingen in Schleswig-Holstein und in Niederelbegebiet." (In German.) Mitt. Faunistischen Arbeitsgem., vol.1 (n.s.): pp.46-48. May 1948. Continues previous account of Lepidoptera migrations in north-central Germany (see #148, above), with records for 10 moths: Pterogon proserpina; Arctotis interjecta; Dianthoecia compacta; Leucania l-album; L. albipuncta; Orthosia rutilicilla; Calophasia lunula; Plusia moneta; Eucosmia certata; and Boarmia gemmaria. (C.R.)
151. Warren, B.C.S., "Three hitherto unrecognized European species of Erebia (Lepidoptera: Satyridae)." Entomologist, vol.82: pp.97-104. May 1949. Discussion of some species of the tyndarus group. Describes as new E. sudetica inalpina (Switzerland). (P.B.)
152. Weber, P., "Flügelform und Geäder der europäischen Gelechiidae." (In German.) Mitt. Schweiz. Ent. Ges., vol.21: pp.215-232, 3 figs., 16 pls. 25 Aug. 1948. Wings and venation of 68 genera described and figured. The characteristic features are also listed in tabular form, and a scale is provided by which the degree of angulation of a specimen's wings can be determined (a very useful idea!). Dr. Weber desires specimens of a number of other genera to complete his studies. (P.B.)
153. Winkler, W., "Herbstwanderungen von Pyrameis atalanta L. (Lep. Rhop.)." (In German.) Mitt. Faunistischen Arbeitsgem., vol.1 (n.s.): p.22. Feb. 1948. Migrations of Vanessa atalanta in Kiel, Germany, reported. (P.B.)
154. Winkler, W., "Einige bemerkwerte Schmetterlingsfunde 1948 in Schleswig-Holstein." (In German.) Mitt. Faunistischen Arbeitsgem., vol.1 (n.s.): p.75. Oct./Nov. 1948. Notes on Apatura iris, Araschnia levana, Hadena gemmea. (C.R.)



NOTICES BY MEMBERS

MICROLEPIDOPTERISTS! Wish to exchange: dried leaves containing insect MINES (all orders) accompanied by name of host plant (and of insect, if possible) and locality, etc. Offer European leaf-mines of Lepidoptera (and other orders if wanted). Exchange also in fruit-flies (Trypetidae).
Dr. E.M. Hering, Reichensteiner Weg 21, Berlin-Dahlem (American Sector), GERMANY.

COLLECTION OF BUTTERFLIES & MOTHS for sale reasonably. World-wide in scope, but strongest in U.S.A. (esp. Colo., N.Mex., Ariz.) and European forms; emphasis on Noctuidae, Tortricidae, Nymphalidae, Hesperiidae. Collection spread on pins, and many unidentified papered specimens, all with full data. Collection to be sold as a whole. Sunie E. Wiegand, 2617 W. Sterner St., Philadelphia 32, Pa.

JAPANESE MOTHS offered in exchange for those of America and other countries,--especially Geometridae, Pyralidae, Spingidae, and Noctuidae. Prof. Masao Azuma, Kōyō High School, Imazu, Nishinomiya, Hyogo Pref., JAPAN, or 1644, Rinkeiji, Arima, Kobe, JAPAN.

For sale: *Boloria*, *Erebia*, *Oeneis* & other Arctic and Far Northern species. Prices nominal. R.J. Fitch, Rivercourse P.O., via Lloydminster, Sask., CANADA.

Would like to exchange butterflies, large moths, and beetles of the world. Have many duplicates, including several thousand from tropics, with full data. Will be pleased to answer all correspondence. G.F. Schirmer, 2912 N. 45th St., Milwaukee 10, Wis.

SWISS BUTTERFLIES offered in exchange for species from elsewhere. Dr. A. Lorenz, Kasernenstrasse, Herisau, SWITZERLAND.

FOR SALE: THE "LIBRA-MOUNT"; a double-Riker-type mount in Book Form. Ruggedly built. Send for descriptive leaflet. Will consider exchange for Macro-Rhopalocera from all parts of the world, especially *Papilio*, *Morpho*, *Ornithoptera*, etc. Arthur Gatti, 63 W. 7th St., Mt. Vernon, N.Y.

Wanted: information on the distribution of Utah LYCAENIDAE in various collections. Please send notices of availability of material. John C. Downey, Biology Dept., Univ. of Utah, Salt Lake City 1, Utah.

All sizes of black steel insect pins from Czechoslovakia for sale at \$3.00 per 1000 or \$25.00 for 10,000. Dr. H. Wilcke, Kössen/Tyrol, No. 199, AUSTRIA.

AGENT WANTED IN U.S.A. who can sell our whole 1949 catch, to be collected in faunistically rich Khasi and Naga Hills of northern India; including butterflies and many other orders of insects. Total will be about 1,000,000 specimens. Please contact us for our terms. Himalayan Butterfly Co., Shillong, Khasi Hills, INDIA.

Have quantity of Madagascar *Urania riphaeus*, first quality papered specimens, for exchange by 100 or 1000. Also have *Morpho amathonte*, *menelaus*, *aega*, etc. by one or a dozen, and thousands of other butterflies for exchange, for what have you? Butterfly World Supply House, 289 E. 98th St., Brooklyn 12, N.Y.

QUESTIONS AND ANSWERS

Q. "How can I go about finding Micropterygidae in New England? I need adults and especially larvae and pupae for studies of evolutionary position."

A. They are found on acid bogs and fly by day in early July. Look on flowers on and at the edges of bogs. So far as I know they are limited to cool zones (Canadian and perhaps Hudsonian). I have never collected any in New England; but on Mt. Marcy they occur at about 3000 ft. elevation, and may be found in cool spots as low as 1000 ft. In my experience they are very rare. Larvae should occur earlier, but it is probably hopeless to look for them, assuming there might be a hundred or two in an acre of wet moss.

W.T.M. Forbes

Q. "I would be interested in knowing the basis for changing the name of our common silver-spotted skipper from *Epargyreus tityrus* (Fabr.) to *Proteides clarus* (Cramer). If I am not wrong both were described in 1775, *tityrus* by Fabricius in his *Syst. Ent.* and *clarus* by Cramer in his *Pap. Exot.*; if so, why has the long standing *tityrus* been discarded for the former synonym *clarus*? With the case of *Epargyreus* versus *Proteides* are not *tityrus* (= *clarus*), *zestos*, and *exadeus* genitally homogeneous and distinct from *mercurius* (the logotype of *Proteides*)? I hope you can set me straight on this matter." (Ed. Note: Prof. Forbes referred this question to Mr. E.L. Bell.)

A. The reason for the use of *clarus* Cramer instead of *tityrus* Fabricius is that *Papilio tityrus* Fabricius (1775) is a homonym of *Papilio tityrus* Poda (1761), as pointed out by Hemming (1934). The Generic Names of the Holarctic Butterflies, p.159) and *clarus* Cramer is the next available name.

Yes, the male genitalia of *clarus* Cramer, *zestos* Geyer and *exadeus* Cramer are homogeneous and although of similar construction those of *mercurius* Fabricius differ in slight details. The genus *Epargyreus* and *Proteides* are very closely related and it seems to be a matter of individual opinion as to whether the differences between the generotypes, *clarus* and *mercurius*, are of sufficient importance for their separation.

Ernest L. Bell

Erratum: In preparation of the photographic copy of the *Lep. News*, vol.3, no.3: p.36, the following words were inadvertently omitted from the 5th line of Mr. Bell's answer, following the last parenthesis: "of a second specimen".

Please note this **erratum** in your copy of the *News*.



LIVING MATERIAL



Wish to buy, exchange, or sell living Lepidoptera ova; *Pseudohazis eglanterina* ova especially desired. Mrs. Hazel Chase, 272 N. Union St., Galion, Ohio.

Living OVA for sale or exch. (in season): *Citheronia regalis*, *Eacles imperialis*, *Platysamia gloveri*, hybrid *cecropia-gloveri*, *Actias luna*, *Automeris io*, *Telea polyphemus*. Duke Downey, 51 W. 4th St., Sheridan, Wyo.

- Anderson, C.A., 3209 Centenary, Dallas 5, Texas.
Danaus plexippus.
- Azuma, Masao (Prof.), 1644, Rinkeiji, Arima, Hyogo-ku, Kobe, JAPAN. MACRO: esp. Geometridae. MICRO: esp. Pyralidae. Life Hist., Distribution. Coll. Ex.
- Boone, Peter, 11 Edgehill St., Princeton, N.J. MACRO: esp. Sphingidae, Ceratocampidae.
- Coy, L.P. (Dr.), 911 9th Ave., San Mateo, Calif. RHOP: esp. *Speyeria*, *Euchloe*. Coll. Ex.
- Fulton, Macdonald (Dr.), Dept. of Biology, Univ. of Houston, 3801 St. Bernard St., Houston 4, Texas. RHOP. Coll.
- Henstock, H. (Dr.), "Glengariff", Caerwys, N. Wales, GREAT BRITAIN. RHOP. British MACRO. Coll. Ex.
- Hering, E.M. (Prof. Dr.), Zoologisches Museum, Invalidenstr. 43, Berlin N. 4, GERMANY. MACRO: Pericopidae, Zygaenidae, Diopsideae. MICRO. Leafminers of all orders. Coll. Ex.
- Hessler, Robert, 6510 N. Campbell, Chicago 45, Ill. RHOP. MACRO. Coll. Ex. Buy.
- Hoffman, James, 1039 S. Mulberry, Ottawa, Kansas. RHOP: Papilionidae, Pieridae, Nymphalidae. MACRO: Sphingidae, Saturniidae. Coll. Ex. Buy. Sell.
- Howe, William, 822 E. 11th St., Ottawa, Kansas. LEPID: esp. Sphingidae and Catocalinae. Life History, Parasites. Coll. Ex. Buy.
- Inoue, Hiroshi, 290, Miyamae, Oka-machi, Minami-ku, Yokohama, JAPAN. MACRO: Geometridae, Cymatophoridae, Drepanidae. Life History. Coll. Ex.
- Jelinek, Anton, 3900 Diversey Ave., Chicago 47, Ill. RHOP: tropical, esp. *Morpho* & *Papilio*. Coll. Ex. Buy. Sell.
- Lambert, Robert, Dept. of Lands & Forests, Bureau of Entomology, 53 Grande-Allée, Quebec, P.Q., CANADA. MICRO: esp. Tortricidae. Biology of forest Lepid. Coll.
- Laspe, Charles G., 4044 Hawthorne, Palos Verdes Estates, Calif. RHOP: Papilionidae. Coll.
- Loeliger, Robert (Dr.), Susenbergstrasse 20, Zürich, SWITZERLAND. RHOP. MACRO. Migration.
- Mergott, Winston B., 549 Oxford Blvd., Pittsburgh 16, Pa. RHOP. MACRO. Coll. Ex.
- Minot, George R. (Dr.), 71 Sears Rd., Brookline 46, Mass. RHOP. Coll.
- Peace, Roger W., Jr., 6 Trumbull St., New Britain, Conn.
- Schirmer, G.F., 2912 N. 45th St., Milwaukee 10, Wis. RHOP. Coll. Ex. Buy. Sell.
- Schmela, Dora E. (Mrs.), 135 N. Evergreen Drive, Ventura, Calif. RHOP. Coll.
- Seok, D.M., National Science Hall, Chung-ku, Seoul, KOREA. RHOP: esp. Pieridae.
- Smith, Arthur C., Rockefeller Foundation, Calle de Viena 26, Mexico, D.F., MEXICO. RHOP. & MACRO: esp. of Mexico & Southwestern U.S.A. Ecology, Distribution. Coll. Ex. Buy. Sell.
- Vrana, Richard, Laurel Hill Rd., Northport, N.Y.
- Warnecke, Georg (Landgerichtsdirektor), Hohenzollernring 32, Hamburg-Altona, GERMANY. RHOP: Palaearctic. MACRO: Palaearctic, esp. Geometridae. Migration, Zoogeography. Coll.
- Williams, Carroll M. (Prof.), Harvard Biological Labs., Cambridge 38, Mass. RHOP. MACRO: Saturniidae. Physiology of metamorphosis. Coll. Buy.

DECEASED

- Keith, Edward D. (Rhode Island).
Lhomme, Léon. (France).

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Other inescapable duties have forced us to drop behind in replying to the very large number of letters received in the Society mail. Emphatically, our delay does not indicate disinterest. The enormous correspondence and the time-devouring labor of keeping financial records emphasize to us the urgent need of organizing the Society on a full-scale basis, with a substantial complement of elected officers to divide the pleasure and toil of leading the Society. We hope such a step may be taken for 1950.



Changes of address are being omitted, since the 1949 List of Members will be compiled in September.

THE LEPIDOPTERISTS' NEWS
The monthly periodical of the Lepidopterists' Society
Membership is open to all persons interested in any aspect of the study of butterflies and moths. The 1949 dues, including subscription to the NEWS, are \$2.00 for Regular Membership and \$4.00 or more for Sustaining Membership. Please make remittances payable to Charles L. Remington. Price for Vol. 2 is \$2.00. No complete sets of Vol. 1 are available.