

SUMMARY OF PROCEEDINGS OF THE
FIRST ANNUAL MEETING OF THE LEPIDOPTERISTS' SOCIETY

The meeting was held December 29 and 30, 1950, at the American Museum of Natural History in New York City. Most of the first morning was taken up with registration and those present becoming acquainted with one another and renewing old friendships. Matters were a bit complicated by icy conditions on all the roads, so things didn't get started quite as soon as expected. In due time, however, Mr. Austin H. Clark called the meeting to order. Dr. A.B. Klots, chairman of the Local Arrangement Committee, gave a short welcoming speech. Afterwards, the group adjourned to the fifth floor of the Museum, where the Lepidoptera collection is housed. Here, under the supervision of Dr. F.H. Rindge, Dr. Klots, and Mr. C.F. dos Passos, parts of the collection were shown to interested members.

Of the 51 members present, 21 were from outside the New York - New Jersey area, from the following states and provinces: Connecticut (5); District of Columbia (2); Maine; Maryland; Massachusetts (2); Michigan (2); Missouri; Ontario (2); Pennsylvania (3); Quebec; Saskatchewan.

After lunch, Dr. C.L. Remington called the symposium on "Geographic Subspeciation in the Lepidoptera" to order. The symposium will be published in full in another issue of the News. It will suffice, therefore, merely to state that this was a most interesting and educational symposium.

A number of the members got together and had dinner at a local restaurant. Many interesting conversations and discussions took place during the meal. This was followed, back at the Museum, by the Illustrations Session. A number of excellent paintings, photographs, and exhibits from various members were exhibited. These were put on display largely through the efforts of Dr. Klots and Mr. S.A. Hessel; a vote of thanks is most certainly due these men, as well as to all others who helped, in their untiring efforts to have everything in such good shape. A number of colored slides were shown, and the highlight of the evening was the showing of films by Nicholas Shoumatoff on collecting Lepidoptera in Jamaica.

The morning session on December 30 was devoted to general papers, with Dr. Rindge presiding. The papers included the following:

1. "The Canadian North and Some of the Indigenous Butterflies", by T.N. Freeman (Read by E.G. Munroe). A brief summary of the butterfly collecting in the Canadian north, together with an exhibit of some specimens therefrom.
2. "Results of a Collecting Trip to the Sangre de Cristo Range in Colorado", by Otto Ackermann.

Some interesting remarks on collecting in Colorado, together with a few specimens on exhibit.

3. "Status of Work on the Listing of Butterflies of Maryland", by John H. Fales. The present situation in regard to a listing of the butterflies in Maryland, and a plea for assistance from people who have collected in that state, in order to have the list as complete as possible.
4. "Some Notes on Michigan Microlepidoptera", by Ralph Beebe (Read by C.L. Remington). A brief summary of the status of Michigan Microlepidoptera.
5. "Observations of Connecticut Lepidoptera, with New Faunal Records", by Peter F. Bellinger and Roger W. Pease, Jr. Mimeographed lists of the new additions to the Connecticut fauna were distributed as part of this talk.
6. "Studies on Jamaican Butterflies", by Nicholas Shoumatoff. Observations on the butterfly population of Jamaica.
7. "The Family Castniidae", by Nicholas W. Gillham. A few remarks on this interesting family of moths, with an exhibit of specimens.
8. "The Relative Weights of Some Butterflies", by John H. Fales. The results of weighing a number of butterflies.
9. "Plastic Mounts for Lepidoptera", a demonstration by Otto Ackermann of the mounts and techniques used in preparing them.

Following this last paper, it was voted to hold the business meeting. In the absence of Dr. J.H. McDunnough, President pro tem., the meeting was called to order by Austin H. Clark, Senior Vice President-elect.

Upon motion duly made, seconded, and unanimously carried, Mr. Clark was elected Chairman of the meeting, pending his formal election as Senior Vice President.

Upon motion duly made, seconded, and unanimously carried, it was

RESOLVED, that the Constitution and By-Laws of The Lepidopterists' Society, as prepared and adopted by the Organization Committee and submitted to the Society in the Report of that Committee dated October 1, 1950, be and the same hereby are ratified and approved as the Constitution and By-Laws of the Society, and it was

FURTHER RESOLVED, that said Constitution and By-Laws be published by the Society and that a copy thereof be sent to each of its members.

Ballots announcing the slate of officers as pre-

ANNUAL MEETING OF THE LEPIDOPTERISTS' SOCIETY - cont.

viously proposed by the Nominating Committee had been mailed to all members of the Society prior to the meeting. The Secretary announced the results of the voting to be as follows:

<u>Officers</u>		<u>Votes</u>
President	J.H. McDunnough(Canada)	142
Senior Vice President	A.H. Clark (U.S.A.)	142
Vice President	W. Forster (Germany)	141
Vice President	K.J. Hayward (Argentina)	138
Secretary	F.H. Rindge (U.S.A.)	142
Treasurer	J.B. Ziegler (U.S.A.)	140

Members of the Executive Committee

To serve 1 year	Henri Stempffer (France)	124
	T.N. Freeman (Canada)	132
To serve 2 years	L.M. Martin (U.S.A.)	130
	N.D. Riley (Great Britain)	127
To serve 3 years	Takashi Shirozu (Japan)	122
	J.G. Franclemont (U.S.A.)	130

Whereupon the Chairman announced that same were duly elected.



Photo by C.L. Remington

PART OF THE EXHIBITION OF PHOTOGRAPHS AND SPECIMENS

Observers are D.T. McCabe, S.A. Hessel, and C.F. dos Passos. The largest prints are by L. Quitt. Other exhibitors of photographs were: C.F. dos Passos, A.B. Klots, L. LeCharles, C.L. Remington, E.W. Teale, B.C.S. Warren. Superb paintings of life-histories by J.A. Comstock and C.M. Dammers were loaned by the Los Angeles County Museum. Colored photographs for projection were exhibited by R.H. Macy, C.L. Remington, R. E. Richard (Chairman of Illustrations), N. Shoumatoff. Specimens on display were from: O. Ackermann, C.A. Anderson, D.L. Bauer, Margaret M. Cary, D.C. Ferguson, L. Harris, Jr., S.A. Hessel, C.L. Remington.

ANNUAL MEETING OF THE LEPIDOPTERISTS' SOCIETY - concl.



Photo by C.L. Remington

GROUP PHOTOGRAPH AT FINAL SESSION

FRONT ROW: Heineman, (unidentified), Mrs. Remington, Fales, Clark, dos Passos, Grey, (unidentified).
 MIDDLE ROWS: Duane, Wilcox, Adelphie, Clench, Bellinger, Ackermann (partly hidden), P.S. Remington, McAlpine (front), Ehle (rear), Klots, Pease, McCabe, Gillham.
 REAR ROW: Rindge, Shoumatoff, Shappirio, Beirne, Bruggemann, Munroe, Ehrlich, Hessel.

Upon motion duly made, seconded, and unanimously carried, it was

RESOLVED, that the action of the officers pro tem. of The Lepidopterists' Society in calling this annual meeting, appointing committees, sending out ballots, etc., be and the same hereby is in all respects ratified and approved, notwithstanding the absence of strict compliance with all the terms and provisions of the Constitution.

Upon motion duly made, seconded, and unanimously carried, it was

RESOLVED, that The Lepidopterists' Society give a vote of thanks in appreciation of all the work performed by Dr. and Mrs. C.L. Remington, and Mr. H.K. Clench for the Society.

A brief discussion followed on the subject of the time of year of the next meeting. A large majority of members present expressed a preference for holding the meeting at the end of the year.

The Editor of The Lepidopterists' News was given authority to send copies of the News to institutions and libraries.

There being no other business, the meeting was adjourned.

Frederick H. Rindge, Secretary

Members and Guests Present at the Meetings

L.P. Grey	Mrs. C. Reed Cary
Harry K. Clench	Otto Ackermann
Cyril F. dos Passos	Peter Boone
Fred T. Naumann	D.T. McCabe
Bryan P. Beirne	S.A. Hessel
Eugene Munroe	J.B. Ziegler
Paul F. Bruggemann	Fred H. Rindge
David G. Shappirio	W.J. Gertsch
P. Sheldon Remington	Alexander B. Klots
Paul R. Ehrlich	Nicholas Shoumatoff
Henry Fleming	John J. Kellner
Marion E. Smith	Bro. Adelphie
George Ehle	Mr. and Mrs. Bernard
Nicholas Gillham	Heineman
Peter F. Bellinger	John W. Cadbury, III
Roger W. Pease, Jr.	Jane R. Van Zandt
LeRoy Wilcox	Lincoln P. Brower
John H. Fales	John P. Duane
W.S. McAlpine	Ernest L. Bell
Mr. and Mrs. Austin H. Clark	Alice L. Hopf
Otto H. Schroeter	Louis S. Marks
Melville W. Osborne	W. Donald Thomas
Dr. and Mrs. C.L. Remington	L.J. Sanford
C. William Beebe	Otto Buchholz
Ernst Mayr	A. Glanz
Mr. and Mrs. C.R. MacGregor	G.T. Hellman

by F. Martin Brown
Colorado Springs, Colo.

Any taxonomist capable of balancing his check-book can use simple statistical methods to improve the quality and value of his work. In this and several succeeding issues of the News I will outline some of the statistical procedures that I have found to be useful in taxonomy. At the same time I will try to explain how and when these procedures may be applied to our problems.

There are two classes of measurement commonly used in biology that lend themselves to statistical analysis: (1) linear measurements and their derived ratios; (2) frequencies. These measurements standing by themselves rarely are of importance. They tell us something about the specimens examined but little about the species or subspecies involved. What we really want to know is this: Do two series of specimens differ enough so that there is little chance that they represent extreme samples drawn from a single variable but homogeneous population? To help answer this question certain simple mathematical procedures must be applied. Perhaps the best way for me to show how this is done is to set out in each case a definite problem related to the taxonomy of butterflies.

I. Linear Measurements

THE PROBLEM: C.F. dos Passos, while studying Plebeius saepiolus, a common western Blue, noted among other things that the specimens before him from southern Utah were rather small for the species. He named this subspecies gertschi and used as one of its characteristics its small size. Now let us see if this smallness was an illusion or if gertschi really is characterized by being small.

THE SOLUTION: I took the first thirty males from each of three randomly arranged series of saepiolus in my collection and carefully measured the greatest radius of the left forewing of each specimen. Two of these series were from localities in the California mountains considered to harbor P. saepiolus saepiolus Bdv. The third series was from Navajo Mountain, Utah, where gertschi flies. Each of these series was treated statistically to arrive at certain numbers, the STANDARD DEVIATION and the PROBABLE ERROR OF THE MEAN, that can be used to estimate the chance that there is no real difference between pairs of series.

To save space and to avoid monotonous repetition I have gone into the details of the arithmetic for only one of the three series. The results of similar treatment of the other two series are included in Table 2.

Table 1 may look formidable but it is easy to build. Here are the steps that are involved.

1. The column labelled "mm." divides the range of actual measurements made into a series of uniform CLASSES, each with a range of 0.2 mm. Into the smallest class "13.0-13.1" go all of the specimens that measured either 13.0 or 13.1 mm. (theoretically

this class extends from 12.95 mm. to 13.14 mm.).

2. The column headed "n" records the results of sorting the actual measurements into classes. Two specimens fell into the smallest class, one into the next, three into the next and so forth through the entire group measured. The sum of the numbers in this column is the number of specimens used (N). In this case N equals 30.

3. The next step is to find the average size of the specimens in the series. The work for this is

TABLE 1.

Treatment of the McCloud, Calif., sample
of Plebeius g. saepiolus Bdv.

mm.	n	d	d ²	d ² n
13.0-13.1	2	-6	36	72
13.2-13.3	1	-5	25	25
13.4-13.5	3	-4	16	48
13.6-13.7	3	-3	9	27
13.8-13.9	2	-2	4	8
14.0-14.1	1	-1	1	1
14.2-14.3	3	0	0	0
14.4-14.5	4	+1	1	4
14.6-14.7	2	+2	4	8
14.8-14.9	4	+3	9	36
15.0-15.1	3	+4	16	48
15.2-15.3	0	+5	25	0
15.4-15.5	2	+6	36	72
15.6-15.7	0	+7	49	0
15.8-15.9	0	+8	64	0
16.0-16.1	1	+9	81	81

N = 30

Sum = 430

Mean = 14.32 mm. v = 14.33

p.e.m = 0.10 mm. σ = 3.795

S.D. = 0.76 mm.

Brown: SIMPLE STATISTICS FOR THE TAXONOMIST -cont.

not shown in Table 1. Simply add the measurements made and divide by N . The quotient is the average size, or MEAN. In this case the mean is 14.32 mm. (Note: Always carry the mean one decimal place beyond that recorded in making the measurements.)

4. Now we are ready to develop the column labelled "d". This column records "difference from the mean". To simplify the arithmetic without seriously affecting the results the differences are noted in whole numbers. It is done in the following manner. In column "d" put a 0 in the space opposite the class that contains the mean (in this case "14.2-14.3", since this class contains all measurements between 14.15 mm. and 14.34 mm.). Number consecutively each of the classes above and below the central class. To those smaller than the central class append a minus sign. (The algebraic sign of "d" is not necessary for the work we are going to do but is useful for other steps you may want to apply.)

5. The next column, " d^2 " is nothing more than the square of the number in column "d" for each class.

6. The column labelled " d^2n " is made up of the products of the numbers found in columns "n" and " d^2 " for each class. For our class 13.0-13.1 these are 2 and 36 respectively and the product is 72.

7. Now add the numbers in " d^2n " and divide this sum by N . In our case the sum is 430 and N is 30. Thus the quotient is 14.33. This number is the VARIANCE OF THE CLASSES and is labelled "v". (Note: If N is less than 30 use $N-1$ as the divisor.)

8. The square root of the variance yields the STANDARD DEVIATION OF THE CLASSES, σ . In our case this is 3.795.

9. In column "d" we allowed a full unit, 1, to represent a difference of only 0.2 mm. Thus the units in "d" are five times those we used in making our measurements. As a result of this the standard deviation of the classes is five times the size of the standard deviation of the measurements that were made. So, by dividing 3.795 by 5 we arrive at the STANDARD DEVIATION OF THE SERIES MEASURED (S.D.). This is 0.76 mm. and is one of the numbers sought. (Note: Since throughout these calculations we have used the mid-point of class "14.2-14.3" as the mean of the series instead of 14.32 mm., the true mean, there is a slight error in v and thus in σ and S.D. These errors can be corrected by methods outlined in any good book on statistics. This correction always makes S.D. smaller. By omitting the correction, which is slight, the error in our figure is on the side of a safer inference at the expense of arithmetic accuracy. With small series I generally ignore the correction EXCEPT WHEN THE CONVERSION OF σ TO S.D. REQUIRES MULTIPLICATION.

10. After one more step, we are through with Table 1. THE PROBABLE ERROR OF THE MEAN ($p.e._m$) is found by dividing the S.D. by the square root of $N-1$ and then multiplying the quotient by 0.6745. In our

case $p.e._m$ is 0.10 mm.

Now of what use are these numbers after we have obtained them? From the S.D. we can get a much better idea of the range in size of a large series of specimens than from a simple statement of the smallest and largest specimen measured. If S.D. is multiplied by 2.58 and the resultant number is added to and subtracted from the mean of the series these numbers give the range within which 99% of all of the specimens in an infinitely long series fall. (Note: The derivation of 2.58 will be explained in a later article.) The "99% limits" is a more meaningful method of stating the range in size for a measurement.

Those specimens that fall materially more than 2.58 S.D. away from the mean should be critically examined. Going over the individuals in each of the series studied I find that none of the Californian specimens fall outside of the 99% limits for their respective samples. There is one Navajo Mountain specimen that measures 10.9 mm. This is 0.1 mm. outside of the limits for that series (Table 2). Although this specimen is mathematically suspect I defy anyone to pick out the individual by eye! In a case like this the researcher must use common sense. The very meaning of "99% limits" allows 1 per 100 to be outside the limits. I think that we can safely say there is nothing odd about the sizes of the individuals within each series. In other words, so far as size is concerned each series is homogeneous.

The next step is to see of what use is $p.e._m$. Just as the S.D. is used for comparing an individual with a whole series, $p.e._m$ is used to compare one series with another series. Table 3 is the result of the comparisons of our three samples. Following it is an explanation of how the numbers were derived and what they mean.

The first two columns are self-explanatory and obvious. The third column "probable error of difference" is easily computed. Square the $p.e._m$ for each of the two means involved, add these squares and then take the square root of the sum. This probable error is usually abbreviated $p.e.d.$ to differentiate it from the $p.e._m$. The "t" score is arrived at by dividing the difference between the two means by its probable error ($\frac{m_1 - m_2}{p.e.d.}$). The "t" score is the important number in Table 3. (Note: The interpretation of "t" scores is somewhat influenced by sample size. To accent them as they stand is to err on the side of caution.)

The "t" score is related to the probability that the two means were derived from samples drawn from the same general population. In taxonomy, as in other fields using biometry, a "t" score of 3 or less has little or no meaning. About 1 in 12 samples drawn from a homogeneous population will show a "t" score of 3 when compared with other samples from the same population. Since in taxonomy we deal usually with very small samples of any population, I prefer to consider different only those samples

that show a "t" score of at least 6 and preferably 7. A "t" score of seven will occur about once among 500,000 samples drawn from the same population. On this basis we can say that there is no reason to feel that the difference in size observed between the samples from McCloud and Big Meadows is signifi-

cant. We can also say with a high degree of confidence that the Navajo Mountain sample represents a population that is smaller than true P. saepiolus saepiolus Bdv. It is safe to say, at least on the basis of size, that gertschi dos Passos is a valid subspecies of P. saepiolus.

TABLE 2

Parameters of three samples of P. saepiolus

	McCloud, Calif.	Big Meadows, Calif.	Navajo Mt., Utah
N =	30	30	30
mean	14.32 mm.	13.90 mm.	12.37 mm.
p.e. _m	0.10 mm.	0.13 mm.	0.07 mm.
S.D.	0.76 mm.	1.00 mm.	0.53 mm.
99% limits	12.36-16.28 mm.	11.32-16.48 mm.	11.00-13.74 mm.

TABLE 3

Comparison of the series

series compared	difference between means	probable error of difference	"t" score of difference
McCloud-Big Meadows	0.42 mm.	0.16	2.6
McCloud-Navajo Mt.	1.95 mm.	0.12	16
Big Meadows-Navajo Mt.	1.53 mm.	0.15	10

CARBON TETRACHLORIDE IS DANGEROUS

The use of carbon tetrachloride to show wing venation and as a killing agent was suggested in the Lep. News [vol.4: pp.70 and 73]. In the September, 1950, issue of Consumers' Research Bulletin there is warning of the dangerous nature of this fluid, with mention of four cases of death from its use reported from Westchester County, New York, in a six weeks' period ending April 21, 1950. "Medical experts recommend that all products containing carbon tetrachloride be clearly labeled, no matter how small the amount present, pointing out that one teaspoonful taken internally may be fatal and the fumes from one cupful in a poorly ventilated place may cause death."

Entomologists often work in small or poorly ventilated rooms, and in studying wing venation would have their faces near or directly over the specimens being examined. The moral is obvious.

Hugh B. Leech
San Francisco, Calif.

CORRECTION ON HÜBNER'S FLORIDA

In the Lepidopterists' News [vol.4: p.62; 1950] there is a short article entitled "Hübner's Florida" by Austin H. Clark. In it there is a misquotation of Hübner. If one will consult the first three "Hundert" [volumes] of the Zuträge, he will find the following cited localities, which have reference to the area discussed by Clark. "Aus Florida", "Aus Georgien in Florida", "Aus Neugeorgien", and "Georgien in Nordamerika". Nowhere is there a reference to "Florida in Georgia". Harris in his revised Butterflies of Georgia, introduction, page v, also makes reference to "Florida in Georgia", undoubtedly based upon Clark. In the Sammlung there is one reference to a North American locality in the text, that is "Pennsylvania" on page 32; some of the plates bear localities in addition to the names, but none such as "Florida in Georgia". Hemming cites localities from the Hübner manuscripts, but still none are as cited by Clark; I am convinced he meant "Georgien in Florida".

John G. Franclemont
Washington, D.C.

FIELD NOTES ON THE BUTTERFLIES OF KNOB LAKE, NORTHERN QUEBEC¹

by Eugene Munroe²
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In 1948, as was reported in the Season Summary for that year, I spent some six weeks in the Knob Lake district of northern Quebec. My trip formed part of the Northern Insect Survey, and was sponsored by the Division of Entomology, Canada Department of Agriculture, and by the Defence Research Board, Canada Department of National Defence. In addition, the most valuable help was provided by the Labrador Mining and Exploration Company, which arranged for accommodations and other facilities at its camp at Burnt Creek, near Knob Lake. One of the objectives of the trip was to investigate the general insect fauna of the region, including as an important element the Lepidoptera.

The Knob Lake district lies well in the interior of the Labrador Peninsula, at about 55° N., 67° W. This place is very nearly on the Quebec-Newfoundland interprovincial boundary, and is about equidistant from Fort Chimo on Ungava Bay, Goose Bay in Labrador, and Seven Islands on the St. Lawrence. The region is now the site of the well-known iron-mining development, which in 1948 was in a relatively early stage. The insect fauna of the interior of northern Quebec and Labrador had not previously been investigated, and consequently the findings were of considerable interest.

Physically, the region is of moderately high altitude and rolling topography. Actual elevations in the localities that I visited varied from about 1700 to 3000 feet. The underlying rocks are sedimentary, in contrast with the igneous rocks that occupy so large a part of northern Quebec. The tilted and folded strata are reflected in the long, straight, parallel series of ridges and valleys that are so evident on any map of the region. The country shows every sign of having been recently glaciated: the hilltops are bare and scarred by rocky cirques; the soil of the slopes is shallow and is usually pure sand or gravel, covered by a surface mat of moss and lichen. Only in the hollows is there any accumulation of peat, and this reaches an appreciable depth only in the lower valleys, where large bogs have begun to develop. The climate is cool and very humid. Although 1948 was an unusually dry summer, only two or three days during my stay were uniformly sunny, and only on these did the temperature go above 70°F. A normal July day is cloudy, with occasional brief sunny intervals, and with scattered, short, cold showers. The maximum temperature may be in the neighbourhood of 60 or 65°F. High winds are common.

Ecologically, the district belongs to the Northern Transition Zone. The hilltops support a tundra

like vegetation, for the most part only a few inches high, and the valley bottoms have a moderately dense growth of coniferous trees. The intermediate slopes have rather sparse stands of conifers in the more sheltered areas, alternating with open areas of lichen studded with dwarf birch, *Vaccinium*, *Ledum*, and *Kalmia*. The upper limit of standing trees is at about 2400 feet, but prostrate conifers occur singly at altitudes up to 2700 feet. In addition to the dry habitats already mentioned, there are numerous moist ones in which the vegetation is somewhat different. In the valleys of temporary or permanent streams there are often stands of two or three species of shrubby willows; one species reaches a height of five or six feet, the others are considerably smaller. Small lakes and large ponds are numerous. Many of these are temporary; after they dry up, meadows of bright green grass rapidly appear in their beds. Floating sphagnum bogs are rare, but occur sometimes around small lakes. In the lowest valleys there are considerable areas of swamp underlain by solid peat. Lakes are numerous everywhere. To the south of the area in which I stayed, the country descends into the broad Hamilton River basin, and its character changes entirely, most of the area being occupied by lakes or floating bog.

Because of the persistence of cool, wet weather in the spring, and its early reappearance in the autumn, the season in which Lepidoptera fly is very short. No butterflies appeared before July 5, and none was seen after July 30. It is unlikely that they survive after the first half of August, during which the weather is already becoming cold and unfavourable. As is usual in extremely humid climates, butterflies take wing readily at the least indication of sunshine, and continue to fly, although in reduced numbers, even in overcast weather, provided it is not too cold and there is no rain. The butterflies, and indeed all the insects of the region, are characterized by strong, rapid flight and great wariness. Species that were captured without trouble at Seven Islands, 300 miles to the south, were taken only with great difficulty at Knob Lake. A separate plan of campaign had to be devised for each species of butterfly, if reasonably long series were to be obtained.

The butterfly fauna is characterized by great poverty. In spite of careful search, I collected or saw only ten species. None of these has an endemic subspecies in the region. In the three species in which a distinction can be made at this time, the Knob Lake population resembles that of the coast of Labrador rather than that of the Gulf of St. Lawrence. The small number of species is no doubt partly to be explained by the relatively recent retreat of the ice from this region. Probably more important, however, is the unusual nature of the habitat. On the one hand, the unfavourable climate undoubtedly hinders the establishment of species of

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the coniferous forest zone; on the other, the areas suitable for barren land species are small, and do not support a varied fauna.

Owing to the short flight season, differences in the time of appearance of different species are very slight. There appears, however, to be a regular seasonal succession, although it is measured in days, rather than in weeks as in more temperate climates. The first butterflies that were seen were Boloria polaris and Pyrgus centaureae, on July 5. Oeneis melissa was seen on July 6, but did not become numerous until later. Boloria chariclea and aphirape appeared rather suddenly on July 8 and 9; B. chariclea was already becoming worn and ragged by July 13. The first individuals of Colias pelidne did not appear until July 9 and 10; this species was seen only singly until July 12, and reached its peak of abundance on July 20. Hesperia borealis was first seen on July 17. The remaining species were so local, scarce, or inconspicuous that the dates on which they were captured are probably not an accurate index of their true flight periods. The last butterflies seen were Boloria aphirape and B. selene, taken at 2200 feet on July 30. Butterflies of any kind were seen on only fifteen different days. This must represent almost the total flying season for the year.

More striking than the seasonal succession of the species was their altitudinal zonation. The range of altitudes investigated is a critical one, as it includes the tree line at about 2400 feet. Three species, Boloria polaris, Oeneis melissa, and Plebeius aquilo, were at home only above tree line. Of these, B. polaris was common from 2400 to 2700 feet; P. aquilo was seen only on bare tundra at about 2700 feet, and O. melissa was encountered only on rocky hilltops at 2800 feet. Colias pelidne ranged freely everywhere above and below tree line except on the highest hilltops. Boloria chariclea was abundant everywhere below tree line; it occasionally strayed above tree line, but was not nearly so numerous there. Pyrgus centaureae had a similar distribution. Boloria aphirape did not go quite so high as B. chariclea, and was confined chiefly to sheltered valleys and ravines. Hesperia borealis was found only on the grassy beds of dried-up lakes at from 2200 to 2400 feet, but doubtless occurs also in suitable localities at lesser elevations. Boloria selene and Plebeius scudderii were found only in a damp place at about 2200 feet, on a long slope facing eastward into a broad, low valley.

Detailed notes on the various species follow. I am indebted to my colleague, Dr. T.N. Freeman, for making the determinations, which he asks me to consider as tentative until the northern butterflies are more thoroughly studied.

Boloria selene atrocotalis Huard. This was the sole southern species encountered. It was found in only a single locality, a marshy hillside at about 2200 feet. The first specimens were taken on July 27, but on this date they were already badly worn, and must have been flying for some days before they were discovered. The specimens were not particularly active, and were easily captured.

Boloria aphirape tricoloris Hbn. This species was moderately abundant, although somewhat local. It was most frequently encountered in sheltered valleys, at altitudes up to about 2300 feet. It flew rapidly at about waist height, in and out among dwarf willows and birches, rarely settling. The first specimens were seen on July 9 and one was seen as late as July 30.

Boloria chariclea boisduvalii Dup. This was the most numerous and generally distributed of the genus. It was common everywhere up to tree line, and single specimens were not infrequently seen above. The flight was rapid and erratic, but in sunny weather the butterflies would often settle on moist sand to drink, and could then be easily approached and caught. The first specimens were seen on July 8; by July 13 the butterflies were becoming somewhat worn; the species continued to fly in some numbers until July 29, although during the latter part of the month they were for the most part in very poor condition. A female was seen ovipositing on Vaccinium sp.

Boloria polaris groenlandica Skin. Unlike the other species of Boloria, B. polaris did not occur normally below tree line. Its favourite habitat was the bare, wind-swept tops of the higher hills and ridges. There the butterflies, both males and females, appeared in considerable numbers. They were most often seen in the lee of low sedimentary ridges on the flat hilltops, usually congregating behind certain favoured ridges; the selection varied from day to day, probably with changing wind conditions. Individual butterflies were most frequently seen flying slowly and with evident effort directly into the strong wind. As they approached the crest of the ridge and encountered an increasing wind velocity, the butterflies would either turn and shoot off downwind, to come back and repeat the performance, or else settle on the spot and bask in the sun with wings outspread. By following the butterfly upwind, one therefore had a chance either of netting it while it was on the ground or of taking it in flight as it sailed downwind. If a butterfly was alarmed it immediately turned and went downwind, returning to the ridge many yards away. B. polaris was much more rapid in flight and also much more wary than the other species of the genus.

Oeneis melissa assimilis Butl. This species was numerous, but was restricted in habitat and required careful stalking; consequently only a few specimens were taken. It was seen only on the highest summits of the district. These were isolated, boulder-strewn peaks crowning the higher ridges, with an average altitude of about 2800 feet. The first specimen was seen on July 6, and was the only one encountered in four successive days of collecting at the higher levels. These were not revisited thereafter until July 20, and on that date and July 22 Oeneis were abundant. They were invariably seen at the very summit of a peak, rarely settling more than a few feet below the highest point. In this situation the ground was always studded with large, lichen-covered, quartzite boulders, and on these the Oeneis normally settled. The resting position was very characteristic, the wings always being held tightly closed, while the insect usually sat tilted at a considerable an-

Munroe: BUTTERFLIES OF KNOB LAKE, QUEBEC - concl.

gle to one side or the other. The butterflies were very hard to see in this position, and were also most alert, so that they could be approached only with the greatest caution. If alarmed, they immediately flew horizontally downwind, so that they were almost instantly carried to safety many yards above the lee slope of the hill. A cautious approach, preferably under cover of a boulder, allowed a single stroke of the net, which was occasionally successful.

Plebeius aquilo aquilo Bdv. This species was encountered in only one place, on a broad sloping expanse of caribou "moss" at about 2700 feet. Even at this locality it was scarce. It was also most inconspicuous, the small size and dull colouring making it hard to follow. The flight was unusual, being rapid and buzzing, making the insect look more like a small noctuid moth than a butterfly. The butterflies rarely rose more than a few inches above the ground, and rested fairly often, with the wings tightly closed. The species was seen only on July 20 and 22, but the period of flight is undoubtedly longer.

Plebeius scudderi aster Edw.(?) What was almost certainly this form was seen, but not taken, on July 27 at a single locality. This was at an elevation of 2200 feet and was the same place at which Boloria selene was caught on two occasions. The butterflies were moderately common, and were settling on a gravel road to drink. They rested with wings closed, but, because of their wariness and small size, were very hard to net. The flight was not strong, but was erratic. The insects were inconspicuous and rarely rose more than a few inches above the ground, and in consequence could be followed with the eye for only a few seconds. I later learned that the species was not uncommon in the swampy territory at the lower altitudes, but was unable to find any after the day on which I first saw it.

Colias pelidne labradoriensis Scud. Although this species first appeared in small numbers on July 9, it continued to increase in abundance, and eventually became one of the most numerous. Males were much more often seen than females, and, like those of other species of the genus, they congregated in numbers around mud puddles. The females did not have this habit, but rather flew freely across country, often settling on dwarf Vaccinium bushes; none was seen to oviposit. The resemblance in appearance and habits to C. interior was striking. I saw the latter species at Seven Islands on my way back from Knob Lake, so that I was able to make the comparison while C. pelidne was still fresh in my memory. There was much variation in pattern among the specimens taken at Knob Lake, but there was no evidence from either habits or distribution that they represented more than one species.

Pyrgus centaureae freija Warr. This butterfly was fairly common up to tree line in the earlier part of the month. Its behaviour was much like that of other species of the genus. The flight was moderately strong, and the butterflies frequently settled to suck moisture from wet places on the ground.

They were most often seen near small, willow-bordered streams in the treed zone. Most specimens were taken between July 5 and 10, but one was caught as late as July 26.

Hesperia borealis Linds. This species was seen only on the meadows of bright green grass that marked the beds of temporary ponds and lakes in sheltered valleys below tree line. The butterflies had flight and resting habits typical of the group. They were most active and wary, but often settled on blades of grass, where with some care they could be captured.

More precise notes on the taxonomy and variation of the various species will appear at a later date, when the full results of the Northern Insect Survey are prepared for publication. Meanwhile, I hope to contribute in the near future some supplementary field notes on the moths of the Knob Lake region.

TYPE SPECIMENS IN THE PARIS MUSEUM

As a result of a meeting of the staff of the Department of Entomology of the Paris Museum (Muséum National d'Histoire Naturelle), it was decided that the primary type specimens belonging to the Museum were not to leave the Department. Theoretically, it had been so for a good many years, but the types were, till now, easily borrowed. From now on, these will have to be studied in the Department. It is already the rigid policy in most other important museums. Paratypes will continue to be loaned to proper authorities.

As far as the Lepidoptera are concerned, I began, about a year ago, to search out the types in the different collections, to classify, file, and catalogue them. Already some lists have been published and others are in press. In this sphere, the Paris Museum finds itself very much behind most of the important museums, which started this work about fifty years ago.

Pierre E.L. Viette
Paris, France

MARKING NORTH AMERICAN LEPIDOPTERA

Several individuals in North America planning to mark Lepidoptera for flight studies have maintained contact with the News editors regarding special marking systems they use. It is vital that some liaison exist so that no two individuals will use the same mark and thus vitiate the certainty of identifying marked specimens picked up in the field. The use of combinations of numbers or letters rubber-stamped on the wings seems to be best for Danaus; bright, rapidly drying lacquer-paints are perhaps best for other species. Lepidopterists in localities where large-scale marking of Monarchs (D. plexippus) is possible may wish to correspond with me on techniques and marks.

C.L. Remington

Notice has been received from the Secretary that at the request of the President a Special Meeting of the Lepidopterists' Society has been called in conjunction with the IXth International Congress in the Netherlands. The meeting has been called for August 21st, 1951. Dr. Walter Forster, Vice President of the Society, has been designated to preside in the absence of the President. Dr. A. Diakonoff is Chairman of the Organizing Committee. The meeting will be held for the purpose of presenting a discussion of special interest to lepidopterists (see below).

Dr. Diakonoff has discussed the plans for the Special Meeting with Prof. D.J. Kuenen, President of the Congress, and received his full support. The Congress will open Friday, August 17th, and close the following Friday. Our meeting will be held in the Congress building on Tuesday, August 21st, at 20 o'clock (8:00 P.M.). It will be held through our own initiative and independently of the Congress, but the President of the Congress preferred to put it on the general program of the meetings. Dr. Diakonoff accepted his proposal to give free access to the meeting to every member of the Congress who might be interested.

Prof. W.K.J. Roepke and Mr. B.J. Lempke have been invited to be members of the Organizing Committee with Dr. Diakonoff. The Committee will secure all necessary local arrangements.

The Chairman of the meeting, Dr. Forster, has invited a panel of specialists to present a symposium on the subject "THE PHYLOGENY AND CLASSIFICATION OF THE LEPIDOPTERA". The speakers will be from several European countries and have been working and publishing on the subject. The panel will not be announced until Dr. Forster has received acceptances from all of the prospective speakers.

The present need to hold the Annual Meetings in North America makes this Special Meeting an exceptionally welcome opportunity to develop the international nature of the Society. Very many of our European members and a few from North America and perhaps elsewhere will be present at the Congress and will be able to attend the Special Meeting with its timely and controversial subject. Efforts are being made to secure for publication at least the essence of the symposium so that it will be available for permanent reference.

C.L. Remington

RESEARCH REQUEST

Harry K. Clench and I are preparing a study of all the *Strymon falacer*, *calanus*, *godarti* forms. For this we need every possible specimen from the South and from Ohio westward, and especially from the far South and the West. All borrowed material will be returned promptly upon completion of the work, determined; and due acknowledgement will be rendered cooperators in publication. Alexander B. Klots, American Museum of Natural History, 79th St. and Central Park West, New York, 24, N.Y.

N.D. RILEY has been elected President of the Royal Entomological Society of London for the Session 1951-52. [At the Lepidopterists' Society meeting in New York, December 30th, Mr. Riley was elected a member of the Executive Committee for 1951 and 1952.]

RAMON AGENJO, of the Instituto Español de Entomología, has recently been awarded the high "Alonso de Herrera" prize by the Spanish "Consejo Superior de Investigaciones Científicas" for his memoir "Fauna Lepidopterológica Almeriense". The memoir has not yet been published but will appear some time in the future.

His "Catálogo Ordenador de los Lepidopteros de España" has now been completed. It can be obtained reasonably by ordering Vol.IV, nos.3-6 and Vol.V, nos.1-3 of *Graellsia* from:

Consejo Superior de Investigaciones Científicas
Medinaceli, 4, Madrid, SPAIN

Dr. A. DIAKONOFF, whose departure from Java was announced previously (*Lep. News* 4: p.69; 1950) has been appointed Keeper of Lepidoptera at the Rijksmuseum Van Natuurlijke Historie, Leiden, The Netherlands. This will allow him to continue his distinguished studies of the Microlepidoptera of South Asia. He will also continue abstracting for the *Lep. News* all papers on Lepidoptera published in The Netherlands and Indonesia. Dr. Diakonoff is serving as Chairman of the Organizing Committee for the Special Meeting of the Lepidopterists' Society being held in conjunction with the IXth International Entomological Congress.

G.D. HALE CARPENTER, Hope Professor Emeritus at Oxford University, has just completed a revision of the Danaidae genus *Euploea*. He has been working on this group for many years and has examined well over 8000 specimens, from all available sources. The appearance of Prof. Carpenter's exhaustive analysis of this wonderful genus will be a notable event for lepidopterists.

PAUL F. BRUGGEMANN, formerly of Saskatchewan and now a member of the Northern Insect Survey of the Canadian government, left March 26th to spend the "summer" of 1951 on the extreme northeastern corner of Ellesmere Island, near the spot where the "Alert" of the Nares Expedition wintered in 1875-76. He hopes to duplicate and add to Fielden's records. He promised an account of his arctic experiences for the *Lep. News* after his return in the fall.

Dr. H.E. HINTON, late of the British Museum staff and now a member of the Department of Zoology, University of Bristol, England, has been working for some years on a book on the biology of the Lepidoptera, with emphasis on physiology and morphology. Best known as a coleopterist, Dr. Hinton has recently worked extensively with larvae and pupae of Lepidoptera and has proposed a modified phylogeny of the order (see review in *Lep. News*, vol.1: pp.33-34; 1947).

C.L.R.



HAROLD I. O'BYRNE (1898-1951)

Harold O'Byrne, formerly of Webster Groves, Missouri, and for many years an ardent student of the Lepidoptera, died suddenly at his home in Iberia, Missouri, 22 January 1951.

Harold Irvin O'Byrne, son of James W. and Lula (De Groff) O'Byrne, was born in St. Louis, Missouri, 21 April 1898. His interest in nature study was fostered early in life by his father who supplied him with a net and encouraged him to collect butterflies in Forest Park. His early educational career was interrupted, however, when, at the age of 18 years, he was called to serve with the Missouri National Guard on the Mexican border in 1916. With the entrance of the United States in World War I in 1917, he was again called to duty and served in the 138th Infantry Regiment of the 35th Division overseas until the end of the war. Although much of this time was spent in the trenches in France, he nevertheless found opportunities to capture an occasional butterfly which he sent home for his future collection.

Upon his discharge from the Army he returned to Missouri where he made his home for a time with his mother in St. Louis and later in Webster Groves. All leisure time of the succeeding years was thereafter devoted to studying the butterflies and moths of this area and to building up a collection of these insects. Upon the removal of the family in 1927 to Webster Groves, he was introduced to the Webster Groves Nature Study Society, where he found many persons having like interests. Chief among these were A.F. Satterthwait, in charge of the United States Bureau of Entomology laboratory in Webster Groves, and Phil Rau of Kirkwood (*Lep. News* 2: p.62; 1948), who was particularly interested in ecology and insect behavior, especially of the Hymenoptera. Rau did much to encourage O'Byrne to make a careful study of his specimens, not only in the laboratory, but primarily in the field. The encouragement which he received from these sources is especially reflected in the articles which appeared from his pen and was the prime motive in inducing him to make natural history his life's work.

O'Byrne attended the University of Illinois

1936-39, at the end of which time he received his A.B. degree with a major in entomology. During this time he did part time work with the U.S. Bureau of Entomology and Plant Quarantine in Urbana, Illinois, as scientific aide in Corn Earworm and Sunflower Seed Weevil investigations. During the summer of 1939 he was stationed in Danbury, Connecticut, with the Dutch Elm Disease control, and in 1940 in Gulfport, Mississippi, as an inspector in White Fringed Beetle control.

In 1942 he was appointed naturalist at Rockwoods Reservation near Glencoe, Missouri, a project of the Missouri Conservation Commission, which position he held until 1948. During this time he lectured to public school children of the St. Louis area, to Boy Scouts and Girl Scouts and to various adult groups, such as garden clubs, civic and church organizations, nature clubs, etc., and also conducted nature tours through the reservation. He also taught a short course in natural history at Washington University, both in the classroom and in the field.

In 1948 O'Byrne was appointed Professor of Biology in Conservation College (formerly Iberia Junior College) at Iberia, Missouri, and during the last year also fulfilled the office of Dean of the College. Here he taught general zoology, botany, entomology, and general conservation of wildlife and at the same time conducted a course in insect pest control to an adult class during the evenings. During 1950 he taught an extension course in Nature Study at Iberia for Central Missouri State College of Warrensburg.

O'Byrne was an active member of the Webster Groves Nature Study Society since 1927 and served at various times as president, editor of its bulletin, and chairman of the entomology section. He was a member of the St. Louis Entomological Club from 1928 until its disbandment in 1934 and always took an active interest in its affairs, frequently reading papers on his observations and experiments with insects. He was also a member of the Academy of Science of St. Louis and for a time chairman of the Entomology Section. He was a charter and sustaining member of The Lepidopterists' Society. Other organizations to which he belonged were the Missouri Academy of Science, American Association for the Advancement of Science, Entomological Society of America, American Association of Economic Entomologists, and The American Nature Study Society of which he also served as secretary-treasurer.

O'Byrne's interest was primarily in the ecology and behavior of insects, as may be seen in the titles of his bibliography. He made many observations on the migrations of butterflies and the relationship of the color of flowers to the visits of their insect guests. Many of these observations still remain unpublished, some in manuscript form, but most of it in unworked notes filling dozens of note-books. He had built up a considerable collection of Lepidoptera, mostly North American, which he freely used in his class-room and field lectures.

Harold O'Byrne married, in 1936, Miss Olive Schregardus of Webster Groves. They had a son and daughter who, together with the widow, survive him.

BIBLIOGRAPHY OF HAROLD I. O'BYRNE

1930. The Night Flight of Diurnal Butterflies. Ent. News 41: 20.
1931. A Recent Occurrence of Catopsilia philea in Missouri. Ent. News 42: 15.
1931. A List of the Butterflies of St. Louis County, with Synonymy. Webster Groves Nature Study Soc. Bull. 2.
1932. A Melanic Female of Colias eurytheme. Ent. News 43: 15-16.
1932. A Female Intermediate Between Papilio glaucus and Its Form turnus. Psyche 39: 35.
1932. The Migration and Breeding of Dione vanillae in Missouri. Ent. News 43: 97-99.
1932. November Observations on Pieris protodice vernalis in Missouri. Psyche 39: 85.
1932. Notes on Butterfly Migration. Bull. Brooklyn Ent. Soc. 27: 185-188.
1932. A Moth Seized by a Bird and Rejected Unharmd. Can. Ent. 44: 239. (Reprinted in Proc. Ent. Soc. London 7: 83; 1933).
1932. On the Activity of Butterflies at Night. Ent. News 43: 207-209.
1933. On the Effectiveness of Protective Adaptions. Ent. News 44: 57-61.
1933. An Attack on a Cicada by Polistes rubiginosus. Can. Ent. 65: 129.
1933. A Migratory Flight of Catopsilia eubule. Psyche 40: 131-136.
1934. Papilio troilus Attacked by Polistes rubiginosus while Mating. Bull. Brooklyn Ent. Soc. 29: 73.
1934. Vespula germanica Attacks a Living Eacles imperialis. Ent. News 45: 101-102.
1934. Strymon ontario in Missouri. Ent. News 45: 212.
1934. Observations on the Life History of the 'Paltimore Checkerspot' Butterfly, Euphydryas phaeton, in Missouri. Trans. Acad. Sci. St. Louis 28: 227-230.
1935. Pogocolon gaurae Breeding in Missouri. Ent. News 46: 160.
1937. Gregarious Caterpillars. Proc. Missouri Acad. Sci. 3: 103-108.
1938. An Unusual Nesting Site of Polistes rubiginosus. Ent. News 49: 288.
1939. Notes on Butterfly Migrations. II. Bull. Brooklyn Ent. Soc. 34: 252-254.
1941. A Revised List of the Butterflies of St. Louis County, Missouri; With a Butterfly Calendar. Webster Groves Nature Study Soc. Bull. 3.
1941. Some Noteworthy Missouri Butterflies: Papilio troilus ab. radiatus and a Variation of Lycaenopsis pseudargiolus. Bull. Brooklyn Ent. Soc. 36: 124.
1941. The Hibernation in Missouri of Zerene caesonia and Euptoieta claudia. Ent. News 52: 181.
1948. Phyciodes Behavior in Missouri. Lep. News 2: 22.

Edwin P. Meiners
St. Louis, Mo.

A REARING HOUSE FOR LEPIDOPTERA

by William H. Evans
Sun Valley, California



I have been so successful in raising many species of Lepidoptera in my rearing house, that other collectors may be interested in the construction of this inexpensive insectary. It, by the way, is designated by my non-lepidopterist friends "The Bug Hotel", where all guests are provided with separate suites and are served the menus of their choice. So that larvae and pupae would not be over-heated during the summer, a site was chosen in the shade of the native ash trees in the front yard. Rock walls on two sides, stone steps on another, and a small cement drainage channel in front limited the floor-size of the structure to 6' x 5'8".

The framework of 2 x 4's is fastened down by bolts set in the cement foundation. The back is covered completely with redwood siding, and the lower 50 inches of the sides and front, except for the screen door entrance, are also boarded up. Above this is 27 inches of screen-wire topped by more siding which extends to the roof. The sloping roof, which is 7 1/2 feet above the cement floor at the front, and six inches lower at the rear, consists of sixteen 3/4 x 6" planks covered with composition roofing paper. Inside, a number of shelves, which hold numerous small rearing containers, are attached to three of the walls. Small partitions of screen-wire divide the space between two rear shelves into five breeding cages which have small screen doors hinged at the bottom so as to open downward. In order to allow plenty of room to step through the doorway, there are no shelves on the north wall. Instead, a series of small wooden rearing compartments with sliding glass fronts are fastened against the screen wire and on top of the horizontal 2 x 4 to which the lower edge of the wire is tacked.

An inexpensive enclosure such as this is very suitable for rearing in this region and in others where the temperature never drops below 20° F. Here, at an elevation of 1200 feet in the Verdugo Mountains in Los Angeles County, California, the larvae and pupae in the rearing house survived the unusually cold winters of 1949 and 1950. With a few changes a similar structure could be adapted to the climatic conditions of other areas.

RECENT LITERATURE ON LEPIDOPTERA

Under this heading are listed each month papers on Lepidoptera from all the scientific journals which are accessible to us and our cooperating abstractors. It is hoped eventually that our coverage of the world literature will be virtually complete. It is intended that every paper published since 31 December 1946 will be included. In the first four volumes of the *Lep. News* 1437 were listed. Abstracts give all new subspecies and higher categories with generotypes and type localities. Papers of only local interest are merely listed. Papers devoted entirely to economic aspects will be omitted. Reprints are solicited from all publishing members and the many regularly received are gratefully acknowledged. Initials of cooperating abstractors are as follows: [P.B.] - P.F. Bellinger; [A.D.] - A. Diaconoff; [L.G.] - L.A. Gozmány; [G.D.L.] - G. de Latini; [C.R.] - C.L. Remington; [T.S.] - T. Shirōzu. A complete set of these pages, for clipping and filing, may be obtained for Vol.4 for \$0.50, and a subscription for Vol.5 for \$0.50.

- Albers, Th., "Die *Boarmia repandata*-Gruppe (Lep. Geom.). Beiträge zur Kenntnis der Gattung *Boarmia* Tr. III" [In German]. *Mitt. Münch. Ent. Ges.*, vol.35/39: pp.241-283, pls.4-5, 17 figs. 1 Aug.1949. A very detailed revision of this group belonging to the subgenus *Alcis* Hb. Figures most of the palearctic species and their ♂ genitalia. Discusses range of group. Describes as new: *B. admissaria* race *kukunorensis* (Kuku-nor); *B. depravata* race *turanica* (Tura, Transcaspi); *B. subrepandata* races *pallida* (Mus-tag-ata, Yarkend) and *diffusaria* (Muskulak, Western Pamir); and *B. diffusaria* (Bashahr, no.India). Two new aberrations named. *B. xenica* Whli. is good species. [G.D.L.]
- Andersen, F. Sjøgaard, "Foleløbige biologiske iagttagelser af klistermøllet (*Endrosis sarcitrella* (L.)) [In Danish.]. (Denmark) *Statens Skadedyrlaboratorium Årsberetning 1948-49*: pp.21-24. 1949. Technique notes on mass rearing in lab. of *E. sarcitrella* (Oecophoridae). [C.R.]
- Bank, G., "De kwikdamp lamp als lokmiddel voor insecten" [In Dutch]. *Ent. Berichten*, vol.12: pp.433-444. 1 Nov. 1949. Notes on mercury vapor lamp for attracting moths. [P.B.]
- Barth, Rudolf, "Vergleichende morphologische Studien über die Duftschnuppen der Pieriden *Pieris brassicae* und *Pieris rapae* und der Satyrine *Coenonympha pamphilus*" [In German]. *Zool. Jahrb., Abt. Anat.*, vol.70: pp.397-426, 31 figs. 30 Aug. 1949.
- Bovey, P., "Determinisme génétique des formes orange chez *Zygaena ephialtes*" [In French]. *Arch. Julius Klaus-Stiftung*, vol.23: pp.499-503. 28 Feb. 1949. Case of incomplete dominance between genes for red and for yellow wing color; orange forms are heterozygotes. [P.B.]
- Daniel, F., "Die Cossiden und Hepialiden der Ausbeute Höne (Lep., Het.) (Nachtrag)" [In German]. *Mitt. Münch. Ent. Ges.*, vol.35/39: pp.226-230, pl.1. 1 Aug. 1949. Additions and corrections to the author's paper of 1940 (l.g., vol.30, p.1004 ff). The species *kulingi*, formerly attributed to *Phassus*, belongs to *Hepialiscus*; *Phassus sinensis* is a good species, not a ssp. of *signifera*; *Hepialiscus altissima* Daniel is merely a synonym of *Hepialus armoricanus* Obth. [G.D.L.]
- Daniel, F., "Neue Sphingidae Südamerikas (Lep. Het.)" [In German]. *Mitt. Münch. Ent. Ges.*, vol.35/39: pp.230-234, pls.2-3. 1 Aug.1949. Describes as new: *Protoparce florestan* ssp. *argentinica* (Tucumán, Argentina); *Protoparce grandis* (Rio Grande do Sul, Brasil); *Protoparce incisa* ssp. *pallidula* (Vulcan Colima, Mexico); *Perigonia pallida* ssp. *rufescens* (Matto Grosso, Brasil); and *Pholus obliquus* ssp. *orientis* (Blumenau, S. Catharina, Brasil). [G.D.L.]
- Daniel, F., "Neue paläarktische Heterocera (Lep.)" [In German]. *Mitt. Münch. Ent. Ges.*, vol.35/39: pp.235-241, pls.8-9. 1 Aug. 1949. Describes as new: *Lacydes semiramis* ssp. *brandti* (Persia); *Hypopta vau-logeri* ssp. *blanca* (Bender Tschababar, Baloutchistan, Persia); *Chilena laristana* (Sardze, Laristan, Persia); *Holococerus reticuliferus* (Buchara), *H. brunneogrisea* (Thian-Shan), *H. baloutschistanensis* (Bender Tschababar, Baloutchistan); *H. senganensis* (Fort Sengan, Baloutchistan); and *Hepialus carna* ssp. *transsylvanica* (Cibins Mts., Transsylvania). [G.D.L.]
- Downes, J.A., "Some Lepidoptera of Western Scotland." *Ent. Mo. Mag.*, vol.84: pp.203-204. Sept.1948.
- Fischer, Ch., "*Lythria purpuraria* Linné et *purpurata* Linné" [In French]. *Bull. Soc. Ent. Mulhouse*, 1949: pp.73-79, 1 pl. 1 Nov. 1949.
- Florkin, Marcel, Franz Lozet, Henri Sarlet, "Sur la digestion de la cire d'Abeille par le larve de '*Galleria mellonella* Linn.' et sur l'utilisation de la cire par une bactérie isolée à partir du contenu intestinal de cette larve" [In French]. *Arch. Internat. Physiol.*, vol.17: pp.71-88, 3 figs. Oct. 1949. The larva of the Wax Moth itself digests some parts of the beeswax; other parts are utilized by a bacterium found in the gut, and may be secondarily available to the larvae. [P.B.]
- Franclemont, John G., "On the Types of Two Genera in the Lepidoptera (Arctiidae and Drepanidae)." *Entomologist*, vol.83: pp.199-200. Sept.1950. *Callimorpha*, type *dominula*; *Drepana*, type *falcataria*. [P.B.]
- Freeman, H.A., "Notes on *Megathymus*, with Description of a New Species." *Field and Laboratory*, vol.18: pp.144-146. 11 Dec. 1950. Describes as new *M. evansi* (Cochise Co., Ariz.). It is apparently a "sibling species" with *M. neumoegeni* and has been confused with it. The two are sympatric but have differences of habit as well as pattern and genitalia. No figures given! [C.R.]
- Freeman, H.A., "Notes on the Agave Feeders of the Genus *Megathymus*." *Field and Laboratory*, vol.19: pp.26-32. 18 Jan. 1951. Detailed notes on oviposition and larval and pupal habits of *M. neumoegeni*, *M. evansi*, and *M. mariae*, with remarks on *M. polingi*, *M. stephensi*, *M. smithi*, with foodplants noted for all six. Suggests that *M. polingi* may be a starved form of *neumoegeni*. [C.R.]
- Freeman, H.A., "Distributional Notes on *Papilio palamedes* Drury and its Subspecies *leontia* R. & J." *Field and Laboratory*, vol.19: p.32. 18 Jan. 1951. Records *palamedes* from Texas and Arkansas, *leontia* from Texas. [C.R.]
- Freeman, H.A., "Distributional Notes on the Theclinae of Arkansas." *Field and Laboratory*, vol.19: pp.36-39. 18 Jan. 1951. Gives records of *Atlides halesus*, *Strymon cecrops*, *S. m-album*, *S. melinus*, *S. ontario*, *S. titus*, *S. edwardsii*, *S. falacer*, *S. liparops*, *Mitoura damon*, *Incisalia irus*, *I. nippon*. [C.R.]
- Freeman, H.A., "Notes on the Genus *Yvretta* Hemming with a New Record for the United States." *Field and Laboratory*, vol.19: pp.45-46. 18 Jan. 1951. Gives key to *Y. citrus*, *Y. rhesus*, and *Y. carus*, with distribution notes on each. *Y. citrus* is the new U.S.A. record. [C.R.]
- Freeman, H.A., "New Skipper Records for Mexico." *Field and Laboratory*, vol.19: pp.46-48. 18 Jan. 1951. Newly recorded are *Thorybes bathyllus*, *Helioptes sublinea*, *Atrytone ruricola metacomet*, *Amblyscirtes cella*. [C.R.]

19. Gregor, F. and D. Povolný, "Further important or new discoveries of Lepidoptera from Moravia" [In Czech, English summary]. *Acta Soc. Ent. Českosloveniae*, vol.46: pp.61-62. 1 Feb. 1949. Record *Pyralis regalis*, *Stagmatophora tirivella* and *Phyllostictis hartmanni*, new to Moravia; notes on some other spp. [P.B.]
20. Heath, J., "Further notes on the Lepidoptera from the Falmouth district of South Cornwall." *Journ. Soc. Brit. Ent.*, vol.3: pp.64-65. 5 March 1949.
21. Hohl, F., "A propos de la migration de *Pyrr. cardui* de Juin 1949" [In French]. *Bull. Soc. Ent. Mulhouse*, 1949: pp.62-63. 1 Sept. 1949.
22. Kaiser, Peter, "Histologische Untersuchungen über die Corpora allata und Prothoraxdrüsen der Lepidopteren in Bezug auf ihre Funktion" [In German]. *Arch. Entwicklungsmech.*, vol.144: pp.99-131, 22 figs. 15 Nov. 1949. Relates changes in size and structure of these glands to molt and metamorphosis. Work done on *Pieris* and other butterflies. [P.B.]
23. Klotz, Alexander B., "Studies of a Connecticut Nexus." *The Biological Review* (City College of N.Y.), vol.13: pp.14-17, 6 figs. March 1951. Popular account of interrelationships on Alder (*Alnus incana*) of Woolly Aphid, its predators (larvae of *Fenisecca tarquinius* and a syrphid fly), and its attendant ants. Fine photos including larva, pupae, and adult of *Fenisecca*. [C.R.]
24. de Luca, C., "Further Notes on Lepidoptera Heterocera from Malta." *Ent. Mo. Mag.*, vol.85: p.191. July 1949. New records: 8 Noctuidae, 2 Geometridae. [P.B.]
25. McClung, Robert M., *Sphinx. The Story of a Caterpillar*. 48 pp.; ill. William Morrow and Co., New York. 1949.
26. MacGillivray, D., "Een kleine waarneming bij *Vanesa atalanta* L." [In Dutch; A stray note on V.a.]. *Ent. Berichten*, vol.12: p.453. 1 Nov. 1949. Observations on reflection of sunlight by the wing of this species. [A.D.]
27. Martin, Lloyd M., "Spectrum on Wings." *Arizona Highways*, vol.27, no.4: pp.4-11, 12 col. photos. Apr. 1951. Popular account of Arizona Lepidoptera, illustrated by large photos in color of *Arachnis picta hamptoni*, *Papilio philenor*, *Agapema galbina*, *Cisthene schwarzi*, *Automeris pumilio auroseus*, *Pholus typhon*, *Arctonotus terlotii*, *Miracraera brilliana*, *Memoria delicatula*, *Neumogenia poetica*, *Papilio daucus*, *Eupackardia calleta*. [C.R.]
28. Muspratt, Vera M., "*Pyrameis atalanta* L." [In French]. *Bull. Soc. Ent. Mulhouse*, 1949: pp.61-62. 1 Sept. 1949.
29. Narbel, M., "La maturation chez *Solenobia* spec. (*lichenella* L.) parthénogénétique (Lepid. Psychides). Communication préliminaire" [In French]. *Arch. Julius Klaus-Stiftung*, vol.23: pp.574-576, 1 pl. 28 Feb. 1949. Maturation divisions in egg described and figured. [P.B.]
30. Obratsov, N., "Vorläufige kritisch-systematische Notiz über die Gattungen *Olethreutes* Hb. und *Exarte-ma* Clem." [In German]. *Entom. Zeitschr.*, vol.59: pp.45-48. 15 June 1949. It is not possible to distinguish correctly these genera only by the dorsal involution of the interior margin of the hind wings. The species involved must be united provisionally in one genus. [G.d.L.]
31. Obratsov, N., "Neue und wenig bekannte Tortriciden-Arten und -Formen" [In German]. *Mitt. Münch. Ent. Ges.*, vol.35/39: pp.198-210, 6 figs. 1 Aug. 1949. Discusses several doubtful species and forms of Tortricidae, especially the genitalia: *Archips betulana* Hb. has priority over *decretana* Tr.; *A. gilvana* Ev. over *rosana* (and partim of *Choristoneura diversana*); *Aethes chersonana* Obr. is a synonym of *A. diacrisiana* Rbl.; *Gypsonoma cnephasiana* Obr. is only a subsp. of *G. oppressana* Tr. Figures genitalia of *Polychrosis cornata*, *Phiaris delitana*, *Ph. umbrosana*, *Orthotaenia striana*, *O. capreolana*, *O. helvinana*, *Dichrorampha tshimgana*, and *D. sheljuzhkoii*. Describes as new: *Polychrosis cognata* (Berdjansk, so. Ukraine), *Orthotaenia striana* ssp. *subcapreolana* (Dzharkent, east Semiretshje, Tyshkan); *Spilonota ocellana* ssp. *centralasica* (Dasht, Schugnan, west Pamir), *Dichrorampha tshimgana* (Tshimgan, west Tian-Shan); *D. sheljuzhkoii* (Ussuch-tshaj, Achty, Daghestan); *Laspeyresia succedana* ssp. *decolorana* (Dzharkent); *L. pamira centralasica* (Mt. Bolshoj Tshimgan, west Tian-Shan); also names two aberrations. [G.d.L.]
32. Obratsov, N., "Zur Schwankung der Cornuti-Zahl bei *Perones hastiana* (L.) (Lepidoptera, Tortricidae)" [In German]. *Mitt. Münch. Ent. Ges.*, vol.35/39: pp.211-213, 1 fig. 1 Aug. 1949. Records a striking variability of the number of the cornuti in *P.h.*, which varies from 3 to 6. [G.d.L.]
33. Obratsov, N., "Eine neue *Perones* Curt.-Art aus N.-Syrien" [In German]. *Mitt. Münch. Ent. Ges.*, vol.35/39: pp.224-226, 2 figs. 1 Aug. 1949. Describes as new: *P. osthelderi* (Maras, Taurus, s.e. Turkey) and figures genitalia of the single ♀. [G.d.L.]
34. Roepke, W.K.J., "Over de vlinderverzamelingen van het Natuurhistoriska Riksmuseet te Stockholm" [In Dutch; On collections of Lepidoptera in the N.R. at Stockholm]. *Verslag 8e Herfstvergadering Nederl. Ent. Ver.*, pp. cviii-cx. 1 Aug. 1949. Impressions of a short visit to the Stockholm Museum during the 8th Intern. Congress of Entomology. Very interesting are the following collections: Dr. R. Malaise's Burma Expedition 1934, so far only partially studied by F. Bryk; a small old collection from the Malay Archipelago, in which *Aurivillius*' types; a rich African collection studied by *Aurivillius*, with many types; an interesting local collection with nice series of *Parnassius*, *Colias*, *Oeneis*, *Argynnis*; a large collection made by Malaise in Korea and studied by Bryk. [A.D.]
35. Seiler, J., "Resultate aus einer Artkreuzung zwischen *Solenobia triquetrella* F. R. x *Solenobia fumosella* H. (Lepid. Psychidae) mit Intersexualität in F." [In German]. *Arch. Julius Klaus-Stiftung*, vol.24: pp.124-154, 16 figs. 1949. Mechanism of intersex formation said to be the same as for the triploid intersexes of *S. triquetrella*. [P.B.]
36. Shillito, James F., "Notes on Insects Visiting Diseased Elms." *Ent. Mo. Mag.*, vol.83: pp.290-292. Dec. 1949. Attempts to assign the spp., including 10 Lepidoptera, to their niches in the biocoenosis created by the diseased trees. [P.B.]
37. Taurala, Osmo, "On the Physiology of the Faceted Eye" [In Swedish, summaries in Finnish and English]. *Ann. Ent. Fennici*, vol.14, suppl.: pp.219-224, 9 figs. 1949. Summary of structure, with a classification of the superposition eyes of Lepidoptera based on the nature of pigment migration in adaptation to light. [P.B.]
38. Waloff, N., "Observations on larvae of *Ephestia glutella* Hübner (Lep. Phycitidae) during diapause." *Trans. R. Ent. Soc. London*, vol.100: pp.147-159, 1 fig. 15 June 1949. Discussion of voltinism and physiology of diapause. Suggests that in this species a prerequisite for release of pupation hormone is loss of about 35% of weight of diapausing larva. [P.B.]
39. Way, M.J., B. Hopkins, P.M. Smith, "Photoperiodism and Diapause in Insects." *Nature*, vol.164: p. 615. 8 Oct. 1949. Artificially increased day length inhibits normal winter diapause in *Diatraea oleracea* (2% diapausing pupae in stocks raised under constant light, as opposed to 100% for 4 or 8 hrs. of daylight out of 24). Some preliminary success also obtained with *Pieris brassicae* and *Mamestra brassicae*. [P.B.]

NOTICES BY MEMBERS

All members may use this column to advertise their offerings and needs in Lepidoptera. There is no cost for this service. Unless withdrawn sooner by the member, each notice will appear in three numbers.

MEGATHYMUS YUCCAE ALABAMAE ex-pupae 1951, perfect, spread. Want exotics and Gulf States rarities in exchange.

H.W. Rustis, 2301 Woodbine Rd., Augusta, Georgia.

AMAZON. Collector in northern Brazil accepts orders for prepared Amazonian Lepidoptera and other insects. Walter A. Riffler, Postbox 500, Belém, Estado do Pará, BRASIL.

BUTTERFLIES from Arctic and Far North especially Oeneis, Erebia, Boloria, at reasonable prices. R.J. Fitch, 2235 Pandora St., Vancouver, B.C., CANADA.

Lepidoptera of the arid SOUTHWEST. Will be collecting in southern New Mexico and southwestern Texas during June, July, and August. Careful attention given to lists of desiderata.

L.H. Bridwell, Box 44, Forestburg, Texas.

Wanted to buy: SEITZ' "MACROLEPIDOPTERA of the World" esp. Vols. 1, 2, 6, 9, 13, English Translation.

G.F. Schirmer, 2912 N. 45th St., Milwaukee 10, Wis.

Lepidoptera of the Southwest for sale, papered or pinned. Inquiry invited. Lots of 100, either Rhopalocera, Macros, or Micros, priced very low, all with full data. Guaranteed first class material. F.P. Sala, 1764 Colorado Blvd., Los Angeles 41, Cal.

SPEYERIA DIANA, S. cybele leto and letona, and S. nokomis nitocris, ♂ and ♀ with full data, offered in exchange for needed species of Erebia and Oeneis, esp. the following numbers from McDunnough 1938 list: 127b-e; 130a-c; 135a; 136a; 138b,c; 140, 143a; 144b-c; 147; 147a; 149b-d; 151; 152. Also need any of forms recently described by dos Passos except taygete fordi and rossii gabrieli. If you have some of these species but are not interested in the Speyeria, send list of desiderata. Paul R. Ehrlich, 538 Academy St., Maplewood, N.J.

Bio Metal standard redwood insect box, new style, 9 x 13 x 2 1/2 inches. Screw on hinge. Satisfaction guaranteed. \$2.25 each, \$25.00 per dozen. Also Cornell Drawers and unit pinning trays. Equipment constructed to order in our shop. Bio Metal Associates, Box 346, Beverly Hills, Calif.

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

Far Eastern Rhopalocera (Japan, Formosa, Korea, etc.) Wish to exchange with all parts of the world. Have interest in Papilionidae (esp. Parnassius, Archon, Hypermnestra, Zerynthia, etc.), Pieridae, Nymphalidae, and Lycaenidae, etc. Inquiry invited. Yoshiko Hata, #594, Aburanocouji Buccouji, Kyoto, JAPAN.

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

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

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

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

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



LIVING MATERIAL



Cocoons of Graellsia isabellae ("Spanish luna") and Actias selene (Indian Moon moth) for sale. O.H. Schroeter, P.O. Box 291, Quaker Hill, Conn.

Join the "Pupa of the Month Club": a pair of living pupae, either Rhop. or Macros each month. Also a list of other available species of the time. Two pair a month for \$7.50 per year, postpaid. Four pair a month for \$10.00 per year. F.P. Sala, 1764 Colorado Blvd., Los Angeles 41, Calif.

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

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

Professor Wm.T.M. Forbes, of Cornell University, has agreed to present answers to questions submitted by members on any aspect of Lepidoptera study. Questions are to be sent to the editor of the Lep. News.

Q. "Are there any baits that can be used to attract butterflies in the North Temperate Zone?"

A. I have no practical experience with this. The usual mixtures for moths are reported to be useful; also various strong-smelling things unpleasant to us attract some, especially Nymphalidae. For instance, my only Purple Emperor was caught on a fresh donkey-dropping. And perspiration is sometimes attractive, notably to Angle-Wings (Polygonia spp.).

Q. "What is the history of the introduction of Samia walkeri into North America, where did it come from, and to what does the name cynthia apply?"

A. It was introduced into France by persons experimenting on developing a commercial silkworm of the coarser (Tusseh etc.) type, and from France into America for the same reason. Cynthia (the Eria Silkworm) breaks into many races, with various foods, chiefly castor bean, Lauraceae, and Ailanthus; the chief commercial strain (ricini) feeds on castor oil plant. Ours is advena Packard and probably came from southern China. Cynthia is the correct name for the species as a whole, and is generally applied to the brown race from Java, though Drury states his specimen came from China.

W.T.M.F.

FOOTNOTE ON PAPILIO

In connection with F. Martin Brown's recent analysis of Papilio (Lep. News 4: p.63) the following slight notes may be of interest.

A good character to separate the two main groups of the fluted Papilios is the very long fringe on the inner margin in group B. It is not always equally well developed, and can be easily overlooked, e.g., in homerus itself; but it is very striking in the forms with weak toothing of the costal edge, such as zagreus and euterpinus.

The early stages show that the troilus and glaucus groups are much closer to each other than either is to the thoas and anchisiades groups, which in turn are closely related. In fact the glaucus and troilus groups have the ONLY larvae above the skip-pers with a fully functional outer row of hooks on the prolegs, adapted only to walking on a silk sheet. Also pilumnus, placed by Rothschild and Jordan in the glaucus group, clearly belongs to the troilus group, and I think the arrangement of the cell of the fore wing will confirm this.

In the protesilaus group, helios from South America is easily recognized by the very large transparent areas; it is also the only member of the group in which the female is taken from time to time, and I think the only one of which the larva is known (on taruma, Vitex montevidensis, on the authority of Prof. Biezanko).

Wm. T.M. Forbes
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Welling, Edward C., 700 East 240th St., Euclid 23, Ohio. LEPID: esp. Speyeria, Melitaea, Papilionidae, etc. Sugar-baiting. Coll. Ex.
Zappalorti, Michael, 123 Andromette St., Charleston 9, Staten Island, N.Y. RHOP. and MACRO: local and exotic. Coll. Ex. Buy. Sell.

DECEASED

Johnston, Edward C. (Washington).
Toxopeus, L.J. (Prof.Dr.) (Indonesia).

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