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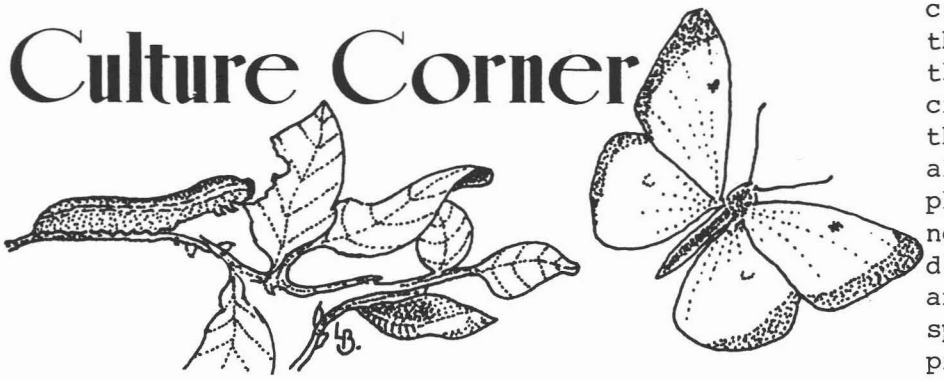
Culture Corner



This is the first of what I hope will be many columns on rearing and breeding. "CULTURE CORNER" is going to deal both with general subjects and precedures and with specific Lepidoptera groups and species. The emphasis will be on rearing and culturing techniques rather than just life histories. It will depend heavily on the readers of the NEWS; feedback is the only way to find out what members of the Society want to know. If you have information to share, send it in —— it can be used as a "guest" column or as amplification of an earlier subject. I welcome, even solicit, questions. If I can't answer them, perhaps other readers can.

Why a column on rearing and breeding? First, because I think it will fill a real void. To look over the Buy, Sell, Exchange column in the NEWS, one would think that no one is interested in rearing anything other than saturniids and swallowtails. I am sure that this is not the case, though (at least I hope not!). Field collecting of adults is enjoyable and worthwhile, but unless you are willing to spend a good deal of time and money in travel to new places, in a few years you will have found almost all the species your vicinity has to offer. Besides, the adult is only one-quarter of the lepidopteran. You can't really say that you are acquainted with even the physical appearance of any species until you have seen all of its immature stages as well as the adult. To me. most of the pleasure of being a lepidopterist is in becoming familiar enough with a species to discover the ins and outs of its own peculiar way of life and behavior. I cheerfully concede that I am a fanatic, but I would like to think that the lepidopterological horizons of a great many collectors would be greatly expanded by spending more time working with live material.

Second, the recent emphasis on conservation by the Society makes this a particularly apt time for the appearance of "CULTURE CORNER". We feel that the North American fauna is pretty well known, but when it comes to the vital particulars of why some species are becoming increasingly threatened and how to help them, more often than not the crucial basic information on the species' life history, let alone anything on its genetics, physiology, or behavior, has never been found out. In addition, an emphasis on rearing and breeding choice and rare species can take collecting pressure off those that occur

as small, localized populations. In the case of phenotypically variable species, rearing out a good-sized brood from each of several wild-caught females is a better, more efficient way of getting a full range of phenotypes than collecting long series of wild individuals. If the species is rare, a few vigorous males and females can be returned to the wild population so as to balance collecting pressure. And, of course, rearing gives the lepidopterist a chance to play god, since the environment can be manipulated so as to produce all sorts of interesting adult phenotypes, some of which may never be found in nature. Or species can be induced to hybridize to produce creatures never before seen.
In future "CULTURE CORNERS" I am planning to talk about such subjects as rearing satyrids, getting diapausing larvae through the winter, building your own growth room, and design of hybridization experiments.

REARING CELASTRINA LADON

Celastrina ladon, the Spring Azure, appears in the spring at a time when the urge to do something with live leps is at its height. I have fooled around with this "species" for some years, but only last summer did I rear it in any quantity. In southwestern Pennsylvania C. ladon is composed of a multivoltine "violacea" entity and the apparently univoltine and much less common "neglecta-major". As far as I know the life history of the latter is completely unknown, and its larval behavior may be as different from that of "violacea" as is C. ebenina (W. H. Wagner & T. L. Mellichamp, J. Lepid. Soc. 32: 20-36, 1978) Further north and east the "lucia-marginata" entity (in my opinion, another univoltine sibling) occurs with "violacea". This has a similar life history. "Violacea" larvae feed on the of many plants, but in Pennsyvania the most common foodplants for larvae from eggs laid by the first generation adults are dogwood (Cornus), and bush cranberry or wild raisin (Viburnum); for second generation sweet clover (Melilotus); and for third generation wingstem (Actinomeris), a tall, weedy composite.

For oviposition containers I use 6 oz. conical clear plastic drinking cups covered with a piece of nylon stocking held in place with a rubber band. I melt a ¼" hole through the cup bottom using a hot screwdriver and put the cup on top of a 1 pint plastic deli container filled with water and with a matching hole cut in the lid. A cut sprig of foodplant with flower buds can be shoved down into the cup and through the two holes into the water below and then arranged so that the ladon ♀ will encounter flower buds frequently while walking around on the inside of the netting. I feed ♀♀ each morning on a sugar-water-soaked piece of paper towel on a plastic petri dish covered with another cup. then put them in their oviposition cups in a sunny window. Some ♀♀ will lay 10 to 30 eggs a day for a week or so, and others never lay a single one. Every morning I give each ♀ a new oviposition setup and inspect the old one for eggs, which are tucked down at the bases of the buds. If there are eggs present, I cover the cup with a petri dish top, then put it aside. After 5 or 6 days, I look the eggs over every day for signs of hatching. When the first larvae appear (you may need a hand lens or dissecting scope to see them) it is time to break up the inflorescence and put the larvae into rearing containers.

Last summer I tried a minimum maintenance method of rearing by putting a few larvae on whole flower heads. The flower heads always seemed to dry up before the larvae were anywhere nearly mature, and recovering young larvae was very time-consuming and risky. Finally I settled on rearing larvae in 20 x 90mm plactic petri dishes as the best method. I cut out circles of paper towel to fit the bottoms of the dishes. Each wall-to-wall carpet gets a drop of water to moisten it slightly, and then I put several small clusters of buds in and lay a single bud bearing a newly hatched larva on each. C. ladon larvae have extremely extensible "necks" and feed by boring a neat hole at the base of a flower bud. The main body remains on the surface of the bud while the head and "neck" are thrust inside. All of the reproductive parts of the flower are eaten, and on this no doubt very nourishing diet the larvae grow very fast (30-40 days, egg to pupa).

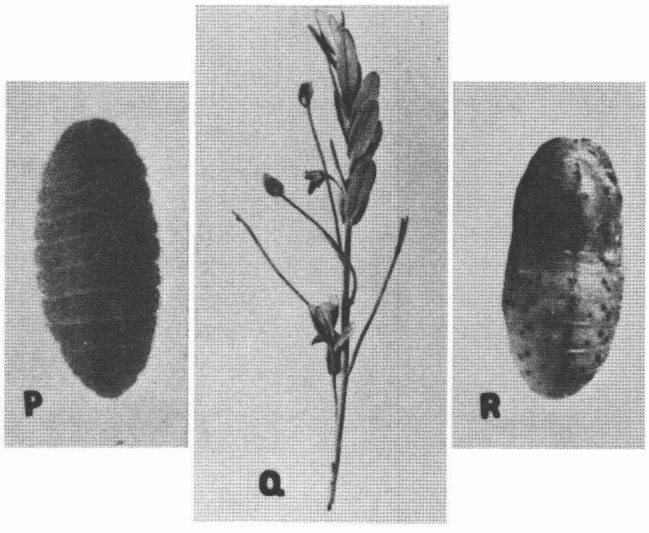
I keep 4 or 5 young larvae or 2 to 3 older larvae in each dish, with the dishes stacked inside ziploc bags to prevent dehydration. Larvae die very quickly if confined with decomposing foodplant, so I change bud clusters every 3 days. I divide my stacks of petri dishes into three groups and change one stack each day. Fifty or so dishes is my daily limit, so I find it possible to rear through about 300 to 350 individuals at a time. Pupation occurs on the foodplant or petri dish, and I move the pupae plus substrate to a screened cage for emergence. I have not yet attempted to get adults to mate, but perhaps they will pair in small cages.

"Violacea" shows some interesting photoperiod effects. The pale summer adult form is a response to long-day short-night conditions. One brood I reared on 18-hour days produced very large adults resembling "neglecta-major" but paler in color. "Lucia-marginata" reared under this abnormal photoperiod develops without diapause, producing forms with light summer coloring dorsally and dark hindwing blotches ventrally. These forms do not seem to occur in nature. (Charles G. Oliver, R.D. #1, Box 78, Scottsdale, PA 15683)

EPIDEMIA EPIXANTHE.....

The cranberry-feeding Epidemia epixanthe (Bsd. & LeC.) is a nearctic lycaenid generally restricted to cool boreal bogs. Nearly all present-day lepidopterological literature describes the immature stages as largely unknown. In the course of my research I have discovered that many older works have been overlooked; a brief historical synopsis would seem appropriate.

The white echinoid ova were first described by Saunders (Can. Ent. 1: 53-57, 1869) and further detailed pictorially by Scudder (Butterflies of New England, 3 vols., 1889). The foodplant Vaccinium macrocarpon Ait. was discovered by Cook & Watson (Can. Ent. 40: 85-88, 1908), who reported that the ova overwintered on the foodplant. This possibility had been suggested by Saunders earlier. Franklin published a photograph of larva and pupa in the miscellaneous section of his "Cranberry Insects in Massa-



BOG BUTTERFLY

Fig. P. Mature caterpillar, much enlarged

Fig. Q. Work of worms.

Fig. R. Pupa, much enlarged.

(Reproduced from Franklin 1948. Permission granted from University of Massachusetts Bulletin Center.)

chusetts" (Mass. Agric. Exp. Sta. Bull. 445:1-64, 1948). The photograph was accompanied by a short caption only and, unfortunately, no descriptive text was given. Nevertheless, this was the first published description of these stages. This publication has gone virtually unnoticed by the lepidopterist community and the photo (from p. 51) is reproduced here with the permission of the publisher. The caption is given exactly as in Franklin.

On the whole, the life history of E. epixanthe is still quite fragmentary and more research is needed. Three colonies within the New Jersey coastal plain pinelands have been under study by this writer for several years. Rearing experiments have been laborious but rewarding. A detailed SEM study of larval and pupal characters, as well as general biological notes, is near completion for submission to the JOURNAL. (David M. Wright M.D., 124 Heartwood Drive, Lansdale, PA 19446)

ERORA LAETA, POSTSCRIPT.....

A very interesting and informative 37-page paper has just been published by Drs. Klots and dos Passos (J. New York Ent. Soc., 89: 295-331), which records almost everything known about Erora laeta and E. quaderna. It includes complete synonymies and references through 1980, a detailed discussion of past knowledge, and photographs and detailed descriptions of the life histories of these butterflies. The E. laeta observations were obtained from museums and private collections, from field studies by the authors and friends from 1934 to 1968 at two localities in Vermont, and from breeding experiments with 20 ova obtained by Dr. Klots from a female caught in Vermont in 1951. Two pupa and one adult were raised on beaked hazelnut leaves.

In a letter to me, Dr. Klots has stated: "The best evidence is that beech is the natural food and others (including beaked hazelnut) are emergency rations. I think the larvae feed much on the developing fruits." However, Dr. Klots, H. Mousley, Ross Layberry, Don Adelberg and I have all failed to raise larvae on beech leaves, and only an occasional ovum has been deposited on beech during numerous attempts to obtain these.

The main problem in reasing E. laeta is to obtain ova, and very few females have laid any in captivity, even in sleeves at the collecting site. Most ova have been deposited on the netting or sides of the breeding cage, and in my experiments many ova were also laid on dried beaked hazelnut leaves on the bottom of the cage.

I have found willow to be an excellent, perhaps preferred foodplant for raising E. laeta in captivity. I have also observed two adults resting on willow and obtained one ovum on a willow leaf in a breeding cage. I suspect that willow is present in most areas where E. laeta has been found, and I suggest that collectors observe these trees for further evidence that it is a foodplant in nature. (William B. Wright, Jr.)

PACHYLIA FICUS (SPHINGIDAE) IN INDIANA: STATE RECORD.....

Dr. Emerson Niswander, recently retired entomology professor at Manchester College, gave me several boxes of insects containing an unidentified hawkmoth of special interest. Although his data were incomplete, I relaxed and spread it, and easily identified it as Pachylia ficus (Linnaeus).

In the "Moths of America North of Mexico" (1971), R. W. Hodges states that "within our region ficus has been taken at Brownsville, Texas, where Glick (in litt.) says that it is frequent. In the Floridian peninsula it occurs throughout the year".

The photograph on Plate 10, Fig. 2, of Hodges book, and the one in C. P. Kimball's "Lepidoptera of Florida", Plate VII, Fig. 14, accurately portray the distinctive characteristics of Pachylia ficus. The wing length varies, according to Hodges, from 50 to 70 mm. or more. The specimen here referred to has a forewing length of 72 mm., or a wingspan of 145 mm.

Dr. Niswander says that this moth was probably collected in 1976, and was definitely taken at light near his house in North Manchester, Wabash Co., Indiana. Since sphinx moths are strong fliers and fly great distances, perhaps it is not too surprising to find P. ficus (Fig Sphinx) in Indiana. (Ernest M. Shull)

BAD NEWS AND GOOD NEWS:
COLLECTING SITES IN WESTERN CANADA 1981.....

During June and July of 1981 I collected in Alberta and British Columbia for the first time in a decade. Considerable changes in topograpy have taken place in the interim. Logging operations and mineral exploration (oil and gas especially) have destroyed considerable habitat. Large tracts have been cleared in northern British Columbia to provide land for agriculture. Grain fields are now encountered along sections of the Alaska Highway! In some areas the old pioneer method of slash and burn for land clearing was observed, where it appeared to me that the timber could have been salvaged for lumber or pulp wood.

The area in Alberta in which a major change has occurred is along the section of the Kananaskis Forest Trunk Road that runs from Coleman to Seebe. The road has been rebuilt along much of its length and realigned, so that it no longer passes through many of the meadows and stream bottoms that used to be prime collecting areas. Presumably one could identify the former course of the road and hike into the old collecting sites. The northern portion of the road has been paved and traverses the Kananaskis Provincial Park; collecting in provincial parks is frowned upon, if not forbidden. The major loss, however, is Plateau Mountain. In the Sept/Oct issue of the NEWS Norbert Kondla indicated that the area had been designated an ecological area and was closed. The situation appears to be more than that, however. Plateau Mountain was formerly accessible by a relatively good gravel road that intersected the Kananaskis road. There used to be some warning signs at the intersection concerning toxic gas, because of the natural gas field operation on the mountain. The access road is now barricaded with a substantial barrier that appears to be made of oilwell drillstem. A locked gate with tamper-proof shield completes this structure. Signs proclaim "Poison Gas" and private property of Husky Oil of Canada, Ltd. I saw nothing to indicate anything about an ecological preserve. There are now numerous other such "Poison Gas" signs along the Kananaskis road, and there is the smell of oil field sour gas (hydrogen sulfide) in some areas. Plateau Mountain used to be a prine collecting area for such species as Colias nastes streckeri, C. meadii elis, Clossiana astarte, C. alberta, Occidryas editha beani, Lycaena phlaeas arethusa, Oeneis melissa beani.

I did not recognise the first 150 miles of the Alaska Highway, which is as far as I travelled in '81. The communities of Dawson Creek and Fort St. John, which were little more than wide places in the road in 1971, are now substantial towns complete with motels, condominiums, and shopping centers. Areas that I collected in '71 are now under argiculture or are gas fields replete with warning and "NO TRESPASSING" signs. Camping along this first section of the Alcan, which was formerly no problem, is now virtually impossible. Because of the way in which the road is graded, there are very few spots where one can even pull off the road. Many of the old intersecting roads have been barricaded. In fact, it is very difficult to find unregulated camping spots in many sections of northern B.C because of all the agricultural development, and collecting is virtually nil in these regions.

Other "classic" B.C. collecting localities such as 100 Mile House and Lillooet are now bustling agricultural communities. The news is not all bad, however. Although logging operations are underway, the areas around Jesmond, Seton Portage and Mt. McLean are still accessible. They

are served by gravel roads and support good collecting. The Mt. McLean-Seton Portage road, however is not without problems. It is long, dusty, and narrow, with many relatively steep grades and hairpin turns. To make driving conditions worse, one must contend (and contest) with logging trucks. There are sections where vehicles travelling in opposite directions cannot pass because of the narrowness of the road. This road is not for the faint of heart!

One still unspoiled collecting spot in northern B.C. is Pink Mountain. The elevation is just under 6000' and the top is generally a tundra plateau with some ridges and gullies. Some of the interesting endemics include Papilio machaon, Parnassius eversmanni, Colias nastes, C. hecla, Clossiana improba, C. polaris, Boloria napaea, Oeneis melissa, O. polixenes, O. macounii.

The mountain is relatively easily reached. One drives north on the Alcan about 143 miles from Dawson Creek to the settlement of Pink Mountain (not to be confused with the mountain itself). On the north side of the road there is a motel/restaurant, and just west of it an Esso gas station. From the Esso station drive 3.9 miles farther along the Alcan. On the south side of the road is an abandonned logging camp, on the north side a cafe called "Mae's Kitchen". A side road takes off to the south at this point and there is a B.C. Game and Fish Dept. sign. As you start down the side road, you pass the abandonned logging camp buildings on your right and then a collection of junked autos. At mile 10.1 measured from the Esso station there is a side road to the right. It looks more like a jeep track at first than a road. This is the road to the mountain top, with its lookout tower 19.5 miles from the Esso station. The eastern hump of the mountain in the general vicinity of the tower provides the best collecting. In good weather the access road does not require a 4-wheel drive vehicle, but high clearance is necessary. A VW bug, any import with 14" wheels or larger, or any pickup should have no trouble. It is not recommended for low-slung cars or RVs. The road up the mountain is narrow and there are very few places where vehicles can pass one another. Caution and discretion should be used in bad weather: the first flat section of the road can turn into "gumbo" when wet, as evidenced by deep ruts in some low places.

Any collector travelling the Alcan to Alaska should plan a side trip to Pink Mtn. If the weather is favorable the species collected on the top of the mountain will be well worth the detour.

I would like to thank Jon Shepard of Nelson, B.C., for the detailed information that he provided for access to Pink Mtn. and for his and his wife's hospitality when I visited Nelson in June '81. (Clifford D. Ferris, Bioengineering Program, Univ. of Wyoming, Laramie, WY 82071)

HOW MANY BUTTERFLY SPECIES? .....

How many species of butterflies exist? To which question one might respond: "Does it really matter? Isn't it a meaningless number?" True, but . . . (1) it is one of those numbers any jack-of-the-trade lepidopterist worth his salt should have handy. (2) More than 20 years ago, Yale ecologist G. E. Hutchinson asked the very good question, "Why are there so many animal species?". But we do not even know the preliminary "How many species exist?" And supposedly butterflies are the best-known group of invertebrates. (3) It is difficult to talk about conservation on a global scale if we do not know how many species exist to conserve. (4) It is good sport. Any number can play: splitters to one side, lumpers to the other. By the turn of the century we should have some good answers.

The solution below treats the true butterflies and the skippers. I divide the true butterflies into four major groups: the papilionids, the pierids, the nymphalids (including danaids, satyrids, libytheids, etc.), and the lycaenids (including riodinids, liptenids, curetids, etc.). The hesperiids are treated as one group including megathymids.

I invite those with better numbers than I have to join the fray. My knowledge of the Oriental and Asian Palearctic regions is exceeedingly limited. The final figure is not yet in.

True Butterflies

In the beginning there was Seitz. Over a period of some 20 years (1907-1927), A. Seitz and his collborators described the world's Rhopaloceran fauna. No one has equalled this feat. I counted the number of species in Seitz, not including forms (Table 1). The numbers are too low for most groups, but the estimate of 10,200 species is the first real approximation.

The only serious latter day enumerators of whom I am aware are Ehrlich & Raven (1965, Table 1). They did not divulge the sources of their information. Their estimate of 12,000 to 15,000 true butterflies falls neatly between the "more than 10,000 species" and "20,000 species including skippers" quoted in various books (e.g. Fox & Fox 1964, Lewis 1973). I used only post-1965 sources for my tabulation, so the similarities between my estimates and those of Ehrlich and Raven are likely to reflect reality.

Table 1. Number of true butterflies from Seitz (1907-1927) (exclusive of additions or supplements) and from Ehrlich & Raven (1965)(last row).

REGION	PAPIL.	PIERI.	NYMPH.	LYCAE.	TRUE BUTTER.
PALEAR.	71	148	532	307	1,058
INDO-AU.	214	277	1,218	994	2,703
AFRICAN	80	175	832	824	1,911
AMERICAN	172	348	2,328	1,683	4,531
WORLD	537	948	4,910	3,808	10,203
WORLD*	575-700	950-1,150	4,800-6,200	5,800-7,200	12,000-15,000

Table 2. Numbers of butterflies in the Malay Peninsula (from Eliot 1978) and in Panama (from Robbins & Small 1981, see text).

	PAPIL.	PIERI.	NYMPH.	LYCAE.	TRUE BUTTER.	HESPE.	ALL BUTTER.
MALAY PENIN.	44	45	273	400	762	246	1,008
PANAMA	29	65	427	530	1,051	~500	1,550

Table 3. Number of butterflies in the World. See text for sources.

REGION	PAPIL.	PIERI.	NYMPH.	LYCAE.	TRUE BUTTER.	HESPE.	ALL BUTTER.
PALEAR.	93	161	722	392	1,368		
AUSTR.	74	174	323	446	1,017	750-900	5,585-6,135
ORIENT.	141-165	145-168	878-1,021	1,286-1,496	2,450-2,850		
AFRICAN	87	146	1,103	1,380	2,716	423-508	3,150-3,225
NEARC.	35	63	202	171	471		
ANTILLES	22	50	97	32	201	1,838-2,206	7,175-8,860
NEOTROP.	169	347	1,850-2,500	2,300-3,000	4,675-6,000		
WORLD	621-645	1,086-1,105	5,175-5,975	6,000-6,900	12,900-14,600	3,000-3,600	15,900-18,225

I record numbers of species for the Australian (D'Abrera 1977, but see Miller & Miller 1981), Afrotropical (D'Abrera 1980), Palearctic (Kostrowicki 1969), Nearctic (Miller & Brown 1981), and Antillean (Riley 1975) regions (Table 3). These numbers vary in accuracy but probably represent reasonable approximations of species-richness for their respective areas. The only reliable and complete lists of species numbers in the Oriental region and the continental Neotropics are for the Malay Peninsula (Eliot 1978, Table 2) and for Panama between the Costa Rican border and the eastern edge of Panama Province (Robbins and Small, 1981; the brassolids and hesperiids are omitted from that work, but are included in Table 2). These lists are valuable indicators of the proportional representation of each group in their respective regions.

My estimates for the Neotropcs are given in Table 3. The numbers for the Papilionidae and Pieridae come from D'Abrera (1981). The estimate of 2650±350 lycaenids comes from my work and from informal discussions with Curtis Callaghan (an expert in the Riodinidae); the lycaenids are

about evenly divided between "hairstreaks" and "metalmarks" with a handful of "blues" and one "copper". In Panama, for every nymphalid species there are 1.24 lycaenid species, 0.15 pierid species, and 0.07 papilionid species. Assuming these proportions are constant throughout the neotropics, then I get an estimate of 2175±325 Neotropical nymphalids.

I estimated the total number of Oriental species the following way. There are 1.42 more African species than in Seitz, 1.35 more New World species, and 1.29 more Palearctic species. I multiplied the 2,700 Indo-Australian species in Seitz by these factors, subtracted the Australian species, and averaged the results. I then assigned these species to each "family" according to the proportional representation in the Malay Peninsula. Perhaps someone familiar with the Oriental fauna will let me know how badly these estimates distort reality.

Skippers

Evans (1937-1955) treated the world hesperiid fauna. His numbers are too low because he only used specimens in the British Museum, because he tended to "lump" when in doubt, and because many new species have been described in the last three decades. I record a range of species numbers (Table 3): the smaller numbers are Evans' figures and the larger ones 20% higher.

Conclusions

1. There exist 12,900-14,600 true butterfly species and 15,900-18,225 butterflies including skippers. Reasonable single figure estimates might be 14,000 and 17,500, respectively. The figures for the true butterflies agree surprisingly well with those of Ehrlich & Raven.

2. There are more lycaenids than nymphalids. Nymphalids have classically been considered the richest group, but Erlich and Raven suggested that lycaenids might be richer. Lycaenids predominate in tropical areas (more than 50% of true butterflies in Africa, the Malay Peninsula, and Panama; 44% in the Australian region), while the nymphalids predominate in the relatively depauperate regions (about 50% of the Holarctic and Antillean regions). Unless the figures for Panama and the Malay Peninsula are grossly unrepresentative, then there are more lycaenids.

3. The richest area for butterflies is the Neotropics. There are 1.4 times as many true butterflies in Panama as in the Malay Peninsula and about twice as many skippers. (Panama is approximately half the size of the Malay Peninsula.) The Neotropical fauna is more than twice as rich as the African fauna. Nearly half (43-50%) of the world's butterfly species, including skippers, occur in the New World.

(I thank John Burns for critically reading the manuscript. A list of references is available from the author: Robert K. Robbins, Dept. of Entomology, NHB 127, Smithsonian Institution, Washington, D.C. 20560)

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PACK A BUTTERFLY NET IN YOUR LUGGAGE.....

For a number of years recently my wife and I have taken winter holidays in the West Indies, varying our locale with visits to Antigua, St. Croix, Grand Cayman, Guadeloupe, St. Lucia, and most recently St. Maarten. While she has basked on the hotel pool's terrace, I have preferred to swing a net in the adjacent ornamental shrubbery or along dusty local roads. Riley's "Field Guide to the Butterflies of the West Indies" has served to identify all the conspicuous species, but when it comes to the small look-alike skippers, I have always delivered them to Lee and Jacqueling Miller at the Allyn Museum in Sarasota, Florida, for their confirmation. Soem day (I thought) I might come up with something unusual. And finally I did.

On 28 March 1981, at a flowering Lantana bush on the island of St. Maarten, I cought a skipper that in my opinion came close to Panoquina ocola, though Riley said the species did not occur east of Puerto Rico, and was sporadic even there. But Lee and Jackie determined it to be considerably more novel than that: a male Panoquina panoquinoides eugeon Godman & Salvin 1896. According to Riley, West Indies representatives of the nominate form of this species occur on the Cayman Isles and Jamaica, while South American eugeon is found in Grenada and the Grenadines. Jamaica is 900 miles from St. Maarten at the western edge of the Greater Antilles, while Grnada is 450 miles distant at the extreme southern end of the Lesser Antilles. Riley adds that eugeon "could well be a distinct species". Obviously the St. Maarten population invites someone to give it critical study. See your friendly travel agent. (C. Brooke Worth, Delmont, N.J. 08314)

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IV CONGRESO LATINOAMERICANO DE ENTOMOLOGIA.....

About 320 entomologists, mostly from Central and South America, met 5-10 July in Maracay, Venezuela, for the IV Latin American Congress of Entomology. This meeting was of significance to lepidopterists because it included the first "Simposio de Lepidopterologia Neotropical", organized by Dr. Gerardo Lamas, of the Universida Nacional, Lima. Dr. Francisco Fernandez-Yepez was honorary President of the Congress. The timing of the Lepidopterists' Society Annual Meeting in Mexico made it difficult for participants to attend both meetings; thus, these notes are presented here as a summary of the Maracay symposium.

Generally about 40 persons formed the audience of the Lepidoptera symposium sessions. Following the formal introduction by Gerardo Lamas, the following papers were presented in two days of sessions: Atlas of Neotropical Lepidoptera, by J. B. Heppner, Smithsonian Institution; Neotropical Lepidoptera: Current Status and Future, by J. B. Heppner; The Neotropical Macroheterocera, by A. Watson of the British Museum; Present and Future Trends and Needs in Rhopaloceran Systematic Research, by Lee D. Miller of the Allyn Museum; Pasado, presente, y futuro de los estudios sobre mariposas neotropicales en America Latina, by G. Lamas; Contribution of Research on Neotropical Butterflies to Ecology, by L. E. Gilbert, Austin, Texas; and Contribucion del conocimiento de los lepidopteros neotropicales a la Biogeografia, by K. S. Brown, Campinas, Brasil. There were also numerous other Lepidoptera papers in general sessions of the Congress.

Following the formal paper sessions of the symposium and general Congress sessions, a number of the lepidopterists met in informal discussions. The first one considered problems lepidopterists must deal with in Latin America and the general state of Latin American museums and insect collections. It was most commonly noted that the great distnaces usually involved in studying holotypes, since they are mainly in U.S. or European museums, is the main hindrance to systematic research by Latin American lepidopterists. Several participants noted that there were now a number of excellent museums or university collections established in several countries, notably in Mexico (Instituto de Biologia, Mexico City), Venezuela (Univ. Central de Venezuela, Maracay), Peru (Museo de Historia Natural, Lima), Brazil (Univ. Federal do Parana, Curitiba), and Argentina (Instituto Miguel Lillo, Tucuman), to name a few. These museums can now safely house collections and holotypes. Several countries have recently begun new natural history museums, notably Ecuador and Paraguay. The consensus was that henceforth lepidopterists describing new species should maintain an active correspondence with Latin American institutions when working on the Neotropical fauna, in this way also obtaining additional material for study. Holotypes should be deposited in appropriate national institutions when possible, or at least paratypes should be sent to one or more Latin American museums.

Another informal discussion centered on the current status of the Neotropical Lepidoptera Project and the production of the series, "Atlas of Neotropical Lepidoptera". The editor, Dr. J. B. Heppner, noted that current work on

the Neotropical checklist was progressing well and that a butterfly bibliography would be ready for publication in 1983. Technical aspects of the checklist were discussed among some of the authors present.

Several lepidopterists remained in Venezuela to do field work in a country with some of the most interesting habitat diversity in South America, with a considerable amount of territory as yet unexplored for Lepidoptera, especially moths. The Congress was a notable opportunity to meet numerous Latin American entomologists, as well as fellow lepidopterists. It is hoped that the success of this first Neotropical Symposium will prompt others to organize such meetings in the future. One opportunity may arise in October 1983, at the planned IX Congreso Latinoamericano de Zoologia, in Arequipa, Peru.

(J. B. Heppner and G. Lamas)

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28th ANNUAL PACIFIC SLOPE MEETING, 1981.....

The 28th annual meeting of the Pacific Slope Section of the Lepidopterists' Society was held June 6-7, 1981, in San Diego, California. Hosts for the meeting were David Faulkner and John and Poody Brown.

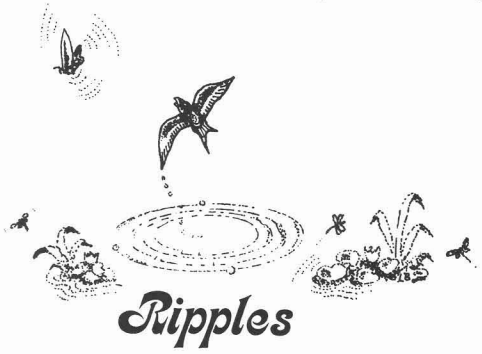
General sessions on Saturday & Sunday were opened by Dave Faulkner, who gave the necessary business announcements. Speakers included Ray Stanford, Tom Oberbauer, Julian Donahue, Greg Forbes, Bill Swisher, Dave Faulkner, Bob Langston, John Brown, John Lane, Paul Tuskes, Arthur Allyn, Glen Gorelick, John Hafernick & Mark Stringer, Larry Farrington, Ried Moran, John Emmel, Clyde Gillette, Doug Mullins, Ray Nagle, Richard Holland, Ben Landing, and Benjamin Banta.

The Saturday evening program began with a social hour and banquet at Cafe Del Rey Morro, Balboa Park, where everyone enjoyed a delicious Mexican dinner. The conviviality led to various predictable ad libs regarding John Hafernicks talk on Buckeye butterflies, wherein he had shown slides of a female being held down by human hands so that a male could mate with her. The banquet address was given by Dr. Reid Moran, Curator of Botany, San Diego Natural History Museum, on "The Plants of Baja California". Dr. Moran was quick to let us know that our goofy little critters ate his plants! The best part of the banquet occurred when his name was drawn for one of the gifts and he won a beautiful tropical butterfly encased in plastic. What better person than a botanist to receive such a beautiful animal?

The John Adams Comstock Award, for the best paper given at the meeting by a student, was presented jointly to John Brown and Greg Forbes by Ray Stanford. The person honored in the award was Peter J. Herlan, in recognition of his life-long work on the Lepidoptera of Nevada; Gloria Harjes is compiling his biography.

The 1982 Pacific Slope annual meeting will be held in Laramie, Wyoming, along with the national meeting.

(Gloria J. Harjes)



Dear Jo,

I recently had a short note rejected by the J. Leps' Soc. on butterfly montane repationships between SE Asia and American butterflies. An anonymous reviewer's comments (5 months in coming) picked at minor points before stating, "Casual notes like this cannot substitute for in-depth analyses of phylogenetic and biogeographical relationships ... Whether he has the discipline to do a rigorous analysis employing the logic if not the doctrinaire methodology of cladistics, is another question; I hope so. In this epoch of intellectual ferment and a demand for rigor in the historico-biological sciences, this note simply does not pass muster." It goes on to say that another article of mine (Shields & Dvorak, 1979) J. Nat. Hist. 13: 221-250) is equally biogeographically speculative for much the same reasons.

Are we to dismiss the stupendous body of knowledge gained from phytogeography , zoogeography, and biogeography by such greats as Darwin, Wallace, Darlington and Croizat as out of hand because it doesn't conform to the rigors of cladistic analysis so recently thrust upon us? Is Brundin's chironomid work the only example of this proper treatment to date? What makes cladistics so superior to normal phylogenetic interpretations? Are those of us who weren't spoon-fed the new cladistics in school doomed to oblivion? What a pity that biogeographic analyses at this fertile time of cross-discipline ideas on continental drift, plate techtonics and earth expansion should suddenly take on the character of cladistics for the select few who have mastered the new tool. I wonder if the reviewer himself could conform to the new standards. In short, the reviewer evidentally has the mind-set of the more rabid Sociobiologists and allows little room for contrary or older opinions.

Oakley Shields,
4890 Old Highway,
Mariposa, CA 95338.

Editor's note: The word 'cladistics' has not yet made its way into any of the currently available dictionaries. However, anyone who wishes to form a 'speaking acquaintance' with it is referred to The New York Times Supplement, 14 Feb. 1982, p. 8E.

Dear Ripples,

In the NEWS No 1, Jan/Feb 1982, p. 5 there appears an unsigned comment: "Larval food for Euphydryas chalcedona" in which Keckiella cordifolius(Benth.) is added to the known food plants of the species. I have observed two more.

In April, probably 1930, I observed numbers of adult Euphydryas c. chalcedona (Doubleday) nectaring at blossoms of Buddleia davidii Franch.(Loganiaceae) in a home garden at the base of the San Gabriel Mountains at Glendora, L. Angeles County, CA. ♀♀were ovipositing on the foliage, and clusters of first and second instar larvae fed along the leaf edges. Chalcedona emergence was near its peak on the hill slopes above the home. Larvae were reared to diapause on cuttings of the plant at my home, but lack of suitable food plant prevented rearing them to adults in the following year. Whether gardening activities allowed larvae to survive a diapause and to reach maturity on the Buddleia in the home garden was not determined.

A second food plant observation was obtained March 31, 1975 at Bodfish, Kern County, CA. where Erich Walter and I collected about forty fourth instar larvae of chalcedona from Veronica anagallis aquatica L. (Scrophulariaceae). Erich noted the first larva on the plants. Plant cuttings kept well in water and allowed some of the larvae to become adults. They were close to Euphydryas chalcedona olancha Wright. My specimens are now deposited in the Euphydryas collection at the Lepidoptera Ecology Laboratory at Leland Stanford University, CA.

Sincerely,

John W. Johnson,
Assistant Research Biologist,
U. of Cal., Irvine, 92717.

To the Editor:

In response to the two latest treatments of North American butterflies now available, I would like to compliment the authors and/or editors for a fine job. Specifically Robert Pyle's Audubon Society Field Guide to North American Butterflies does indeed meet the goal of making people aware of the fascinating variation seen among our butterfly species. Photographs were excellent, and the descriptions and ranges given were clear and concise. Cliff Ferris and F. Martin Brown are also to be given plaudits for their editing of Butterflies of the Rocky Mountain States. The treatment and biological data added by the contributing authors make this publication a real advance over previous attenpts to describe the butterflies of the Rocky Mountain regions of the U.S. I am always glad to see the availability of field guides with which one can actually identify butterflies! In addition, regional butterfly publications are usually more detailed if not more accurate as to butterfly biology and distribution than is Butterflies of North America, which fails, I am sorry to admit as one of the contributing editors, to meet such goals.

Glenn Gorlick,
Citrus College, Azusa,
CA 91702.

Editor's comment: Dear Glenn, Have you seen the Butterfly Watcher's Guide to the Butterflies of Sanibel and Captiva (Florida). 41 information-packed pages written for Everyman! Illustrated by 16 different artists from coast to coast, including the author,

Jo Brewer, ed.

Dear Jo,

In San Diego County, California, Papilio eurymedon is an avid "hilltopper" on the summits of Tecate and Monument Peaks. Typically in late morning to mid-day, about a half dozen or a dozen males patrol or cruise all around the top, occasionally alighting. When two meet, they proceed to fly straight up in the air together for ca 50' - 200', not returning to ground level sometimes for 4 or 5 minutes. It would be an interesting project to study these displays through powerful binoculars, or even record them of film with a motion picture camera equipped with a telephoto lens.

Sincerely, Oakley Shields.

The Editor
NEWS of The Lepidopterists' Society.

Dear ed.,

In some recent numbers of the NEWS there have been letters on the subject of genes producing effects in both larval and adult Lepidoptera. The general drift being that such genes are almost unknown. You may be interested therefore, in the subject of the enclosed 1966 paper (Entomologist 99; 281-3), which describes a non-adaptive character common to larva, pupa and adult, apparently produced by a single gene.

Yours, S.R. Bowden,
53 Couch Hall Lane,
Redbourn, Herts. AL3-7EU,
England.

Ed. note: Thanks to you for sharing. A good many people will be interested in reading this article.

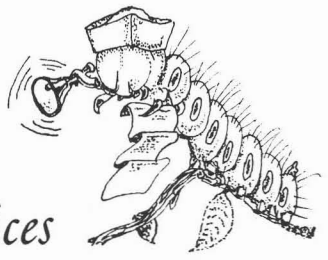
Dear Jo,

I live in St. Petersburg, which is about 45 miles from the Allyn Museum, I went down to the museum, which is in Sarasota, with another member of the Lepidopterists' Society. We were very disappointed to find that the museum is not opened to the public. I would like to have other members know this before they make an expensive trip down from another state. Is there any way to get into this museum? I am interested, as I would love to see the collection.

Sincerely,

Jay Stees,
5717 Harding Blvd. NE
St. Petersburg, FL 33703.

Ed. note: The Allyn Museum is privately owned, and probably the reason why it is not open to the public is that the museum staff members are all engaged in extensive research, and there is usually no one who can spare the time to show the collection - especially on the spur of the moment. I think your best bet would be to write to Lee or Jackie Miller who are the curators. Explain that you are members of the Leps' Soc., ask if it is possible to see the collection, and if so, try to make an appointment in advance.



Notices

ANNUAL MEETING UPDATE.....

The details of the Annual Meeting program in Laramie, Wyoming, are now set and are as follows:

Thursday, 15 July: Registration at Conferences & Institutes Building, 1-5; Executive Council Meeting, 1:30-5; Open House at the Entomology Collection, College of Agriculture, 2-4; Open House at "Rancho Ferris", 8-10.

Friday, 16 July: Late Registration, Classroom Bldg., 3rd Floor, 8:20-8:50; Symposium on Behavior & Ecology, 8:50-12:15; Symposium on Rocky Mountain & Arctic Species, 1:30-5:30; Wild-game Cookout at "Rancho Bagdonas", 6:30.

Saturday, 17 July: Contributed papers, Neotropical fauna and general, 8:45-12; Noctuoidea Symposium, 1-5; Social Hour, 6:00, Banquet, 7:00.

Sunday, 18 July: Lepidopteran Behavior, 9-10:30; Annual Business Meeting, 10:45; Pacific Slope Section Business Meeting, 11:45; picnic & field trip, Snowy Range mountains, west of Laramie, 1-5.

Monday, 19 July: Group field trip to Sierra Madre Range about 140 miles west of Laramie, 6:30 a.m. to 4 p.m. Overnight camping is possible for blacklighters.

All in all, this should be a series of events not to be missed!

REGARDING PUBLICATIONS.....

If you are wondering what became of the rest of the 1981 JOURNAL, the last two issues are allegedly in press and due out in early summer (or sooner). The first for 1982 might eclose in July. Writing to the treasurer or the Editor will not speed things up. They are waiting for theirs also.

As for your back issue orders, they have been recieved and are in the works. They are no longer being mailed out by Lep. Soc. volunteers, and the new system is not yet devoid of Hemiptera.

Despair not!

SOCIETY OF KENTUCKY LEPIDOPTERISTS.....

Membership in the Society of Kentucky Lepidopterists includes a quarterly newsletter plus several field trips

each year and an annual meeting in November. Send $3 annual dues with name, address, and information on your interests in Lepidoptera to: W. Blaine Early, Treasurer, Dept. of Biology, Cumberland College, Williamsburg, KY 40769.

EXOTIC ENTOMOLOGY GROUP.....

Anyone interested in the rearing of exotic insects might like to join the Exotic Entomology Group (see also NEWS for 1981, page 4). This British group has members in many countries. Subscriptions may now be paid in $$ to our U.S. representative, Molly Monica, 11 Putnam Ave., Berkeley Heights, NJ 07922. Just send her an annual sub. of $7.50 to receive the quarterly Newsletter and another $5.00 if you want to receive the monthly information sheet containing the wants and exchanges section. Checks should be made payable to her, and she would be glad to supply you with further details.

TAMAULIPAN BIOTIC PROVINCE SYMPOSIUM.....

An International Symposium on the Tamaulipan Biotic Province will include all aspects of the biome: vegetation, invertebrates, vertebrates, ecological structure and function, biological resources (use & effects), and management. It will include aspects of applied science and conservation.

The meeting will be held at La Quinta Royale Motor Inn, Corpus Christi, Texas, 28, 29, & 30 October 1982. Those interested in contributing papers should submit an abstract by 1 August 1982; abstracts for invited papers must be received by 1 September 1982. For information on either, contact Gene W. Blacklock, Curator, Welder Wildlife Foundation, P.O. Drawer 1400, Sinton, TX 78387, or David Riskind, Head, Resource Management Section, Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, TX 78744. For information on registration contact Jimmie R. Picquet, Director, John E. Conner Museum, Texas A&I University, P.O. Box 2172, Kingsville, TX 78363.

ICZN NOTIFICATION.....

The International Commission on Zoological Nomenclature has given notice of the possible use of its plenary powers in the following cases:

Case No. 2305: Agrotis redimicula Morrison, 1875: proposed conservation from 1874.

Case No. 2351: Papilio fatima Fabricius, 1793: request for conservation under the plenary powers.

The Commission would welcome comments and advice from interested zoologists, by 11 September 1982, addressed to R. V. Melville, Secretary, c/o British Museum (Natural History), Cromwell Rd., London SW7 5BD, ENGLAND.

INCIDENTAL INTELLIGENCE.....

On the bare possibility that others might share your editor's ignorance on certain subjects, we include the following note from Olavi Sotavalta, of Vantaa, Finland:

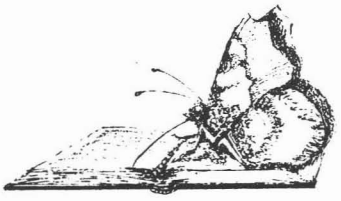
"As far as I know this (Malaise) trap has nothing to do with a malaise, but has got its name because it has been invented by Dr. Rene Malaise of Sweden, who used it at least while collecting in the Maalayan jungles. Therefore it should be spelled with a capital M. I have met Dr. Malaise in Stockholm some 30 years ago but do not know whether he is any more alive; probably not, or if he is, he will be aged about 90 years (as is Dr. Higgins in England!). I saw a Malaise trap working when I collected with Ken Philip in Alaska 1974".

RESEARCH REQUESTS.....

Help required to collect samples of Maniola species (M. jurtina, nurag, telmessia, cypricola, megala) from any area for research project. Exchange possible: please write first. George Thomson, Dept. of Biology, The University of Stirling, Stirling, SCOTLAND FK9 4LA.

WANTED: Specimens of Hamadryas, Catonephele, Myscelia, Epiphile, Doxycopa, and Ectima for completing revisions. Will determine loaned specimens promptly (mounted or papered), exchange, or buy. Complete collection data needed. Dr. Dale W. Jenkins, 3028 Tanglewood Drive, Sarasota, FL 33579.

WANTED: Any hepialids from the new world or Holoarctic. I am especially interested in material from eastern Europe, Asia, and western North America. I am interested in all life stages, pinned or in liquid preservatives; seconds are welcome. In exchange I can offer many North American taxa, e.g., Papilio, Erebia, Boloria, Speyeria, saturniids, sphingids, determined microleps., etc. All correspondence welcomed. David Wagner, 218 Wellman Hall, Dept. of Entomology, Berkeley, CA 94720.



Books

"Butterflies of the Ottawa District": R. A. Layberry, J. D. Lafontaine, P. W. Hall; in Trail & Landscape, Vol. 16, No. 1, pp. 3-59; publication of the Ottawa Field-Naturalists' Club.

This publication, brought to our attention by Jack Holliday, is an outstanding example of how a local butterfly guide can be put together. The 94 species (of which 27 are skippers), compiled from sight and collection records, are cited as to abundance, habitat, flight period, local larval foodplants, and specific remarks. Where reference to the plates in Klots is inadequate for identification, supplementary photos are included to define distinguishing features. Common names are from Klots, with scientific names updated from Miller & Brown. Distribution maps are given for all species and flight period graphs for most. A section on "possible" species to be looked for precedes the final checklist.

Apart from its excellence as a local handbook, "Butterflies of the Ottawa District" should serve as a model for local guides being contemplated elsewhere. It is obtainable for $3 (postage included) from the Ottawa Field Naturalists' Club, Box 3264, Postal Station C, Ottawa, Ontario, CANADA K1Y 4J5.

D'ABRERA SERIES CLARIFIED.....

(The following rather lengthy letter is included, not for the purpose of "giving the author his licks", but because it gives significant information about the creation of his books, not available elsewhere. The original has been truncated somewhat; certain portions were italicized by the Editor.)

To the Editor, Dear Sir:

I am not usually inclined to take much notice, let alone reply, to reviews of any of my books no matter how important the reviewer may be nor how influential his journal, simply because I consider such reaction rank bad form and inclined towards the petulant, and in any case because reviewers invariably claim for themselves the authority and indefectability they so vehemently keep denying the unfortunate authors whose books they review.

However, a review of my latest offering (Neotropical Region Part I) has recently appeared in the NEWS and is so tainted with gratuitous and misleading opinion as to make it necessary for a reply. I therefore crave your indulgence in permitting me the right of reply at least in my own defence.

First, however, let me state that *the Addenda & Corrigenda to Afrotropical has been issued and is now available from Classey at a small charge.* It must be fairly obvious that in undertaking a work of the size and scope, attempts must be made to keep things as up to date as possible. A similar list will doubtless follow for all subsequent volumes, giving my critics (those with constructive intent) the opportunity to put something useful where their mouths are, thereby making life a little more bearable for all concerned. I am always delighted and flattered to hear from anyone at all who wishes to offer positive advice and criticism and who genuinely has the cause of objective knowledge at heart. His or her contribution will be studied carefully, and his opinion, if carefully substantiated, will be printed by me with full acknowledgement. Let me state however, once and for all, that notwithstanding the secret desires of many to the contrary, my books are definitely not infallible (either in my opinions or in those of other contributors). *They are at best a consistent synoptic pictorial account of the world's fauna, to serve as a basis for study by others, allowing them to produce less expensive books on specific and more erudite areas, since each new book will not be under any obligation to duplicate coloured plates. That is the service I am trying to render my fellow lepidopterists.* Of course, there will be omissions in my work. Sometimes these are deliberate (as in the case of P. polyxenes, as will be explained shortly), sometimes because taxa concerned were described or published too late for me to include; or sometimes because through my own fault I simply missed them. For these I apologise, hoping to rectify the situation as the whole work progresses, by means of the Addenda & Corrigenda issues.

Which brings me to the review of Neotropical Part I by Dr. Clifford Ferris. First, Dr. Ferris, please be so kind as to provide me with a list of the "many omissions" to which you refer, as soon as possible.

Next, please note, polyxenes for all its neotropical wanderings is essentially a holarctic butterfly. It is very difficult to establish demarcation lines for certain species which continuously cross faunal boundaries, simply because such boundaries are at best uncritically defined on the basis of generalized zoo-geographic observations. P. polyxenes is one of those species. When my holarctic volume emerges, it will be treated (with your help, I hope) in all its glory.

I accept your criticism that Colias cunninghami was not included, and would welcome more information about it. I don't know it at all. May I gently point out that Munroe omitted one or two species from his splendid Classification of the Papilionidae, while Seitz, Godman & Salvin, Staudinger, Semper, Corbet & Pendlebury, and just about every author of butterfly books can be shown to be missing a thing or two from their checklists. With Afrotropical I had the advantage (or disadvantage, depending on your point of view) of having the unpublished Carcasson Catalogue and the expert advice of a few other specialists, and still the work was imperfect. With Neotropical I I had to rely on Munroe's (imperfect) but thoroughly and unquestionably scientific Classification of the Papilionoidea. This remains, in spite of its being twenty-one years old, the soundest work on the global Papilionidae.

May I also point out that my apparent "fixation" with the BMNH collection is based on my belief that it is still (though not complete) the finest and most accessible for my purposes. Failure to figure and treat certain taxa is not always my fault. Sometimes, notwithstanding my so-called "association" with the BMNH (and often because of it) my request for access to material and literature is ignored. An unbiased examination of my books will reveal a large number of omissions of plates, even though the taxa are listed. In other instances I have had positive responses from various workers and (as will be noticed in Neotropical Part II) I have printed photographs of various taxa, not contained in BMNH, by courtesy of their authors.

(A lengthy paragraph illustrating the all too familiar effects of inflation in the last ten years is omitted here.)

Having said that, let me risk the wrath of those responsible for selling my books by admitting that I consider that $185 US is, though not ridiculously so, a rather steep price to pay for Neotropical I. But I am aware that my publisher lost heavily on Afrotropical (that book was ridiculously under-priced), and I can only guess that the price tag reflects some attempt to gain on the swings what was lost on the roundabouts. For my part, I earn 5% (in real terms, after taxes, etc.) of the Australian retail (priced at a theoretical figure of around A.$140) for my efforts. I say theoretical because few if any of my books are sold in my home country. Out of that 5% I have to maintain a family, travel to the U.K. (hence visits to other museums though highly desirable are impossible), and photograph and write the books as well. Very occasionally a small government or private grant comes my way (a total of $7000 over ten years, or $700 per annum) and these pay for field trips, typing expenses, and so forth. I have no other source of income. Now it doesn't take even an intellectual pigmy a great deal of time to surmise that I am operating, as the economists would say, at a significant deficit of capital.

Recently, fed up with the quality, editorial policy, publishing schedules, and prices (and income generated) of my books, I took steps to effect a legal separation from my publisher of a decade.

My first solo work as author/publisher will be Butterflies of the Oriental Region, Part I (Papilionidae, Pieridae, & Danaidae). The book is now in Hong Kong being printed. Classey will have copies by July/August of this year. I can assure my readers that quality will be vastly improved as I am now controlling all stages myself, and that my agent in Hong Kong has undertaken to export the print run circa 15-20 June. I have already seen some first proofs and impressed at the improvement over previous titles. I am even hoping to bring the price of the book down somewhat and am currently negotiating with Classey to this effect. The entire exercise is a desperate do-or-die effort to keep the series going.

Having progressed thus far it is somewhat galling to the spirit to find criticism of my published work so one-eyed and irrelevant to the purposes of the work itself. Further, I take grave offence at the insult given my friend and designer of more than a decade, Derrick Stone, that his aesthetic genius (unquestionably one of the top book designers in the world) be sacrificed or "dispensed with to bring the cost down". Books are much more than just words and pictures on paper thrown together hiddeldy-piggeldy between a pair of covers, to serve the exigencies of economics. My books certainly are artistic, and to refer to them pejoratively as art books, in inverted commas, begs the question of the suitability and aesthetic sensibilities of the reviewer.

I expect balanced, fair and mature criticism from those who would judge my work. If they can do better than I can, please allow me to be the first to offer them my support and good wishes. If they can't (or won't), then forever let them hold their peace. (Bernard D'Abrera, Hill House, Highview Road, Ferny Creek, Victoria 3786, AUSTRALIA)

1981 SEASON SUMMARY, CONCLUDED.....

ZONE 9: NORTHERN NEOTROPICS. Contributors: G. W. Busby III, Robert Busby, David Pinder, Michael Rickard, Ray Stanford, Douglas Mullins, Eduardo C. Welling M. (Coordinator).

Weather trends: During a journey to Belize and Gautemala in July & August, Welling noted that rains seemed to

be moderate but constant, not overly interfering with activities. In the peninsula of Yucatan, the rain pattern seemed to have reverted to the pattern from about 1971 onward, in which the western part of the peninsula seemed to get abnormally heavier rainfall while the state of Quintana Roo and eastern Yucatan received less than normal. There were disastrous crop failures in most areas, and all in all the season can be classified as dryish and very poor.

MEXICO, DURANGO: Mullins reports that Chlosyne definita anastasia was collected 27 July at 2600 m. elev. w. of Rio Mimbres on Highway 40, the specimens exactly matching that in Godman & Salvin.

NAYARIT: Ray Stanford took Chlosyne endeis endeis ca. 5 km. w. of "Jasmine" (?sp.), a good record as he considers most endeis being taken today to be of ssp. pardella Higgins.

SAN LUIS POTOSI: Busby, Busby & Rickard collected in the Ciudad Valles, Tamazunchale, Xilitla, and El Salto Falls area in late May, taking the following good sepcies listed as "new records" for them, at least: Doxocampa cherubina, Hypanartia kefersteini, H. dione, Coea acheronta, Colobura dirce, Eresia eranites, Euselasia eubule, Diophthalma telegone, Atlides caranus, Calycopis demonassa, C. orcidia, C. phrutus, Thecla paetus, T. jebus, T. hisbon, T. mathewi. T. politus, T. phobe, Dismorphia nemesis, Caligo uranus, Thracides phidion, Diaeus lacena, Pompeius pompeius. G. Busby and Rickard in the same area 22-27 August recorded Mesene croceella, Anaea callidryas, Xeniades xanthotrix, Lycas godarti, Polygonus leo, Pheraeus covodonga. Busby & Busby in the same area 20-25 Oct. took Mesena margaretta, Leuchochimona philemon, Thecla thales, T. ligurina, T. serapio, T. minthe, Atlides gaumeri, Phocides urania, Tirynthia conflua, Zenis monis (complete list available from G. W. Busby III).

QUINTANA ROO: Collecting Rhopalocera could have been a complete waste of time, as there was almost nothing; critical flight months were exceedingly dry. Saturniidae and Sphingidae resistered a slight increase over previous years, especially the latter family. Blacklighting in the vicinity of Kantunilkin late May and early June was very exciting, as several Manduca hoffmani and over a hundred Eacles imperialis quintanensis were taken, the latter being a population explosion. A few each of Arsenura championi and a Copiopteryx species were the highlight of the year, both being very rare. Other moths were out in good numbers, a direct contrast to the almost complete absence of butterflies (Welling M.).

YUCATAN: Rhopalocera were almost completely absent everywhere, except for a few isolated spots in the eastern part of the state where there were moderate populations. A stray Eunica alcmena was taken in the eastern part of the state, a STATE RECORD (Welling M.).

BELIZE, CAYO DISTRICT: Several days were spent in the pine ridges about Augustine and San Luis. A few butterflies hilltopping at the Bent Pine Fire Tower ca. 800 m. elev. were all that were seen. Areas usually rich in Cyllopsis gemma & C. wellingi produced nothing. However, blacklighting 16 July at the fire tower, with the moon nearly full, produced more than 800 moths, including some very good species. Is this the exception to the rule: hoards off moths coming in too fast to collect, on a night when the moon was dominating everything in an extremely clear, dry sky? (Welling M.)

GUATEMALA, EL PETEN: Blacklighting in Tikal in late July yielded a specimen of a new Manduca sp., with few other Sphingidae. Other psecies of moths were poorly represented, despite the lack of moon. The same poor results were experienced at Las Canas in the southern part of the department; however, in the equatorial rainforest by day a few things were out: Heliconius sappho, a few Riodinidae, Pteronymia cotytto, and some Hesperiidae, but this was better than in most other locations visited in Guatemala.

ZACAPA: Excellent flights of butterflies were noted in the higher elevations of this department. Blacklighting at lower elevations (125 m.) gave very poor results.

ALTA VERAPAZ: Blacklighting around Coban, Quixal, Mexabaj, especially at the last locality, was very interesting and was busy all night. After leaving Alta Verapaz department it was virtually impossible to do any blacklighting anywhere, as guerilla warfare is making the country a very dangerous place to visit (all Welling M.).

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SEASON SUMMARY REVISITED: ERRATA.....

ZONE 1: HELP! Please print that I was misquoted in the 1981 Season Summary regarding the record of "Pyrgus albescens" from Rancho Cordova, Sacramento Co., CA. My report said communis, and I have no idea how or why it got transmogrified. The point was the new host plant, Modiola caroliniana, an agressive, expanding weed of sandy soils in California (Malvaceae).

Please, folks: if you must claim albescens-communis sympatry, don't blame me. (Arthur M. Shapiro)

ZONE 3: p. 17, line 33, for Cadamin read Prospect Mtn.; p. 18, line 65, remove (A.) at end of line; p. 19, line 27, for 1980s read 1890s; line 71, insert MORGAN Co. between 6000' and 12 June 78; p. 20, line 8, after Saturniidae insert (all BFC); line 14, for (RES) read (RES; W Unaweep Cn, CDF); p. 21, lines 2, 8, 9, 24, 27, for 7 June (JM) read 6 July (JM); line 10, for Cheery Cr. read Cherry Cr. (CDF says it's cheery also); line 11, for Dilla read Dilia; line 14, for 5 Aug. read 21 Aug.; lines 16, 19, for 5 March read 3 May; line 19, delete EARLY (R. Stanford).

ZONE 7: p. 29, Pennsylvania, C. ladon seen nectaring on horsebalm, for 9 July in Montgomery Co. read 9 August in Philadelphia. (Tom Williams)

ZONE 9, for 1980: A specimen cited as a Catocala collected in Puerto Rico by Alvin W. Ludke was definitely a misidentification, and he regrets having inconvenienced anyone. (Eduardo Welling M.)

Items submitted for inclusion in this section are dealt with in the manner outlined on page 9 of the 1982 NEWS (Jan/Feb issue). It was decided several years ago that prices would generally be excluded from the printed notices, except for the prices of lists and printed matter. "SASE" calls for a self-addressed, stamped envelope. Notices will be entered once, unless entry in two (maximum) successive issues is requested.

FOR SALE: H.L.Lewis "Butterflies of the World" picturing over 5000 specimens in color; out of print; excellent condition. SASE for price. Janice Logan, Route 1, Box 236, Fayetteville, TN 37334; 615-433-2294.

FOR SALE: A-1 papered Morpho didius from Peru. Janice Logan, address above.

FOR SALE: Cocoons of A. luna, A. polyphemus, A. io form coloradensis, H. euryalis. Ova of the proceding plus H. cecropia, H. gloveri, and some Hyalophora hybrids available beginning mid-May. Some A-1 papered saturniids and a few H. lineata available. SASE for lists. Carita Hamblyn Bates, P.O.Box 3133, Eldorado Springs, CO 80025.

WANTED: to buy or exchange, colorful butterflies and moths from any country, esp. from S. America, Africa, and Asia. Specimens in A-1 or A & B condition welcome, esp. Morpho, Papilio (esp. Birdwings), and S. Amer. nymphalids; any colorful butterfly, moth, or beetle. Please write stating species, condition, quantity, and price, or what you want for exchange. B.L.Gooi, P.O.Box 9, Tanah Rata, Cameron Highlands, Pahang, WEST MALAYSIA.

FOR SALE throughout the year, Daphnis nerii (Oleander Hawkmoth); pupal stage 15 days. For details write Cheng Kam Wor, 502 Kg. Cross St., Bt. Mertajam, Penang,

MALAYSIA.

FOR SALE: Collabsible bait traps 16" dia. x 36" high with 4" dia. x 16" inverted cone. Plastic coated nylon screen, canvas top,nylon tethers, and 22" plastic zipper for easy access and cleaning; very durable. Four to six weeks for delivery. Leroy C. Koehn, 18204 Hiller Ave., Cleveland, OH 44119.

WANTED: S. cynthia cocoons. Please call collect after 8:00 pm. 219-875-7502. Catherine Hartman, 25903 CR 24 W Elkhart, Indiana 46517.

FOR SALE: "The Moth Book", W.J.Holland, 1903, excellent condition; "Wild Silk Moths of the U.S.". Collins & Weast, 1961; "Legion of Night, The Underwing Moths", T.D.Sargent, 1976; "Moths of the Limberlost", G. Stratton-Porter, 1921; "Our Butterflies & Moths", W.H.Howe, 1963, autographed. Best offer. Oakley Shields, 4890 Old Highway, Mariposa, CA 95338.

FOR SALE: Butterflies from Churchill, Manitoba. SASE for list to D. K. Parshall, 4424 Rosemary, Columbus, OH 43214.

FOR SALE: "Moths of America North of Mexico", Fasicles 20.2A & 20.2B, Bombycoidea, Saturniidae; mint condition. Rob Pudim, P.O.Box 4613, Boulder, CO 80306.

WANTED: "Butterflies of Australia" by D'Abrera. David Pinder, 1306 Hewitt, Houston, TX 77018.

EXCHANGE: Lepidoptera of central and southern Florida in return for lepidoptera of the Rocky Mountain states. SASE for list, Sam Isaac, 303B Wellington Ct., Tampa, FL 33604.

WANTED: LEPIDOPTERISTS' NEWS 1955 Vol. 9, No. 2-3 (pp 41-105). Also wish correspondence with collectors who have native and foreign Lepidoptera for exchange. William W. Thrasher, R.D.Route 1, Box 44, S.R. 305, 8473, Garrettsville, OH 44231.

FOR TRADE: A. polyphemus ♂&♀, A. pernyi, P. troilus, papered, for domestic or foreign material of equal value. Steven R. Berry, 2506 Spaulding #7, Long Beach, CA 90804.

WANTED: pupae or ova of Polygonia faunus, progne, zephyrus, satyrus, gracilis, Nymphalis j-album, & milberti. Please state price & quantity. Mark. A. Howe, RR #1, Box 217, Lake Village, IN 46349.

WANTED: listings from collector, breeders, dealers, etc., worldwide who can supply Lepidoptera. Ron Demski, 25 E. Washington, Round Lake Park, IL 60073, USA.

WANTED: Oeneis ivallda, O. nevadensis nevadensis, O. chryxus stanislaus, O. melissa lucilla, O. alberta daura, Parnassius phoebus sternitskyi, P. phoebus sayi, P. clodius menetriesi. My exchange list will be sent on request. Glenn A. Gorelick, Citrus College (Biology), Azusa, CA 91702.

FOR SALE OR EXCHANGE: Lepidoptera of Texas. John Kemner, 9018 Liptonshire, Dallas, TX 75238.

MEMBERS COMMERCIAL NOTICES.....

YING MIN WU, Formosa Insect Farm, P.O.Box 2-046, Peitou, Taipei, TAIWAN: can supply healthy viable pupae of Formosa Lepidoptera. Write for wholesale/retail price list and details.

MRS. CHANG PI-TZU, P.O.Box 873, Taipea, Taiwan 100, R.O.C. Selling Formosan butterflies, beetles, and assorted insects, including rare species, rare ♀♀, sexual mosaics and color aberrations of butterflies and moths; ova and cocoons of moths.

MICHEAL K. P. YEH, P.O.Box 32, Ipoh Garden P.O., Ipoh, MALAYSIA: Dealer in Indonesian, Thailand, and Malaysian butterflies, beetles, and insects. Price list on request on dealer's letterhead, wholesale/retail; collectors welcome, for exchange only.

SIMON ELLIS, Transworld Butterfly Co., Apartado 7911, San Jose, Costa Rica: South American butterfly specimens and pupae; worldwide and British butterflies; books; moth traps; fast service, offices in Britain & Spain; mastercard; mailing list (10 catalogue/lists by airmail) $6; catalogue only, $1 cash.

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DEADLINES: Material submitted for inclusion in a specific issue of the NEWS should reach the NEWS EDITOR no later than the 15th of the preceding even-numbered month. Reports for the SEASON SUMMARY must reach the ZONE COORDINATORS (listed on front cover of this issue) no later than 31 January.

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INFORMATION ABOUT THE SOCIETY.....

Membership in the Lepidopterists' Society is open to all persons interested in any aspect of Lepidopterology. Prospective members should send the TREASURER the full dues for the current year ($18.00 US), together with mailing address and a note about areas of interest in Lepidoptera; student membership (must be certified) $12; sustaining membership $25. Remittances must be in US dollars, payable to the Lepidopterists' Society. All members will recieve the JOURNAL (published quarterly) and the NEWS (published bimonthly). A biennial membership list will comprise the last issue of the NEWS in even-numbered years.

Information on membership may be obtained from the TREASURER, Ron Leuschner, 1900 John St., Manhattan Beach, CA 90266, USA. Changes of address must be sent to the TREASURER, and only when the changes are permanent or long-term.

Other information about the Society may be obtained from the SECRETARY, Julian P. Donahue, Natural History Museum of Los Angeles County, 900 Exposition Blvd., Los Angeles, CA 90007, USA. Please notify him of any additions or changes in areas of interest for publication in the membership list.

Manuscripts submitted for publication in the JOURNAL are to be sent to the JOURNAL EDITOR, Dr. Thomas D. Eichlin, JOURNAL of the Lepidopterists' Society, Insect Taxonomy Laboratory, 1220 N Street, Sacramento, CA 95814, USA. See the inside back cover of a recent issue of the JOURNAL for editorial policies.

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AVAILABLE PUBLICATIONS OF THE SOCIETY.....

CATALOGUE/CHECKLIST OF THE BUTTERFLIES OF AMERICA NORTH OF MEXICO (Memoir No. 2), Lee D. Miller & F. Martin Brown: includes references to original descriptions and location of type specimens. Members and subscribers, $10 cloth, $5 paper; non-members, $17 cloth, $8.50 paper, postpaid. Order from Ron Leuschner, Treasurer, 1900 John Street, Manhattan Beach, CA 90266, USA.

COMMEMORATIVE VOLUME,1947-1972: a 25-year review of the Society's organization, personnel, and activities; biographical sketches; JOURNAL 25-year cumulative index by author, subject, and taxon; clothbound. Members and subscribers, $6; non-members, $10, postpaid. Order from Ron Leuschner, Treasurer, address above.

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