NEWS of the LEPIDOPTERISTS' SOCIETY

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June Preston, Editor
832 Sunset Drive
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USA

SPECIES DIVERSITY AND ABUNDANCE IN JARU, RONDÔNIA (BRAZIL)

I was very impressed by Gerardo Lamas' article in the NEWS #4 of July-August 1983 on butterfly diversity, a subject which has fascinated me since Dr. Ebert's manuscript (published in J. Lep. Soc., 23, supplement 3, 48 pp., 1969) first crossed my desk. Since Dr. Lamas has requested from me a direct comparison between Tambopata and a similarly rich small area in Jaru, Rondônia, which was briefly described in the 1976 season summary (NEWS #2, pp. 17-18), I present here the latest (and possibly final) data on the Jaru butterfly fauna. I revisited Jaru in November 1983; I was also hoping to visit Tambopata in October, and/or discuss and compare the areas with Gerardo in December, but have been impeded by lack of financing and illness, respectively.

Comparative environmental data, in a nutshell, help to highlight similarities and differences (marked with an asterisk*) between the two areas (data for Tambopata given in parentheses): Latitude of Jaru 10°26' (12°50'), longitude 62°27' (69°17'); altitude 250-350 m with very hilly topography* (300 m, flat); distance from high mountains 800 km* (35 km); annual rainfall 2200 mm with 2-5 dry months and frequent winter cold snaps (2500 mm with 1-4 dry months and regular cold snaps); eutrophic, often rocky podzolized soils and derived eutrophic alluvial soils, all very rich* (hydromorphic and alluvial soils, only some rich); vegetation moderately disturbed non-floodable* open-canopy palm* and bamboo forest with some dense hill forest* and alluvial forest, all with much light penetration to a dense undergrowth and very high primary productivity* (moderately disturbed high alluvial forest with bamboo thickets and periodically and permanently flooded areas* and lake and riverbanks*, moderately high primary productivity in more disturbed areas).

As to the area sampled for butterflies, intensity, and results, once again a direct comparison is instructive [using Lamas' data from the 1983 NEWS article and the Rev. Soc. Mex. Lepid., 6(2), 21-40, 1981; 8(1), 13-24, 1983, and pers. comm.]: area covered a single trail of 3565 m, entering no more than 40 m on either side, plus one side trail of 250 m and a primitive road section of 450 m--total area actually sampled about 0.33 km^2, potentially contributing species to trail sector about 1 km^2 (Tambopata 2 km^2); maximum abundance of butterflies in July-October (September-November, also latter part of dryer season); initial impression of very high abundance and species diversity of butterflies* (initial impression of low abundance and diversity); "population bursts" frequent at species, genus, and subfamily levels (same); presence of occasional Andean species like *Morpho zephyritis* in spite of great separation, perhaps through the "stepping stone" of the Serra dos Pacaas Novos in SW Rondônia, 800 m high with many Andean plants including two *Podocarpus* (same): absence of *Danaus* and most typical field, scrub, and sandbar species (same except for last group): genetic mixture in many *Heliconius* and Ithomiinae populations, mostly Rondônia but much Inambari and some Yungas introgression (same, mostly Inambari with some Yungas

introgression): total man-hours of collecting 300 (1000 in Tambopata); total species recorded (see also Table below) 956 (865, up to 1032 with another 400 man-hours in 1983); total species expected about 1330 (1040, later revised to over 1600).

The sad news is that the Jaru trail is now mostly field and farms (Tambopata fortunately is a reserve). A replacement area could surely be found S or W of Jaru, but the specific area of the data presented here is no longer the richest known butterfly woods, this claim borne out in 1977 not only by total numbers of species but also by normal daily lists over 300 species, and top lists of 429 (one person, 5/X/75) and 462 species (two persons, 2/X/75) (see my foolish prediction that such daily lists would be impossible in J. Lep. Soc., 26:183-196, 1972). As a quantitative contrast, a tall dense rain forest on poor yellow latosol north of Manaus, central Amazon, shows no more than 400 species of Rhopalocera in a km^2 (even after many months of monitoring), of which at most 100 can be recorded in a day (paper in preparation).

A graphic comparison of species diversity and abundance of different localities (or seasons, or families, or subfaunas) can be obtained through the construction of species-time and species-area graphs, such as Fig. 1. These require that field data be gathered in separable sets through time and space, using daily lists and separating subsites within the study area. The relatively steep rise of the species-time curve for Jaru (Fig. 1A) reflects high population levels and temporal constancy associated with the rich physical environment; its probable lower asymptote (with relation to Tambopata) indicates a lower regional species pool, possibly for geographic or historical reasons. In contrast, the curve for a poor-soil, dense-forest site north of Manaus (M) is basically shaped like that of Tambopata but has a much reduced asymptote due to both historical and environmental factors (very homogeneous environment with low primary productivity of larval food-plants); it may take over 10,000 man-hours to approach its limit. The curve for Campinas (C), with rich soils but on the edge of the tropics, rises like that of Jaru but has a lower asymptote due probably to cold winters today and very inhospitable climate in past periods, extinguishing all tropical forest populations, which indeed are still invading cyclically from all sides in the present. The slopes of the species-area curves (Fig. 1B) for the four sites indicate great environmental microheterogeneity for Jaru and Tambopata (the curve is only presumed for the latter), diminishing with Campinas and very small in Manaus. These curves reflect variation patterns in topography, soil and vegetation, as well as the nature, extent, and intensity of environmental alteration (disturbance) in the site.

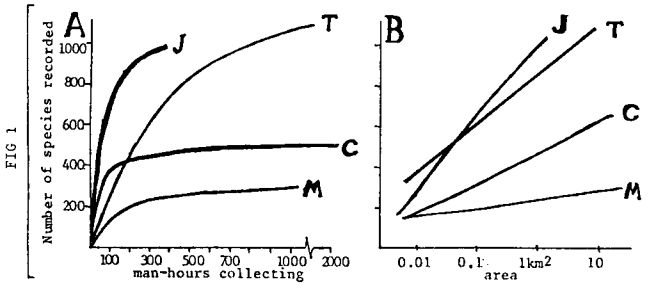


FIG 1

The above comparisons help to address Gerardo Lamas' questions about the causes of species diversity. I personally favor ecological over historical explanations (see Amer. Zool., 22(2):453-471, 1982), but accept the latter as a long-term multiplier of potential regional diversity, rarely if ever realized in local situations. The regional species pool can be much more richly represented locally and also in much denser populations in areas with eutrophic soils, giving high primary productivity and diversification of understory vegetation and plant species, providing more niches and more food to butterfly larvae and adults. I find this factor far more important than simple rainfall; for example, the Chocó (10,000 mm annually), the upper Rio Negro (3500 mm), and the Serra de Parana-piacaba (3500 mm) all show poor soils and low intensive and extensive diversity of butterflies. The soil factor dominates the rich Jaru environment, and may substitute for the nearby Andes which contribute to the Tambopata diversity. As Lamas mentions, both areas are "peri-refugial" with typical complex microheterogeneity of the physical environment, further multiplying niches and species diversity. Most important, both areas are subject to frequent unpredictable mild disturbance, both by climate (thunderstorm winds, variable dry spells, and cold waves, the latter observedly fatal to many tropical butterflies - see Willis, Acta Amazonica, 6:379-394, 1976) and by man (trails, small clearings, tree removal). This maintains the already heterogeneous system in a constant state of polypreclimax, with multitudinous secondary succession series and their very diverse resources and niches alongside those of the more "stable" or mature forest patches.

TABLE I: Species diversity in four Neotropical sites (number of species recorded, predicted to occur, and shared with Jaru, with % of total recorded)

Butterfly group	JARU, RO (1 km², 300 m-h) rec	pred	TAMBOPATA, PERU (2 km², 1000 m-h) rec	pred	shared	MANAUS, AM (10 km², 1000 m-h) rec	pred	shared	CAMPINAS, SP (4 km², 2000 m-h) rec	pred	shared
Papilionidae[1]	23	30	25	40[3]	17(68%)	7	25	6(86%)	17	22	10(59%)
Pieridae											
Dismorphiinae[2]	6	8	4	8	2(50%)	1	3	1(100%)	5	7	2(40)
Pierinae[1]	20	24	20	25	15(75%)	6	18	6(100%)	24	29	11(46)
Nymphalidae											
Danainae[1]	2	4	3	6	2(67%)	2	4	2(100%)	4	5	1(25)
Ithomiinae[2]	57	65	41	69[3]	24(58%)	18	24	16(89%)	22	30	11(50)
Satyrinae[2]	95	100	81	110	67(83%)	39	58	36(92%)	28	37	7(25)
Brassolinae[2]	23	25	21	30[3]	19(90%)	7	5	7(100%)	14	19	10(71)
Morphinae[1]	8	8	7	10[3]	6(86%)	7	7	6(86%)	5	7	4(80)
Acraeinae	1	1	1	1	1(100%)	0	1	-	7	8	1(14)
Heliconiini[1]	24	27	22	30	18(82%)	18	26	16(87%)	13	14	8(62)
other Nymphalinae[1]	103	115	113	152	73(65%)	31	70	27(87%)	93	113	42(45)
Apaturinae[1]	29	35	35	50	23(66%)	15	22	14(93%)	22	30	13(59)
Libytheidae	1	1	1	1	1(100%)	0	1	-	1	1	1(100)
Lycaenidae SUBTOTAL	392	443	374	532[3]	268(72%)	151	274	138(91%)	254	322	121(48)
Riodininae[2]	196	~300	193	~380[3]	~118(61%)	111	~200	~91(82%)	~60	~120	~30(50)
Plebejinae[1]	2	4	0	2	-	0	3	-	4	4	2(50)
Theclinae[1]	87	~160	125	~195	~64(51%)	51	~100	~35(69%)	~50	~100	~22(44)
SUBTOTAL LYC	235	~464	318	~577[3]	~182(57%)	162	~303	~126(78%)	~114	~224	~54(47)
Hesperiidae											
Pyrrhopyginae[1]	8	15	23	42[3]	8(35%)	2	5	1(50%)	8	14	3(38)
Pyrginae I & II[1]	124	~190	152	~235	~76(50%)	~30	~80	~20(66%)	~100	~200	~50(50)
Hesperiinae[1]	147	~220	165	~238	~91(55%)	~20	~60	~15(75%)	~60	~150	~30(50)
SUBTOTAL HESP	279	~425	340	~515	~175(51%)	~52	~145	~36(69%)	~168	~364	~83(49)
GRAND TOTAL SPECIES	956	~1332	1032	~1624[3]	~625(61%)	~365	~722	~290(80%)	~536	~910	~258(48)

[1]Jaru is far poorer in these groups, both in species diversity and abundance, than nearby areas of poorer, sandy soils and more scrubby vegetation, or presumably than Tambopata.

[2]Jaru, with its rich soils, is especially rich in these groups, both in species diversity and abundance, contrasting in some cases with Tambopata.

[3]These estimates (by G. Lamas, pers. comm.) seem rather high to me, on the basis of present lists, regional species pool, and normal depletion factor for a small area. However, the latter factor may be unusually small in Tambopata, due to local heterogeneity and the extensive movement of nearby populations along the rivercourses--a phenomenon which needs much more study in the Neotropics.

Tambopata and Jaru are now out of competition for the butterfly diversity "record" since the latter has been deforested. Where might one seek a place richer than both? I would start in regions which combine Jaru's rich soils and rolling topography, Tambopata's proximity to montane habitats, and the climatic vagaries of both as well as continual mild disturbance - elevation no more than 400 m (to retain the alluvial-forest Satyrine and Riodinine diversity), a smallish river with sandbars, lots of small trails, a variable dry season, and a large regional species pool. I would be tempted to start hunting somewhere in central Peru, but the eutrophic-soil regions of Rondônia and Acre in SW Brazil will surely still give surprises, and parts of southeastern Colombia have a very large regional species pool to draw from. We will await new information.

The Table above, reflecting some systematic

revisions since the 1976 Jaru list, reveals the markedly similar components of the high species diversity in Jaru and Tambopata; at least three-fifths of the species are shared (this percentage will surely increase as modern taxonomy unravels species relationships). The numbers recorded in each group are also surprisingly convergent in view of the different environmental and biotic characters noted above. The Manaus list, in the central Amazon with dark, dense forest on poor soils, may be regarded as a depauperate subset of the Jaru (or Tambopata) fauna, with some of its own species coming from the Guiana shield region. The Campinas list, in a physical environment rather similar to though more harsh than that of Jaru, is rendered smaller and very different by historical links to the Brazilian Atlantic region rather than the more exuberant Amazonian and Andean faunas.

December 1, 1983
Campinas, São Paulo
Keith S. Brown Jr.

A MONARCH TAGGED AT TORONTO ENCOUNTERED IN TEXAS

One of the Monarchs I tagged and released on September 26, 1983, at the Toronto waterfront was found by Nell and Johnnie Coskey in their garden on an Abelia bush on or about November 1, 1983. They advise they live in the central western part of Texas in a ranch/rural area 70 miles northwest of Austin and 11 miles from Burnet, Texas. This Monarch was released to continue its migration to Mexico.

W. M. Edmonds
Toronto, Ontario, CANADA

To Ripples Editor:

I have been troubled periodically with brown and bluish staining in relaxed specimens of Papilios and Pieridae. I am at a loss as to how these unsightly stains can be removed without damaging the specimens. If anyone has a solution (no pun intended) I would be glad to know about it.

Wayne Miller, 2209 Park View, Kalamazoo, MI 49008

Dear Jo,

I have a question. Has anyone that you know ever found an adult Pologonia interrogationis in hibernation? In many years of collecting in Penna., Ind., Ill., and elsewhere, I never have. Where I have seen early specimens which were worn, they are always of the summer phenotype and appear migratory!

David Hess, Macomb, Ill.

ED. NOTE: I can't remember seeing a hibernator, but I have reared a brood in Maine which produced both the light and dark phenotypes--color, shape, everything. Furthermore, 5 caterpillars of this brood, which were reared on hops and not caged, ALL went into the same corner of a latticed porch to pupate! and this in mid summer ...

Dear Editor,

In July 1983, in Park County, CO, 5 miles NW of Guffey, my sister, Donna, discovered an impressive swarm of butterflies around a seep in a steep-sided but shallow gully. The time about 1100 hours MDT on a clear day at about 80°F. Included were dozens of blues, mostly Plebejus saepiolus and Agraides rustica, several Phyciodes campestris and about 20 Euphydryas anicia. But most interesting were the scattered, separated wings of dead E. anicia, probably the prey of _____. (Who can fill in the blank?) Altogether there were 10 forewings (5 pairs) of anicia, 2 wings of P. saepiolus and 2 of a noctuid moth. All were on the mud or floating in the shallow water among the sedges within an area of about one square meter. No tracks of small mammals were found, but the ground was fairly hard and may not have shown shrew tracks etc. No fish were present in the extremely shallow trickle. Dragonflies were present. Sedges (Carex sp.) were the dominant plants. The elevation is about 9000 ft. I was particularly interested since E. anicia presumably feeds on Penstamon sps. and other Scrophulariaceae and might be poisonous to predators. Can any old timers out there give me a clue to this sort of heavy predation? It's a first for me!

Samuel A. Johnson, 2412 Indian Trail, Austin, TX 78703

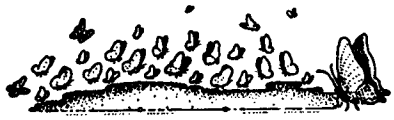
ED. NOTE: In '82 in Ossabaw, GA, a dragonfly flew right in front of my eyes, clasping a Megisto cymela in its claws. I photographed it, it flew back whence it came, and I later found 3 detached wings there on the ground. In Mexico where the Monarchs congregate, there are black grosbeaks which descend on the butterflies and bite off their abdomens, letting the remains fall to the ground. The abdomens contain the Monarchs' glycosides, and hence are presumbly poisonous. Maybe some birds just don't care. What do the rest of you old timers think about this?

Dear Ripples Editor:

Dr. Sid Dunkle, Dragonfly specialist (U. of Florida), observed adults of Pachysphinx modesta Harris, flying over a lake in Verendrye National Park, Quebec, Can., on July 8, 1982. He noted to me that several moths were seen dipping their abdomens in the water in a way similar to the egg-laying behavior of various species of dragonflies. The moths were observed at dusk, about 9:30 pm. One male was collected, but it is not known if only males were engaged in this behavior. I know of no similar report for any sphingid moth. Similar observations, however, have been made for horseflies (Tabanidae). Schact (1981, Entomofauna: Linz, Austria, 2:159-164) noted that horseflies do this to break the water surface tension and, by hitting the water rapidly with their abdomens, obtain a large drop of water which is then moved to the mouthparts for ingestion.

I would be interested in hearing from any other collectors who have noticed the same type of behavior with other sphingids or other moths.

John B. Heppner, Florida State Collection of
Arthropods, P.O. Box 1269, Gainesville, FL 32602



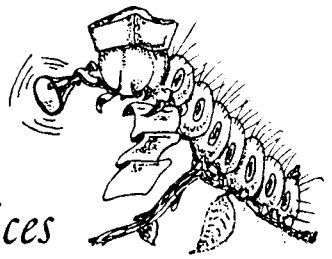
Forthcoming Meetings

1984 ANNUAL MEETING

To be held July 5 thru 8 in Fairview, Alberta, Canada. See NEWS #5, 1983, pg 66; NEWS #6, 1983, pg 76; NEWS #1, 1984, pg 7 for general information. See NEWS #2, 1984, pg 43 for costs and registration form. Note that PRICES QUOTED ARE IN CANADIAN DOLLARS. Send the equivalent in U.S. funds in a personal check or Postal Money Order (a bank can give you the current exchange rate) to Ted Pike. Papers are still needed and are being accepted until May 10. Phone Ted at (403) 835-5381 if you wish to present a paper. A specimen exchange is being organized, so bring lists of desirata and offerta along with exchange specimens. For any further information contact Ted at Box 1231, Fairview, Alberta T0H-1L0, Canada. Agendas will be mailed to registrants in late May.

PACIFIC SLOPE MEETING, 1984

To be held June 1, 2 and 3 at the University of California forestry field station in Plumas Co., California. See NEWS #2, 1984, pg 43. If interested in attending, contact David Wagner, Dept. of Entomology, 212 Wellman Hall, Berkeley, California 94720.



Notices

JOURNAL UPDATE

Volume 37, No. 3 of the Journal should be mailed by early May. Volume 37, No. 4 will be out in 4 months.

THE MOTHS OF AMERICA NORTH OF MEXICO: AN APPEAL FOR FUNDS

Surprisingly, moths are very poorly known in North America. They have never been treated comprehensively and remain difficult subjects for research because of major problems of identification and inadequate literature. The publication series, The Moths of America North of Mexico, is a faunal work designed to make identification of species, genera, and higher taxa as easy as possible. Species and variants are illustrated in color, and diagnostic characters are clearly figured. Information on life histories and distribution and problems of recognition and validity of questionable taxa are provided, often for the first time. Since 1971 thirteen parts have been published; these treat the Sphingidae, Saturniidae, Lasiocampidae, Lymantriidae, Cosmopterigidae, Oecophoridae, and some Pyralidae and cover 934 species out of an estimated 13-15,000 species. A check list of the fauna appeared in 1983, and a manuscript on the green Geometridae is in press. Manuscripts are in hand for Acrobasis and related genera in the Pyralidae and the large cutworm genus Euxoa. Nine other manuscripts will be completed within the next two years.

The Wedge Entomological Research Foundation, publishers and distributors of the series, has funds to print only one part at a time. The Foundation must recover money through sale of one to print another. Were this to continue, completion of the series could not occur until the mid-21st century. Therefore, the Foundation appeals to you for financial support to increase its publication schedule to two or three parts per year. This goal can be achieved with about $30,000.00. Your contribution, tax deductible in the USA, will be acknowledged immediately. Contributors of $50.00 or more will be listed in a future fascicle. Additionally, those giving more than $300.00 will receive the saturniid fascicle, more than $500.00--the saturniid and sphingid fascicles.

Ronald W. Hodges, Managing Director
The Wedge Entomological Research Foundation
c/o National Museum of Natural History, MRC-127
Washington, D.C. 20560

LEPIDOPTERORUM CATALOGUS

Flora and Fauna Publications, Gainesville, Florida, is pleased to announce the renewed publication of Lepidopterorum Catalogus. Initially published by W. Junk Publishers, Berlin and The Hague, from 1911 until 1939, Flora and Fauna Publications is now the publisher and sole distributor of the new edition of this important title.

The new series will be edited by Dr. J. B. Heppner, Center for Arthropod Systematics, Florida State Collection of Arthropods, Gainesville, Florida. Uncataloged families will be published as soon as authors are found to accept assignments. Those parts of the old series now in print, but available only from antiquarian book dealers, will be updated and revised as rapidly as possible. We plan to make available back issues, either as reprints or as originals, until the new editions of Lepid. Cat. parts become available.

A new higher classification will be used in the new series, reflecting current work of the editor and other lepidopterists. The new series will be issued in fascicles numbered by family according to this new classification and each part will be issued soft bound as the old series. An updating feature will be available to series subscribers and subscribers will also obtain the series at a discount via a "standing order" arrangement: upcoming parts will be announced to subscribers and those responding with purchase intents for that part will receive the discount price. Thus, print runs will be dependant on the subscriber response for each part. An annual or irregular update service will be available to subscribers only, possibly on a free basis from the project computer files.

This is a long-term project and many specialists will need to be involved. Persons wishing to contribute to the series should contact the editor. Information on series subscriptions should be addressed to the publisher: Flora and Fauna Publications, 2406 NW 47th Terr., Gainesville, FL 32606.

FUND DRIVE FOR THE NEOTROPICAL LEPIDOPTERA PROJECT

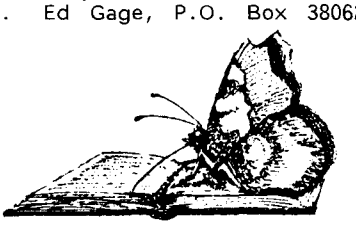
The "Atlas of Neotropical Lepidoptera," to be published over the next 20 years, will initiate publication of the 6 part checklist in 1984. W. Junk Publishers, P.O. Box 13713, The Hague, Netherlands, is the publisher and will take orders for the series. The first checklist part covers 41 families (Micropterigidae to Immidae), plus its own index of included taxa. Over 100 volumes will cover the illustrated portion of the work which will illustrate and diagnose all described Neotropical Lepidoptera species.

The project is now associated with the Lepidoptera Research Foundation and all funds for the project will be maintained by this foundation. Thus far, several nations have committed funds for the project: Bermuda, Costa Rica, Dominican Republic, Ecuador, Guyana, Netherlands, and Peru. Other nations should join the project in the near future but donations from private individuals are also welcome. All donations are used for the completion of research on various families and for preparation of manuscripts for publication, after allocation decisions by the project review board. Checks can be sent directly to the Lepidoptera Research Foundation (c/o Santa Barbara Museum of Natural History, Santa Barbara, CA 93105) or to the editor (payable to the foundation). Contributions are tax-deductible.

J. B. Heppner, Editor
Center for Arthropod Systematics
Florida State Collection of Arthropods
P.O. Box 1269, Gainesville, FL 32602

RESEARCH NOTICE

● Urgently need tiger beetles from every country to complete a comprehensive work on the tiger beetles of the world (Cicindelidae). I will buy specimens or exchange for butterflies or moths. If I don't have it, I'll try and get it for you. Write and tell me your interests or needs. Ed Gage, P.O. Box 380622, San Antonio, TX 78280.



Books

BOOK REVIEWS

Butterflies of South America, Bernard D'Abrera. Price $18.50 + $3.00 shipping from BioQuip Pdts., P.O.B. 61, Santa Monica, CA 90406. 256 pages, durable soft binding. The undersigned was rather critical of the first volume of D'Abrera's multivolume series on the Neoptropical butterflies. This recent book (available in

the U.S. as of February, 1984) is not part of that series, but rather an independent volume in a field guide format. Prefatory material is at a minimum (9 pages + a map) with brief comments about butterfly biology and structure, and some comments on classification and nomenclature. As stated by the author, the purpose of the book is to introduce readers to South American butterflies. Consequently not all species are covered, and many genera are omitted as well. For the most part, the more common species are illustrated in full color. As is the case with D'Abrera's previous books, no skippers are illustrated. The treatment begins with the Papilionidae and concludes with the Riodinidae.

The species included in this book are illustrated life size in full color. The color is excellent with white background setting off the specimens. Generally this production is superior to the larger previous volumes by the same author. Quality glazed paper is used throughout and there is much better space utilization than in the prior works. In most respects, the species coverage is not much different from that in two earlier books on World butterflies by Smart and Lewis, but what distinguishes D'Abrera's book is the size and clarity of the color illustrations.

This book, which measures 4½ x 7½ inches, was published by Hill House of Victoria, Australia. It is a quality production and well worth the cost in today's book market. The nomenclature appears to be current and accurate, but this reviewer has a limited knowledge of Neotropical fauna. This most recent volume of D'Abrera's should be a useful addition to the library of anyone interested in South American butterflies.

Clifford D. Ferris

New Zealand Butterflies, by George W. Gibbs. $45.00 (U.S.) from Int. Scholarly Book Service, 10230 S.W. Parkway, Portland, OR 97225. A handsome volume of over 200 pages, with 197 color plates, 16 Electron Microscope photos, and 51 other maps or photos. Every possible detail of the 23 resident butterfly species (plus 4 others unconfirmed) is discussed in quite readable style. There is emphasis on the history of discoveries and observations in New Zealand.

Ron Leuschner

BOOKS AVAILABLE

The following books are available from Ianni Butterfly Enterprises, P.O. Box 81171, Cleveland, Ohio 44181, USA: The Dictionary of Butterflies and Moths, Lathwaite, Watson & Whalley. 405 color photographs representing over 1000 species in this A-Z Dictionary that is chock full of facts such as sizes, habitats, etc. An excellent addition to any library ($19.50 postpaid). Beetles of the World, Gakken. A color pictorial reference book illustrating over 600 worldwide beetles. English names and origins, text Japanese ($32.50 postpaid). Beetles, Bernard Klausnitzer. Fascinating and most informative easy reading! Summarizes the most interesting representatives of the beetle family. Fantastic color and b/w illustrations of many rare and extraordinary species $21.50 postpaid). For any of the above, send check or money order.

New Members

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ENNIS, DONALD K.: 7201 Marx Road, Evansville, IN 47712.
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* * * * *

REVERSE FIRST AND SECOND NAMES for BALINT ZSOLT and DR. GIOVANNI SALA.

Items submitted for inclusion in this section are dealt with in the manner set forth on page 10 of the Jan/Feb 1984 NEWS. Please note that in keeping with the guidelines of the Society, henceforth no mention of any species on any threatened or endangered species list will be accepted in these items. Items will be accepted from members only and will be printed only once unless entry in the maximum of two successive issues is requested. Please keep items short. A maximum of 100 words is allowed. SASE calls for a self addressed stamped envelope.

The Society, as always, expects all notices to be offered in good faith and takes no responsibility for the integrity of any advertiser.

WANTED: Series of up to one hundred or more specimens of all Zerene species and ssp. from various localities in North, Central and South America for research. Please, quote prices and quantities available. Exchange for northern and western species also possible. Perfect specimens preferred but seconds also acceptable. At present I am on a trip but will be back at my home address by mid-August. John Reichel, Box 789, Revelstoke, B.C. V0E-2S0, CANADA.

FOR SALE: Natural history books. Write or call for list. John Wall, 76 Brambach Rd, Scarsdale, New York 10583; (914) 723-3105.

FOR SALE OR EXCHANGE: Euphydryas chalcedona specimens freshly emerged. Will trade for other Euphydras or Melitaea of your area. Also Basilarchia lorquini and Heterochroa californica specimens available. Wayne L. Marquis, P.O. Box 1026, Buellton, CA 93427.

URGENTLY REQUIRED: Livestock of U.S.A. butterflies, particularly those of the Danaidae and Heliconiidae genera. Will accept large or small quantities in return for cash or livestock of British butterflies. R. Burgess, Irongate Farm, Halls Green, Weston, Hitchin, Herts., ENGLAND.

FOR SALE: Butterflies of the palearctic region such as USSR, Hungary, Czechoslovakia, Germany, etc. WANTED: Heliconius, Agrias and Cetonidae (Coleoptera, worldwide). Write to Wilfried Braun, Pferdsbruchweg 1, 5107 Simmerath, WEST GERMANY.

EXCHANGE: I am looking for reliable collectors who wish to exchange western Catocala only for Eastern Catocala species next summer. Or I can also supply Euptychia mitchellii and Hesperia ottoe. Send list of species to offer and desired to Wayne A. Miller, 2209 Parkview, Kalamazoo, MI 49008.

FOR SALE OR EXCHANGE: Western Butterflies. Wanted Speyeria, Colias, Papilios, Euphydryas and Saturnids especially Hemileucas. Elmer W. Griepentrog, Elsie Rt. Box 740, Seaside, OR 97138.

EXCHANGE OR FOR SALE: Many butterflies (worldwide); Morpho, Papilio, and all other families and moths for sale at wholesale prices or exchange for tiger beetles (Cicindelidae). Single specimens or large numbers needed; will exchange butterflies from all countries or moths for worldwide tiger beetles or whole collections. Write for list ASAP. Send SASE for immediate reply. Ed Gage, P.O. Box 380622, San Antonio, TX 78280.

FOR SALE: Books on Lepidoptera. Send SASE for lists to Les Sielski, P.O. Box 10083, Merrillville, IN 46410.

WANTED TO BUY: Monographs, papers, revisions and original descriptions of North American moths including, but not limited to, works by Grote, Smith, Barnes et al., Hulst, Edwards, Draudt (in Seitz), Heinrich, etc. George T. Austin, Nevada State Museum and Historical Society, 700 Twin Lakes Drive, Las Vegas, Nevada 89107.

FOR SALE: Lepidoptera: Hesperiidae, Notes on Species-Group Names, by Charles A. Bridges, 1983. Catalogs 9039 names. Bibliography of 1640 items. Published by the Author; 290 pp. Price (post paid); $37.50. Available from the Author, 502 W. Main St., Apt. 120, Urbana, Ill. 61801.

WANTED: Specimens and/or precise, preferably recent, unpublished or obscurely published locality, date, and habitat data for any taxon in the following Pierid genera; Baltia (Himalaya-Pamir-Tibet-China) Piercolias, Infraphulia, Pierphulia, Hypsochila (except H. wagenknechti wagenknechti) (Andean region). Correspondence with anyone having recent experience with these animals is solicited. Arthur M. Shapiro, Department of Zoology, University of California, Davis CA 95616, USA.

WANTED: Biographical and other informaton on one "James Sinclair", entomologist in California area circa 1900. All correspondence answered. Reply to Vincent P. Lucas, 800 Brick Mill Run #301, Westlake, Ohio 44145, USA.

WANTED: Items philatelic pertaining to the lepidoptera. Particularly postally used covers and meters needed as well as some stamps. Will trade or buy outright. Send holdings or list by Scott number to Vincent P. Lucas, address above.

WANTED: Dryas delila ♂'s, solid orange, un-marked forms only; Hypaurotis chrysalus ♂'s and ♀'s; Colias eurydice ♂'s. Buy or exchange. Thomas Ashby, Jr., 667 Halifax Dr., Mobile, AL 36609.

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DEADLINES: Material for the Jan/Feb issue should reach the NEWS EDITOR by Dec. 1 of the previous year, and that for the Mar/Apr issue by Feb 15, for the May/June issue by Apr 1 and for the July/Aug issue by May 1, the Sept/Oct issue by Aug 15 and the Nov/Dec issue by Oct 15. Reports for the SEASON SUMMARY must reach the ZONE COORDINATORS listed on the front cover no later than the 15th of January. NEWS EDITOR is June Preston, 832 Sunset Dr, Lawrence, KS 66044, USA. RIPPLES EDITOR is Jo Brewer, 257 Common St, Dedham, MA 02026, USA.

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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, Eric Metzler, 1241 Kildale Square North, Columbus, OH 43229, USA, the full dues for the current year ($18.00 US), together with mailing address and a note about areas of interest in the Lepidoptera; student membership (must be certified) $12; sustaining membership $25; life membership $250. Remittances must be in US dollars, payable to the Lepidopterists' Society. All members will receive the JOURNAL (published quarterly) and the NEWS (published bimonthly). A biennial membership directory will comprise the last issue of the NEWS in even-numbered years.

Information on membership and other aspects of the Society must 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 directory.

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

Manuscripts submitted for publication in the JOURNAL are to be sent to Dr. Thomas D. Eichlin, EDITOR, 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..... Order from the PUBLICATIONS COORDINATOR, Ron Leuschner, 1900 John St., Manhattan Beach, CA, USA.

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.

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.

1982 MEMBERSHIP DIRECTORY (current to April 1983). Biennial directory of members and their addresses, with geographic and interest indices. Not available for commercial use. (NEWS #6 for 1982). $5.00 postpaid.

BACK ISSUES of the JOURNAL and of the NEWS of the Lepidopterists' Society. A list of the available issues and their cost, postpaid, is in the NEWS for Mar/Apr 1984, page 39.