THE LEPIDOPTERISTS' SOCIETY EST. 1947

NEWS of the LEPIDOPTERISTS' SOCIETY

Number 3
15 May, 1974

(15 Sep., 1974)

FLUCTUATIONS IN MONARCH BUTTERFLY POPULATIONS

As a result of field observations over the past thirty-three years it has been noted that the Monarch butterfly, like many other species of animals, exhibits marked fluctuations in numbers. A population peak (Urquhart, 1970) occurred in 1950 and 1951 followed by a marked reduction in numbers in 1952; by 1953 the populations had been reduced to such an extent that no over-night roosting colonies could be found in areas where they had previously occurred in thousands and only seven field specimens were collected throughout the entire summer period. By 1956 the population once again reached a peak of abundance. Similar peaks in 1938 and 1944 have also been recorded.

Based on the above data it was forecasted that there would be a population peak in 1962 and 1963 followed by a decrease in 1965. This statistical analysis proved to be correct. It was later forecasted that there would be a peak in 1968 and 1969, but a rather peculiar anomaly occurred: The population did indeed increase in 1968 but this was followed by a marked reduction in 1969 followed by a rapid increase in 1970 which continued throughout 1971-1973 with the most dramatic peak occurring in the summer of 1973.

The above analysis was based on observations received from the members of our migration research association in various parts of the North American continent, who filled out a questionnaire sheet concerned with their observations on relative abundance.

As to the cause of such fluctuations: It has been proposed that the primary factor involved in the rapid decrease is a cytoplasmic polyhedrosis virus (Urquhart, 1966), and the rapid increase due to the biotic potential of the species in the absence of the epizootic.

During the past summer (1973) the monarch butterfly owing to its extreme abundance, occurred in numbers in areas where it was previously unknown or was of rare occurrence. One of these areas was Newfoundland.

Bernard S. Jackson, Newfoundland Provincial Director of the Canadian Nature Federation, reported (Jackson, 1974), in part, as follows:

"The phenomenal population increase of monarch butterflies reported to have affected the entire eastern part of the continent appears also to have affected the Avalon Peninsula of Newfoundland. During the latter half of September numerous sightings were reported. Reliable records, from single butterflies up to a flock of several thousands have been received. Fishermen have reported them flying past their boats three miles out to sea. There is no doubt that this past September will go down in Newfoundland natural history records as the first great invasion of monarch butterflies to our island province."

Bernard S. Jackson adds further data (personal communication): All of the observations occurred on the Avalon Peninsula, the isthmus of the Avalon and adjacent Placentia Bay. All sightings were recorded in open heathland. Some were out at sea flying past fishing boats. Three observations that mentioned wind stated that the butterflies were being carried in the direction of the wind, sometimes even north. There was a reliable opinion expressed that butterflies in a wind less than 15 mph appeared to be heading south of south-west.

Jackson's observations on the S-SW flight fits the regular fall migration pattern (Urquhart, 1960).

It has been emphasized that monarch butterflies, such as those that occur from time to time in England, are carried to such remote areas only during peak years (Urquhart, 1965). It would also appear that when the migrants are caught in strong winds, exceeding 15 mph, as pointed out by Jackson, they will be carried off course. If, as a result of being carried out over the ocean, and unable to land for any length of time on the surface of the water (Urquhart, 1965) they may either perish or, perchance a passing vessel may act as a floating island carrying them to more distant areas. There is also the possibility that the pupae, which take a minimum of ten days to mature, may be carried across expanses of ocean on various boxes that have been lying near railway lines or shipping

docks where milkweed plants and larvae populations are to be found. The combination, then, of wind, vessel, and pupae attached to material being shipped, would explain the unusual appearance of monarchs in areas remote from the North American continent. If the host plant occurs in such remote areas, then it is possible that a resident population could be established as has occurred in Australia (Urquhart, 1960).

Although statistical analyses of field observations have not shown to be too accurate, since we anticipated a population trough in 1971-1972, we can conclude that eventually there will be a marked drop and that the first indication of this will be the occurrence of a virus epizootic, perhaps in conjunction with bacterial infection, in which the larval population will be decimated, as occurred in 1965-1966 (Urquhart, 1966).

F. A. Urquhart
Dept. of Zoology, Scarborough College
University of Toronto, West Hill, Ontario, Canada

REFERENCES

Jackson, B. F. 1974. Monarch Butterfly migration through Newfoundland. Nature Canada, 3(1):41.

Urquhart, F. A. 1960. The Monarch Butterfly. University of Toronto Press, 361 p.

..... 1965. Monarch Butterfly (Danaus plexippus) migration studies; autumnal movement. Proc. Ent. Soc. Ont., 95:23-33.

..... 1966. Virus-caused epizootic as a factor in population fluctuations of the monarch butterfly. Jour. Invert. Pathol., 8:492-495.

..... 1970. Fluctuations in the numbers of the Monarch Butterfly (Danaus plexippus) in North America. Atlanta, 3(2):1-11.

THE LEPIDOPTERISTS' SOCIETY STATEMENT OF CONDITION

31 December 1973

ASSETS

Cash:		
Checking Account		$ 7,068.73
Savings Account		5,920.68
Back Issues Stock		1.00
		$12,990.41

LIABILITIES

Life Members @ $150 ea.	$ 6,150.00
Illustration Fund	106.50
Publications Fund	48.00
Profit & Loss	6,685.91
	$12,990.41

STATEMENT OF OPERATIONS

INCOME

Dues		$12,155.47
Regular	(9,229.47)	
Sustaining	(940.00)	
Student	(1,386.00)	
Life	(600.00)	
Subscriptions		1,560.00
Sales		1,746.28
Memoirs	(479.50)	
Back Issues	(1,239.28)	
Intro. offer	(27.50)	
Unscheduled Income		1,551.00
Page charges		
Color-plate charges		
Contributions		346.50
Illustr. fund		
Publications fund		
Postage fund	(192.00)	
		$17,359.25
Income over expenses		1,794.51

EXPENSES

JOURNAL Publication Volume 27:1-4		$10,233.61
NEWS Publication Numbers 1-6		3,141.97
Reprint, Volumes 2 & 3		508.14
Administrative Costs		1,081.02
Supplies & Forms	(447.01)	
Annual Meeting	(28.02)	
Postage	(605.99)	
Transferred to savings		600.00
		$15,564.74

EVALUATION: There are no known unpaid bills for 1973. Operations for the year came close to the estimates submitted at the beginning of the period. Operational costs increased, but so did our income from increased student dues and a substantial growth in total membership for the year. Increased back issue sales and a modest income from page charges provided a more reasonable operating surplus. Operating costs for 1974 will be slightly higher than for the past year, but postage costs will show considerable increase. An estimated budget for 1974 is: JOURNAL $11,000; NEWS $3,500; Administrative expenses (including postage) $2,000.

Respectfully submitted, S. S. Nicolay (Treasurer, 1973)

MONARCH BEHAVIOR IN SOUTH TEXAS

Monarch butterflies migrating through Central and South Texas during the Fall of 1973 reached phenomenal numbers, peaking from October 23-27th. For the first time in my 17 years of tagging Monarchs with the Insect Migration Studies of the University of Toronto, Canada, I watched thousands of Monarchs fly through drizzling rain, not waiting for sunshine to send them moving. On one known roosting tree, we counted more than 1,000 Monarchs clinging to the outer leaves on the offwind side of the tree as early as 4 p.m. (Daylight Savings Time), October 27th. It was as though a colorful Persian Rug had been thrown over the tree to cover it.

And on December 5, 1973, the day before cold weather arrived here, we caught a female Monarch laying eggs. Fortunately we had enough potted *Asclepias curassavica* hothoused to rear the resulting larvae — of course this plant freezes down with our first frost of the year, normally by November.

But then, Fall 1973 wasn't "normal" for Monarchs as a decline in numbers, instead of a population explosion, was (from statistical data) to be expected. I am wondering how many others are finding that 1974 may again not follow this statistical 7-11 year cycle of abundance. Spring migrating Monarchs usually arrive here in South Texas in March and they, and their progeny, are long gone by the time the temperature reaches the 90's by June 1st.

But, on June 25, 1974, I caught a dull, tattered, small female Monarch laying eggs on native milkweed in our one acre butterfly garden. Her abdomen was so shrunken that I did not think she had any more eggs to lay, but hopefully caged her over *Asclepias curassavica* and she cooperated with 16 eggs before expiring 24 hours later (dissection proved she had layed her complete wad).

From these 16 eggs, 9 of the most gorgeously colored, largest Monarchs I have ever reared emerged from July 20-26th (5 females, 4 males). Deaths occurred in two larvae during the second instar, one from thuringienses, and four just quit eating on July 10th and finally expired 16-18 days later with no evidence of disease, tachinid fly or other parasitic cause (larvae are still held in test tubes and showing nothing but dessication). Incidentally, these 16 eggs were hatched in the outdoors, but were reared in 80° air-conditioning as our Texas dry heat has in the previous 16 years of rearing proved that third generations reared out of doors from early spring migrants produce only deformed adults.

Tag numbers t6/637-646 were attached to upper right wings and the Monarchs were released here in Pearsall (50 miles SW of San Antonio, Texas) daily as they emerged and their wings hardened. Though I was dubious about their survival in our long-time drouth and daily heat of 104°+ at that time, I was curious to know where they might go: ahead of us to the North in Texas, the temperature was officially recorded in Dallas at 104° also. We generated enough local publicity, via radio and newspaper, that any recapture here would have surely been reported. My 17 years of tagging Monarchs and releasing them here (migrant, reared, and transferred specimens) have informed the area about Monarch migration and tagging, so I luckily get many reports of early, late, and seasonal sightings.

I'm sorry to report that no one phoned to report seeing any of my out-of-season tagged Monarchs in their yards, and so far no one has sent in a recaptured wing to Fred Urquhart at the University of Toronto. But then, I sent 200 tagged Monarchs to Pleasantville, New York, to be released (Ed Note: Cf. Donahue, NEWS, 1973, on other ceremonial releases) during the 1973 Easter sermon of Dr. John R. Pearson of the Emanuel Lutheran Church and the weather there was an unseasonable sunny 80° and Pearsall had just suffered a tornado that killed 8 persons. Those Monarchs flew around in local New York yards and pleasured many persons, but not a tagged wing was ever returned to Dr. Urquhart. Where did they go, where did they die when normal, killing weather came afterwards to that area? Though we got many reports of seeing our tagged "Easter" Monarchs in that area, a month or more before their normal migating arrival time, not a single tagged wing was sent in.

Because we are situated in the migrating flypath to Monarch overwintering areas, we have been lucky to have had recaptures reported from Mexico. Only a very few from as many as 2,000 Monachs tagged in peak years, but it will always be miraculous to me that any one single tagged Monarch could be found from the multitude that migrate each Fall.

What will 1974 bring in numbers of Monarchs? I will appreciate anyone writing me what their experience has been this year. If I could hear by the first of November, I could include your reports in my presentation to the second annual national Girl Scouts of U.S.A. Wildlife Values Education Program, November 7-10, 1974, in Austin, Texas. My participation in that meeting will encompass all Lepidoptera, not just Monarchs, though of course the Monarch butterfly and its mileage record of migration holds a peculiar fascination to all interested youth — our serious Lepidopterists of future years.

I wish to extend, through the Lepidopterists' NEWS, an invitation to all who might be planning to attend this Girl Scout Environmental Workshop to stop and visit with me, to field trip, to exchange specimens, to bull session about rearing and collecting. My family joins me in offering the hospitality of our home (4 vacant bedrooms & baths, complete with good meals), to any girls who are interested in Lepidoptera. I ask only that parents phone me (Area 512, 334-2218) in advance so that we can coordinate transportation, diets & vitamins, etc. Happiness away from home is important too.

Dorothy Yeager
Yeager Butterfly Farm
570 William Drive
Pearsall, Texas, USA 78061

ABOUT OUR NEW SOCIETY EMBLEM

It seemed like maybe it was time to get a new society emblem for the cover of the News. But where most people might talk about it, or perhaps send a letter to the Editor suggesting that *he* do something, we have one member who took more direct and effective action. He is George L. Venable, a scientific illustrator for the Smithsonian Institute, but also an ardent amateur Lepidopterist. On his own time, he cleaned up the lines of the insignia, and did an artistic title as well, and sent it in as an unsolicited but highly appreciated donation to the Society. Many thanks, George.

While I'm on the subject, I wonder if any readers besides your present editor failed to notice (all these years) that the butterfly in both old and new insignia (the new one is a bit more subtle) is made up of the letters "L" and "S" — for Lep Society, get it? Oh, well, I have a hard time finding *Catocala* on tree trunks, too.

OPLER RETURNS

As of last June, Paul Opler and family have returned to Berkeley from Costa Rica, and can be reached at the address shown on the News masthead. Paul would like to modify his "Field Collections" section, which has lacked for inputs of late, to become "Collecting, Techniques and Conservation". Please send any notes or articles along these lines directly to him.

MISSING UNDERLINES

The Field Season Summary issue was done on an electric typewriter and photo reduced, rather than the usual type setting process. Thus the right margins were not justified, nor were italics available for scientific names. We could have used underlines instead, but each page would have been done twice since there were so many names. For any readers disturbed by this omission, the editor will be glad to send a page of lines, which can be cut to fit and applied to one's favorite species or section of the report.

NATURE IS YOUR LABORATORY (A REMINDER)

You wouldn't knowingly damage this country's green resources. But, that's what could happen if foreign butterflies or moths—perhaps no threat to plant life in their natural habitats—escape here, where few natural enemies exist to curb their populations. Because of this environmental threat, permits are required by the U. S. Department of Agriculture (USDA) for importation and interstate transport of all Lepidoptera livestock, including adults, pupae, larvae, and ova. Before you send for, or ship living insect material, check with state authorities or write: Director, Program Development and Application; Plant Protection and Quarantine Programs; Animal and Plant Health Inspection Service; USDA; Federal Building; Hyattsville, Maryland 20782.

M. A. Whitefield
U. S. Department of Agriculture

BOOK NOTICES:

Emmel, Thomas C. and John F. Emmel, 1973. THE BUTTERFLIES OF SOUTHERN CALIFORNIA. 148 pages, 10 color plates, 77 halftone figures of early stages. 167 species of butterflies and skippers. Paperbound, $4.00. Order from Book Shop, Natural History Museum of Los Angeles County, 900 Exposition Boulevard, Los Angeles, CALIF. 90007, U.S.A.

Field, William D., Cyril F. Dos Passos and John H. Masters, 1974, A BIBLIOGRAPHY OF THE CATALOGS, LISTS, FAUNAL AND OTHER PAPERS ON THE BUTTERFLIES OF NORTH AMERICA NORTH OF MEXICO ARRANGED BY STATE AND PROVINCE (LEPIDOPTERA: RHOPALOCERA). Smithsonian Contributions to Zoology. Number 157. The authors have exhausted their supply of separates, however, free copies of the above publication may still be available from the Publication Distribution Section, Smithsonian Press, 1242 24th Street N.W., Washington, D.C. 20037. Be sure to give the complete citation when asking for a copy. In the event that the Smithsonian Press cannot supply you, the publication is available at $1.70 per copy from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Bill Field also writes: "I have 50 copies for free distribution of my early *Manual of the Butterflies and Skippers of Kansas* (publication date is May 28, 1940, not May 15, 1938). I'll send a copy free to the first fifty that write for this." William D. Field, Associate Curator of Lepid., Dept. of Entomology, Smithsonian Institution, Washington, D.C. 20560, U.S.A.

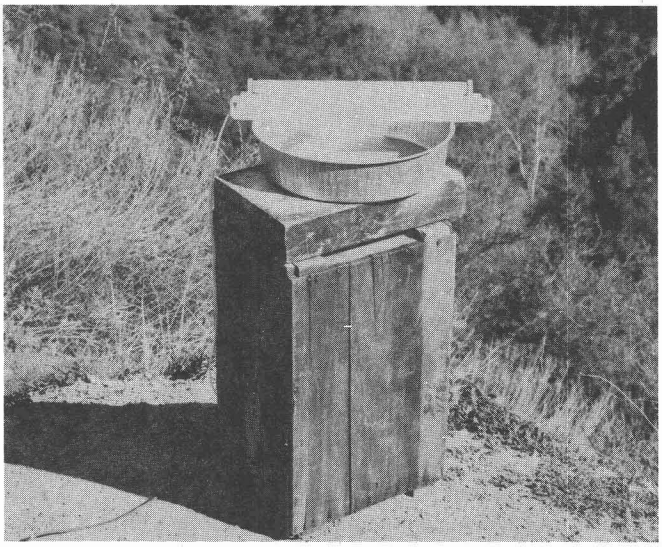
Pyle, Robert M., 1974, WATCHING WASHINGTON BUTTERFLIES, Seattle Audubon Society. This full scale treatment of Washington butterflies will be useful from B.C. to Oregon to Idaho. The 120 pages of this pocket-sized book include 65 color photographs of live butterflies taken in the field, plus maps, drawings, and a checklist. There is a wealth of information here: geographic, ecological, identification, foodplants, habits—all sorts of interesting reading not found in most butterfly books. Order from: Seattle Audubon Society, 712 Joshua Green Bldg., Seattle, WASH. 98101, U.S.A. Price, $3.95 plus 30¢ postage.

Greve, Peder, LOKALITETSLISTE FOR SYDEUROPA OG NORDAFRIKA. This locality list reads like a collector's log for trips in 1971-73 through Spain, Italy, Tunisia, Algeria and Morocco. Unfortunately, it reads in Danish. But the names come through fine, 120 butterfly species in all. Localities are shown in detail on maps, and there are black/white photos of many species. Available for $1.00 ($2, Air Mail) from Peder Greve, Postbooks 1095, 1009 Kobenhavn K, DENMARK.

Bustillo, M.R. Gomez, & Fernandez Rubio, LAS MARIPOSAS DE LA PENINSULA IBERICA (Butterflies of Spain and Portugal), 1974, two volumes. 500 pages, 400 color plates include color photographs of all Rhopalocera of Spain and Portugal, with life history and distribution. De luxe edition in Spanish. Price, U.S. $25, including surface postage. Order from: SHILAP, P.O. Box 331, Madrid, SPAIN.

ESPECIALLY FOR FIELD COLLECTORS:

A NEW MOTH TRAP



I would like to bring to the attention of other mothmen in this society, a trap which I devised last year while engaged in field work in the Santa Ynez Mountains (Calif.). Although I'm sure other Lepidopterists have dreamed up such a trap in the past, I doubt this technique of moth collecting is widely known. As is obvious in the photograph, this trap is very simple in design. A blacklight is placed across an Oil Drain Pan, which is filled with one inch of 70% Rubbing Alcohol. (Naturally, on warm nights, when the moths come in like falling snow, you'll need more alcohol! Or more pans!) The trap is very efficient, as 95% of the moths attracted to the light end up in the fluid. The moths are demobilized in a minute, and consequently, one can retrieve specimens in immaculate condition. The alcohol can be recycled. Pour the alcohol into a covered container, like a large coffee can. All the scales and foreign matter will settle to the bottom. With a smaller can, you can carefully remove the clean alcohol. I can think of only two disadvantages to this trap: One, because of the fire hazard you should stay with the trap while it is in operation. Two, if you want live females for eggs, obviously this trap is inappropriate.

Larger moths *(Noctuidae,* and on up) can be pulled out with forceps and placed on a paper towel. Smaller moths *(Geometridae,* and on down) can be retrieved in the following manner: Place a sheet of wax paper in an aluminum pan, and pour in enough alcohol so as to barely cover the surface of the wax paper. Small moths should be laid carefully in the pan, and "played with" in the fluid until the wings are spread in a natural position. Then just take a piece of cloth and soak the alcohol out of the pan. As soon as the alcohol has evaporated from the moths, the specimens can either be mounted, or put into a freezer, for mounting at a later time.

A tremendous amount of work needs to be done on our native moths, and I do hope this trap will stimulate more field work on this group of insects. We have got to get a clear picture of the geographical distribution of every species of moth in North America, before we can begin studies of evolutionary patterns, as they relate to past and present climates and geological changes.

Richard C. Priestaf
P.O. Box 14203
University of California - Santa Barbara
Santa Barbara, California 93107

HINTS FOR BETTER PREPARATION

1. MOULD REMOVAL

A batch of butterflies were quite mouldy, both on wings and bodies. I found that the mould was removed completely, without any damage or color change, with application of Formula 409, an all purpose cleaner.

2. LOW COST, FAST MOUNTING METHOD

Working with butterflies for over thirty years, I have developed a method of mounting which is both faster and costs less than the conventional wooden mounting board method. There are potential disadvantages, however, so beware: the legs can often become broken off, and a degree of skill must be developed for proper re-pinning.

The material used for the mounting devices is ordinary wallboard. Scraps can be used, but I prefer a reasonable size of 19 by 10 inches. Glue sheets of fine linen paper to the board to provide a suitable surface to contact the wings.

The freshly relaxed butterfly is pinned in the normal spot but in the bottom of the thorax: i.e., upside down. Let the pin penetrate the body only slightly, less than in a normal mounting. Using forceps to spread the wings, pin the specimen onto the board. Keep the body from rotating with a pin on either side of the abdomen. Anchor glassine strips at the top with pins, extending down over the wings. Work both wings upward to the desired position under the strips. When satisfied with the mount, fasten more pins in the side and bottom of the strips. Antennae may be positioned with pins, too. Quite a few specimens may be spread on a single board, depending on size, and you don't need special boards for different sizes (just an assortment of strips). Usual drying times of 3 to 14 days must be allowed. Keep data pinned next to specimen, of course.

Now comes the final (and tricky) part. Remove all strips and extra pins. Lift up the specimen, which should be mounted flat and upside down, and carefully break the pin loose by pushing in a bit deeper and gently rotating at the same time. Once the insect is loose on the pin, withdraw the pin and lay the butterfly down. With forceps, turn it over and carefully reinsert the pin into the hole that you'll find in the top of the thorax. If the insect still rotates, try one size larger pin. Move to the desired height, affix final label, and you are done. Believe me, once you get the hang of it, this method can be used to mount lots of butterflies in a very short time.

Raymond Jae
1286 S. Umatilla St.
Denver, COLO. 80223

NOTICES:

Members of the Lepidopterists' Society are invited to use this section free of charge to advertise their needs and offerings in Lepidoptera. We cannot guarantee any notices, but all are expected to be made in good faith. Please be brief, clear, and check spelling. Avoid long lists. Generally, notices will be limited to 3 appearances if more than one are requested. The Editor reserves the right to alter or reject unsuitable copy.

FOR SALE: Rare butterflies of A-1 quality: 5 *N. j-album,* 7 *P. satyrus marsyas,* and 11 *P. gracilis.* Price $20, postpaid. Henry Hensel, 145 Bellevue Str., Edmundston, N.B., CANADA.

WANTED: Lots of 100 or more of A-1 papered *Morpho* and *Caligo.* Send lists with prices and quantities available. Robert D. Lehman, P.O. Box 40, San Pedro Sula, HONDURAS.

FOR SALE: Fox- Monograph of the Ithomiidae (Pts. I & III), $12; Zimmermann-Macrolep. of Hawaii, $14; Klots & Klots- Living Insects of the World, $12.50; Packard- Monograph on the Geometridae, $20; Cott- Adaptive Coloration in Animals, $12.50; Needham- Dragonflies of N. Amer., $12.50; Williams- Migration of Butterflies, $6. All bound in buckram except first. Price includes postage and insurance. Russell A. Rahn, 3214 W. Springdale Ave., Wausau, WISC. 54401, U.S.A.

WANTED: To buy McDunnough's Checklist, Vol. 2 (Micro's) (1939) and Forbes' Lepid. of New York, Part 1. State condition and price. Stephan Goldstein, 146 Eighth St., Providence, R.I. 02906, U.S.A.

FOR SALE: Formosan butterflies of all groups, rare and common, for art work or collectors. Need butterflies from S. America, India, Africa and Australia. C.K.Yu, Muh Sheng Entomological Center, 3 Ton Rong Rd., Puli, TAIWAN 545.

EXCHANGE: Available in fall papered adults and fertile ova of *Hemileuca lucina* (hosts, first instar, in field *Spirea, Prunus, Vaccinium)* and *H. maia* (any oak). Want certain U.S. *Catocala* and many Lithophanini esp. from SE, Midwest, Rockies, Pacific coast and Eurasia incl. livestock for thesis research. Dale F. Schweitzer, Dept. Zoology, Univ. of Mass., Amherst, MASS. 01002, U.S.A.

FOR SALE: Over 900 rare and common species of butterflies, beetles and other insects from Malaysia, Indonesia, Thailand, Portuguese Timor, etc. K.H.Wong, P.O. Box 74, Paya Lebar, SINGAPORE 19.

WANTED: Live butterfly larvae for freeze-drying. Will exchange a freeze-dried larva for every five reaching me in good condition. Please write before sending. Any U.S. Museum interested in a collection of freeze-dried larva, please contact me. Frank R. Hedges, 11852 Hempstead Hwy., Lot J-9, Houston, TEXAS 77018, U.S.A.

FOR SALE: Rare and common butterflies from tropical America—*Morpho, Agrias, Papilio, Prepona, Heliconius, Riodinidae, Ithomiidae, Pieridae,* etc. Send for price list. Miguel Serrano, Avenida Alfredo Espino y Calle B, Colonia Campestre, San Salvador, EL SALVADOR.

FOR SALE: Many Formosan butterflies, moths, beetles, dragonflies, and other dried insect specimens for collectors or art work. Also living cocoons and eggs of moths in large quantities. Mrs. Chang Pi-Tzu, P.O. Box 873, Taipei, FORMOSA.

WANTED: To buy Evans, Catalog of African Hesperiidae, and Lindsey, Bell, Williams, Hesperioidea of N. America. If you are not actively using these, please help a younger collector with a serious interest in this group. L. J. Melton, 5438 High Tide Ct., Columbia, MD. 21044, U.S.A.

FOR SALE: *O. helena cerberus* (female A1-), *O. oblongmaculatus papuensis* (2 pr. A1-), *O. amphrysus ruficollis* (2 female A2), *O. aeacus thomsoni* (1 pr. A2), *O. cuneifer peninsulae* (1 pr. A1-), *O. p. urvillaenus* (1 pr. A2-). Entire group $10.00. Kurt Laurent, 1331 Grant Ave., Rockford, ILL. 61103, U.S.A.

FOR SALE: Pupae, cocoons of *P. philenor* (50¢), *A.andria* (60¢), *E.claudia* (35¢), *P.lavinia* (30¢), *E.clarus* (30¢), *A.luna* (45¢ or 35¢ in lots of 50. Also large variety of papered specimens. Rubber stamps with 8 pt. type at wholesale prices. Write for sample of type and prices. D.Kurzek, 205 Ferguson, Berryville, ARK. 72616, U.S.A.

FOR SALE: Eight 22 x 22 x 1¼" plywood tray drawers, $8.00. Polaroid 210 Colorpack Land Camera (3½ x 4½ pics, b/w or color), like new, cost $50, price $30. Donald L. Baber, 1511 Drake Ave., Burlingame, CALIF. 94010, U.S.A.

FOR SALE: Fascicles 21 (Sphingoidea), 20.1 (Mimall./Bombycoidea), 20.2A (Bombyc.), and 20.2B (Bombyc.) of Moths of America North of Mexico. Never used, all for $100.00, postage paid within U.S. J. H. McGowen Jr., 1540 W. 220th St., Torrance, CALIF. 90501, U.S.A.

FOR SALE: 1,500 species of exotic butterflies, moths, beetles, biologicals. Siam, Africa, Brazil, Indonesia, etc. Send $1.00 for 72 page catalog. Complete Scientific, P.O. Box 307, Round Lake, ILL. 60073, U.S.A.

WANTED: Lepid. of Florida (Kimball), Colo. Butterflies (Eff et al), Butterflies (Macy & Shepard), Butterflies of N. Dakota (Puckering & Post), Butterflies of Virginia (Clark & Clark), Wild Silk Moths of U.S. (Collins & Weast), Hesperioidea of N. Amer. (Lindsey et al). Please state price and condition. Roger M. Kuehn, 5042 N. 61 St., Milwaukee, WISC. 53218, U.S.A.

EXCHANGE: Butterflies from Papua and New Guinea for *Delias* from West Irian and Moluccas. P. Sawyer, Box 1249, LAE, PAPUA NEW GUINEA.

FOR SALE: Large selection of worldwide Lepidoptera and Coleoptera, esp. boreal and neotropical, many fine exotics. First quality papered with data at reasonable prices. Send $1.00 for 25 p. listing. Wayne W. Klopp, 6705 S.W. 44 St., #10, Miami, FLOR. 33155, U.S.A.

FOR SALE: Comprehensive collection of Brazilian Lepidoptera with 8,000 specimens, some from other parts of the world. Also insect collection with 2,230 specimens. All classified, in cabinets and in excellent condition. Samuel Zitrin, Rua Buenos Aires 112, Rio de Janeiro, BRAZIL.

WANTED: Volumes/single issues of: Entom. News, Canad. Entom., Jour., N.Y. Ent. Soc., Entom. Americana, Pan-Pacific Ent., Psyche, Trans. Amer. Ent. Soc. FOR SALE: Comstock's Butterflies of Calif. ($80); Holland's Butterfly Book, Nature Library Ed. 1922 ($30); Holland's Moth Book, 1941 printing ($30); Moth Book, Nature Ed. 1904, pencilled annotations and a few loose signatures ($25). All excellent condition except latter. Dennis Groothuis, 1700 E. 56th St., Apt. 3808, Chicago, ILL. 60637, U.S.A.

WANTED: Examples of genus *Astraptes* (Rhop.: Hesperiidae) from Mexico, Central & S. America, full data essential. Will trade U.S. or Mexican butterflies all families, or purchase. Bill McGuire, 2911 Ave. O, Galveston, TEXAS 77550, U.S.A.

WANTED: Singles or series of any member of *Papilio machaon*-complex from anywhere. Also life history, distribution data, contact with people studying hybridization. Will buy or trade for list. Want to buy or trade for *eggs* of *P.rudkini, bairdii, oregonius, indra* and *brevicauda* for crossing experiments. Peder Greve, Postboks 1095, 1009 Kobenhavn K, DENMARK.

FOR SALE: Lane 25 drawer steel insect cabinets. Less than two years old. Price $75.00. You pay the freight charges. Contact Mr. A. C. Allyn, 3701 Bay Shore Road, Sarasota, FLA. 33580, U.S.A.

ATTENTION: Cleveland, Ohio area Lepidopterists: 2,000 specimens, mostly papered N. American butterflies with full data (esp. blues, coppers, Nymphalidae and Pieridae were stolen as part of a larger theft. If anyone happens upon these or any butterfly books (E. g. Holland, Klots, etc.) bearing my name or initials (SEC, GGC, or G and S Cristoph), please contact me. Gary G. Cristoph, Assistant Professor, Dept. of Chemistry, Ohio State University, Columbus, OHIO 43210, U.S.A.

FOR SALE: *Morpho, Agrias, Prepona praeneste* (rare), *Ancyluris formossima,* butterflies of all Cent. and So. American countries, Malaysia, Far East, W. Pacific islands incl. *Ornithoptera* and *Papillo.* In quantity or singles. Full price lists on request. Can correspond in many languages. EXCHANGE: Need butterflies of any country, esp. N. American (papered). Want cocoons and ova of large silk moths *(Saturniidae).* Want books on Lepid., any language, esp. S. America and Mexico. Mrs. Monica A. Azevedo.20, Martin Close, Heighington, Lincolnshire, ENGLAND.

FOR SALE: Butterflies of Peru, Brazil, Columbia — rare and common. *Morpho cypris, Agrias narcissus, Caligoe atreus.* Saturniids and other moths available. Send 25¢ for latest list, 50¢ for wholesale list. WANTED: *Anaea* and related groups. Will exchange worldwide lepid. or buy. State species, quantity and quality. David W. Bouton, 408 S. Franklin St., Wilkes Barre, PA. 18702, U.S.A.

EXCHANGE: *Apodemia mormo mejicanus* from Arizona and New Mexico for *A. mormo cythera* from Calif. or any *mormo* from Texas or Mexico. Greg Forbes, 1153 E. Montebello Circle, Phoenix, ARIZ. 85014, U.S.A.

FOR SALE: Extensive range of worldwide butterflies, including rarities and aberrations. Good prices paid for collections and surplus material. Send us your want list; we are also interested in exchanges. Write for catalog. Lepidoptera Ltd., 1 Marsh St., Warminster, Wiltshire, ENGLAND.

EXCHANGE: Ornithoptera victoria isabellae, rubianus, and epiphanes for other rare Ornithoptera. Several A2 pairs also available. Mrs. R. H. Morgan, 42 Rangiwai Rd., Titirangi, Auckland 7, NEW ZEALAND.

WANTED: Tropical Lepidoptera and Coleoptera, esp. large, colorful species. Will exchange Lepidoptera and other orders from Pacific NW and SE United States and Mexico. Write for free list. Richard H. Whitten, Carolina Biological Supply Co., Gladstone, OREG. 97027, U.S.A.

WANTED: Reliable suppliers of all livestock and perfect papered specimens of Lepidoptera and other insects. We need permanent suppliers only, who will send every season. Send full details and prices. Exchanges can be made for books, equipment, specimens and livestock of world Lepidoptera. Mailing Index: send 0.60 Pounds Money Order to join. M.C. Dickens, The Butterfly Farm, Ashford, Kent, ENGLAND TN25 7JW.

WANTED: To trade or buy ova and pupae of *Arctiidae.* Will exchange material from British Columbia and arctic butterflies. H. P. Kimmich, 3372 Mahon Ave., North Vancouver, B. C. V7N 3T6, CANADA.

FOR SALE: Insect Pins, $5.00 per 1,000 (10 packages) plus 15¢ postage. Prompt delivery. State size desired. Clair Armin, 191 W. Palm Ave., Reedley, CALIF. 93654, U.S.A.

RESEARCH REQUESTS:

Wanted for population study of Texas Hesperioidea: any data or information re: genus *Hesperia* in Texas. All contributions and correspondence acknowledged. Bill McGuire, 2911 Avenue O, Galveston, TEXAS 77550, U.S.A.

Need data on butterflies and skippers caught anywhere in Maryland. Will be included in list to be published in the near future. William A. Andersen, M.D., 1528 York Road, Lutherville, MD. 21093, U.S.A.

Would like to borrow preserved (in any manner) ova, larvae, and pupae of *Speyeria, Boloria,* and any other Argynninae. Richard A. Arnold, Dept. of Entomology, Natural Sciences Bldg., Michigan State University, East Lansing, MICH. 48823, U.S.A.

For dissertation on butterfly conservation: any information, esp. with supporting data, concerning decline of Lepidoptera populations due to human causes. Urgently need biogeography, life history and population biology of *Oen. polyxenes katahdin, O.melissa semidea* and *O.chryxus valerata.* R. M. Pyle, School of Forestry and Environmental Studies, Yale University, New Haven, CT. 06511, U.S.A.

from: THE LEPIDOPTERISTS' SOCIETY
Allyn Museum of Entomology
3701 Bay Shore Road
Sarasota, Florida 33580, U.S.A.

Forwarding and Return Postage Guaranteed

MR. J. DONALD EFF
445 THERESA DRIVE
FAIRVIEW ESTATES
BOULDER, COLORADO 80302

Memoirs of the Lepidopterists' Society, Number 1 (Feb., 1964)

A SYNONYMIC LIST OF THE NEARCTIC RHOPALOCERA, by C. F. dos Passos

Price:

Society Members, paper covers, Addenda et Corrigenda (revisions of Melitaeinae and portions of Lycaenidae supplied separately), $5; non-members, $7.50. Hard-cover binding (revisions bound in): Members, $8; non-members, $10.

Send to **Memoirs** Editor Sidney A. Hessel, Nettleton Hollow Road, Washington, CONN. 06793, U.S.A.

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 ($10, U.S.A.) together with full address and areas of interest in Lepidoptera. Remittances in dollars (U.S.A.) should be made payable to The Lepidopterists' Society. All members will receive the **JOURNAL** (published quarterly) and the **NEWS** (published bimonthly). A biennial membership list will comprise one issue of the **NEWS** in even-numbered years. Back issues of the **JOURNAL** may be purchased from the TREASURER.

Information on membership may be obtained from the TREASURER, Col. Stanley S. Nicolay, 1500 Wakefield Drive, Virginia Beach, VA. 23455, U.S.A. Changes of address must be sent to him alone, and only when changes are permanent or very long-term.

Other information about the Society may be obtained from the SECRETARY, Dr. Lee D. Miller, Allyn Museum of Entomology, 3701 Bay Shore Rd., Sarasota, FLA. 33580, U.S.A.

Manuscripts for publication in the **JOURNAL** are to be sent to the Editor, Dr. Theodore D. Sargent, Zoology Dept., Univ. of Massachusetts, Amherst, MASS. 01002, U.S.A. See the inside back cover of a copy of the JOURNAL for editorial policies.

Items for inclusion in the **NEWS** should be sent to the Editor, Ron Leuschner, 1900 John St., Manhattan Beach, CA. 90266, U.S.A.