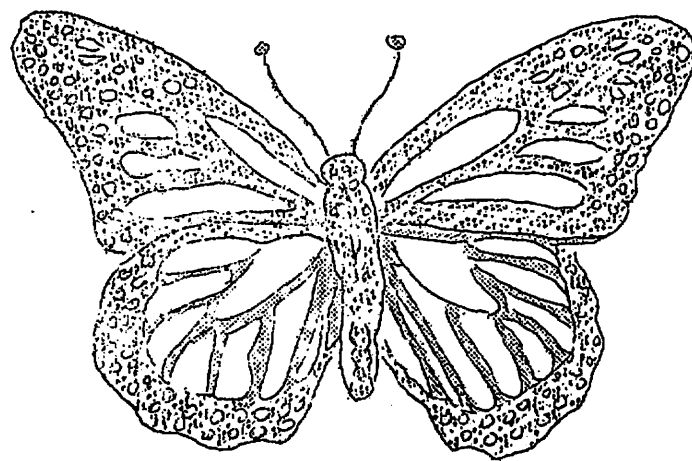


INSECT MIGRATION STUDIES



NEWSLETTER to
RESEARCH ASSOCIATES

Vol. 1.

— February —

1964

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THIS NEWSLETTER HAS BEEN PRODUCED IN ORDER TO INFORM OUR ASSOCIATES OF WHAT HAS BEEN DONE AND MUST NOT BE USED FOR SCIENTIFIC PUBLICATION. ANYONE WISHING SCIENTIFIC DATA SHOULD CONTACT MISS AUDREY E. WILSON, R.R. # 5, COBOURG, ONTARIO, CANADA.

* * *

FROM PROFESSOR URQUHART

HEAD OF MONARCH RESEARCH PROJECT

This has been a most eventful year. Not only were the monarch butterflies abundant in most parts of North America, but, as a result of publicity through the Reader's Digest and Canada Month, we have had a gigantic flood of letters from individuals all over the world expressing their desire to join our research team of associates.

We have learned, from years of experience, that only a small percentage of those who express an initial interest in our work are willing to contribute to any degree, with the result that time and money are lost in useless correspondence and sending out tags and instructions. To curb this initial enthusiasm on the part of many we decided to charge a fee of \$3.00, part of which will be added to our Research Fund and part to cover the cost of the Newsletter. This fee, of course, applies only to those joining in the future. Present associates will still be charged the \$1.00 fee.

I am pleased to announce that, thanks to the excellent fund-raising activities of Miss Ivy LeMon of the Massachusetts Audubon Society, we have been able to establish a Research Fund in the University of Toronto known as RESEARCH FUND FOR THE STUDY OF INVERTEBRATE MIGRATION. I also wish to thank those who sent more than the one dollar for the Newsletter thus adding to our Research Fund. Miss LeMon, Miss Wilson, and Mr. Sibley deserve special mention because they presented public lectures, some on television and radio broadcasts, for which they received a fee and which they turned over to the University to be added to our small, but we hope growing, Research Fund.

There was a time when I thought we would have to discontinue our migration program, since I found it impossible to be my own secretary, stenographer and laboratory assistant. Fortunately, my wife stepped into the breach and has taken over the secretarial-stenographic-laboratory assistant work. This change-over, from my rather haphazard system to a more exact one, resulted in a few errors, for which I offer my apologies.

PROFESSOR URQUHART'S REPORT (CONT.)

I am delighted to have Miss Audrey Wilson of Cobourg, Ontario as our Newsletter Editor. She is in complete charge of producing this newsy item. I know she will be pleased to receive your comments and suggestions. We are most fortunate in having Miss Ivy LeMon as our Associate Editor as well as being in charge of visual aid material and a one-man (woman) fund-raising committee. Miss LeMon has been most helpful in many ways and I do thank her for her enthusiastic assistance.

Some of our Associates organized their own group of cooperators and they have done a splendid job. Miss LeMon and Mr. Bracher had cooperators working with them this past year. If any of you wish to form your own group of cooperators, please contact me and we will send you the necessary tags and special instructions.

We have had reports from individuals who prepared their own labels and, in some cases, have had returns which have been reported to us. Unfortunately we can not accept such records for our scientific publications. If you know of anyone who is carrying out such individual research, we would appreciate it if you would advise them to obtain our labels, or obtain them through you. In this way all information may be properly checked for accuracy. As you can imagine, many such records are quite erroneous and perhaps some of them were not actual returns. If any of you run out of labels, please contact me immediately, or get in touch with Miss LeMon or Miss Wilson who will have an extra supply of labels on hand and will be able to record the necessary information accurately according to the demands of our files.

Mr. Beard of Monterey, California, has been actively engaged in tagging the overwintering colonies in California. We hope to write a joint scientific paper next year on the results obtained.

After consultation with the Avery Adhesive Label Company, we now have a much superior adhesive and a much superior paper stock. We experienced a little difficulty with some of the labels this past year. See the report on this elsewhere in the Newsletter.

I wish to thank all our associates for their excellent endeavours this past year. Mrs. Urquhart and I have enjoyed reading your most friendly letters and your reports, some of which are most detailed and will give us valuable information for our scientific publications which is the end product of our research and in presenting which we will all have taken part.

* * *

TAGGING RETURNS FOR 1963

1963 was a peak year for monarchs and as a result many were tagged; a total of 13,800 butterflies in all. The following people deserve special mention as they each tagged over 1000 specimens.

TAGGING RETURNS FOR 1963 (CONT.)

Lloyd Beamer of Meaford, Ontario.
 Paul Beard of Monterey, California.
 Dr. Wm. Burns of San Antonio, Texas.
 E.R. McDonald of Port Hope, Ontario.
 Audrey E. Wilson of Cobourg, Ontario.

A total of 128 tagged specimens were recaptured this year - an unprecedented number. We did not, however, obtain many long distance records. Of the returns, the following recaptures will be of interest to you as they flew a significant distance.

<u>TAGGED BY</u>	<u>AT</u>	<u>RECAPTURED AT</u>
Lloyd Beamer	Meaford, Ontario.	St. Catharines, Ontario.
" "	Meaford, Ontario.	Rainham Centre on Lake Erie, Ontario.
Ted Currie	Toronto, Ontario.	Burlington, Ontario.
Ruth Haig	Niagara Falls, Ont.	Gilbert, W. Va.
" "	Niagara Falls, Ont.	Muskogee, Okla.
H. Hedges	Scarborough, Ont.	Kensington, Md.
Mrs. A.W. Kuschke	Quarryville, Pa.	Avalon, N.J.
Miss LeMon	Quarryville, Pa.	Avalon, N.J.
E.R. McDonald	Port Hope, Ontario.	Near Cleveland, Ohio.
F.A. Urquhart	Toronto, Ontario.	Avon Lake, Ohio.
Audrey E. Wilson	Grafton, Ontario.	Avoca, Pa.
" "	Grafton, Ontario.	Scarborough, Ontario.
" "	Grafton, Ontario.	Baton Rouge, La.

Each associate will find a list attached to his Newsletter with his returns for his own information. If such a list is not included then it means he did not have any of his specimens recaptured.

* * *

ASSURING THE INSECT MIGRATION STUDIES

Persons who recognize the importance of assuring the continuance of our work have asked how they can help. Contributions of any amount sent to Dr. Urquhart, c/o The University of Toronto will be added to our fund. With this money we pay for the Monarch tags, publish our Newsletter, pay for secretarial help when needed, and expand our program. We feel that our studies are important in the field of research as well as interesting to people in every country. Your donation will be of immeasurable value toward the advancement of this work.

* * *

HAVE YOU COLOUR SLIDES?

Many Research Associates have inquired about colour slides depicting our work with the Monarch Butterfly. We should like to compile two sets of slides to make available on a rental basis. We would appreciate receiving copies of slides illustrating the metamorphosis, parasites, banding, sleeping assemblies, habitats, cages, nets or other phases of the Monarch work. A commentary will be written to accompany the slides. The profits from the rentals will be added to the operating funds. The charge will be two dollars plus postage, shipped far enough in advance to meet the scheduled dates for showing. You can benefit the publication of the work being done by our organization by donating copies of your slides to Miss Ivy LeMon, Ipswich River Wildlife Sanctuary, Topsfield, Massachusetts.

* * *

ABUNDANCE OF MONARCHS

Although most of our associates reported monarchs as being abundant some found them scarce. A.L. Brandhorst of Denver, Colorado; D.L. Mauger of Paoli, Indiana; Mr. Chas. B. Hartley of Pensacola, Florida; Mrs. A.E. Mohr of Brookfield, Wis.; S. Sweet of Manchester, Conn.; Elizabeth Smith of Ripley, Mass.; Mrs. L.G. Senghas of Mount Clemens, Mich.; A.H. Moeck of Milwaukee, Wis.; Victoria Lesinski of Flint, Michigan; and R.W. Bracher of Granger, Indiana all report an unusual drought period which, as Mr. Mauger states, "dried up the milkweed." Mrs. Senghas observed that the breeding season was exceptionally good and yet she found them scarce during the fall migration. Mr. Bracher fears that the use of weed killers is "fast decimating the butterfly population and he predicts the extinction of many species in the near future.

* * *

SPRING MIGRATION

We have had more records of spring migration this year than ever before. In some cases there are reports of "large" northerly movements. Mr. Mauger of Paoli, Indiana writes: "They were all travelling in the same direction towards the North and East. They all seemed to follow the same route through the yard and over the hill. It was just like the fall migration in reverse. We had no flowers in bloom to entice them to stop."

This large spring movement gave rise to a large summer population, but we are at a loss to understand why the monarchs were not abundant during the fall migration in certain sections of the country. As usual, there was a definite lull in the September flight. There is usually a large flight about mid-September and then a period of scarcity followed by a second mass movement. This we feel is due to the passage of cold waves which tend to hold up the development of existing larvae. A warm September period hastens development resulting in a second mass

movement. If one collects during the lull period he may be impressed by the scarcity, whereas if one collects during either of the peak periods he may be impressed by the abundance. This is thrown out as a suggestion.

* * *

MIGRATORY MOVEMENTS IN CALIFORNIA

We are most interested in the late fall and winter movements of Monarchs in California. We have been most fortunate to obtain the assistance of Grace Moore of Oceanside to take observations for us. You see, the monarchs move north in California during the late fall and early winter - an observation made by us some time ago. It would appear that there is a definite relationship between the monarchs overwintering in northern California with those in the south and the possibility that monarchs from the Eastern U.S. and Canada travelling through Mexico ultimately reach the Pacific coast and turn northward. We hope to obtain associates in southern California and Baja, California to help us obtain data on this part of the problem.

* * *

TRANSFER EXPERIMENTS

Some of our associates have suggested in the past that monarchs be collected in one part of the country and sent to another just to see what would happen. Now that we know the direction of migration it seems sensible to cut down on the loss of tagged specimens by sending them by aircraft, thus assuring a maximum release at a southern point. With this in mind we sent a few hundred specimens to the following: Mrs. W.L. Penney, Lubbock, Texas; Mrs. C.B. Hartley of Pensacola, Florida; Mrs. Kerry Yeager of Pearsall, Texas; Veta Wright of San Antonio, Texas; and Chas. Renfranz of Lakeland, Florida. Mr. Sibley of Whittemore, Mich. reared, tagged and sent 84 monarchs to 6 friends - 5 shipments to Florida and 1 was forwarded to Georgia for releasal. Mr. Sibley received detailed reports on the condition and behavior of these Monarchs at the time of releasal. Audrey Wilson sent a shipment to Mrs. Gathing of Quemado, Texas. Mrs. Gathing sent back the following report: "Package mailed Oct. 21/63 in Cobourg, Ont. Passed Chicago, Ill. customs on Oct. 22 and arrived in Quemado, Texas, Maverick Co. on Oct. 23/63 at 8:00 a.m. by special delivery, air mail. The package contained 100 monarchs with labels on each upper right wing. The package was in good condition. The butterflies were released at 10:30 a.m. on Oct. 23 in a lightly wooded place that had other monarchs flying about. 3 were completely dead and 2 were in a weakened condition but still alive. Broken clouds covered the sky and the N.E. wind was about 5 m.p.h. with temperature about 75 degrees. Labels were firmly attached and all but the 3 were active and flew away."

* & *

STUDENT ADDS SCIENTIFIC OBSERVATIONS

Miss Ruth Haigh of Niagara Falls, Ont. and now a student at the Guelph Agricultural College, was able to force mate a male and female monarch by placing the tips of their abdomens together. This was a most interesting discovery and one which will assist us in our laboratory breedings. As a result of being able to do this, Miss Haigh was able to keep a number of generations of butterflies going during the summer and thus supplying us with accurate data on the number of possible cycles during the breeding season. Miss Haigh informs us that the butterflies will mate six days after emerging from the pupa. The female when mated laid eggs "in a great frenzied rush". After laying the eggs the female became exhausted, the wings broke and within a day she had no energy left. The male mated in the same manner twice with three and four day old females. At the end of three days of mating the male became feeble. She also observed that once mated the female became interested in the presence of milkweed, but not before. Also, the act of copulation lasts more than twelve hours. All this information is very exciting to our work and we are most grateful to Miss Haigh for her ingenuity and obvious research abilities. Incidentally, Miss Haigh fed the females on honey.

*

Mrs. Roy Beyer of Ithaca, Neb. reported seeing a male monarch on "mating guard" throughout October. This behavior which is a form of territorialism is described in the Monarch Butterfly book and is usually observed in July and August. This is the first record of this display as late as October.

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WORLD STUDIES

We eventually hope to obtain the assistance, or cooperation of research workers in other parts of the world, particularly South America. We know nothing at all about the migrations of the South American species. This is a new and important field of research. If our present organization becomes strong enough, particularly from the financial point of view, then it would be interesting to all of us to work with and hear from our colleagues throughout the world. This is our ambition in the future.

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AUSTRALIA

Dr. Smithers, of the Australian Museum in Sydney, will be using our labels - printed "return Museum Sydney" printed on them. Dr. Smithers is doing an extremely fine job of following the movements of the Monarch butterfly in his country. Incidentally this is the same species as our North American one. It will be extremely interesting to find out if this species migrates at the same time as ours and in what direction. When Dr. Smithers has obtained sufficient information on the Australian movement, we hope to cooperate with him on the analysis of his data not only with respect to the movement in Australia but also in comparison with the information which we obtain.

REPORTS

Many of our associates presented full and detailed reports of their tagging and observations. Mr. Beamer carried out observations on pupation time which will add to the data we now have and thus give us a better average figure. He also reported on the occurrence of tagged specimens that remained in the area where they were tagged. From a casual perusal of the data presented by Mr. Beamer it would appear that the butterflies tended to remain in the area longer in June than in any other month. However, a specimen tagged on Aug. 3 remained within three miles of the tagged area until Aug. 22. These reports will be kept on file and will be examined more critically when results are being brought together for various research purposes.

* * *

PARASITES AND DISEASES

When animals become unusually abundant in any one locality, parasitism often follows. The monarch seems to be no exception to this rule. Bill Sieker of Madison, Wis. noted "There were a lot of parasitized larvae this year." Mrs. Brewer, of Newton Highlands, Mass. refers to "black sand effect" with respect to what seems like a virus infection in the pupa that starts with a number of small sand-like marks that eventually spread until the entire pupa turns black. Sometimes a black watery fluid exudes. The larvae also seems prone to attack by similar diseases, the larvae eventually turning black and limp.

* * *

LABELS

There were two unfortunate occurrences this year with respect to the labels, henceforth referred to as "alar labels" meaning wing labels. First, the glue on most of the tags was of a type that did not cling strongly to the wing membrane. We contacted the company and found out that we should have had a permanent type of glue. We did not realize, after obtaining our labels from this company for so many years that we needed to specify this. However, after talking to one of their representatives, I think we now have a glue that will be more superior to anything we have had before and a type of paper that has "no life" so that it will cling to the wing more closely. A paper with "life" is apparently one that when it is bent tends to want to return to its previous flat position. A paper that does not have this tendency is said to have "no life". The second unfortunate occurrence was that the ink used (red) was not of a permanent type. We had experimented with it for waterproof characteristics but it did not occur to us to test it for the effect of sunlight. However, only a few recoveries, and only two of these, were of this faded ink and hence the results did not suffer to any appreciable degree. Next year, as a result of the work we are doing this winter, we will have a more permanent ink.

* * *

LECTURING ACTIVITIES AND PUBLICITY

Many of our associates were able to promote our program through various mediums - addressing clubs, T.V. and radio shows, in the press and of course hundreds of students in schools were given a "birds-eye view" of our program. The following is a brief report of these activities that have come to our attention.

Mr. Sibley of Wittemore, Michigan addressed the Garden Clubs at the Tawas and students of the Oscoda Area schools. The fee given to Mr. Sibley was sent to us for our research fund by Mr. Sibley - a most gracious act and most appreciated.

Nancy Hoeflich, who is an Elementary Natural Science Teacher in Arlington, Mass., introduced the tagging program to a group of 250 adults taking a course on conservation at Hog Island. She also presented six weeks of lessons on the life cycle of the Monarch and tagging program to the fifth and sixth grade classes.

Mrs. Jo Brewer of Newton Highlands, Mass. lectured in London, England and visited Frankfurt and Brussels where she examined collections of Lepidoptera. Also, in Russia she examined the Romanoff collection in Leningrad and showed her slides of Monarchs. In Switzerland she photographed many butterflies of species which she had never seen before - a most exciting experience.

Mrs. Karl Fuge of Jefferson, Wis. carried out an interesting program with her fifth grade class. After observing and tagging Monarchs they wrote to the fifth grade children of Pacific Grove, Calif. at the time of the Monarch Parade and Festival in their city. A tape was recorded and sent. The children of Pacific Grove informed Mrs. Fuge's class of the fact that their city has a \$50.00 fine for any person caught killing a Monarch butterfly. No doubt this exchange of letters and tape will arouse much interest amongst future possible associates!

David Miner of Barre, Mass. sent us the following report. "The Cook's Canyon Wildlife Sanctuary Butterfly House, "Flutter-by" #2, produced Monarchs for classroom banding. During the period, Sept. 20 to the 27th it was possible for the director David R. Miner, to take a Monarch to each of his eleven science classes, band it for the students and release it. This made it possible for over 400 students to see the method of application, scales on the wings, sex determination and upon release the manner of flight".

*Waldo Lincoln, as a result of his tagged specimen being recaptured in Florida, appeared on a T.V. show and was written up in local newspapers.

Miss LeMon of the Massachusetts Audubon Society appeared on a number of radio and T.V. shows. Thanks to these shows and her recruiting efforts she was responsible for raising a grand total of \$247.00. Special thanks to the Massachusetts Audubon Society who contributed \$150.00 of this amount to assist us with our program. Read "Excitement on the Northern Shores" to know about Miss LeMon's other activities.

LECTURING ACTIVITIES AND PUBLICITY - (CONT.)

Audrey E. Wilson appeared on a coast to coast T.V. show from Toronto regarding Monarchs. The pupils of her school deserve much of the credit for doing the "leg-work" in catching the large numbers banded in her area.

We are most grateful to Mr. Renwicke Cary who, through his column, "Around the Plaza" in the newspaper "The Light" published in San Antonio, Texas, has publicized our program and as a result obtained for us four most capable associates.

The recent article in the Reader's Digest did much to publicize our program and, although we have been kept extremely busy as a result of it, we have been able to swell our ranks with new associates from various parts of North America. We are now receiving further offers of assistance as a result of the publication of a book titled "Beasts, Brains and Behavior". We have not seen this book as yet, so we do not know in what form the appeal has been made. However, it is certainly bringing results.

Mr. Ray W. Bracher of Granger, Ind. obtained newspaper publicity in which he asked for cooperators. He was rather disappointed at obtaining only six. This is in fact, rather good. Mr. Bracher raises an interesting idea. Perhaps some of our associates would like to form a small group of their own cooperators. Thus our work would expand from the Associates working directly with us and the cooperators working indirectly through the Associates. Miss LeMon has virtually done this in obtaining cooperators working through her. See Dr. Urquhart's report at the beginning of Newsletter if you are interested in this idea.

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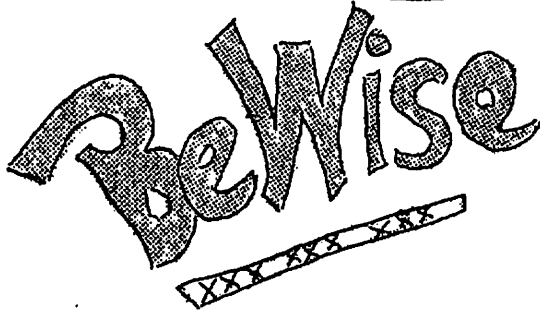
EXCITEMENT ON THE NORTH SHORE

Ivy LeMon

Every day during day camp at the Ipswich River Wildlife Sanctuary boys and girls tagged Monarch butterflies. Campers arrived each day with shoe boxes and mason jars filled with freshly caught specimens. Many camp activities were interrupted with the cry "Monarch" as the entire camp took off over a stone wall to retrieve one. By the time camp ended, hundreds of youngsters were scouting the north shore for monarchs. Cars continued to roll into the sanctuary loaded with parents and youngsters eager to have their butterflies tagged. Telephone calls came in from people fortunate enough to spot a banded insect. Newspaper photographers arrived for pictures and a story. Nor did this activity stop with the fall school days. Thirty-two classes were visited and shown the banding process, as well as being briefed on the research program. Insect cages were hastily put together. Every classroom became a "crawlers". Monarch larvae were feeding on tender milkweed leaves, while a student remained ready to run out for a fresh supply. Tiny lids from jars holding a supply of honey and sugar-water were placed around the rooms. Escaped Monarchs hung from the ceiling and walls while teachers and principals were cheered by the class as they succeeded in catching a

EXCITEMENT ON THE NORTH SHORE (CONT.)

few. Finally a cold spell ended the work for another season, but not the enthusiasm and anticipation. In every class that is visited the same question is asked. "Have you heard if any of our Monarchs made it south"?



OWN AND READ
A COPY OF
THE
MONARCH
BUTTERFLY
BY



F. A. URQUHART

HARD COVER - \$6.50 / PAPER-BACK - \$3.95 UNIVERSITY OF TORONTO PRESS

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