

INSECT
MIGRATION
STUDIES

VOLUME 14, 1977

ANNUAL NEWSLETTER TO RESEARCH ASSOCIATES

OF THE INTERNATIONAL ASSOCIATION OF INSECT MIGRATION RESEARCH

Insect Migration Studies was made possible with the co-operation of the Graphics and Photography Department and the Printing Department of Scarborough College, University of Toronto.

PUBLISHED BY SCARBOROUGH COLLEGE, UNIVERSITY OF TORONTO

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TO OUR ASSOCIATES
FROM
PROFESSOR AND MRS. URQUHART

We revisited the overwintering site of the monarch butterfly in Mexico. Although a careful search of the colony was made we were unable to locate any of the specimens that you might have tagged last summer. The colony had moved from the site last year to the other side of the mountain and occupied a much smaller area, approximately five acres, and resting on about half as many trees. Whether this would indicate a reduction in the overall population or that there are other colonies, remains a moot question. We are of the opinion that there are a number of overwintering colonies of the monarch along the mountains extending from east to west over a distance of at least three hundred miles. We do know of two other colonies not too far from the one illustrated in the National Geographic Magazine, but we do not intend visiting such areas so as to protect the colonies.

IF YOU WISH A COPY OF THE AUGUST 1976 ISSUE OF THE NATIONAL GEOGRAPHIC, BE SURE TO SEND THE FORM AND LABEL AT THE FRONT OF THIS REPORT.

Last year we outlined many of the projects that we are interested in with respect to various phases of the ecology of the monarch butterfly. We also stated that we would be please to propose small research projects to any of our associates who would like to become so involved. As reported elsewhere, we are most pleased that some of our young members have done an excellent job of research of which special mention is made of Richard Ebright.

During this past year we have received hundreds of letters from those who had read the article in the National Geographic Magazine (be sure to get your copy). All of them were most lavish in their praise both of the article and the discovery. We have received letters from various countries of the world adding a great deal of valuable information of which the presence of monarch butterflies in the West Indies (our species) and the Canary Islands are among the most exciting. For some time we have been of the opinion that the monarchs known to breed in various of the Canary Islands migrated to the European continent giving rise to those reported from England. Now that we have made contacts with individuals there we intend to start a tagging program in the hope of solving this most interesting little problem. We have already proposed a migratory route of the monarchs down the Florida peninsula to Yucatan and hence to Central America. A recent letter from a reader of the

National Geographic reports on the presence of migrants in the Leeward Islands. If such is the case, then we will have another migratory route which might account for the occasional presence of our species being found in Trinidad. However, there is a subspecies of the monarch, Danaus plexippus megalippe, that occurs north of the Brazilian forests and in Central America and also in the West Indies. We do not know the relationship between the two subspecies but, in the past, we have been able to cross them and produce mature offspring.

We receive many letters from our young people who have become interested in this research program. As we read them we become aware of the fact that a study of nature is one of the most valuable interests a young person can have and we are so proud of the fact that we have been able to interest our young people in research. In a world that has become so complex, with computers, high speed machines of all kinds and complex social legislations, it is a tremendous relief for both young and elderly to go into the fields and study one of nature's most interesting little animals. In doing so, we are made aware of the wonders and beauties of nature and the need to protect all living things, plants or animals. We have become most ardent conservationists and our young people becoming so involved are the advocates of necessary reforms in the future; and this comes about by a small insect, the monarch butterfly, that has led our youth into the world of living things. In this we do feel so very proud.

To the parents of our youth who have taken such an active interest in this project we are most grateful. What can be more rewarding than for a parent or parents to become interested in the great out-of-doors; in the quiet of the fields and woods rather than the roar of car motors and motor boats; to the solitude of the countryside rather than the noise and crowds of the city; to look up at a bright star-studded sky and breathe the fresh lung-tingling air in contrast to the smog and smoke of towns and cities. We recently received a most wonderful recorded sermon from Mrs. Sutherland of Boise, Idaho. The minister of the church used his interest, along with that of his children, in the monarch butterfly to preach a sermon to the young and elderly members of his congregation on the wonders and beauties of nature by following the monarch butterfly. We wish all our associates could listen to this service; regardless of religious affiliations, nature is for all of us to enjoy and how fortunate we are that we as a group of associates can enjoy this marvelous experience together. This is our reward in addition to the aspect of science. Our sincere thanks to you, Mrs. Sutherland, and to your church minister.

As discussed in our report last year, there are many problems with respect to the migratory routes of the monarch butterfly that still remain unanswered. In North America we now know that the

overwintering site of the eastern population is in the Sierra Madre mountains of Mexico. However, there is a possibility that there are a number of overwintering sites and that the monarchs may arrive at these various sites from different parts of the United States and Canada. Also, there are undoubtedly sites in parts of Central America, the migratory routes of which are, at present, completely unknown. In the Western Population, the breeding areas of which are found in the Rocky Mountain valleys, there is the very large unknown concerning the migratory routes to the overwintering areas in California. It would appear from our returns to date that the monarchs from Colorado journey to the most southern sites in California while those from the northern States of Idaho and Oregon have routes leading to the San Francisco Bay area with monarchs from Utah and Nevada journeying to the Monterey area. All this is pure speculation and it will only be as a result of intensive tagging that we can state for certain what the routes are and where the various overwintering areas are located. Mrs. Sutherland has been doing an outstanding job in this phase of our research.

There still remains the very large problem of the inter-relationship between our North American subspecies and that found in northern South America. We are hoping to add associates to our group from such areas in the future.

We hope to continue transferring butterflies from one part of the continent to another in order to fill in areas where the monarchs are not too abundant and also to obtain more data on whether or not monarchs taken from one area will follow the same direction in migration when placed in a different area. The data we have at present would seem to confirm this suggestion but, in order to assure that such is the case, much more tagging will have to be done.

Then there are many other aspects of the monarch butterfly that are of interest such as the fluctuations in numbers; the presence or absence of parasites; the incidence of viral disease. Experiments are now being carried out in various universities on such interesting topics as the utilization of stored fat during migration; direction of flight in relation to the sun; the difference in the proportion of male to female during migrations; the function of the "gold spots" on the pupae; and numerous other research projects.

So, having found the overwintering site of the eastern population simply means the beginning of our research, not the end.

RECAPTURE RECORDS FOR MONARCH BUTTERFLIES DURING 1976

We are please to report that of the thousands of monarch butterflies which were tagged during 1976 we have received a substantial number of recaptures and reports of recaptured butterflies which were released. These records were received from the following locations: California, Colorado, Florida, Idaho, Minnesota, Missouri, New Jersey, New York, Ohio, Ontario, Oregon, Pennsylvania, Utah, Wisconsin, West Virginia.

Since it is impossible for us to publish all of these records, we have selected those which have contributed new information to our accumulated data, these are listed below:

<u>Tag No.</u>	<u>Tagged by</u>	<u>Tagged at</u>	<u>Recaptured at</u>
SJ 456	Betty Carlson	Lake Oswego, Oregon	Brookings, Oregon
rs 719	E. R. Currie	Toronto, Ontario	Wilson, New York
ps 910	Jim Gilbert (Jim Street)	Chaska, Minnesota	San Antonio, Texas
sbx 337	Molly Monica	Berkeley Heights	Camp LeJeune, North Carolina
t4 453	Faye Sutherland	Boise, Idaho	Molera State Park, south of Monterey, California
rz 190	" "	Boise, Idaho	Carmel, California
H235	" "	Boise, Idaho	Arroyo Grande, California
H 177	" "	Boise, Idaho	Ventura, California
7879	Fred & Norah Urquhart	Appalachicola, Florida	Panama City, Florida
6157	" " " "	Lighthouse Pt., Florida	Grande Isle, Louisiana
7504	" " " "	ShellPoint, Florida	Texas City Dike, s/e Houston, Texas

Please note that all research associates whose tagged butterflies have been recaptured have already been notified before the publication of this list.

LETTERS

We have received hundreds of letters from individuals living in many parts of the world praising the research that led to the discovery of the overwintering site. These letters we appreciate so very much. But, the letters that give us so much pleasure are those that we receive from you, our associates. We wish that we could share these gems of correspondence with you. They are so full of the great pleasure that this project offers and the good it has done for others. Through lectures, radio, and television our associates have been most active in bringing this interesting program to the elderly in nursing homes and to those confined to hospitals, particularly the children. Some of our associates have taken pupae of the monarch to such places and have given much joy to those who have never witnessed such a remarkable transformation from a green, inert pupa to a most beautiful butterfly. Then these butterflies are tagged and released, leaving the audience wondering if they will be recaptured in some distant locality.

We receive hundreds of letters from children whose teachers have taken this research as a science program in the school. They are most delightful, not only in the content but in the manner of expression. The spelling is at times most amusing. We have thought that perhaps we should bring out a small book in which we could make public these most delightful and most amusing letters. What do you think of the idea???

ASSOCIATES NEEDED IN FOREIGN PLACES

The monarch butterfly is not only a remarkable migrant it is also a most remarkable world traveller. It has become established in various of the islands of the South Pacific; Australia, New Zealand, the Canary Islands, and the West Indies. The questions then arise: Do such populations migrate? If so, in what direction? Would those south of the equator now move north when those north of the equator move south? Or, do they migrate at all?

IF YOU KNOW OF ANYONE WHO MIGHT BE INTERESTED IN JOINING OUR RESEARCH GROUP WHO LIVE IN ANY OF THE ABOVE LOCATIONS, WOULD YOU PLEASE LET US KNOW.

SLIDES

Since we have been experiencing difficulties with our rental slide collections we have decided to discontinue this service. There have been a number of broken slides, due in part to damage through the postal service, and also the loss of slide sets. As you will note in the enclosed form, we have decided to allow our associates to purchase individual slides as listed. The cost of postage, mounting in glass, duplication, etc. brings the cost to approximately \$1.00 per slide. We would request that you order at least 5 slides at any one time to cut down on the postage charges, mailing boxes and preparation time.

TUTORIAL (SLIDES & LECTURE NOTES)

It has been suggested that a set of slides with an accompanying description, in the form of a lecture, might be useful to teachers and those who are now involved or may become involved in a lecture program. We would be willing to begin such a preparation of lecture and slides if the demand seemed to warrant such an effort. We would welcome your comments on this or any related suggestions you might have.

We are all concerned not only with the data for research but also to use this program to interest others in our wildlife and the need for adequate protection, particularly for insects that, contrary to what most individuals believe, are most beneficial and without them there would be fewer flowers, fewer fruit-bearing trees, not to mention the insectivorous birds that require such for their diet. The misuse of insecticides is most dangerous not only to the monarch butterfly but to all insects. As a result of our efforts at least five conservation areas have now been set aside to protect the monarch butterfly and in so doing protects all living creatures in the area. Perhaps we could obtain more such insect conservation areas where underbrush and tangle of fallen logs, etc. are left undisturbed. As members of the Insect Migration Association we are interested in insect conservation as well as studying the migration of butterflies.

FELLOWSHIP IN THE ROYAL ENTOMOLOGICAL SOCIETY

We were delighted to learn that we have been appointed Fellows of the Royal Entomological Society of London, England. We feel that this great honour, resulting from our migration

Fellowship in the Royal Entomological Society, con't.

investigations, should be shared with you, our associates, for having made this possible. We thank you for your efforts in this most interesting study, and trust that you have been enjoying the relationship with us.

MONARCH LARVAE ON PARSLEY?

As a result of the article in the National Geographic Magazine, we have received a number of letters stating that the larva of the monarch butterfly also feeds on the leaves of carrots, parsley and dill plants. This is, of course, a confusion with the larva of the black swallowtail, sometimes referred to as the "parsnip swallowtail" (Papilio polyxenes). This butterfly has a very wide distribution across the North American continent, from the Atlantic to the Pacific and from southern Canada to the Gulf Coast and Mexico. It has been confused with the larva of the monarch because the stripes on the body somewhat resemble those of the monarch. However, if perchance you have actually reared a monarch butterfly from any of the above plants we would be most interested.

TRANSFER OF TAGGED MONARCH BUTTERFLIES IN 1976

The proof that monarch butterflies are extremely hardy creatures is borne out in their ability to stay alive under very adverse circumstances. Some years ago we found out by experimentation that it was possible to keep monarch butterflies alive and healthy for long periods even when they were placed in small plastic envelopes where they could move only slightly, just enough to drink water from a moistened wad of cotton placed in the envelope.

This led to our experimenting with sending tagged specimens by air mail to various parts of the continent where monarch butterflies were of rare occurrence and in this manner we were able to establish records of migration which would otherwise not have been possible to achieve.

This year we have been fortunate in having the cooperation of the following associates in our "transfer experiments":

William Coleman, Ventura, California sent tagged specimens to Faye Sutherland, Boise, Idaho.

Transfer of Tagged Monarch Butterflies in 1976, con't.

Franz Pogge, Morgantown, West Virginia sent tagged specimens to Carlton McQueen, Mercedes, Texas.

Elaine Swanson, Omro, Wisconsin sent tagged specimens to Faye Sutherland of Boise, Idaho.

Note: If any of you wish to become involved in the transfer experiments from your part of the country to another, please let us know and we shall be pleased to explain what is required.

FINANCIAL SUPPORT

Although we do receive grants in aid of our research from various granting agencies, such as the National Geographic Society and the National Research Council of Canada, such are sporadic and usually given for one year only. Thus, in order to continue our research as a group effort, of which you are a part, it is necessary to have a continuing source of support. This is done by your contributions. As previously stated in other reports, all monies received are made payable to the University of Toronto in the form of donations. In our application forms we suggest what donations you might make, but such are suggestions only. You may give more or less as you see fit.

We give the occasional television or radio interviews. When payment is received for such services we ask that the amount be made payable to the University in aid of the research - we do not accept any such payment to us personally. All payments for the use of photographs and other illustrative material are treated in the same manner. If we are asked to give a lecture, to groups, or on radio or television, we always ask for a donation to our research fund.

It is in this manner that we are able to purchase the necessary material for tagging, copies of research articles, annual report, slides, etc.

We are most grateful to those who have contributed donations in excess of our suggested amount: these we consider as "special donations". We recently received a donation in memory of one of our associates who passed away. This is a most kindly contribution and will, of course, be used to further the work that Mrs. Barbara Throm found so very interesting and who contributed so much to the advancement of our work.

MONARCH SLIDES

IN

COLOUR

For lectures and teaching purposes only and available only to our associates.

As mentioned elsewhere, we have had to discontinue rental of the slide sets. However, we now have a number of very good slides in colour available to you.

We suggest a donation of \$1.00 per slide to cover the costs of duplicating, glass mountings and postage.

We would appreciate requests for not less than five slides in order to reduce postage and handling charges.

See list of slides available in this issue. Mark those you would like to have and send the list together with this sheet giving your name, address and amount of donation.

NAME

ADDRESS

Please make the cheques or money order payable to:
Invertebrate Migration Research Fund, University of Toronto.

Date Required

Send your request to: Professor Fred A. Urquhart,
Scarborough College,
University of Toronto,
West Hill, Ontario, Canada M1C 1A4.

COLOUR SLIDES AVAILABLE

(see order form in this issue)

For lectures and teaching only: Not for publication or reproduction.

Slide #

1. Male and female monarchs showing sex difference.
2. Section through male alar gland showing cellular structure.
3. Close-up of monarch head showing proboscis (sucking tube) and large compound eyes.
4. Monarch egg: magnified.
5. Female monarch depositing an egg on a milkweed leaf.
6. Milkweed plant in flower.
7. Minute larva hatching from the egg.
8. Newly hatched larva eating the egg shell.
9. Fully grown larva.
10. Larva suspended in J-shape ready to enter pupa stage.
11. Cremaster of pupa being attached to the button of silk.
There are three slides showing this process (11, 11a & 11b).
12. Exarate pupa: that stage immediately after the larva skin has been removed and the parts of the pupa are still free.
13. Fully formed pupa.
14. Gold spot of pupa as seen through the microscope showing the prismatic colour.
15. Adult monarch as seen through the transparent cuticle of the pupa.
16. Newly emerged adult with soft, short wings.
17. Adult monarch clinging to pupal skin prior to flight.
18. Overnight roosting cluster of migrant monarchs.
19. Overwintering clusters as seen in California.
20. Overwintering colony in Mexico; there are five rather dramatic photographs available (20, 20a, 20b, 20c, & 20d).
21. Migration map showing release-recapture lines.
22. Migrating clusters along the Gulf of Mexico on the salt bushes in Florida.
23. Cow eating overwintering monarchs in Mexico.

In addition to the above, there are also a number of most attractive slides showing monarch butterflies on various flowering plants; tagged butterflies at Niagara Falls; resting on cactus plants; in a field of cotton, on the coast with shrimp boats in the background, etc.

Send this marked list along with the address and request sheet.

ON BUTTERFLY COLLECTIONS

We are so pleased to receive letters from our teaching fraternity to the effect that the classes are now studying the life cycle and importance of insects in the realm of living things rather than making a collection. Perhaps such collections do not reduce the population of a species to any extent but one wonders at the value of such a procedure to the student. Those classes that have turned their attention to studying the life cycles and inter-dependence of insects to all living organisms are not only learning much more than they would from making a collection but also are becoming aware of the importance of insects to human welfare.

We are grateful to Miss Heidi Hughes for sending a copy of ECO-NEWS to us in which appeared the following article:

"If you go to the country this summer, you will probably see many, many butterflies. Observe as many of them as you can, but be sure not to catch and kill them. Since more and more buildings, roads and parking lots are being built in our country, there are less places where butterflies can thrive. Some of them are in danger of becoming extinct. So we do not want to kill any of them:"

It has been suggested that perhaps a small pamphlet might be produced by us informing teachers, and leaders of nature groups on methods of rearing insects for study purposes and a few simple ecological experiments that may be carried out. Let us know if such would be of interest to you. If the response is sufficient we shall certainly give it our immediate attention.

WE RETIRE FROM THE UNIVERSITY THIS YEAR

After forty years of teaching service to the University of Toronto, less four years of war service with the Royal Canadian Airforce, I, Fred Urquhart, have reached the age of retirement. Norah has submitted her resignation from the University to take effect as of July 1, 1977. The university has honoured us by giving me the title of Professor Emeritus and Norah as Honorary Research Associate. Thus, we shall remain as full time members of the University of Toronto staff so that we may continue with our research.

Last year the University granted us leave of absence for one half term. This allowed us to establish two offices in our home where we have been carrying on most of our work during the past year. In addition, the University will also supply us with an office in Scarborough College.

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We retire-----

Therefore, the only change in our academic life will be freedom from lectures, attending meetings and members of committees, thus allowing us much more time to devote to our studies of butterflies with special consideration to the monarch butterfly. We hope that with the extra time available we will be able to answer your letters more expeditiously and with more content. We also hope to prepare more teaching and lecture aids for our associates, as well as writing research papers copies of which will be available to you.

THE OVERWINTERING SITES IN CALIFORNIA AND THE GULF COAST MIGRATIONS

It has been known for many years that monarch butterflies overwinter at various localities along the Pacific coast of California. But, where they came from was not known. We did suspect that perhaps they came from breeding colonies in the mountain valleys and, as the result of some tagging and the transfer of specimens we were fairly certain that such was the case. However, data were still insufficient to account for the location of the various colonies extending from San Francisco to Los Angeles. This year Mrs. Faye Sutherland solved the problem. We now know that monarch butterflies from Idaho can journey to Monterey, Carmel, Arroyo Grande and Ventura all in California. This exceptionally fine data will now be added to our science paper which was ready for press.

For the past six years we have been carrying out intensive tagging programs along the north coast of Florida in an attempt to obtain data as to the direction of migration. It was suspected that they followed the coastline finally entering Mexico and ending up in the overwintering sites of the Sierra Madre mountains. However, there was a possibility that they might fly across the Gulf and enter the Yucatan area, as we have shown to be the case with the migrants moving down the Florida Peninsula. As a result of an expedition last summer, we had three of our tagged specimens recaptured indicating that they travel along the coast, not across the Gulf. (See Table of Recaptured Monarch Butterflies in this issue.) These recaptures will be included in a short paper on the migration routes along the Gulf Coast after further data has been obtained with alar tagging in the area of Houston, Texas and Grand Isle, Louisiana.

It takes many years to obtain definitive data, but with the help of our associates we do eventually obtain real breakthroughs.

SCIENTIFIC PAPERS AVAILABLE TO ASSOCIATES

- () 1. A discussion of the use of the word "migration" as it relates to a proposed classification of animal movements.
- () 2. Laboratory techniques for maintaining cultures of the monarch butterfly.
- () 3. Fluctuations in the numbers of the monarch butterfly in North America.
- () 4. Mechanism of cremaster withdrawal and attachment in pendant rhopaloceros pupae of Lepidoptera.
- () 5. Microcauterization to maxillectomize lepidopterous larvae by fulguration.
- () 6. The effect of cauterizing the PPM of the pupa of the monarch butterfly.
- () 7. The effect of cauterizing the MNPPM of the pupa of the monarch butterfly.
- () 8. The effect of microcauterizing the ALPPM of the pupa of the monarch butterfly.
- () 9. Epidermal cells of the PPM of the pupa of the monarch butterfly.
- () 10. Functions of the prismatic pigmented maculae of the pupa of Danaus p. plexippus.
- () 11. Migrations along the Gulf Coast of Florida.
- () 12. A study of the peninsular Florida populations of the monarch butterfly.
- () 13. Alar pocket of the male monarch butterfly.
- () 14. Ecological studies of the monarch butterfly.

Name

Address

Date Requested

PUBLICITY

The amount of publicity which has resulted from the finding of the overwintering colony of the monarch butterfly in Mexico has been truly amazing. It is very gratifying to learn how many people have shared our excitement and sense of satisfaction from this achievement after such a long search. In addition to that it is a great pleasure to learn that many of our associates have been the subjects of newspaper articles describing and picturing their activities as research associates - many of these are teachers who have involved their students in our research. We are grateful to you associates who have sent in press clippings from your area. We have listed these so that you may all realize the high degree of interest that our research has evoked in many parts of the continent.

Mrs. Gladys Black, Pleasantville, Iowa - "Des Moines Sunday Register", October 10, 1976 and "The Knoxville Express", October 7, 1976.

Gray Carter, Winston-Salem, N.C. - "The Sentinel", November, 11, 1976.

William Coleman, Ventura, California, "Star Free Press", November 19, 1976.

Gregory Glovas, Bethlehem, Pennsylvania, "Call-Chronicle", April 18, 1976 and "The Bethlehem Globe-Times", October 8, 1976.

Nancy Hoeflich, Bedford Massachusetts, "Arlington Advocate", October 1976.

Alice Hopf, New York, N. Y., "New York Post", September, 1976.

Mrs. Harvey Houck, Decorah, Iowa, "Weekly Reader", October 20, 1976.

Mrs. Shirley Hupp, Hinton, Virginia, - "Daily News Record", October 10, 1976.

Heidi Hughes, Layton, N. J. - "Eco-News", April 1976.

Mrs. LaBarre, Windsor, Connecticut, "Courant", October 25, 1976.

Van Luxenberg, Tonopah, Arizona, "Nevada State Journal", October 2, 1975.

Joyce Mallery, Vestal, N. Y. - "Binghamton Press", October 1, 1976.

Gwen Palmer, Pleasant Hill, California, "Contra Costa Times", October 13, 1976, and "Oakland Tribune", October 8, 1976.

Brenda Reynolds, Erin, Tennessee, "The Tennessean", August 1976.

Michael and Mark Spafford, Saunemin, Illinois, "Pontiac Leader", September 9, 1976.

Faye Sutherland, Boise, Idaho, "The Idaho Statesman", July 1976 and August 26, 1976.

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Publicity-----

Nancy Votava, Westchester, Illinois, "Sunday Sun Times", April 25, 1976.

Maryanne West, Gibson's Landing, British Columbia, "The Dallas Morning News", October 24, 1976.

Audrey Wilson, Cobourg, Ontario, "Peterborough Examiner", August 4, 1976.

Other items that have been brought to our attention are as follows:

articles in "The Atlanta Journal and Constitution", "Chicago News", "Los Angeles Times", "Miami Herald", "The New York Times", "Pekin Times", "The Plain Dealer", "The San Dollar Watch", "San Francisco Sunday Examiner and Chronicle", "Toronto Sun", "Windsor Star".

HONORS TO OUR ASSOCIATES

It was with great pleasure that we received an announcement in the Honors Group in the 30th Annual Science Talent Search for the Westinghouse Science Scholarships and Awards informing us that Richard Ebright, one of our most talented associates, was among those listed.

The achieving of Honors in the Science Talent Search is an evidence of ability and interest in science and engineering which can be taken into consideration by Colleges and Universities in admissions and granting of scholarships. For this reason this Honors List is distributed to all universities and colleges in the United States utilizing a list furnished by the American Council of Education.

Richard has taken the research on the "gold spots" of the pupae as a research project; he has examined these areas of the pupa not only for the monarch but for other species of butterflies. He has also introduced the use of hormones in his research.

We look forward with great interest to following the career of one who will someday be a very outstanding research entomologist.

We all join in congratulating you, Richard.

We are happy to annouce that Norwood (Woody) Keeney III of Hudson, New Hampshire has been nominated by the Hudson Conservation Commission for an E.P.A. Region I Environmental Merit Award for his "outstanding work in the community".

Congratulations, Woody.

RECAPTURE RECORDS FOR BUTTERFLIES OTHER THAN THE
MONARCH BUTTERFLY - 1976

This year, although many species of butterflies were tagged by a goodly number of our associates, we received very few recapture records. Eric Brunneman of San Antonio, Texas had a Swallowtail recaptured after it had flown a quarter of a mile southeast from the point of tagging. Tom Williams of North Haven, Connecticut had one Tiger Swallowtail, and two Spicebush Swallowtails recaptured; details of these flights were not available at the time this issue was published. In any case, we would like to emphasize that we are just as interested in records of short flights for these many species as we are in records of long flights, since, apart from the work done by our associates, there are no definitive data for the movement of these butterflies.

Please remember to tag any and all species that you can find - all new data are welcome additions to our present meagre knowledge of butterflies.

Special Note: Just as we were going to press, the following information arrived from Tom Williams to the effect that the Tiger Swallowtail was recaptured in exactly the same location where it had been tagged, one month later; and that one Spicebush Swallowtail had been recaptured 1/2 mile southeast of the tagging point; the other Spicetail Swallowtail was recaptured 1 mile east of the tagging location.

SPECIAL ACTIVITIES

Rowena Davidson, Waterloo, Iowa reported that her son-in-law who is the weather man for the local TV station asked for reports of sightings of monarch butterflies and received only 3 reports indicating a scarcity of monarchs in the Waterloo area in June.

Mrs. Paul Elliott, Muskegon, Michigan reported giving illustrated talks on "Butterflies" and on "Monarch Research" to 2 church groups, 1 garden club, 1 nature museum group and 4 elementary schools.

Joyce H. Mallery, Vestal, New York and the Broome County Naturalists Club were invited to present a display on the monarch butterfly theme at the annual Roberson Festival at Binghamton's Museum. For the past 5 or 6 years the group have mounted a very popular display showing the actual stages of the life cycle of the monarch butterfly and featuring tagging monarch butterflies at hourly intervals for the interest of the public.

Mrs. Joseph Miale, Lawrenceville, New Jersey reported giving a talk and showing slides about monarch research at Bowmans Hill Wildflower Preserve, Washington Crossing, Pennsylvania. Her 4H club put up a display of pictures and posters and gave information to the public.

Mrs. Faye Sutherland, Boise, Idaho and William Coleman, Ventura California were the subjects of two TV programs in Boise, Idaho because of the fact that Mr. Coleman sent 400 monarch butterflies to Mrs. Sutherland by air mail to Boise where they were released at the local school. The records of recaptures of 4 of these butterflies appear in this issue.

BUTTERFLY "HOSPITAL"

Joseph H. Moss, Roanoke, Louisiana has a "butterfly hospital" where he repairs broken wings of live monarchs with our tags or with "Magic" tape using pieces of wings from dead monarchs saved for this purpose. If you would like to learn more of his technique, please write to us and we shall send you a copy of his directions.

"THE MONARCH BUTTERFLY" STILL AVAILABLE

We have secured 15 copies of "The Monarch Butterfly", F.A. Urquhart, University of Toronto Press, 1960. These are the last copies available as the book is now out of print.

If you wish to have a copy, please send \$10.00 (to reimburse us for the cost of the book), and \$1.90 postage. Total \$11.90

Please make your cheque or money order payable to:

SEND TO Insect Migration Research, University of Toronto
Prof. Fred Urquhart,
Scarborough College,
University of Toronto,
West Hill, Ontario, Canada M1C 1A4.

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SPECIAL GIRL SCOUT MONARCH BUTTERFLY BADGE

The Silver Sage Girl Scout Council has developed a special badge embodying a monarch butterfly which would be awarded to those Girl Scouts who "learn the life cycle of the monarch butterfly and participate in research via the tagging program".

A sample of this most attractive badge was sent to us by Mrs. Faye Sutherland, Boise, Idaho, who had interested the girls of Troop 450 in our research.

The badge was submitted to the National Girl Scout Council in the hope that the badge would be adopted for all girl scout troops who wish to try for this award.

TRANSFERRED BUTTERFLY GIVEN AIR TRIP

One of the butterflies that had been sent from Ventura, California to Boise, Idaho to be released by Mrs. Sutherland (see item in this issue) escaped detection until it was too late and too cold to let it loose. So, Mrs. Sutherland sent it south with the cooperation of the crew of the United Airlines, Flight 62. We will be looking forward to the fate of this specimen. Mrs. Sutherland is indeed a most enthusiastic associate.

IN MEMORIAM

We regret to report the passing of Barbara Throm, wife of Dr. Frank Throm, 7723 Hardy, Overland Park, Kansas, on March 29th, 1976.

Mrs. Throm joined our group in 1960 and was a faithful and enthusiastic contributor to our research efforts for many years. We shall miss her cheerful cooperation.

SPECIAL DONORS

As in all research work, the availability of funds is a basic ingredient. Naturally, if we have access to ample financial support, we all benefit as this allows us to embark not only on necessary, but on imaginative projects. Listed below are those associates who have generously donated more than the amount suggested by us to maintain a minimum level of activity. We are grateful for their support.

Gladys Black, Pleasantville, Iowa.
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RESEARCH ASSOCIATES 1975-1976

Those listed below are research associates who have been actively involved in our research for the year 1975-76.

Please note: If your name does not appear on this list, it is because you joined our group after this issue was submitted for publication.

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