international migration studies

VOLUME 15, 1978

HOEFLICH

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TO OUR ASSOCIATES

FROM

NORAH AND FRED URQUHART

We did not return to the overwintering Site in Mexico this past winter owing to the fact that the area reported in National Geographic has been widely publicized so that many visitors are now entering the area - this resulting from the work being done by a biologist and which was reported to you in answer to an article that appeared in Natural History. One of the difficulties we have encountered in our studies of the migrations of the monarch butterfly centers around the overwintering sites for the following reason: In the overwintering Site the migrants remain in a restricted area for a period of many weeks. Thus, when we tag the specimens they may be collected by visitors who, unaware of the nature of our research program, send the tagged specimens to us or remove the tags and send them. Thus the potential data are destroyed. A biologist, working in one of the overwintering areas in California, sent dozens of tags to us which he had removed from the specimens. Hence, to return to the same area in the Mexican Site would result in the destruction of many of our tagged specimens.

Instead of returning to the same area to carry on further tagging we decided to investigate the possibility of other areas within the Mexican Site. We are most pleased to report that we have located five areas representing thirteen loci. Incidentally, the word "Site" refers to the entire Neo-volcanic Plateau of Mexico where the monarchs overwinter; the word "Area" refers to a particular volcanic mountain; the word "Locus(i) refers to locations of clustering within an area. As a result of these discoveries we may be in a position to carry out our migration research without interference by interested visitors or biologists. A science paper reporting on these discoveries is now in press and will be available to you at a later date.

It has been a most enjoyable year for us free of University commitments and being able to devote more time to the research on the monarch butterfly and other species. As a result, we have been able to prepare and submit for publication four papers, one of which deals with recaptures of specimens tagged in Mexico with amazing results.

We trust that some of you were able to see the television program "To Tell the Truth" in which we took part. It was a most enjoyable experience since the staff were so very friendly and made our stay in New York a most memorable one. Unfortunately, one member of the panel, Mr. Rayburn, put his finger upon the right person thus preventing a share in the $500 for our research.

One of our tagged specimens from Mexico was recaptured in Daytona Beach, Florida. We had the real pleasure of meeting Mrs. Storey who captured the specimen and sent it to us. We carried out a survey of the Atlantic area adjacent to Daytona Beach, in order to locate other migrants. We hope to set up a group of associates in this area to obtain more data not only on the Spring migration but also on the Fall movement going through the Florida Peninsula.

As the result of observations on the migrations of the monarch through the Cayman Islands, we spent ten days on Grand Cayman making enquiries and surveying the entire island. We now have a group of associates on Grand Cayman who will be on the alert for further field observations and perhaps the recapture of tagged specimens. This part of the research program has to do with the peculiar flight pattern in the islands of the Caribbean Sea and the relationship with the mainland of Central and South America. From data now at hand it promises some rather exciting revelations.

For the past seven years we have been carrying out a tagging program along the coast of the Gulf of Mexico in Florida where there is a maximum migration movement which, at one time, was considered as a separate migrating population. After tagging over 20,000 specimens we were finally able to have six of them recaptured which indicated their migratory movement along the coast and the relationship with the other migratory patterns leading to the Mexican Site. This past fall we spent two weeks tagging thousands of specimens from Galveston to Sea Drift, Texas in the hope that we would be able to follow the migration directly to the Mexican Site. Unfortunately, as has happened to so many of our associates, we did not receive a single recapture. However, in this kind of research one simply continues year after year in the hope that some of the specimens will eventually give us the information we require.

We received a long-distance phone call from Mexico inviting us to go to Mexico City to take part in a T.V. presentation dealing with the monarch butterfly. However, we were unable to take the time for such a visit. We were indeed surprised when a local phone call informed us that a T.V. crew from Mexico had arrived in Toronto and wished to discuss our research and record it on T.V. tape. It was a most delightful experience. Not only did we have the real pleasure of having four Mexicans of the T.V. crew but a representative also attended from the Office of the Mexican Ambassador to Canada. We took the opportunity to inform the Ambassador's representative, as well as the Head of the T.V. film crew, of the necessity of protecting the overwintering area in Mexico. We brought to their attention the article that had appeared in Natural History in order that they would be aware of the dangers involved.

As discussed elsewhere in this report we are reducing the number of our Associates. We have had to refuse hundreds of requests to join our association in order that we can get on with the most important job of writing science papers. The end product of the research in which all members of the Insect Migration Association (IMA)

are involved is the presentation of our findings in a reputable scientific journal. This is done so that other scientists and writers will have accurate data on the migrations of the monarch butterfly. Eventually such accurate information appears in popular books, magazine articles, and school text books. Concerning the latter, we were most interested in the fact that our work is included in books and magazines in Russia and Czechoslovakia. Of course, you are well aware that our research is now known throughout the world and we receive numerous letters from many foreign countries in praise of our studies and requesting copies of our published research. We will, of course, continue to add to our associate list individuals who are living in areas where we have little or no information. Incidentally, we do not have much information from Texas, a state where thousands of monarchs pass through on the way to Mexico. We are hoping to add to our association individuals living in Texas near the Mexican border.

We have often been asked how we got interested in the migrations of the monarch butterfly and was it an integral part of our University research. We were pleased to have a request from the News of the Lepidopterists Society to submit an article dealing with this rather personal side of the story. We have requested sufficient copies of this autographical essay for distribution to our members.

Our association, as we have explained elsewhere in this report, is one that is involved in a common interest - the migration and ecology of the monarch butterfly, with, when possible, an interest in the migration of other species of Lepidoptera. Thus, it is what one might refer to as a "Family of Naturalists" rather than a collection of Scientists. This program started as a hobby many years ago and we have attempted to keep it in this category. If, as a result of our combined efforts, some applications may be made in other fields of science we would be most pleased. However, our ambition is simply knowledge for knowledge sake; an understanding of some of the remarkable phenomena of nature; to answer the questions "how" and "why" of animal behaviour.

We trust that you have enjoyed working on this program and that you will continue your efforts of tagging and field observations as well as sending us your most interesting and informative letters.

MEMBERSHIP RENEWAL FORM: 1978-1979

Please fill out the following form and send it to:

Professor F. A. Urquhart,
Scarborough College,
University of Toronto,
West Hill, Ontario, Canada M1C 1A4.

Based upon the present cost of materials, postage, reprints of science articles, annual Newsletter, etc. we would suggest a donation to our research fund of $12.00 for an individual and $18.00 for a group (schools, clubs, scout troops, etc.).

Name (Mr. Mrs. Ms. Miss) _____

Mailing Address _____

_____

_____ Zip Code _____

If you are in a rural district, please indicate the nearest town or city _____

Occupation _____

Age if under 18 _____

Please make cheque or money order payable to: Insect Migration Studies

Number of tags required _____

Serial numbers of tags on hand for use in 1978 _____

Date renewal form submitted _____

PLEASE ORDER YOUR TAG SUPPLY BEFORE JULY 1, 1978

Since we will be absent from the College during the months of July and August, would you please estimate the number of tags you expect to use and send the request before July 1st. After this date we will be unable to assure further tags until September 1st at which time the peak of the migration will start.

If you should run out of tags and you have a number of monarchs on hand send a self-addressed envelope to us and we will make some arrangements to have the tags sent to you. Do not use U.S. stamps on the envelope since they are not valid in Canada.

Recapture Records for Monarch Butterflies for 1977-78

Tag no.	Tagged by	Tagged at	Date	Recaptured at	Date
08105	Frances Buchanan	New Paltz, New York	Aug. 16/77	Newcastle, Delaware	Aug. 25/77
62332	Jerome Barry	Bedford, New Hampshire	Sept. 27/77	Triverton, Rhode Island	Oct. 2/77
sj 972	Bill Coleman	Ventura, California	Jan. 25/77	Tucson, Arizona	Mar. 17/77
a3 956	Bernard Fashingbauer	Minneapolis, Minnesota	Aug. 8/77	Ottumwa, Iowa	Sept. 12/77
sc 240	Virgil Inman	Trego, Wisconsin	July 24/77	Des Moines, Iowa	July 29/77
a 483	Woody Keeney	Hudson, New Hampshire	July 31/77	Chelmsford, Massachusetts	Aug. 9/77
65840	Molly Monica	Cape May, New Jersey	Oct. 6/77	Walterboro, S. Carolina	Oct. 29/77
65805	" "	" " " "	Sept. 30/77	Emporia, Virginia	Oct. 11/77
67117	Anne Neale	Basking Ridge, New Jersey	Sept. 30/77	Destin, Florida	Oct. 16/77
25992	Steve Powers	Oley, Pennsylvania	Sept. 10/77	Michoacan, Mexico	Feb. 6/77
17530	Vicki Preston	Pylesville, Maryland	Sept. 24/77	Pompano Beach, Florida	Oct. 11/77
70742	Dale Reichert	Hanover, Pennsylvania	Oct. 2/77	Pasadena, Maryland	Oct. 6/77
25212	Ellen Roush	Lynchburg, Ohio	Sept. 30/77	Malinaltenango, Mexico	Dec. 28/77
75649	Sister J. Marian	Lebanon, Kentucky	Oct. 29/77	Pinewood, Tennessee	Nov. 6/77
23793	G. and M. Smith	Lyndonville, New York	Aug. 9/77	Port St. Joe, Florida	Sept. 8/77
22165	Dave Weaver	Newark, Delaware	Sept. /77	Panama City, Florida	Oct. 19/77

The above data represent the more interesting records of flights for this past year and have been selected to demonstrate the great number of areas involved in this research. We regret that lack of space does not permit us to publish all re- capture records. At the time of publishing this Newsletter all associates whose tagged butterflies were recaptured and returned to us have been notified and all captors who sent us tagged butterflies have been informed of the pertinent data.

Special Note - The recaptures listed below cannot be completed as the data was not available at the time of publishing this list. We have asked for the reports concerned but so far have not received them. If one of these is your record, please let us have the information.

61014	Dorothy Carlson	?	?	Northern California 121/13/30 West 38/15/15 North	Aug. 8/77
65561	J. G. Powers	?	?	Myrtle Beach, South Carolina	Oct. 18/77

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. Fully grown larva.
9. Larva suspended in J-shape ready to enter pupa stage.
10. Cremaster of pupa being attached to the button of silk. There are two slides showing this process (10, 10a)
11. Exarate pupa: that stage immediately after the larva skin has been removed and the parts of the pupa are still free.
12. Fully formed pupa.
13. Gold spot of pupa as seen through the microscope showing the prismatic colour.
14. Adult monarch as seen through the transparent cuticle of the pupa.
15. Newly emerged adult with soft, short wings.
16. Adult monarch clinging to pupal skin prior to flight.
17. Overnight roosting cluster of migrant monarchs.
18. Overwintering clusters as seen in California.
19. Overwintering colony in Mexico.
20. Migration map showing release-recapture lines.
21. Cow eating overwintering monarchs in Mexico.

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

MONARCH SLIDES

IN COLOUR

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

We suggest a donation of $1.25 per slide to cover the costs of duplicating, glass mounting 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 your donation 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.

Recapture Record for Other Species of Butterflies

Tag #	Species	Tagged by	Tagged at	Date	Recaptured at	Date
B-834	Spicebush Swallowtail	Mrs. F. Hupp	Hinton, Virginia	Aug. 21/77	Hinton, Virginia	Aug. 25/77
13538	Eastern Tiger Swallowtail	Anne Neale	Berkeley Heights, New Jersey	Aug. 4/77	Berkeley Heights, New Jersey	Aug. 7/77
05498	Spicebush Swallowtail	Paul Stephen Noles	Winchester, Tennessee	July 19/77	Winchester, Tennessee	July 24/77
01132	Tiger Swallowtail	Leslie Smith	Citrus Heights, California	Aug. 10/77	Citrus Heights, California	Aug. 19/77
	Cabbage White	Leslie Smith	Citrus Heights, California	Apr. 26/77	Citrus Heights, California	July 5/77
64300	Spangled Fritillary	Paula Waggy	?	?	Franklin, West Virginia	Sept. 17/77
1071	Mourning Cloak	John Walas	Thunder Bay, Ontario	Aug. 16/77	Thunder Bay, Ontario	Aug. 18/77

All of the above records represent short flights and except in the case of the Cabbage White the butterflies were recaptured shortly after they were tagged. This may not seem like very startling data but virtually nothing is known about species other than the monarch as to whether they migrate or not and it is as a result of data like this that we will be able to provide documented evidence as to the movements of these species.

Note - The question marks represent data that has been asked for but which has not reached us as yet.

SCIENTIFIC PAPERS AVAILABLE TO ASSOCIATES

1. Microcauterization to maxillectomize Lepidopterous larvae.
2. Fluctuations in the numbers of the monarch butterfly.
3. A study of the peninsular Florida population of the monarch butterfly.
4. Mechanism of cremaster withdrawal and attachment.
5. A continuous breeding population of the monarch butterfly.
6. Effects of cauterizing the PPM.
7. Alar pocket of the male monarch butterfly.
8. Laboratory techniques for rearing monarch butterflies.
9. Ecological studies of the monarch butterfly.
10. The overwintering site of the eastern population of the monarch butterfly.
11. Overwintering areas and migratory routes of the monarch butterfly with special reference to the western population.

Name _____

Address _____

_____

_____

Date requested _____

Note: The above are available only as long as the supply of reprints last.

NATIONAL GEOGRAPHIC MAGAZINE

AUGUST 1976 ISSUE

DISCOVERED: THE MONARCH WINTER HAVEN

WE PURCHASED A NUMBER OF COPIES OF THE AUGUST 1976 ISSUE OF THE NATIONAL GEOGRAPHIC MAGAZINE CONTAINING THE ABOVE ARTICLE FOR OUR ASSOCIATES. IF YOU WOULD LIKE TO HAVE A COPY, IT IS FREE FOR THE ASKING.

If you wish, we would appreciate a donation to cover postal charges (.60¢) Of course, if you wish to donate more than the postal charges, this would be appreciated.

We can allow only one copy to each associate and they will be sent out on the first come, first served basis.

SPECIAL ACTIVITIES OF SOME OF OUR RESEARCH ASSOCIATES

Caroline Davies has been experimenting with the hypothesis that there might be a relationship between the sex of the butterfly and the colour of the larvae. She observes the larval coloration and then connects this with the adult. We do know that the females are darker in colour than the males. Perhaps Caroline might cross dark colour with dark colour to see if the progeny are darker.

Ron Lachelt held a special Monarch Butterfly Banding Program at Wood Lake Nature Interpretive Center in Richfield, Minnesota which attracted over 200 people.

Harold Mahan and Claire Rossbach held a "blitz" for tagging monarchs with the aid of the "1974 Naturalists" near Cleveland, Ohio. Young people from the Rockport United Methodist Church in Rocky River, Ohio, also participated. Dr. Mahan also appeared on a live T.V. show entitled "The Monarch Nursery".

Joyce Mallery presented a lecture to the deaf students with the aid of an interpreter. She has also given talks and showed slides to the audience of the Roberson Festival as well as many other groups.

Mr. and Mrs. Joseph Miale took their display of "The Monarch Butterfly Story" to the Audubon Camp in Greenwich, Connecticut.

Joseph Muench is a member of the "Woodland Dunes", an organization dedicated to preserving a wilderness area between Manitowoc and Two Rivers, Wisconsin. To date the group has purchased 518 acres.

Lois Weber arranged for her students to take monarch larvae home in milk cartons in order that they may observe the metamorphosis. Milkweek cuttings and seeds, as well as caterpillars, were sold at the school carnival in Clearwater, Florida. Cartons with a plastic window for observing the emergence of the monarch from the pupae were also available at the carnival.

AWARDS AND HONOURS

Judee Cox won first place at the Oklahoma State Fair for her advanced educational entomology exhibit "Life Cycle of the Black Swallowtail Butterfly".

Diane Secker won first place with her monarch project at the Science Fair held at Central School, New Ipswich, New Hampshire.

Sam Trophia's display of a growth chamber won a blue ribbon at the Booneville Fair, New York as well as a blue ribbon at the New York State Fair.

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AWARDS AND HONOURS con't.

Richard Ebright's brilliant experiments on the gold spots of the pupa of the monarch butterfly was selected for the following awards:

Reading Park Science and Engineering Fair
1. First place, Zoology Division
2. Fair Ground Champion - eligible to compete ISEF.

International Science Engineering Fair
1. First place, Zoology Division
2. First place in the USDA Award
3. First place in the Eastman Kodak Award
4. First place in the U.S. Army Award
5. First place in the Entomological Society of America Award.

We congratulate our young associates and will look forward to watching their individual careers in the future. Many of our young people in Canada and the United States have started their biological careers with us and it gives us very great pleasure to have been so responsible. This is one of the most enjoyable aspects of this research project.

IN MEMORIAM

We regret to report the death of the following:

Mrs. Jessie Glynn's husband who actively assisted Jessie for many years in her monarch butterfly activities. Jessie has been associated with the monarch butterfly program ever since its inception and shares the honour, along with a few other associates, to be listed in our first important publication, The Monarch Butterfly. We sincerely trust that Jessie will be able to continue her splendid work with us.

Mrs. Elizabeth Lytle. Elizabeth has been an associate since 1973. She and her husband cooperated in this research and we owe both of them a great deal for the data they have supplied. Our deepest sympathies to Mr. Lytle. We hope he will continue to take an interest in our studies.

The wife of Mr. James M. Malick. Mr. Malick enrolled in our research program in 1964 and has contributed many valuable observations. We sincerely trust that Mr. Malick will be able to continue as an associate.

ESSAYS SUBMITTED BY OUR ASSOCIATES

We receive over two thousand letters per year most being from the members of our Insect Migration Association (IMA). We try to answer all of them but there are a few that must of necessity be neglected; these apply only to those not members of the IMA. Correspondence with our associates is a first priority.

In addition to short letters, we also receive many rather lengthy accounts of the activities of some of our associates which, because of the length and nature of the account we have termed essays. We wish we could share all of these fine essays with you but space unfortunately forbids. We hope to include at least one such essay in each report.

Mrs. Beatrice Ridgeway of North Eastham, Mass., sent a most delightful essay of which the following is but a digest - we wish we could present it in toto.

MONARCH WATCHING

(Adapted from Mrs. Ridgeway's essay)

I searched milkweed plants in many locations hoping to find eggs or larvae I might cage rear. We lived in North Tarrytown, N.Y. and the first larvae were discovered on my swamp milkweed plants on the bank overlooking the Hudson River. Constructed with floor and top of wood, my cage was of wire mesh with an opening cut for access which was taped when closed. Separate containers of milkweed leaves were placed in the cage for each larva collected. As the stalks became defoliated, they were cut and new sprouts soon appeared. The cage was kept on our screened porch, suspended from a rafter. The wood floor was protected by aluminum foil and the paper towels covering the foil in the cage were changed daily.

Pm, September 2, 1972, we placed the cage in our station wagon and left for Eastham, Cape Cod, on vacation. The cage was placed in a screened porch of the cottage overlooking Minister's Pond.

During 1973, I raised 20 monarchs in my cage; one of them later became famous since it carried tag #h343 which was captured by Mauricio MacGregor in Mexico City. This flight was one of the longest on record covering, in a straight line, over 2000 miles in 5 1/2 weeks. Sr. MacGregor, who was a 13 year old bilingual student, has since been helpful in reporting the monarchs while he was visiting in Monterrey, Nuevo Leon, Mexico at a home of his relative. Each fall monarchs have a roosting site on a tree in the Monterrey Mexican garden there.

The first monarch transfer was airmailed to Sra. Barbara de Montes in Mexico City and received by her 9 days later alive. She released it in a bed of dahlias in a park in Mexico City. Since it

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MONARCH WATCHING con't.

was quite cool when the last monarch emerged with frost threatening - that was my reason for the transfer.

Although my husband and I were hospitalized during 1976 and we moved our home to Eastham, Cape Cod, Massachusetts, we were still able to rear a few monarchs in my cage.

August 10th, 1977, I discovered 14 larvae on my swamp milkweed. After our move here last summer, the seeds were planted, having been brought from the garden in our former home. The plants survived the icy winter and grew well despite the nibblings of sundry rabbits. The rangers decided to wage war on ticks along Nauset March trails and prime butterly field in April. They proceeded with a controlled burning of a very large area, much to the distress of local naturalists. Some birds had already nested and many pupae of over-wintering Lepidoptera were destroyed. This changed the complexion of the fields as to flora etc., and far fewer species were observed during the Xerxes Society Fourth of July Butterfly Count. As for the ticks - they just moved over and were not destroyed.

As for me: If the tagging program were over, I plan to continue the cage-rearing of monarchs. There is always some new each year.

Note: As a result of Mrs. Ridgeway's transfer of monarchs to Sra. Barbara de Montes we received most valuable field observations and contacts with interested people. We regret that space did not permit presenting this portion of Mrs. Ridgeway's essay since it shows how one contact can lead to others. In this way we have, in the past been able to follow the monarchs each year on their annual migrations. We thank Mrs. Ridgeway for a most delightful essay. We will look forward to receiving further news of her activities.

MORE ASSOCIATES NEEDED IN TEXAS, MEXICO AND CENTRAL AMERICA

We have very little data on the movements of the monarch butterfly through Texas. We also need much more information on the migration through Mexico to the overwintering Site.

We would appreciate receiving from you the names and addresses of anyone you believe would be interested in assisting with the research in these countries.

Transfer Experiments of Tagged Monarch Butterflies

Since we discovered some years ago that monarch butterflies can survive being sent by air mail from one part of the continent to another we have been arranging for some of our associates to capture and tag monarchs, then send them to other associates in whose area monarchs are scarce. These associates record the tag numbers and other data and release the butterflies in the hope of obtaining data from areas where this data would otherwise be very difficult to secure.

This year we are happy to report the following transferred specimens:

Patty Ensman, Oswego, New York to Chris Bartlett at Greeley, Colorado.

Mrs. Franklin Hupp, Hinton, Virginia to Chris Bartlett at Greeley, Colorado

Michael and Mark Spafford, Saunemin, Illinois to Chris Bartlett at Greeley, Colorado.

Franz Pogge, Morgantown, West Virginia to Carleton McQueen at Mercedes, Texas.

Beatrice Ridgeway, North Eastham, Massachusetts to Susan Ridgeway at Durham, North Carolina.

Unfortunately, Eric Brunneman was prevented from transferring specimens due to a scarcity of monarchs in his area and Mrs. Harvey Houck was unable to transfer since the materials we sent for this purpose were held up in the mails for a month.

CAMPAIGN AGAINST INDISCRIMINATE PLANT SPRAYING

Faye Sutherland has been most active in preventing indiscriminate "weed" spraying in her area which has killed milkweed plants. We are pleased to report that Faye has been successful in curbing these deleterious spraying programs, in Idaho. No doubt the killing of weed species of plants is necessary in crop fields, but far too much of this plant killing is done in areas where such is not necessary. Perhaps you could keep watch on such activities and try to prevent it not only for the larvae of the monarch butterfly but for other species of insects that are so very important in the total ecology of our wildlife.

We would also add that the indiscriminate spraying of insecticides are most hazardous not only to human life but to the many species of invertebrate animals that live in an intricate relationship with other species of animals and plants.

PUBLICITY

Since the success of our research depends so much on the recapture of tagged butterflies, we are conscious that publicity about our research has helped our cause by making the general public aware of our program and thus increasing the chances that a tagged butterfly will be noticed and the information about the specimen will be forwarded to us. Therefore we are grateful to those who have sent us clippings. The following is a list of those who sent clippings and the names of the publications involved:

John and Chris Bartlett, Greeley Tribune, Greeley, Colorado
Gladys Black, 2 items from the Des Moines Sunday Register, Des Moines, Iow
Jane Boatright, The News, King City, Missouri
Ray Bracher, The South Bend Tribune, South Bend, Indiana
Gray Carter, Winston-Salem Journal, Winston-Salem, North Carolina
Troy Eid, Denver Post, Denver, Colorado
Sarah Galbraith, The Journal, Marquette, Michigan
Jean George, National Wildlife, Washington, D.C.
Gregory Glovas, Morning Call, Allentown, Pennsylvania
Abraham Holtz, Philadelphia Inquirer, Philadelphia, Pennsylvania
Barbara Hagenson, The Des Moines Tribune, The Des Moines Sunday Register, Scholastic News Trails, St. Petersburg, Florida paper
Mary Henshall, The Idaho Free Press, Nampa, Idaho
Gayle Krause, Tribune, Freemont, Nebraska
Harold Mahan, The Cleveland Press, Cleveland, Ohio, Tracks, Newsletter of the Cleveland Museum of Natural History
James Malick, 2 items from the Stevens Point Daily Journal, Stevens Point, Wisconsin
Arthur Meyenberg, Northern Advocate, Whangarei, New Zealand
Marge Miale, The Lawrence Ledger, Lawrenceville, New Jersey
Molly Monica, The Evening Bulletin, New Jersey, and a Port Charlotte, Florida paper
Joseph Moss, Ford Times, Dearborn, Michigan
Julie and Paul Movall, the Sioux City Journal, Iowa
Joseph Muench, local paper, Manitowoc, Wisconsin
Paul Stephen Noles, Tullahoma, Tennessee paper
Gwen Palmer, The Oakland Tribune, Oakland, California
Steve Powers, The Evening Bulletin, Philadelphia, Pennsylvania
Nancy Rothnie, Tri-City Herald, Pasco, Washington
Kathleen Rutherford, Lincoln Post Express, the St. Catharines Standard from Lincoln and St. Catharines, Ontario
Joan Senghas, 2 items from the Detroit Free Press, Detroit, Michigan
Lu Severson, Wisconsin State Journal, Madison, Wisconsin
Marion and George Smith, Medina Journal, Medina, New York
Faye Sutherland, 3 items from the Idaho Stateman, and one from The Leisure Times, both published in Idaho
Edna Sutton, the Richland Observer, Richland Center, Wisconsin
E. Williams, The Advocate, New Zealand

Other items brought to our attention are as follows: Port St. Joe, Florida paper, Current Science, Vincennes Sun-Commercial, Canada Today, The Des Moines County News, The Whig Standard, Detroit Free Press, St. Louis Globe Democrat, Saturday Telegraph and News, The Reporter and Excelsior.

All of the above items were published in the past year.

MONARCH BUTTERFLY CONSERVATION

Although the monarch butterfly is not one that should be considered as on the "endangered list" of possible extermination, as many species of world butterflies are, nevertheless it is such a beautiful species and is so well known, and is so important to the classroom in primary and secondary schools, that everything possible should be done to maintain its numbers.

One way is to prevent the indiscriminate use of herbicides in areas which are not in agricultural use, such as along roadways and the like. Also, by growing milkweed in our gardens can extend the area of available food. We have seeds available for those who wish to do so (see separate article).

In the overwintering sites where the monarchs congregate in great numbers and remain in a restricted area, any damage to the area could result in the destruction of countless thousands of overwintering monarchs. The removal of trees within a forested area is not likely to cause too much damage since the monarchs will move to another wooded location within the same area. The great danger in such areas is fire. The indiscriminate placing of fires within a overwintering colony is most hazardous. Since the predominant trees are evergreens that are rich in combustible resins, a fire could rapidly spread through the forested area completely destroying the colony, a threat that was brought to your attention in a special Report, a fire started by a biologist who visited the area in order to obtain photographs for popular publication. We are pleased to inform you that we have had discussions with Mexican authorities and have brought this matter to their attention. A copy of the article that appeared in Natural History was given to them in order to emphasize the importance of strict regulations governing the area, such as is the case in the Monterey Peninsula of California where there is a fine of $500 for interferring with the overwintering monarchs in this area. One can imagine what would have happened if a biologist had ignited a fire in the roosting colonies in Washington Park, Pacific Grove, Monterey, California, not to mention throwing stones at the clusters or leading cows in to eat those that had fallen upon the ground.

We trust that members of the IMA will take part in the protection of the monarch butterfly by extending the area of milkweed, and preventing the destruction of the food plant by herbicides.

A few areas have been set aside for the protection of the monarch butterfly in California and Florida. Perhaps you and your local nature club could take an active part in setting aside areas for the protection of the food plant of the monarch, which, incidentally, would protect other invertebrate animals which receive so little attention and yet are so important to our land ecology.

MILKWEED SEEDS AVAILABLE

Species of milkweed of the genus Asclepias are among the most beautiful and interesting of all plants. The flowers are most attractive and they produce a sweet perfume. They attract many species of insects. But what is most interesting is the manner in which cross-pollination is accomplished. The pollimium, a truly remarkable structure, is like a small trap that fastens itself to the legs of visiting insects and in this manner is carried to another flower. Occasionally a visiting insect trapped by this minute structure is unable to extract it from the flower and thus becomes fastened to the flower head.

We know that you would enjoy having this plant in your garden and, what is most important, it will act as food for the larvae of the monarch butterfly as well as attracting the female monarchs to your garden.

These seeds are available only to our associates. We would, of course, appreciate a donation to our research fund to cover the cost of packaging and mailing the seeds to you. We will enclose a short piece of instructions as to how and where to plant the seeds.

MONARCH LARVAE ARRIVE BY BUS

Since monarch larvae are rather scarce in Lake Oswego, Oregon, Betty Carlson has obtained the cooperation of a high school science teacher in Ashland, Oregon who, having a good supply of larvae, sends them to her by Greyhound bus. This makes possible the "Fly Away Day" for monarchs celebrated at Lake Oswego Schools.

Our monarch butterflies certainly get around one way or another.

HOLDING LIVE MONARCHS IN STORAGE

Some of our associates have had a supply of live butterflies which they wished to keep awaiting the arrival of more tags. If you wish to do so, do not keep them in a cage since they will damage their wings in the attempt to escape. Place them, wings folded, in plastic containers, the type you buy at the store for sandwiches and the like. Introduce into the plastic containers a small piece of cotton or paper towel, about the size of your thumb nail, that is slightly damp so as to maintain the humidity. The sandwich wrapper can be held flat, so as to prevent the monarchs from moving about, by using pins or paper clips. You can keep them alive without harm for a period up to a week or more. We use this method to keep live monarchs during the winter months; the pieces of cotton were treated with a honey solution so as to give humidity and sustenance. Keep the plastic envelopes in a cool place; in your refrigerator if the temperature is not below 40°F, or a cool part of your basement.

MARKED MONARCHS IN SOUTHERN CALIFORNIA

Derham Giuliani of Big Pine, California has asked our research associates to keep a watch for monarchs that he has marked with a dob of white paint which is part of his special study being carried out in the canyons of southern California. If you find a monarch so marked would you please report it to us and we will send the information on to him. Your cooperation with Derham would be greatly appreciated.

IDAHO TELEVISION PROGRAMS

During the summer and fall of 1977, Faye Sutherland of Boise, Idaho, was responsible for 12 T.V. announcements concerning many phases of the monarch butterfly research in her area. Of particular note were her efforts to eliminate the spraying of poisons on local milkweed plants in order to preserve the monarch population. Program announcements such as this are so very important in all areas of North America so as to preserve our wildlife. Perhaps you will be able to carry the message to your local radio and television. We hear so much about "endangered species" as it relates mostly to birds and mammals. Very few individuals realize the great importance in preserving our invertebrate life of which insects are but a part. Without them our ecology would be completely ruined. It is these "lowly" creatures that feed birds and mammals, not to mention cross-pollination of plants.

ROOSTING SITES REPORTED

Mary Ann Tretter had calls from local residents reporting the mass congregation of over-night roosting monarchs in her area. The awareness of the community about roosting trees during the fall migration could be of considerable assistance to our associates in all areas. It is suggested that we institute a "Monarch Watch" in your area. Write a short note and submit it to your local newspaper asking for anyone finding such trees to report to you. If you intend to write such an article please send it to us, we will go over it and return it to you together with a photograph of an overnight roosting site for publication in your local paper.

REPORTS OF TAGGING BUTTERFLIES

We would like to thank all of you who sent in your reports of tagging promptly. We would like very much to be able to acknowledge the receipt of tagging reports but unfortunately the pressures of writing scientific papers, the answering of correspondence and the many other activities which are necessary to keep this research

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REPORTS OF TAGGING BUTTERFLIES con't.

going do not permit us sufficient time. We would like to emphasize the importance of receiving your reports as soon as your tagging is done.

PLEASE KEEP DUPLICATES OF ALL YOUR REPORTS SINCE THE ORIGINALS MIGHT BE DAMAGED OR LOST IN THE MAILS.

TAGGING DRAGONFLIES

We suspect that there are a number of species of butterflies that move from one part of the country to another each year in an annual migration. In addition, one species of dragonfly, Anax junius, is suspected of long distant flights. You may have seen this very large dragonfly with its conspicuous light green or blue abdomen, flying in numbers around the roosting trees of the monarch butterflies. As you journey southward you will continue to see them as far as the coast of the Gulf of Mexico.

Lee Ann Hughes has experimented with tagging dragonflies. She found that the dragonfly could fly successfully if the tags were cut in two with each half being applied on the front wings. We have experimented with tagging Anax junius and we found that by placing the tag on one of the rear wings, flight was not impaired. Dragonflies use the hind wings more as aelerons for steering and hence do not take part in the forward movement by air displacement. Perhaps Lee Ann might experiment with the hind wings and report to us at a later date.

REARING AND TAGGING SPECIES OTHER THAN THE MONARCH

Judee Cox, with the assistance of one of her friends, reared 254 black swallowtails. Although we have had a few recaptures of butterflies, other than the monarch, the data is very meagre. So far we can only conclude that most species of butterflies do not move over very great distances. However, we have no data on the smaller species such as the red admiral, the buckeye, the gulf fritillary or the tailed skipper, not to mention many of the sulphurs and whites that, by field observations, are migrants. Many of our associates have tagged other species of butterflies and moths and we hope to prepare a short paper giving the data we now have on hand.

MISSING TAG NUMBERS: DO YOU HAVE ANY OF THEM?

Despite our best efforts to record the numbers of thousands and thousands of alar tags we fail to have a record for the series that begin with "011---". These are five digit numbers. Please inform us if you have received any of these numbers; send the numbers of the tags to us. If one of the butterflies bearing one of these numbers is recaptured we will be unable to inform you as well as the loss of what might be important flight records.

There is also the series "a550 - a725". Do you have any of these?

MAIL SERVICE PROBLEMS CONTINUE TO MOLEST US

Problems with the mail service in Canada continue to plague us, due to "slow-downs", strikes and careless work in sorting. Reports that our associates have sent to us have failed to arrive. Some of our mail has failed to reach our associates and we have had a number of letters and packages returned in a damaged condition. Since this situation is out of our control we would remind you to keep a copy of all reports just in case the originals are lost in the mail. This is a very good scientific practice anyway and one which we adhere to with all correspondence. Documents of importance are always sent as registered mail, which, of course, is very costly but at least you have some way of tracing it if it is lost.

This matter is brought to your attention since we must have your reports in order to complete the data on recaptures as well as having a file on the number of specimens tagged in any one year and in particular areas. Your reports are most important.

IT IS NECESSARY TO LIMIT THE NUMBER OF ASSOCIATES

The study of migrations of the monarch butterfly with particular reference to the problem as to where the eastern population spent the winter months, started as a hobby rather than a research program. From this, the study grew into a research program but, unlike other investigations of this nature, it has been maintained as a group project with a common interest. We have tried to maintain this somewhat family feeling by our interchange of friendly letters and observations.

In order to maintain this unusual friendly relationship we wish to answer, as fully as possible, all letters submitted by our associates. We wish to continue taking part not only in your interest in the monarch butterfly but also other aspects of your, and our, lives. To do this is impossible with a large number of associates.

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IT IS NECESSARY TO LIMIT THE NUMBER OF ASSOCIATES con't.

We will, of course, add to our associate list those who live in strategic areas, at the same time maintaining a constant number by attrition.

Many individuals join but do not carry on much in the way of tagging or field observations and, over a period of one year, from the time of receiving a copy of the Insect Migration Studies to the issue of the next volume, do not contribute to the research or keep in contact with us. We have made it a practice to remove such individuals from the list of associates thus giving more time to the active and interested associates as well as making vacancies for those living in areas where there is a need for more data.

SPECIAL DONORS TO THE RESEARCH FUND

We are grateful to all of our research associates who contribute not only their time and energy but give donations to our research fund to help with the expenses involved. Those mentioned below have contributed more than the amount that we suggest, therefore we would like to make special mention of them: Gabriel Brown, Eric Brunneman, Gary Fairfoul, Josephine Fernandez, Jean George, Jim Gilbert, Jessie Glynn, Barbara Hagenson, Carol Hillman, Alta Horr, Larry Hummer, Wren Hunt, Van and Les Luxenberg, Elisabeth Lytle, Harold Mahan, Joyce and Charles Mallery, Roland Matson, Ruth McKee, Molly Monica, Steve Powers, Vicki Preston, Dale Reichert, Beatrice Ridgeway, Marion and George Smith, Virginia Spafford, Prentice Stout, Edna Sutton, Majory Tyndall, Maryanne West, Nancy Ziebur.

WHERE DO WE GO FROM HERE?

Some of our associates have written to us asking why we should continue the tagging program now that we have found where the monarchs spend the winter. Tracy Johnson of Bellevue, Nebraska wrote as follows: "I figured that you and your associates have already found their over-wintering sites and know the migration pattern so what more will tagging prove?"

We wrote to Tracy as follows: "We do not know all there is to know about the migration routes and perhaps we will never have the complete answer. For example, we know know that there are a number of areas in the Mexican Site where the monarchs overwinter; Do the migrants from the prairies go to one area and those further east to another? We do not know for certain. In fact we only have about a half dozen recaptures in the area and in only one area at that. Also, do the monarchs return to the same place where they were caterpillars? We do not know. We only have eight returns from the

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WHERE DO WE GO FROM HERE con't.

overwintering Site even though we have tagged thousands of them in Mexico. Also, do some of the monarchs go from North America to Yucatan? Perhaps one of your tagged specimens may make it back to Bellevue - it is highly possible. We have one tagged specimen that was tagged in Iowa, went to Mexico and was recaptured seven months later on the way back in northern Texas."

We have reason now to believe that the migrants from the Great Plains regions of the U.S.A. travel to the western volcanic mountains of Mexico while those from breeding areas east of the Great Plains overwinter in the central and eastern mountains. Of course, this is purely conjectural and only many years of tagging will prove whether this is correct or not.

As yet we do not have sufficient data informing us of the passage of migrants through Texas and across the border into Mexico. Nor do we know where the monarchs that travel to the islands of the Caribbean Sea eventually overwinter.

Is it possible that a monarch butterfly may journey to Mexico and return to the same field in which it was a larva the previous summer? Although such a suggestion seems impossible nevertheless it is well within the realm of possibility since we do know that migrants are found to return to the most northern parts of their breeding range based upon the condition in colour and tattered wings of monarchs found in late spring and early summer. We have seen and collected many migrants in our back yard laying eggs on our milkweed plants; the faded colour and tattered wings give evidence of a long journey flown, undoubtedly, from the overwintering Site in Mexico.

These and many other factors, as yet not dealt with, are the reasons why our studies will continue and, we realize, will continue long after we are no longer involved. Perhaps as a result of your tagging, some of the above problems will be solved or perhaps you will raise some other promising avenues of investigation.

RESEARCH ASSOCIATES 1977-1978

Those listed below are research associates who have been actively involved in our research for the year 1977-78.

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.

A.

Albanese, Rosalyn. Red Hill, Pennsylvania
Allgrove, Valerie. Windsor, Connecticut
Anderson, Timothy P. Richfield, Minnesota
Antonoplos, Joseph. Fargo, North Dakota
Armstrong, Mrs. Fred. Red Bank, New Jersey

B.

Baird, James. Pine Bush, New York
Barry, Jerome J. Bedford, New Hampshire
Bartlett, Christopher J. Greeley, Colorado
Beauchaine, Mrs. Willard. Minneapolis, Minnesota
Beich, Mrs. Steven. Janesville, Minnesota
Black, Gladys. Pleasantville, Iowa
Boatright, Jane. King City, Missouri
Boston, Mary E. Champaign, Illinois
Bracher, Ray W. Granger, Indiana
Brady, Wm. S. Brewster, Massachusetts
Breen, Jean. Brookfield, Connecticut
Brown, Gabriel. Baltimore, Maryland
Brumbaugh, Sherri. Agency, Iowa
Brunneman, Eric. San Antonio, Texas
Buckley, Derek L. York County, New Brunswick
Buegler, Richard P. Staten Island, New York
Burns, Cathy. Flushing, Michigan
Buchanan, Frances B. New Paltz, New York

C.

Carlson, Betty N. Lake Oswego, Oregon
Carter, Gray. Winston-Salem, North Carolina
Castro, Jose I. Charleston, South Carolina
Clemente, Michael F. Atlantic City, New Jersey
Clements, Marta. West Paris, Maine
Coleman, Wm. J. Ventura, California
Conroy, Philip. Paterson, New Jersey
Cooper, Mary. Findley Lake, New York
Coppens, Daniel. Williamsville, New York
Currie, E.A. Toronto, Ontario

D.

Davidson, Rowena. Waterloo, Iowa
De Mar, Sharon J. Romeo, Michigan
De Sato, Cecilia M.I. Buenos Aires, Argentina

D., con't.

Dickson, David. Cedar Falls, Iowa
Dodd, Geoffrey E. Tenerife, Canary Islands
Doole, A. Blenheim, New Zealand
Douglas, Nancy J. Green Brook, New Jersey
Duncan, J.G. Brampton, Ontario

E.

Ebright, R.H. Reading, Pennsylvania
Edwards, Coggin. Elizabeth, Illinois
Eid, Troy A. Wheat Ridge, Colorado
Eller, Lillian. Mason City Iowa
Emery, Mrs. Calvin. Nevada, Missouri
Ensman, Patty. Oswego, New York

F.

Fagle, David L. Marshalltown, Iowa
Fairfoul, G.L. Toronto, Ontario
Fernandez, Josephine L. Dartmount, Massachusetts
Finley, Karin & Sonia. Saugerties, New York
Fisk, Barry. San Pablo, California
Frederick, Peter A. Reading, Pennsylvania
Freund, Carol Lynne. McKeesport, Pennsylvania

G.

George, Jean. Chappaqua, New York
Gerber, Ian. Glenview, Illinois
Gilbert, James R. Waconia, Minnesota
Giuliani, Derham. Pig Pine, California
Glovas, G.S. Bethlehem, Pennsylvania
Glynn, J. Limehouse, Ontario

H.

Hagenson, Barbara. Clinton, Iowa
Hague, Margaret J. Spring Bay, Manatoulin Island
Hansen, R.E. Staten Island, New York
Haynam, Karen. San Anselmo, California
Henry, Donna. Clearwater, Florida
Henshall, Mary S. Nampa, Idaho
Hillman, Carol B. Harrison, New York
Hoeflich, Nancy J. Bedford, Massachusetts
Holbrook, Elizabeth. Ogden, Utah
Hopf, Alice. New York, New York
Horr, Alta. Gretna, Nebraska
Hosea, Kernan F. Lafayette, Louisiana
Hoskins, Dorothy M. Weston, Massachusetts
Houck, Harvey & Lorraine. Decorah, Iowa
Hughes, Lee Ann. Palmyra, New York
Hummer, Larry. San Mateo, California
Hunt, Duane R. & Lonsberry J. Perry, New York
Hunt, Wren. Bristol, Tennessee
Hupp, Mrs. Franklin. Hinton, Virginia

I.

Inman, Virgil. South Bend, Indiana
Irwin, Ann D. Bloomfield Hills, Michigan

J.

Johnson, Tracy. Bellevue, Nebraska

K.

Katz, Margaret. Riverdale, New York
Keeney, Norwood H. Hudson, New Hampshire
Kendrick, Mrs. E. Sault Ste. Marie, Ontario
Kennedy, Laura C. Islington, Ontario
Kennedy, Mike. Lubbock, Texas
Kester, Patricia. Appleton, Wisconsin
Keyes, Brian R. Shrewsbury, New Jersey
Kirkpatrick, Amy B. Northfield, Minnesota
Klass, Judith. Leonia, New Jersey
Korte, Jeff. St. Cloud, Minnesota
Kough, Ruth. Dysart, Pennsylvania
Krause, Gayle. Fremont, Nebraska

L.

Lachelt, Ron. Minneapolis, Minnesota
Laire, Mary W. Oxford, Pennsylvania
Lake, Robert G. Long Beach, California
Larson, Donald W. Minnetonka, Minnesota
Lefebvre, Robert H. Keene, New Hampshire
Le Mon, Ivy. Glowcester, Massachusetts
Le Pore, Jeff. Lancaster, Pennsylvania
Litwin, Mary Lou. West Bloomfield, Michigan
Lopina, Marion T. Wauwatosa, Wisconsin
Lorimer, John & Family. West Bloomfield, Michigan
Luetkens, Carol. Middleton, Wisconsin
Luxenberg, Mrs. Lester. Castle Rock, Colorado

M.

Mahan, Harold. Cleveland, Ohio
Malick, J. Stevens Point, Wisconsin
Mallery, Mr. & Mrs. C. Vestal, New York
Manos, Marilyn. Provincetown, Massachusetts
Marian, Sister Joseph. Lebanon, Kentucky
Masshardt, Mrs. Eugene. Brooklyn, Wisconsin
Masuoka, James. Chardon, Ohio
Mathes, G. Eldred & Marjorie. Pontiac, Michigan
Matson, R.R. Minneapolis, Minnesota
McAndrew, Ruby. Ventura, California
McClusky, J.V. Fredericksburg, Texas
McHush, Frances J. Catskill, New York
McKee, Ruth Anne. Stockton, California
McLeod, Dave. Hyde Park, Ontario
McQueen, Carlton. Mercedes, Texas
Meyer, Tim. Milwaukee, Wisconsin
Miale, Mrs. Joseph. Lawrenceville, New Jersey
Milani, Ruth. Meaford, Ontario

M., con't.

Miller, Donna. Ottawa, Ontario
Miller, Glen R. Annada, Missouri
Mohler, Ethel. New Bloomfield, Pennsylvania
Mohling, Wendell & Carol. Shawnee, Kansas
Monica, Molly. Berkeley Heights, New Jersey
Mooney, Carol. Lewittown, Pennsylvania
Moss, Joseph. Roanoke, Louisiana
Morall, Paul. Storm Lake, Iowa
Mueller, Kimberly Ann. Brookfield, Wisconsin
Muench, Joseph A. Manitowoc, Wisconsin
Murphy, Melissa. Ridgewood, New Jersey
Murray, Sarah M. Tuscola, Illinoia

N.

Naughton, Frank. Short Hills, New Jersey
Neale, Anne. Berkeley Heights, New Jersey
Noe, David. Marietta, Ohio
Noles, Paul Stephen. Winchester, Tennessee

O.

O'Bert, Rev. Sandra. Colona, Illinois
O'Brien, Ann. Poughkeepsie, New York
Offer, Mark. Burlington, Ontario
Oldham, Kathlyn. Grosse Pointe Farms, Michigan
Onken, Christopher. Central Valley, New York
Ortt, Marilyn W. Marietta, Ohio

P.

Pauly, Christine, M. Brookfield, Wisconsin
Pendleton, Emily V. Montevallo, Alabama
Pendleton County Bd. of Education, Franklin, W. Virginia
Penn, Linda. Toledo, Ohio
Peterson, Melinda O. Brookings, South Dakota
Podnieks, Vizma M. Edina, Minnesota
Pogge, F.L. Morgantown, West Virginia
Powers, Steve. Philadelphia, Pennsylvania
Preston, Mrs. Barry. Whiteford, Maryland

R.

Rabatin, Mary June. Chardon, Ohio
Reed, Ronald. Loudonville, Ohio
Reese, Randy. Newark Valley, New York
Reichert, D. Hanover, Pennsylvania
Reuter, Sue. Bradenton, Florida
Ridgeway, Beatrice. North Eastham, Massachusetts
Roberts, Maurice G. Wells River, Vermont
Roush, Ellen. Lynchburg, Ohio
Running, M.H. Two Harbors, Minnesota
Rutherford, Kathleen M. St. Catharines, Ontario

S.

Sawyer, M. Rockland, Maine
Scott, George C. Casper, Wyoming
Senghas, Joan. Mount Clemens, Michigan
Severson, Lu. Middleton, Wisconsin
Siegel, Russell. Danbury, Connecticut
Sieker, W.E. Madison, Wisconsin
Silver Spur School, Rancho Palos Verdes, California
Simon, Jim. Burnsville, Minnesota
Simonsen, Bill. Swan Lake, Montana
Simonsen, R.A. Waterloo, Iowa
Sinclair, Ellery W. Falls Village, Connecticut
Sipler, Rob & Chad. Hatchville, Massachusetts
Slavin, Amy Beth. Campobella, South Carolina
Smith, Leslie V. Citrus Heights, California
Smith, Marion E. & George. Lyndonville, New York
Smith, Susie. Bountiful, Utah
Spafford, Michael & Mark. Saunemin, Illinois
Spears, Ian. Toronto, Ontario
Star Island, Portsmouth, New Hampshire
Stout, Prentice K. Narangansett, Rhode Island
Struble, Buddy L. Lake Hiawatha, New Jersey
Stull, Jean H. Waterford, Pennsylvania
Sturgess, Kelley.
Sutherland, Faye. Boise, Idaho
Sutton, Edna M. Richmond Centre, Wisconsin
Swanson, J.H. Dublin, New Hampshire
Swanson, Severin. Omro, Wisconsin

T.

Teed, L.B.
Tretter, Mary Ann. Emmaus, Pennsylvania
Trophia, Samuel. Rome, New York
Tyndall, Marjory A. Millington, New Jersey

V.

Votava, Nancy. Westchester, Illinois

W.

Waggy, Paula D. Franklin, West Virginia
Walker, Thomas J. Gainesville, Florida
Watson, Robert J. New Hope, Pennsylvania
Weaver, Dave. Newark, Delaware
Weber, Lois. Clearwater, Florida
West, Maryanne. Gibson Landing, British Columbia
White, John. Liberty, Maine
Williams, Gary. Glen Ellyn, Illinois
Williams, M.J. Whangarei, New Zealand
Williams, Thomas. Hamden, Connecticut
Wilson, Audrey. Cobourg, Ontario
Wilson, Roger L. Moville, Iowa
Winkler, Sally R. Western Springs, Illinois
Woodcock, Alice P. Upper Montclair, New Jersey

Z.

Ziebur, Nancy K. Binghamton, New York