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University of Toronto
Scarborough Campus 1265 Military Trail Scarborough Ontario M1C 1A4

DIVISION OF LIFE SCIENCES
INSECT MIGRATION STUDIES

Nov. 8, 84

Dear Margaret:

We have been receiving reports of Monarchs being more abundant, less abundant and the same. It will be interesting to plt the returs and see what happens.

The note in the National Wildlife Federation News is fairly accurate. I suppose you could state that the departure from Mexico is instinctual, whatever that means. I take the more scientific attack and look for enviornmental factors. I believe that higher temperatures and increased daylight period at the overwintering site is responsibe. It is true that most of the males do not make the return trip; many do die along the route as well as at the site.

The manuscript of the book is progressing slowly - editorial corrections. It will be available next summer, so I am advised.

Hope you have a very pleasane winter.

Sincerely,
Fred
Fred A. Urquhart

University of Toronto

Scarborough Campus 1265 Military Trail Scarborough Ontario M1C 1A4

DIVISION OF LIFE SCIENCES
INSECT MIGRATION STUDIES

January 26,1984

Dear Mrs.Elliott:

Thank you for your report of your tagging for 1983. We were delighted to see that you had been able to tag a total of 120 monarchs. As you may know the monarchs were conspicuously scarce in most areas this past season but for some reason the scarcity did not seem to occur in the state of Michigan. We have analzed the data from the questionnaires and will publish it in the I.M.S. now in preparation.

We were very much interested in your activities on behlf of the monarchs. You must be one of our most active associates and we are always pleased to hear what you have been doing and we enoy passing on the news to the other associates in the I.M.S.

Also many thanks for your generous donation to the research fund.

The new monarch butterfly book is now completed and we hope that it will be on its way to the publisher in a very shor time.

Best wishes for a very happy and healthy 1984.

Yours sincerely,

Fred A. Urquhart

Fred A.Urquhart for Fred and Norah

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TO OUR ASSOCIATES

FROM

NORAH AND FRED URQUHART

Is the Monarch butterfly an endangered species?

During the past few years, three biologists have been causing undue alarm concerning the safety of the Monarch butterflies in one locus in Mexico-resulting from newspaper releases and published articles. As we have informed you in the past, we have been in contact with officials in Mexico working out a system whereby the Monarch butterflies would gain protection at the same time being of economic value to the local inhabitants Unfortunately, these biologists have made unreasonable demands on the Mexican government by requesting that three mountain loci be made conservation areas, thus depriving the local campesinos of the right to use the timber. As a result, there has arisen a considerable degree of animosity on the part of the local Mexicans concerning this proposal. The following was published recently in the Smithsonian Magazine: "Tensions sometimes run high. Armed guards patrol the sanctuaries and scientific parties have been rousted from their camps at gunpoint. At least one shooting death has been blamed on the logging ban. A landowner has raised the threat that unemployed campesinos will torch the butterfly groves." A further note in this same article states:" (One of the biologists above mentioned) has been allowed inside the fence to study the Monarchs. One night last January, however, Mauricio Mondragon led an armed group into (this biologist's camp). 'We cannot guarantee your safety here' he said punctuating his sentences with flourishes of his semiautomatic rifle.'You'll have to leave. We couldn't protect you from angry campesinos who have lost their jobs. We have different opinions about what disturbs butterflies' (The biologist) moved his camp the next day."

(Note: We have puposely left out the name of the biologist,which is given in the article,since we have not given the names of the other two members of the party).

Thus, instead of protecting the Monarch butterflies on the overwintering site in Mexico they have endangered the survival by antagonizing the local inhabitants, that which was not necessary.

The Mexicans are well aware of the importance of the trees in their economy. They will protect them by replanting as they have done in the past and will continue to do so in the future. They are well aware of the importance of the Monarch butterflies and they will do whatever is necessary to protect them without outside interference.We sincerely hope that these biologists will leave the areas alone and return to their University to carry out other research projects.

Without meaning to be boastful, we are of the opinion that there are no other persons in the world that know more about the Monarch butterfly than we do, after over forty years of studies of this interesting insect. Therefore, we can state to you unequivocally that the Monarch butterfly is not and never will be an endangered species, unless man obliterates all of the animal and plant life on our earth by the use of the atomic bomb.

The Monarch butterfly overwinters in other loci besides that at Angangueo. There are at least nine other loci one of which must be much larger than that at Angangueo because it represents all of the migrants from the eastern section of North America. We trust that no one will discover this large overwintering locus for fear of a repetition of the Angangueo dilemma. In addition, there is the large western population that overwinters along the coast of California; many of the islands of the South Pacfic are inhabited by Monarch butterflies in considerable numbers in some cases as in Australia and New Zealand. There are thousands of acres of land in North America , such as semi-desert areas and sand dunes, not suitable for agriculture, where various species of milkweed grow.

However, there is danger to the survival of Monarch butterflies in local areas owing to the indiscriminate use of insecticides and herbicides. This occurs mostly in agricultural areas where local authorities often control weeds by spraying large areas with herbicides. In order to increase local populations, many of our associates grow milkweed in their gardens. Others have planted seeds in various waste lands and along roadways. We strongly suggest that you do everything possible to maintain milkweed in your area. It makes an excellent school project because it introduces the students to the inter-relationship between animal and plant life and at the same time being introduced to the study of insects through the rearing of the Monarch butterfly.

Whenever there exists a marked drop in the population of the Monarch butterfly one tends to blame the use of insecticides or herbicides or polution. As a result of the unfortunate publicity given to the overwintering locus at Angangueo, some of our associates are now concerned that the drop in the population this last summer might be due to the removal of trees in the overwintering sites. None of these are true, as we explain in another article. We share your concern and we will do everything we can to maintain the breeding population in North America through your active assistance.

We have yet to obtain definitive data on the migration of the more eastern Monarch butterflies. We have also a few unknowns, such as the relationship between the various mountains and the related breeding populations. Thus, we continue our alar tagging.

We sincerely hope that you will enjoy a most fruitful summer studying the Monarch butterfly in your area.

Special Donors

The amount of the donation that we suggest that our associates give to the reseach fund is based on the cost of the supplies and services that are necessary to keep the Insect Migration Association functioning. Naturally, we are always pleased when some of our associates donate more that the suggested amount thus giving us more assistance in carrying out the work.

We would like to thank those who are listed below for their generous donations:

Carl Allgrove
Fred Armstrong
Ron Austing
Jean Breen
Betsy Briggs
Barbara de Montes
Erma DeWitt
Margaret Elliott
Jim Gilbert
Jeri Goldman
Barbara Hagenson
Olivia Hansen
Mary Henshall
Mrs.Franklin Hupp
Nelson Jaquay
Joan Johnson
Niel and Sheila Karrow
Norwood Keeney III
Donna Kessler
Debbie Knutson
Marion Lopina
Harold Mahan
Joyce and Charles Mallery
Marjorie and G.Eldred Mathes
Roland Matson
Babs Meyer
Helen Millward
Molly Monica
Joseph Moss
The Naturalists Club of Broome County Inc.
Walter Regula
Dale Reichert
Millicent Scott
Marion Smith
Doris Stifel
Edna Sutton
Alice Woodcock
Walter Zimmerman

RECAPTURE RECORDS OF MONARCH BUTTERFLIES TAGGED IN 1983

Despite the fact that a great majority of our associates reported a marked reduction in the population of monarch butterflies in the area where they were working, we received a heartening number of reports of recaptured monarch butterflies.

Unforunately, our limited space does not permit us to publish the details of all recaptures, but all of the associates whose tagged butterflies were recaptured have already been informed of the details.

Listed below is a sampling of some of the long distance flights. Others, although involving shorter distances, are significant because of the flight direction showing that not all flights are in a southwesterly direction during the fall migration; these "aberrant flights" have been marked with an asterisk. Spring migration records in California have been marked with a double asterisk.

	Tagged At	Recaptured At.
Ron Austing,	Wheatley, Ont.	Point Pelee, Ont.
Harold Mahan	Kelley's Island, Oh.	Martin Ky.
Mary Lu Sinclair	Falls Village, Conn.	New York,N.Y.
*Marion Hill	Wycoff,N.J.	Long Beach, N.Y.
*Alta Horr	Gretna,Neb.	Omaha,Neb.
*Hamilton County Park District	Cincinnati,Oh.	Geneva, Fl.
*Christine Schaefer	Muncy,Pa.	Salem,N.J.
*Doris Stifel	Maumee Bay State Park,Oh.	Republic,Oh.
*Larry Totton	Granger,Ia.	Ankeny,Ia.
**Larry Hummer	Carlsbad,Ca.	Oceanside,Ca
** " "	" "	Alta Loma,Ca.
** " "	" "	Randsburg,Ca.
** " "	" "	Lake Elsinore,Ca.

SOUTH PACIFIC

The Monarch butterfly has invaded many of the larger islands of the South Pacific. They were first reported in the Hawaiian Islands in 1840 and in New Zealand at the same time. We may assume that they reached these islands prior to this date to be later reported by a butterfly collector. From these starting points, it has spread across the islands as far as Indonesia, As more records turn up, we are of the opinion that it will eventaully spread across Indochina, India and Africa. In all of these countries, species of milkweed abound representing over 1500 distinct species of the genus Asclepias to which our North American species also belong. Since the Monarch butterfly is established in the Canary and Cape Verde Islands off the west coast of Africa, the Monarch butterfly, often referred to as the "traveller",will be considered a circum-global species occurring between latitudes 40°N and 40°S. This spread, which will continue, has been brought about by shippingand by flight, assisted by strong winds.

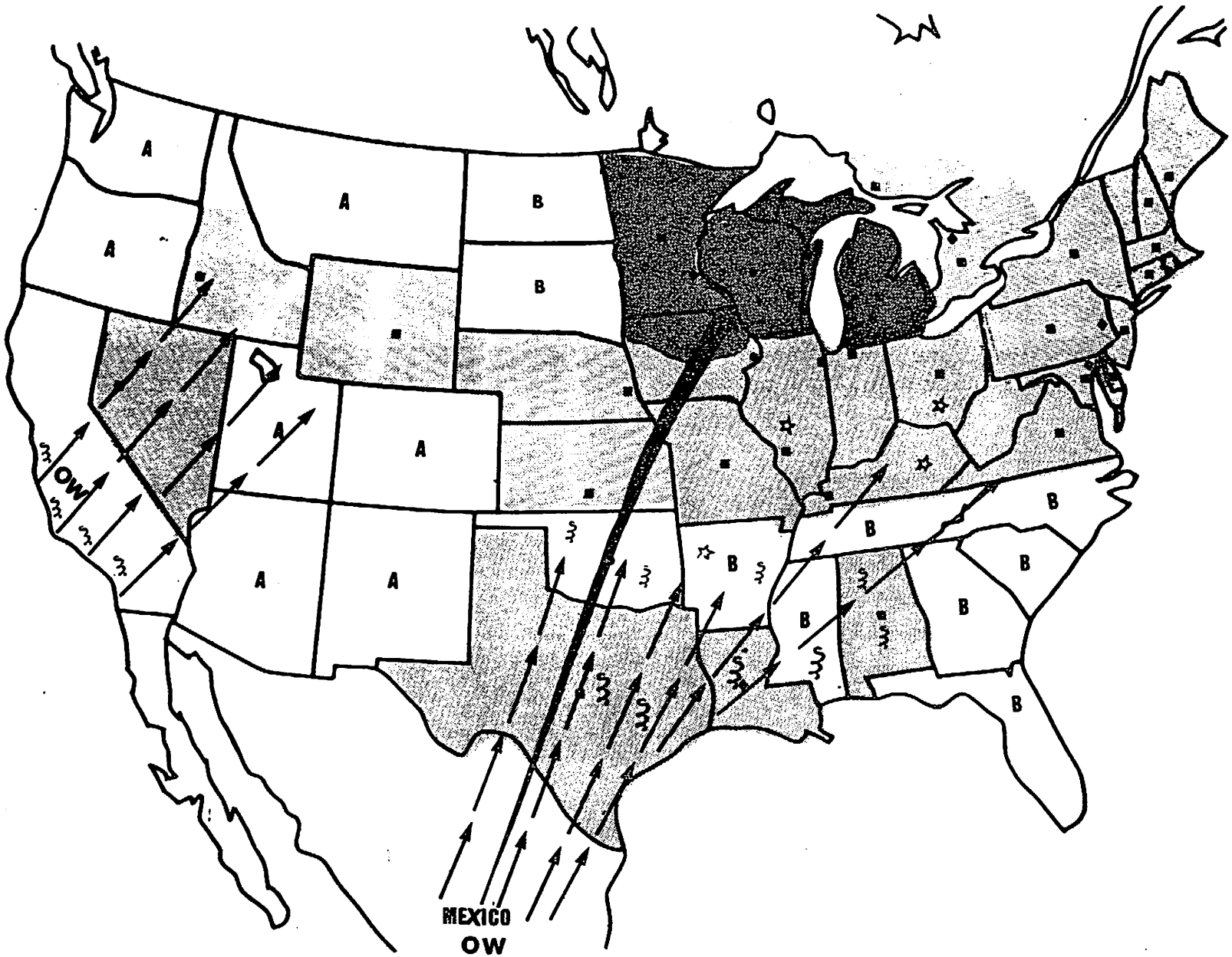
As the result of our intensive studies of the Monarch butterflies in Australia and New Zealand, we have concluded that the propensity to migrate is still present in these populations but it only occurs in those islands, such as New Zealand, where temperatures fluctuate to lows at or below freezing. When such occurs, the Monarch butterflies enter a reproductive dormancy, as in North America, but the movements are of a random nature, not one from NE - SW as in North America. This, we believe, is related to the difference in magnetic lines of force that are different in Australia and New Zealand as compared to North America and hence,although the instinct to migrate is present,there are no geographical guide lines.Complete data on this work is given in the NEW MONARCH BUTTERFLY BOOK.

We have discontinued our research in these islands since no further significant data was being obtained than those already published in scientific journals. We are hoping, however, that some other person will contine the alar tagging in order to find out what happens to those specimens in reproductive dormancy that do establish themselves on overwintering sites. We were unable to obtain any recaptures of alar tagged specimens from such overwintering loci.

ATTRACTING MONARCH BUTTERFLIES TO YOUR GARDEN

Since adult Monarch butterflies feed upon the nectar of flowering plants, they can be attracted to your garden by planting those flowers that produce nectar.If you have space in your garden, in some corner, a large clump of the common goldenrod is most attractive to Monarch butterflies. Of course, the flowers of the milkweed plant also attracts them.

Here are some flowers that attract: Asters (sngle types);Zinnias; Cosmos; Gazania; Foxglove; and Chrysanthemums.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POPULATION REDUCTION IN BREEDING AREAS - SUMMER, 1983

Occasionally the population of Monarch butterflies in North America suffer marked reductions in numbers. Such reductions resulting from disease (such as the nuclear polyhedrosis virus), or severe storms occurring during the migratory periods (spring and fall).

During this past summer (1983), we experienced a marked reduction in the population of Monarch butterflies in our area near Toronto. So we wrote to you requesting a report as to whether the Monarch butterflies in your area were more abundant, less abundant, or no change. As a result, all of our associates responded. Based upon these reports, together with our knowledge of the spring migration gathered from our combined observations and tagging over the past many years, we were able to examine the population reduction across North America and plotting the data on the outline map. Please refer to this map as you read the following.

Eastern Population (East of the Rocky Mountains):

"A": Refers to those States where Monarch butterflies were not abundant at any time during the breeding period and hence we have no associates in these States and hence no reports.

"B": Refers to those States where Monarch butterflies are present but are not abundant during the summer breeding season in the southern States because the migrants and their progeny move north out of these areas.In Florida there is, of course, a small, non-migrating resident population during the summer months.

"Light Areas": The Associates in these States, and in Ontario, reported a marked reduction in population.(■).

"Dark Areas": The Associates in these States reported a population increase (●) or no change from the previous year (◆).

Discussion and Conclusions - Eastern Population:

The Monarch butterflies commence their northward spring migration from the Overwintering Site (OW) in Mexico towards the end of February, with the majority leaving in March. A few - which we believe represent those from the more northern breeding areas - leave in late March and April. Although as yet we have no definitive proof, we are of the opinion that migrants from the more northerly breeding areas arrive late at the Overwintering Site, because of longer flight distances together with the effect of cold temperatures, and hence leave the site late.Migrants from the more southern breeding areas arrive early, because of the shorter flight distances together with higher temperatures, and hence leave early. We have oberved at the overwintering site, that the spring migrants do not leave at the same time; some leave early (early leavers-EL); some leave late (late leavers-LL); and there are those in the middle (mid leavers-ML). The EL and ML migrants pass through the southwestern States and the Gulf States in March and April. The LL migrants pass through in late April and May.

During the month of March and most of April of 1983, temperatures in all States were unusually low; there were numerous heavy storms (ξ) accompanied by light to heavy snow falls (☆) with below freezing temperatures. Cyclones and tornadoes (ξ) caused high winds and heavy rain along with extensive flooding. In contrast, during the last week of April and extending through May to June, temperatures were unusually high and there were only a few light storms.

Bearing in mind that there are the EL, ML, and LL migrants, those of the EL and ML passed through the storm areas during March and most of April resulting in their mass destruction- Norah and I have witnessed such destruction of migrants along the Gulf Coast during fall migrations This caused a marked reduction in the breeding populations in most States and in Ontario (light shaded areas).

Migrants of the LL passed through during the latter part of April and through May, when temperatures were exceptionally high and there were few storms. These migrants - indicated by the large arrow - passed rapidly (owing to the high temperatures resulting in increased flight activity) to reach the northern areas near the Great Lakes. As a reult, Associates in these States witnessed, in most reports received, a marked increase in numbers (●), or no change from the previous year (◆).

Western Population (Rocky Mountains):

Owing to the severe storms (ξ) that occurred along the Pacific coast of California during the overwintering period, populations at the various loci suffered considerable reduction as the result. This would account for the reduction in the breeding areas, as reported by our Associates.

When Monarch butterflies are scarce we tend to place the blame on the use of herbicides and insecticides. Such is, of course, true in local areas. When considering population reductions for the entire North American Continent, disease and weather are the important factors involved. The reduction in population during this past summer in North America was due to weather conditions.

Thus, as a resut of the combined efforts of our Research Associates, we are able to answer the question: "Why were the Monarch butterflies so scarce in the summer of 1983?" This question could not have been answered a few years ago when we had very little knowledge of the migratory routes and the times of progression northward.

This material may be used by associates for teaching and lectures purposes with respect to variations in animal populations. Also for articles in newspapers and mgazines. Credit should be given, of course, to our Insect Migration Association.

(Climatological data was obtained from: National Climatic Data Center, Asheville, North Carolina).

NUCLEAR POLYHEDROSIS VIRUS

Those who have been working with the Monarch butterfly for some time are well aware of the disease caused by a virus. It attacks the larvae and pupae. Itspresence is known because the larvae or pupae turn black and if the skin is ruptured, a black, inky fluid is discharged. It is a virus that attacks the nuclei of the cells, hence "nuclear"; and, under the electron microscope, it appears as an inanimate, many-sided structure, like a polyhedron - hence the name "polyhedrosis".

Occasionally, there is a mass outbreak of this virus which travels across North America reducing the populations to a considerable degree. This happens at irregular intervals, between seven and eleven years. However, some members are immune to the virus and as a result the population across North America gradually builds up again. When the virus mutates, it causes another outbreak. So, the see-saw effect between abundance and scarcity.

There are no methods to combat the virus if you happen to be rearing them in cages. It is necessary to wait until the immune population is once again present.

NUMBER OF SPECIMENS TAGGED IN 1983

Although the number of Monarch butterflies tagged during 1983 was down conspicuously from the previous year when the total was 8162, nevertheless there was a significant number tagged, especially in view of the continent wide major reduction in population. A total of 3321 specimens were tagged or 40% of those tagged in 1982.

A total of 1007 specimens were alar tagged in the overwintering California site at a locus at Carlsbad, due to the activities of Larry Hummer. This particular locus is most important since it is the most southern one and has given necessary data as to the presence and migration pattern of these more southern migrants.

One should remember that every Monarch butterfly you tag is is important because recapture data are composed only of flights of individual specimens. Naturally, the greater number tagged the more likelihood there is of one of your specimens being recaptured. You may tag only one specimen during the summer and that one individual might supply the information we need to complete some of the unknowns of the overwintering site in Mexico and the routes taken.

SPECIAL ACTIVITIES OF OUR ASSOCIATES

It is always most interesting to learn of associates carrying their interest in the Monarch butterfly into the community in the form of lectures, slide presentations, nature study groups, and outdoor workshops. The following carried out such special activities: Margaret Elliott; Donna Kessler; Linda Penn; Edna Sutton; and Ruth Trim

THREE NEW BOOKS FOR CHILDREN

Linda Penn sent three of her books to us. These are exceptionally fine "activity books" written by Linda for Primary Grades.

Perhaps some of our associates who are engaged in teaching the primary grades might like to obtain them for the school library.

The following titles:

Young Scientists Explore Insects (Book 2)
Young Scientists Explore Butterflies and Moths (Book 4)
Young Sceintists Explore Seasons (Book 5).

These books are published by Good Apple, Inc., Box 299, Carthage, Illinois, 62321.

THE MILKWEED BEETLE

You may have noticed a fairly large, reddish beetle, the elytra (first pair of shell-like wings) ornamented with black spots. This is the species Tetraopes tetraophthalmus - a rather jaw-breaking name which means having four spots (tetraopes) on the elytra and four eye spots (tetra-four; ophthalmus-eye) on the prothorax (the part of the body to which the front pair of legs are attached). The antennae are long, about the length of the body, and so it is classified in the beetle family , Cerambycidae, which is a very large family composed of over 17,000 species. The larva of the milkweed beetle lives in the ground feeding upon the roots and stem buds of the milkweed plant. It pupates in the ground so that the only time we see it is in the adult stage. After mating the female deposits her eggs in the ground and dies. By late summer all have departed, the offspring living in the ground to emerge the following summer.

If you hold a milkweed beetle close to your ear you will hear a faint squeaking sound which is produced by the contraction of the beetle's pharynx. I have often amused children by asking:"Have you ever heard a beetle speak?" I then place the beetle close to a child's ear much to the delight of all participants.

SPECIAL NOTE RE TAGGING REPORTS AND LOCATIONS CITED IN THEM

When submitting a tagging report, please give the name of the exact location where you have done the tagging. Since many places, such as nature centers, various parks, and small communities, do not appear in our atlases, we would appreciate it if you would indicate in the report the location of tagging in reference to a large center, or, if this is impractical, send us a hand drawn map showing where you did the tagging. It is ncecessary to have exact locations when plotting the migratory routes. Otherwise, we do,at times, have to request further information. A few miles can, for certain reasons, be most important.

THE MONARCH BUTTERFLY FOR CLASSROOM STUDIES

The use of the Monarch butterfly as a starting point in the study of Natural Science is becoming very popular in many schools across the United States. By raising Monarch butterflies in the classroom, from egg to adult, the students are introduced to the study of insects - ENTOMOLOGY. -in all of its many aspectssuch as: By dissecting the larvae and adults, the students learn a great deal about INSECT ANATOMY: they learn that the Monarch butterfly is given the scientific name, Danaus plexippus plexippus and that it belongs to the Family Danaidae of the Order Lepidoptera to which the moths and butterflies belong - the science of TAXONOMY:By raising the larvae at different temperatures they learn that development is much more rapid at higher temperatures and the reasons for this more rapid growth - the science of INSECT PHYSIOLOGY ;Since the Monarch butterfly moves from breeding areas to overwintering ones and back again, they are introduced into the fascinating field of ANIMAL MIGRATION, a branch of INSECT BEHAVIOUR ; collecting female Monarch butterflies in the fall, the students learn that they will not lay eggs and are thus introduced to the science of INSECT DIAPAUSE and its importance in insect survival in cold climates.

Teachers are finding that using the live insect can teach more about natural history than dozens of books containing only illustrations. There is something about the sight, feel, and even smell, that adds a further dimension to students' learning.

One of our Associates uses the migration of the Monarch butterfly in her lessosn on GEOGRAPHY. The students follow the migrations of the Monarch butterfly across North America and also through the islands of the South Pacific. Some of the students have written to other students living in various parts of the continent. In this way the subject of Geography becomes a living subject, not one found only in maps in textbooks.

If you use the Monarch butterfly in introducing other subjects in your classes, please write and let us know about it so that we may mention such in our next report.

INFERTILE EGGS

Occasionally a female Monarch butterfly will deposit eggs but the latter do not hatch. This has been brought to our attention by some of our associates. This is due to the obvious fact that mating has not taken place, or the female has used all of the sperm cell contained in the spermatheca - the sperm package transmitted to the female. Infertility often occurs in caged specimens when they have been reared from eggs. Forced mating is often necessary. Females that suffer from the virus disease will often deposit infertile eggs - Such females show the results of infection by the abdomens being swollen, resembling bowling pins.

PUBLICITY

It is an indication of the endless fascination that the Monarch butterfly has for all nature lovers that the monarch's life history is the subject of so many newspaper and magazine articles.

There were a goodly number of such articles in 1983 and we have a file simply bulging with clippings sent to us from many different places. The following is a list of the newspapers and magazines where such articles appeared:

Ventura County & Coast Reporter
The Times
St. Petersburg Times
New York Times
News-Advocate (Audubon, Iowa)
International Wildlife
Oceana Farm Mews
Hutchinson (Kansas) News
The News (Mexico City)
The Mirror (Sooke, B.C.)
National wildlife Federation
Lynchburg (Ohio) News
Dayton (Ohio) News
Detroit Sunday Times
Detroit Sunday Times
The Daily Monitor Leader
Detroit Free Press
Focus-World Wildlife Fund
Jack Pine Warbler
Morning News (ERie , PA)
View (Richardson School Dist.)
Journal (Moville, Iowa)
Waco News Tribune (Texas)
Pearssall Leader (Texas)
The San Antonio Light
The Dallas Morning News
The Sciences
Texas Monthly.

The above clippings were submitted by the following: Laura Banet; Bill Coleman; Peggy Garner; Barbara Hagenson; Marion Hill; Donna Kessler; Ruth Kough; Sarah Marossy; Marjorie Mathes; Babs Meyer; Gwyn Owen; Phyllis & Lee Perzanowski; Ellen Roush; Joan Senghas; Jean Stull; Ruth Trim; Roger Wilson; Dorothy Yeager; Cyril Zewe; Walter Zimmerman.

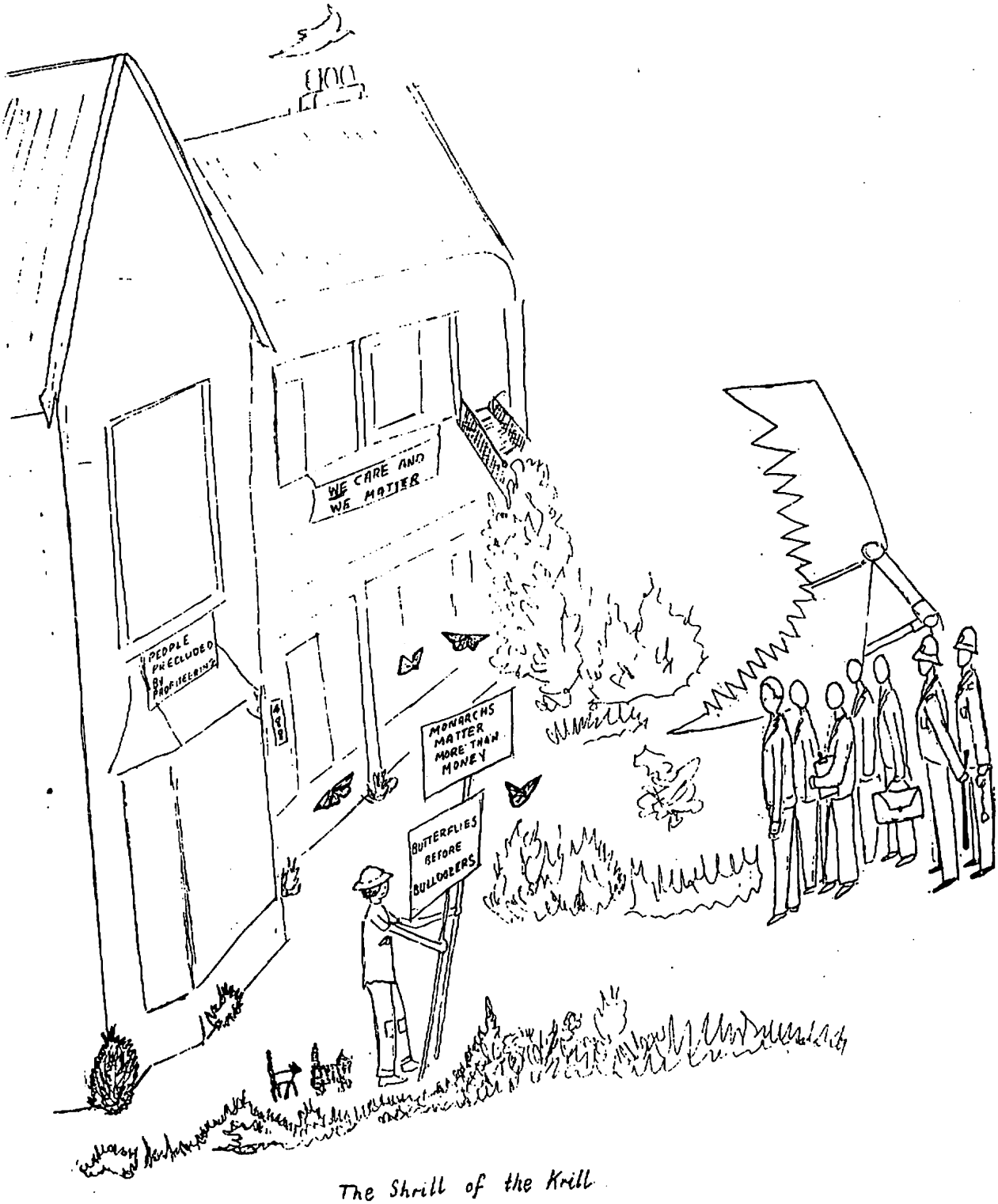
CONGRATULATIONS

Congratulations to Sarah Marossy for winning a "Best of Show Ribbon" for her unique display on monarch migrations at the 1983 Oceana County Fair.

A UNIQUE RECAPTURE RECORD

Up to the present time, we had but one outstanding day flight record of 82 miles. Now we have an amazing one. A migrant tagged by Jean Stull on September 18 at Waterford, PA, was recaptured on September 19 at 3 p.m. at Franklin, W. VA., after a flight of approximately 265 miles (425 km) in a twenty-four hour period.

We assume that this new record was due to very strong northerly winds assisting the flight. However, our ideas of how far a migrant can fly in twenty-four hours must be reconsidered.



The Shrill of the Krill

NOTE: The bird above the building is not the dove of peace – it's a wood-pigeon.

AN EXCELLENT THIRD GRADE MONARCH CLASS PROJECT.

We were delighted to receive a beautiful, thirty-one page hard cover book written and illustrated by the students in Marilyn Kaestner's class at Amerman School dealing with the life history of the Monarch butterfly. Each page of the book was written and illustrated in color by one of the students with his or her name appended.

Marilyn has also used the Monarch butterfly in her studies of geography by having the students follow the migrations of the fall migrants across the United States to Mexico. In addition, her students wrote to the primary schools in Mexico and have received letters from the Mexican students. Using this as a stimulus, she has further introduced her students to the study of Spanish, with the assistance of a local Spanish teacher.

Perhaps some of our teachers may wish to adopt Marilyn's ideas. We would be most pleased to receive such class projects to be included in our next report.

THE LANDLORD AND JUDITH EGERTON

One of our associates, Judith Egerton, who lives in Dunedin, New Zealand, recently sent to us a most interesting letter accompanied by a most delightful cartoon which we decided to share with our North American associates. Judith wrote, in part, as follows:

"Concurrent to the abysmal spring/summer, I was enmeshed in the throes of a habitat crisis. In September, the Wicked Landlord called to say that this property was to be demolished and redeveloped into four ownership flats. This scheme was somewhat disconcerting to me as it meant the entire ruination of the habitat..... Worst of all, it spelt the end of the Monarch Project unless or until another suitable area could be found...."

The Landlord finally allowed Judith to purchase the property - which she did.

Judith is a technician in the Anatomy Department of the Medical School at the University of Otago.

We wish to thank Judith for allowing us to share this Monarch butterfly episode and cartoon with us.

DEAR LORD ROTHSCHILD

BIRDS, BUTTERFLIES & HISTORY

When one thinks of "The House of Rothschild"one conjures up a family of great wealth. However, it will interest our associates to find scientific excellence characteristic of various members of the family, who between them have produced 1500 scientific publications.

In his Tring Museum, Walter Rothschild assembled the largest collection of natural history specimens ever made by one man, assisted by more than 400 collectors working all over the world. The fundamental concepts of subspecies owes its birth and development to the group at the Rothschild Museum at Tring in England, and this idea also put the trinominal system of nomenclature on a firm basis. The Tring Museum was wholly supported by Rothschild funds until it was bequeathed to the British Museum,

The book was written by the niece of Lord Rothschild, Miriam Rothschild, one of our very dear friends and colleagues who has contributed many scientific papers dealing , among other interests, with Batesian Mimicry and the Muhlerian hypothesis as well as the much written about, protection by warning coloration.

This book is available in the United States through ISI Press of Philadelphia.

PLANT LICE (APHIDS)

If you grow milkweed plants in your garden, or examine milkweed in nature, you will have observed clusters of aphids, commonly referred to as "plant lice",clustered on the underside of the leaves. Monarch butterfly females will rarely deposit eggs on plants thus infested. It is a most difficult insect to control , especially when you wish to use the milkweed leaves for rearing Monarch butterfly larvae and hence you can't use an insecticide.

The species of aphids, of which there are many hundres of them, overwinter in the soil. In late spring or early summer, the gravid females deposit eggs, or living young, on the milkseed leaves. You may have observed that the milkweed plants are relatively free of aphids in the spring and early summer. That is why, in part, you should collect the early milkweed leaves for freezing, if you wish to rear the Monarch butterfly during the winter months. This method has been described in previous reports. However, for more recent members, please write asking for information on raising Monarch butterflies throughout the winter.

The best control for the aphid is to destroy all plants in late summer - before the leaves fall. Tilling the ground in early winter, before freeze-up, will help destroy the aphids overwintering in the ground.Such methods can, of course, only be carried out in small garden patches - it is quite impossible for large areas.

ADHESIVE ON TAGS

Please examine the adhesive quality of any tags that you intend using this season. The adhesive is supposed to be of a permanent quality and should last for several years. However, if you have difficulty with the tags not adhering properly, return your defective tags immediately and they will be replaced.

If you have tags left over after the end of the season, please keep them wrapped in plastic and notify us of the numbers of the tags that you have retained for the nest season.

IN MEMORIAM

WALTER REGULA

It is with deepregret that we announce the death of one of our most active and dedicated associates, Walter Regula of Hamilton, Ontario.

Mr Regula joined our research group in 1978 and was most active, not only in tagging the Monarch butterflies but also in the transfer experiments that were carried out previously. He also contributed most generously to the support of the project.

Mr. and Mrs. Regula are noted photographers and have received top awards from the Photographic Society of America for their photographs and essays on the life cycle of the Monarch butterfly.

We extend our deepest sympathy to Mrs. Regula.

TEN YEAR HONOUR ROLE

Some research projects are "long term" while others are "short term". The study of animal migrations belong in the first category. The reason for this is obvious: A particular species of animal, be it mammal, bird, or butterfly, moves south or north only once each year. Hence, to plot the migratory routes involves many years of research.

That our research project dealing with the migrations of the Monarch butterfly has been so successful is due to the activity of our Research Associates over the past thirty-odd years. Over 3000 Associates have taken part. Of those who are still members, some joined for only one year while others have worked with the project for many years. Of the latter, we wish to honour those who have been members of our research group for ten years or more - the number of years given in brackets.

Fred Armstrong, Red Bank, N.J. (17)
Ray Bracher, South Bend, IN (25)
Kenny Brooks, Junction City, KA (14)
Bill Coleman, Ventura, CA (15)
Donald Davis, Newmarket, Ont. (16)
Margaret Elliott, Muskegon, Mich (21)
Mildred Emery, Nevada, MO (16)
Bernie Fashingbauer, St. Paul, MN (17)
Jim Gilbert, Waconia, MN (11)
Gregory Glovas, Bethlehem, PA (17)
Jessie Glynn, Limehouse, Ont. (20)
Barbara Hagenson, Clinton, IA (10)
Olivia Hansen, Staten Id, N.Y. (13)
Alice Hopf, Upper Black Eddy, PA (19)
Alta Horr, Gretna, NE (13)
Dorothy Hoskins, Weston, MA (13)
Lorraine & Harvey Houck, Decorah, IA (13)
Larry Hummer, Vista, CA (14)
Mrs. Franklin Hupp, Hinton, VA (13)
Island Nature School, Toronto, Ont (21)
Norwood Keeney, Jr., Hudson, NH (19)
Evelyn Kendrick, Sault Ste. Marie, Ont. (14)
Patricia Kester, Appleton, Wis (10)
Ruth Kough, Dysart, PA (10)
Donald Larson, Minnetonka, MN (10)
Mary Lorimer, West Bloomfield, Mich (15)
Patricia Malick, Stevens Point, Wis (10)
Joyce & Charles Mallery, Vestal, N.Y. (13)
Marjorie & Eldred Mathes, Pontiac , Mich (12)
Roland Matson, Minneapolis, MN (14)
Ruth Milani, Meaford, Ont. (11)
Molly Monica, Berkeley Heights, NJ (12)
Randy Reese, Newark Valley, N.Y. (15)
Dale Reichert, Hanover, PA (17)
Millicent Scott, Casper, WYO (15)