

ANNUAL NEWSLETTER

Department of Entomology

University of Illinois

Urbana, Illinois

MARCH, 1970

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We are saddened this year by the loss of Dr. Walter Balduf, long-time associate and friend of many of you who have passed through the portals of the University of Illinois. It is with a great deal of respect that we dedicate this issue to his memory.

This has been a year of change in Entomology at Illinois and in the Newsletter we share with you the shifting sands of time.

The editor once again takes the opportunity to thank Ruth Plymire, Judy Michael and Carol Jolley, our ever-faithful office girls, whose time, effort and willingness make it possible for the Newsletter to come to you each year. We are also grateful for all of our nonacademic people in the Department who give of their time and talents unselfishly. Also we would like to thank our graduate students, fellow colleagues and all of you alumni who share your activities and interests of the past year.

The Editor

MESSAGE FROM HEAD OF DEPARTMENT

This year has been a most eventful one at the University of Illinois, particularly in the Department of Entomology where there has been a great deal of change. The first major change was that of Dr. Herb Ross, who left the University of Illinois after forty years of dedicated service in the State Natural History Survey with a joint appointment in the Department of Entomology. All of you who have passed through this institution will remember the influence of Dr. Ross, the many students who completed the Ph.D. under his direction and his impact on Entomology at this University. Dr. Ross has taken a position at the University of Georgia where he is helping develop a new program in the biological sciences. With a great sense of loss we say goodbye to Herb and wish him well in his new position. Dr. Selander has written a very fitting resumé of his activities at Illinois and we are happy to honor him in this issue of the Newsletter.

This past year in December we were saddened by the passing of Dr. Walter Balduf. A long-time faculty member, researcher, fellow colleague, and friend to all of those students who passed through the Department of Entomology. We respectfully dedicate the 1970 issue of the Newsletter to his honor and to the many years of faithful service that he gave to this department and University.

Continuing in the vein of change was the departure of Dr. Clyde W. Kearns, former Head of the Department, to England where he assumed the Directorship of the Shell Research Laboratories. Clyde has taken a two-year leave of absence from the department to direct the laboratories in Sittingbourne. We would like to express our gratitude to Dr. Kearns for the excellent job he did in serving as Head of the Department from 1963 to 1969. During this period of time the department underwent a tremendous metamorphosis moving from Harker Hall into new quarters in Morrill Hall. This period of time saw a great deal of change and development in the setting up of superb research laboratories. The addition of four new staff members and continued improvement in curriculum and graduate student training to maintain the excellence and high standards generated in this department over the years. We owe a debt of gratitude to Dr. Kearns for his faithfulness and astuteness as a researcher, administrator and teacher. We take this opportunity to give him our heart-felt thanks for service well rendered.

Having assumed the responsibility of Head of the Department, I feel very keenly the need to maintain the tradition of excellence perpetuated by those distinguished men who have held the position of Head of this department. I address the job with a great deal of humility and a sincere desire to carry on these traditions to maintain excellence in Entomology at the University of Illinois. We have a responsibility to continue to turn out superb graduate students who will make significant contributions to the science of Entomology all over the world. I will be grateful in the future for your comments, suggestions, criticisms and continued support as alumni of the Department of Entomology at Illinois.

I would like to take a moment to thank those alumni who participated in the Entomology Breakfast at the meetings in Chicago. The Breakfast was a definite success. All those who attended had an opportunity to enjoy some fellowship and renew old acquaintances and as long as you feel it worthwhile to support we will continue such an activity at the future meetings.

I look forward to continued association and service with all of you.

Sincerely,

A handwritten signature in cursive script that reads "Joseph R. Larsen". The signature is written in dark ink and is positioned below the word "Sincerely,".

Joseph R. Larsen  
Head of Department

## ACTIVITIES OF THE SCHOOL OF LIFE SCIENCES

As we enter a new decade of growth in the Department, the School and the University, we pause to give you a brief report of activities within the School of Life Sciences. Last year we reported to you the development of a number of interdisciplinary programs. These have now come to fruition. Neurobiology is now functioning and we are proud to say the first student in this new program was Mr. Woodward, from Entomology, who is working under the direction of Dr. Sternburg on neurophysiological phenomenon as related to DDT. The new program in environmental biology has been approved by the Graduate College and with the current interest and stimulation in the overall problems of environmental control, this area was overwhelmed with applications at the graduate school level. It is quite evident that the University of Illinois will become an outstanding center to cope with these problems that face the world at large concerning environmental control with such tasks as control of pesticides, air pollution, etc. Dr. Robert Metcalf, serving as Head of the Department of Zoology and also from the Department of Entomology, is actively engaged in developing this program. The entire University on an interdisciplinary basis is developing a program in the area of environmental sciences.

The School of Life Sciences becomes more deeply involved in the teaching processes. A number of new courses have been added to the biology curriculum. We are delighted to say that members of the Department of Entomology are active in these School programs. Dr. Selander is teaching in population biology. Dr.'s MacLeod and Willis are actively engaged in the Honors Biology program and more and more members of the staff from all departments will be involved in School courses. We realize the responsibility to train our students and give them the advantage of interdisciplinary programs that bring together the facilities of all of the departments in unified concepts in the biological sciences.

Again we would like to express our appreciation to Dr. Kallio, our effective Director of the School, for his astute leadership in welding together even more strongly the various parts of the framework in a unified concept for the biological sciences. We look forward to a most successful year in the School and the continued development of those programs that will bring about increased strength and stature in the scientific community of this University. We feel that in our peer group we are outstanding and have great pride in being associated with this organization and look forward to another successful year within the School framework. We continue to feel that the facilities, instrumentation and physical plant of this University cannot be excelled.

IN MEMORIUM

Dr. Walter V. Balduf

During the past year a distinguished member of the Department of Entomology has passed away after long service to his University and profession. It is with a great deal of sadness that we note the passing of Walter V. Balduf, member of this department at the University of Illinois for 47 years. We respectfully dedicate this year's issue of the Newsletter to the memory of Dr. Balduf and the contributions he made to Entomology during his long tenure of service.

Following is the memorial prepared by his colleagues and presented in his honor at a meeting of the University Senate.

Walter Valentine Balduf, Professor Emeritus of the Department of Entomology, died 13 December 1969 after a distinguished career as a teacher and investigator for 47 years with the University of Illinois. He is survived by his wife Willma to whom he was married in 1916. He was born in LaCarne, Ohio, 28 September 1889. His academic credits include Ohio Wesleyan University, A.B., 1916; Ohio State University, M.S., 1920 and Ph.D., 1922. Before entering a graduate program he taught in high school. While completing his advanced degree he served as assistant entomologist of the Ohio Experiment Station. He came to Illinois as an assistant professor in 1922, became an associate professor in 1939, a professor in 1945, and an emeritus professor in 1958.

Professor Balduf was a teacher who liked both his students and the subject matter he taught. He was particularly interested in the undergraduate and in providing him with an understanding of the life around him through the study of insects. He saw in insects the fundamentals displayed by all living things wherein there is action and reaction in all levels of association. He turned the natural inquisitiveness of youth to studying living things, especially insects, both professionally and esthetically.

Dr. Balduf pursued his interest in insects as an individual effort largely at his own expense, for his was a day of low-budget research. In this he was blessed by encouragement and active assistance of his talented wife. He published two books on bionomics of parasitic and predacious insects, and both were illustrated by Mrs. Balduf. Much of Professor Balduf's time was spent hiking through the byways, meadows and fields of central Illinois observing, collecting, and recording facts about insects in their complex focal patterns. He was a meticulous observer who was able to see interactions of parasites and predators and their hosts and to explain his observations lucidly. Much of his work was done in a private laboratory maintained at home at personal expense. His understanding and enthusiastic wife permitted free range on porches and in the basement to a host of crawling insects during the summer months.

From endless hours with insects in the field and laboratory and with his collection, Professor Balduf contributed 70 journal papers and 3 books.

Most of his work was of ecological importance. In later years before retirement and in all of the years afterward, he devoted his time to studying interactions of various combinations of insects that serially degraded a common background source of energy. One of his longer treatises dealt with the ecology of insects based on the fruits of native roses. At the time of his death he was completing a work on focal parameters of insects based on birch logs as basic food. Even the day he went to the hospital for what proved to be his terminal illness, Dr. Balduf was working to complete an extensive manuscript of his work on interactions between two species of wasps in the same nesting site.

Dr. Balduf exerted himself to bridge the gap between academia and the lay community by participation in academies of science, service clubs and church affairs. He participated without ostentation, acting on the belief that laymen and academicians have much in common. Whatever he did in these areas he did willingly and unstintingly.

Dr. Balduf was an inspiration not only to his students but to his colleagues. His quiet mien, his appreciation of wit and humor and his charitable acceptance of the foibles of his associates made him a joy to know. We will always remember him as a scholar, naturalist and gentleman.

Robert L. Metcalf  
Gilbert P. Waldbauer  
William R. Horsfall

Department of Entomology

## A FAREWELL TO DR. H.H. ROSS

The year 1969 marked the end of an era in entomology in Illinois as Dr. Herbert H. Ross announced his retirement from the Illinois Natural History Survey and the University of Illinois, after completing 42 years of distinguished and dedicated service.

Dr. Ross joined the Survey staff as Assistant Entomologist in 1927, shortly after receiving his B.S.A. in agriculture from the University of British Columbia. In the same year he began his graduate work in entomology, in our department, obtaining his M.S. in 1929 and his Ph.D. in 1933. In 1931 he was appointed Systematic Entomologist at the Survey; in 1935, Head of the Section of Faunistic Surveys and Insect Identification; in 1956, Principal Scientist; and in 1963, after serving as Acting Chief of the Survey for a year, he was made Assistant Chief. Always interested in students and active in departmental affairs, he held a joint appointment as Professor of Entomology in our department from 1947 until his retirement. During this period 22 students received advanced degrees under his direction.

In the course of his long and brilliant career in Illinois Dr. Ross has become one of the most productive and influential entomologists in the world. Displaying great breadth of interest and amazing versatility, he has emerged as a leader in such diverse fields as evolutionary theory, community ecology, biogeography, and systematic entomology. In addition to nearly 190 articles treating the systematics of insects (Orthoptera, Dictyoptera, Plecoptera, Hemiptera, Neuroptera, Hymenoptera, Diptera, and Trichoptera) and problems of ecology, taxonomy, phylogeny, biogeography, and entomological techniques, he has published several important books, including A Textbook of Entomology, originally issued in 1948 and now in its third edition and widely used in several translations, Evolution and Classification of the Mountain Caddisflies (1956), A Synthesis of Evolutionary Theory (1962), and Understanding Evolution (1966).

Apart from his contribution to biology as a teacher and research worker, Dr. Ross has rendered service as Review Panelist for the National Science Foundation (1958-61), Editorial Board Member for the Annual Review of Entomology (1956-61), Evolution Editor (since 1961) and Trustee (since 1968) of Biological Abstracts; Secretary-Treasurer (1944-53) and President (1954-55) of the Entomological Society of America; and Secretary (1959-63) and President (1966) of the Society for the Study of Evolution.

Through his own work and that of his students he has profoundly influenced the nature and direction of evolutionary biology and systematics. Despite his attention to faunistic work in Illinois, he has consistently held and encouraged in others an extremely broad approach to systematic problems, in terms not only of geography but also of the ecological and historical dimensions. By emphasizing its evolutionary aspects he has done much to lift systematics from the dull, backward, and languishing condition in which he found it to its present status as a progressive analytical and synthetic science.



Apart from his professional attainments, Dr. Ross will be remembered on this campus for his integrity, industry, and friendliness, and for lending to both the Survey and the Department of Entomology a special distinction that is part of his style.

In saying farewell to Dr. Ross and to his lovely wife, Jean, we take pleasure in knowing that this is not the end of his career but rather the beginning of a new phase. On leaving campus the Ross' moved to Athens, Georgia, where Dr. Ross has taken on new duties as Professor of Entomology in the University of Georgia. Courses in systematics are already underway and the manuscript of a book on Plecoptera has made its way north from Dixie. Hold onto your hats, gentlemen. Here we go again!

DEPARTMENTAL ROSTER, 1969-70

Faculty

- Booth, Gary M. - Assistant Professor of Entomology  
Chadwick, Leigh E. - Professor of Entomology, Emeritus  
Decker, George C. - Professor of Entomology, Emeritus  
Fraenkel, Gottfried S. - Professor of Entomology  
Friedman, Stanley - Professor of Entomology  
\*Ghent, Arthur W. - Associate Professor of Entomology  
Hayes, William P. - Professor of Entomology, Emeritus  
Horsfall, William R. - Professor of Entomology  
\*\*Jaycox, Elbert R. - Professor of Apiculture  
Kearns, Clyde W. - Professor of Entomology  
\*\*\*Larsen, Joseph R. - Professor of Entomology and Head of Department  
Luckmann, William H. - Professor of Entomology and Head of  
Economic Entomology Section  
MacLeod, Ellis G. - Associate Professor of Entomology  
Metcalf, Robert L. - Professor of Entomology and Head of Zoology Department  
Milum, Vern G. - Professor of Entomology, Emeritus  
Selander, Richard B. - Professor of Entomology  
Stannard, Lewis J., Jr. - Professor of Agricultural Entomology  
Sternburg, James G. - Professor of Entomology  
Waldbauer, Gilbert P. - Associate Professor of Entomology  
Willis, Judith H. - Associate Professor of Entomology

\*Joint appointment with Zoology

\*\*Joint appointment with Horticulture

\*\*\*Joint appointment with Physiology and Biophysics

Research Associates

Bhaskaran, Govindan  
Bhattacharya, A.K.

Zdarek, Jan

Research Assistants

Ameel, John  
Bouseman, John K.  
Brattsten, Lena B.  
DeWitt, Jerald  
Fox, Michael  
Hsieh, Feng-kuo  
Kapoor, Inder

Nordin, Gerald  
Penny, Norman D.  
Sangha, Gurcharan Kaur  
Sell, Douglas (Technical)  
Sprenkel, Richard K.  
Woodward, Willard

Teaching Assistants

Casaburri, Angelo  
Harris, Howard  
Henderson, Mary  
Lee, An-horng  
Lipsey, Richard

Moretti, Louis  
Sanburg, Larry  
Scarborough, Aubrey  
Sheldon, Joseph

Trainees and Fellows

Adams, Cheryl - U of I Fellow  
Denlinger, David - NDEA Fellow  
Dunwoody, John E. - Cell Biology  
Trainee  
Freier, Jerome - USPH Trainee  
Gardner, Francis - Cell Biology  
Trainee  
Henderson, Mary - Cell Biology  
Trainee  
Krone, Larry - NSF Trainee

Molina-Pardo, Adolfo - Wright  
Fellow  
Morden, Robert - USPH Trainee  
Nigg, Herbert - USPH Trainee  
Nye, Donald - USPH Trainee  
Olson, Jimmy K. - NDEA Fellow  
Randall, Robert F. - USPH Trainee  
Wu, Ming-fue - U of I Fellow

Students not on Staff

Berrios-Ortiz, Angel  
Chen, Chiou-nan  
Clegern, Robert  
Diem, Michael H.  
Keh, Hsiao-mei  
Khalsa, Mohinder

Kuhlman, Donald E.  
Perera, Nalini  
Singh, Zile  
Vaishampayan, Sharad  
Wilson, Gary R.  
Wilson, Thomas (in absentia)

Nonacademic Employees

Belsö, Myrna  
Duvall, Eloise  
Fisher, Mary  
Jolley, Carol  
Michael, Judy

Millholin, E. Ruth  
Plymire, Ruth A.  
Ransom, Terry  
Satterthwaite, Helen  
Yeh, Shaw-mei

Academic Employees

Hansen, Penny - Research Assistant  
Hollowell, Margaret - Research Assistant

Ruh, Mary - Research Associate

Student Employees

Broadbent, Alan  
Burkhart, Ellen  
Carlson, Karen  
Fitzgerald, Robin  
Hall, Diana  
Harrison, Wilbur

Hinthorn, James  
Hodes, Michael  
Humphries, Arlene  
Lundgren, Deborah  
O'Neill, Patricia  
Sutton, Karen

VISITORS TO THE DEPARTMENT

MARCH, 1969

Dr. Richard R. Mills  
Department of Biology  
Tulane University  
New Orleans, Louisiana

Dr. D.L. Whitehead  
Department of Zoology  
Oxford University  
Oxford, England

MAY, 1969

Dr. Bernard Belleau  
Department of Chemistry  
University of Ottawa  
Ottawa, Ontario  
Canada

Dr. Barbara Stay  
Department of Entomology  
University of Iowa  
Iowa City, Iowa

Dr. Carroll M. Williams  
Department of Biology  
Harvard University  
Cambridge, Massachusetts

OCTOBER, 1969

Dr. June Chadwick  
Department of Microbiology  
Queens University  
Kingston, Ontario  
Canada

Dr. Thomas E. Moore  
Museum of Zoology  
University of Michigan  
Ann Arbor, Michigan

## SPORTS REVIEW

The sports calendar for the past year included basketball, football, and softball. The department's dream coach, Terry Ransom, surrounded himself with a group of super jocks that would rival even the most successful athletic program. With this nucleus the team was christened the Dung Beetles, and set forth to do battle with the campus best.

Basketball 70 saw the Beetles slide in and out of greatness (mostly out) as they were rolled to a 1 and 5 season. Softball followed and so did an increase on the loss side. However, the season was not without its moments of glory. Who can forget the emergence of Inder Kapoor as the team's longball hitter. Inder, using a flat bat, hit two homeruns and demanded that he be traded to a team where his talents would be properly utilized. At the close of a 1 and 5 season the Beetles regrouped for one final game with the highly touted team from the Illinois Natural History Survey. With a keg of beer at stake the Beetles proceeded to lose number six.

Undaunted by these initial setbacks the Beetles charged onto the gridiron only to find that dream coach had stuck them in the super super fraternity league. Needless to say the competition was keen. Despite these hopeless odds the surprising Beetles posted a 2 and 3 season record (the final two games were won by forfeit). The long season saw the Beetles post one first down and not score a point.

Throughout the winter the team re-evaluated its entire program, and with a new plan of attack, some fresh new talent, and a wealth of desire proceeded to lose the first two games of the 1970 basketball season. However the team's future looks bright. Stimulated by an extreme amount of enthusiasm as exemplified by Herb Nigg's take-off on Randy Crews at the last game the department jocks look forward to another year of stimulating activity. We play with the spirit of Bud Wilkinson who said "show me a good loser and I'll show you a loser".

### CHRISTMAS PARTY

The department held its annual Christmas Party on December 10, 1969, at the University Club. This party had special significance since it was the department's last opportunity, as a group, to bid farewell to Dr. and Mrs. Kearns. The affair was well attended, and from all indications enjoyed by all.

The group received a surprise visit from Santa Claus who presented students and faculty members with appropriate gifts. Dr. Gary Booth received a separator for his desk. We understand that it has since been misplaced in the debris it was designed to separate. Larry Krone received a portable sewer and John Ameal a bronzed set of stalagmites. The most appropriate and most useful gifts were presented to Dr. Larsen. He received a set of 440 racing slicks, a roll bar, and a set of studded tires for his wheel chair.

After Santa departed, Dr. Larsen presented Dr. Kearns with a watch and a plaque, and took some friendly shots at his golfing future. All in all it was an extremely enjoyable evening.

We wish to thank Alice Prickett for her efforts in preparing the invitations, the Womens Bridge Club for assistance in many areas, and the faculty members and their wives for supplying the food. It was indeed a Merry Christmas.

## ENTOMOLOGY GRADUATE STUDENT ASSOCIATION

Fall of 1969 saw the formation of the Entomology Graduate Student Association (E.G.S.A.) whose primary purpose is to establish better communications between the students and faculty and between the students themselves. The association is composed of all the graduate students and is governed by a steering committee comprised of students representing each of the three floors in Morrill Hall and the Survey. Each representative is elected by the group of students whom he will represent; and from these four people, a chairman is selected through a vote by the entire E.G.S.A. membership. Those presently serving on the steering committee are: Jim Olson, fourth floor; Larry Sanburg, third floor; Herb Nigg, second floor; and Norm Penny, Natural History Survey.

The major objectives and goals of the Association were quite adequately stated in a letter read at the October 7 Faculty Luncheon by Bob Morden, who is serving as the student spokesman at faculty meetings:

"The Entomology Graduate Student Association was formed because the graduate students felt they should have a greater voice in the policies that concern them. In the past there has been no effective way for the students to make their ideas known to the faculty. It is the hope of the association that our ideas and opinions which represent those of the majority of the graduate student body in entomology will be given greater consideration than those which we have presented as individuals.

In brief, what the EGSA hopes to achieve is a greater voice in matters which concern them. This in turn should lead to better understanding and great communication between the students and faculty which we hope will create a better academic atmosphere in the department."

In partial fulfillment of these objectives, the Association has formed the following committees:

Newsletter - Bert Clegern, Editor, and Jerry DeWitt  
Faculty meetings - Bob Morden, Representative  
Employment opportunities - Herb Nigg, Jerry Nordin, Co-chairmen  
Student-Faculty bulletin board - John Ameel, Chairman  
Student-Faculty dossiers - Dave Denlinger, Chairman  
Sponsorship of new students - Dick Sprengel and Ernie Dunwoody  
Cooperation with Zoology G.S.A. - Larry Sanburg  
History of the department - Norm Penny and Bert Clegern  
Coffee room - Gary Wilson

The newsletter is published monthly and includes items pertaining to E.G.S.A. activities, departmental news and noteworthy items from the national and international scene which pertain to us as entomologists. Bert Clegern acted as editor, reporter, and copy boy all wrapped into one during the fall semester and as a committee of one, he did an outstanding



job. Others have recently expressed an interest in working on the newsletter (namely Jerry DeWitt); and it is our hope that as more become interested, the newsletter can expand its scope and content. Bob Morden, faculty representative, coordinates the activities and concerns of both the faculty and students. He is to report to the faculty those ideas, opinions and decisions of the E.G.S.A. which we feel are important to the functioning of the department. At the same time, he will screen the material under discussion at the faculty meetings and report to the steering committee only those items which pertain directly to the graduate students or to their well-being within the department.

As Co-chairmen of the Employment Opportunities, Herb Nigg and Jerry Nordin have begun to accumulate lists of prospective jobs, however, the demand for jobs is far exceeding the supply of job opportunities and any information that you, as alumni, faculty, or students, may have pertaining to employment would be greatly appreciated by this committee. John Ameel is in the process of loading his cameras and will be sneaking into the various labs to single out each individual for a candid photograph which will be placed along with the individual's name and major interest on two bulletin boards: one at the Natural History Survey and the other in Morrill Hall. Meanwhile Dave Denlinger is attempting to accumulate enough information on each student and faculty member such that a short dossier can be written for each member of the department. The bulletin board coupled with the dossiers will serve as means for a short introduction to each member of the department which would aid new students and faculty members and visitors to the department. These two projects will also have historical value in the years to come.

Sponsorship of new students will commence with the new students entering during the summer and fall of 1970. This program, as outlined in the E.G.S.A. Newsletter, will include communicating with prospective students; making the university, the community, and most of all, the department, known to the new people; giving them a tour of both the Natural History Survey and Morrill Hall; and introducing them to the staff and students within the department. These new students will also be sent a copy of the history of the department which Norm Penny and Bert Clegern completed in January and which was included in the January issue of the E.G.S.A. Newsletter.

Larry Sanburg is acting as our liason with the Zoology Graduate Student Association in order that our two groups may coordinate activities and ideas. The two groups shared a common coffee room during the first semester; however, through some remodeling on second floor of Morrill Hall, the Department of Entomology now has a combination reference, browsing, conference and coffee room. This does not mean that we should discontinue using the original coffee room entirely since it offers a chance to associate with the members of the Department of Zoology on a relaxed basis.

I feel that, during its short six months of existence, the E.G.S.A. has made some major progress towards the aims and goals that it has set for itself. I would like to extend my most sincere gratitude to those students who have spent the time and effort required for the success of those programs.

which have been initiated. To those students who have not taken an interest, I invite you to join us in trying to strengthen the association such that it represents all the graduate students in entomology. I also invite the faculty, and alumni to join us in our endeavors and any criticism, ideas, suggestions, or comments you might have pertaining to the E.G.S.A. and its function within the department would be greatly appreciated. On behalf of the E.G.S.A. I would like to thank Dr. Larsen who has cooperated with us in every conceivable way in our attempts to get the Association off on the right foot. I hope in our own small way we have shown that not every student-conceived organization is out to destroy the establishment; rather, it is our aim to strengthen the department of which we are a part.

J.K. Olson  
Chairman, E.G.S.A.

RECENT GRADUATES

Eddie Wayne Cupp - June, 1969

Eddie Wayne Cupp was born April 7, 1941, in High Splint, Kentucky. Ed attended Elmhurst College from 1960-61 in Liberal Arts. He attended Murray State College from 1961-64 and graduated with a Bachelor of Arts degree in biology and history in June of 1964. As an undergraduate, Ed was a member of Beta Beta Beta. After graduation in 1964, Ed went to work with Dr. Breman in the vector control program of the Tennessee Valley Authority. Just prior to entering the University of Illinois, Ed worked for six months as a senior lab technician in the Lutheran General Hospital in Park Ridge, Illinois.

He entered the University of Illinois in the Department of Entomology in 1965. While he was here at the University of Illinois, Ed was supported on a Public Health Traineeship. He was also the recipient of a two-month Inter-American program fellowship in tropical medicine which he received from Louisiana State University. The Inter-American program fellowship was an excellent opportunity for Ed to spend approximately 8 weeks in Latin America studying the principal problems of tropical medicine in such countries as Costa Rica, Honduras, Sal Salvadore, Guatamala, Mexico and Panama. Ed's primary interests are in medical entomology for which reason he came to train under Dr. Horsfall here at the University of Illinois. On graduation he was nominated to Sigma Xi and was a member of the Entomological Society of America. Ed received his Ph.D. in June of 1969. He carried out his thesis research under the direction of Dr. William Horsfall on the effect of thermal stress during embryogeny on the larval and imaginal morphology of Aedes aegypti.

When Ed left he accepted a position in the Department of Parasitology of the School of Tropical Medicine and Hygiene at the Tulane University Medical School.

Harlan Wade Fowler, Jr. - June, 1969

Harlan Wade Fowler, Jr., was born July 29, 1928, in Arcadia, Florida. He grew up in Florida where he attended Desota County High School graduating in 1946. Wade then attended Florida South College from 1948 to 1950 where he majored in business administration and music. From 1950-53 he attended the University of Florida majoring in entomology and received a Bachelor of Science degree in 1953. From 1953-55 Wade also attended the University of Florida where he studied bacteriology. Wade also spent a year at the University of Maryland from 1957-58.

Wade entered the United States Army in the preventative medical corps as an officer at Ft. Jackson, South Carolina, where he served from 1953-55. He also attended the Army Medical Service school in 1955 and completed the basic officers course. He served in Korea from 1955-56 as Entomologist and Public Health Director. He served with the 406 Medical General Lab in Japan from 1956-58 where he worked as a research entomologist. He served as an

instructor in the Army Medical Service School at Ft. Sam Houston in 1958. In September of 1959 Wade entered the University of Illinois to begin his graduate studies toward the Ph.D. degree. Wade was able to stay only one year to the fall of 1960 and then had to return to active duty. After completing one year of course work at Illinois, Wade served in the following positions: From 1959-62 he was Research Entomologist with the U.S. Army Environmental Labs at Edgewood, Maryland; from 1962-65 he served as Medical Entomologist and Consultant with the U.S. Army European Ground Troops in Landsdol, Germany; from September 1965-December 1965 he was student officer in the Medical Field Systems School at Ft. Sam Houston, Texas.

In January, 1965, Wade returned to the University of Illinois to continue his graduate studies in medical entomology. While he was here at the University of Illinois, he completed his course work and his thesis requirements under the direction of Dr. William Horsfall. His thesis research was on the bionomics of Aedes vexans. By the time he had completed his training here at Illinois he had been promoted to the rank of Lt. Col. and upon completion of his degree program was assigned to Viet Nam.

Wade is a dedicated entomologist who will make a contribution not only to entomology but also through faithful service to his country in the department of preventative medicine. He is a member of the Entomological Society of American and the American Mosquito Control Association.

#### Franklin Chang - October, 1969

Franklin Chang was born February 12, 1942, in Princeton, New Jersey. Frank's family subsequently moved to Maryland where he attended high school and entered the University of Maryland. He completed a major in entomology and received the B.S. degree in June of 1963. As an undergraduate, Frank worked summers for the Forest Insects Laboratory in the Forest Service of the U.S. Department of Agriculture also as a biological aide in the Plant Pest Control Division of the U.S.D.A. Frank applied to the University of Illinois for graduate study in entomology in the fall of 1963 but opted for an offer from Purdue University where he started his graduate training under the direction of Dr. Stan Friedman. When Dr. Friedman came to Illinois in 1964, Frank transferred his graduate position to the University of Illinois where he entered the Department of Entomology in the fall of 1964. Frank continued to work in the U.S.D.A. laboratories in the summer of 1963 and 1964 in the Plant Pest Control Division and the Insect Physiology Lab.

While at the University of Maryland, Frank earned the Ernest M. Corray scholarship two consecutive years in 1962 and 1963. He also received a certificate of distinguished scholarship and graduated with honors. He was a member of Alpha Zeta (honorary fraternity) and a member of the Entomological Society of America. While at the University of Illinois, Frank was on the U.S. Public Health Training Grant and carried out his research under the direction of Dr. Stan Friedman in insect physiology and biochemistry. Frank completed the Ph.D. requirements in October of 1969. His research was on the developmental analysis of the uptake and release of lipids by the fat

body in the tobacco horn worm, Manduca sexta. When Frank completed his work he accepted a job in the Department of Biology at Alma College in Alma, Michigan. He is involved in teaching basic biology courses and will undoubtedly look forward to developing a teaching program of his own in entomology.

Gary Eugene Eertmoed - October, 1969

Gary Eugene Eertmoed was born April 24, 1939, in Pekin, Illinois. Gary is a true product of the Midwest having grown up and spent his childhood years in Pekin. He attended Pekin Illinois Community High School where he graduated in 1957. Gary attended Illinois State Normal University in Bloomington where he graduated in June of 1961 in biology and general science and earned the Bachelor's degree with certification in education. While attending Normal he held a state teacher's education scholarship. Gary's interest in entomology goes back to his high school days when he won an award for his school science exhibition on insects.

Gary entered the University of Illinois in the Department of Entomology in September of 1961. While Gary was working on his Ph.D. in Entomology his wife, Betty, was also attending school here where she completed her degree and certification in the teacher training program in biological sciences. While a graduate student here at the University, Gary held both research and teaching assistantships. He carried out his Ph.D. work under the direction of Dr. Richard Selander. His thesis was on the phenetic relationships of the Epipsocetae (Psocoptera): The higher taxa and the species of two new families. On the completion of his doctoral work in October, 1969, Gary returned to his alma mater where he assumed the position of Assistant Professor in the Department of Biology at Illinois State University in Normal. He is busily engaged in their teaching program and will develop a research program of his own.

Frank Ray Voorhees - October, 1969

Frank Ray Voorhees was born December 8, 1935, in Pekin, Illinois. Frank is one of two of our graduates this year to come from Pekin. Frank spent his early years in Pekin but subsequently moved to Florida where he attended Landa High School in Jacksonville, Florida. Having become relocated to the southern climes, Frank attended the University of Florida from 1953-58 where he received a Bachelor of Science Education in Math and Science Education and was certified as a secondary school teacher. Frank taught science at Trenton High School in Florida. In the summer of 1960 he held an N.S.F. fellowship for biology teachers, where he attended the Appalachian State Teachers College from 1960-62. Frank taught math and biology as a high school teacher for the government in Tumon High School in Agauna on the island of Guam. From 1962-65 Frank taught chemistry and physics in Gilman, Illinois. In addition to his high school teaching while on Guam he also taught evening courses in physics and math at the U.S. Armed Forces Institute

at Anderson Air Force Base.

Frank applied to the University of Illinois in the Department of Zoology in 1965 and began his student work with a fellowship. Frank also served as a teaching assistant in Zoology 104 and Zoology 333. Frank completed a Master's degree under the direction of Dr. Watterson on the embryology of the chick. On the completion of his Master's degree Frank petitioned for transfer into the Department of Entomology and in 1967-68 was awarded a university fellowship. Frank completed his Ph.D. program under the direction of Dr. William Horsfall. He worked on the genesis of the reproductive system of the mosquito Aedes stimulans (Walker) as influenced by serial temperature.

With Frank's strong interest in teaching he accepted a position in the Department of Biology at Knox College where he will be teaching biology, as well as developing his own research program. Frank is a dedicated teacher and will make a contribution to the future training of biology teachers in the state of Illinois. He is returning to the University of Illinois in the summer of 1970 to continue some of his thesis research on a postdoctoral basis with Dr. Horsfall.

#### Richard Charles Weddle - October, 1969

Richard Charles Weddle was born February 21, 1934, in Indianapolis, Indiana. He grew up in Indianapolis where he attended Southport High School graduating in 1952. In the fall of 1952 Dick entered Ball State Teachers College in Munsey, Indiana, where he majored in physical education. After a year at Munsey, Dick transferred to the University of North Dakota which he attended from 1954-59 and received his Bachelor's degree in August of 1959. From the fall of 1960-63 Dick continued on at the University of North Dakota and received a Master's degree in June of 1963. While at the University of North Dakota, Dick worked as a lab assistant in general biology for two years. His Master's work was in zoology and ecology. He worked on edaphic conditions of the soil moisture and temperature and how they related to micro habitat.

Dick entered the University of Illinois in 1963 to continue his graduate studies as a candidate for the Ph.D. degree in entomology. While at the University of Illinois, Dick served as a teaching and research assistant. He carried on his graduate work under the direction of Dr. Richard Selander. He worked on the experimental studies of the ecological and hormonal control of postembryonic ontogeny in blister beetles of the genus Epicauta. On completion of his Ph.D. in October of 1969 Dick left the academic field and went into the commercial world where he accepted a position with the Stoker Company in El Central, California.

William Robert Campbell - February, 1970

William Robert Campbell was born February 2, 1942, in Roanoke, Virginia. Bill is a product of the South having grown up in Roanoke where he attended Jefferson Senior High School, graduating in June, 1959. At that time Bill entered Virginia Polytechnic Institute at Blacksburg where he received a B.S. degree in June, 1963. As an undergraduate he majored in the biological sciences. Bill broadened his background by attending Roanoke College in Salem, Virginia, in the summer of 1961 and the University of Virginia at Charlottesville in the summer of 1962. He returned to Virginia Polytechnic Institute in the fall of 1963 to work on a Master's degree which he completed under Dr. Cochran in August of 1965. While a graduate student at V.P.I. he worked in the secondary science training program for gifted students and served as a teaching assistant. The title of his Master's thesis was a study of the genetics and biochemistry of DDT resistance in two independently selected strains of the German cockroach.

Bill entered the Department of Entomology at the University of Illinois in September of 1965. While he was a student here at Illinois he was on a U.S. Public Health Training Grant. He did his graduate work under the direction of Dr. Clyde Kearns in insect toxicology. He did his research on purification properties of house fly head acetylcholinesterase and on the inhibition of fly head acetylcholinesterase using a bis [M-hydroxyphenyl] trimethyl ammonium iodide esters of polymethylenedicarbamic acid. On the completion of his Ph.D. work in February, 1970, Bill accepted a position at Purdue University in the Department of Entomology. He is now carrying on an active research program in that laboratory.

Roscoe Randell - February, 1970

Roscoe Randell was born March 11, 1930, in Tuscola, Illinois. Roscoe is also a product of the Central Midwest. He attended Tuscola Community High School where he graduated in spring of 1947. Roscoe entered the University of Illinois in the fall of 1947 in the College of Agriculture. He received a B.S. degree in June of 1951 in general agriculture. Roscoe interrupted his undergraduate education at the University of Illinois for a hitch in the U.S. Army during 1952-53. He returned in 1953 where he transferred into the general agricultural and teacher training curriculum. When he graduated in 1951 from the College of Agriculture he was also certified to teach in vocational agriculture. Roscoe entered the Graduate College in 1954 where he received a Master's degree in education in June of 1959.

He came back to the University in the fall of 1965 where he entered graduate school in the Department of Entomology. Having had his Master's degree in education he did a major in entomology and a minor in education. Roscoe has worked as an instructor in Agricultural Entomology for the Extension Service in agriculture and home economics. He also worked in the Section of Economic Entomology at the Illinois Natural History Survey. Roscoe completed the Ph.D. requirements in February, 1970. He did his graduate

work under the direction of Dr. William Luckmann of the Natural History Survey. He did his thesis work on the bionomics of the corn leaf aphid, Rhopalosiphum maidis (Fitch). Upon the completion of his graduate work, Roscoe continued with the State Natural History Survey where he had worked for a number of years between receiving his Master's degree and returning to graduate school.

Ching-chieh Yu - February, 1970

Ching-chieh Yu was born June 10, 1940, in Taoyuan, Taiwan, China. He attended the local primary school and then attended Taiwan Provincial Taoyuan Agricultural School from 1952-58. He received a B.S. degree in entomology from Taiwan Provincial Chung-Hsing University in 1962. After graduation, he was enlisted to serve in the Chinese Army as second lieutenant platoon leader for one year.

He passed the Chinese Civil Service examinations and was employed as junior specialist in the Laboratory of Entomology and Phytopathology, Bureau of Commodity Inspection and Quarantine in Taipei, Taiwan, for one year. In September, 1964, he came to the United States and pursued further study in the University of Georgia. He received a M.S. degree in entomology in 1966. At Georgia, he had the opportunity to meet Dr. U.E. Brady, a University of Illinois entomology alumnus who is a faculty member in Georgia. Dr. Brady recommended Ching to attend the University of Illinois for Ph.D. study.

Ching finished his Ph.D. degree on February, 1970, under the direction of Dr. Kearns. The thesis is entitled comparative study of insect cholinesterases with special reference to substituted phenyl N-alkyl monocarbamates and bis-carbamates. His major interest is on the insecticide selectivity. Currently he is an instructor for the Department of Entomology helping with the teaching of insect toxicology in Spring, 1970.

Regarding the future planning, he would like to do research or a combination of research and teaching on insect toxicology and insect biochemistry. He is a member of the Entomological Society of America, American Chemical Society and A.A.A.S.

Ching was married to Stella in August, 1969. Currently Stella is working in the University of Illinois Chemistry Department. Last summer they traveled through the eastern part of Canada and the United States. They spent their honeymoon in the Rocky Mountain National Park in Colorado.



PRESENT ENTOMOLOGY GRADUATE STUDENTS

Cheryl Lynn Adams

I was born June 28, 1947, in Anna, Illinois. I attended Southern Illinois University at Carbondale where I received a B.A. degree. I came to the University of Illinois in September of 1969 and I am being supported by a University Fellowship. My anticipated thesis research will be physiological ecology. Future goals: Desire research and academic position.

John J. Ameal

I was born January 11, 1941, in Manhattan, Kansas, where I attended high school and Kansas State University. I received my B.S. in entomology from Kansas State in 1963 and departed for the Lake Itaska biological station of the University of Minnesota for summer field courses in entomology and invertebrate zoology. I returned to Kansas State for a Master's degree in entomology under Dr. T.L. Hopkins. My topic was symptoms of insecticidal and physiological stress on cockroaches. In 1965 I was fortunate to attend an eight week course in tropical insect ecology sponsored by Organization for Tropical Studies in Costa Rica. That fall I entered the University of Illinois for work on a doctorate. While here I have been supported by an NDEA Title IV Fellowship, a teaching assistantship in biology, and a research assistantship.

My thesis research concerns the biology and ecology of stored grain insects, primarily the Cadelle, Tenebrioides mauritanicus. This pest has been found in a wide variety of stored products and is a major pest in some parts of the world. I have been running detailed studies of its feeding habits as a germ feeder and am running food utilization studies on a variety of diets at different environmental conditions.

At present my plans for the future are open. I would like to pursue some phase of biospeleology, a field of interest which has grown out of a recently developed hobby. And there is also a desire to return to the Central American tropics for ecological research.

My outside interests include hiking, mountain climbing, caving, cycling, nature and cave photography and SCUBA diving.

Advisor: G.P. Waldbauer.

Angel Berrios-Ortiz

My research concerns the anatomy of immature stages of Epicauta segmenta (Coleoptera - Meloidae).

Advisor: R.B. Selander.

Chiou-nan Chen

I was born October 14, 1942, in Taiwan, China. I was educated at the National Taiwan University in Taipei, Taiwan, China, and have received a B.S. degree in agriculture from that university. I am self-supported. My specialization within entomology is economic entomology. My future goals and plans are to be a teacher and doing research work in Department of Entomology,

National Taiwan University, Taipei, or to do research work in any institute in Taiwan. My outside interests include music (classic and hit songs), movies, mountain climbing, fishing, reading (especially philosophical essays).  
Advisor: W.H. Luckmann.

Robert (Bert) W. Clegern

I was born February 28, 1943, in San Diego, California. I am married (Carol) and we have a son, Jimmy, who was born March 16, 1969, in Enid, Oklahoma. I received my B.A. degree in biology from the University of Colorado, Boulder, in 1965 and my M.S. degree in entomology from the University of Illinois, Urbana, in 1966. I am currently being supported by the Air Force Institute of Technology. I taught aviation physiology to pilot trainees in the Air Force for three years. My specialization within entomology is medical entomology. Course work is foreseen for still another year, however, thesis research is in systems analysis of insects of medical importance (statistical-computer study of inter-relationships of the various factors in the ecology and control of an insect).

My proposed study is on the house fly as a mechanical transmitter of disease.

My future plans include returning to the Air Force as a medical entomologist after receipt of the Ph.D. I intend to make the Air Force a career, spending at least fifteen more years in the service. My possible assignments in medical entomology include several overseas countries as well as many stateside locations and all of these possibilities are positions that entail research and consultant work as their prime duties. After retirement, I plan to teach and do research at the college level, hopefully in Colorado.

Outside interests include taking my family to enjoy scenic areas, adding to my insect collection (primary interest = Diptera - Syrphidae), playing softball and other sports, playing bridge, listening to music (favorite = Baroque?) and reading in general to try to keep up with the world.

Advisor: R.L. Metcalf.

Lena B. Brattsten

My specialization within entomology is toxicology. My thesis research is study of drug degrading enzymes.

Advisor: R.L. Metcalf.

David Denlinger

It's been 2 1/2 years since I left the hills of Pennsylvania and wandered onto the Illinois prairie. My interests in physiology and ecology have focused on a study of diapause in species of Sarcophaga under the direction of Drs. Fraenkel and Willis. More specifically my thesis involves working out the hormonal control of diapause induction in these animals. Although my thesis has not provided much opportunity for field work, I hope to become involved in field studies in the future. I am especially interested in doing some work in the tropics. Upon the completion of my degree I hope to combine a teaching and research career in an academic situation.

Outside of the lab it has been a great year also. Judy and I had an opportunity to travel around Europe last summer — I highly recommend it

as a way to get psyched for prelims! Judy is enjoying her second year as a first grade teacher at Robeson Elementary School in Champaign. In my free time I like to get out and swing an insect net, play tennis, or do a little oil painting.

I was born November 20, 1945, in Lancaster, Pennsylvania. I received my B.S. from Pennsylvania State University. I am being supported by an NDEA Title IV Fellowship.

Advisor: Judith Willis.

Jerry DeWitt

During the past year I have concluded research for my Master's on the effects of photoperiodic variations on diapause in the alfalfa weevil. Additional summer research on Cannabis sativa (marijuana) yielded a thrips (Oxythrips cannabensis) new to the United States and was coined "the pot thrips".

I attended the E.S.A. meetings in Chicago and spent some time during the summer at Leech Lake, Minnesota.

During the past year I was author or co-author of the following papers:  
Lethal limits of low temperature for the alfalfa weevil in Illinois. J. econ. Ent. 62:464-467.

Evidence of a second generation of the alfalfa weevil in southern Illinois. J. econ. Ent. 62:509-510.

Preliminary study of the bionomics of the alfalfa weevil on soybeans. J. econ. Ent. 62:1234-1235.

Advisor: W.H. Luckmann.

P. Michael Fox

I lived in Madisonville, Kentucky, until I finished high school and then moved to Lexington where I studied at the University of Kentucky for a B.S. degree in zoology (1963) and an M.S. degree in entomology (1965). While at Kentucky, I worked with Dr. J.G. Rodriguez on the bionomics of macrochelid mites and with Dr. R. Thurston on problems of phytotoxicity of insecticides on tobacco. Research for my M.S. thesis was a study of certain aspects of the parasitic relationship between the green pea aphid and Aphidius smithi. Since 1965 I have been at the University of Illinois working for the Ph.D. degree in insect physiology. During this time, I have been supported by an NDEA Fellowship and a research assistantship under the U.S.A.F. grant to Dr. Larsen. My research has been a study of the properties and subcellular distribution of the enzyme, glutamic acid decarboxylase in the brain of the honey bee.

I plan to finish the degree requirements in June, 1970, and spend the remainder of the year in post-doctoral research in this department. I will also be working for an academic teaching-research position to begin in September, 1970. I would prefer to move out to one of the western states when I leave Illinois but geographic location is not a primary consideration.

Advisor: J.R. Larsen.

Jerome E. Freier

I was born May 26, 1946, in Toledo, Ohio. I attended primary and secondary school in Temperance, Michigan, where I graduated from Bedford High School in 1964. At that time, I entered Central Michigan University and received a B.S. degree in biology in 1969. Following graduation I taught high school biology at Tri-County Area High School in Howard City, Michigan, during the spring of 1969.

I am presently pursuing my first year of course work at the University of Illinois on a U.S.P.H. Traineeship for financial support. My area of interest and specialization deals primarily with various aspects of carbohydrate metabolism, however, I have not yet selected a definite problem for my research investigation.

Moral support and social advice are derived from my wife, Lynda, who is a speech therapist for the Rantoul City Schools. Together, we share interests in travel and amateur ornithology. Alone, I am interested in photography and tennis.

Advisor: S. Friedman.

Francis E. Gardner, Jr.

I was born December 13, 1938, in Wichita, Kansas. I went to high school in Clearwater, Kansas, received my B.A. in biology from Ottawa University, Ottawa, Kansas. I went on to receive my M.S. degree in biology from Wichita State University, Wichita, Kansas. I came to the University of Illinois in September, 1968. I am being supported by a U.S.P.H.S. Traineeship in Cell Biology. My wife, Carolyn, and I have a daughter, Stephanie Suzanne.

My research interest is the neurophysiology of the American cockroach, P. americana (L.). I am presently investigating various aspects of the effects of nicotine upon the electrophysiological activity of the sixth abdominal ganglion.

At present, my job interests lead toward an academic position which allows the maximum time possible to continue research, especially in an environment which would expand my experience in electrophysiology. An industrial position which would allow me a similar learning opportunity is also attractive.

My outside interests include my family, golf (when time permits), bowling, hunting, football and basketball. I enjoy informal get-togethers, especially out-of-doors.

Advisor: J.G. Sternburg.

Howard R. Harris

My wife, Joan, and I have a new baby daughter, Margaret Lillian, born September 26, 1969, weighing 7 lbs. and 2 ozs.

I was born in Brooklyn, New York, on November 5, 1943, and educated in Public School No. 158, Berriman Junior High School No. 64, John Adams High School in Queens and The City College of the City University of New York in Manhattan. I received my Master's degree in entomology at Clemson University, Clemson, South Carolina, in May of 1969.

I am currently pursuing my Ph.D. in entomology and expect to complete

these studies by 1972 or thereabouts...

My financial support here at Illinois consists of a half-time teaching assistantship in the Department of Biology, but I am hoping for a N.S.F. Graduate Fellowship for next fall semester and beyond.

Since the summer of 1966 and when I began my studies in Clemson, I have been working on projects involving entomology or the teaching of biology. In Maine, I was employed temporarily in the collecting and preparing of material for research into Black Fly and mosquito bionomics for the National Museum in Washington. At Clemson I was fortunate in that my assistantship (research) allowed me to devote the greater portion of my time to my own research in the taxonomy of the Pine Tip moth, Rhyacionia frustrana and related species, (R. rigidana, R. sonia and R. subtropica). Last summer (1969) Dr. Selander employed me for the rearing of several of his Meloidae for the collecting of eggs and the observation of ontogenetic development.

My interests in entomology center around the bionomics and systematics or taxonomy of insects and I hope to pursue these studies under the guidance of Dr. Selander toward my degree goal.

I anticipate that my research will involve some behavioral aspect of the Meloid beetles, as it may be affected by environmental changes and/or inter- and intraspecific activities.

Upon obtaining my degree, I hope to teach at the college level in the field of entomology, with emphasis on bionomics and morphology as they relate to systematics (or taxonomy).

My "outside" interests include reading, listening to good music (mainly classical and the like), collecting stamps and coins (when I can), playing the guitar, attending the theater (when finances permit), a weekly Hebrew class, traveling (as extensively as possible), mountain climbing (HA in Illinois!), meeting people, cooking, drawing insects, visiting museums and spending money, although not in that order and certainly not at the same time!

Advisor: R.B. Selander.

Mary Henderson

I was born April 4, 1947, in Ruston, Louisiana. I received my B.A. degree from Grambling College, Grambling, Louisiana. I am being supported by a teaching assistantship. My major field of interest is medical entomology.

Advisor: J.R. Larsen.

Feng-kuo (Frank) Hsieh

I was born September 1, 1940, in Taiwan, China. I received a B.S. degree from the National Taiwan University in 1963, and fulfilled the M.S. requirements in entomology at V.P.I. in 1968. Currently I am working on morphology and physiology of the alfalfa weevil by means of electron microscopy toward a Ph.D. under Drs. Armbrust and Luckmann.

My wife, Linda, and I find wonderful life in our marriage. We love music, sports and photography. Recently I traveled to Indiana to collect a bunch of classical music records with miracle prices (\$1-2 per record). Linda plays basketball and chess while I am a valuable table tennis player. I also plan to be an amateur photographer in the future.

I am co-author of the following paper:  
Pienkowski, Robert L., Feng-kuo Hsieh, and G. Leonard LeCato III. 1969.  
Sexual dimorphism and morphometric differences in the Eastern, Western,  
and Egyptian alfalfa weevils. Ann. Entomol. Soc. Amer. 62(6):1268-1269.  
Advisor: W.H. Luckmann.

Inder P. Kapoor

I was born September 9, 1937, in Multan, West Pakistan. I received a B.S. (Hons.) in agriculture from the University of Delhi, New Delhi, India. I did graduate work at the University of California, Riverside, and then transferred to the University of Illinois in September, 1968. I have been supported by the following: Research assistant, Ministry of Food and Agriculture (Department of Food), New-Delhi, India; research assistant, University of California, Riverside; research assistant, University of Illinois, Urbana. My specialization is insect toxicology and economic entomology. My thesis research is the comparative metabolism of DDT and some related analogues in mammals, insects and environment. My future goals concerning jobs: Research - metabolism of pesticides in the environment; academic job preferred. Outside interests: This area is hard to describe. I have too many interests but can't do anything about it. Dr. Metcalf is quite capable of keeping me busy. Incidentally, I play tennis, cricket, softball. I also love to watch professional football on TV alone. P.S. I still like girls.

Advisor: R.L. Metcalf.

Grace Hsiao-mei Keh

I was born September 19, 1947, in the Republic of China. I received my B.S. degree from the National Taiwan University, Taipei in June, 1969. I came to the University of Illinois in September, 1969, and am being supported by a research assistantship. Future goals and jobs desired: up to now, I have general interest in entomology. As a new graduate student, I hope I can learn more, then I can decide my major field. I hope I can get a research job in the future. My outside interests include hiking, traveling, collecting stamps, reading and music.

Advisor: Judith Willis.

Mohinder S. Khalsa

I was born December 11, 1925 in Quetta (now W. Pakistan). My wife's name is Surjit. I attended Punjab Agricultural College, Lyallpur (then India now W. Pakistan Agricultural University) and the Government Agricultural College, Kanpur, India (now Institute of Agricultural Sciences) where I received the B.S. (agriculture) in 1946 and the M.S. (agriculture) in 1950. I am currently being supported on a U.S.A.I.D. Fellowship.

I have served as a Crop Protection Assistant from August, 1946, to July, 1947, with the State Department of Agriculture, Punjab; Jr. Lecturer and Lecturer in Entomology at the Kanpur Institute from 1950-51 and 1952-53 respectively; Sr. Sugarcane Protection Inspector, with the State Department of Sugarcane Development in U.P. India, from 1954 to July, 1963; Assistant

Professor of Entomology at the Kanpur Institute from August, 1963, to February, 1965; and Extension Entomologist at the U.P. Agricultural University, Pantnagar, India (a land grant University), from March, 1965, to August, 1969. I am now on sabbatical leave. I have had nearly twenty years field experience in management of insect pests of the crops like, sugarcane, rice, cotton, corn, soybeans, peaches and apples in India. Also I possess a field scale rodent management experience in an area of 100,000 acres, in the Tarai (foothill) belt of U.P. state of India.

I am interested in integrated control of crop and orchard pests. My thesis research is on the fate of a group of insecticides in the ecosystem. Future goals and plans: I prefer a research job in U.S.A. and/or Asian countries.

My outside interests are social work for the handicapped, foreign languages, hunting and photography.

Advisor: W.H. Luckmann.

#### Lawrence Krone

The natal star appeared over the stockyard's district in Chicago on September 8, 1940. For it was in the "windy city" that I grew up and attended North Park College (B.S., 1963). After college I left Chicago, complements of Uncle Sam, to serve as a medical entomologist at Ft. Detrick, Maryland. Upon completion of my active military service, I entered Yale's School of Medicine, Department of Epidemiology and Public Health (M.P.H., 1967) where I also met my wife, Joan (W.E.D., 1968)!

During the past three years, I have had several interesting job experiences: the Aedes aegypti eradication program in Mobile, Alabama (summer, 1966); Yale-Rockefeller arbovirus laboratories (summer, 1967); teaching assistant in medical entomology and insect control (University of Illinois, 1968); and a Louisiana State University Tropical Medicine Fellowship to Central America (summer, 1968). (This last experience through Latin America made me realize that other cultures have many things to offer, and my wife and I hope to travel more in the future.) At present, I am being supported by an N.S.F. Traineeship.

This past year was spent partly on course work, but primarily on my thesis research. The problem involves a closer look into the host feeding preferences of Culex pipiens pipiens (Diptera: Culicidae). Interest along this line of research stems from the fact that members of the Culex pipiens complex have been incriminated as "vectors" in the St. Louis encephalitis outbreak in Southern Illinois. Therefore, an understanding of the seasonal feeding pattern of C. p. pipiens and hybrids of the same subspecies is necessary.

My major interests outside of the laboratory fall into two general categories: sports and music. Tennis, swimming, fly fishing, and ice skating are my favorite forms of recreation. My one-time great rendition of Chopin's etudes has degenerated to country western-rock masterpieces.

Advisor: R.L. Metcalf.

Donald E. Kuhlman

I was born September 24, 1933, in Quincy, Illinois. My wife's name is Donna. I received my B.S. and M.S. from the University of Illinois. I am now working on my Ph.D. and also working as an Extension Entomologist at the State Natural History Survey of the University of Illinois. My specialization within entomology is field crop insects. My thesis research is bionomics of western and northern corn rootworms. When my studies are completed I will continue to work as an Extension Entomologist. My primary outside interest is golf.

Advisor: W.H. Luckmann

An-horng Lee

I was born in Taiwan, China, on October 4, 1942. I was graduated from the Department of Plant Pathology and Entomology, National Taiwan University and received a B.S. in June, 1964. Following this, I spent one year in the Chinese Army serving as Second Lieutenant. In September, 1965, I entered the Research Institute of Plant Pathology and Entomology of the National Taiwan University. I completed my M.S. program over there and received the degree in June, 1967. My M.S. thesis was entitled, "An artificial diet for rearing Prodenia litura" (in Chinese). I came to this country in September, 1967. I have completed my courses during the past two years. After passing my preliminary examination last October, I was then able to devote all my time on research. Now I am working on house cricket, Acheta domestica, acetylcholinesterase. The methods for approach are: partial purification, study, physical and chemical properties of the enzyme, electrophoretic study, kinetic study, histochemical localization. I am really enjoying my work. I have a desire to continue this line of work and prepare myself to do both research and teaching in the area of life science. I attended the Chicago E.S.A. meetings.

Advisor: R.L. Metcalf.

Richard Lipsey

I am working under Dr. Ellis MacLeod teaching in two Entomology 103 labs. My research involves the reproductive biology of Chrysopa oculata. By feeding female lacewings a combination of aphids and artificial diet, we have been able to get over 2,000 eggs from one female. Mass rearing of C. oculata for possible inundative release in field crops could be ultimate use of our results.

I attended the E.S.A. meetings in Chicago and spent another summer as a ranger-naturalist at Grand Teton National Park, Wyoming. The work on the biology of Neurocalpus nubilus (Miridae) I did for my Master's degree may be published in two parts this year.

Advisor: E.G. MacLeod.

Adolfo Molina-Pardo

I received the degree of "Ingeniero Agronomo" from the Universidad Nacional de Colombia, in 1964. I was a member of the Faculty at the



Universidad de Narino when L.A.S.P.A.U. in 1967 made possible for me to come to the States to specialize. Last June, I received my M.S. and now I am working on honey bee pheromones. I recently married Teresa who is also from Colombia.

Advisor: E.R. Jaycox.

Robert Morden

My wife, Annette, and I have a daughter, Kristina, who is three. I was born in 1939 in Greene County, Iowa. I received my pre-college education in the rural community of Scranton, Iowa. In 1957 I attended Iowa State University and two years later transferred to the University of Northern Iowa where I received my B.A. in 1962. Three and a half years later after teaching in Dysart, Iowa, and Rockford, Illinois, my wife and I returned to the University of Northern Iowa and obtained our M.A. degrees. From here we came to the University of Illinois. While at the University, I have been supported by a research assistantship and by a U.S.P.H. Traineeship. At present I am working on some phenological phenomena of the evergreen bagworm, Thyridopteryx ephemeraeformis by comparing different geographic populations.

Next year I plan to apply for a college position which will offer both teaching and research opportunities. The northwest area of the U.S. interests both my wife and I, but with job opportunities being limited we certainly are not restricting ourselves to this area of the country.

We both enjoy many outdoor sports including tennis, golf, swimming, sailing, canoeing and boating as well as traveling and camping along the way.

Advisor: G.P. Waldbauer.

Louis Moretti

I was born November 6, 1944, in Utica, New York. I am not married. I received my B.A. from the State University of New York at Oswego and my M.S. degree from the University of Illinois, Urbana. I am being supported by a teaching assistantship. My specialization within entomology is insect embryology. My thesis will deal with providing a detailed account of the embryonic development in Aedes vexans — a common floodwater mosquito.

Advisor: J.R. Larsen.

Herbert N. Nigg

I was born July 9, 1941, in Detroit, Michigan. My wife, Kirsten, and I have two children, Lee (5 years) and Karen (2 1/2 years). I received my B.S. from Michigan State University in 1967. I came to the University of Illinois in February, 1968, and have been supported by a U.S.P.H.S. Traineeship. My specialization is biochemistry and toxicology. My thesis research involves the purification, and characterization (inhibitors, M.W., function) of an esterase in the house fly head. My future goals include research on rapid extraction and characterization procedures for proteins of resistant and susceptible insects. I would prefer a warmer climate than Illinois. I also prefer an academic position but would accept an industrial position depending on the research I would be involved in and the area of the country.

/ Outside interests: hiking, swimming, tennis, bridge, sailing, fishing, softball and basketball.

Advisor: C.W. Kearns/R.L. Metcalf.

Gerald L. Nordin

My present research is on the virus diseases of the fall webworm, Hyphantria cunea, with emphasis on the nuclear polyhedrosis virus. In August I attended the A.I.B.S. meetings in Vermont with Dr. Maddox, and I also attended the E.S.A. meetings in Chicago. Two publications appeared in 1969:

G.L. Nordin and J.E. Appleby. 1969. Bionomics of the juniper webworm. Ann. Entomol. Soc. Amer. 62:287-292.

G.L. Nordin and J.E. Appleby. 1969. Chemical control of the juniper webworm on Irish juniper. J. Econ. Entomol. 62:23-24.

Advisor: W.H. Luckmann.

Jimmy K. Olson

September, 1969, marked the end of the second year that my wife, Joanne; my two girls, Teresa and Kristine; and I have spent in the land of the fighting (???) Illini. Dr. W.R. Horsfall continues to be my advisor and I still hang out up in room 415, Morrill Hall. This past year saw the completion of course work, the passing of my prelims, and a good start on my thesis research. This research involves the effect that temperature alternating between two extremes has on organogenesis in Aedes stimulans (Walker). It is my hope as well as that of my wife's that I will complete my work by no later than June, 1971. Upon the receipt of my Ph.D., I would like to return to the land where the water runs in a westward direction. I am presently interested in insect bionomics and applied entomology and would like to do extension research for a while or take an academic position which involves both teaching and research in the applied aspects of entomology. At present I plan on continuing my research work; humbling Gary Wilson in handball, paddleball, and any other competitive sport where only two can play; and learning chess since I can't beat my wife at bridge!

Vita:

Born in Twin Falls, Idaho on February 18, 1942.

Attended University of Idaho where I received my B.S. in agriculture (major: entomology) in June, 1965.

Presently working towards my Ph.D. under an NDEA Title IV Fellowship.

Jobs: Insect surveyor for the U.S.D.A., A.R.S., Plant Pest Control Division during the summers of 1961-64.

Officer in U.S. Army Chemical Corps, Dugway Proving Ground, Utah: in charge of the field research unit responsible for studying host-vector relationships of various arthropod-borne diseases.

Publications: Olson, J.K., R.E. Eibel, and K.L. Smart. 1968. Mosquito collections by CDC miniature light traps and livestock-baited stable traps at Callao, Utah. Mosquito News, 28:512-516.

Advisor: W.R. Horsfall.

Nalini Perera

I received the B.S. degree in zoology from the University of Ceylon and worked for the Central Agricultural Research Institute, Department of Agriculture, Ceylon. Currently I am a first year graduate student reading for the Master's degree and am supported by a U.S. Government Grant. My research interests are in the fields of insect behavior and ecology.

Advisor: J.G. Sternburg.

Robert F. Randall

Carlene and I became the proud parents of a little girl this last July. This limited our travel for the year but we did enjoy a trip to the Chicago E.S.A. meetings. I hope to take a position this fall as my research now needs only a few more experiments to be finished. The spring semester should see my thesis either finished, or nearly so, and the date for my final exam set. It has been a good year and we hope as good for all of you.

Advisor: C.W. Kearns.

Larry Lee Sanburg

I finally passed prelims in February, 1969, and then spent many months "spinning my wheels" on research. I have reached solid ground now and am moving forward after switching from Anopheles to Culex pipiens pipiens. Travel the past year included a trip back to California and I had to use all my will power to return to the great (?) state of Illinois!

Advisor: J.R. Larsen.

Gurcharan Kaur Sangha

My specialization within entomology is toxicology. My thesis research is metabolism of carbamates in ecosystem.

Advisor: R.L. Metcalf.

Aubrey Scarbrough

For the last year I have had the pleasure of assisting the laboratory sections of Entomology 101. This segment of my education is stimulating, challenging and will provide valuable experience in the near future.

I assisted Don Kuhlman and Roscoe Randell in judging the 4-H entomological collections at the Illinois State Fair during the summer. In the fall, I attended the Entomological Society Meetings in Chicago. I returned to Chicago, along the I.C. railroad tracks, on a collecting trip for cecropia cocoons with Drs. Waldbauer and Sternburg just prior to the Christmas holidays. Fortunately, I was able to take a few days off for Christmas in Arkansas.

During the past year, I have been working on various aspects of the biology of Hyalophora cecropia L. I have been trying to locate urban and non-urban populations of the moth, where cocoons are found in microhabitates and how they get there. I also want to determine what pupal predators are present and how they might influence the urban and non-urban populations.

Fortunately, my research is nearly completed and I am in the writing phase at this time. I expect to finish my degree in June. Also, I am seeking a position for the coming school year.

Advisor: G.P. Waldbauer.

Douglas K. Sell

During the past year, I have continued to pick up course work. We vacationed at each of our homes (Lincoln, Nebraska, and Rapid City, South Dakota) for a short time last summer. I am employed by the Illinois Natural History Survey and am continuing research there on the physiology and biochemistry of Heliothis zea. Gloria and I have two children, Steve (6) and Kim (2).

Advisor: W.H. Luckmann.

Joseph K. Sheldon

The past year has been an exciting one for our family. In January, 1969, I passed my prelims. A few days later I left for Costa Rica for an intensive two-month study of tropical ecology — a very enjoyable break from the "midwestern" (= east central) winter. After returning to Illinois, the next few months were rather uneventful. Later during the summer we flew to Oregon for a short visit with our parents and a little camping. The rest of the year was spent in Illinois except for a week trip to Florida to collect chrysopids for Dr. MacLeod and three trips to Wisconsin and three to Kentucky for my own research. The last and greatest point in the year was the birth of our first child on January 10, 1970. Jodi Gwyn is now at home with us adding immeasurable joy to our lives.

Publications:

Geographic variation in the diapause phenology of nearctic Chrysopidae (Neuroptera). Presented at the Chicago meetings of the E.S.A. with Ellis G. MacLeod. (1969)

Sexual dimorphism in the head structure of Mutillidae: a possible behavioral explanation. Ent. News. In press. (1970)

Advisor: E.G. MacLeod.

Zile Singh

I was born June 9, 1928, in Gumana (Haryana) India. My wife's name is Shanti. I received my B.S. (agr.) Hons. from the Delhi University, Delhi, India; M.S. (agr.) from Punjab University, Chandigarh, India; M.S. from the University of Illinois, Urbana. I am now being supported by A.I.D. My specialization within entomology is economic entomology. My thesis research is the relationship of tarnished plant bug to soybean and other legumes. My future goals and plans are to do research and have an academic position at the J.N. Agricultural University, Jabalpur (M.P.) India. My outside interests are sports (volleyball, hockey, badminton). I attended the Chicago meetings of the E.S.A.

Publications:

Singh, Z. and S.S. Jakhmola. 1969. Effect of blossom thrips infestation on pod setting in red gram. Indian J. Agril. Science.

Advisor: W.H. Luckmann.

Richard K. Sprengel

Having completed prelims in November of this past year, I was able to begin work on my thesis research involving entomogenous fungi of the corn leaf aphid. I attended the national meetings of the E.S.A. held in Chicago. This was, however, the extent of my travels during 1969.

Publications:

Sprengel, R.K. and W.G. Yendol. 1969. Effects of Apholate on the alfalfa weevil. J. Econ. Entomol. 62(1):122-125.

Advisor: W.H. Luckmann.

Sharad Vaishampayan

I was born September 1, 1939, in Gwalior (M.P.), India. I received my B.S. Ag., M.S. (Ag.) in entomology in Gwalior (M.P.), India. I am being supported by a scholarship during my graduate work at the University of Illinois. My specialization within entomology is economic entomology. I have had approximately 12 research papers published so far in Indian Journals. My thesis research is on the studies on spotted boll worm of cotton Earias fabia Stoll (Lepidoptera: Arctiidae), a pest of Bhindi (Okra: Hiliscus esculentus). I studied in detail biology of the pest, external and internal morphology of adult and effectiveness of insecticides in the control of this pest. I wish to undertake an independent, long-term research project at J.N. Agriculture University, Jabalpur (M.P.), India, financed by Government of India in collaboration with some international agency with an objective to study in detail the insect pest problems on a particular group of crops, maybe corn and sorghum or oilseed crops, etc., and to develop most suitable and economical integrated control programs against this major pest.

Outside interests: playing bridge.

Advisor: W.H. Luckmann.

Thomas Vance

I am presently working on larval forms of the genus Sericothrips (Thysanoptera), since September.

Publications: The marijuana thrips, Oxythrips cannabensis, a new record for Illinois and North America, by Lewis Stannard, Jerald DeWitt, and myself.

Advisor: L.J. Stannard.

Gary R. Wilson

I was born on May 18, 1941, in Detroit, Michigan. I received my B.S. degree from Michigan State University in 1963.

I completed my research on the effect of environmental factors on the hatching of eggs of Aedes vexans, and received my M.S. on schedule. As a reward Uncle Sam has decided that my "Big Body" is needed in southeast Asia. What a travesty of justice. I expect to depart the Champaign-Urbana area in May. Until that time I expect to complete work on two papers and conduct some additional research as well as audit several courses.

I also expect to play some basketball with the Dung Beetles, and continue

my domination over Jim Olson on the paddleball court. My wife, Joyce, and I have thoroughly enjoyed our stay at the University of Illinois. The friendly atmosphere and the many wonderful people we have met have made this a period to remember. Thank you all.

Advisor: W.R. Horsfall.

Willard W. Woodward

My wife, Eleanor, and I have two children, Mary (7) and Bradley (4). The past year saw the completion of course work for the neurosciences program. Electrophysiological work is continuing on labellar hair responses in the house fly and Phormia regina, with the main thrust concerning the mode of action of DDT and peripheral resistance mechanisms.

Advisor: J.G. Sternburg.

PRESENT POST-DOCS

Govindan Bhaskaran

Research: Continuing the studies on metamorphosis in cyclorrhaphous diptera.

Travel: Attended the annual meetings of the Radiation Research Society at Cincinnati in May and E.S.A. meetings in Chicago in December. We enjoyed summer vacation in the eastern and northeastern states and in Ontario, Canada.

A.K. Bhattacharya

My current research involves the effect of various physical factors on the consumption and utilization of various nutrients and choice of food particles by stored grain insects. I spent my vacation in Porcupine Mountain, Michigan and Devil's Lake, Wisconsin, with John Ameel and John Stepal. We had a very nice time camping and hiking there. In the last week of October Dr. Waldbauer and I visited the U.S.D.A., Stored Product Research Laboratory, Savannah, Georgia, and gave seminars on our research work. I also attended the E.S.A. meetings in Chicago.

Jan Zdarek

Research: Hormonal control of puparium formation in flies.

Travel: Boston, Massachusetts, for the A.A.A.S. meeting in December.

Family: During our summer vacations we discovered the beauty of America by visiting 13 western states of the U.S. — unforgettable experience particularly for us as foreigners!

NEWS ABOUT THE STAFF MEMBERS

Dr. Gary M. Booth

I came to Illinois in January of 1969 to fill an N.I.H. Postdoctoral position here in the department to study cholinesterase histochemistry. In September of 1969, I joined the staff as a toxicologist with teaching responsibilities in insect toxicology and insect control. In conjunction with the teaching duties, I am actively pursuing research interests on the histochemistry of esterases. This project is currently financed by a recent grant from the Rockefeller Foundation which will continue for the next three years.

My family and I have enjoyed our stay here and we hope to contribute to both the community and the department.

Dr. Leigh E. Chadwick, Emeritus

Maria and I continue to enjoy our retirement in Maine. We spend the summer and early fall at the shore and the rest of the time in our all-year house in nearby Sargentville. Contrary to general belief throughout the U.S., we have enjoyed a rather mild winter, with little snow and not a great deal of cold weather.

The past year saw the arrival of our second great grandchild.

—Probably the most striking news item of our year was my coronary attack in November. This seems to have been only mild, there have been no recurrences, and I feel fine and am able to lead a near normal life. The most heartening or encouraging — apparently the appropriate words, but vile and wholly unintentional puns — thing about the whole affair was the large number of friends who wrote of their concern. May I take this opportunity to thank them all most deeply, and to assure them that all seems to be going well.

Once again I would remind you that we are delighted that the department is in such good hands, and wish all of you every success.

Dr. G.S. Fraenkel

Research: As usual puparium formation in flies, a subject of never ending wonders and surprises, in conjunction with Jan Zdarek. A new neurohormone, produced in the brain which accelerates pupariation — the old (1935) experiment on the "pupation hormone" for *Calliphora* which had been questioned by a group from Harvard. Useless to say they were wrong.

Travel: One-month visit to Russia on the Exchange program between the Academies of Sciences of the U.S.A. and the U.S.S.R. (June-July, 1969.) Visited Moscow, Leningrad and and Novosibirsk. Leningrad a magic sight during



the White Nights in June when it never gets dark. Akademgorodok (Academic City) near Novosibirsk in the midst of the birchwoods of Siberia, a new city entirely devoted to science.

Wageningen (Holland): Symposium on Insects and Hostplants. June, 1969. I attended and gave lecture.

Vacation: none.

Dr. Stanley Friedman

This past year has been spent much like the last few, enjoying the weather, culture, and academic and research facilities of the C-U area. Early this summer we took a trip through the Smoky Mountains and ended our drive eastward at Cape Hatteras -- unbelievable, if one likes sand beaches.

Frank Chang was back for two profitable months during the summer, finishing some work on his thesis and generally cleaning things up.

Our own time has been devoted mostly to studies on regulation of the enzymes involved in sugar metabolism, although we are becoming more and more intrigued (as might be expected of someone my age) by the possibilities involved in work on aging.

Dr. William P. Hayes, Emeritus

Winter of 1968 -- I cruised on the Sagafjord in the Pacific. I spent June in Colorado. In August and September I had a 15-day cruise to Alaska and looked for Katy Summerman. I did not locate her. In December I started to cruise around the world from Los Angeles on the President Roosevelt. I had a bad attack of arthritis and left the cruise at Lisbon, Portugal, to fly to Champaign.

Dr. William R. Horsfall

This has been a busy year with three persons (Cupp, Voorhees and Fowler) finishing Ph.D. theses and Wilson completing his M.S. thesis. I have led two seminar groups (Iowa State University and University of Wisconsin). Part of the summer was spent at the Arctic Health Research Center at Fairbanks, Alaska, where Dr. Katie Sommerman (former Illini) provided excellent facilities for work on Arctic mosquitoes.

Dr. Elbert R. Jaycox

I continued with honey bee behavior studies in 1969 to gain more information about the stimuli that cause worker bees to forage. We compared the effects of larvae and extracts of larvae and their food on behavior of

small colonies with and without queens. The extracts stimulated worker foraging in the presence of a queen and incoming nectar. The larvae gave a stronger impetus to foraging for pollen than did extracts or the queen.

Extension work takes about 30 per cent of my time and provides a chance to work with growers on pollination problems. Near Hoopston we found that pumpkin fields had so few pollinators you could pour nectar out of the blossoms when they should be empty. With honey bees provided, estimated yields rose about 20 per cent. Illinois apple growers are using supplemental pollen and honey bees to increase fruit set in their problem blocks of trees. One large grower says he can triple the yield in this manner.

Apiculture has its own building on the Hort Farm in S.E. Urbana and we plan to build a headhouse with 12 attached cages in 1970. Out-of-state visitors to our facilities have included Dr. Roger A. Morse of Cornell and Dr. Norman E. Gary of the University of California, Davis. Visitors are welcome at any time.

Dr. C.W. Kearns

Dr. Kearns resigned as Head of the Department of Entomology effective November, 1969, prior to his leaving on a two-year leave of absence. For the next two years Clyde and Camille will be living in England where he has taken over the Directorship of the Shell Oil Company Research Laboratory at Sittingbourne. He will be back in this country for periodic visits to take care of his graduate students who are completing their research work under his direction. Clyde will be sorely missed in the toxicology program and also as Department Head. We are certainly grateful for his efforts and unselfish dedication to his position for the past six years. Clyde will return in January of 1972 and we will look forward to his continued input into this department for a long time to come.

Dr. Joseph R. Larsen

This has been an extremely busy year, however, I have still found time to continue research on insect sensory receptors and am currently preparing some of this material for publication. Last year was pretty much a stay-at-home year with a short visit to Utah to visit family. I am still involved in teaching responsibilities in Biology 110, 111 and looking after the teacher training people in the biology education program. Most significantly, I am looking forward to, and accepting with mixed emotions, the new appointment as Head of the Department. I will try very hard to maintain the excellence and high standards generated in this department and to uphold the traditions of both the department and the University. The biggest news in the family this year is the engagement of our oldest daughter, Pam, to Dave McClure. Pam is now a junior at Brigham Young University and the young man to whom she is engaged is an honor student at B.Y.U. in premed. It looks like Shauna and I will be entering the ranks of the aged with married children as of August, 1970. Deb continues to be active in Centennial Jr. High in Champaign and Jennifer carries on the hopes of musical genius.

Dr. William H. Luckmann

Most of this year was spent working for others, and there was little time to do things for myself. We ended the decade with real accomplishments in gaining one new facility and one new program. The "Old Fly Lab" located north of Smith Music Hall was vacated for a new Entomology Laboratory located on Griffith Drive south of St. Mary's Road. The move was made at the request of the University, and we traded a prime location and a very poor building for a facility with considerable utility located off-campus on the Experiment Station farms. The new laboratory contains large insect-rearing rooms, a diet preparation room, offices and laboratories, and an insectary.

On July 1, 1969, an international project on soybeans was finally initiated. The program is supported in part by the Rockefeller Foundation. We are establishing on campus a reference collection of insects and mites and a rapid retrieval system of papers and books dealing with arthropods of soybeans. These two collections are international in scope, and Drs. Marcos Kogan and Lewis Stannard are co-leaders on the project. I made one brief trip to Jamaica in August, 1969, and I was fortunate enough to locate an experimental planting of soybeans and to collect specimens of one phytophagous caterpillar and two parasites to add to our insect collection.

My family is well and we have been blessed with good health throughout the year.

Dr. Ellis G. MacLeod

Research during the year involved a continuation of studies on the biology of the Chrysopidae and the fossil history of the Neuroptera. The studies on the Chrysopidae have involved work with the diapause phenology and the environmental control of diapause of additional Nearctic species of this family which were studied in a series of laboratory experiments and in the field. The species under study this past year included a group of montaine forms from the western United States and the field work connected with these species forced me to spend eight weeks in the mountains of Colorado and Wyoming so that it was necessary for me to miss the bracing effects of the usual Illinois summer. Studies on the Neuroptera of the Baltic amber are continuing and, in addition, a collection of early Eocene fossils has been received for study from Denmark. This latter contains a number of exciting specimens including a fine chrysopid which, aside from two mesozoic fossils, is the oldest record for the family.

Visitors: It was a great pleasure to receive a visit from Professor Sally Hughes-Schrader of Duke University, who has shared an interest in the chromosome cytology of the Neuroptera with me for many years.

Dr. Robert L. Metcalf

Research: I received a new Rockefeller Foundation Grant in collaboration with University of California, Berkeley and Riverside and with Cornell University in "Development of Selective and Biodegradable Insecticides".

Travel: I went to Switzerland in August, 1969, for consultation with World Health Organization.

Dr. Vern G. Milum, Emeritus

A request for 1969 activities really is for inactivities. My wife, Esther, and I visited our son, George, his wife and two grandsons in California. George is a refrigeration engineer for Gateway Stores on the West Coast. We were toured through California by our second son, Richard Vern, an electrical engineer with Boeing Aircraft in the missile program at Camp Vandenberg. Needless to say we spent all of our time at ground level while there.

Back in Urbana there was less golf than formerly. Much time spent in tracing ancestry. Some Milum great grandparents are hard to find.

Dr. Richard B. Selander

I attended lecture-workshop session on Coleoptera at Museum of Comparative Zoology, Harvard University, where I gave a talk on sexual behavior in Meloidae.

I did field work in the Davis Mountains-Big Bend Region of Texas, in early fall.

I gave invitational paper on sexual behavior in Coleoptera at E.S.A. meetings in Chicago.

Research: Continued comparative study of sexual behavior in blister beetles and experimental investigation of environmental control of ontogenetic patterning in Epicauta.

Other activities: Initiated interdepartmental course in principles and methods of taxonomy (Biology 305). Also, an important change in the entomology curriculum resulted from the decision to move Entomology 302 (Classification of Insects) to the summer. Although the focus of the course will continue to be primarily taxonomic, this change will permit more emphasis to be placed on ecological and behavioral aspects of entomological systematics. Students will spend most of the time in the field. An extended trip to Texas is planned for this summer. Other areas will be visited in subsequent years.

Dr. Lewis J. Stannard

Since the writing of last years Newsletter, Dr. Stannard has received a joint appointment in the department. This marks another step in the closer cooperation between the Natural History Survey and the department. At this writing Lew is on special assignment for the Survey in India for four months. We will look forward to an extensive report next year from Lew on his travels and experiences of the past year.

Dr. James G. Sternburg

Research activities during the past year have continued along two distinctly different lines. My work on the effects of various insecticides on the nervous activity in insects has continued. These studies include the disruption of synaptic transmission caused by anticholinesterases and by nicotine. Certain aspects of DDT action are also being studied.

In collaboration with Gilbert Waldbauer, research has continued on quite a number of very interesting aspects of the biology and behavior of Hyalophora cecropia. Our studies are broadening to include other Saturniidae, but the main emphasis will continue to be cecropia.

Travel this year was almost non-existent, because the national Entomological Society meetings were in Chicago.

Visitors: Dr. Frank E. Guthrie of North Carolina State at Raleigh; Dr. John Eaton of Virginia Polytechnic Institute; Dr. Roger Flattum of Shell Development, Modesto, California; Dr. Allen Young of the University of Chicago; Dr. Dan Shankland of Purdue.

Family information: During July last summer, the Sternburg's returned to northern Wisconsin for several weeks of relaxation. This time, the weather was absolutely perfect, and made up for several years of rainy spells. The children, our three and a niece now living with us, had a wonderful time swimming, hiking, and boating. We hope to return there next summer if possible. Activities at home have not differed greatly from previous years. My gardening activities seem to get more complicated each year, including a small pond last summer, which will be enlarged next year! Other activities include some insect collecting as a professional hobby, and model railroading with my son, Tom.

Dr. Gilbert P. Waldbauer

Research for 1969: I. Continuation with Dr. A.K. Bhattacharya of work on the measurement of the consumption and utilization of food by insects. A major forward step was the successful development of a method for using the naturally occurring uric acid in feces as a means of determining the proportions of left-over food and feces in a mixture. Now that we have this method worked out we are moving ahead rapidly on one study of the effect of environmental factors on the utilization of food by stored grain insects. II. Jim Sternburg and I are continuing our studies on the behavior and ecology of cecropia. Our recent discovery of populations of prometen in nearby parts of Indiana has made it possible to add this insect to our program. III. Every once in a while I manage to get in a little bit of work on mimeter-syrphidae. This summer with Joe Sheldon's help, I made a study of the renewal distribution of mimetic-syrphids, their wasp and bee models and insect-eating birds at Allerton Park.

Travel: With doubt, my most interesting trip of the year consisted of leading a delegation of University of Illinois biologists to visit a large piece of land on the island of Jamaica which was recently donated to the

University of Illinois. We were a part of a Graduate College Committee charged with considering what use the University might make of this land. We found it well suited to use as a biological research station. Perhaps this will one day come to pass.

Family information: We took a lovely summer vacation on beautiful Glen Lake in Leelanau County, Michigan, which was followed by a tour of the Upper Peninsula.

Dr. Judith H. Willis

We remained in Cambridge, England, until the end of August, 1969, taking but two brief trips to the Continent — Italy in April and Holland in August. My time was spent analysing cuticular proteins with Dr. Svend Anderson and studying the mechanism for the deferred action of juvenile hormone with Dr. Peter Lawrence. The latter work was successful in so far as we were able to show that the epidermal cells are not reprogrammed by application of juvenile hormone to the embryo. After a year abroad it was wonderful to be back in Urbana and in the department, but I am finding it hard to adjust to a life which has demands other than research.

NONACADEMIC EMPLOYEES

Myrna Belsø

I transferred to the Department of Entomology as a Natural Science Lab Assistant in July, 1969, and I am working in Dr. Metcalf's labs. I am married and have one child, Carl.

Eloise Duvall

I have now been with the department 7 plus years. To you grads who deplored the cockroach room I am happy to say we no longer have the rearing drawers thus eliminating some of the offensive odor. We are now using large lard cans with stacked trays. Since the cans are washed frequently it is a much more pleasant room to work in. Large shelves have been installed on three sides of the room and all the old antique furniture is gone. I am happy to report you can walk into the room without stepping on or over loose cockroaches. Also the black wasp is almost extinct. Our colony was almost wiped out by these little beasts but is now on the way back up.

My family has dropped to one daughter still at home (Bob, too, of course) and attending the University of Illinois. My two married children (1 boy, 1 girl) are now living in Champaign and I hope to be grandmother for the third time before this goes to press. [She was! Denise Leeann.]

Mary Fisher

This past year has largely been spent in 017 Morrill Hall in the company of the microtome and the electron microscope. There has been some progress in the perfecting of my skills of microscopy and the usual number of accompanying frustrations. The balance at present not being too bleak, I am looking forward to another year of pursuing ultrastructure problems.

Carol Jolley

I came to work in the Entomology Office in August, 1969, and have enjoyed the time spent here.

Judy Michael

I have had another enjoyable year working in the Entomology Department. My husband, Don, has started going to school full time at Parkland Jr. College in Champaign and is planning on attending the U. of I. next spring. Our son, Jeff, is growing quickly and is as full of mischief as any small boy. During the year, we have a nice change of pace — a vacation at Kentucky Lake. It was lots of fun as we and another couple own a motor boat, skis (although I don't participate in the skiing — maybe this year!) and, of course, we took them along. The weather was great for boating and just plain vacationing.

Ruth Millholin

It has been a busy year, moving upstairs to the 5th floor lab and trying hard to keep on top of the World Health Organization Insecticide Evaluation Program. With the help of our new staff, Mrs. Hansen and Mrs. Belsø, much has been accomplished. On the personal side, attempting to get settled in my new-old house, celebrating with a department backyard cook-out, an all too short fishing trip to Northern Wisconsin, a quick check-up to see how the Bill Campbell's are getting started off on their new life at Purdue, a delightful visit from my parents from California and one day at the Entomological Society meetings in Chicago rounded out the year.

Ruth Plymire

I finished my Physical Geography 201 course and decided to take a rest from the grind of school work. Mainly because that new Head of Department is keeping me too busy for extracurricular activities. But he still allows us a few coffee breaks now and then. [Likely story!]

Our girls are now 11, 9 and 5 and growing up much too fast. Bill's coaching career is doing better than his basketball playing. After trying to keep up with the rest of the squad of the Entomology Dung Beetles he ended up on crutches for 3 days.

The most exciting event in our lives this year was buying a new house in Urbana at 1109 Mitchem. We just love it and are having great fun furnishing and decorating it. Anytime you former alums are in town please feel free to drop in and see us.

Helen Satterthwaite

During the past year I have been employed on a part-time basis as a laboratory assistant in the Department of Agronomy working with Dr. E.W. Stoller on weed research. In my off-duty hours my time has been well occupied with activities related to being a professor's wife, mother of five children, and chairman of the board of directors of the University of Illinois Y.M.C.A. I came to work for Dr. Horsfall in January, 1970.

Shaw-mei Yeh

I have kept busy running Dr. Friedman's laboratory. I was struggling with an ulcer and drank lots of milk and mealex last summer. I am just fine now. Looking forward to a trip to the West which I cancelled out last year.



ACADEMIC EMPLOYEES

Penny Hansen

During the past year I managed to get my Bachelor's degree in astronomy, which is why I'm working in entomology. I added a Mrs. degree in August. Also in August some friends and I went to the World Science Fiction Convention in St. Louis. We managed to meet several interesting authors — Paul Anderson, Lester del Ray, Harlan Ellison — and had a wild time. I have just applied to graduate school and am aiming for a Master's degree in library science, which should blend well with my B.S. in astronomy and experience as a mosquito grower.

Mary Ruh

I received the doctorate degree in physiology from Marquette University, Milwaukee, Wisconsin, August, 1969. Currently I am an Instructor in the Physiology Department here at the University of Illinois teaching and supervising the laboratory course for Physiology 103. Although I have been primarily a mammalian endocrinologist, I am slowly but surely becoming an insect endocrinologist — thanks to Dr. Judy Willis. I am thoroughly enjoying my work with Judy as a Research Associate, especially since I am not yet as allergic to cecropia as I am to rats.

PUBLICATIONS FROM THE DEPARTMENT OF ENTOMOLOGY, 1969-70

BHASKARAN, GOVINDAN, Research Associate

- Bhaskaran, G. and P. Sivasubramanian. 1969. Development of transplanted imaginal disks in x-irradiated housefly pupae. *Nature*, 222:786-787.
- Bhaskaran, G. and P. Sivasubramanian. 1969. Metamorphosis of imaginal disks of the housefly: evagination of transplanted disks. *Journal of Experimental Zoology*, 171:385-396.

BHATTACHARYA, A.K., Research Associate

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- Bhattacharya, A.K. and G.P. Waldbauer. 1969. Quantitative determination of uric acid in insect feces by lithium carbonate extraction and the enzymatic-spectrophotometric method. *Annals of the Entomological Society of America*, 62:925-927.
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BOOTH, GARY M., Assistant Professor

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- Booth, Gary M. and Robert L. Metcalf. 1970. Histochemical evidence for localized inhibition of cholinesterase in the house fly. *Ibid.*, 63:197-204.
- Whitt, G.S. and G. Booth. 1970. Localization of lactate dehydrogenase activity in the cells of the fish (Xiphophorus helleri) eye. *Journal of Experimental Zoology* (submitted).

CHADWICK, LEIGH E., Professor Emeritus

Krysan, J.L. and L.E. Chadwick. 1970. The solubility of cholinesterase from the housefly, Musca domestica. Journal of Insect Physiology, 16:75-82.

FRAENKEL, GOTTFRIED S., Professor

Berreur, P. and G. Fraenkel. 1969. Puparium formation in flies: contraction to puparium induced by ecdysone. Science, 164:1182.

Fogal, W.H. and G. Fraenkel. 1969. The role of bursicon in melanization and endocuticle formation of the cuticle of the adult fleshfly, Sarcophaga bullata. Journal of Insect Physiology, 15:1235-1240.

Fogal, W. and G. Fraenkel. 1969. Melanin in the puparium and adult integument of the fleshfly, Sarcophaga bullata. Ibid., 1437-1447.

Hsiao, T.H. and G. Fraenkel. 1969. Properties of leptinotarsin: a toxic hemolymph protein from the Colorado potato beetle. Toxicon, 7:119-130.

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FRIEDMAN, STANLEY, Professor

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GHENT, ARTHUR W., Professor

Ghent, A.W. 1969. Studies of regeneration in forest stands devastated by the spruce budworm. Pt. 4. Problems of stocked quadrat sampling. *Forest Science*, 15:417-429.

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HORSFALL, WILLIAM R., Professor

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JAYCOX, ELBERT R., Professor

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Jaycox, E.R. 1970. Collecting and counting bees with a vacuum cleaner. *Journal of Economic Entomology*, 62 (in press).

LARSEN, JOSEPH R., Professor and Head

Larsen, J.R. 1969. A laboratory manual in biology (rev. ed.). Stipes Pub. Co., Champaign, Ill., 294 pp.

LUCKMANN, WILLIAM H., Professor

Broersma, D.B. and W.H. Luckmann. 1970. Effects of tarnished plant bug feeding on soy bean. *Journal of Economic Entomology*, 63:253-256.

MACLEOD, ELLIS G., Associate Professor

MacLeod, E.G. 1969. The Neuroptera of the Baltic amber. Part I. The families Ascalophidae, Nymphidae, and Psychopsidae. *Psyche*, (in press).

METCALF, ROBERT L., Professor

Camp, H.B., T.R. Fukuto and R.L. Metcalf. 1969. Selective toxicity of isopropyl parathion: effect of structure on toxicity and anticholinesterase activity. *Journal of Agricultural and Food Chemistry*, 17:243.

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ROSS, HERBERT H., Professor Emeritus

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SELANDER, RICHARD B., Professor

Selander, R.B. and J.M. Mathieu. 1969. Ecology, behavior, and adult anatomy of the Albida Group of the genus Epicauta (Coleoptera, Meloidae). Illinois Biological Monographs 41, Univ. Ill. Press, Urbana, 168 pp.

Selander, R.B. and R.C. Weddle. 1969. The ontogeny of blister beetles (Coleoptera, Meloidae). II. The effects of age of triungulin larvae at feeding and temperature on development in Epicauta segmenta. Annals of the Entomological Society of America, 62: 27-39.

Selander, R.B. and J.D. Pinto. 1970. The bionomics of blister beetles of the genus Meloe and a classification of the New World species. Illinois Biological Monographs 42, Univ. Ill. Press, Urbana, 240 pp.

STANNARD, LEWIS J., Professor

Kokernot, R.H., C.H. Calisher, L.J. Stannard and J. Hayes. 1969. Arbovirus studies in the Ohio-Mississippi Basin, 1964-1967. VII. Lone Star Virus, a hitherto unknown agent isolated from the tick, Amblyomma americanum (Linn.). American Journal of Tropical Medicine and Hygiene, 18:789-795.

STERNBURG, JAMES G., Professor

Sternburg, J.G. and G.P. Waldbauer. 1969. Bimodal emergence of adult Hyalophora cecropia moths under natural conditions. Annals of the Entomological Society of America, 62:1422-1429.

ALUMNI NEWS

Once again we received a number of responses from the alumni and are delighted with their willingness to share their activities, publications, and family news with all of the readers of the Newsletter. We hope that in those years you have significant accomplishments, travels, family notes of interest, etc., you will be willing to pass them on to us through the Newsletter. With your regular support we have an opportunity to keep track of your activities. We also appreciate the words of encouragement. The Newsletter will continue to come each year and we hope it will be of worthwhile value to all of you. We will continue to include in the back of the Newsletter a perforated information sheet which we ask you to fill out and return. Make this a yearly ritual and it will become an enjoyable part of the Newsletter.

We would like to report on the success of the Alumni Breakfast for former Illini at the Chicago meetings. This activity arose from the suggestions of a number of alumni and we are delighted with your response, participation and support of this activity. We had well over 50 people again at the breakfast in Chicago and will look forward to continuing this activity in Florida where we might have an opportunity to renew old acquaintances and enjoy some fellowship and give us an opportunity to let you know what's going on in the department. If you have any suggestions or comments on the breakfast or any other kind of activity that you feel would be a meaningful experience for all of us, please do not hesitate to let us know.

Lusettie Blevins

My research has been gardening. I learn something new every summer. I had a very nice and interesting visit to Alaska, summer of 1968. This past spring, I was on the campus at Illinois and had a very pleasant visit with Dr. and Mrs. Balduf. I also called on Mrs. C.L. Metcalf while in California this past spring. I also called at Palo Alto and had a short visit with Margaret Windsor. She is well and still working at the University library. I like the Newsletter and am happy to receive it.

B.D. Burks

I just finished a revision of the world genera of the Eurytomidae — it should be in print within a year. Right now, I am taking off (May 19, 1969) for a month in Puerto Rico to hunt Tetratichus parasites of the citrus weevil, Diaprepes, for shipment to Florida. I told my wife to stay home and tend the garden, but, somehow, she prefers a trip to the West Indies, so she is going to join me in this expedition.

Wayne P. Carlisle

I spent the summer of 1969 in Puerto Rico, Antigua, Martinique, Barbados and Trinidad. I had no research or recent publications.

Paul A. Dahm

Recent publications: Metabolism of insecticides. (1969.)  
Nakatsugawa, T., N.M. Tolman, and P.A. Dahm. Oxidative degradation of diazinon by rat liver microsomes. *Biochem. Pharmacol.* 18:685-687.  
Nakatsugawa, T., N.M. Tolman, and P.A. Dahm. Metabolism of S<sup>35</sup>-parathion in the house fly. *J. Econ. Entomol.* 62:408-411.  
Nakatsugawa, T., N.M. Tolman, and P.A. Dahm. Degradation of parathion in the rat. *Biochem. Pharmacol.* 18:1103-1114.

I was a participant in U.S.-Japan Seminar on Insecticide Metabolism and Resistance in Tokyo in June, 1969. The Seminar was sponsored by National Science Foundation.

My wife and I became grandparents for the first time when our older daughter, Patricia Flores, gave birth to a daughter, Maria Angela, in June, 1969.

Keith A. Keyt

I have been assigned as an Entomologist to the 20th Preventive Medicine Unit at Bien Hoa Army Base, Viet Nam. My wife and I had a son, Michael Gordon, born April 10, 1969, at San Antonio, Texas.

Carl Mohr

My current research has been: 1. Relation of ectoparasite load to host size among small mammals and reptiles. 2. Size and function of home range, topography, home area vs home space — including those of arthropods.

Franklin C. Nelson

I have kept busy with renovating an old house (1876) in New Jersey. Also, I have a Broker's License in real estate but only work on Commercial properties. Any spare time is taken up at the Stock Market.

I took a trip to California last August and September to visit Professor Ray Hutson, formerly of East Lansing, Michigan. Enjoyed my short visit with Dr. Kearns and Dr. Metcalf on a short stopover in Champaign. Sorry I missed Dr. Balduf and Dr. Hayes. Quite a difference in present Entomology Department now and the old law building in '24 and '25. Hardly knew the campus. A new grandson, Guy Jeffrey Nelson, was born November 23, 1968.

I always enjoy reading each issue and catching up a little on what goes on. Hope you keep up the good work.

Steve Parshall

I was a vector control specialist for the State of New Mexico Health and Social Services Department in Santa Fe from June, 1968, to February, 1969. This position took me to various parts of New Mexico on such projects as mosquito surveillance, skunk control, plague investigations in wild rodents, survey work on urban rat populations, and curatorial work on the Health Department's insect collection (especially mosquitoes). Since February, I have been working at Hopland Field Station, University of California,



mostly operating fly traps for Dr. John R. Anderson, Associate Professor of Parasitology at Berkeley. I have been comparing the efficiency of different kinds of fly traps in catching blood-feeding flies. We confirmed that blackflies can carry the footworm (Wehrdikmansia) in deer. I will continue working at the field station until mid-August.

At Thanksgiving time I took a trip home to Winnetka to see my folks. I continued on to the Dallas Meetings of the E.S.A. where I saw a number of Illini — past a present. In June, I attended the Livestock Insects Work Conference in West Sacramento with Dr. Anderson.

John E. Porter

Grandson "NO. 2" was born to our oldest daughter, Susan, on August 17. We now have 4 grandchildren!

Just keep the Newsletter coming! I appreciate hearing of activities and doings of the Department, staff and alums.

Janet L.C. Rapp

My current research has been on the studies on ruminant nutrition.

William F. Rapp

I am now engaged in the study of water pollution problems both biological and chemical. In charge of public health entomology program, but spend only about 10% of my time in the area.

I recently attended a one-week school at the Robert Kerr Water Research Laboratory, Ada, Oklahoma.

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NEWSLETTER INFORMATION FOR 1969-70

Name:

Home Address:

Business Address:

Current Research and Recent Publications:

Recent Travels for Business or Pleasure:

Additions to the family (names, dates):

Suggestions or comments concerning the "Newsletter":

Return to: Newsletter Committee  
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WALDBAUER, GILBERT P., Associate Professor

Bhattacharya, A.K. and G.P. Waldbauer. 1969. Quantitative determination of uric acid in insect feces by lithium carbonate extraction and the enzymatic-spectrophotometric method. *Annals of the Entomological Society of America*, 62:925-927.

Bhattacharya, A.K. and G.P. Waldbauer. 1969. Fecal uric acid as an indicator in the determination of food utilization. *Journal of Insect Physiology*, 15:1129-1135.

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WILLIS, JUDITH H., Associate Professor

Willis, J.H. 1969. The programming of differentiation and its control by juvenile hormone in saturniids. *Journal of Embryology and Experimental Morphology*, 22:27-44.

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ZDAREK, JAN, Research Associate

Zdarek, J. and G. Fraenkel. 1969. Correlated effects of ecdysone and neurosecretion in puparium formation (pupariation) of flies. *Proceedings of the National Academy of Science*, 64:565-572.