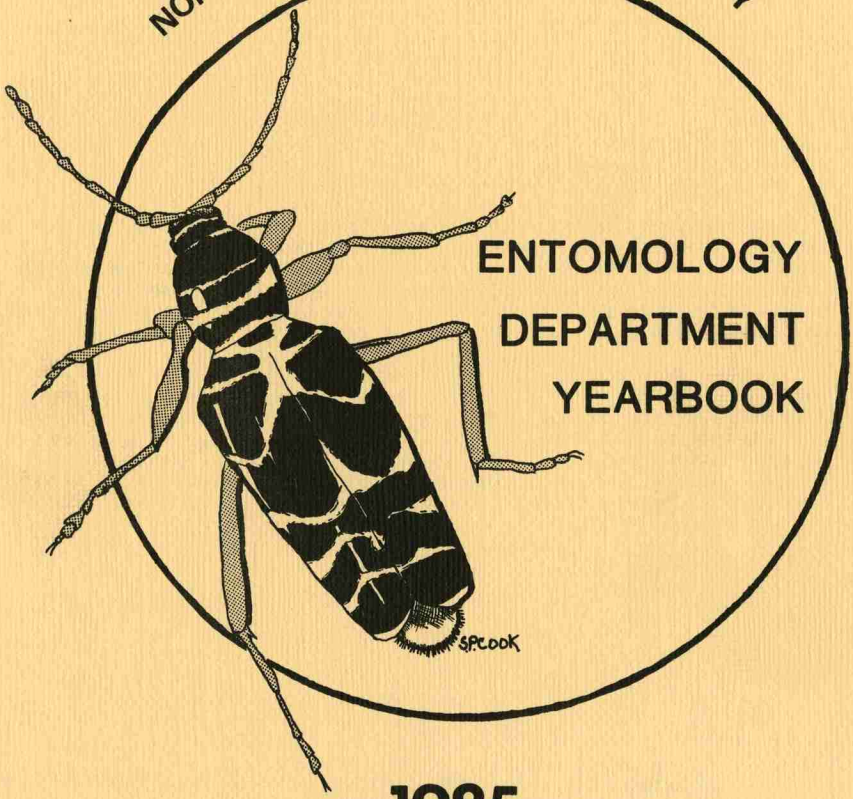
NORTH CAROLINA STATE UNIVERSITY



ENTOMOLOGY DEPARTMENT YEARBOOK

1985

IMAGO

As members of a university department, very much of what we do depends upon communication with colleagues. Therefore, it is worthwhile to periodically record who we are and what we do, so that we may better know ourselves and represent ourselves to others. In this spirit we offer "Imago" as the 1985 yearbook of the North Carolina State University Department of Entomology.

Special thanks for this publication are due to Dr. Ronald J. Kuhr, Department Head, for his support of the project; Tim Lysyk, President of the Graduate Student Association and chief instigator; Ronnie Hines for printing; original artwork by Art Agnello, David Riley, and Clyde Sorenson; and the photographers, Craig Eckel, Rick Etzel, Emmett Lampert, Tim Lysyk, David Riley, Karl Suiter, Scott Thomson, Michael Waldvogel, and Randi Wilfert.

Cover: The locust borer, *Megacyllene robiniae* (Forster), design by Stephen Cook and Michael Duke.

IMAGO

Yearbook of the North Carolina State University

Department of Entomology

March 1985

Yearbook Committee: Scott Thomson (Chairman), Art Agnello, Michael Duke, Craig Eckel, Tim Lysyk, and David Riley.

Contributors: Dr. Ronald J. Kuhr, Dr. Lewis L. Deitz, David L. Stephan, George Horton, Susan Whitney, and members of the Yearbook Committee.

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DEPARTMENT UPDATE

February 19, 1985

Hello Alumni Everywhere:

It has been some time since the department has produced a newsy Yearbook. Thus, we hope you will use this issue to bring yourself up to date on department changes and on the activities of each other. The Yearbook was conceived, edited and directed by the graduate students, with production assistance from the department, especially from Mr. Ron Hines. My special thanks to the Student Yearbook Committee consisting of Scott Thomson (chairman), Art Agnello, Mike Duke, Craig Eckel, Tim Lysyk and Dave Riley, and to all of you for your contributions.

Most of you know by now that I became department head on October 1, 1980- has it only been 4 1/2 years? In the next few paragraphs, I will highlight a few of the changes that have taken place during this time.

First, we were all extremely saddened by the loss of two faculty members. Professor Emeritus Dr. Theodore B. Mitchell died on February 10, 1983 after a long and distinguished career. Later in the same year, on March 19, Dr. Gerald T. Weekman passed away at the young age of 51. He had served as Specialist-in-Charge for 17 years. We continue to miss both of these dedicated people.

Faculty retirements during the period include Dr. Kenneth L. Knight (1980), Dr. Walter J. Mistric, Jr. (1980), Dr. John Falter (1981), Dr. Robert L. Rabb (1983), Dr. Robert T. Yamamoto (1983), and Mr. Robert L. Robertson (1984). Faculty who left to accept other positions include Mr. Thomas N. Hunt (American Cyanamid Company), Dr. Tim W. Hunt (Union Carbide Corporation), and Dr. Donald A. Rutz (Cornell University). Finally, Mr. Ray Yeargan retired after 15 years as an Agricultural Research Technician and Mrs. Betty Woolard moved to Research Accounting after 17 years as Department Bookkeeper.

New faculty coming aboard to replace those who left consist of Dr. Emmett P. Lampert, Assistant Profesor in Tobacco Entomology (1981); Dr. James J. Arends, Assistant Professor in Extension Livestock/Poultry Entomology (1981); Dr. Edward Mrozek and Mr. Mark Tooley, Extension Specialists and Program Director and Computer Programmer, respectively, in Pest Survey and Detection and Pesticide Impact Assessment (1982); Dr. Garfield J. House, Assistant Professor in Soil Entomology (1983); Dr. R. Michael Roe, Assistant Professor in Insect Physiology (1984); and Dr. Rick L. Brandenburg, Assistant Professor in Extension

Peanuts/Turf/Forage Entomology (1985). Same faces but different responsibilities belong to Dr. Fred Gould, now our Insect Ecologist, Dr. P. Sterling Southern, Extension Specialist-in-Charge, Dr. Ross B. Leidy, Senior Researcher, and Mr. Steve Bambara, Extension Specialist/Researcher.

The face of the department's facilities has also changed, beginning shortly before I arrived with completion of the Varsity Drive "Barn" renovation and the move to the new Ligon Street Research Annex by the Kennedy and Bradley mob. We were fortunate to acquire almost all of Method Unit I to allow the Stinner, Gould and House clans to spread out a little more and in July of this year the Toxicology Program consisting of the Dauterman, Guthrie and Hodgson crowd will move to new laboratory facilities in Unit IV. Finally, we recently acquired some good quality space in the Grinnells Laboratory on Faucette Drive which will house the Ambrose, Hain, Meyer, Rock and Sorensen groups. This space allowed us to move all faculty out of the Varsity Drive Complex (the house will be torn down, the barn used as a field/lab center) and the Forest Entomology house and to do some shuffling within Gardner Hall so that Baker and Hillmann returned to Gardner.

Some program changes have also occurred in the last five years. First, the undergraduate major in entomology was dropped and students interested in the field have since been encouraged to enroll in the entomology option in the Biological Sciences Curriculum or in the Pest Management for Crop Protection Major. In 1982, the department became the administrative center for two school-wide programs, namely, the new National Pest Survey and Detection Program and the modified National Pesticide Impact Assessment Program. In preparation for our USDA/CSRS Review and NCSU Graduate School Review in February, 1983, a thorough examination of our graduate program and curriculum was completed resulting in the establishment of core course requirements (ENT 502 and 503) and other changes. Our research and extension programs were also carefully scrutinized as part of the review.

During my tenure thus far I have been very pleased to see entomology students complete 4 Master of Agriculture degrees , 32 Master of Science degrees and 32 Doctor of Philosophy degrees. Toxicology students in the department during this time completed 2 Master of Toxicology degrees, 14 Master of Science degrees, and 7 Doctor of Philosophy degrees. These students join a host of other alumni scattered across the country and the world. We hope you all enjoy this Yearbook and will make it a point to stop in and see us whenever you return to Wolfpack Country.

Ronald J. Kuhr

GRADUATE STUDENT ACTIVITIES

Greetings to all from the Entomology Graduate Student Association at NCSU. I would like to take this opportunity to outline some of the functions of our organization. The present EGSA has four elected officers which constitute the Executive Council. These are: the President, Social Rep, NCSU Graduate Student Association Rep, and the Seminar Committee Rep. These posts have been held this past year by myself, William Nicholson, Stephen Cook and Mike Waldvogel, respectively. We also have a student member on the Department Curriculum Committee, Amy Suggars, and on the Computer Committee, Mike Waldvogel. Student members also sit on search committees as faculty positions are filled, and the president attends Department Faculty Meetings to represent the Graduate Student body. Our functions are supported by contributions from the campus Graduate Students Association, the department head, and by admission fees to events. We do not collect dues of any kind.

This year has seen the EGSA develop into a more active group than it has been in past years. Our biggest endeavour has been the resurrection of the Department Yearbook under its new name, "Imago". This has involved a lot of hard work by the members of the Yearbook Committee and a great deal of cooperation from the faculty, student body, the department head, and particularly the Alumni who responded in force to our requests for information. We hope this yearbook will provide you with as much enjoyment as we had preparing it.

I would like to outline some of the other activities we are involved with. The Fall Picnic is held annually in the middle of September at Schenck Forest. This year's picnic had over 85 people attend and enjoy hotdogs, beer, ice cream, etc. The volleyball court and horseshoe pits were well used. Bill Irby won the croquet championship of the world, but only because he makes up the rules as he plays. We have plans for a Spring picnic this year.

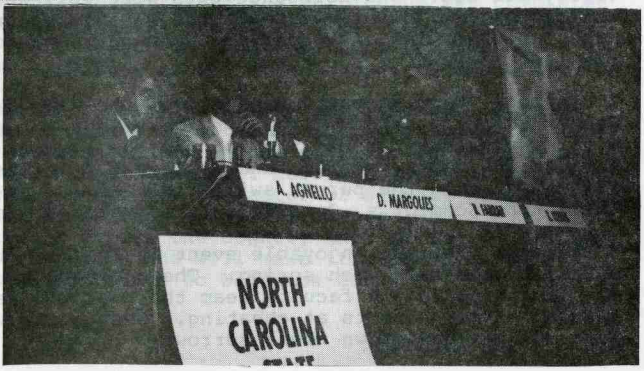
The beer tasting party was held in the Walnut Room of the Student Center, rather elegant surroundings for such a sordid affair. Various "brews" from around the country were served in blind taste tests, scored, and evaluated. In keeping with tradition, only the purest swill finished in the top three. These were Schmidt's, Ortlieb's (whatever that is) and Foster's.

Perhaps the most enjoyable event is the faculty-student softball game held each spring. The graduate student team has soundly thrashed the faculty team the past two years, despite the faculty's best efforts at cheating. Beer is served after the game so they can drown their sorrows.

The department has had a team participate in the Linnaean Games competition at the SEB meetings the past two years. The 1984 team did very well, finishing second in the branch (losing in overtime of the final game...where is Lorenzo Charles when you need him?). We were invited to participate at the National meeting in San Antonio, and finished second in the country. The team consisted of Bob Farrar, Art Agnello, Dave Margolies and myself, with Joella Killian and Louise Romanow as alternates. The 1985 team also had a strong showing, but lost at the final question in the semi-finals to the hated Clemson team. They will be back to participate another year. Best of luck to them.

I would like to thank all the people who participated in making this yearbook possible, and also all those who participated in, planned, and attended our functions.

Tim Lysyk
President
EGSA



IN THE NEWS...

Thirty (+) Years in Entomology

Commentary

The early two-thirds of my career was spent in research on agricultural insects and in making control recommendations. Thus, I was in the thick of things as the need for change in attitude toward pest control became increasingly evident in the 1950s and 1960s. At meetings, one could detect echoes from the words of Dwight Isley, Harry Smith, and others who laid a foundation on which to fashion flexible and more useful responses to pest problems. But those who generate attractive ideas and new terminology have little, if any, control over their subsequent fate. Thus, some of the programs under the rubric of *pest management* fail to meet criteria early proponents had in mind. Hopefully, however, we have learned much about the dangers of attempting to handle nature with so little knowledge and respect for its complexity and interdependencies.

Robert L. Rabb

Note: Robert L. Rabb is a William Neal Professor, Emeritus (retired 1 February 1983), Department of Entomology, 840 Method Road, Unit 1, North Carolina State University, Raleigh, NC 27650.

30 The News and Observer, Raleigh, N. C., Fri., July 31, 1981

Malathion fears called unfounded

The Associated Press

An N.C. State University toxicologist says the dispute about the insecticide malathion, used to control the Mediterranean fruit fly in California, has been blown out of proportion.

Dr. Frank Guthrie, professor of entomology, says the insecticide is no more toxic than a dose of aspirin and has been used in North Carolina and other states for many years.

"As for all the controversy in California, I'm afraid Governor Brown is just fanning an emotional flame which could result in a great deal of needless worry for the state's citizens," Guthrie said.

We Salute

David L. Stephan, entomology specialist, for his expert identification of thousands of insects and related pests submitted to the North Carolina State University Plant Disease and Insect Clinic; for his work that is a vital link in the response of agents and specialists to a wide variety of pest problems; for serving the university community and the general public directly; for his contributions to the NCSU insect collection. His expertise and dedication have earned him the respect of his co-workers and those whom he serves.

NCSU Extension News, March 1983

STEPHAN

Dr. Southern Promoted to Specialist-in-Charge

Dr. Sterling Southern was promoted to entomology specialist-in-charge as of March 1. Dr. Southern joined the staff as an entomology specialist for tobacco in 1978 and has helped establish integrated pest management practices in tobacco production throughout the state.

SOUTHERN

He received a B.S. degree in biology from Davidson College and his Ph.D. in entomology from NCSU. He joined NCSU as a research assistant in 1973. He has also served with the U.S. Air Force.

New director named for Bishop Museum

Dr. W. Donald Duckworth, an entomologist with the Smithsonian Institution, will become director of the Bernice Pauahi Bishop Museum on Aug. 1, the museum announced yesterday.

He replaces Dr. Edward Creutz, who has been director of the museum for seven years. Creutz reached the museum's retirement age of 70 last year.

Duckworth now is a special assistant to the assistant secretary for museum programs at the Smithsonian Institution in Washington, and also curator of the Department of Entomology at the National Museum of Natural History.

"We are delighted to have Dr. Duckworth joining us," said Peter E. Russell, president of the Board of Trustees of Bishop Museum. "He has diverse experience in various levels of administration and a strong background in museum planning — exactly what the Bishop Museum needs as it prepares to enter its second century."

For the past six years, Duckworth was planning coordinator for a $50 million Museum Support Center, which the Smithsonian opened in 1983. The center houses 6 million objects, has 300 staff members and is a storage, study and teaching facility.

W. Donald Duckworth
Smithsonian official

Duckworth also is an internationally recognized authority in his research area of microlepidoptera (butterflies and moths), and has published works in that area and in the field of tropical biology.

He also has served as a program planning consultant for federal agencies and various museums and universities.

Local residents make up about two-thirds of the museum's total visitors, the rest being tourists who are mostly shuttled up from Waikiki aboard Bishop's fleet of old London double-decker buses. When Free Family Sundays were started, it was reckoned that they would draw perhaps 1,500 people on a good Sunday. The crowds have lately been running close to 5,000, straining the museum's ability to cope with them. That doesn't bother Duckworth. "It proves that the audience and the interest are there," he says.

Dr. W. Donald Duckworth

ROBERTSON

Robert L. Robertson, 59, entomology specialist, NCSU, retires Sept. 1. A Blountsville, Ala., native, Robertson earned bachelors and masters degrees at Auburn University. He joined extension in 1950 in Alabama, worked as an entomologist at Auburn University from 1954-1957 and then moved to a job with American Cyanamid Co. in New York City for two years. He returned to a position as Extension entomologist for the University of Georgia for a year and then joined the staff at NCSU in 1961. Robertson received the N.C. Entomological Society's annual award in 1978 and is a past president of the N.C. Entomological Society and board member of the Entomological Society of America. His retirement address will be 409 Holly Circle, Cary 27511.

SEB Award Winner D. C. Margolies and GAST Award Winner Joella C. Killian, both from N.C. State University.

Proceedings of the 58th Annual Meeting
Southeastern Branch, Entomological Society of America

Guthrie Receives O. Max Gardner Award

Dr. Frank E. Guthrie

Dr. Frank E. Guthrie, professor of entomology and founder of the University's internationally-recognized Toxicology Program, was presented the O. Max Gardner Award in ceremonies in Chapel Hill May 13.

The award is the only statewide faculty award presented by the University of North Carolina Board of Governors.

Co-recipient of the award this year was East Carolina University geologist Dr. Stanley R. Riggs.

Guthrie, an international leader in the field of toxicology, was cited for playing "a major role in agricultural productivity," especially for recognizing the benefits and dangers of chemical pesticides "before it was fashionable."

The citation read: "His scientific achievements have improved our understanding of toxic chemicals so that with fewer environmental hazards, farmers are able to feed more of the world's people."

One of the first scientists to study harmful pesticides, Guthrie pioneered pest management with Dr. Robert L. Rabb of NCSU. He helped establish NCSU's international reputation in the field of toxicology research by initiating its master's and doctoral programs in toxicology and by helping the University to obtain about $20 million in research and training grants over the last 18 years.

"Our program was greatly enhanced by similar programs of the newly-established National Institute of Environmental Health Sciences (NIEHS) in the Research Triangle," said Guthrie, who is on an advisory committee for an NIEHS toxicology study group.

Concern for consumers reflected in studies

Guthrie's early studies on the effects of toxic pesticides used in tobacco fields and inhaled by smokers, and his current research on human exposure to toxic chemicals through skin absorption, reflect his concern for consumers as well as for farmers.

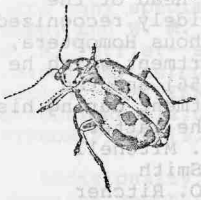
"The hundreds of thousands of chemicals which have become a part of our advanced civilization are undoubtedly of importance in attaining 'the good life,'" he said, "but the long-range, possibly adverse effects of trace contamination are not adequately known . . . Through our studies, we hope to either allay our fears of the unknown or inaugurate more positive action to reduce chemical contamination."

Guthrie also was honored for his significant contributions to controlling a wide variety of devastating plant and animal pests.

Guthrie has served in the United Nations, in NIEHS, on the President's Environmental Council, in the U.S. Department of Agriculture and in numerous other organizations.

In 1980, Guthrie authored several chapters and was co-editor of "Introduction to Environmental Toxicology" and "Introduction to Biochemical Toxicology"—two landmark publications used by toxicology experts and students throughout the country.

Bean Leaf Beetle



What Makes a Bean Leaf Beetle Happy?

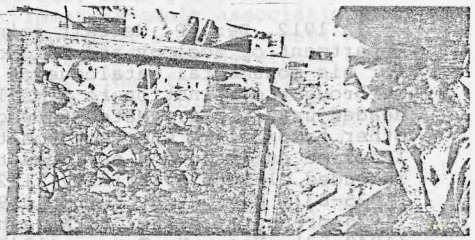
To find out how different soil types, temperatures, and moisture levels affect the development of bean leaf beetles, Pam Marrone started 324 pots of soybeans in the NCSU Phytotron in mid-April. In about 6 weeks, when field-collected bean leaf beetles start laying eggs, she will introduce 30 eggs into the soil of each pot where hatched larvae will feed on the roots and root nodules for several weeks.

Soil types used in this experiment include a high organic soil from the Coastal Plain and a sandy soil and clay loam from the Piedmont. She will combine the three soil types with three temperatures (68°, 77°, and 86° F) and three levels of controlled moisture.

The length of the rope wick suspended from each pot determines the level of soil moisture. Wicks will draw water from a constant source so that pots with long wicks will be driest, while those with short wicks will be wettest. Figuring the necessary wick lengths to obtain equal levels of soil moisture in three different soil types took Ms. Marrone months of experimentation.

Once a week, several pots from each combination of soil, moisture level, and temperature will be disassembled and the larvae separated from the soil by salt flotation. She will compare the number of stages of larvae present under each combination of conditions to gain a better understanding of the influence of various environmental factors on the bean leaf beetle population. This information will be fed into a mathematical model of population behavior being developed for this insect.

Pam Marrone and Dr. Stinner prepare pots for testing effect of different soil and moisture combinations on bean leaf beetles.



Soybeans growing hydroponically in high-nitrogen, low-nitrogen, and no-nitrogen solutions developed by Dr. D. W. Israel, NCARS soil scientist. Mexican bean beetle larvae are confined to the leaves of plants in controlled-environment chambers.

Mexican Bean Beetles Are What They Eat

The three hydroponically grown soybean plants in the controlled environment chamber may look alike, but the nitrogen content in their leaves is stored in different forms. Plants like the one on the right, grown in a nitrogen-free solution, fix their own nitrogen through active root nodules. The other plants are growing in solutions with varied amounts of nitrogen added. Mexican bean beetles are confined to the leaves of the different plants so that differences in weight gain and numbers of eggs laid may be recorded.

Mrs. Karen G. Wilson, graduate student in entomology, is investigating the hypothesis that the Mexican bean beetles will not grow as rapidly or reproduce as well on soybeans which fix their own nitrogen. Nitrogen produced by root nodules is stored in the leaves as allantoin and the Mexican bean beetles apparently lack the enzymes to digest it. Allantoin is chemically only one step away from the uric acid excreted by the Mexican bean beetle, suggesting that it is not a form of nitrogen which provides a satisfactory source of protein for the insect.

This is only one of the relationships between plant and insect physiology which is being investigated by NCSU entomologists. The soybean, an import from the Far East, is not a natural host for the Central American Mexican bean beetle. Although soybeans will do as a secondary host, when other stresses such as high temperature and low humidity are added to the nutritional stress of feeding on a marginal host, beetle mortality rises quickly. Beetles feeding on soybeans may succumb at temperatures which do not adversely affect beetles feeding on garden beans.

Research is underway to investigate possible chemical changes in the composition of the insect's cuticle which might result from feeding on different hosts. The key here is thought to be the highly polyunsaturated nature of soybean lipids. Mexican bean beetles feeding on soybeans in hot dry weather lose weight and reproduce poorly, apparently because of water loss through the cuticle, which may become permeable at certain combinations of temperature and humidity. Other factors which may contribute to the disintegration of the cuticle are abrasion from the hairier soybean leaves, or interference with the ability of the larvae to extract water and/or nutrients.

According to Mrs. Wilson, "You are what you eat may be even more immediately important for Mexican bean beetles than it is for human beings."

Mexican Bean Beetle

NCSU INSECT COLLECTION

Lewis L. Deitz and Carol S. Parron, Curators.

Although the Entomology Museum (now called the NCSU Insect Collection) was not formally initiated until 1952, some of the earlier specimens collected by Franklin Sherman date back to the turn of the century. An ardent collector, Sherman served as the Agricultural Experiment Station Entomologist from 1902 to 1907, concurrently acting as the State Entomologist for the N.C. Department of Agriculture (1900-25).

In 1912, Zeno P. Metcalf joined the college as Head of the Department of Zoology and Entomology. Becoming widely recognized for his monumental catalogue of the auchenorrhynchous Homoptera, he brought distinction to himself and to the department which he headed until 1950. Metcalf (who died in early 1956) and the other taxonomists who took positions in the department during his lifetime enlarged and enriched the Collection. The latter included Clement S. Brimley (1920-27), Theodore B. Mitchell (1925-83), Bentley B. Fulton (1928-54), Clyde F. Smith (1939-present), Walter M. Kulash (1943-60), Paul O. Ritcher (1949-52), Henry K. Townes (1949-52), and Maurice H. Farrier (1955-present). During the period 1950-55, the Entomology Faculty was a part of the Division of Biological Sciences.

Since 1955, when Entomology became a separate department, David A. Young (1957-present), Herbert H. Neunzig (1957-present), Kenneth L. Knight (1968-present), David L. Stephan (1974-present) and L. L. Deitz (1980-present) have joined the taxonomic faculty. Through the years other faculty, staff and students have also helped to build the Collection. Forty-one students (23 M.S., 18 Ph.D.) have completed advanced degrees relating to taxonomy or morphology.

Today, the NCSU Insect Collection embraces the departmental research and reference collections of more than 448,000 pinned specimens, 84,000 slides, and 17,000 vials. It thus ranks among the largest arthropod collections of the Southeast. Though much of the material is from North Carolina, coverage in many groups spans the United States and beyond.

Especially outstanding are the holdings in HOMOPTERA, estimated at over 242,000 specimens (including approximately 99,000 cicadellids, 55,000 aphid slides, 14,500 delphacids, and 11,200 membracids). Z. P. Metcalf established the world-wide collection of Auchenorrhyncha between 1912 and 1956, and D. A.

Young contributed much to its recent growth. In 1977, the Wilhelm Wagner Collection, rich in European Auchenorrhyncha, was bequeathed to NCSU, where it is maintained as a unit within the Homoptera. C. F. Smith began amassing the large world collection of aphids in 1939; it includes much material from North Carolina and Utah.

Other noteworthy holdings are: HYMENOPTERA (71,000+ specimens, including T. B. Mitchell's world collection of bees and C. F. Smith's collection of aphidiids), DIPTERA (57,000+ specimens, with more than 8,000 mosquitoes and 18,000 tabanids contributed mostly by K. L. Knight and R. C. Axtell, respectively), COLEOPTERA (51,000+ specimens, over 12,000 elaterids and 8,000 scarabs), LEPIDOPTERA (31,000+ specimens, including numerous noctuids, geometrids, sphingids, and over 8,000 pyralids, valuable for their immature-adult associations, with many specimens reared by H. H. Neunzig, D. L. Stephan, R. L. Rabb, and W. M. Brooks), ACARINA (28,000+ slides, developed by M. H. Farrier- strong in ascids, phytoseiids, rhodacrids, veigaiids, zerconids, and the W. Gordon Bruce Collection of ticks), HEMIPTERA (16,000+ specimens, many mirids and lygaeids), ORTHOPTERA (12,000+ specimens, B. B. Fulton Collection), and SIPHONAPTERA (5,000+ slides, Archie D. Shaftesbury Collection).

Additionally, the Collection serves as a repository for NCSU research vouchers and North Carolina reference material, with many specimens from the NCSU Plant Disease and Insect Clinic. Notable voucher collections are those of soybean and grape insects from North Carolina. Numerous paratypes and other secondary types are incorporated in the Collection, but most holotypes (over 300) are on indefinite loan to the U. S. National Museum of Natural History.

Room 4321 Gardner Hall (105.4 sq.m.) houses the general collections; specialized collections elsewhere occupy an additional 26.5 sq.m. Overall, there are 1,888 museum drawers in 178 cabinets for pinned specimens, 67.4 sq.m. of shelf space for vials, and 85.5 m of shelf space for slides.

Important collections of entomological literature housed in the D. H. Hill Library are those of the Viennese entomologist Friedrich F. Tippmann (items on beetles and many old European serials), K. L. Knight (nearly all books published on mosquitoes through 1979), Z. P. Metcalf (comprehensive coverage of auchenorrhynchous Homoptera through 1955), and C. F. Smith (taxonomic works on aphids). These collections contribute to the Library's excellence in the area of entomology.

The creation of a departmental Museum Council in 1979 spread responsibility for the NCSU Insect Collection among a broad base of faculty and staff with interests in taxonomy. Those presently

serving on the Council (and their taxonomic specialties) are: James R. Baker (immature Corydalidae and Megachilidae); L. L. Deitz (Curator, Membracoidea); M. H. Farrier (soil-inhabiting Mesostigmata); K. L. Knight, Prof. Emer. (Culicidae); H. H. Neunzig (Pyralidae); C. S. Parron (full-time Curator); P. Sterling Southern (Cicadellidae); C. F. Smith, Prof. Emer. (Aphididae); D. L. Stephan (identification service); and D. A. Young, Prof. Emer. (Cicadellidae).

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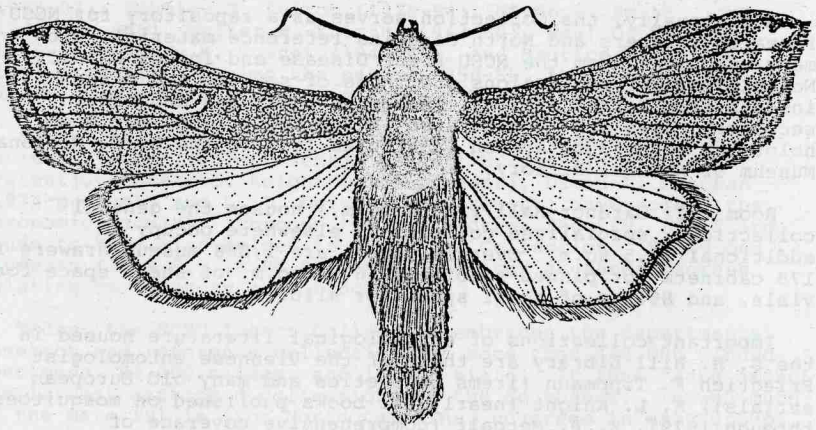


the ANTENNA

Newsletter of the NCSU

Entomology Department

Spring 1985

NOW WE ARE FOUR

The news sheet people in the department are accustomed to finding in their mailbox every Monday morning traces its origins to four years ago, when on 29 January 1981 Mike Keller first published the "GSA Newsletter" with the assistance of Lance Meinke, Susan Whitney and Mike Dimock. A second issue ("EGSA" - for Entomology Grad Student Association) came out in April, and on 11 November 1981, the "ANTENNA" first appeared with the familiar logo we retain today, which was drawn by Mike Dimock. After a couple more issues printed on a "freestyle" schedule, weekly publication was begun on 19 April 1982 under the editorship of Art Agnello and Scott Thomson. Aside from Christmas breaks, the presses haven't stopped since.

Today's ANTENNA contains regular features we can't get along without: job announcements, new course offerings, seminar notices, new books, departmental happenings, new students, oral exams, housing pleas, and (of course) a weekly picky question to keep you on top of things and a cartoon to maintain your perspective. Nearly every other kind of departmental news is also printed, including information that would otherwise take the form of memos, bulletin board clutter, or word of mouth. Student editors have a habit of graduating off, so a transition has been in the works for a few months to assure that the new 'eds.' -- Amy Suggars, Tom Keeley, and Bill Irby -- will continue to deliver the kind of newsletter the department wants.

The ANTENNA has served as a model or motivation for newsletters in at least three other NCSU departments, but whatever respect we may enjoy as a regular, authoritative periodical is attributable to a supporting cast of true stars: Dr. Ron Kuhr, whose underlying endorsement of our efforts has made each issue required reading ("Whatsa matter, didn't you read this week's ANTENNA?!!"); Diane Jones and Rita Reynolds, who are singly and jointly responsible for constructing the final copy, and organizing all the information that comes from or lives in the Front Office (Art to Diane: "Please please could you type this over just *once* more but let's change this around like that maybe,

or else do it in italics with no underlines and center it backwards okay?..."); Ron Hines, who fires up the offset press every week, does the collating *and* distributing, and now has trained US in the meaning of a deadline ("Don't say 'stop the presses' to ME, son..."); and lastly, the people without whom this endeavor could not succeed, the department readership that regularly submits their news items without fail, properly labelled and before 9:00 a.m. on Friday, in the right mailbox, despite botched 'facts', typos, faded cartoons and terrible puns.

Guess you talked us into keeping at it.

"Lunch is ready, Lawrence, and... What? You're STILL a fly?"

DEPARTMENT FACULTY, STAFF AND GRADUATE STUDENTS

ADMINISTRATION

Left to right: Terri Jaskolka, Diane Jones, Angie Carmichael, Carmen Sasser, Rita Reynolds, Ron Hines, Gerry Cheney, Kathy Fuller, Ronald Kuhr, Jane Stephens.

KUHR, Ronald J. Department Head and Professor

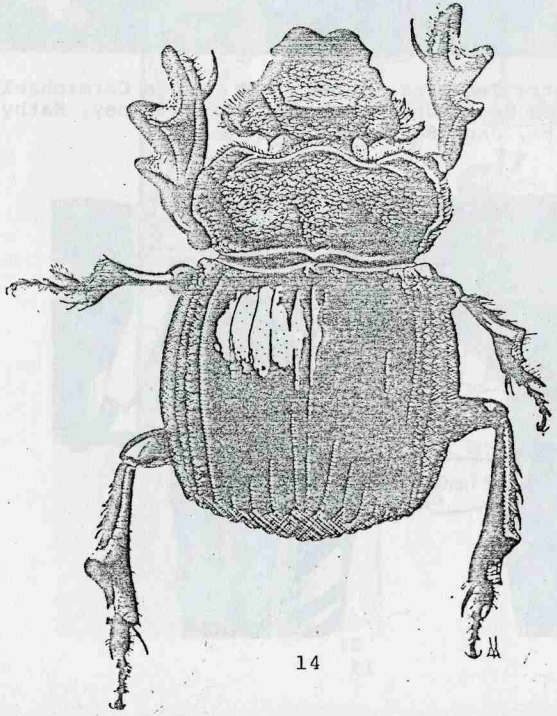
Administration of the department's teaching, research and extension programs takes up just about all of my time. I offer a one-credit special topics course each spring, ENT 590B - Careers in Entomology, in an attempt to help students prepare for finding a job and getting through the first year on the job. As an insect toxicologist, I try to keep up with developments in pesticide metabolism and insect resistance to chemicals.

Bolden, Johnnie P. M.S. (Kuhr)

Agronomic/fruit crop protection entomology

Quote: "Woman was taken from man, not from his head to top him, nor from his feet to be trampled underfoot, but from his side to be equal to him under his arm to be protected and near his heart to be loved."

Also associated with Dr. Kuhr in administrative capacities are Angie Carmichael (Steno Clerk III), Gerry Cheney (Budget Clerk), Ron Hines (Lab Manager), Deanna Jones (Clerk-Typist III), Diane Jones (Steno Clerk IV), Rita Reynolds (Administrative Secretary V), and Betsy Ringgold (Accounting Clerk III).



TOXICOLOGY AND BIOCHEMISTRY

Back row: Mohamed El-Oshar, Norbert Kaminski, Doug Helling, David Wells. Front row: Osamu Kodama, Ivin Silver, Buck Grissom, Walter Dauterman. Seated: Frank Guthrie.

Back row: Steven Kinsler, Gregory Beumel, Jon Cook, David McGuinn. Front row: Margaret Lewandowski, Ernest Hodgson, Patricia Levi, Susan Conley, Barbara Fouse, Faye Lloyd, Mary Leigh.

GUTHRIE, Frank E. Professor

Absorption and transport of insecticides in target and non-target organisms. We expect to move to human skin absorption (*in vitro*) in the immediate future.

Teaching - Ent 550 (Fundamentals of Insect Control); TOX 515 (Environmental Toxicology); TOX 510 (Biochemical Toxicology - in part); TOX 590C (Methods in Toxicology - in part). Assist with both Entomology and Toxicology seminars. Drs. Dauterman and I share Ent 622 (Insect Toxicology), but it has not been offered recently because of low enrollment.

The toxicology program now offers separate M.S. and Ph.D. degrees in toxicology. There are about 50 students electing this major in addition to the entomology major. Drs. Dauterman, Hodgson and I will move from Gardner Hall to a new facility in Method in 1985.

Also associated with Dr. Guthrie is Faye Lloyd (Secretary IV).

Tromp, Lanionel L. M.S. (Guthrie)

The absorption of pesticides by treatment to different anatomical areas of mice.

Quote: "I am a great believer in education, and I find the harder I work, the more I appreciate it." Philosophy of Life: "Success is not measured by heights attained, but by the obstacles overcome."

Dr. Guthrie's other graduate students are Nancy Adams, Kevin Denny, Buck Grissom (Postdoc.), Mark Higuchi, Norbert Kaminski, James Warren, and Garry Wong.

DAUTERMAN, Walter C. Professor

My family and I are slowly adjusting to living in the U.S. after having spent a year down under. We all enjoyed Australia with its variety of different plants and animals, as well as its relaxed style of living. During my stay, I spent a year looking at pesticide metabolism in the sheep blowfly.

Since returning to NCSU I have been busy working on a variety of projects dealing with pesticide resistance and the metabolism of pesticides. During the past year, I have presented papers at the International Congress of Entomology in Hamburg, Germany, as well as the National ESA meeting in San Antonio, Texas.

El-Oshar, Mohamed A. Ph.D. (Dauterman)

Mode of action and metabolism of insecticides: IGR and OP compounds.

Fix, Laurel Anne Ph.D. (Dauterman)
Purification of glutathione-S-transferases in the house fly.

Kodama, Osamu Research Associate (Dauterman)
Purification and characterization of house fly Cytochrome P-450.

Silver, Ivin S. Ph.D. (Dauterman)
Metabolism of xenobiotics (glutathione conjugation).

Dr. Dauterman's other graduate students are Robert DeWoskin, Serafino Franch, Kenneth Rudo, and David Wells.

HODGSON, E. William Neal Reynolds Professor
Teaching - TOX 590A (Introduction to Toxicology); TOX 510 (Biochemical Toxicology - in part).
Research - Without going into the details of who does what, there are about 10 people in the group who collectively cover the following projects, four of which are on mammals and two on insects:
Mammals
1. Purification, properties and induction of hepatic Cytochrome P-450
2. Cytochrome P-450 from human placenta
3. Liver, lung and kidney FAD-containing monooxygenase
4. *In vivo* modification of xenobiotic metabolism

Insects
1. Purification and properties of house fly Cytochrome P-450 isozymes
2. Nutritional effects on xenobiotic metabolizing enzymes

The last two are in cooperation with Dr. Dauterman and his group.
We are currently moving in the direction of some of the molecular biology aspects of these problems, e.g. gene expression during the induction process, and hope to use some of the new biotechnology techniques in their resolution.

Beumel, Gregory Ph.D. (Hodgson)
The effects of ethanol on the metabolism of pesticides.

Cook, Jon Calvin Ph.D. (Hodgson)
Induction of xenobiotic metabolizing enzymes by methylenedioxyphenyl compounds.

Fouse, Barbara L. M.S., Toxicology & Physiology (Hodgson)
Acetaminophen toxicity in mice in response to Mirex or chlordecone pretreatments: hepatotoxicity measured *in vivo* with serum enzymes and *in vitro* in hepatocyte culture.
Quote: "It's when things seem worst that you must not quit."

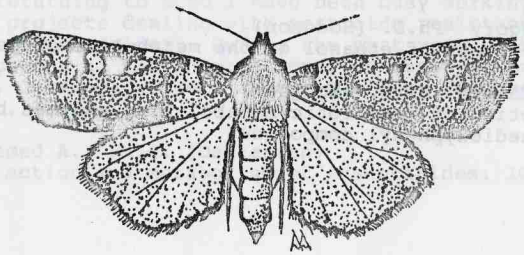
Jeffreys, Lisa M. M.S., Toxicology (Hodgson)
My area of interest includes the use of NMR analysis to follow the metabolism of hepatotoxins in the rat. I have a graduate appointment at NIEHS in the Nuclear Magnetic Resonance Laboratory (NMR) under Dr. E. Murphy and Dr. R.E. London.

Levi, Patricia E. Research Associate (Hodgson)
Oxidation of pesticides by purified Cytochrome P-450 isozymes and purified FAD-containing monooxygenase.

Lewandowski, Margaret M.S. (Hodgson)
Purification and characterization of Cytochrome P-450 from human placenta.
Quote: "Daigakuin no gakusei no motto wa, bushido desu."

Smyser, Barbara Ph.D. (Hodgson)
Contributions of microsomal liver FAD-containing monooxygenase toward matabolism of pesticides and model phosphorus compounds.
Quote: "Behind every happily married graduate student is a supportive & patient spouse!"

Dr. Hodgson's other graduate students are Jeffrey Boyd, Susan Conley, Steven Kinsler, Patricia McClellan-Green, David McGuinn, and Marc Reilly.



PHYSIOLOGY

Left to right: Marla Share, Richard Roe, Princy Jesudason.

PATHOLOGY

Left to right: Clyde Moore, Wayne Brooks, Jimmie Cranford, Ali Ali.

ROE, Richard M. Assistant Professor

Dr. Roe's insect physiology/biochemistry laboratory is directed toward the isolation and characterization of key regulatory elements from the insect juvenile hormone system and from the insecticidal delta-endotoxin of members of the *Bacillus thuringiensis* complex. Classical, affinity and monoclonal antibody-affinity chromatography are being utilized to purify juvenile hormone esterase (JH esterase), neurohormonal JH esterase inducing factor(s), and insecticidal, cytotoxic, and neurotoxic polypeptides from the delta-endotoxin of *B. thuringiensis*. Transition state theory and directed-synthesis of specific reversible and irreversible inhibitors are being utilized to identify critical interactions at the JH esterase active site and to facilitate crystalization and heavy atom labeling of the JH esterase site for x-ray crystallography studies. Active site radiolabels are being developed to follow specific JH esterase degradation. Insect fat body tissue culture is employed to study the genetic prioritization of biotic and abiotic induction stimuli for JH esterase biosynthesis, and complementary DNA probes are being developed to study gene structure for JH esterase. Classical techniques in protein degradation, ELISA, and a functional analysis of degradation products are being coupled with neurophysiological studies to determine the mode-of-action of *B. thuringiensis* delta-endotoxin.

Dr. Roe is also teaching Entomology 503, Functional Systems of Insects.

Jesudason, Princy Ph.D. (Roe)

Development of new biodegradable insecticides from studies of juvenile hormone esterase regulation.

Quote: Philosophy of Life - "Accept people as they are."

Share, Marla M.S. (Roe)

The activity and characterization of juvenile hormone esterase during embryogenesis and larval development in the tobacco hornworm.

Quote: "So many bugs, so little time."

BROOKS, W.M. Professor

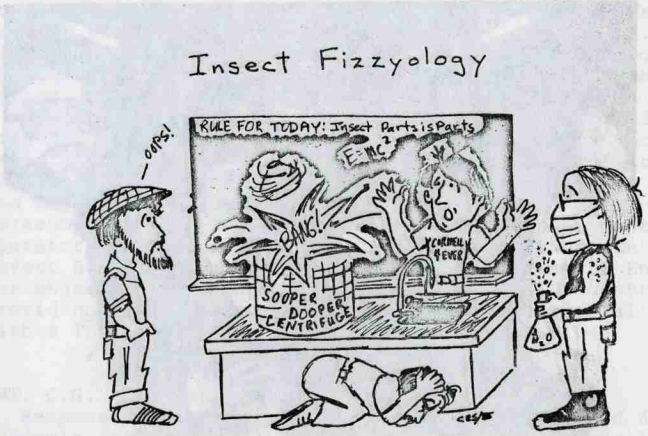
The year 1984 was a fairly significant one for Dr. Brooks, both personally and professionally. The first six months were spent on a sabbatical studying microsporidioses of freshwater amphipods and other arthropods at the USDA Gulf Coast Mosquito Research Laboratory in Lake Charles, Louisiana. Emphasis was placed on taxonomic studies including characterization of microsporidian life-cycle stages with both the light and electron microscope. As expected, the sabbatical also afforded an opportunity to fish for bass in the marshes of

southwestern Louisiana as well as to make new friends -- including one from Texas who currently also resides in Raleigh. Rumor has it that he may take the plunge again soon. The year also marked the conclusion of a two-year term as President of the Society for Invertebrate Pathology. Present research activities include examining the potential of microsporidia as microbial control agents for the Mexican bean beetle and the Colorado potato beetle. In addition to insect pathology (ENT 520), Dr. Brooks assists in teaching a new course on biological control (PM 525) cooperatively with Drs. R. Stinner of Entomology and C.G. Van Dyke of Botany.

Also working with Dr. Brooks is Jimmie Cranford (Research Technician III).

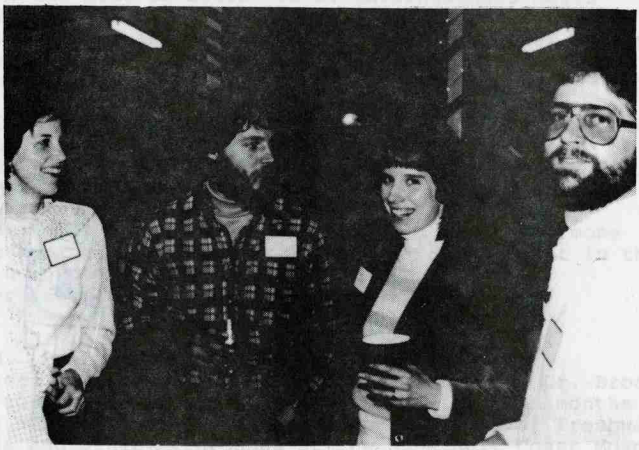
Moore, Clyde B. Ph.D. (Brooks)
Characterization of microsporidian species *vairimorpha* using light and electron microscopy, gel immunoassay, and monoclonal antibody sera.

Dr. Brooks' other graduate student is Ali Ali.



The Ent. 503 Class stares in wonder as the centrifuge explodes.

Back row: Charles Wright, Harry Moore, Rudy Hillmann. **Front row:** Amy Suggars, Gene Dupree.



HILLMANN, Rudy C. Associate Professor

I have 100% extension responsibility in the areas of household pests, 4-H entomology, and stored product pests. My primary audiences are Extension agents, pest control operators, 4-H volunteers, and householders. Homeowner complaints about fleas have been bad this year and the mild November - December weather prolonged the normal urban pest problems.

Pest control problems in families enrolled in the Expanded Food and Nutrition Education Program (EFNEP) are receiving renewed emphasis. Although this program for limited-resource families is now offered in only 45 N.C. counties (down from 95 in 1975) requests for insect and rodent control training have increased recently.

An annual award sponsored by the N.C. Pest Control Association was awarded for the first time in 1984 to the N.C. 4-H Entomology Project winner. The award, an all-expenses-paid trip to the National 4-H Congress in Chicago, will be available to future 4-H winners and is sure to increase interest and participation in the 4-H program.

MOORE, Harry B. Professor

I currently teach ENT 312, Introduction to Economic Entomology, each semester. Most of the students are in Horticulture, Crop Science, and Pest Management. We no longer have an entomology undergraduate curriculum as such. Undergraduates interested in entomology are directed into Pest Management or into Biological Sciences with an Entomology option.

My extension assignment accounts for 40% of my time. At present, I am responsible for recommendations on wood products insects. My clientele includes homeowners, manufacturers, county agents, and pest control operators. The big thrust at the moment is a series of three graded levels of on-campus workshops on wood-destroying organisms for pest control operators. This is a cooperative effort between Entomology, Forest Resources, and Biological and Agricultural Engineering. Our objective is to upgrade the pest control industry by providing the best possible training in the specialty area with a lot of public concern - termite control.

WRIGHT, C.G. Professor

Responsibilities at the University are assigned 69% academic affairs and 31% research. The Agricultural Pest Control Curriculum of the 2-year Agricultural Institute, School of Agriculture and Life Sciences (SALS), is under my guidance. In this program, I teach four courses per year (General Entomology, Ornamental and Turf Insects, Vertebrate Pests, and Pest Control in Today's Environment) plus advise 35

to 40 students in the curriculum. Four-year undeclared majors (SALS) are also advised until they select a major field of study.

Research involves cockroach biology and control, and the movement of insecticides to non-target indoor areas (in cooperation with the Pesticide Residue Research Laboratory). Other members of the team are Gene Dupree (research technician and a 2 yr. APC graduate) and Ms. Amy Suggars (graduate student). Committee assignments seem to be one of my strong points, as I've had many over the years: One of my longest running committee assignments is as a member of the N.C. Structural Pest Control Committee, North Carolina Department of Agriculture, which I've held since 1967 except for one 4-year period. Seems like I'm committed.

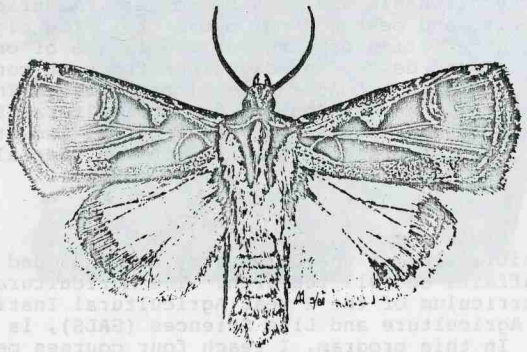
My advising, teaching and research responsibilities keep me from extensive travel, but I do attend a limited number of professional meetings and give occasional talks to various pest control groups, regulatory bodies, etc. on my research.

Velma (my wife of quite a few years) and I have one daughter, Lisa, who is a sophomore at Wake Forest University.

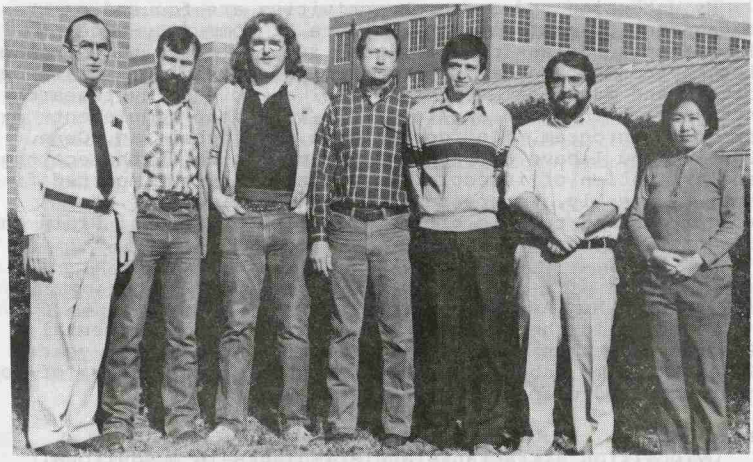
Suggars, Amy Ph.D. (Wright/Farrier)

Research on the distribution, biology, and control of house dust mites (Acarina: Pyroglyphidae) in North Carolina.

Quote: "Maintain professionalism!"



Left to right: William Irby, Gene Powell, Lewis Robertson, Charles Apperson, Beulah Parker, Gary Benzon, Phil Manly, Bruce Furlow.



Left to right: Richard Axtell, James Arends, Tim Lysyk, Tommie Edwards, David Guzman, Chris Geden, Su Xiaoquing.

KNIGHT, Kenneth L. Emeritus

Since official retirement from the Department of Entomology on September 30, 1980, I have continued at a reduced rate a revisionary study of the *Aedes* (*Finlaya*) *niveus* complex of South East Asian mosquitoes for the Walter Reed Biosystematics Unit, U. S. National Museum of Natural History, Smithsonian Institution. Additionally, I have just completed the first year of a second 3-year term as the elected Secretary-Treasurer of the Entomological Society of America. To fill in any remaining bits of extra time, I serve as the Secretary of the Board for the Sans Famille Homeowners' Association (the housing project in West Raleigh in which we live) and this year am serving as President of the Triangle Chapter of the Retired Military Officers' Association. My family consists of wife Ruth (of more than 40 years), four sons, one daughter, one son-in-law, two daughters-in-law and two grandsons. As a last word let me say that I am immensely grateful to Dr. Kuhr and the Department of Entomology for permitting me to continue utilizing space in the department for my research work. It is very gratifying to see the expanding quality and influence of the department.

APPERSON, C.S. Associate Professor

My extension and research activities are focused on the management of pests of man that are of community-wide importance. Extension activities involve training workshops for environmental health personnel and providing assistance to county and municipal vector control agencies. My research necessarily involves applied field work that complements my extension program. In recent years, my technician, Gene Powell, and I have drifted away from working on the ecology and evaluation of insecticides against the red imported fire ant. Currently, we are researching the bionomics of mosquitoes and tabanid biting flies in the Coastal Plain and Piedmont.

PARKER, Beulah M. Assistant Professor

Teaching in the Biological Sciences Interdepartmental Program has taken much of my time over the past few years. Research in my laboratory centers on mosquito vectors of dog heartworm and diapause in the genus *Aedes*.

Benzon, Gary L. Ph.D. (Apperson)

Oviposition attractants and stimulants in mosquitoes.

Furlow, Bruce M. Ph.D. (Apperson)

Flight activity of Tabanidae in a coastal plain creek bottom. Quote: "Ministrare Supra Omnia"

Irby, William S. Ph.D. (Apperson)
Feeding patterns of N.C. coastal plain mosquitoes; improvements in serological techniques for identification of arthropod blood meals.

Robertson, Lewis C. M.S. (Apperson)
Research involves the collection, identification and cataloging of mosquito species at Falls of the Neuse Lake in North Raleigh. Major research goals are to determine the age distribution of *Anopheles quadrimaculatus* and to evaluate mosquito resting houses as a method of mosquito surveillance.
Quote: "Always take the path less travelled."

AXTELL, Richard C. Professor
Teaching (15%): ENT (ZO) 582, Medical and Veterinary Entomology; ENT 690, Seminar of various topics in medical and veterinary entomology; Lecture on integrated pest management in VMM 844, Veterinary Public Health and Hygiene; Lecture in Ent 550, Fundamentals of Insect Control.
Research (85%): Program focuses on integrated control of arthropods affecting humans and animals. Particular emphasis is placed on biological control and integration of biocontrol agents into management programs for livestock and poultry IPM. Specific research is on parasites and predators of muscoid flies, nematode parasites of darkling beetles, fungal agents for mosquito control, and pest monitoring techniques (especially for muscoid flies). Studies are also in progress on arthropod vectors of fowl pox in poultry, biology and control of poultry ectoparasites, compatibilities of insecticides and disinfectant mixtures. Research on biology and sensory behavior of flies, fly predators and parasites is also being conducted.
The research is supported by the North Carolina Agricultural Research Service under regional project S-181 - "Integrated Arthropod Management for Livestock and Poultry in the Southern Region", and by grants from the Southeastern Poultry and Egg Association and an NIH Grant on "Fungal Agents for Integrated Mosquito Control."

Also working with Dr. Axtell is Tommie Edwards (Agricultural Research Technician II).

AREND, J.J. Assistant Professor
100% Extension - Responsibilities include poultry and livestock IPM and general extension for insect pests of animals. Particular emphasis is placed on poultry/livestock IPM, which is supported by two area agents who work in the field delivering the programs to producers, field service personnel, and agribusiness personnel. In conjunction with

the IPM program, an active field demonstration program is maintained to evaluate control techniques (biological and chemical), management strategies, and pest economic impact in the field.

Also working with Dr. Arends is Shannon Jones (Agricultural Research Technician I).

Fatchurochim, Sukarsih M.S. (Axtell)
Biology and ovipositional behavior of flies breeding in poultry manure.

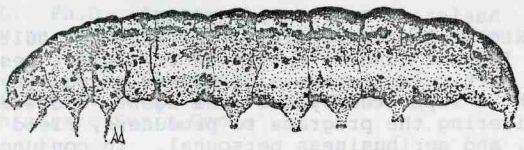
Geden, Christopher J. Research Associate (Axtell)
Insects and mites affecting poultry production. Primary research area is predators and parasites of the house fly and the lesser mealworm, *Alphitobius diaperinus*.

Guzman, David R. Research Assistant (Axtell)
Biological control of mosquito larvae using *Lagenidium giganteum*, a fungal pathogen, and fly control with pteromalid parasites.

Lysyk, Tim Ph.D. (Axtell)
My research focuses on developing statistically sound methods of monitoring house fly populations, as well as aspects of house fly population dynamics, such as dispersal, development, etc.
Quote: "If God was a graduate student, he'd have fooled around for 6 days before creating the world, and on the seventh pulled an all-nighter."

Nicholson, William Lanier, Jr. M.S. (Axtell)
Investigations into the seasonal patterns of incidence of dipterous insects in and around turkey housing in eastern N.C. to gain insights into their role as potential vectors of disease.

Su Xiaoquing Visiting Scientist (Axtell)
Biological control of mosquitoes using fungus.
Quote: "To explore the secret of nature is a pleasure."



Left to right: Emmanuel Younan, Alex Mangini, David Kramer, Frank Arthur, Winnie Hobbs, Fred Hain, Stephen Cook, Bradford Kard.

HAIN, Fred P. Associate Professor

Research 86%; Teaching 14%: ENT (FOR) 565, Advanced Forest Entomology.

Studies of the dynamics of low level populations of southern bark beetles. Investigations of meteorological and predatory factors that regulate populations of the spruce spider mite. Evaluating host tree reaction to insect attack. Determining the predisposition of hosts to insect attack by exposure to atmospheric deposition.

Also working with Dr. Hain is Winnie Hobbs (Research Technician II) and Emmanuel Younan.

Arthur, Frank Ph.D. (Hain)

Susceptibility of Fraser fir in the southern Appalachians to the balsam woolly adelgid.

Quote: "It's never over till it's over." - Y. Berra

Cook, Stephen P. Ph.D. (Hain)

Examining the interaction of the southern pine beetle, *Dendroctonus frontalis*, and its two principle host trees, loblolly and shortleaf pines.

Kard, Bradford Ph.D. (Hain)

Control of May beetle grubs in Fraser fir Christmas tree plantations.

Quote: "Everything that quacks isn't a duck."

Kramer, David A. M.S. (Hain)

To measure the effects of varying vapor pressure deficit and temperature on the developmental rate of the spruce spider mite, and to validate and modify a mathematical model with this data.

Quote: "All that is gold does not glitter; not all those who wander are lost." - J.R.R. Tolkein

Mangini, Alex Ph.D. (Hain)

Effects of temperature and precipitation on spruce spider mite populations on Fraser fir. Determination of Phytoseiidae present in Fraser fir plantations (two new species found). Effects of temperature and humidity on two interacting species of phytoseiid mites.

Quote: "We must know what is true in order to do what is right." - Thomas H. Huxley

Left to right: Kenny Crabtree, David Hawthorne, Rick Etzel, George Rock, John Meyer, Kim Smart, Thurman Weaver.

(AT LEFT) Back row: Ken Sorensen, Grace Haven, William Lord, Christine Nalepa, James Baker. Front row: Stephen Bambara, Kathleen Kidd, Phyllis Lamont. (AT RIGHT): John Ambrose.

ROCK, George C. Professor

My teaching responsibilities are primarily with ENT 562 (Insect Pest Management in Agricultural Crops) which I share with Drs. Bradley and Kennedy. Periodically, I offer topics on insect nutrition or insect sex pheromones for ENT 690 (Student Seminars.)

My overall research project is the management of arthropod populations affecting apple. Several subprojects include: (1) developing descriptive and predictive phenology models for tufted apple budmoth and redbanded leafroller; (2) maintaining biological control of orchard spider mites; (3) determining judicious use of pesticides for orchard IPM programs and; (4) nutritional studies of tufted apple budmoth. Students are involved in developing the phenology models by studying diapause (initiation, maintenance and termination) and nondiapause development. This involves the effect of photoperiodic and thermal requirements, and their interaction, on development. The temperature-dependent models are validated in the field using biological data from virgin-female traps, sex-pheromone traps and larval samplings. The orchard IPM programs emphasize the biological control of spider mites by phytoseiid mites, orchard evaluations of pesticide selectivity (timing, rate and relative toxicity) to arthropod pests and beneficials, and laboratory screening for pesticide resistance in spider mites and phytoseiid mites. The nutritional studies are in cooperation with UC-Berkeley and deal with determining essential dietary fatty acid requirements and metabolism of the fatty acids.

Also working with Dr. Rock is Kenny Crabtree (Agricultural Research Technician I).

AMBROSE, John Associate Professor

My program is the only one in the department that deals with insects as a commodity, as opposed to viewing the insect as a pest or as a research animal. The division of responsibilities is: 55% Extension, 30% Research, and 15% Teaching.

Teaching responsibilities include an undergraduate course in beekeeping (ENT 203, An Introduction to the Honey Bee and Beekeeping) which is offered each fall semester. On a request basis, I also offer a graduate level seminar course on insect social behavoir (ENT 690B, Social Behavior of Insects).

My research project covers most of the practical aspects of apiculture (beekeeping) as well as insect pollination of crops and work on insect social behavior. Studies on bee pollination of various crops such as apples, cucumbers and blueberries, as well as work on honey bee diseases and pests make up the basic structure of the program. Work is also under way on a number of minor but intrinsically interesting

topics such as the source of "blue" honey, the use of ultra sound to calm honey bees and the practicality of "trapping" pollen from honey bee colonies for sale to the health food industry.

The extension component involves work with the state's beekeeping industry at all levels from actual honey production to the processing and eventual marketing of the crop. NC has the largest number of beekeepers in the US and it is a growing industry with many needs for assistance. One of the primary components of my extension program is the development of the Master Beekeeper Program which serves to both educate beekeepers and to provide a trained cadre of beekeepers who are willing to educate both beekeepers and the general public about bees and beekeeping. This program has resulted in a marked increase in the dispersal of beekeeping information without a concurrent increase in staff.

An additional area of interest is the creation of beekeeping developmental projects in the underdeveloped areas of Africa, particularly the Sudan. We have been administering such a project in the Sudan for the last few years and the project is now being expanded, through United Nations assistance, to the refugee populations in that part of the world.

Also working with Dr. Ambrose is William G. Lord (Agricultural Research Technician I).

MEYER, J.R. Associate Professor

Fall semesters I can be found indoctrinating neophytes in the Joy of Entomology (ENT 425 - General Entomology) and every third or fourth spring I oversee a graduate seminar on insect behavior. On the side, I operate Moxy's Meat Market and Slave Labor Exchange, an illicit dealership peddling student labor for cheap wages. For the past two years I have coached the stars: NCSU's entries in the Linnaean Games. My research takes me into the peach orchards, blueberry fields, and grape vineyards of southeastern NC where I pursue the life history of sharpnosed leafhoppers, the bionomics of catfacing insects, and the sex life of grape root borers. My students, Susan Whitney and Rick Etzel, are probing aspects of the sharpnosed leafhopper-blueberry stunt syndrome in an effort to model dynamics of both the insects and the disease they transmit. Plans for the future include a move to new quarters at Grinnells Lab (formerly a pig sty), implementation of an IPM program in peaches, and modelling the edaphic factors that contribute to sporadic outbreaks of the blueberry maggot in North Carolina.

Also working with Dr. Meyer is Thurman Weaver (Agricultural Research Technician II).

BAKER, James R. Associate Professor (Extension)

I spend 85% of the time extending information on insect, mite, and slug biology and management on ornamental plants to county agricultural extension agents and to professional flower growers, nurserymen and groundskeepers. Some of that information has been published as identification manuals: "Insect and Related Pests of Flowers and Foliage Plants" (greenhouse pests, 75 pp.); "Pests of Shrubs" (199 pp.); "Pests of Turf" (108 pp.) These are for sale publications and they really sold like hotcakes for awhile but then my mother stopped buying them. Information to nurserymen is published in the NC Association of Nurserymen Nursery Notes in a feature article shared with my friend, plant pathologist Ron Jones. The article is called "Bugs and Blights." As a consequence, I am known to the nursery industry as "The Bug Man" and "Bug Man Baker." These are affectionate epithets, no doubt. My column in the North Carolina Flower Growers Bulletin was called, "Don't Bug Me", but to avoid the connotation of that jaded phrase and in an effort to upgrade the dignity of the bulletin, the titles now reflect the subject of the column.

Fifteen percent of my time is spent on research on insects and mites associated with ornamental plants. This research is conducted at an infested plant nursery at the Unit 2 Research Farm and in a small quonset greenhouse at Unit 5. For the next five years, we will be studying the biology and management of tea scale in North Carolina in the greenhouse and at the nursery.

Also working with Dr. Baker is Phyllis Lamont (Agricultural Research Technician I).

SORENSEN, Kenneth A. Professor

As Extension Entomologist I have statewide responsibilities for the development and implementation of an education program on the biology, management and control of insect pests of tree fruits, small fruits, pecans and vegetables. The diverse audience includes commercial producers, agri-fieldmen and consultants, and homeowners. Freeze-dried insect kits along with a life history notebook, county plant diagnostic clinics, and a comprehensive vegetable insect manual have resulted in an improved professional service.

Insect forecasting, on-farm tests and traditional and innovative training activities continue to receive emphasis. Minor use registrations have been obtained and IPM programs (Apples, Blueberries, Potatoes, Tomatoes, Cucumbers) have been packaged for grower adoption.

New address and phone: 1103 Grinnells, Box 7626, Raleigh, NC 27695-7626, phone 919/737-3140,3183.

Also working with Dr. Sorensen is Kathleen Kidd (Agricultural Research Technician I).

BAMBARA, Stephen B. Extension Specialist/Research Assistant

Extension Specialist since 1979. Permanently funded position began July 1983.

Research duties - assist in Apicultural Research. Activities primarily in areas of cucumber, blueberry and apple pollination. Additional areas in honey bee diseases, pests, and pollen collection.

Extension duties are heavy in beekeeping short courses and the Master Beekeeper Program. Give programs to county beekeeping associations and schools.

Etzel, Rick M.S. (Meyer)

Simulation model of environmental factors affecting sharpnosed leafhopper movement.

Hawthorne, David M.S. (Rock)

Temperature-dependent models for simulating nondiapause development of redbanded leafroller in North Carolina. The models will be validated using data on adult flight activity (sex pheromone catch) from orchards where temperature data are collected. The dates of diapause initiation will also be studied.

Nalepa, Christine Ph.D. (Ambrose/Gould)

Parental care in the woodroach, *Cryptocercus punctulatus*, and the evolution of termite eusociality; biological control.

Quote: 1) Six-word philosophy of life: "Do good, try stuff, follow through" - Coevolution Quarterly 2) "Make sure that your life is a rare entertainment; it doesn't take anything drastic; you needn't be gorgeous or wealthy or smart, just very enthusiastic!" - Bette Midler "Saga of Baby Divine"

Smart, Kim M.S. (Rock)

Phenology of the tufted apple budmoth in western North Carolina is investigated by comparing flight activity patterns to moth emergence in field rearings. Temperature data are combined with biological data to refine the phenological models.

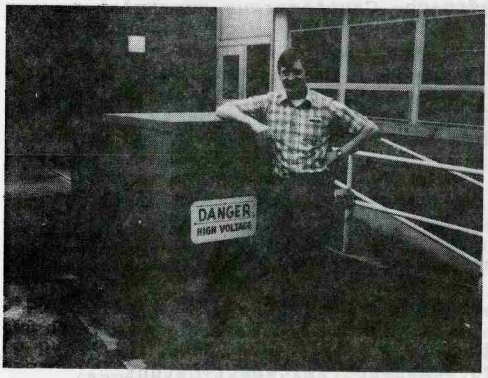
Quote: "Thought for the year: Don't Panic"

Whitney, Susan Ph.D. (Meyer/Rock)

A study of the sharpnosed leafhopper/blueberry stunt disease system in North Carolina.

Quote: "Gloria Steinem may think that 50 is what 40 used to be, but 40 is what 20 used to be!"

Left to right: David Margolies, Robert Farrar, Vann Covington, Leslie Sprando, David Smitley. Recumbent: George Kennedy.



KENNEDY, George G. Professor

Research 85%, Teaching 15% (ENT 562-Insect Pest Management in Agricultural Crops, ENT 690-Seminar: Insect Plant Relationships - Applied Aspects). Primary responsibility for research on insect management and control in vegetable crops. Specific research efforts focus on: a) Seasonal dynamics and management of European corn borer on potato and corn; b) Role of dispersal and a pathogenic fungus (*Neozygites floridana*) in the persistence and pest status of twospotted spider mite populations; c) Mechanisms and utility of genetically-based, multiple insect resistance in a wild tomato species; and d) Effects of resistance to watermelon mosaic virus II and to one of its vectors (*Aphis gossypii*) on virus transmission and spread.

The goal of the overall research program is to develop an understanding of the underlying processes and relationships which contribute to specific arthropod pest problems and to utilize that understanding to devise effective procedures for managing those pest problems.

Also working with Dr. Kennedy is Vann Covington (Agricultural Research Technician I).

Barbour, Jim M.S. (Kennedy)

Investigation of the association between steroidal glycoalkaloids and non-trichome based resistance of tomato to the Colorado potato beetle.

Farrar, Robert R. Postdoctoral Research Associate (Kennedy)

Mechanisms of resistance to *Heliothis zea* in the wild tomato, *Lycopersicon hirsutum* f. *glabratum*.

Kauffman, William C. Ph.D. (Kennedy)

Influence of 2-tridecanone-based resistance of a wild tomato on predators and parasitoids of the tomato fruitworm, *Heliothis zea*.

Quote: "It's not how much we have, but how much we enjoy, that makes happiness."

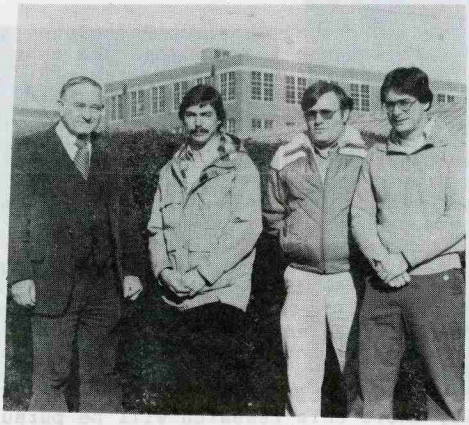
Margolies, David C. Visiting Research Scientist (Kennedy)

Focusing on the aerial dispersal behavior of spider mites by: 1) comparing mite life-history strategies in several agroecosystems and the selective pressures acting to mold these strategies, and 2) investigating mite behavioral response to pesticides.

Recently accepted a position as Insect Ecologist at Kansas State University where this research will be pursued further.

Quote: "Even if you're on the right track, you'll get run over if you just sit there."

Back row: Latif Ahmadzabidi, Craig Eckel, Imam Prasadja, J.R. Bradley, Jack Bacheler, Phil Threatt. Front row: Arthur Agnello, Lisa Breeden, Marilyn Woodall, John Van Duyn.



Left to right: William Campbell, Carl Kollmer, Royce Batts, Thomas Keeley.

BRADLEY, J.R., Jr. Professor

Research 85%, Teaching 15% (Ent 562-Insect Pest Management in Agricultural Crops, ENT 592-Agricultural Entomology Practicum, ENT 690-Seminar: Environmental Impact of Pesticides). Biology and damage relationships associated with corn, cotton, and soybeans. Effects of pesticides on arthropod community structure and population dynamics in corn, cotton, and soybeans. The overall goal of the research is to provide the biological and management inputs necessary to structure insect pest management programs and to integrate these into the context of total crop and pest management systems.

Also working with Dr. Bradley are Phil Threatt (Agricultural Research Technician II), and Marilyn Woodall (Secretary III).

VAN DUYN, John W. Professor

General extension activities focus on the development of practical insect management systems, training of agricultural agents, support for county programs, and the general dissemination of information. Major responsibility is with field grains (corn, small grains, sorghum) and soybeans, whereas cotton responsibilities are regional and supportive.

The development and promotion of IPM systems through grower service organizations is another extension activity. Increasing the value of a multidisciplinary collection of farmer-oriented services, so that IPM programs can be financially solvent, is the main thrust.

Research in corn is presently dominated by European corn borer studies. Graduate students C. Sorenson and C. Umeozor are working with myself, Dr. J.R. Bradley, Jr. and Dr. George Kennedy. Objectives are (1) to describe the relationship of ECB with the corn plant and its general environment and (2) to develop detection, prediction, and control techniques. Other work on corn involves no-tillage culture and chemical control.

Areas of soybean research include herbicide-insect interactions (A. Agnello, student), *Heliothis zea* thresholds (C. Eckel, student), relationship of narrow rows and pest insects (I. Prasadja, student), the influence of soy oils on soybean insecticides (L. Ahmadzabidi, student), soil insect-soybean plant relationships (D. Riley, student) and insecticide screening. All studies are in association with Dr. J.R. Bradley, Jr. and/or Dr. Gar House.

Also working with Dr. Van Duyn are Wayne Modlin (Agricultural Research Technician I), and Marlyn Stanfield (Clerk Typist).

BACHELER, Jack Associate Professor

My activities are 100% extension, with responsibilities primarily for cotton, but also corn and soybeans in the Piedmont (small grains responsibilities are being considered). In cotton, my applied research and demonstration interests include sampling methodology, identification of pest thresholds, evaluation of the relationship between plant phenology and insect population dynamics, cotton pest biology, and chemical efficacy evaluations. In soybeans, interests include the relationship between cultural variables and their effect on host plant attractiveness and susceptibility to podworms and sampling procedures in conventional and narrow-row beans. Extension activities include annual regional scouting schools (with Dr. Van Duyn) and agent training. In order to make extension information palatable for growers and county agents, the use of unconventional delivery systems, such as freeze-dried caterpillars and large-scale insect models, are employed.

Also working with Dr. Bacheler is David Mann (Agricultural Research Technician I).

Agnello, Arthur M. Ph.D. (Bradley/Van Duyn)

Influence of postemergence soybean herbicides on the abundance and development of insect pests found on plants treated with these compounds.

Quote: "During times when people spend their lives trying to second-guess the future and world opinions, there's a certain irony in casting your fortunes on the meanderings of some beetle."

Ahmadzabidi, Abdul Latif Ph.D. (Bradley/Van Duyn)

The influence of vegetable oil on the characteristics of insecticides on soybeans.

Breeden, Lisa M.S. (Bradley/Bacheler)

Evaluation of stink bugs on cotton - species present, occurrence, damage, and economic significance.

Quote: "For in much wisdom is much vexation, and he who increases knowledge increases sorrow" Ecclesiastes 1:18

Eckel, Craig M.S. (Bradley/Van Duyn)

Effects of *Heliothis zea* larvae on soybean yields in North Carolina.

Quote: "It will only take an hour..."

Prasadja, Imam M.S. (Bradley/Van Duyn)

Influence of row width and irrigation on corn earworm and bean leaf beetle in soybean.

Quote: "Slow and steady wins the race."

Sorenson, Clyde E. Ph.D. (Van Duyn)
Monitoring, scouting and controlling the second generation of European corn borer in field corn in eastern North Carolina.

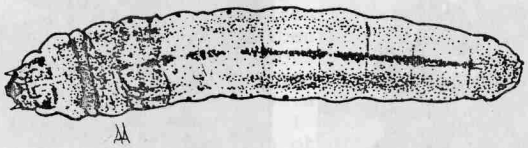
Umeozor, Odidika Christian Ph.D. (Bradley/Van Duyn)
Biology and ecology of the European corn borer (Lepidoptera:Pyralidae) in corn.
Quote: "You do not have a second chance to make the first impression."

CAMPBELL, W.V. Professor
I am conducting research on the management of arthropods on alfalfa, clover, peanuts, soybeans, and stored grain. This includes host plant resistance, cultural practices, economic thresholds, pesticide interactions, and cooperative IPM programs with Weed Science and Plant Pathology.
I have a collaborative research program on peanuts with entomologists and plant breeders in Thailand and the Philippines supported by USAID Title XII Peanut CRSP entitled "Management of Arthropods on Peanuts in Southeast Asia."
I teach a special problems course entitled "Plant Resistance to Insects" on odd years.

Also working with Dr. Campbell is Royce Batts (Agricultural Research Technician II).

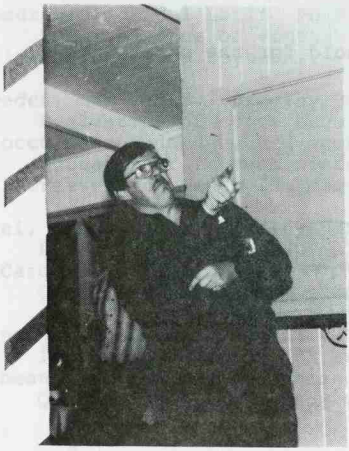
Keeley, Thomas P. M.S. (Campbell)
The effect of planting date, seeding rate, and cultivar on insect damage and yield of peanuts.

Kollmer, Carl W. M.S. (Campbell)
Development of an action threshold for the potato leafhopper on peanuts.



TOBACCO

Back row: Lawrence Pearce, Emmett Lampert, Randi Wilfert. Front row: Alan Stephenson, Michael Jackson, Sterling Southern, Michael Duke, Jim Throne.



LAMPERT, Emmett Assistant Professor

Since joining the faculty in July 1981 as the research entomologist in tobacco, I have taught three separate seminars and special topics. These courses have a common theme in that they deal with data interpretation and the design of sampling procedures. Specific topics covered have included biological monitoring, small plot techniques, and FORTRAN for entomologists. I believe these courses strengthen the quantitative backgrounds of the students and improve their ability to conduct research and experiments.

My research responsibilities can be divided into two categories: insecticide screening, and biology and ecology of insects in tobacco. I currently evaluate numbered chemicals for efficacy on insects (both pests and beneficials), and for phytotoxicity to tobacco. Major research projects on the biology and ecology of insects are under way on aphids and flea beetles. A postdoctoral fellow is currently looking at the relationships between aphids, honeydew, and sooty mold, and how these factors affect the quality of tobacco. A Ph.D. student is examining the role of aphids in the spread of tobacco etch virus between tobacco and alternate hosts. At the Master's level, a project to examine the biology of flea beetle is under way. This will improve our understanding of how larvae should be sampled and how they affect yield. An ongoing project also exists to monitor the abundance and phenology of insects in treated and untreated tobacco. This information is being utilized to improve scouting procedures for major insect pests in tobacco.

Also working with Dr. Lampert are Lawrence Pearce (Research Technician II), and Alan Stephenson (Agricultural Research Technician Trainee).

SOUTHERN, Sterling P. Associate Professor

The responsibilities of my position include the Extension program in flue-cured and burley tobacco. The thrust of this program is to stress efficient insect management and an integrated approach. This is done through a general educational program (meetings, publications, slide sets etc.) and the support of IPM programs at the county level. In recent years, my applied research (in the form of on-farm tests and demonstrations) has centered on economic evaluation of management strategies, insecticide application techniques, effects of cultural practices and (the ever-present) insecticide evaluations. Especially since taking on the Specialist-in-Charge position, I have tried to do much of my field work in cooperation with others. This has included work with Dr. Lampert and his students, and Dr. Gould and his folks. A good bit of my other work is with Extension Specialists in Crop Science and Plant Pathology.

Also associated with Dr. Southern are Micou Browne (Agricultural Research Technician I), Grace Haven (Clerk Steno III), Carmen Sasser (Secretary IV), and Jane Stephens (Clerk Steno III).

JACKSON, D. Michael Assistant Professor

I am a USDA-Assistant Professor with a 100% research position on tobacco insect pests. I have been located at the Tobacco Research Laboratory, Oxford, NC, and have been a member of the NCSU faculty since 1980. Since then, my research has focused on the areas of host plant resistance and biological control. For the HPR studies, I have been identifying and evaluating sources and mechanisms of resistance in tobacco germplasm. I have concentrated these efforts toward investigating the association between leaf surface chemicals from tobacco and tobacco budworm ovipositional behavior. We have identified components that stimulate budworm egg laying. More recently, we have initiated studies to evaluate the importance of chemical constituents on larval survival and development.

I have also investigated several aspects of the biology of spined stilt bugs, *Jalysus wickhami* Van Duzee, which are predators of lepidopteran eggs and aphids on tobacco. In particular, we have mass-reared up to 750,000 adult stilt bugs per year in large plastic greenhouses since 1978. Many of these insects were used in a 4-year pilot test in Bladen Co., NC. I was responsible for evaluating the dispersal capabilities of these laboratory-reared insects throughout flue-cured tobacco fields. We also tested the impact of soil-incorporated pesticides on stilt bug survival. These insects routinely probe tobacco plants for water or nutrients, and are killed by several systemic insecticides and nematicides.

Duke, Michael E. M.S. (Lampert)

Examining adult tobacco flea beetle emergence patterns and population trends. Also looking at larval population dynamics and determining sampling scheme.

Quote: "Science is true; don't be misled by facts."

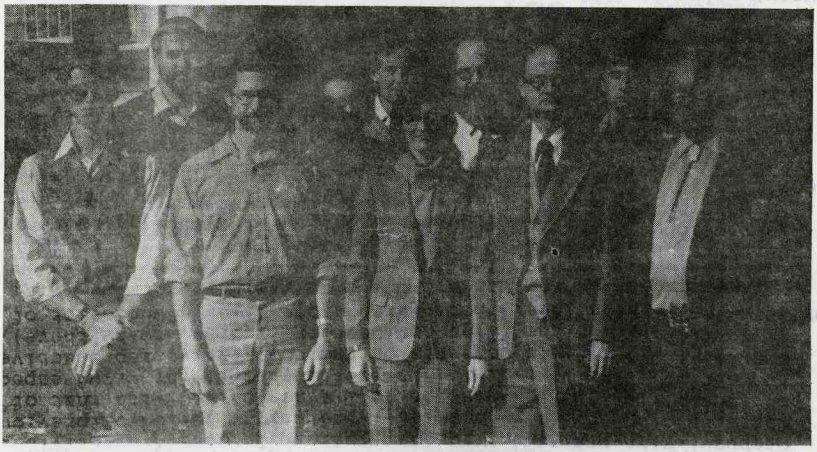
Throne, Jim Research Associate (Lampert)

Research is to investigate the interaction between certain plant characteristics, aphid honeydew production, and sooty mold growth on the quality of flue-cured tobacco.

Wilfert, Randi V. Ph.D. (Lampert/Kennedy)

The biology of the green peach aphid relative to its role as a vector of tobacco etch virus.

Quote: "The mind is a fragile thing."



Back row: Lewis Deitz, Carol Parron, Herbert Neunzig, David McCorkle, Christopher Dietrich. Front row: Peter Hertl, David Stephan, Nancy Leidy, Maurice Farrier, Clyde Smith.

SMITH, Clyde F. Emeritus

Dr. Smith's current interests include aphids, rocks, fishing, hunting, genealogy, family and friends. His family includes 3 children, 15 grandchildren, and 2 great-grandchildren. He recently traveled to the western U. S. to collect aphids, rocks, and friends. While there he also visited some of his family.

YOUNG, David A. Emeritus

Main interests are in insect taxonomy, especially the completion of part 3 of a classification of Cicadellinae. Currently wintering in Florida.

DEITZ, Lewis L. Assistant Professor

I serve as faculty curator of the NCSU Insect Collection and chair the Departmental Museum Council formed in 1979. By the end of 1984 the Collection held over 460,000 pinned specimens, 100,000 slides, and 17,000 vials. With the assistance of C.S. Parron, full-time staff curator, D.L. Stephan, H.H. Neunzig, M.H. Farrier, and part-time workers, significant progress is being made towards arranging various orders according to current catalogs and checklists. Growth and utilization of the Collection are both on the upswing. During 1984, for example, we acquired 12,037 slides, 5,538 pinned specimens, and 516 vials -- we loaned 7,676 specimens or slides and made 4 exchanges. We encourage the donation of specimens, especially material from poorly collected habitats of North Carolina, as well as material that will strengthen our research collections of Homoptera, Lepidoptera, Acarina, and Hymenoptera.

My research program centers on the systematics of two groups of Homoptera: treehoppers (superfamily Membracoidea) and armored scale insects (family Diaspididae). As many membracoid genera are now placed in an incorrect tribe, subfamily, or even family, a major aspect of my work involves cladistic and phenetic analyses of relationships among the families Aetalionidae, Biturritiidae, Membracidae, and Nicomiidae. Graduate student projects include revisions of the tribe Aconophorini (Membracidae -- C.H. Dietrich) and the genus *Aetalion* (Aetalionidae -- D.M. McCorkle). At present, identifying specimens in either of these groups is extremely difficult. Also in preparation is a bibliography of recent literature (1955-1980) on the Membracoidea. Regarding the family Diaspididae, a technical bulletin on the taxonomy of *Melanaspis*, the largest genus of armored scale insects indigenous to North America, is being completed with Dr. J.A. Davidson (Univ. of Maryland).

Courses: ENT 502, Insect Diversity (offered each fall); ENT 590C, Special Problems in Insect Morphology (offered each

year); ENT 590N, Special Problems in the Taxonomy of a Selected Group (offered each year); and ENT 690U, Advanced Topics in Insect Systematics (offered as needed). The annual ENT 502 collecting trips to Bladen Co. have turned up everything from ascalaphids and embiopterans to stylopids and zorapterans.

FARRIER, M.H. Professor

Teaching Forest Protection, Introduction to Forest Insects, Bibliographic Research in Biology, Acarology, and an occasional honor student with participation in the taxonomy seminar. We presently have over 2000 entries from over 100 genera in our catalog of free-living and soil Gamasina from North America compiled from over 400 papers. Some 10,000 soil-inhabiting gamasids and several hundred bat mites from Bolivia have the attention of graduate students. House-dust mites have the attention of another "half student".

NEUNZIG, Herbert H. Professor

Presently teaching ENT 541 (Immature Insects), assisting (Trichoptera and Lepidoptera) with ENT 502 (Insect Diversity), and offering ENT 590X (Aquatic Entomology) every few years.

My research, and that of my students, deals primarily with the taxonomy of immature Lepidoptera. Emphasis is on members of the subfamily Phycitinae (Pyralidae). Descriptions and keys are being prepared, and host plant relationships studied. I also find it necessary at times to deal with the taxonomy of adult Lepidoptera, and maintain an interest in the identification of immature and adult Megaloptera.

STEPHAN, David L. Extension Specialist

Since the position of Insect Identification Specialist was created in 1975 (and for several years before that as a grad student), I have been working in the Plant Disease and Insect Clinic, identifying insects and other alleged pests that people submit. Samples come in from everyone: county agents, farmers, gardeners, exterminators, health departments, researchers, etc. Over the years we have received critters from every imaginable crop, ornamental and situation, plus weeds, wildflowers, wildlife and not a few unimaginable situations. We average about 5000 disease and injury samples and 2500 insect samples per year. My position is 100% Extension and principally involves identification and affiliated activities. Additional activities include collecting for our Collection and surveying winter moths.

Dietrich, Christopher H. M.S. (Deitz)

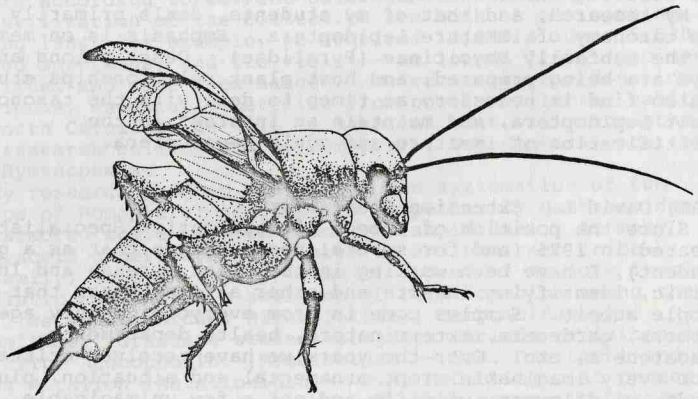
Revision of the tribe Aconophorini (Homoptera:Membracidae)
Quote: "Systematics is of the essence."

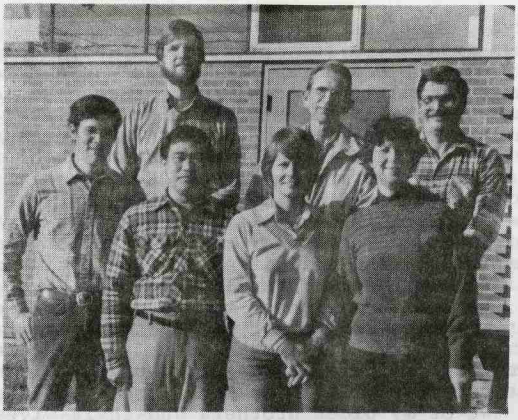
Hennessey, Michael K. Ph.D. (Farrier/Deitz)
Taxonomy of free-living gamasine mites inhabiting soil; catalog of free-living Mesostigmata inhabiting soil in North America.

Hertl, Peter Thomas M.S. (Farrier)
Acarine parasites of Bolivian bats; also interested in cave fauna.
Quote: "A man with a mission is hard to stop."

Leidy, Nancy A. M.S. (Neunzig)
Biology and taxonomy of the larvae and pupae of *Dioryctria* (Lepidoptera:Pyralidae) in North Carolina.

McCorkle, David M.S. (Deitz)
A revision of the genus *Aetalion* (Homoptera:Aetalionidae).
Quote: "I still remain the Unknown Entomology Student."





Back row: Michael Keller, Robert Rabb, Ron Stinner. Front row: Scott Thomson, Ping-Chu Chu, Jeanne Bacheler, Connie Satterwhite.

Back row: Douglas Landis, Noele Ledford, David Riley, Wendy Olson, Michael Waldvogel, Arne Anderson. Front row: Gar House, Fred Gould, Rosario Alzugaray, Karl Suiter, Chuck Warrick.

RABB, Robert L. Emeritus

Although retired, a few 'professional strings' remain attached. One cut off a few months ago was a paper presented at an international conference held in Baton Rouge on Movement and Dispersal of Biotic Agents. I also completed my term on the Executive Committee of the SEB-ESA at the January Meetings in Greenville, SC, and too, I breathed a sigh of relief with the publication a few months ago of "Ecological Entomology", edited by Carl Huffaker and myself. Now, my remaining professional responsibilities are as chairman of Mike Keller's and member of Scott Thomson's Graduate Advisory Committees.

My non-professional activities include active membership in the Association of Retired Faculty Exercise Club (3 sessions per week), gardening, fishing, tennis, reading (ecology, philosophy, fiction) and a lot of visiting with family and friends. Last summer ('84) Mabel and I toured the West with our two children, son-in-law and five grandchildren. This year we've scheduled a trip to Nova Scotia and Quebec in early June with two of my older brothers and their wives. We hope to visit with two former students, Jeremy McNeil and Jacques Regniere, while in Quebec.

Advice to students: In your modelling, do not ignore infinity.

GOULD, Fred Assistant Professor

Under my new job title of Insect Ecologist, I have shifted some of the focus of my work to above the soil line although I have not severed my ties with the soil fauna. I am continuing to teach the graduate insect ecology class, which I hear is getting tougher, every other year. I will be leading an advanced topics seminar in evolutionary aspects of insect ecology next fall.

I have become enamored with the now obsolete Apple II computer and have been using it to write simulation programs for looking at development of insecticide resistance. The tobacco budworm ecological genetics project rolls on with 900,561 cups of diet poured to date. Wendy Olson is still hanging in there with those larvae and now has Arne Anderson as a partner in the set-up room.

Mike Villani and Lance Meinke are now gainfully employed doctors of philosophy. Mike is moving from a postdoc in a natural products chemistry lab to a tenured position with Cornell at the Geneva Experiment Station. Lance is back home in the cornbelt at the University of Nebraska. Mike Waldvogel has tamed those wild female *Heliothis* moths and has them ovipositing on command. Doug Landis and Karl Suiter have begun their thesis research projects.

Also working with Dr. Gould is Connie Satterwhite (Clerk Steno IV).

HOUSE, Gar Assistant Professor

In 1983 I initiated my research program with several long- and short-term studies investigating the impact of various chemical and cultural practices on the composition and activity of soil arthropods. These include various herbicides, conservation tillage methods (with special emphasis on no-tillage), and crop rotations, including winter cover crops such as legumes and small grains. Studies currently in progress involve research on corn, tobacco, soybean and peanuts. A long-term goal of my research is to identify crop management practices that enhance the beneficial activities of soil arthropods and other invertebrates (especially earthworms) in no-tillage systems. I am also investigating the relationship of faunal dynamics and behavior to soil physical and chemical changes in conservation tillage systems. Manipulation of the soil fauna for improving soil fertility and controlling decomposition and nutrient release may someday be a feasible management option in continuous no-tillage agroecosystems.

I currently have two graduate students: David Riley and Rosario Alzugaray. My research technician, Chuck Warrick, brings his highly regarded computing and technical skills to our program. In addition, Noele Ledford, our student-worker, has been a great help in the laboratory.

Finally, I am currently preparing material and information for an ENT 590 Special Problems class on Soil Entomology and Ecology.

Alzugaray, Rosario M.S. (House)

The effect of different ground covers (different kinds of pastures of different ages) and tillage practices on the population dynamics of certain soil insects.

Quote: "I came to this department thinking it would be a good experience. It has been better than that, and the thing I mostly appreciate is that everybody made me feel 'at home' since the first week."

Landis, Doug Ph.D. (Gould)

Assessing the utility of natural feeding deterrents for protection of corn seeds and seedlings against soil insect pests.

Riley, David G. M.S. (House)

Soil arthropod community composition of North Carolina soybean cropping systems in the Coastal Plain, with emphasis on soil insect root feeding and influences on soybean yield.

Quote: "An equation for success: (Work + imagination + headaches + seminars + 1000 cups of coffee) X (cooperation of our insect friends) = one Master's degree in Entomology."

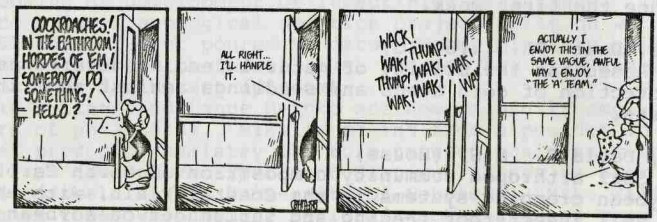
Suiter, Karl A. Ph.D. (Gould)
Evolution and genetics of behavioral responses in the two-spotted spider mite (*Tetranychus urticae*).
Quote: "...I think it is more worthwhile to be a nice person and a competent scientist than to be an arrogant, bright and shining star."

Waldvogel, Mike Ph.D. (Gould/Kennedy)
Genetic variation in oviposition preference of *Heliothis virescens*.

STINNER, R.E. Professor of Entomology and Biomathematics
Member Ecology, IPM and Computer Studies Faculties
Teaching - Team teach Biological Control, Modeling of Insect Population Dynamics, Special Topics in Biomathematics.
Research - Population dynamics of field crop insects, including host plant-herbivore interactions. Particular interest in insect movement and agroecosystem structural effects on movement and population dynamics of insect pests of soybean.

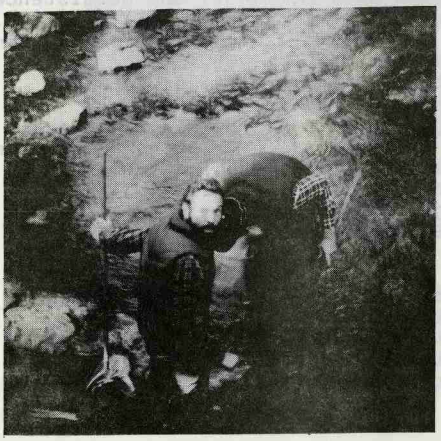
Also working with Dr. Stinner is Jeanne Bacheler (Computer Programmer II).

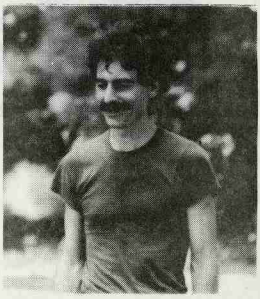
Thomson, Scott Ph.D. (Stinner)
Comparative host-seeking behavior of *Trichogramma* species.
Quote: "...in research, ideas should be used, not believed." - W.I.B. Beveridge



PESTICIDE RESIDUE LAB

Back row: Karen Barbour, Willie Jones, Rick Diehl, Celestine Murray, Thomas Sheets, ElRay Roper. Front row: Janet Hayes, Pat Messick, Ross Leidy, Minnette Suddarth, Joy Fields, Jim Laws.





SHEETS, Thomas J. Professor of Entomology, Crop Science, and Horticultural Science, and Director, Pesticide Residue Research Lab
LEIDY, Ross B. Senior Researcher
ROPER, ElRay M. Research Assistant

The Pesticide Residue Research Laboratory was established in 1954 to support research on pesticide residues in animals, plants, soils, and water. The laboratory is administered through the Department of Entomology, but its function is to cooperate with project leaders in several departments where pesticide residue analyses are needed on research projects. Research on methods of analysis for pesticide residues and on several other problems is conducted independently by the laboratory personnel.

Emphasis on specific pesticides and commodities varies from year to year as problems associated with the use of pesticides develop. Research will continue on minor uses of pesticides in food and fiber crops.

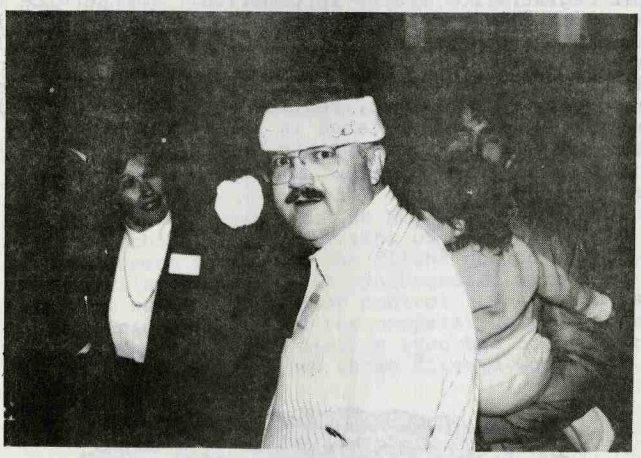
Pesticide residues on tobacco have constituted an important part of the research program for about 15 years. This activity will continue and currently major attention is being devoted to blue mold control chemicals (metalaxyl and EBDC). We also are increasing the number and kinds of pesticides which are determined on auction market samples of flue-cured and burley tobacco and tobacco products.

Research on pesticide deposition, movement, and persistence in structures, in cooperation with C.G. Wright, will continue. A major thrust of this work within the last few years has been determination of chlordane in air of family dwellings as related to treatment for subterranean termite control and changes of chlordane concentrations over time.

Laboratory personnel cooperate with scientists in several departments and on regional and national programs on pesticide residue research (for example, minor-use studies in North Carolina and other states in the Southern Region and the national IR-4 program). Major support for the research comes from North Carolina, the U.S. Department of Agriculture and the tobacco industry.

Also working with Dr. Sheets are Joy Fields (Clerk Steno IV), Janet Hayes (Research Technician II), Willie Jones (Research Technician II), Jim Laws (Research Technician III), Pat Messick (Research Technician II), Celestine Murray (Research Aide), and Minnette Suddarth (Agricultural Research Technician II).

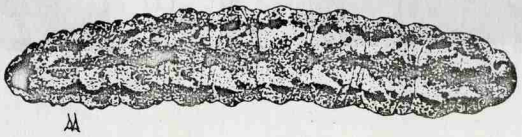
Mark Tooley (left), Ed Mrozek.



MROZEK, Ed, and TOOLEY, Mark Extension Specialists

North Carolina Plant Pest Survey and Detection System -Although technological advances have improved production, increased efficiency and reduced costs, pests remain the major source of loss in agricultural systems. A major weapon against crop plant pests is a system for predicting the occurrence of pests so that appropriate preventive measures can be initiated. Also, there must be some means for evaluating both the efficacy of preventive and remedial treatments and the changing distribution of the crop plant pests. In order to develop such a system, the N.C. Agricultural Extension Service is participating in the Cooperative National Plant Pest Survey and Detection Program. The CNPPSDP is a computer-based plant pest information gathering and summarization network with 48 states participating. North Carolina was one of the original pilot states in the project, which began in 1982.

North Carolina Pesticide Information Retrieval System - The number of registered pesticides is increasing, and with it the effort required to update and distribute accurate registration information. In order to handle this vast volume of information, efforts were undertaken to computerize national chemical registration status information. The service that was developed as a result of these efforts has been designated the National Pesticide Information Retrieval System (NPIRS). The service is housed at Martin Marietta Data Systems in Orlando, Florida, and the administrative staff is located at Purdue University. The N.C. Pesticide Information Retrieval System (NCPIRS) was established in 1982 to provide an interface between personnel within N.C. and the NPIRS.



NORTH CAROLINA ENTOMOLOGICAL SOCIETY REPORT

Dave Stephan, Secretary-Treasurer

The North Carolina Entomological Society held its 1984 fall banquet on 19 October at Balentines Restaurant in Raleigh. This event was attended by 64 people from NCSU, the North Carolina Department of Agriculture (NCDA), and by other N.C. entomologists. Refreshments provided by Ciba-Geigy, American Cyanimid, and Shell helped spark a festive atmosphere, and the sumptuous buffet drew many of us back for seconds. During the business meeting the 1985 officers were elected, including President Dave Bowen, Vice-President Ken McCutcheon, Secretary-Treasurer Dave Stephan, and Historian Charles Apperson. The N.C. Entomological Society Award for outstanding Contributions to Entomology was presented to the sweet and loveable Dr. Frank Guthrie.

Highlighting the evening was Dr. Karen Wilson's talk entitled "Scenes from Rural Japan-or What Kudzu and the Japanese Beetle Have in Common." Karen, a former graduate Student at NCSU and now with the NCDA, had spent several weeks in Japan searching for new strains of a tachinid fly parasite of adult Japanese beetles. The flight period of previously introduced flies was not well synchronized with that of the host beetle, resulting in poor control. The crowd especially enjoyed Karen's comments on the comparative reproductive behavior of the flies and beetles (you had to be there), and her many slides. Let's wish those flies a whole lot of success.

FEATURED ALUMNUS

Karen Wilson
Staff Entomologist
Division of Plant Industries
Plant Protection Section
N. C. Department of Agriculture
Raleigh, North Carolina

Progressivism, breadth, and collaboration are qualities we admire in the career Karen Wilson has been cultivating at the North Carolina Department of Agriculture (NCDA) since 1982. Karen provides entomological expertise to the Plant Protection Section which is responsible for pest survey, regulatory and management programs. The position was newly created when she accepted it, and Karen took advantage of the flexibility offered by this situation to develop an agenda to meet a panorama of needs.

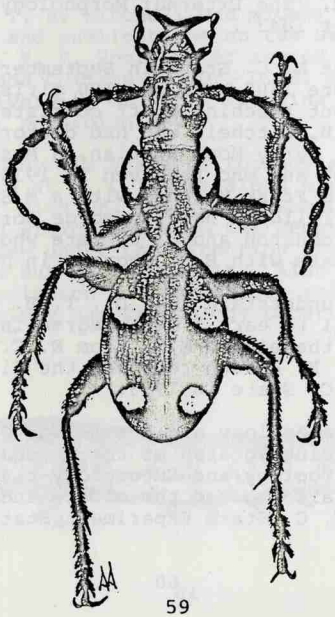
Karen's progressivism is evident in her work to promote biological control in North Carolina. The NCDA has been given a mandate to promote biocontrol programs against established pests and Karen has taken this to heart. She has set up a federally sanctioned quarantine facility in Raleigh and has begun foreign exploration for entomophages, bringing North Carolina in line with California, Texas and Florida. In quarantine now is *Hyperecteina aldrichi*, a tachinid parasitoid of the Japanese beetle that she collected in Japan in June and July, 1984. In the future Karen envisions a state biocontrol facility to house plant pathologists, microbiologists, weed specialists and entomologists, cooperating on control programs for the state. Her proposal to this end has already been given priority by NCDA.

The breadth of Karen's work is illustrated by her many other projects: assisting the USDA Boll Weevil Eradication Program by initiating effective legislation and coordinating the collection of grower fees; survey and treatment of the gypsy moth in conjunction with the Division of Forest Resources and the Animal Plant Health Inspection Service (APHIS); participation in a team assembled by the U. S. Forest Service to model the dynamics of gypsy moth populations; survey and quarantine of the sweet potato weevil; an experimental program to determine the relationship between soil cation exchange capacity and the effectiveness of milky spore against the Japanese beetle; distribution and application of milky spore powder at-cost to turf owners; survey of the parasitoids of the Japanese beetle, cereal leaf beetle,

European corn borer, and northern corn rootworm; survey of the seven-spotted lady beetle to monitor its establishment in North Carolina and the possible displacement of native coccinellids; setting up a field insectary for parasitoids of the cereal leaf beetle; and distribution of a parasite of the citrus whitefly, a pest of gardenias in North Carolina.

Karen is collaborating with graduate students from area universities. She supervises a full-time position that is divided into two part-time positions to allow working experience for graduate students. In addition, two graduate students from Duke University are working with Karen to develop cold-hardy alligator weed flea beetles to expand the range of this biocontrol agent into the temperate climate of North Carolina.

Karen's advice to students is to approach a thesis topic from more than one angle to enhance the number of skills acquired and breadth of experience. Her outlook for employment opportunities for entomologists is optimistic: she believes that since entomologists are primarily involved in reducing the cost of production, they will be in demand despite economic conditions.



HISTORICAL NOTES

In response to our request for an update on alumni activities, we received a generous letter from George Horton, Emeritus Professor, University of Tennesse at Martin, and member of our department during the early 1930's. The letter is reproduced here in part, because of its interest and historical significance.

"I was graduated from the University of Tennessee at Knoxville, Tennessee in June, 1930, with a B.S. degree in Entomology and on September 1, 1930, I became a member of the N.C. State Zoology and Entomology Department Staff as a Teaching Fellow. My research was under the direction of the late Dr. Z. P. Metcalf, Head of the Zoology and Entomology Department and also long time Director of Instruction for the School of Agriculture and Forestry and an entomologist known world wide for his research and publications on the order Homoptera. I was awarded the M.S. degree in Entomology in June, 1932. My M.S. thesis was entitled, 'The External Morphology of the Genus *Diabrotica* Chevrolat 1843'.

When I arrived at N. C. State in September 1930 the enrollment was 1600. There were 1500 boys and 100 girls. The Zoology and Entomology Department teaching staff consisted of Dr. Z. P. Metcalf and Dr. T. B. Mitchell who had doctorates (D.Sc.) from Harvard University, Carey Hoyt Bostian, a Master Teacher with a M.S. from Pittsburgh and who received in 1933 a Ph.D. in Genetics from Pittsburgh, and Frank Meacham with a M.S. from N. C. State and three Teaching Fellows- namely George Horton, B.S. Tennessee, Knoxville, Harmon Johnston and H. D. Tate who had both graduated from Mississippi State with B.S. degrees in June 1930.

Incidentally, I understand that Dr. T. B. Mitchell in 1924 was the first individual to earn a M.S. degree in Entomology at N. C. State. I received the eighth M.S. from N. C. State in Entomology in 1932 while Henry F. Howden received the first Ph.D. in Entomology from N. C. State in 1953.

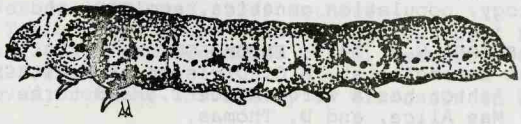
In the 1930's the Zoology and Entomology Department was housed in the Zoology Building located at the present site of the Mann Building. All the Zoology and Entomology classes were taught in this building. It also housed the office and laboratory of Dr. B. B. Fulton, the N. C. State Experiment Station Entomologist,

and the office of Mr. C. H. Brannon, the Extension Entomologist, and the office of Mr. C. L. Sams, the Extension Apiarist. Dr. Fulton, Mr. Brannon and Mr. Sams were considered to be a part of the Zoology and Entomology staff and regularly attended staff meetings.

During the six years I taught at N. C. State, the Zoology and Entomology Staff and the Botany Department Staff along with some 3 or 4 graduate students held seminars in the Zoology and Entomology Department library every two weeks. The Botany Department Staff consisted of Dr. B. W. Wells, Head of the Botany Department, Dr. D. B. Anderson, Dr. I. V. Shunk, Dr. S. H. Lehman, Dr. R. F. Poole and Larry Whitford who had earlier earned a M.S. from N. C. State and who later completed a Ph.D. at Ohio State.

The seminar group mentioned above composed of the Zoology and Entomology Staff and the Botany Department Staff had the best group of D.Sc.'s and Ph.D.'s with which I have been associated in 42 years of college teaching. All of them served N. C. State faithfully for many years. They were "down to earth," dedicated and excellent teachers and researchers. Dr. Z. P. Metcalf later served from 1943 to 1950 as Associate Dean of the Graduate School for the Greater University of North Carolina, in charge of graduate instruction at N. C. State. Dr. Carey H. Bostian served as Chancellor of North Carolina State for almost six years (1953-1959). Dr. T. B. Mitchell was widely known for his many years of research and publications on the bee family, Megachilidae. Dr. R. F. Poole later served many years as President of Clemson College and Dr. D. B. Anderson was later Provost of the University of North Carolina at Chapel Hill and a widely known plant physiologist.

I greatly value my six years of Zoology and Entomology teaching experience at N. C. State along with my research experience working with Dr. Metcalf on Homoptera from Cuba, South America, China and Africa and also the genetics research I did on the wasp *Habrobracon* under the direction of Dr. Bostian. We did a lot of hard work but we enjoyed it. Also long to be remembered was the close association and harmonious relationship of the members of the Zoology and Entomology Department and Botany Department Staffs."



ALUMNI REPORT

CHARLES O. ABERNATHY Ph.D. 1970 Guthrie/Hodgson
Pharmacologist, Metabolic Structure Activity Section, Toxic Effects Branch (TS-796), Environmental Protection Agency, 401 M Street SW, Washington DC 20460.
Examining effects of endotoxin and drugs on hepatic excretory function.
"Mella (my wife) and I enjoy travelling and seeing various parts of the world, especially Europe."

THOMAS E. ANDERSON Ph.D. 1981 Kennedy
Assistant Entomologist, Boyce Thompson Institute for Plant Research, Cornell Univ., Ithaca, New York, 14853.
Presently involved in the development of insecticides of microbial origin, and their incorporation into integrated pest management systems.
Currently living in Dryden, NY, with wife, Susan, and their two year old daughter, Gwynneth. They spend their spare time hiking and cross country skiing. Thomas just finished a year as vice president of the Cornell Sailing Club. "In August, Susan and I went to Germany for the International Congress of Entomology. We spent a week touring the country and almost fell off the highest peak in the Bavarian Alps.
Advice to students: "Don't try rock climbing in Nikes."

LTC RICHARD G. ANDRE M.S. 1974 Knight
Chief, Department of Entomology, Walter Reed Army Institute of Research, Washinton, DC 20307-5100.
In charge of research on malaria, leishmaniasis, trypanosomiasis, antidote screening to O-P compounds and repellent testing.
Degrees recieved: B.S., M.S., Ph.D.
Honors: Phi Kappa Phi, Sigma Xi, Gamma Sigma Delta.
Family: wife, Janet, active in music. Sons: Michael and Gregory.
Just returned from Bangkok, Thailand, where he conducted research on mosquito taxonomy, malaria, and Japanese encephalitis virus.
Advice to students: "For students in medical entomology the following subjects should b considered: molecular genetics, physiology, biochemistry, parasitology, virology, serology, histology, population genetics, ecology, and statistics."

DONALD F. ASHTON M.S. 1937 ENTOMOLOGY
Medical Entomologist, N.C. Division of Health Services.
Donald Ashton has a wife, Alice T., and three children, Mary Helen, Mae Alice, and D. Thomas.

JAMES R. BAKER M.S. 1968 Neunzig
Extension Entomologist, PO Box 7613, NCSU, Raleigh, NC 27695-7613.
Present research concerns the tea scale and other pests of ornamental plants.
Received Ph.D. at the University of Kansas 1972.
"Faye has started a cottage industry making Moravian stars for the local Moravian church and for the bookstore at Old Salem. Krista has just gotten her driver's license (shudder!). Kirk is in the fifth grade and Sharon is in the first grade. So far so good."
Advice to students: "Shun evil and do good!"

ROSS JENKINS BAKER M.S. 1967 Yamamoto
Biology Teacher, N.C. School of Science and Math, Durham, NC 27705.
Research subject was the oviposition behavior of *Manduca sexta*.
Honors received: N.C. Biology Teacher of the Year, 1981.
Married since grad school. Husband is Charles Baker, registrar at Jordan High School in Durham, NC. Daughter is now a lieutenant in the US Navy, in Washington, DC. Son, Lynn, works at Union Club in NYC.
Travels include visiting her daughter while stationed in Italy and Hawaii.
Advice to students: "The people you meet and learn to know in grad school are your best resource. They won't let you down. They'll improve with the years."

RALPH C. BARNES M.S. 1941 Metcalf
510 Fairfax, Denver CO 80220.
Retired from the US Public Health Service in June 1978 after 36 years of service. Retired from Metropolitan State College in December 1983 after serving as part time instructor in Biology for 5 years. Was involved in the administration of the Public Health Service.
Honors received include the Colorado Public Health Association Distinguished Service Award for Leadership in Public Health in Colorado 1980.
Wife, Billie Jean, deceased. "Grandson, Lincoln Taylor Anderson, takes up much of my spare time." Also pursues the hobby of "birding."
Comments: "Hope to come back and see N.C. State again. The changes during [the] past 40 years sound impressive!"

RONALD L. BARON B.S. 1957, M.S. 1959 Guthrie
Manager of Toxicology, Union Carbide, Agricultural Products Co., PO Box 12014, T.W. Alexander Drive, Research Triangle Park, N.C. 27709.
Ph.D. received from the University of Wisconsin in 1962.

All children are in school, "evenly divided," a daughter at N.C. State and a son at UNC in Chapel Hill. Has held his present position for 4 years now, after a long and distinguished career with FDA and EPA. His present position is "much more rewarding - mentally."
For the people involved in putting the yearbook together, a special thanks. "I like keeping in touch with others from my era."

GARY W. BENNETT Ph.D. 1970 Wright
Professor and Extension Coordinator, Department of Entomology, Purdue University, W. Lafayette, IN 47907.
Present research concerns the behavior, ecology and management of the German cockroach.
Selected in 1983 as outstanding extension entomologist in the North Central Branch of ESA.
Wife, Milta, keeps busy with the kids in school and extracurricular activities. Daughter, Nichole (Nikki), is now a freshman in high school where she is active in almost everything. Son, Chris, is in the fourth grade, loves sports (especially soccer) and is starting to keep his eye on the little girls.
Last year, visited Japan for a two week series of lectures on the utilization of ULV application technology in cockroach management programs.
Advice to students: "Don't let those faculty members scare you,... all bark and no bite."

CLARENCE S. BLACK M.S. 1950 Smith
Superintendent, Sandhill Research Station, Jackson Springs, NC 27281.
Research concerns the peachtree borer.
Has twins, a boy and a girl, and also grandchildren.

H. DERRICK BLOCKER Ph.D. 1965 Young
Professor of Entomology, Department of Entomology, Kansas State University, Manhattan KS 66506
Present research: phylogeny and systmatics of the leafhopper, *Athysanella* and allied groups.
Wife, Martha, is presently a Research Assistant in Agronomy (Soil Fertility). Daughter, Julie, is a freshman in high school, and is a dance enthusiast. Son, Jim, is a senior in high school and will join the Air Force in September of 1985.
Dr. Blocker was recently an exchange scientist to India, went to the International Congress in Hamburg, Germany, in August of 1984, and went to the Auchenorrhyncha meeting at Davos, Switzerland, in September of 1984.
Advice to students: "You are in a good school; take full advantage of it."

GILLES BOITEAU Ph.D. 1978 Bradley
Research Scientist, Entomology, Agriculture Canada, Research Station, PO Box 20280, Fredericton, N.B., Canada E3B 427 (506) 452-3260
Present work deals with biological and chemical control of potato pests, including epidemiology of virus diseases on potato.
"Hope to find time soon to go back and visit North Carolina."

LEROY S. BOYKIN Ph.D. 1983 Campbell
Technical Represenative, ICI Americas Inc., 3301 N. 20th St., McAllen, TX 78501.
Presently involved in the development of experimental chemicals for agricultural use in the South Texas territory.
Family news: Christopher was born October 9, 1981 and Catherine was born on September 6, 1983.

RICK L. BRANDENBURG Ph.D. 1981 Kennedy/Bradley
Assistant Professor, State Extension Specialist, Entomology Dept., NCSU, Raleigh, NC 27695-7613.
Present research looks at the insect pests of forages, grain crops, turf, and peanuts. Has primary extension responsibilities in these areas.
Received his B.S. degree from Purdue University in 1977. Accepted a position at N.C. State, effective March 1, 1985 after four years as an assistant professor and State Extension Specialist in the Department of Entomology at the University of Missouri. Will be getting married on June 15, 1985 in Columbia, MO. In 1983, he went to Tunisia, North Africa, as a Pest Management Consultant.

JAMES W. BURNETTE, Jr. (Jim) M.S. 1978 Yamamoto
Assistant Pesticide Administrator, Pesticide Section, Food and Drug Protection Division, NCDA, PO Box 27647, Raleigh, NC 27611.

WILLIAM V. CAMPBELL Ph.D. 1958 Brett
Professor of Entomology, Department of Entomology, PO Box 7613, N.C. State University, Raleigh, NC 27695-7613.
Presently working in the management of insects and mites on peanuts, alfalfa, clover, soybeans, and stored grains.
Among honors received is an award of the N.C. Entomological Society and is also a Fellow of the American Peanut Research Education Society. Presently has a USAID research project on peanuts in Southeast Asia (until 1990) and has collaborators in Thailand, the Phillipines, and India, where he visits once or twice a year.
Wife, Dorothy, is retired. Has not had children recently but now has four grandchildren. Son is a librarian and his wife is an MD. They live in Chapel Hill. Daughter is a school

teacher and her husband is a salesman. They live in Virginia Beach, VA.
Advice to students: "Work hard, keep entomology number 1 in your life, and keep up with current research."

RICHARD E. CARON Ph.D. 1981 Bradley
Assistant Professor, Extension Entomologist, 605 Airways Blvd., Jackson, TN 38301.
Other degrees include a B.S. Entomology from the University of Maine in 1972 and a M.S. Entomology from N.C. State University in 1976. Honors received include Phi Kappa Phi and Sigma Xi.
Now has one son, John Cabot Caron, Born October 1, 1982 in Jackson, TN. Wife, Katrina, and son doing great.
Advice to students: "Learn as much as you can about as many insect pest situations as you can while you are in school. You'll need it later."

EVERETT D. CASHATT (TIM) Ph.D. 1964 Neunzig
Coordinator of Zoological Research, Center of Entomology, Illinois State Museum, Corner-Spring & Edwards, Springfield, Illinois 62706.
Continuing revisionary work on Chrysauginae (Lepidoptera:Pyralidae); maintains interest in Pterophoridae (Lepidoptera); working on a color field guide for Illinois dragonflies.
Ph.D. 1982, Catholic University of America.
"My mother passed away Dec. 29, 1984, and she was buried near Sanford, N.C., but we really had no time to visit the campus while we were there. Two children: Lisa, 14, and Daniel, 9. Recently moved (Nov. 1983) into a new house (17 Golf Road, Springfield, Illinois 62704) and have been remodelling for the past year.
"Last out-of-state collecting trip was to the S.E. one-fourth of Arizona in July 1982. I will be busy this summer co-hosting the Annual Meeting of the Lepidopterists Society with George Godfrey of the Illinois Natural History Survey in Champaign-Urbana, Illinois, July 18-21, 1985."

MARIO CERMELI Ph.D. 1979 Smith
JEFE Seccion Entomologia, Fondo Nacional de Investigaciones Agropeciarias, Region Central, Maracay, Edo. Aragua, P.O. Box 4653, Venezuela.
Taxonomy of the Aphidae of Venezuela, aphids as virus vectors in pepper and sorghum.
Instructor of aphid taxonomy: II Curso Internacional "Problemas Patologocos en la Produccion de Semilla de Papa", Toluca, Mexico, July 12-24, 1984.
"Four kids are enough!"

LING-YI CHANG Ph.D. 1982 Hodgson
Medical Research Associate, Division of Allergy, Initial Care and Pulmonary Medicine, Department of Medicine, Duke University Medical Center, Durham, NC 27710.
The effects of low levels of oxidants on the structure and cytodynamics of pulmonary systems.

WALTER E. COLE Ph.D. 1972 Farrier
944 Chatelain Rd., Ogden, UT 84403
Retired Project Leader of Population Dymanics of the Mountain Pine Beetle. USDA-Forest Service Superior Service Award (USDA), Meritorious Service Award (FS). Retired in April 1984 after 37 years of service.
Currently calling square dance full time, specializing in caller education. Adjunct Professor at Weber State College, Ogden, Utah, in the Physical Education Department teaching square, round and traditional dance. Own and operate a square dance hall, caller note service. Featured writer for a national square dance magazine.
"My wife Louise still works to support my square dance 'addiction'."
Advice to students: "Learn to reason, to develop logic and to go that extra mile voluntarily -- 'to thine own self be true and surely as day follows night thou shalt do no wrong to any man'."

JAMES R. COLLINS M.Ag. 1977 Bradley
Research and Development Representative, Rhone-Poulenc, Inc. P.O. Box 1515, Statesboro, Georgia 30458.
Evaluation of experimental insecticides for the control of the lesser cornstalk borer in peanuts.
Divorced. "Have two sons, Christopher Scott, age 15 and Jonathon Braden, age 5. Recently moved from Tifton, Georgia to Statesboro, Georgia. I have the research and development responsibilities for Georgia and South Carolina."

LEWIS COONS Ph.D. 1970 Axtell
Director and Associate Professor of Biology, Center for Electron Microscopy, Life Sciences Building, Memphis State University, Memphis, Tennessee 38152.
Research: Physiology of ticks.

J.F. CORNELL M.S. 1965 Young
President, Surplus Electronics Inc., 1616 Euclid Ave., Charlotte, NC 28203.
Working on Anilline Carabidae of SE; also, catalog of beetles on stamps.
Has two sons: James III, 12, and Thomas, 7. Wife, Sandra, continues to keep us organized.
Has taken many short trips in NC to collect soil insects.
Recently received several winged male stylopids from Brazil.

MARY HELEN DAIL CROWE M.S. 1981 Guthrie
Transplant Coordinator, Department of Surgery/Histcompatability Laboratory, 619 South 19th Street, University of Alabama Hospital, The University of Alabama in Birmingham, Birmingham, Alabama 35233.
Immunological parameters affecting living related donor (LRD) kidney transplants.
Married to Ralph Crowe in April 1984. We have recently purchased a house (1151 Lake Forest Circle, Birmingham, Alabama, 35244).

DAVID M. DAUGHERTY Ph.D. 1964 Brett
Project Supervisor, Agricultural Research Project, Bangladesh, International Agricultural Development Service (IADS), c/o Bangladesh Agricultural Research Council, Farm Gute, Dhaka, Bangladesh.
Worked as Agricultural Research Administrator for nearly 15 years, following 10 years of active research.
Meritorious Honor Award (Depatment of State), Administration Special Achievment Award (USDA). "After 21 years with the USDA, first as Research Entomologist at the University of Missouri and ultimately as Senior Deputy Administrator of the USDA's Office of International Cooperation and Development (OICD), I joined the International Agriculture Development Service and now supervise a research project in Bangladesh aimed at strengthening their Agriculture Research Council which coordinated the National Research System."

LEWIS L. DEITZ Ph.D. 1973 Young
Assistant Professor, Box 7613, Department of Entomology, NCSU, Raleigh, NC 27695-7613.
Presently involved in the classification of the Aetalionidae, Biturritiidae, Nicomiidae, and Membracidae (Homoptera). Also working on a synopsis of the genus *Melanaspis* in North America (Homoptera: Diaspididae).
Dr. Deitz is the curator of the NCSU Insect Collection.

MICHAEL B. DIMOCK M.S. 1981 Kennedy
Graduate Research Assistant, Department of Entomology, Comstock Hall, Cornell University, Ithaca, New York 14853.
Resistance in *Solanum* spp. to the Colorado potato beetle.
Ph.D. expected summer 1985.
"My wife, Mary Alice, is working as a computer programmer in the Administrative Programming Services at Cornell University.
"Presented a paper on my thesis research at the national ESA meetings in San Antonio, Dec. 1984; invited speaker at the Symposium on Colorado Potato Beetle at the XVII International Congress of Entomology in Hamburg, West Germany, August 1984, where I presented a review paper on the mechanisms of Colorado potato beetle resistance in *Solanum* spp."

W. DONALD DUCKWORTH Ph.D. 1962 Young
Director of the Bernice Pavahi Bishop Museum, PO Box 19000-A, 1525 Bernice St., Honolulu, HI 96817.
Presently researching the systematics of Microlepidoptera, especially clearwing moths (Sesiidae).
Honors received include the Distinguished Alumnus Award at Middle Tennessee State University, 1984.
Wife, Sandra, is learning about a new community and is as active as ever. Son, Clifford, is seventeen now and is a senior at Punahou School. Clifford is an aspiring basketball star. Daughter, Laura, is fifteen and is a sophomore at Iolani School. The younger son, Brent, is fourteen and is a freshman at Iolani School. He is a computer enthusiast.
The biggest news is the new job and home.
Comments: "Pleased to see the yearbook revived. Best regards to all. Congratulations to the N.C. State Linnaean Game team for the fine showing in San Antonio!"

JACK D. EARLY Ph.D. 1958 Gast
President of the National Agricultural Chemical Association, 1155 15th St. N.W., Washington, D.C. 20005.

KENT D. ELSEY Ph.D. 1969 Rabb
Research Entomologist, ARS USDA, U.S. Vegetable Laboratory, Charleston, SC.
Currently finishing up a long term project on pickleworms.
Family news: remarried in 1982 to Beth and still has only one son, Mark David, who is now eighteen.

CARL W. FATZINGER Ph.D. 1968 Farrier
Research Entomologist, Southwestern Forest Experiment Station, PO Box 70, Olustee, Florida 32072.
Presently researching pine seed orchard insects, particularly the black turpentine beetle.

MICHAEL O. FLEMING M.Ag. 1975 Bradley
Biologist for Mobay Chemical Corporation, Vero Beach Laboratories, PO Box 1508, Vero Beach, Florida 32960.
Family news: married June 1978, divorced July 1984. One daughter, Ellena Michelle Fleming, born April 8, 1981.

JAMES R. FUXA Ph.D. 1978 Brooks
Associate Professor of Entomology, Department of Entomology, Louisiana State University, Baton Rouge, LA 70803.
Presently working on the epizootiology of insect diseases and microbial control.
Has two sons, Alex, who was born in January 1980, and Jason, who was born in September 1982.

LLOYD E. GARCIA M.S. 1981 Ambrose
Resident Agricultural Consultant, Sudan, PO Box 2646, Khartoum, Sudan.
Family news: One daughter, Morgan Daniel Garcia, born September 9, 1982.

REID R. GERHARDT Ph.D. 1972 Axtell
Professor, Entomology and Plant Pathology, University of Tennessee, Knoxville, TN 37901-1071.
Presently researching pink eye and face flies on cattle (Tabanidae, on and around cattle).
Family news: wife, Nancy, is teaching general science and biology in high school. Daughter, Shannon, is a freshman at Mars Hill College and son, Brant, is fifteen and in high school.
They try to go to the North Carolina beaches each summer.
Comments: "I am very glad that there are students who will take time to put the yearbook together. Thank you."

JOHN M. GEARY (deceased on November 11, 1983)

LISA C. HAHN M.S. 1979 Axtell
Associate Scientist, Genetics Institute, 225 Longwood Ave. Boston, MA 02115.
Home address: 1105 Lexington St., Bldg. 4 Apt. A, Waltham, MA 02154.

LARRY G. HANSEN Ph.D. 1970 Hodgson
Prof. Vet. Biosciences, Prof. Environmental Studies, University of Illinois, College of Veterinary Medicine, 2001 S. Lincoln, Urbana, Il 61801.
Researching OP neurotoxicants, renewed effort in PCB area, sewage sludge and flea markets.
Remarried 1983 (Terry K.)
Adjusting current profile of marginally marketable produce (5 acres of mulberries, thistles and poison ivy), converting dilapidated machine shed into unprofitable antique/collectable shop.
Travelled to the Netherlands on sabbatical in 1980.
Advice to students: "In spite of his wisdom, Professor Guthrie is an unsuitable model for all but a select few."

JILES P. HARRELL II M.S. 1983 Bradley
Agricultural consultant, Harrell's Pest Management Services, Inc., PO. Box 663, Jackson NC 27845 919-534-8921.
2 children: Daughter, Lindsay, 3 years, Son, Jay, 11 months.

BRUCE S. HEMING Ph.D. 1960 Campbell
Professor, Dept. of Entomology, Univ. of Alberta, Edmonton AB T6G 2E3 Canada.

Studying the functional morphology, development and phylogeny of insects with emphasis on Thysanoptera, Hemiptera-Gerromorpha, and Coleoptera-Meloidae.
Received C. Gordon Hewitt Award, Ent. Soc. Canada- Oct. 1976.
Wife, Karin, and two boys: Arthur, 6 1/2, Steven, 3 1/2.
Attended XVII Int. Congr. of Entomology in Hamburg and presented two papers.
Advice to students: "Do your research on what turns you on, not what brings in big bucks (unless, of course, you can do both at the same time)."

CLARENCE H. HILL Ph.D. 1939
Former Director, Winchester Research Lab. VPI&SU, Winchester, VA 22601.
Died September 15, 1980.
His wife, Hap Hill, still lives in Winchester, VA.

ROBERT G. HOLLINGSWORTH M.Ag. 1982 Apperson
Entomologist, Samoan-German Crop Protection Project, PO Box 597, Apia. Western Samoa, S. Pacific.
Examining biological control of coconut insect pests (*Brontispa longissima*, *Oryctes rhinoceros*).
With wife, Diana, in W. Samoa with Peace Corps. Will be finished in Sept. 1984 and then go back to a school in the States to study insect biocontrol at the doctoral level.
Advice to students: "Overseas experience as an entomologist has been a wonderful opportunity for gaining experience and self-sufficiency. However, check out all aspects of a new job very carefully to make sure you will have funding and political support."

GEORGE HORTON M.S. 1932 Metcalf
Emeritus Professor, Univ. of Tennessee at Martin, 602 Lee Street, Martin, TN 38237.
"In September 1937, I became a member of the Faculty of the University of Tennessee Junior College of Martin, Tennessee (enrollment 311). I retired on September 1, 1973 after teaching 36 years at U.T. Junior College, later named U.T. Martin Branch and now termed the University of Tennessee at Martin. From 1939-1958, I served as Head of the Curricula in Liberal Arts and at the same time as Head of the Biology Department and Advisor to all pre-professional students. Three hundred and ten of whom received professioal degrees including 126 physicians, 73 dentists, 67 pharmacists, 23 lawyers, 7 medical technicians, 9 nurses and 5 others in health related professions. During the interval 1939-1958 the total enrollment rose from 325 to 972 and is currently about 2500.
"Mrs. Horton and I celebrated our 50th Wedding Anniversary in September 1978. The event was sponsored by our son, Dr.

George M. Horton, Associate Pastor of the Haywood Hills Baptist Church of Nashville and his wife and our three grandchildren. We do not see them as often as we would like to, but we are enjoying retirement and enjoy reasonably good health for senior citizens 76 and 77 years of age."

ANNE THOMPSON HOWDEN M.S. 1950 Metcalf
Research Associate, Biology Department, Carleton University, Ottawa, Ontario, K1S 5B6.
Studying the biology of Australia's Amycterinae and the systematics of Tanymecini, blind weevils.
Eldest of three daughters married in June, 1984. ("Not an entomologist in the lot!")
President, Coleopterists Society, 1983.

HENRY F. HOWDEN Ph.D. 1953 Mitchell
Professor of Biology, Biology Dept. Carleton Univ., Ottawa, Ontario, K1S 5B6.
Researching systematics and biology of Geotrupinae of the world.
"Returned from South Africa Dec. 21 where my wife and I were guest lecturers at the University of Pretoria. 1983: Visiting Scientist in Australia."

CINDY MITCHELL HUBER M.S. 1981 Hain
Forest Entomologist, USDA Forest Service, FPM, 200 Weaver Blvd., Asheville, NC 28804.
Advice to students: "Get all the practice you can on giving presentations of your work. It is a rare pleasure to listen to a well presented seminar or paper."

RANDY HUCKABA Ph.D. 1984 Coble (Weed Science)
7916 Senta Farm Rd., Apex NC 27502.
Senior Research Biologist for SC, NC, and VA. Dow Chemical, Raleigh, NC.
Thesis subject: Single and interactive effects of soybean thrips (*Sericothrips variablis*) and herbicides on soybeans.
9 month old daughter, Kira Marie.

TIMOTHY W. HUNT M.S. 1975 Sheets
Senior Chemist, Union Carbide Agric. Prod. Inc., T.W. Alexander Dr., Research Triangle Park, NC.
Coordinator of Residue Programs for Larvin brand Thiodicarb insecticide.
Ph.D. Crop Science, 1979.
Wife, Elaine C., Son, Eric, age 13, Daughter, Heather, age 8.

MIKE IOANNOU Ph.D. 1978 Dauterman
Toxicologist, EPA, 401 M Street SW, Washington, DC 20460
CM-2 TS-769-C.

Researching metabolism of pyrimidinyl organophosphate insecticides in mammals, insects and plants.
Happily married for 13 years to Patty. Two children: Athina, 11 years old and Nicholas, 7 years old.
"Recently moved from Research Triangle Park, NC, where I spent 5 years as a Visiting Fellow and Senior Staff Fellow with the National Institute of Environmental Health Sciences."

TEODORO A. IRABAGON Ph.D. 1973 Rabb
President, Nueva Vizcaya State Institute of Technology, Bayombong, Nueva Vizcaya, Philippines.
Received the Outstanding Community Service Award and Plaque of Recognition in Education by the WAG-WAG Club Munoz, Nueva Ecija. Also received the Distinguished Award in the Peace and Order campaign in the province of Nueva Vizcaya.
Eldest son, Luisito, died in June, 1980. Two remaining sons and daughter all graduated from college and all are married.
Mrs. Irabagon has recently retired from government service.
"Dedication to service by the faculty, staff and students of the department has contributed to the very great progress attained by the department in instruction, research and extension."

RUTH S. KEARNS M.S. 1980 Yamamoto
Home address: 108 Broadbent Rd., Wilmington, DE 19810.
Presently studying the comparative behavior and physiology of *Leptinotarsa decemlineata* and *Leptinotarsa juncta* on potato and related plants.
Ph.D. expected Spring 1985.
Advice to students: "For students with children: try to finish before the kids become teenagers! (It also helps to finish before one's parents are old enough to have serious health problems.) Check into your major professor's retirement plans! (I'm not so negative as it sounds, but any of the above can really slow down graduate study.)"

MICHAEL KELLER Ph.D. 1985 Rabb
Research Associate, USDA, ARS, IABBBRL, Entomophagous Insects and Biological Control, PO Box 748, Tifton, GA 31793.
Studying the foraging behavior of parasitic Hymenoptera.

KATHLEEN KIDD M.S. 1983 Apperson
Ag. Research Tech I, Box 7626, NCSU, Raleigh, NC 27695-7626

JOELLA CHAMBERS KILLIAN Ph.D. 1984 Meyer
Assistant Professor, Department of Biology, Mary Washington College, Fredericksburg, VA 22401.
Thesis subject: Effect of Orchard Weed Management on Catfacing Damage to Peaches in North Carolina.

Received the Robert T. Gast Memorial Award, New Orleans, 1984, Outstanding Graduate Student Teacher Award, April 1984.
Advice to Students: "Relax!"

MICHAEL D. KILLIAN M.Ag. 1984 Arends

DANIEL L. KLINE Ph.D. 1975 Axtell
Research Entomologist, USDA Insects Affecting Man and Animals Research Laboratory, PO Box 14565, Gainesville, FL 32606.
Present research consists of *Culicoides* biting midges and mosquito population dynamics and the development of integrated pest management strategies for these pests.
One son, Jedidiah Dixon Kline, born June 25, 1981.
Advice to students: "Get as broad a background in IPM as possible."

HENRY G. KOCH Ph.D. 1977 Axtell
Research Entomologist, ARS/USDA, Lone Star Tick Research Lab, Box 588, Poteau, OK 74953.
Studying the biology and ecology of ticks affecting wildlife and domestic animals.
Wife, Madeline, works for Headstart program for preschoolers, Project Compassion, and United Methodist Women. Laura is in the 1st grade and Marcus is in 3rd grade.
Advice to students: "Take advantage of all learning experiences (seminars, bag lunches, etc.) while at the big university department."

RICHARD B. MAILMAN Ph.D. 1974 Hodgson
Chief, Neurotoxicology Section, Biological Sciences Research Center, University of North Carolina School of Medicine, Chapel Hill, NC 27574.
Researching the neuropharmacology-toxicology of the central nervous system.
Member, American College of Neuropharmacology.
Richard splits loyalties for UNC and NCSU at basketball games.

C. DOUGLASS MAMPE Ph.D. 1965 Nuenzig
President, D.M. Associates, 33 Mann Ct. Monmouth Beach, NJ, 07750.
Douglass started D.M. Associates, a pest control consulting firm, in July 1980, with the direct benefit being that he is his own boss. He has taken the lead in termiticide decontamination and preventing contamination.
Remarried to Kim, 1981. Son, Chuck, is living in north Jersey, working and attending college part time. Kim and Douglass moved into a new house in April 1984. The house is on the water, allowing more time for sailing.

Consulted with the Ministry of Antiquities of Saudi Arabia on termite control in 1982. Douglass has new contacts for the Caribbean and South America for 1985, so he will spend time in the sun during the winter months.
Advice to students: "Get training and/or experience in business/personnel management- You will need it in the future regardless of what you do."

PAM MARRONE Ph.D. 1983 Stinner
Group Leader, Insect Biology/Microbiology, Monsanto Ag. Prod. Co., 700 Chesterfield Village Parkway, Chesterfield, MO 63198.
Presently studying the identification and discovery of sources of pesticidal genes and natural products for control of insects and plant pathogens.
Pam's husband, Mick Rogers, is now area manager of St. Louis County Child Mental Health, Central Office.
Advice to students: "Working in industry is tremendously rewarding and extremely exciting, but there is also a lot of real pressure. I would recommend that anyone with an aggressive personality seriously consider working for industry."

H.B. "SKIP" MATTHEWS M.S. 1965 Guthrie
Head, Chemical Disposition Section, National Institute of Environmental Health Sciences, Research Triangle Park, NC 27709.
Examining the effect of the metabolism, disposition and mechanisms of toxicity of industrial and environmental chemicals. Received Ph.D. from the University of Wisconsin in 1968.
Skip was married in 1965 and has two children, a son, 16 and a daughter, 12.
Skip spent a week in Japan last year and plans to spend two weeks in Europe next year.
"There are three ways of increasing your chances of success: 1) Be in the right place at the right time, 2) Be exceptionally bright and 3) work like hell all the time. The latter is the only one over which you have much control, but I would rather be fishing."

FRANK W. MEAD Ph.D. 1968 Young
Taxonomic Entomologist, Florida Dept. Agr. Div. Plant Ind., 1911 SW 34th Street, PO Box 1269, Gainesville FL 32602.
Research consists of short papers on Florida Heteroptera: Auch. Homoptera, Psyllidae.
Received Florida Ent. Soc. Certif. of Appreciation in 1975 and 1982, plus a plaque as Co-Entomologist of the Year, 1981. Also honored with the Florida Dept. Agric. "Outstanding Service Award", 1978.

Wife, Eileen, is in her 11th year as a Staff Assistant, Dental Clinic, University of Florida. Son, David, is a gem cutter at Ft. White, Fla. Son, Greg, is in 3rd year as basketball coach at Qadsia Sports Club, Kuwait, and health instructor at Kuwait University.
Advice to students: "Keep plugging."

HARIHARA M. MEHENDALE Ph.D. 1969 Hodgson
Professor, Department of Pharmacology and Toxicology, University of Mississsippi Medical Center, Jackson, Mississippi 39216-4505.
Studying pulmonary and hepatic toxicology and toxic chemical interactions.
Two children: Roopa, 15, and Neelesh, 13.
Visiting Professor, sabbatical in the Department of Toxicology, Karolinska Institute, Stockholm, Sweden, September 1983- August 1984, under Senior Fogarty International Fellowship.
Advice to students: "Busy now? It does not get any better!"

LANCE J. MEINKE Ph.D. 1984 Gould/Bradley
Assistant Professor, Dept. of Entomology, University of Nebraska, Lincoln, NE 68583-0816.
Presently studying the ecology of soil arthropods, agricultural entomology, corn rootworm management.

BOONSOM MEKSONGEE M.Ag. 1966 Guthrie.
Entomologist, Div. of Entomology and Zoology, Dept. of Agriculture, Bangkok 10900, Thailand.
Researching maize and sorghum insects.
Two children, a boy and a girl, both are studying at Kasetsart University, Bangkok.
Visited CIMMY at Mexico from July 2-12, 1984 and attended the Sorghum Entomology Workshop at Texas A&M during July 16-20, 1984.

EVERETT R. MITCHELL Ph.D. 1963 Mistric
Supervisory Research Entomologist and Research Leader, Behavioral Ecology and Reproduction Unit, Insect Attractants, Behavior, and Basic Biology Research Laboratory, ARS, USDA, PO Box 14565, Gainesville, FL 32604.
Examining the effect of synthetic and natural chemicals on the reproduction and dispersal of crop insect pests and their natural enemies.
"I have been married to the same wonderful woman, Wanda, for 27 years. We have one son, Michael, who is attending college here in Gainesville."

HARRY B. MOORE Ph.D. 1964 Smith
Professor of Entomology and Wood & Paper Science, Box 7613, NCSU, Raleigh, NC 27695.
Harry has two daughters married and no grandchildren yet.

Spent two weeks in Panama in May conducting a workshop on termite control for Panama Canal employees.

DAVID E. MORRISON M.S. 1978 Bradley
Agr. Extension Agent, PO Box 749, Laurinburg, NC 28352
Thesis subject: Population of arthropod predators and *Heliothis zea* after application of certain systemic insecticides and nematicides to soybeans.
Wife, Barbara Morse Morrison. Children: Sarah 3, Kathryn 7 months.
"We need practical research."

NOLAN H. NEWTON Ph.D. 1984 Campbell
Branch Head, Vector Control Branch, N.C. Division of Health Services, Box 2091, Raleigh, NC 27602.
Present research is on the ecology of vector-borne human diseases and salt marsh mosquito management.

TERRY P. NUHN M.S. 1977 Wright
Biological Technician-Insects, Systematic Entomology Lab., USDA, c/o U.S. National Museum, Natural History Bldg. 168, Washington D.C. 20560.
"I am currently working with Dr. Wright on a paper examining the distribution of ants around houses."
Collected Proctotrupoidea and other insects during a trip to Texas in May, and did extensive Malaise trapping in the Blue Ridge Mountains last summer and fall."

CAROL SULLIVAN PARRON M.S. 1974 Smith
Natural Science Museum Curator, Department of Entomology, Box 7613, N.C. State University, Raleigh, NC 27695-7613.
Present research concerns North Carolina Homoptera: Aphididae.

DOUGLAS G. PFEIFFER M.S. 1978 Axtell
Assistant Professor, Va. Polytechnic & State University, Shenandoah Valley Research Station, Steeles Tavern, VA 24476.
Doctoral work was in fruit entomology, and is currently responsible for fruit IPM in Virginia. His students are working with insect/plant interactions in apple and grape systems, dealing mainly with indirect pests (aphids and mites on apple and Japanese beetle on grape).
Ph.D. Washington State University.
"Sally and I live in the Shenandoah Valley, a couple of hours from the main campus in Blacksburg. We're in the shadow of the Blue Ridge, which we take advantage of by collecting, hiking and birdwatching. Sally is teaching chemistry labs at Blue Ridge Community College, about 35 miles down the valley."

ROBERT H. PLEASANTS M.Ag. 1976 Bradley
President, Agronocon, Inc., Private Ag. Consulting, 420 Washington St., Williamston, N.C. 27892.
Co-Chairman of the N.C. Agricultural Consultants Association.
Children: Patrick Graham (age 14) and Amy Harrison (age 6).
Wife, Margaret, is building credits toward completion of a four year degree, possibly at ECU.

LORENE C. POCHER M.Ag. 1978 Mistric
Inspector, Structural Pest Control Division, N.C. Department of Agriculture, PO Box 27697, Raleigh, NC 27611.
Thesis was on the potato tuberworm.
Son, William Timothy Pocher, was born November 16, 1984.
Lorene and husband, John, are in business for themselves in drywall and welding.
Advice to students: "Broaden your backgrounds as much as possible, it really comes in handy!"

GAIL SCOTTON POWELL M.S. 1977 Axtell, Ph.D. 1981 Campbell
Research Entomlogist, Union Carbide Ag. Prod. Co., PO Box 12014, Research Triangle Park, NC 27709.
Present research deals with soil insecticides and nematicides.

JOHN J. PRATT, JR. M.S. 1941 Metcalf
4 Cole Rd., Wayland, MA 01778.
Retired in 1976 from U.S. Army Research and Development Laboratories, Matick, Mass.
Ph.D. from Cornell University in 1948; Sigma XI.
Family news: first grandson was born August 31, 1984 to daughter, Joanna, vice-president of a Washington D.C. consulting firm. Joanna holds a Masters of City and Regional Planning from Harvard. Other daughter, Judith, a candidate for Ph.D. in Theater at the University of Nebraska, was appointed Assistant Professor of Theater at Ithaca College, Ithaca, NY, in 1983.
"Wife, Jean, and I spend many enjoyable hours square and round dancing."
Advice to students: "Learn the history of Entomology and the historical literature of your specialty."

ROBERT L. RABB Ph.D. 1953 Fulton
William Neal Reynolds Professor Emeritus, Department of Entomology, N.C. State University, Raleigh, NC 27695-7628.
Honors received include: Honorary Member of the Entomological Society of America in 1983 and Fellow of the Entomological Society of America in 1984.
Recently took a month's tour (in the Summer of 1984) through western U.S.A. with daughter, son-in-law, and five grandchildren. Son also accompanied them for part of the trip.

Advice to students: "Emphasize competition among ideas and cooperation among associates in the search for more useful knowledge and understanding. ...and develop a good sense of humor."

GENE REAGAN Ph.D. 1975 Rabb
Associate Professor, Department of Entomology, Louisiana State University, Baton Rouge, LA 70803.
Present research is on the ecology and pest management of sugarcane insects.
Three children: Bill (age 13), Joy (age 5) and Jill (age 4).
Attended the International Congress of Entomology in Hamburg and while there took a River Rhine cruise with wife, Sheila.
Advice to students: "Obtain diverse training, publish work promptly, and have at least one reputable publication (for each degree pursuit) separate from M.S. and Ph.D. research in print at the time job search is begun."

MARY SCHUMM RICHARDSON M.S. 1981 Stinner/Bradley
1663 #7 Wishwood Ct., Chesterfield, MO 63017 (314) 536-2705.
"After graduating, I went to Sandoz (now Zoecon) in Wasco, California. I supervised the insect rearing facility and occasionally assisted with the bioassays on *Bacillus thuringiensis*. I was married in May 1984; my husband, Ron, is an ag. formulation chemist. He accepted a job with Monsanto, so we moved to St. Louis, Missouri, in June. I'm starting work in January 1985 at the VA hospital where I'll be assisting with research on sleep disorders."

DAVID C. ROBACKER Ph.D. 1979 Ambrose
Research Entomologist, USDA ARS, 509 West 4th St., Weslaco, TX 78596.
Presently working with pheromones and the courtship behavior of the Mexican fruitfly.
Still collecting moths and butterflies with occasional trips to Mexico.

LOUISE ROZAK (ANN) ROMANOW M.S. 1980 Ambrose, Ph.D. 1984 Kennedy
Guest Worker, Institute for Horticultural Plant Breeding, Post Box 16, 6700 AA Wageningen, Netherlands.
Present research topics: 1) Epidemiological effects and resistance in tomato on white fly, *Trialeurodes vaporariorum* 2) measurement of interplot interference in insect resistance screening tests 3) determining and quantifying types of resistance to Tulip Breaking Virus in tulip 4) assessment of TBV vector pressure in tulip in the Netherlands and 5) detecting differences in probing behavior by *Aphis gossypii* in muskmelon which result in reduced virus inoculation efficiency.
"Bill Swallow and I are spending 1 year in the Netherlands. Bill has sabbatical leave; I've a post-doc. We're going to

use vacation time to see (at least some of) Europe. Doing lots of bicycling (the most common mode of transportation here) on bike paths which are on every road in Holland. We toured (by car!) Bourgogne region, Provence (where we saw a French agricultural research institute), the French Alps, and Paris. Our dog came with us and I'm ashamed to say that he has learned more Dutch than we have. Luckily, all the Dutch speak very good English so we're only really handicapped when we get mail."

ELRAY M. ROPER Ph.D. 1984 Wright
Research Assistant, Pesticide Residue Research Lab., 3709 Hillsborough St., Raleigh, NC 27607.
Presently working in residue chemistry for registration of minor uses of pesticides with the IR-4 program.
"We have a new Roper in the family, Kevin Roper, born August 14, 1984. He joins his older brother and sister, Kyle and Maren."

MONTRI RUMAKOM M.Ag. 1962 Brett
Director, Entomology and Zoology Division, Department of Agriculture, Bangkhen, Bangkok 10900, Thailand.
Married in 1966 to present wife, Mrs. Orapin Rumakom. One daughter: Monupsom Rumakom, who is 17 years old.
The last visit to North Carolina was from the 27th to 30th of October 1984.

(ROGER) DALE SAFRIT M.S. 1983 Axtell
Assistant Extension Agent, 4-H, PO Box 526, Mocksville, NC 27028.
Presently involved in educational work with the 4-H clubs of Davie County. Emphasis is on county-wide 4-H livestock programs (horses, beef, market steers, market lambs, etc.) and communication skills (demonstrations, record keeping, etc.). Also has horticultural responsibilities (home gardens, landscaping, ornamentals, commercial fruit production, and forestry).
"After a six month trip to Trinidad and Tobago, I returned a year ago to my parents' home in Salisbury, North Carolina, with a gorgeous tan on my back, a M.S. in my pocket and not a penny to my name. I accepted my present position in Davie County in April of 1984 and now call the small community of Redland 'home'. This is truly God's country--the countryside is beautiful; the people, warm and friendly; the insects, plentiful! I live in a 120-year old farmhouse with myself, my plants, my antiques, and my own personal ghost! My experiences as a graduate student in entomology have really proven beneficial in my present position. At least twice a week I'll have someone bring in a single mutilated leaf and ask, "Mr. Safrit, what bug is eating my bush???".

KEN SAMOIL M.S. 1984 Campbell
Staff Entomologist, Bell Environmental Services Inc., 229 New Rd., Parsippany, NJ 07054.
Thesis topic: Ladino clover resistance to the alfalfa weevil.
"I recently left my job as a research associate with the Louisiana State University Entomology Dept. to begin work with Bell, a company that performs pest control services using traps, desiccants, and a minimum of pesticides. Its clients include animal laboratories and food processing companies. The job is based in my home state of New Jersey."
Home address: 412 Prospect Ave., Avenel, NJ 07001. (201) 636-1880.

CAYDEE SAVINELLI Ph.D. 1984 Bacheler/Bradley
Sales Representative, Stauffer Chemical Co., PO Box 667, Dayton, NJ 08810-9998.

HERBERT E. SCHOOF B.S. 1936 Mitchell, M.S. 1938 Metcalf
3 Pinewood Ave., Parkersburg, Savannah, GA 31406.
Retired. Serves as technical advisor to Chatham County Mosquito Control Commission.

LEE S. SELF Ph.D. 1964 Guthrie
Vector Control Advisor, WHO Regional Office for the Western Pacific, U.N. Avenue, Box 2932, Manila, Philippines.
Lee has been in Manila since 1977 and is mainly involved in promoting and developing disease vector control programs in various countries of the region.
His duties require travel to China, Malaysia, South Pacific, and other areas from time to time.
Son, Peter, is 15 years old and attends International School in Manila.
Lee is very much looking forward to the possibility of seeing some of his former classmates when he returns to the USA in a few years time and permanently stays here.

P.V. SHAH M.S. 1972, Ph.D. 1982 Guthrie
Project Scientist, Northrup Corporation, PO Box 12313, Research Triangle Park, NC 27709.
Studying percutaneous absorption of chemicals in mammals.
Son born in 1980, name: Palak.

ROWLAND M. SHELLEY Ph.D. 1970 Hodgson
Curator of Invertebrates, N.C. State Museum of Natural History, PO Box 27647, Raleigh, NC 27611.
Researching the taxonomy and systematics of Xystodesmid diplopods in the Southeastern United States, supported by two NSF grants.

In 1980, Rowland married Lourdes Ortiz Hardister of San Juan, Puerto Rico.

LISA SILBERMAN M.S. 1983 Kennedy
Statistical Analyst, Nebraska Dept. of Health, Division of Health Data & Statistical Research, Lincoln, NE 68583.
Data base manager for boll weevil eradication program during 1984, in Raleigh, NC.

DAVID N. SINODIS M.Ag. 1975 Bradley
Senior Research Entomologist, Union Carbide Agr. Products, PO Box 12014, T.W. Alexander Drive, Research Triangle Park, NC 27709.
Spouse: Susan Green (Sinodis)- Teaching chemistry at Cary High School.
Chidren: Joey, 8, Ross, 3, one due Feb. 15.
David travelled to Brazil in October 1984.

DAVID SMITLEY Ph.D. 1985 Kennedy
Landscape Industries Entomologist, Dept. of Entomology, Michigan State University, East Lansing, MI 48824.
Extension and research responsibilities for greenhouse crops, bedding plants, flower and bulb production, nursery and turfgrass, and landscape maintenance industries.

P. STERLING SOUTHERN Ph.D. 1978 Young
Assoc. Prof. and Extension Specialist in Charge, Dept. of Entomology, Box 7613, NCSU, Raleigh, NC 27695.
Sterling's work consists of the Extension program and applied research in management of insect pests of tobacco along with the administration of the entomology extension program.
"Linda and I have two children. Joshua will be 6 in April, 1985, and Margaret will be 4 in March. They do their part to keep us busy. Our last big family trip was in 1984 when we went to Disney World and happened to catch a shuttle launch. Linda is at home these days but is beginning to think about alternatives. Most of my time revolves around work or the children but I have rekindled an old interest in sailing and am edging toward buying a boat."

EDWARD J. SPYHALSKI Ph.D. 1959 Mistric
Sr. Biochemicals Specialist, PPG Industries Inc., 8845 Valley Circle Drive, Florence, KY 41042.
Field research on plant and animal growth regulators.

S. MICHAEL STRINGHAM M.Ag. 1979 Ambrose
Livestock Pest Management Area Agent, PO Box 458, Kenansville, NC 28349.

Michael had been working as an Area Agricultural Specialist with the Missouri Coop. Ext. Service, and he has just started his new job with NC Extension.
He received the 1984 NACAA Achievement Award from the Univ. of Missouri Extension Assoc.
"My wife, Marihelen, and I have a 3 year old addition to the family- Mikalena Stringham. She's already working on her degree in entomology."

MICHAEL J. SULLIVAN Ph.D. 1973 Brett
Professor of Entomology, Box 247, Edisto Experiment Station, Blackville, SC 29817.
Studying host plant resistance in soybean insect pests.
"Still married to one and only wife. Three children, Carl(14), Dewey(9), and Charles(5)."

L. IRENE TERRY Ph.D. 1983 Bradley
Asst. Professor & Asst. Research Scientist, University of Arizona, Dept. of Entomology, Tucson, AZ 85721.
Research is on the effects of several water management/irrigation practices in cotton on insect populations.
"N.C. State entomology program has a good reputation in the West."
Advice to students: "Get involved with departmental committees, in addition to concentration on research."

RICHARD (SKEETER) WERNER Ph.D. 1971 Yamamoto
Research Entomologist, Institute of Northern Forestry, 308 Tanana Dr., Fairbanks, AK 99701
Studying the role of plant carbon/nutrient balance in regulating defoliating insect populations on aspen and birch.
Recently appointed as Senior Research Associate at the University of Alaska's Institute of Arctic Biology.
Part of a delegation of Alaskans involved in agriculture to tour the USSR and China in the fall of 1984. The purpose of the trip was to exchange ideas for developing agriculture at northern latitudes, including economic entomology and its prominent role in agriculture and forestry.

DAVID W. WILLIAMS M.S. 1977 Stinner
IPM Systems Specialist, IPM Implementation Group, Univ. of California Statewide IPM Project, Davis, CA 95616.
Currently David is working on crop, pest and natural enemy population models for California grape, citrus and wheat agroecosystems.
David received his Ph.D. in Entomology from the University of California at Berkeley in December, 1981.
"My wife, Sheila Connely, and I are expecting our first child in March, 1985."

TOM WILSON M.S. 1970 Hodgson
Assistant Professor, University of Vermont, Dept. of Zoology, Burlington, VT 05405.
Studying the genetics of insecticide-resistant *Drosophila* and juvenile hormone in *Drosophila*.
"Finally got married!"
Advice to students- "Stay down South; okra doesn't grow up here."

GEORGE WISE M.S. 1970 Axtell
Director, Memphis Botanic Garden, 750 Cherry Rd. Memphis, TN 38117.
Evaluating techniques for the establishment of and/or restoration of tall grass prairie.
M.S. 1977, Botanic Garden Management, University of Delaware.
Recently celebrated 16th Wedding Anniversery.
Wife, Susan, and sons, John, 10, and G. Thomas, 6.
George recently took a study tour of alpine and subalpine plants of Banff and Jasper, Alberta.

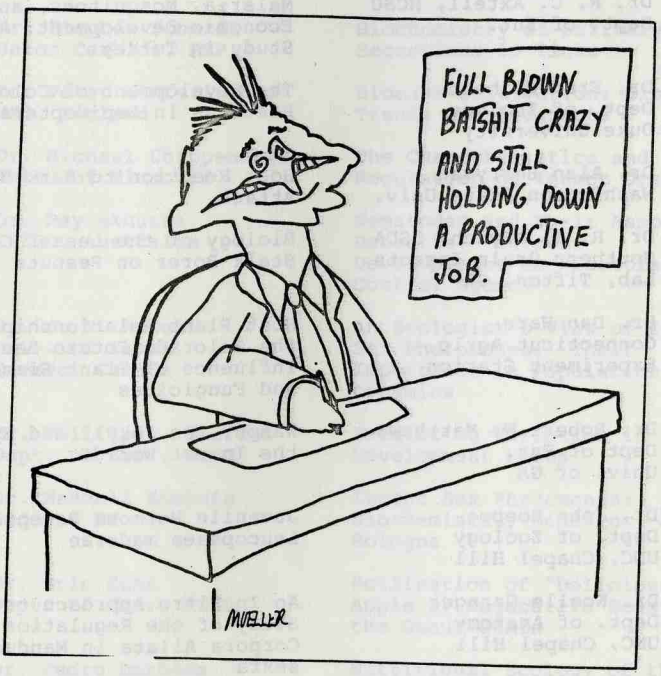
DAVID L. WRAY B.S. 1926 (Biology) Metcalf
(Retired) Taxonomic Entomologist, N.C. State Dept. Agriculture, 1930-1971.
510 Dixie Trail, Raleigh, NC 27607.
Studied the taxonomy of springtail insects.
Degrees received include B.S. and M.S. from N.C. State and a Ph.D. from Cornell in 1936.
David's granddaughter, Diane Wray, is working on a M.S. in Animal Science at Cornell Univ.
Advice to students: "Do the type of work in your profession that you would be happy to do- whether outside field work, classroom or laboratory."

CHARLES G. WRIGHT Ph.D. 1958 Smith
Professor of Entomology, Box 7613, NCSU, Raleigh, NC 27695-7613.
Assignment consists of teaching- 69% and research- 31% (pesticide movement in buildings and cockroach studies).
Honors include the Alumni Distinguished Professor award at NCSU, the Outstanding Teacher award, NCSU and the NC Entomological Society Award.
Charles is married with one daughter, who is a sophomore at Wake Forest University.

ROBERT J. WRIGHT Ph.D. 1981 Van Duyn/Bradley
Research Associate, Potato IPM, Dept. of Entomology, Cornell Univ. Long Island Horticultural Research Station, 39 Sound Ave., Riverhead, NY 11901.
Presently researching the biology and management of Colorado potato beetle on potato and the development and administration of a pilot potato IPM program.

"Based on recent research in San Antonio, TX, I nominate Dos Equis and Lone Star for Best Beers of 1984."

RAYMOND S.H. YANG Ph.D. Dauterman
Chemical Manager/Project Officer, NIEHS/NTP, PO Box 12233, Research Triangle Park, NC 27709.
Examining carcinogenesis and toxicology evaluation.
"My wife, Ann, and I have a baby girl (Caroline) now. She was born on March 18, 1984."



DEPARTMENTAL SEMINARS

SEMINARS AND LECTURES, 1982

January		
18	Dr. Fred Gould, NCSU Dept. of Ent.	The Role of Mixed Function Oxidases in the Evolution of Polyphagous Herbivores
25	Dr. Simon S. J. Yu Univ. of Florida	Host Plant Induction of Detoxifying Enzymes in Polyphagous Insects
February		
1	Dr. Sara Via Duke University	Quantitative Genetics of the Leaf Miner, Liriomyza sativae: Genetic Variation in Host Plant Utilization
8	Dr. R. C. Axtell, NCSU Dept. of Ent.	Malaria, Mosquitoes, and Economic Development: A Case Study in Turkey
15	Dr. Fred Nijhout Dept. of Zoology Duke University	The Development of Color Patterns in Lepidoptera
22	Dr. Alan Berryman Washington State Univ.	Host Reaction to Bark Beetle Attack
March		
15	Dr. R. E. Lynch, USDA Southern Grain Insects Lab, Tifton, GA	Biology of the Lesser Corn Stalk Borer on Peanuts
17	Dr. Dan Hare Connecticut Agric. Experiment Station	Host Plant Relationships of the Colorado Potato Beetle: Influence of Plant Seasonality and Fungicides
22	Dr. Robert W. Matthews Dept of Ent. Univ. of GA	Wasps: the Jekyll and Hyde of the Insect World
29	Dr. John Koeppe Dept. of Zoology UNC, Chapel Hill	Juvenile Hormone Receptors in Leucophaea maderae
April		
5	Dr. Noelle Granger Dept. of Anatomy UNC, Chapel Hill	An In Vitro Approach to the Study of the Regulation of Corpora Allata in Manduca sexta

19	Dr. Murray Blum Dept. of Ent. Univ. of GA	Insects and Toxic Plants: The "Forbidden Fruit" is Delicious
21	Dr. O.M.B. Ponti Inst. for Hort. Plant Breeding Wageningen, Netherlands	Breeding for Resistance to Insects and Mites in Vegetable Crops
26	Dr. David M. Soderlund Dept. of Ent. Cornell Univ., NY	Sources of Specificity in the Action of Pyrethroids
July		
29	Dr. John Jaenike State Univ. of NY at Binghamton	Host Use in Drosophila Spp. With Special Reference to Their Tolerance of Alpha-Amanatin in Mushrooms
September		
13	Dr. Stephen Schmidt Union Carbide, RTP	Biochemistry of Salivary Secretions in Ticks
22	Dr. Peter Winteringham WHO, England	Biomass Cultivation: Global Trends and Prospects
27	Dr. Michael Chippendale Univ. of Missouri	The Characteristics and Regulation of Insect Diapause
October		
4	Dr. Ray Akhurst CSIRO, Australia	Nematodes and Their Associated Bacteria: Current Developments as Microbial Control Agents
11	Dr. J. N. McNeil Univ. of Laval Quebec, Canada	An Ecologist's View of Insect Sex Pheromones: Their Importance in Population Dynamics
25	Dr. Phillip L. Shaffer Dept. of Ent., NCSU	Predicting Variation in Insect Development Rates
November		
1	Dr. Wendell Roelofs Geneva, NY	Insect Sex Pheromones: Biochemistry, Behavior, and Bologna
8	Mr. Eric Kuhn Dept. of Ent., NCSU	Pollination of "Delicious" Apple by Megachilid Bees of the Genus Osmia
15	Dr. Pedro Barbosa Univ. of Maryland	Nutritional Ecology of the Gypsy Moth

December

6	Dr. Gerald Carlson Dept. of Economics NCSU	Economics of Area-Wide Boll Weevil Management

SEMINARS AND LECTURES, 1983

January

17	Dr. Angela H. Arthington Griffith University Brisbane, Australia	Insects and Stream Pollution: An Australian Study.
24	Maj. Bruce M. Furlow Dept. of Ent., NCSU	Undocumented Loxoscelism at Ft. Leonard Wood, Missouri
31	Dr. Elizabeth A. McMahan Dept. Biology, UNC	Tool Use by an Assassin Bug in Capturing Termites

February

7	Mr. Nolan H. Newton N.C. Department of Human Resources, Raleigh	Eastern Encephalitis in North Carolina
14	Mr. Howard M. Singletary NCDA, Plant Industry Div.	Plant Regulatory Programs in the N. C. Department of Agriculture: Bugs, Backaches and Politics
28	Dr. William S. Blau and Dr. R. E. Stinner Dept. of Ent., NCSU	Studies of Dispersal and its Role in the Population Dynamics of the Mexican Bean Beetle

March

14	Dr. Samuel C. Mozley Dept. of Zoology, NCSU	Diversity and Zoogeography of Chironomidae in North Carolina
21	Mr. Michael A. Keller Dept. of Ent., NCSU	Assessing Evidence for Competitive Exclusion of Introduced Natural Enemies: Hypothesis Testing Using Historical Data
28	Dr. Douglas J. Futuyma Ecology and Evolution Dept. Univ NY at Stony Brook	Ecological Genetics of Herbivorous Insects

April

5	Dr. Donald R. Strong, Jr. Dept. Biological Sci. Florida State Univ.	Community Studies of Phytophagous Insects

11	Dr. William E. Waters Col. of Nat. Resources Univ. CA., Berkeley	Some Aspects of Spatial and Temporal Variation in the Population Dynamics of the Western Spruce Budworm
12	Dr. Sean S. Duffey Dept. of Entomology Univ. of CA., Davis	Antibiosis: Complexities of its Use in Resistance of Tomatoes to Noctuid Larvae
18	Dr. David N. Ferro Univ. of Massachusetts Amherst	Management Strategies for the Colorado Potato Beetle in the Northeastern U. S.
25	Dr. Jeffrey K. Barnes Entomol.-Biol. Survey N.Y. State Museum, Albany	Asa Fitch and the History of American Entomology
26	Dr. W. S. Blau Dept. of Ent., NCSU	Expanding Scales of Pest Management Research: Approaches to the Study of Dispersal in the Mexican Bean Beetle
August		
29	Dr. William D. Mawby Private Consultant	Modeling Southern Pine Beetle Populations
September		
12	Dr. Fred Hain Dept. Of Ent., NCSU	Host Conifer Reaction to Stem Invasion
19	Dr. Mary Bowen UNC	In vitro Studies on the Endocrinology of Pupal Diapause in Manduca sexta
26	Dr. Trevor Crosby, DSIR Auckland, New Zealand	Cannabis and the Azarelius connection
October		
3	Dr. Les Real Dept. of Zoology, NCSU	Resource Tracking in Pollinator-Plant Interactions
10	Dr. Tom Brown Dept. of Ent., Clemson	Management of Insecticide Resistance
10	Dr. David W. Stanley-Samuelson, Dept. of Ent. Univ. of CA., Berkeley	Metabolism of Polyunsaturated Fatty Acids in Insects
13	Dr. Michael Roe Dept. of Entomology Univ. of CA., Davis	Regulation of Juvenile Hormone Titer: JH Esterase Degradation

21	Dr. C. J. Geden Univ. of Massachusetts Amherst	Biology and Behavior of the House Fly Predator, Carcinops pumilio
31	Dr. Felton Hastings Research Triangle Park	Mode of Action of Fatty Acids as Insecticides
November		
7	Dr. Karen Wilson Staff Entomologist, NCDA	The Biological Control Program of the N. C. Department of Agriculture
14	Dr. Kent Elsey U. S. Dept of Agriculture	Research on Biology and Control of the Pickleworm at U. S. Vegetable Lab
November		
15	Dr. Ron Prokopy Dept. Of Ent., Univ. of Massachusetts, Amherst	Vision in Insect Ecology
21	Dr. Harvey Gold Biomath. Dept., NCSU	Modeling Decisions in Pest Management
December		
5	Mr. Mike Villani Dept. of Ent., NCSU	The Use of Plant Extracts for Soil Insect Control
5	Dr. Sterling Southern Ent. Dept., NCSU	The Role of Specialist-in-Charge in the Entomology Department
8	Dr. Freddie Johnson Dept. of Ent. University of Florida, Gainesville	The Role of the Specialist-in-Charge in the Entomology Department

Spring Seminar Chairman-Dr. L. L. Deitz
Fall Seminar Chairman-Dr. Fred P. Hain

SEMINARS AND LECTURES, 1984

January		
16	Dr. Walter C. Dauterman Department of Entomology NCSU	An Australian Sabbatical
30	Dr. Rex Cates Department of Biology Univ. of New Mexico Albuquerque	Patterns in Defensive Natural Product Chemistry: Douglas Fir and Western Spruce Budworm Interaction

February		
6	Dr. Han Chunru Peking, China	Energy Analysis of an Advanced Collective Farm in Northern China
13	Dr. Tim Seastedt Division of Biology Kansas State University Manhattan, KS	The Role of Arthropods in Terrestrial Nutrient Cycling Process
20	Dr. Tony Waiss, USDA-ARS Western Reg. Res. Lab. Albany, CA	Bioregulation of Host Plant Resistance to Insects
24	Dr. Mike Smith Department of Entomology Louisiana State Univ. Baton Rouge, LA	Mechanisms of Soybean Resistance to the Soybean Looper
March		
12	Mr. David Margolies Department of Entomology NCSU	On the Road, Following the Twospotted Spider Mite in Corn-Peanut Agroecosystem
19	Ms. Louise Romanow Department of Entomology NCSU	Plant Resistance and Virus Transmission by Aphids
26	Dr. Herbert Henry Private Consultant Bishop, GA	Agricultural Entomology as Viewed by the Private Practitioner
April		
2	Dr. George Bird Department of Entomology Michigan State University	IPM, its Status and Future Roles
9	Dr. Jerry Graves Department of Entomology Louisiana State Univ.	Quality, Quantity and Significance of Insecticide Residues in Selected Louisiana Agroecosystems
16	Ms. Joella Killian Department of Entomology NCSU	Effect of Orchard Weed Management on Catfacing Damage to Peaches in North Carolina
September		
10	Kuhr, Axtell, Kennedy, Hain, Campbell, Dauterman, Hillmann Dept. of Ent.,NCSU	Recent Developments in Entomology: Report on the International Congress of Entomology (Hamburg)
17	Dr. Jay F. Levine NCSU School Vet. Med.	Ticks and Lyme Disease

24	Dr. Robert Ruppel Michigan State Univ. & Visiting Scientist, NCSU	Use of Degree Days in Applied Entomology
October		
1	Dr. W. V. Campbell Department of Entomology NCSU	Insect Pests on Peanuts in Southeast Asia
8	Dr. B. R. Stinner Res. & Dev. Center Wooster, Ohio	Arthropod Dynamics in Non-Tillage Ecosystems
22	Dr. Bruce D. Hammock University of California Davis	Regulation of Juvenile Hormone Metabolism in Lepidoptera
November		
5	Dr. Beulah M. Parker Department of Entomology NCSU	Diapause in Aedes Mosquitoes
12	Dr. Donald E. Weidhaas USDA, Univ. of Florida Gainesville, FL	Modelling of Vectors and Disease in Medical Entomology
19	Dr. Fred Hain Department of Entomology NCSU	Role of Atmospheric Deposition in Fraser Fir Mortality Caused by Aphids
26	Mr. Mike Waldvogel Department of Entomology NCSU	Genetic Models Simulating the Development of Insecticide Resistance in Field Populations
December		
3	Dr. L. A. Magnarelli Connecticut Experiment Station	Tick-Borne Diseases in the Eastern U. S.

Spring Seminar Chairman-Dr. J. S. Bacheler
Fall Seminar Chairman-Dr. R. C. Axtell

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