As a Department of Food Science, we have the opportunity to conduct basic research at the cutting edge of science in several areas important to the food industry. At the same time, we are involved in applied research directed to the solution of current problems. This brings an excitement to food science not encountered in many other areas and is one of the elements which make the field attractive to students and faculty. It is a part of the image which we must more effectively communicate to high school students and other students on campus who are uncertain as to which major they should pursue.

As a result of this duality of research interests, also reflected in our teaching and extension programs, we have an opportunity to interact regularly with industries within the field. It is becoming more and more apparent that this academic-industrial interface is of critical importance to the future success of both organizations. It is an area in which new opportunities and meanings must be sought and developed.

Industry commonly regards academia as sources of graduates for employment, consultants, and funding requests. Academics often think of industry as a source of research and gift funds, consulting opportunities, and jobs for many of our graduates. All of these are important and mutually beneficial areas which will remain so in the years ahead. These represent traditional and continuing facets of the nature and interests of each type of organization.

However, it is clearly evident that we must go beyond these traditional modes of thinking to address additional issues of common interest. These include increased exchange of non-proprietary information concerning research needs and opportunities; nature and amount of personnel needs by industry, including the impacts of mergers and acquisitions, and the ability of academia to fill these needs; the relevancy of current academic curricula to the needs of industry; opportunities for joint sabbatical (study) leaves, which could be highly beneficial to the individuals and organizations involved; and a general seeking of opportunities to exchange information of mutual interest and benefit. We must seek ways to encourage such exchange, even formalizing it when necessary. Recently initiated discussions between the Research Directors Roundtable and academic food science administrators concerning personnel needs of industry and the ability of food science departments to meet those needs is one example. Advisory groups are another. More are needed. The globalization of the food industry, with attendant changes in the EEC and other areas of the world, clearly indicate that we must strengthen interactions between industry and academia in the United States in as many ways as possible that strengthen both of those groups.

As part of our planning and evaluation efforts, our faculty held a one-day retreat off campus this spring. A number of issues were discussed which relate to the concerns previously listed. These included future directions for departmental programs, building stronger ties with industry, the potential need and role for an industrial advisory committee, offering courses to non-traditional audiences at non-traditional times, potential needs for short courses in areas of our research expertise, effective use and generation of funds for departmental operation and equipment purchase/replacement, and graduate and undergraduate recruiting efforts. Out of these discussions will come the development of activities designed to strengthen our department, enabling it to better meet future needs. We look forward to trying to bring about better industry-academic interactions of mutual benefit to all involved.
Academic Affairs
(V. A. Jones)

Depl. Faculty Retreat at Faculty Club on May 12

Thirty-one students graduated from Food Science during the 1988-89 academic year. Fifteen students received diplomas at the 1989 May Commencement.

The BS recipients were: Janet L. Jones (Raleigh), Robert J. Markovsky (Raleigh), and Marilyn K. Perry (Tarboro).

MS degrees were awarded to: Susan B. Leason (Ann Arbor, MI), Steven M. Leonard (Raleigh), and Gray W. Rushin (Gaithersburg, MD).

Nine students received AA degrees in Food Processing, Distribution and Service. They were: Kenneth C. Cooke (Huntersville), Nancy A. Harris (Henderson), Gary L. Holland (Angier), Shaye D. Johnson (Raleigh), Patrina Y. Mayfield (Norlina), Edwin M. McMillan (Wilkesboro), Rose M. Pinnix (Reidsville), Amy C. Rowell (Monroe), and Barbara J. Sorrell (Raleigh).

Ginger Goodman (Salisbury) is coordinating the Spend-A-Day-At-State Program out of the Academic Affairs Office of the College of Agriculture and Life Sciences. High school students are encouraged to spend one day at NCSU with their parents. The student visits a class, talks with faculty, lunches with an administrator, and tours the campus. If you know of potential students with interest in Food Science or other curricula in Agriculture and Life Sciences, please contact us (919)737-2952 or Academic Affairs (919)737-2614.)

Food Science Club Officers for 1989-90 are: Marie Walsh, President; Jenny Maruri, Vice President; Judy Lewis, Secretary; Tina Lorenzo, Treasurer; Mark Beaumont and David Hall, Activities Co-Chairpersons; Bruce Hein and Suzanne Case, Ag. Life Representatives; Suzanne Case, Publicity; Dr. Leon Boyd, Senior Advisor and Dr. Jonathan Allen, Junior Advisor.

The fourth annual Food Science Student Symposium held at the N. C. Museum of Art was very successful. Twelve students presented research papers to a packed room.

Extension
(Donn R. Ward)

Occasionally, I think it worthwhile to focus on a specific program that has been developed by our extension faculty. We have a number of extremely successful programs from which to choose, but in this instance I'll focus on Dr. Max Gregory's Foodservice Manager's Certification Training Program.

The foodservice industry is the fourth largest industry in the United States, comprising more than half a million establishments that employ some eight million people. By any measure, training this many people is a mammoth undertaking; however, the need is one of the most pressing in our nation. More people are eating meals away from home than ever before; but they are relying on one of the most poorly educated, poorly paid, and poorly trained segments of our society to prepare and maintain safe and wholesome foods. With this issue in mind, in 1983, Dr. John Rushing and Dr. Gregory developed the Foodservice Manager's Certification Training Program. Working cooperatively with the North Carolina Division of Health Services they determined that the program should follow the general recommendations reported in an earlier U.S. Food and Drug Administration study. The course should be focused on the needs of foodservice managers since they would become a statewide cadre of trainers, each responsible for training their own employees. Moreover, it was determined that the North Carolina Division of Health Services should serve as the regulatory monitor and certifying agency, while the North Carolina Agricultural Extension Service would serve as the educational component.

The training program emphasizes research-based practical information for managing a sanitary establishment and training foodservice workers. It relies on a variety of visual aids to keep the students' attention, as well as lecture and discussion periods. Since the first program was conducted in October of 1983, one thousand five hundred and eighty (1,580) managers have been certified in a total of seventy (70) workshops. There have been sixty-three (63) individuals who did not pass the certification examination. The high rate of passing is a tribute to the type and quality of instruction Dr. Gregory provides.

It should also be emphasized that Dr. Gregory involves county extension personnel and health professionals in the program. This helps establish the

Continued on next page
Department Seminar Program
(S.J. Schwartz)

The Department has an active seminar program. Speakers invited from other departments, universities, and corporations provide seminars on a variety of current and timely topics. In addition, exiting Ph.D. students in Food Science are expected to present their research prior to departure. Departmental funds are occasionally available to attract out-of-town speakers. The Department also has an ongoing seminar exchange program with Virginia Polytechnic Institute and State University, the University of Tennessee, The Pennsylvania State University, and the University of Georgia. Through this cooperative effort, students and faculty are exposed to a broad variety of research questions, approaches, and applications. Dr. S.J. Schwartz, Associate Professor, is the current chairman of the seminar program.

Faculty Receive Special Awards

The NC State chapters of Sigma Xi, the Scientific Research Society at NCSU presented their young research investigator award to P.M. Foegeding in April. Dr. Foegeding was one of three scientists at NCSU who received the prestigious honor. T.R. Klaenhammer was presented the Nordica International Research Award in March by the American Cultured Products Institute. This eminent award is given to individuals who have made outstanding contributions in cultured products. Dr. Todd Klaenhammer was the recipient of the 1989 Samuel Cate Prescott Award presented at the IFT meeting in Chicago in June. The award recognizes younger IFM members who have demonstrated outstanding ability in research.

Extension—Continued

county staff as educators interested in food safety and public health, as well as able to provide input regarding specific local situations. The approach that Dr. Gregory has developed is one of the few alternatives available that can make a significant contribution to improving the food safety record of foodservice establishments. In North Carolina, with nearly 1,600 foodservice managers trained and certified and assuming an average multiplier effect of 20 (since managers will, in turn, train their personnel), approximately 32,000 foodservice personnel have received some instruction with respect to food safety and proper sanitation in food handling. Many of you were probably not aware of Dr. Gregory’s program or the scope of its impact. We are justifiably proud of this program and feel it can serve as the basis for a national model for other such programs.
The 23rd Annual Food Science club Banquet was held in April. Marilyn Perry (Tarboro) received the B.M. Newell Outstanding Senior Award and the Ambrosia Chocolate Award (engraved watch). The Forbes Leadership Award was presented to Judy Lewis (Raleigh) and Jaime Mullerat received the Crouch Scholastic Achievement Award (highest grade average of juniors). Outstanding Club Member plaques were presented to David Hall (Denton), undergraduate student, and Linda J. Harris (Canada), graduate student.

Five NCSU students have won six scholarships or fellowships in national competition. IFT Fellowships were awarded to two graduate students (Cathy Culver and Linda J. Harris) for 1989-90 and two undergraduates (John Roberts and Carol Tompkins) will receive IFT Scholarships. Undergraduates were also awarded a National Dairy Promotion and Research Board (NDPRB) Scholarship (Ginger Goodman) and an RJR Nabisco Scholarship (Carol Tompkins).

Cathy Culver, a Ph.D. candidate working with Dr. H.E. Swaisgood, is a repeat winner of an IFT Fellowship. Her thesis research has as its goal a better understanding of protein modification under conditions of processing and storage. She is investigating structure and digestibility of B-lactoglobulin.

Linda J. Harris received her BS and MS in Food Science from the University of Alberta. Linda is working with Drs. H.P. Fleming and T.R. Klaenhammer to transfer nisin-producing genes to lactic acid bacteria. They hope to take advantage of the inhibitory effect of nisin on Listeria monocytogenes and other gram-positive microorganisms.

John Roberts, a sophomore from Newton, received his second IFT Scholarship. Carol Tompkins (Springfield, VA) will enter NCSU as a freshman. Ginger Goodman is a junior from Salisbury.

Pickle Packers International Meeting

H.P. Fleming and R.F. McFeeters helped organize the Symposium, Biotechnology and Ecology—Key Issues for the Pickle Industry, which was held on April 13. The symposium was held in the Food Science Dept. and was part of the Spring Conference of Pickle Packers International, Inc. The conference drew the largest attendance in more than 25 years. There also were attendees from throughout the USA and from Canada, West Germany and Holland.

Food Science faculty participating in the conference include T.R. Klaenhammer, “Improvement of Food Fermentations through Application of Molecular Genetics,” R.F. McFeeters, “Biochemistry of Cucumber Fermentation — Texture Control and Organic Acid Metabolism” and H.P. Fleming, “Microbiology of Cucumber Fermentations — Possibilities from Problems.”

Industry and Alumni News

Two friends of Food Science passed away recently, Mr. J.D. Kilgore and Mr. Ralph H. Scott. Mr. Kilgore was former president of Pine State Creamery and loyal supporter of the department. He has a student scholarship endowment fund named in his father’s honor. Mr. Ralph H. Scott was the driving force that was responsible for the funding and construction of Schaub Hall, the home of Food Science at NCSU. A room in Schaub Hall is named in his honor and the inscription on the plaque reads as follows: 1924 Alumnus of NCSU, Dairy industry leader, distinguished legislator in the NC General Assembly, and great humanitarian.

Robert F. Chestnut (B.S. ’87) is a full-time graduate student in the Univ. of South Carolina’s Master of Business Administration Program. Samuel A. Varner (B.S. ’78) is Strength and Conditioning coordinator in the Intercollegiate Athletic Dept. at the Univ. of Utah, Salt Lake City. While being concerned with the growth and success of our programs, he notes that he seldom comes in contact with prospective food science students in his current work. Laura A. Anderson (B.S. ’87) is employed with Nestle-Beich in Hockessin, DE as a consultant. She was the outstanding consultant in her region in 1988 with increased sales of 64%. She is planning to attend the Owen School of Business at Vanderbilt Univ., starting this fall, to obtain an MBA. Robert Shore (B.S. ’80) is General Manager of the Carolina Virginia Milk Producers Assoc. in Charlotte, NC.
Department Recruitment
(P.M. Foegeding)

The department has been recruiting aggressively over the past year, tapping the assistance of alumni, undergraduate students, graduate students, faculty, and friends. The thrust of the activities has been to enlighten and bring opportunities for food science careers to the attention of junior high, high school and college (undecided majors at NC State) students as well as their parents and teachers. We feel we have an excellent product to sell: challenging applied science coursework (which can slant toward business for those interested) scholarships ($24,327 awarded to undergraduates [2 yr and 4 yr] in 1988 with only about 50 undergraduates in the program]), small classes, personal advising, many diverse job possibilities upon graduation (as well as during school and summers), competitive starting salaries (among the highest for NCSU), an active Food Science Club, a nationally and internationally recognized program, and more. We just need to get the word out. To do this, faculty, students, alumni, and friends have spoken to seminar classes on campus (reaching about 1000 students), high school science classes (about 20 schools and numerous classes) the NCSU-CALS High School Science Teachers' Advisory Council, and the NC Science Teachers Association, to name a few of the audiences. We have also developed or renovated our Food Science literature (information on the department, scholarships, minor program, etc.), are updating our informational slide set about food science and the Department, and have a short VHS video tape in production. These efforts have paid off in quality, but not yet in numbers of students (next year's freshman class is as good or better than any we've had recently, but is still small with only six students). Nonetheless, we are encouraged from the reception and inquiries we have received, which we feel will translate to more students in the future. Many of you have helped us with recruiting and we certainly appreciate your assistance. We welcome help from all of you either formally (call us and let us know you are interested — there's lots to do with schools all over the state) or informally (tell parents of college age students, friends, civic clubs, PTA's, etc., as the opportunity arises).

Dairy Center

The Operational Advisory Committee (OAC) held its second meeting on January 26, 1989. During the meeting, two additional projects were approved for funding beginning July 1, 1989. These were:


The OAC will meet annually in late January or early February. The format may be one or two days, in the latter case including presentations by principal investigators of progress on research projects funded by the Center.

The OAC approved the Annual Plan for the second year of operation of the Center. Only minor changes were made to the first annual plan. One research area was eliminated, since the proposal funded was more appropriately placed in one of the other areas.

Newsletters and short courses are in place and/or are being developed to assist in the information and technology transfer function of the Center. The OAC will consider future areas in which such transfer will best serve Southeast dairy producers and processors.

Mrs. Deanna Sledge has joined the department as Administrative Secretary funded by the Dairy Center. In her position, she will function as communications specialist and will assist with the operation of the Center. She brings a wealth of experience to this position and has "hit the ground running."

Dr. Lineback and Dr. Ward, with Ag Ext. Dir. Black and Assoc. Dir. Wells visit at Carolina Pride in Plymouth as part of the coastal tour of seafood processors
Department Honors and Activities

Two faculty members, K.R. Swartzel and L.G. Turner, were promoted to full professor effective July 1, 1989. H.R. Ball, Jr., was an invited speaker at the 3rd annual J.R. Brunner Protein Symposium at Mich. State Univ. in April and at the Georgia Commercial Egg Seminar in Gainesville in April. R.E. Carawan was an invited speaker at the Seafood Equipment and Marketing Exposition in Hom, LA in Jan.; at the TVA-EPA Waste Audit Training Program in Nashville, TN in Feb.; at the Southeast Dairy Food Research Centers Processor’s Conference in Starkville, MS in March; at the American Cultured Dairy Products Institute Annual Meeting in Phoenix, AZ in March; and the Southeastern Extension Regional Food Safety Conference in Atlanta, GA in May. He served on the program committee at the 19th Environmental and Energy Engineering in the Food Processing Industry in Santa Barbara, CA in March and attended the Dairy and Food Industries Conference in Columbus, OH in Feb.; appointed to the Editorial Board for the Journal of Dairy Science; winner of second prize in the Audits International’s Fall 1988 Technical Writing Competition as co-author of paper entitled “Waste Audits—Increased Profitability and Reduced Liability.” Dr. Carawan has three projects. “Reduction in Waste Load from a Yeast Processing Plant” funded by Fleishmann’s Yeast through a Challenge Grant from the NC Pollution Prevention Program; “Reduction in the Waste Load from a Peanut Processing Plant” funded by Beatrice/Hunt-Wesson (Fisher Nut) through a Challenge Grant from the NC Pollution Prevention Program; a student intern training grant from the NCSSI Industrial Extension Service to develop “Training Materials for Waste Reduction in a Snack Food Bakery.” H.P. Fleming was an invited speaker in the seminar on “Advances in Bioreactor for Microbiological Processes” at the Amer. Soc. for Micro. meeting in New Orleans in May. M.E. Gregory will be on study leave at Appalachian State Univ., July 1-Dec. 31, 1989 to develop and teach a course in food safety and sanitation in the Hospitality Management Program in the School of Business. In addition, he will be preparing training materials and visuals to be used in the Foodservice Manager’s Certification Training. A.P. Hansen was an invited speaker at the Amer. Chem. Soc. meeting in Dallas in April; was one of the key note speakers at the first Pakistan Dairy Forum held in Lahore on May 20, 1989. The dairy forum was attended by Pakistan dairy processors and their employees, The Pakistan Minister of Agriculture, U.S. AID officials and members of the Winthrop Rockefeller Association. Following the forum, Dr. Hansen taught a dairy course for the dairy processors with an emphasis in dairy chemistry, dairy processing and UHT processing from May 21 through June 16 for the Pakistan Dairy Association. Upon completion of the course, a dinner was held in honor of Dr. Hansen where he was presented with an outstanding teacher award for his excellence in teaching the course. H.M. Hassan was an invited speaker at the Amer. Soc. for Micro. in New Orleans in May and will be participating at the 5th Conf. on Superoxide and Superoxide Dismutase in Jerusalem, Israel in September, 1989. E.A. Foegeding has received funding for a new project, “Controlling Poultry Meat Texture and Juiciness by pH Stabilization” from Southeastern Poultry and Egg Assoc. P.M. Foegeding has a new researcher in her laboratory, Dr. Jungho Kim from the Univ. of Massachusetts, who will be working for two years on Dairy Center research; has had several visitors in her lab including Dr. David Farr, Nestle’s in Switzerland, Dr. V. Vadehra of Westeco, New Milford, Conn., Dr. T.P. Labuza, Univ. of Minn. and Dr. M.P. Doyle, Univ. of Wis. T.R. Klaenhammer received funding for a new project, “Molecular Characteristics of Phage Defenses in Lactococci” from Miles, Inc., Elkhart, Ind., was an invited speaker at the Center for Dairy Research, Madison, WI, in April; visitors in his lab include Dr. Gerald Tannock, Univ. of Otago, Dunedin, New Zealand, who worked in April through June on Lactobacillus genetics, and Mr. Jean Christopher Piard, a Ph.D. student from Paris, France, who is working with Pete Muriana, one of Dr. Klaenhammer’s graduate students. T.C. Lanier has a visitor in his lab from May-Aug. from the Meat Industry Research Institute in New Zealand. D.R. Lineback was program chairman for Food Update ’89, Scottsdale, Ariz. in April and will be Chairman of Board of Governors in ’89-90; was a member of CSRS Review Team at Univ. of Neb. in April; was on lecture tour for Amer. Chem. Soc. in May and gave an invitational seminar at Miles, Inc.,Elkhart, Indiana in May. D.H. Pilkington received funding from the NC Ag Foundation to continue work on country hams; invited by Organization of American States to work on Meat Products in Uruguay in May and June. H.E. Swaisgood served as chair and presented an invitational paper at the 3rd annual J.R. Brunner Protein Symposium at Mich. State Univ. in April; was an invited speaker at Amer. Soc. of Micro. symposium on Biotechnology in Orlando, Fl in June; has a new postdoctoral student in his laboratory, Dr. Claudia Sooddeen, who received her Ph.D. from Howard Univ. in Wash. DC. S.J. Schwartz received funding for two new projects, “Aseptic Processing and Packaging of Plant Products: Chlorophyll Chemistry Affecting

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Our Food Science undergraduate teaching program is administered by two dedicated teachers. V.A. “Vic” Jones coordinates the four-year program, while L.G. “Lynn” Turner guides the two-year Ag Institute program. Vic joined our faculty in 1962 after completing his Ph.D. at Mich. State Univ. Lynn completed his Ph.D. at NCSU in Food Science in 1977. He has been in charge of our two year program since 1974. Both individuals are committed to the students’ welfare and make themselves available to students at all times.

Vic and Maryetta, an elementary school teacher, have four boys and 11 grandchildren. The Joneses have always been an exemplary family unit, worthy of emulating. Vic’s outside interests center on fishing and handball. He has accumulated over 20 (he's lost count) handball trophies in the single and doubles tournament in the University’s intramurals program.

Lynn and Beth moved into a new home recently. Beth is a research analyst in our department. They met in Schaub Hall while Lynn was pursuing his Ph.D. They were married in 1976. They both are extremely well liked and cherished by department colleagues.

Department Honors and Activities—Continued

Color and Appearance in Vegetable Particulates” from CAPPs and “Extractive Fractionation of Beta-Carotene from Dunaliella Algae by Supercritical Fluids” from the NC Biotechnology Center. B.W. Sheldon has prepared a new station project entitled “Efficacy and Verification of Alternative Biocidal Agents in Controlling Foodborne Pathogens and Spoilage Microorganism on Poultry Products”; is serving as section chairman for the annual meeting of the Poultry Science Association in Madison, WI in July; filed a US patent on “Method for Sanitizing and Improving the Hatchability of Hatchery Eggs.” Dr. Sheldon, in cooperation with N.A. Klapes, received a grant to study “Efficacy of Bacteriocins in Controlling Poultry Pathogens” from the S.E. Poultry and Egg Association and was awarded an NC Ag Foundation Assistantship for study of “Potential Applications of Bacteriocins in Controlling Poultry Pathogens.” L.G. Turner was honored by the National Association of Colleges and Teachers of Agriculture with a Teaching Award of Merit. W.M. Walter, Jr. is Chairman-Elect of the National Sweet Potato Collaborators; gave invitational presentations at the NC Sweet Potato Commission Inc. in Goldsboro in January, and the National Sweet Potato Collaborators in Nashville, TN in February. C.T. Young was an invited speaker at Univ. of Georgia in May. Dr. H. Bradford Craig is retiring effective July 31, 1989 from his position as Associate Director of Academic Affairs and Director of the Agricultural Institute, College of Agriculture and Life Sciences. Before he assumed his present position, he was on our faculty in the Meats Research area. Dr. Peter Adams of International Paper Company at Research Triangle Park is a new adjunct professor in the department. Effective June 1, 1989, Ms. Donna Sartain has assumed the responsibilities of Administrative Assistant in the Department.