

**MEMORIAL STATEMENTS
for the**

Department of Biological and
Environmental Engineering
(1939 through 2016)

Cornell University Faculty

Office of the Dean of Faculty
Ithaca, New York

Extracted from the Office of the
University Faculty Records
by
J. Robert Cooke and Ronald B. Furry
April 20, 2017

Evolving Organizational Name

"The beginning of the present Department of Biological and Environmental Engineering at Cornell was as the *Division of Rural Engineering and Architecture*, formed when Liberty Hyde Bailey, Dean of the College of Agriculture, invited Howard W. Riley, a Cornell mechanical engineering graduate, to head it in 1907. Department status came in 1909 with the name *Department of Farm Mechanics*. In 1913 it was renamed the *Department of Rural Engineering*. The name *Department of Agricultural Engineering* was adopted in 1930 and remained until July 1, 1988, when the name was changed to *Department of Agricultural and Biological Engineering*. The program subsequently evolved into two integrated focal areas, and in 2001 the name was changed to *Department of Biological and Environmental Engineering* to reflect that orientation."

Ronald B. Furry

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Preface

The University Faculty has always followed the practice of including within the faculty records a memorial resolution on the death of one of its members. This custom, which was begun in the earliest days of Cornell University, was modified by the faculty in 1938 as follows:

Upon the death of a member of the University Faculty, the President or Dean of Faculty shall formally notify the Faculty at the next meeting and those present shall rise in respect for the memory of the deceased member. The Provost shall then appoint a committee to prepare an appropriate memorial statement. Such statements shall not be presented in the form of resolutions, as in the past, but shall be annually collected, edited, and printed by the University in a memorial booklet which shall be sent to members of the Faculty, to the families of the deceased members, and shall be filed with University records.

The contents of this booklet, prepared by the Office of the Dean of the University Faculty, contains articles in memory of those twenty-nine University Faculty members whose deaths were reported in the period from 1939 through 2016. The names of the committee members who prepared the statements are given at the end of each article (with the chair's name appearing last during earlier years).

Richard Black

November 2, 1926 - September 27, 1998

Dick Black came to Cornell from the University of Illinois in 1959, at a time when the Agricultural Engineering Department (now Agricultural and Biological Engineering) was in transition from a department that was very applied, to one that could meet the needs of the rapidly changing agricultural sector in New York and the country. It was a time with increasing emphasis on research as well as strengthening the department's teaching program. Dick brought an unusual combination of skills very appropriate to the period. He coupled a genuine interest in the problems farmers faced with a willingness to address those problems through research in the field setting. He had a special skill in designing and implementing research that involved the real-world complexities of the natural environment. Dick was an artisan, with a range of skills unusual for an academic. He was an accomplished machinist, metalworker and carpenter, and used all of these skills in carrying out his research program. This program, centered on the drainage problems characteristic of New York, was one of the earliest that linked theory with the realities of a very heterogeneous physical situation characteristic of much of the state.

In addition to his research on agricultural drainage, Dick carried heavy teaching and advising responsibilities. He taught in both the department's technical program in the College of Agriculture, and the relatively new professionally oriented program carried out cooperatively with the College of Engineering. While he contributed substantially to the latter, including the development of the department's hydraulics laboratory, Dick's special forte was working with the department's "transfer" students in the technical program. These students, many from the state's agricultural and technical institutes, had special needs that Dick was able to meet. He was faculty advisor to most of these students, and was instrumental in their success.

With his boundless energy, Dick also was involved with the Department's Extension program. He was a strong advocate for the formation of the New York State Land Improvement Contractor's Association, and served as Secretary to the Association for a number of years.

Dick was an outdoorsman, with an avid interest in hunting and fishing. He shared these interests with youth in the community, through service as a leader in the Boy Scouts. He was a warm and generous individual, always willing to assist others.

In 1982, a combination of increasing interest in the area of extension, and the lure of returning to the mid-west, caused Dick to accept a position of Professor of Extension at the University of Kansas, where he remained until retirement. He was a Professor Emeritus at both Cornell University and the University of Kansas. Following retirement, Dick and his wife, Marilyn, indulged in a favorite pastime, traveling with their recreational vehicle. It was on a visit to their daughter, Carolyn, in Alaska that he took ill and died soon after on September 27, 1998. His wife, Marilyn; son, Jim; two daughters, Carolyn and Barbara; and eight grandchildren survive Dick.

He was a good friend and colleague, and is missed.

Tammo Steenhuis, Gilbert Levine

Joseph Kearns Campbell

October 30, 1927 - August 4, 1997

Joseph Kearns Campbell, Professor Emeritus of Agricultural and Biological Engineering, passed away peacefully at his home in Fredricksburg Texas on August 4, 1997. Professor Campbell is survived by his wife, Sigrid (Beicht); daughter, Sabine Hyland; son, Oliver; brother, John D. Campbell; and sisters, Ann Campbell and Susan Campbell Shell.

Joe was born and raised in Belleville, Pennsylvania. In 1945, he volunteered for the U.S. Navy and served three and one half years as a Radarman. In 1953, he earned a Bachelor of Science degree in Agricultural Engineering at Pennsylvania State College and then worked for eight years as a Design Engineer at New Holland Machine Company in New Holland, Pennsylvania. During the next four years, he worked at Allegheny Ballistics Laboratory in Maryland as part of the team that developed the Polaris missile launch system. In 1967, he completed a Master of Science degree in Agricultural Engineering at Cornell and joined the faculty as an Extension Engineer. Joe retired from Cornell in 1992 and he and Sigrid moved to Fredricksburg, Texas shortly thereafter.

Joe had a very successful career at Cornell University and was active in teaching, research and extension, serving as Department Extension Leader from 1983-89. His outgoing personality, formal training and practical "hands-on" engineering experience in industry made him a natural extension educator and a great university teacher. Joe's leadership in extension was clearly evident as he inspired all those around him to expand their efforts in transferring information and technology into the farmer's hands. To this end, he produced upwards of 150 articles and papers of practical content aimed toward production agriculture and technology transfer. A number of these publications received Blue Ribbon awards, a national recognition by the American Society of Agricultural Engineers. Joe was a registered Professional Engineer and held four U.S. Patents at the time of his retirement.

Joe was a recognized authority on tillage and implements appropriate for use by the smallholder farmer in the international community. To this end, he developed a popular undergraduate course, Agricultural Mechanization – an International Perspective, which he taught from 1981-86. Students learned about the simple tools and machines used in developing countries and drew upon the examples he had encountered in his many real world experiences. His course was a blend of engineering, production agriculture, and

social and political science. This made his course unique in an engineering department, for he taught mechanization using examples of engineering principles which had in many cases evolved and been tested in agrarian cultures for hundreds of years. The fact that many of the technical features of the "third world" tools formed key elements in modern machines made his course equally relevant to both international and domestic students.

Joe expanded his international agriculture expertise by spending sabbatical leaves at the International Rice Research Institute (IRRI) in the Philippines, and at the International Potato Center (CIP), in Lima, Peru. During his sabbatical at IRRI, he served as head of the Agricultural Engineering Department and wrote the textbook *Dibble Sticks, Donkeys, and Diesels*, which is a practical guide for appropriate technology transfer and sustainable agricultural mechanization. While at CIP, he focused on simple machines for cultivation and processing of potatoes. In addition to this formal international involvement, Joe worked as an engineering consultant with a number of international agencies on projects in Indonesia and Africa.

After Joe retired, he and Sigrid moved to Fredricksburg, Texas, a small town that has retained much of its German heritage. Joe and Sigrid busied themselves there with settling into their new home, writing the Campbell and Beicht family history, enjoying their new grandchildren and hosting a number of visitors from around the world. Joe continued to pursue his many hobbies, one of which was a long time association with a Model A Ford pickup. During this same time, Joe continued his battle with cancer.

What we remember most and appreciate most about Joe was his constant positive attitude. He was a role model to all that knew him and he was a person who led by example. Joe was always looking on the positive side of things and he was a constant source of new ideas and concepts. He always encouraged his students in the classroom and on the farm to "try it out", to implement new technology and improved methods in a positive way in order to make work more efficient and labor less tedious. His office was often a beehive of activity featuring international visitors, graduate students, extension specialists and his Cornell peers discussing technology, research, or the latest extension information. Everyone appreciated his willingness to help solve problems, his creativity in making technology useful, and his ability and patience in explaining it all in printed and spoken words. He was an eternal optimist who sought to improve peoples' lives by generously sharing his many talents. He was a mentor and a friend and we miss him deeply.

James A. Bartsch, Roger F. Sandsted, Michael B. Timmons

Hollis Rexford Davis

October 18,1915 -January 13,1995

Hollis Rexford Davis, Associate Professor of Agricultural Engineering, retired on February 28, 1978, after over thirty-three and a half years of service to the Department of Agricultural Engineering at the New York State College of Agriculture and Life Sciences at Cornell University. In March of 1978, he was awarded the title of Professor Emeritus of Agricultural Engineering.

He graduated from South Otselic High School where he played baseball and basketball and participated in band and orchestra. He was active in 4-H and played in the Chenango County 4-H Band which made a trip to the Chicago World's Fair in 1933. At Cornell, he was a pitcher on the Freshman Baseball Team and played in the Cornell Marching Band. He received both his degrees from Cornell University, the B.S. in Agriculture in 1937, and the M.S. in Agricultural Engineering in 1948.

Hollis taught vocational agriculture at DeRuyter High School. In January 1942, he was appointed District Agricultural Engineer to work with the New York State Emergency Farm Machinery Repair Program, directed by the Department of Agricultural Engineering at Cornell University. Hollis served in the U.S. Marine Corps from October 1943 to March 1946 and returned to Cornell University as an Extension Agricultural Engineer in April 1946.

Hollis distinguished himself as an outstanding teacher in educating farmers, dealers, and equipment service personnel in proper selection, operation, and adjustment of agricultural machines and equipment. As the program emphasis changed, Hollis was called upon to broaden his Extension commitment to include structures and electrification, dairy and poultry building ventilation, and materials handling systems. His Cornell Extension Bulletin 849, "Adequate Farm Wiring Systems" became a widely used publication throughout the United States.

Mr. Davis was promoted to Assistant Professor, Department of Agricultural Engineering, College of Agriculture and Life Sciences, Cornell University, in 1956, and in 1962 was promoted to Associate Professor. He was an authority on poultry laying and pullet housing systems. Builders, equipment manufacturers, and poultry producers throughout the United States continually sought his advice. He worked with government agencies in developing plans and regulations in the design of egg grading and breaking facilities, processing plants, and slaughter plants for poultry operations.

Davis was also involved in the problems associated with the disposal of waste from the above facilities as well as for home sewage disposal systems. In the 1970s, he worked with growers and builders to design common refrigerated and controlled atmosphere storage facilities and ventilation systems for crop storage. He helped develop drying systems for potatoes and onions that made it possible for growers to salvage their crops during wet harvest seasons. He collaborated on the most practical and authoritative cabbage and onion storage bulletins that are available in the United States today.

He consulted in England, Italy, Greece, Iran, India, and with the World Bank. He was widely respected by growers, equipment manufacturers, contractors, government agencies, professional peers, and his friends for his expertise, friendliness, and desire to help people with problems. He served the agricultural industry of New York State in a dedicated, conscientious manner, always emphasizing practical solutions.

Early on, Hollis was an active sportsman indulging in hunting and fishing. Later he became an ardent golfer and continued to be one for the rest of his life.

Hollis was an active member of the American Legion and past Commander of the Owen Woodford Post 894, DeRuyter; past Master of Masonic Lodge 692, DeRuyter; member of the American Society of Agricultural Engineers; and member of the Ithaca Lions Club.

Hollis and his first wife, Harriet, had a happy life with their four sons. Harriet died in 1982.

Later Hollis married Margaret Sullivan Paetow. Hollis and "Peg," both ardent golfers, enjoyed life at their summer residence in Ithaca and their winter townhouse at Suntree in Melbourne, Florida.

Hollis is survived by his wife Margaret; his four sons: Richard of Merrit Island, Florida; Robert of Atlanta, Georgia; Allen of Philadelphia, Pennsylvania; and Steven of Reading, Pennsylvania; and his two stepdaughters: Elizabeth Cowger of Rochester, New York, and Anne Barnett of Jasper, Indiana.

Everett D. Markwardt, Richard W. Guest, E. Stanley Shepardson



Edward O. Eaton

April 10, 1919 – July 11, 2012

Edward (Ed) Oscar Eaton was born on April 10, 1919 in Middlesex, Vermont to Fred and Emily (nee Johnson) Eaton. He attended Waitsfield Elementary and Waitsfield High School in Waitsfield, Vermont. Following graduation from the University of Vermont in 1941, he was employed as a Vo-Ag teacher in Newport Center High School in Vermont until he entered the U.S. Army Air Corps in 1942. He served in the Pacific Theater in World War II on Saipan, Iwo Jima and Manila and was discharged in 1946.

Following his discharge, he returned to Vo-Ag teaching in Vermont at the Newbury and Groton High School until 1949. He then attended Cornell University as a graduate assistant in the Department of Agricultural Engineering, receiving an M.S. in 1950 and a Ph.D. in 1952 and subsequently joined the Atlantic City Electric Co. in Atlantic City, New Jersey. There he served as an Agricultural Engineer, an Electrical Heating Engineer and an Industrial Representative. In 1958 he returned to Cornell University as an Assistant Professor in Agricultural Engineering, was promoted to Associate Professor in 1963, Professor in 1977 and then Professor Emeritus upon his retirement in 1979, having served on the faculty for 21 years.

Ed's principal professional interests lay in electric power and processing and youth development through application of mechanical sciences. He developed special programs in petroleum power for small engines, farm tractors and machinery; electric power; woodworking; fire prevention and safety; automotive safety and care; and bicycle safety. He offered leadership in originating and introducing the programs and supporting materials to Cooperative Extension Service 4-H Agents and the training of volunteer adult and junior leaders in their use throughout New York State. The success of his outreach efforts in the 4-H engineering program is summarized in the numbers: in 1958 when he assumed responsibility for the program, youth enrollment in agricultural engineering projects was 25,000 annually; at his retirement in 1979 enrollment had increased to 220,000 annually. Approximately 2.5 million boys and girls were enrolled in various agricultural engineering projects during his tenure. In addition, at the New

York State Fair in Syracuse, New York Ed conducted annual Tractor Operators Contests for those enrolled in the Tractor Maintenance Program. His entrants always placed near the top and won four times at the Eastern Regional Competition. For three years he also took a turn at teaching Agricultural Engineering Course 315, Electricity on the Farm, but his heart remained steadfastly in the youth engineering program.

Ed's programs were recognized as the most educational and innovative agricultural engineering 4-H programs in the US and served as models for similar programs at other institutions. Sabbatical leaves in 1964-65 at the University of Alaska working with youth and adult engineering programs in the Alaska Extension Service and in 1972 at the University of Arizona sharpened his knowledge in Extension Education and served to extend his programming skills. During his tenure, he received 14 Blue Ribbon Education Aid Awards from the American Society of Agricultural Engineers (ASAE), now known as the American Society of Agricultural and Biological Engineers (ASABE). These ribbons were for his program entries in national competitions – a deserved recognition of his ability to originate high quality, innovative and age appropriate educational materials. He obtained firsthand experience in just how suitable his materials were for the needs of 4- H boys and girls by his regularly serving as a leader in a local 4-H Club. Ed also received a National 4-H Council commendation for the Eastern US for his work.

In addition to scores of manuals, bulletins, leaflets and program reports, he also authored 6 slide sets and 7 films, but one program aid in particular earned him almost instant and extensive national recognition. In 1971 Ed assembled "talking" bicycles as educational aids in the 4-H Bicycle Safety Program. The bicycles were equipped with safety devices, sound equipment and control boxes. Activated by a remote operator, a bicycle could sound its horn, turn on its headlight, pedal the rear wheel, and even talk in response to questions from a safety instructor or the student audience. The youngsters taking the safety course loved it as did the instructors! Ed had a knack for knowing how to create and maintain interest and attention. His talent taught 4-H agents not only what to teach but how to teach.

Ed served on the Electric Power and Processing and Extension Committees of ASAE, the Operating Committee of the Food and Energy Council and the College Energy Task Force. He was also Executive Secretary and Treasurer of the New York State Rural Safety Council and received a citation for his long and important service.

Ed enjoyed bowling, music and athletics and was a member of King Solomon Chapter No. 7, Royal Arch Masons and a member of Mad Rover Lodge No. 77, Free and Accepted Masons. In retirement, he frequently attended Cornell Alumni events in Vermont, and divided his time between his home there and the warm sunshine of Florida.

He is survived by his two sons, Edward H. Eaton and his wife, Marie, and Paul Eaton and his wife, Barbara, as well as 7 grandchildren, 11 great grandchildren, 3 nieces and 1 nephew. In addition to his parents, he was

predeceased by his loving wife, Lois (nee Hodgkins) Eaton on September 20, 2003 and his sister, Evelyn, and her husband, Donald Goetz. Ed's smile, flashing eyes, robust greetings and fun conversation will be sorely missed. He will be well remembered.

*Ronald B. Furry, Chairperson; J. Robert Cooke,
Everett D. Markwardt, Howard A. Longhouse*

Frank Latta Fairbanks

December 16, 1884—March 5, 1939

Frank Latta Fairbanks was born at Ithaca, New York, December 16, 1884, and died on March 5, 1939, of injuries received in an automobile accident while engaged in work for the University.

Professor Fairbanks was of a sturdy family founded in this country by Jonathan Fairbanks, who came from Somerby in the West Riding of Yorkshire, England, in 1633 and in 1636 erected a dwelling at Dedham, Massachusetts, which is standing, habitable, and owned by one of the family today. Harvey Fairbanks, great-grandfather of Professor Fairbanks, moved from Cornish, Vermont, to Homer, New York, in 1816 and cleared a farm on the Scott Road that is now occupied by a grandson. In the barn on this farm the first installation of the Fairbanks-Goodman ventilating system for dairy stables was put into practical operation in 1925.

The son of a father expert in mechanical matters from whom he gained valuable early experience, Professor Fairbanks graduated from Sibley College of Mechanical Engineering in 1910, served the H. H. Franklin Company of Syracuse as test engineer, and had a varied engineering experience in Pendleton, Oregon, from 1911 until 1915, when he was recalled to Ithaca to care for his parents. He served as librarian of Sibley College from 1915 until 1917, when he became assistant in Farm Mechanics in the New York State College of Agriculture. After 1918 he was successively instructor and assistant professor of Agricultural Engineering. The title of professor came to him in 1934.

Early teaching work was in the tractor schools given during the World War to promote food production, after which, in addition to teaching, he carried on investigations in the artificial illumination of poultry houses, farm power machinery, applications of electricity to agriculture, and air-conditioning of animal shelters. In the latter field the development of the Fairbanks-Goodman system of ventilation of dairy stables, addresses before the American Societies of Agricultural Engineers and Heating and Ventilating Engineers, bulletins and other Publications have given deserved national standing to work done with scientific thoroughness and with a sympathetic and informed appreciation of agricultural requirements. He was a member of Sigma Xi, of the American Society of Agricultural Engineers, and of Masonic fraternities, being a 32nd-degree Mason.

His colleagues have lost a true friend and an able associate. The farmers of the State have lost a sound and capable adviser.

Edward W. Foss

December 4, 1914 - January 28, 1988

Edward Wilbur Foss, professor emeritus of agricultural engineering, died on January 28, 1988 at the age of 73. He retired from Cornell in 1980 after thirty-two years of active and dedicated service to Cornell.

Professor Foss was born in Laconia, New Hampshire and received a bachelor's degree from the University of New Hampshire. Ed earned a master's degree from Cornell in 1947. He was on the staff at the University of New Hampshire from 1942-45 and the University of Maine from 1945-1948. In 1948 he became professor of agricultural engineering at Cornell.

Ed came to Cornell to teach the farm shop and woodworking courses. In this capacity he served as teacher trainer for vocational agricultural teachers emphasizing teaching farm mechanics. He quickly broadened his interests and became involved with research and extension activities. His deep and abiding interest in forestry and the development of logging equipment for the small woodlot owner was paramount. He and his graduate students developed many labor saving devices to mechanize the woodlot operations. These included the logging arch, fence post sharpener, a small portable sawmill, firewood bundler and a combination log delimeter and debarker. Ed and forestry professor Fred Winch became involved in extending valuable information to the woodlot owners by preparing extension publications and conducting meetings, demonstrations and exhibits.

Professor Foss was given additional responsibilities in agricultural engineering extension when he was assigned the rural housing program. This was an appropriate program area for Ed because of his background in farm shop, forestry and in having had the experience of building several houses. Ed's boundless energy, dedication, foresight, and prolific mind produced many practical publications to help homeowners with sound housing decisions. When many of the responsibilities of the agricultural engineers in rural housing were transferred to the College of Human Ecology, Ed's interest turned to new programs. One of these areas was community resource development. This was uncharted territory for agricultural engineering and it was necessary to explore new ways of applying engineering knowledge to the development of

resources in local communities. The development of recreational facilities was one area where Ed produced many educational publications and programs. Another area of Ed's interest was in the preparation and dissemination of educational materials for the civil defense and disaster relief programs.

Ed was also very active in the farm safety program with the New York State Rural Safety Council. One of his important programs with the Safety Council was to organize and conduct workshops for members of the central Organization of Farm Mutual Cooperative Fire Insurance Companies. He developed and for several years taught one of the first agricultural engineering safety courses ever offered in the United States. He also served as a consultant in farm safety.

Professor Foss anticipated the problems with the disposal of sewage and other waste from small communities, recreational parks and camps, rural housing developments and with the disposal of solid wastes. He innovated new programs by developing program materials to help groups and community leaders in making important decisions with regard to these problems.

Another of his strong interests was youth development programs. He contributed greatly to the revision of the New York State 4H Fire Safety Program and the initiation of a Farm Tractor Certification Program for youth.

Ed was always concerned with the improvement of community educational facilities. He served as an active member of the Ithaca Board of Education, the Board of Cooperative Educational Services, and was very effective in promoting economical and well designed building projects. Ithacans can be grateful to him for the tax money saved by his careful review of building ideas and plans.

Professor Foss was awarded lifetime membership in the American Society of Agricultural Engineers and was active for many years with the National Fire Protection Association, the National Safety Council and Alpha Zeta and Phi Sigma honorary societies. He was honored with several citations and commendations for his civic and professional services by New York State, Tompkins County and communities in Florida.

Ed was a very active, energetic and dedicated person and prolific writer. He seemed to have a compulsion to be "involved". His interests were very broad and he contributed to many program areas in agricultural extension with his drive, determination, expertise and inexhaustible energy. He was a tireless worker who always had plans for more work than he ever had time to complete.

Above all Ed was an excellent coworker, very active in civic affairs and an ideal Rotarian - service above self.

In retirement the Foss's moved to Florida to be near their son. Ed is survived by his wife of forty-nine years, Elizabeth Peabody; two daughters, Joan Elizabeth and Linda Foss Ecker; and a son, John.

Edward O. Eaton, Everett D. Markwardt, Wesley W. Gunkel

Orval C French

January 3, 1908 - March 30, 1999

Orval C French was born in Geneseo, Kansas, raised on his father's farm, and attended a one-room school. Orval enrolled in Electrical Engineering at Kansas State University, took leave in 1927 to help on his father's farm, returned to Kansas State University in 1928, switched to Agricultural Engineering and received a B.S. degree in 1930 and an M.S. degree in 1931. Orval then joined the faculty of the Agricultural Engineering Department at the University of California, Davis. In 1932, he married his college sweetheart, Helen Pembleton, from Ness City, Kansas

At Davis, his career was directed toward teaching and research. He quickly became an authority on methods and equipment for weed and pest control, including aerial chemical application. He prepared many widely read publications on pest control, spray equipment and chemical application.

From 1942-45, Orval was "borrowed" as a research engineer on the Manhattan Project at the University of California's Radiation Laboratory in Berkeley. While at the University of California, he was promoted to Assistant Professor in 1943 and to Associate Professor in 1947.

Shortly after that, he was invited to Cornell University to interview for the position of Professor and head of the Agricultural Engineering Department, which he accepted beginning in the fall of 1947. Orval came into a department that was teaching and extension oriented and housed in several buildings. He oversaw the design and construction of the finest Agricultural Engineering building in the country, Riley Robb Hall. Under his tutelage, the already growing department moved into these fine new quarters in February 1956, here he began to develop a strong research program while expanding and strengthening the teaching and extension areas. Building a good research faculty made it possible to develop a graduate faculty and a strong graduate program, which now draws students from all parts of the world.

He made many personal visits to farmers and agribusiness people all over New York State to learn firsthand their needs and problems. He quickly earned the respect of industry for his good judgment, sound advice, frank suggestions, progressive ideas and willingness to work on any project that helped the farmers.

Under Orval's leadership, Agricultural Engineering at Cornell blossomed. He convinced many in the university, the state, and the

nation of the importance of agricultural engineering. He attracted funds and assistance for research activities. Under his guidance, a five-year professional undergraduate degree program was initiated in 1953 and accredited in 1958.

Early phases of research efforts under Professor French included a strong pest control program in cooperation with the Entomology Department. Excellent programs were developed in mechanizing fruit and vegetable production, in agricultural waste management, and in bioengineering. Much of that pioneer research has been translated into commercially available machines and methods.

A great deal of Orval's success at Cornell came from his ability to develop each staff member to his or her full potential. His warm, friendly manner made him easy to meet. He enjoyed talking to students, staff members, farmers, businessmen and women, and government officials. Orval was a sincere, dependable, honest, forthright person with high moral standards. He would gladly counsel with anyone on problems of any sort at any time. He was the kind of man people would choose for a referee, whether for a ball game or a word battle. All knew of his fairness.

From February 1958 to February 1959, Professor French was a Visiting Professor in the Cornell-UP Contract Program at the University of Philippines, College of Agriculture at Los Banos.

Since joining the American Society of Agricultural Engineering in 1932, Orval has been Chairman of the former College Division; Chairman of the North Atlantic Region; and was ASAE national President in 1966-67. During his presidency, a new organizational structure was adopted, the Food Engineering Division was organized, and ASAE became a full member of the Engineering Committee for Professional Development. He served on many committees, programs and special assignments. French was elected an ASAE Fellow in 1964. He received numerous other recognitions and awards, including an Extension Service award in 1970 for meritorious service to 4-H and to the 4-H Tractor Program in New York State. Perhaps the most prestigious award was The Cyrus Hall McCormick Gold Medal for "Exceptional and Meritorious Engineering Achievement in Agriculture" in 1975, the highest honor in ASAE.

In addition, Orval ably represented ASAE in the American Society for Engineering Education and the Engineering Joint Council. He served on several ECPD accreditation teams. He was a longtime member and Fellow in the American Association for the Advancement of Science.

Orval served as Elder and held many other church offices in the First Presbyterian Church of Ithaca. Here too, he was most anxious that others receive credit, even if the work was entirely his own. In the quarter century that Orval attended his church, the pastor claims he never once heard a derogatory remark about Orval. He classified Orval as "a leader who developed the finest of leaders."

When the first fire department was organized at the University of California, Davis about 1938, Orval was Assistant Chief and later served as Chief until 1942. In 1955, when a fire department was organized in his community of Cayuga Heights, Orval was the only member qualified to serve as Chief, which he did for the first year. He continued as an active volunteer fireman until after his retirement from Cornell University.

Following retirement, Orval and Helen moved to Florida, where he continued contact with colleagues and former students. Orval will long be remembered by his many friends and colleagues.

His wife of 66 years, Helen; daughter, Nina L. French Glover; son, Byron; five grandsons; and two great grandsons survive him.

Everett D. Markwardt, William F. Millier, E. Stanley Shepardson

Alpheus Mansfield Goodman

January 29, 1885 – May 29, 1956

Alpheus Mansfield Goodman, Professor Emeritus of Agricultural Engineering died unexpectedly on May 29, 1956 while making a field survey near the Cornell campus at Ithaca, N. Y.

He was born at Salisbury Mills, N. Y. on January 29, 1885 to Eunice and Alpheus Goodman.

He attended the Bethlehem Rural School at Cornwall, N. Y. and the Cornwall Union School, Newburg Academy. He was graduated from Cornell University in February 1912 with the degree of B. S. in Agriculture.

On July 12, 1916 he married Clara Witmer Browning of Buffalo, N. Y. To this union were born four children, Clara, Robert, Eunice and Eleanor. At his death there were 11 grandchildren

Immediately after graduation from Cornell, he was successively a Dairyman for the USDA at Washington, a County Agricultural Agent in New Jersey, Superintendent of the Denison Dairy Demonstration Farm at Denison, Texas, and Herdsman at the USDA Experiment Station at Beltsville, Maryland.

In 1919 he came back to Cornell as an Extension Agricultural Engineer specializing in the subjects of land drainage, water supply, sewage disposal, gasoline engines and ventilation of farm structures. From his experience in ventilation he developed an interest in farm structures in general which in turn led to his starting a residence course on the subject for undergraduates in 1935.

By means of hard work in the field and special study at home, he soon became a licensed land surveyor and was made a member of the New York State Society of Professional Engineers. He was also a member of Sigma Xi, Epsilon Sigma Phi, American Society of Agricultural Engineers and was a founding member of the Cornell Extension Club.

After 16 years as a full time Extension Specialist he was appointed to half time resident teaching in 1935, and in 1946 he became a full time resident Professor offering courses in Farm Structures, Surveying, Drainage and Irrigation. In this latter capacity he served until his retirement on August 1, 1952.

From 1926 to 1952 he authored and co-authored 21 extension bulletins and 9 mimeo bulletins for distribution to farmers of the state. He also wrote numerous articles for leading agricultural papers.

During his periods of sabbatical leaves and on special leaves, Professor Goodman was called upon to serve in a professional capacity in many parts of the world. Beginning in 1927, working with the Rockefeller Foundation, he spent two years setting up a drainage project for malaria control and agricultural production in Puerto Rico. He returned there periodically during the next 8 years to supervise and inspect the project. From 1942 to 1947 he did similar work for the Rockefeller Foundation in Haiti, Trinidad, Tobago, Cuba, British Guiana, and the Dominican Republic.

In 1935 he served as a member of a party named by the Alaska Rehabilitation Administration to visit and to make recommendations on the development of the Matanuska Valley Colony in Alaska.

Immediately after retirement, in August 1952, he went on a two-year assignment as a member of a party of specialists to the University of the Philippines to engage in teaching and research and to promote better methods in Philippine agriculture.

Since his return from the Philippines and to the day of his death, he was busy practicing his profession for the benefit of his fellow men.

As an Agricultural Engineer, Professor Goodman was well known throughout the state, the nation and in many other parts of the world. His numerous and valuable contributions to the welfare of rural people both at home and abroad have earned for him an enviable reputation. He was loved and respected by all with and for whom he worked. In his widespread activities he acquired many close friends in all walks of life. His parting from our midst leaves a void that no one else can fill. He was a devoted husband and father and took great pride in building for his family a fine home in every sense of the word. The devotion of his family to him and to each other is evidence of how well he succeeded in this respect.

His family, the University, the State and the Nation have lost a faithful and valuable friend.

J. H. Bruckner, B. A. Jennings, F. B. Wright

Richard William Guest

July 7, 1932 - February 24, 1997

Richard William Guest was born in Oklahoma City, Oklahoma on July 7, 1932. He grew up on a grain and beef cattle farm near Menoken, North Dakota. Dick attended North Dakota State University, where he received both his B.S. (1954) and M.S. (1958) degrees, and was a Second Lieutenant in the US Air Force (1955-56). He met Myrth J. Weiser while in college, and married her in 1959.

Dick was appointed Assistant Professor in the Department of Agricultural and Biological Engineering (ABEN) of the College of Agriculture and Life Sciences on September 1, 1958; promoted to Associate Professor with tenure on July 1, 1964; and to Professor on April 1, 1983. He retired September 1, 1991 and was appointed Professor Emeritus. Following retirement, he continued part-time to develop a comprehensive publication on dairy manure management for the Northeast Regional Agricultural Engineering Service. During his thirty-three years with the Department of Agricultural and Biological Engineering, Dick participated in the department's teaching, research and extension functions, but by far his first love was extension and the continuing challenge of applying engineering to the solution of problems associated with the dynamic world of production agriculture. Here, he developed principal specializations and expertise in the areas of Farmstead Engineering and Mechanization, and Animal Waste Management; during a time when rapid change was taking place in farming and solutions to attendant problems was in short supply. Dick loved a challenge and he met them head-on with his eternal optimism and wry smile.

His professional work covered a wide range of topics, the major areas being animal manure management, land application of wastes, milking systems, feeding systems, housing for livestock, energy conservation in livestock production systems, and mechanical fruit harvesting. He was one of the early leaders in developing solutions for the proper handling, utilization and disposal of wastes from dairy and other animal production systems. He attracted a wide national following for this work, well beyond the borders of New York State, and received requests from both national and international agencies for assistance as well.

Dick served as Interim Department Extension Leader and Consultant to the World Health Organization on farm sanitation practices. He was the recipient of several Blue Ribbon Awards from

the American Society of Agricultural Engineers for exemplary publications, as well as designs for agricultural systems, and received an early award (1963) for the college's "Project M" milking systems over-the-road educational demonstration unit that traveled throughout New York State to educate the dairy industry on proper milking system operation, practices and their influence on animal health. He helped design, build and test a successful mechanical cherry harvester, and was co-leader in the design and development of a mechanical harvester for processing apples. He taught Household Mechanics to hundreds of women in the fields of Human Ecology and Agriculture. His consulting activities, both overseas and domestic, have had a marked influence on practices that relate to the maintenance of environmental quality for agricultural production systems, as well as reduce labor tedium and increase production efficiency.

Always concerned with practical innovations and new challenges, in his role as Extension Agricultural Engineer, he advised several thousand farmers about free-stall dairy systems, milking parlors, swine housing, grain drying, ventilation systems, materials handling equipment and related facilities. He also helped many colleagues with the development of research facilities, especially at the Cornell Animal Science Teaching and Research Center, the Swine Barns, and at the Miner Institute in Chazy, New York. For two decades, he taught certified milk inspectors, and was a participant in Empire Farm Days for a decade. Dedicated to improving engineering in agriculture, his efforts and skills cannot be replaced. Dick spent his sabbatical leaves as a research and development engineer with Sperry-New Holland, in New Holland, Pennsylvania; as a consultant engineer with Alfa-Laval in Tumba, Sweden; as well as the Martin Manufacturing Company in Myerstown, Pennsylvania; and the Institute für Landtechnik in Weihenstephan, West Germany. He especially favored the hands-on practice of engineering and getting solutions into the mainstream of application utilization as soon as possible.

Dick was always a faithful supporter of the ABEN family, both professionally and socially. He also gave of himself generously in community activities beyond the university's doors, and most notably as a dedicated member of the Trinity Lutheran Church in Ithaca, New York. In 1995, the Dryden Sertoma Club honored him with its Sertoman of the Year Award. Sertoma stands for Service to Mankind, and for thirty-five years, in both the professional and nonprofessional worlds, Dick was truly Mr. Sertoma. He was a member of the American Society of Agricultural Engineers, the New York State Association of Milk Sanitarians, the Northeast Dairy Practices Council, Tau Beta Pi, Sigma Xi, both the Ithaca and Dryden Sertoma Clubs, a 4-H Leader, and a member of the 4-H Acres Development Committee. Beyond this, over the years Dick

also found some time occasionally to fish, hunt, fly a plane, bowl, play some golf, put on a benefit pig roast, and grow a rose or two in his home greenhouse. He truly enjoyed it all and remembered to "smell the roses" as well as share them with his friends.

Dick and his wife, Myrth, had three daughters: Katrina, Sheryl, and Linda; and four grandchildren, Adam, Nathen, Kyle, and Keirsten. He was understandably proud of them all, and will be long remembered and sorely missed by his family, friends, and colleagues. We can speak for them all by simply saying, "Mr. Sertoma, we salute you".

*Joseph K. Campbell, Wilmot W. Irish, Everett D. Markwardt,
William F. Millier, Ronald B. Furry*

Wesley Winnfred Gunkel

October 17, 1921 - May 12, 2000

Professor Emeritus Wesley W. Gunkel was a dedicated Agricultural Engineer, serving Cornell for a half century and helping numerous students, colleagues and clients find pathways to inventive solutions. His intense concentration on practical engineering problems and his high spirits during adversity are memorable. The corridors of Riley-Robb Hall still echo with his cheerful whistle.

Wes was born in Hope, North Dakota, where daily farm chores helped establish his work ethic. One of his early exploits was skiing on a towrope behind his older brother's truck. Snow covered roads across the plains were windswept and snow banks on either side gave added thrills. During one nasty spill, a ski hit him in the throat and he could not talk for a week. This did not stop his inquisitive mind. He graduated from high school at the top of his class, and entered North Dakota Agricultural College in Fargo, now North Dakota State University. He was honored with induction into Alpha Zeta and Phi Kappa Phi.

Pearl Harbor and World War II changed plans for many young men. Private Gunkel entered military service in April 1943, and left active duty in October 1945 as First Lieutenant. He qualified for the rigorous Student Training Program in the Army Air Corps. As a navigator in U.S. 8th Air Force, he flew from England on a B-17 Flying Fortress. His squadron was one of the busiest in WWII, but Wes only told his experiences when pressed. One mission with several thousand bombers targeted fuel storage outside of Berlin. While flying towards the target, Wes could not see his wingman because of smoke from nearby exploding shells. Although his plane returned from this mission, more than one-third did not.

Returning from another mission, they landed the damaged bomber at a Nazi occupied field in Belgium to make repairs. While racing around to fix the plane, a large number of Belgium citizens arrived. So they packed the plane with these refugees, and were able to get airborne and return to England without any loss of life.

When flying home across the Atlantic, several squadrons of B17s met high headwinds and an approaching storm. With limited fuel and reduced ground speed, the airfield in Labrador was nearly out of range. As lead navigator, Wes calculated a new course through less severe winds. Although some continued on the original course, all planes that diverted to the new course did reach the airfield.

Like many of his generation, Wesley Gunkel was first in his family to graduate from college, receiving a Bachelor of Science degree in 1947 from North Dakota State University. He continued studies in Agricultural Engineering at Iowa State University, earning a Master of Science degree in 1948 and a position as Instructor. That summer, O. C French persuaded Wes to join an expanding faculty in the Department of Agricultural Engineering at Cornell as Assistant Professor. Within five years, he was promoted to Associate Professor and there were new challenges to face. In 1957, Professor Gunkel earned the Ph.D. degree in Agricultural Engineering from Michigan State University, and returned to Cornell, becoming Professor in 1960.

Three sabbatic leaves interrupted teaching and research in agricultural machinery design and applications. In 1962-63, the Gunkel family went to the University of Nigeria in Nsukka where Wes was Chairman of the Agricultural Engineering Department. In 1969-70, the Gunkel family went to Hawaii where Wes was a Consultant with Dole Pineapple Co. and designed one of the first mechanical pineapple harvesters. Their last sabbatical in 1976-77 was in the Philippines at the International Rice Research Institute where Wes was a Visiting Scientist designing machines to reduce human drudgery and improved food production.

One of Professor Gunkel's first research projects at the College of Agriculture was a sprayer for pesticides, but his interests and achievements include bean harvesters, onion drying, wind powered water heating, coated moldboard plows, a robotic grape pruner, automotive pollution and fuel efficiency. Two unique projects explored vacuuming beetles from potato plants, and the "snap-back" of nylon tow ropes. Cooperating with colleagues and graduate students, he produced more than one hundred technical publications and articles, and received a Technical Paper award from the American Society of Agricultural Engineers in 1974. Major contributions included, "Energy Requirements for New York Agriculture, Part I Food Production" (1974); "Part II Indirect Energy Inputs" (1976); and "Bioconversion of Agricultural Waste for Pollution Control and Energy Conservation."

Wes was very helpful to all students, and of his 70 graduate students between 1959 and 1997, eighteen earned Doctoral degrees. He urged several students to enter the James F. Lincoln Arc Welding competition, and a half dozen received substantial prizes for their projects. He was recognized as an outstanding teacher by Agricultural Engineering students and his department in 1976 and in the top 10% by Tau Beta Pi in 1982.

Wes was proud of his colleagues, and an active leader of the departmental awards committee. Many members of his department were recognized with honors because he prepared the

rigorous documentation, especially for the American Society of Agricultural Engineering (ASAE). These results contributed to the high national ranking for Cornell's Agricultural and Biological Engineering Department.

Professor Gunkel was a member of the American Society for Engineering Education, American Association for the Advancement of Science, Society of Automotive Engineers, Council on Agricultural Science and Technology, National Safety Council, Human Factors Society, Fluid Power Society, and American Wind Energy Association. He was most active with the American Society of Agricultural Engineers where he served on committees for Research, Graduate Education, the Division of Power & Machinery, Agricultural Chemical Application, and Nursery and Greenhouse Mechanization. Also a representative of ASAE to the Engineers Joint Council, he was elected Fellow of ASAE in 1980.

Professor Gunkel consulted with many American firms and the Ministry of Agriculture in Ghana. He was an expert witness in more than forty cases, developing reports and testifying where litigation involved product liability and accidents with farm machinery. Safety for operators of farm machinery was part of his teaching, his design philosophy, and his life, perhaps originating from those boyhood accidents on the farm in Hope, North Dakota.

In northeast Ithaca, Wes joined the Cayuga Heights Fire Department, and was a Deacon at the First Congregational Church. He was a charter member of the Ithaca-Cayuga Rotary Club, and its president in 1973-74. In 1979, a severe operation and treatment for stomach cancer were successful. Nearly twenty years later another cancer was found and treated. In spite of this, Wes remained active and cheerful, participating fully in faculty meetings and informal coffees until two days before his death. His ready smile, hearty greetings, and warm friendly personality raised our own spirits under all conditions.

Wesley Winnfred Gunkel is survived by his wife of 54 years, Lucille Peterson Gunkel; his daughter, Sharon, of Ithaca; his son, Gerald, of Tampa, Florida; and two sisters, Eleanor Cornelius and Edith Munter, of Fargo, North Dakota. He is remembered by many more as a stalwart individual, a cheerful survivor, and a compassionate mentor dedicated to Agricultural Engineering and Cornell.

William F. Jewell, Norman R. Scott, Wilmot W. Irish

Paul Raymond Hoff

August 29, 1903-September 4, 1974

Professor Paul Raymond Hoff, born in Dover, Ohio, grew up on a poultry farm and attended elementary and secondary schools in Lisbon, Ohio. He earned the Bachelor of Agriculture degree at Ohio State University in 1928.

During the period 1927-29 he served as extension specialist in agricultural engineering at Ohio State University, and after this experience, he went west to the University of Nebraska, again as extension specialist in agricultural engineering, where he served from May 1929 until February 1934. While at Nebraska, Professor Hoff developed a comprehensive rural sanitation program and obtained cooperation from industry in carrying out the program. He also developed the first intensive 4-H programs at Nebraska in engineering projects on surveying and farm machinery. He joined the USDA Soil Conservation Service in 1934 and carried out field projects in Nebraska and Kansas on soil-saving programs during the "dust bowl" years. In February 1939 he was appointed extension instructor in agricultural engineering at Cornell University and simultaneously enrolled in the Graduate School to pursue a Master of Science in Agriculture, which he earned in 1940. Upon receiving the M.S.A. degree, he was appointed as assistant extension professor in agricultural engineering at Cornell. He was advanced to associate professor in 1945 and to full professor on July 1, 1949.

His programs at Cornell in extension education were quite diverse, encompassing soil conservation, farm drainage, farm machinery, and poultry housing and equipment. During the late war years he devoted much effort to field supervision of fifteen district agricultural engineers who were operating the emergency farm machinery repair program for the New York State War Council. In 1946 an agriculture demonstration train, the "Farm and Home Special," traveled through New York State on the New York Central system to show farm people what was new in agriculture. Professor Hoff managed the three-week tour for the College of Agriculture; his efficient management won praises from both the college administration and New York Central officials.

From 1945 to 1954 Professor Hoff was project leader of the extension program of Cornell's Department of Agricultural Engineering. Hoff collaborated actively with the College of Home Economics in the rural housing and community buildings program that was initiated after World War II. His principal efforts were directed to water supply, sewage disposal systems, and heating systems.

Hoff's interests were in agricultural engineering educational programs, not only in the United States, but also in developing countries. From August 1954 to August 1956 he served as visiting professor with the Cornell-Los Banos project in the Philippines. In

addition to aiding in the rebuilding of the College of Agriculture at Los Banos, he helped establish a drainage system at the college experiment station and conducted research on proper use of irrigation for rice production.

During a sabbatic leave from February 1958 to March 1959, Professor Hoff was engaged by International Cooperative Administration to organize and conduct training programs for instructors of farm machinery operation and service for Mexican extension personnel, agricultural college faculty, employees of agricultural credit banks, and farm machinery distributors.

One of the outstanding accomplishments while he was in Mexico was the establishment, by the Mexican Ministry of Agriculture early in 1959, of a training center to continue, on a permanent basis, the type of machine operation training developed by Professor Hoff.

Because of his interest and concern for technical assistance to developing countries, Hoff retired from Cornell on September 18, 1960, to accept a two-year assignment with the International Cooperation Administration in Brazil. Due to a serious back injury, Professor Hoff chose to accept disability retirement from federal service prior to completion of this assignment in Brazil.

During his twenty-one years at Cornell, Hoff authored or revised over fifty extension publications and prepared many news stories for farmers' benefit. He was a regular contributor to *Extension County News* and wrote frequently for farm magazines. He had great interest in helping people to help themselves. His success in conducting educational programs can be attributed to his ability to instill in people the desire to learn and to encourage them to continue their learning experiences.

Professor Hoff was active in the American Society of Agricultural Engineers, the Cornell Extension Club, Epsilon Sigma Phi, the First Baptist Church of Ithaca, and the Ithaca Rotary Club. In addition to photography, he had a hobby of building radios, stereos, and other electronic equipment.

He was married to Lucy G. Swift in Danville, Kentucky, on March 31, 1929. Their son, Hugh W. Hoff, a graduate of the School of Hotel Administration at Cornell, lives with his wife and four children in Seattle, Washington. For the past several years Professor and Mrs. Hoff have resided at Panoramic City Retirement Community, Lacy, Washington, where Mrs. Hoff will continue to live.

William F. Millier, Orval C. French, Hollis R. Davis

Burton Aaron Jennings

March 12, 1895—March 18, 1964

Burton Aaron Jennings, Professor Emeritus of Agricultural Engineering, died suddenly of a heart attack on March 18, 1964, at his home near Ithaca. He was sixty-nine years old.

Professor Jennings, a native of New York State, was born in Killawog on March 12, 1895. His early years were spent on Long Island and in near-by Cortland County. After graduating from Cincinnatus High School and before enrolling in the New York State College of Agriculture, he came to Cornell as an employee of the Department of Farm Practice. During World War I, while still an undergraduate at Cornell, he was an instructor for the New York State Food Commission. In that capacity he conducted special tractor repair schools and operated a power ditching machine for tile drainage systems on many New York farms. He served also as an assistant instructor in the Department of Agricultural Engineering before receiving his Bachelor of Science degree in February, 1921.

Immediately following graduation from Cornell, Professor Jennings was employed as farm manager at the George Junior Republic, Freeville. He returned to Cornell, April 1, 1922, as an instructor in Agricultural Engineering Courses 2, 3, and 10. On July 1, 1924, he became an extension specialist with primary interests in drainage and farm machinery. He was made an Assistant Professor July 1, 1926. He continued work in the field of extension until July 1, 1939. Professor Jennings became well known and highly respected by New York State farmers for his thorough understanding of the operation and adjustment of a multitude of farm machines. He pioneered in teaching farmers how to properly adjust, repair, and operate farm machines and also conducted many tractor repair schools throughout the state. He has surveyed and planned hundreds of drainage systems, both tile and open ditch, for farms throughout the state.

On July 1, 1939, Burton A. Jennings was made a full Professor and in the fall of that year started his career on the teaching staff. From 1939 to 1951 he was responsible for the courses in farm power, Agricultural Engineering 102, and farm machinery, Agricultural Engineering 103, and from 1946 to 1958 the farm mechanics course, Agricultural Engineering 1. In the many years of teaching, Professor Jennings continued to seek better ways to illustrate the many new concepts that he introduced to his students. He wrote and made available to his students at cost an offset printed textbook for his farm mechanics course. He is remembered by his colleagues and students as an outstanding teacher.

His publications include numerous extension bulletins, departmental mimeographed bulletins, and *Farm Research* and *Agricultural Engineering Journal* articles. In 1945 he received an award from the American Society of Agricultural Engineers, of which he was a member, for a paper, "Mow Curing of Hay."

His research activities were in milk house design and construction, air blast sprayer development, both field and mow curing of hay, and corrosion tests of farm fencing and metal roofing materials. The work with fencing and roofing materials was conducted under the auspices of the American Society for Testing Materials. Professor Jennings was an energetic and stimulating cooperater in interdepartmental research. His approach to problems was basic and original. In addition to contributing a practical viewpoint, he always asked himself and his co-workers: "Why?" During hay-curing studies he invented an ingenious method of labeling plants in the swath so that it was possible to learn just what the side-delivery rake did in windrow "positioning" of hay. Those of us who shared research projects with him could not avoid some feeling of professional improvement.

One of his rare *gifts* was the *ability* to explain even the most complicated subject in crisp, concise English which made it both attractive and simple to every listener. This helped to establish Professor Jennings as one of Cornell's outstanding teachers, both among farmers and resident students.

When the United States entered World War II, Professor Jennings trained the fifteen agricultural engineers who were sent throughout the state on the War Emergency Farm Machinery Repair Program to keep farm tractors and machinery going. This special training in the fundamentals of tractor and machinery operation proved to be a most important factor in the success of this program.

Professor Jennings saw the Department of Agricultural Engineering grow from cramped quarters in the basement of Stone Hall to the modern, well equipped Riley-Robb Hall it now occupies. He took the lead in the planning of this building, working persistently for many years preparing plans and incorporating many of the best features of other buildings until the existing building evolved.

His activities were never limited to those in connection with Cornell University. He was an outdoorsman, and his hunting and fishing expeditions took him into the hinterlands of the United States and Canada. Other sports and hobbies included photography, fly tying, bowling, golfing, and the building of bamboo flyrods. In these, as in all others of his activities, Professor Jennings persistently aimed for perfection.

Professor Jennings retired from the faculty of Cornell University on June 30, 1958. He had served Cornell for thirty-six years. After retirement he added to his many hobbies the task of remodeling

and modernizing an old farm house on Applegate Corners Road. This, as was true with all his endeavors, was done with perfection.

His many friends, colleagues, and former students have recognized his contribution to agriculture by establishing a scholarship fund called the Burton A. Jennings Scholarship for Agricultural Engineering students.

Professor Jennings is survived by his wife, Clara Jennings; a son; two daughters; nine grandchildren; and two brothers.

H. B. Hartwig, E. D. Markwardt , W. F. Millier

John William Layer

August 18, 1927-March 13, 1975

Agriculture lost a dedicated servant with the untimely death of John W. Layer on March 13, 1975, at the age of forty-seven, as the result of a long illness with the rare disease amyotrophic lateral sclerosis. He is survived by his wife, Marie, and their two children, Kathy and Chris.

A native of Buffalo, New York, John served in the United States Army Corps of Engineers during 1945-47. Thereafter he entered Cornell University and received the Bachelor of Science degree in 1951. Upon graduation he was appointed district extension agricultural engineer for the southeastern counties of New York State. In 1956 John returned to Ithaca as an instructor in the Department of Agricultural Engineering. The following year he completed his Master of Science degree and was appointed assistant professor of agricultural engineering. Promotion to associate professor came in 1963. Upon retirement on August 21, 1972, after twenty-one years of service at Cornell University, he was named professor of agricultural engineering, emeritus, by Cornell's Board of Trustees.

John's primary extension responsibility was to develop and carry out an educational program in the design and construction of structures for storing farm produce. He also cooperated in research on ventilation and designs for such facilities. John became one of the leading authorities on storage of fruit, potatoes, onions, and flowers, as well as silage, hay, and grains. His advice and counsel were sought by growers, building consultants, contractors, and manufacturers from all parts of the nation. As an expert in construction of controlled-atmosphere storages for apples, he was called upon to advise farmers in New York and nearby states wherever specialists were not available. His counsel was sought for almost every refrigerated-storage facility built on a farm in the state in the last fifteen years of his career. His extension bulletin *Farm Refrigerated Storages* is considered a model and is consulted throughout the country.

As an active member of the College Floriculture Industry Program Committee, he provided effective leadership in approaching greenhouse environmental control problems. He was one of the key authors of the Cornell extension publication *Fertilizer Proportioners for Floriculture and Nursery Crop Production Management*. This manual and the extension program for which it was developed were highly successful in motivating commercial

flower producers to mechanize and improve crop nutrition practices. The manual continues to be unique and to be used nationally, not only by extension and industry personnel but also by college teachers, as a floriculture text. John also coauthored numerous other publications in the area of greenhouse environmental control. He was appointed leader of the College Floriculture Industry Program in 1970 and served in this role until his illness forced his retirement.

In 1970 the New York State Flower Industries, Inc., recognized him for his industry-wide contributions and service and conferred honorary membership on him. They further recognized his contributions in 1971 with a special citation on behalf of the state's floriculture industry.

Nationally, he was a leader *in* the American Society of Agricultural Engineers, served as chairman of the committee to plan and conduct the North Atlantic Section Meeting of the ASAE in 1965, and was on the planning committee of the national meeting held at Cornell in 1959. He was a member of the Executive Committee of the North Atlantic Region of ASAE and in 1971, chairman of their Farm Structures Division. He was active on several technical committees at the national level of ASAE and contributed to the preparation of some of the standards incorporated into the Agricultural Engineers Yearbook. The society conferred honorary life membership on him in 1972 in recognition of his work and devotion to the society and the profession.

To fulfill John's wishes, the John W. Layer Memorial Scholarship Award in Agricultural Engineering has been established. Its purpose is to encourage professionalism and participation in activities of the American Society of Agricultural Engineers by undergraduate student majors in agricultural engineering.

John was project superintendent of the Farm Buildings Project at the New York State Fair for several years and was responsible for planning and supervising the construction of the major facilities.

He was author of eleven bulletins and dozens of articles for industry and for country extension publications. In national competition he received the ASAE Blue Ribbon Award in the category of extension publications.

Active in community service, John served as a member of the board of trustees of the Presbyterian Church in Trumansburg, chairman of the board of trustees of Cayuga Lodge, chairman of the Brooktondale Community Center, and a member of the Brooktondale Volunteer Fire Department.

John Layer loved life, people, and a good story. He engaged in conversation as both friend and teacher with enthusiasm, knowledge, and a sly, beguiling wit. He often took a positive

position on unpopular issues and said what others feared to mention, but he was never pedantic or overbearing. He respected other points of view. These characteristics served him well in his occupation as an extension agricultural engineer. He worked hard and enthusiastically at helping people solve problems related to engineering and made it a point to know his clients and audiences. As a result, he became an extremely effective teacher with an admirable sense of what to emphasize and when to lighten a lecture with humor. He presented well-organized and aptly illustrated material with clearly articulated delivery—always managing to say just what he intended to say. Most importantly, he could interpret technical subject matter for his audiences so they could appreciate the salient points.

John loved life, and his enthusiasm for it and determination to get back to living it fully carried him through the years of fighting his little-known disease. It deprived him of one of his most prized possessions—communication with the people he loved. His mind remained alert and active, even as his body withered and finally could no longer support his effort to live. Yet he was convinced he would win. His devoted nurse expresses it best: "John was not only a professor at Cornell, but also a teacher to many of us in the medical profession—a teacher of patience and understanding. It was he who taught many of us the real meaning of these words. John was physically vegetated; however, his mental faculties were completely intact to his day of passing. His smile, his blink, and his sparkling eyes will always be a remembrance of this man to whom so many are thankful." John did win.

Carl F. Gortzig, Everett D. Markwardt, Ronald B. Furry

Fred G. Lechner

September 23, 1915-November 1, 1983

The retirement of Fred G. Lechner as professor emeritus, on September 1, 1982, concluded twenty-five years of teaching at Cornell and a total teaching career of forty-two years. Prior to his Cornell appointment Fred taught high school vocational agriculture at Holyoke and Brighton, Colorado. During the time he taught vocational agriculture he also served as a supervising teacher-trainer in agricultural education for the State of Colorado and was a member of the Future Farmers of America Advisers Committee.

Fred came to Cornell in September 1957, appointed as a staff member in charge of developing the new agricultural engineering mechanization teaching facilities. These facilities included hands-on laboratories for carpentry, plumbing, electricity, welding, and lathe work. The astute organization of each of these facilities attests to Fred's pedagogical expertise.

Fred was born in Hudson, Colorado. His college education included a B.S. degree in agriculture (1938) and an M.E. in agricultural education (1952) from Colorado A & M (now Colorado State University). His Ph.D. was attained in 1958 from Michigan State University, where he specialized in vocational agriculture. He met and married Frankie D. Hill while teaching vocational agriculture at Holyoke, Colorado.

Fred's educational background together with his teaching experience in vocational agriculture and agricultural engineering mechanization inspired him to develop a close working relationship with New York State vocational agriculture teachers. He provided special summer classes at Cornell so that they could work toward advanced degrees. He also developed pamphlets, study outlines, and visual aids that were used as resource material for high school vocational agriculture teachers.

Cornell students desiring hands-on experience in carpentry and metal work found that opportunity in Professor Lechner's classes. Basic instructions in woodworking, welding, sheet metal, and lathe were available. After becoming proficient in several of the crafts, a student was encouraged to combine them in a project. Many students designed and built various items such as picnic tables, feed carts, and sewing cabinets for their personal use.

Professor Lechner reached an audience much larger than those in the classroom. Active in cooperative extension, he co-authored bulletins and gave radio talks that made his expertise available to many. Examples of the subjects covered included planning farm

shops, tuning gasoline engines, and techniques of welding. Commercial welders and welding sales representatives stayed in touch with Fred to learn of new methods and techniques.

Fred was professionally active in promoting the teaching of high school vocational agriculture and was a member of the American Vocational Agricultural Teachers Association. He was a member of the American Society of Agricultural Engineers (ASAE) for twenty-five years. He used his influence to maintain agricultural engineering mechanization as a credible activity of the ASAE. As an ASAE member he was secretary of the Agricultural Teacher Education Committee for five years and held membership on the ASAE Instruction in Agricultural Mechanization Committee.

If any of Fred's activities could be called a hobby, it would be the development of mechanical devices. An ongoing project was his version of a lawn mower. Each summer, when his lawn was growing profusely, he would still be working on the latest modification of his mower. This tinkering would go on past the middle of July, which did not matter, as the mower could cut grass even though it was knee high. To save face in the neighborhood Frankie acquired her own mower and used it to keep a presentable front lawn. Fred also built his own orchard spray rig.

As part of his activities in the Department of Agricultural Engineering, Fred developed a cart to be used to distribute feed for livestock. Working together with other Cornell staff, he contributed his mechanical know-how toward the development of an automated plant grower. This device rotated shelves containing potted plants through a lighting and watering cycle. The schedule of the shelf movement could be adjusted to the day-length regimen of the plants. An internal watering mechanism provided water for the plants. Fred was awarded two blue ribbons by the American Society of Agricultural Engineers for these developments.

A large part of Fred's life was devoted to altruistic civic activities. One of these activities was the Lion's Club, which he initially joined during his first teaching assignment at Holyoke, Colorado. He continued his Lion's Club membership during his whole life, serving in various capacities as a local or district official. As a member of the Lansing Lion's Club he received a tribute from the Town of Lansing for his efforts in the renovation of the former Grange Hall into the Lansing Community Center. Fred also was secretary of the New York State Eye Bank, an activity supported by the Lion's Club. Other civic activities included being a Boy Scout leader, a member of the Lansing Central School's PTA, and a member of the Lansing Board of Education for one term.

Fred was an ardent supporter of the credit union movement. His credit union experience began in Adams County, Colorado, where he was a member of the board of directors. He served in various

official positions of the Cornell Federal Credit Union from 1957 through 1967.

Professor Lechner received a number of awards. His most cherished recognition was the Distinguished Service Award for Civic Activities by the United States Chamber of Commerce. College scholastic honor societies included Alpha Zeta, Alpha Tau Alpha, and Phi Delta Kappa. As a high school teacher he was proud that the Brighton, Colorado, 1954 high school annual was dedicated to him. The Future Farmers of America awarded him the Honorary Colorado State Farmer Degree and the Honorary American Farmer Degree. He won four ASAE blue ribbon awards for excellence in developing plans and publications. The Agricultural Teachers Association of New York gave him a journalism award in 1972 and an honorary life membership in 1974. In addition to being Lansing Lion of the Year for 1969-70, Fred was awarded so many other Lion statuettes that there was no more room for them on the mantle.

Professor Lechner is survived by his wife, Frankie, of Ithaca; four sons and a daughter (all graduates of Cornell); and three grandchildren. John and Robert are involved as Ph.D.'s in cancer research and are located in Washington, D.C. Larry is a construction contractor, and Leland a professional surveyor (both located at Vail, Colorado). Linda is employed in food technology research at Hamlin, New York.

Wesley W. Gunkel, Norman R. Scott, Robert T. Lorenzen

Ruby M. Loper

January 12,1901 - January 17,1990

Ruby M. Loper was born in rural Douglas, Nebraska where she developed a positive work ethic and a strong and sympathetic understanding of her fellowman. A dedication to teach others in ways to improve their lives was formally begun in 1925 when she became a student and draftsman in the College of Engineering and Architecture at the University of Nebraska, Lincoln, Nebraska. It is believed she is the first woman to be graduated from that college and in 1934 was appointed to the position of assistant agricultural engineer, which she held until 1946. She was a member of the Nebraska extension staff for 21 years. She owned Nebraska farmland all of her adult life and identified with the problems of farm ownership and management. One part of her early Nebraska extension career was to survey farms for contours and terraces, a new practice at that time, to prevent soil erosion.

In 1946 Professor Loper joined the Cornell faculty as extension architect with a dual appointment in the Department of Housing and Design in the New York State College of Home Economics and the Department of Agricultural Engineering in the New York State College of Agriculture. She was the first woman to hold this position in New York State.

Although a person of short stature and a predecessor of Women's Liberation, Professor Loper was a true pioneer in being able to actualize her teaching to all-male audiences in the building-trades. She spoke and wrote with conviction and authority, winning the respect of her audiences. Her efforts assisted many farm families to attain housing to meet their living requirements; conducted building technology seminars for building-trades people; assisted county extension associations in planning extension headquarters; and in collaboration with the Department of Institution Management, provided plans for community food service facilities.

She served on numerous national housing committees and was the author of housing extension bulletins as well as articles in architectural, engineering, home economics and commercial magazines. In 1955 the Lambda Chapter of Epsilon Sigma Phi awarded her a certificate for highest achievement in written material for advancing the work of the Cornell Extension Service. Her many accomplishments were due to her endless energy and dedication to education.

Professor Loper was held in high esteem nationally and statewide for her leadership roles in providing quality housing information and housing programs. She was a charter member of the American Association of Housing Educators and served on its Board of Directors. Additionally, she served as a chairman and member of the House Plans and Planning Committee of the Northeast Land-Grant Universities.

After retirement in 1967 Miss Loper remained in Ithaca and resided at the Ramada Inn where the entire staff became "her family". She became a benefactor of the College of Human Ecology, formerly Home Economics; and established two department loan-funds for students in financial need and also contributed generously to various college funds and community causes.

She nurtured many continuing and rewarding friendships during her retirement years and continued her love of reading. She surrounded herself with books of many subjects and interests in keeping with the many facets and interests of her personality. Ruby M. Loper, a true friend, a colleague, a person of integrity, humor and protocol, a scholar truly missed.

Bernice Hopkins, Clark E. Garner



Robert T. Lorenzen

February 16, 1917 – December 4, 2011

Robert (Bob) Theodore Lorenzen was born on February 16, 1917 in New Leipzig, North Dakota, on a homestead located on the flat, windswept prairie, to pioneer settlers Theodore and Hattie Marek Lorenzen. He was reared on their expanding family crop and livestock farm, assisted his father in all aspects of the operation, and graduated from New Leipzig High School in 1935.

In 1936, he joined the Civilian Conservation Corps (CCC) as a crew leader in construction and maintenance, where he served until 1939 when he entered college and received a B.S. in Agricultural Engineering from North Dakota State College (now North Dakota State University), Fargo in 1943. From 1943 to 1946, he served in the US Army as a First Lieutenant in the European Theater in World War II and was awarded two Purple Hearts and cluster for combat wounds he received in 1944, as well as the Presidential Unit Citation and the French Fourragere.

Following his discharge, he was an engineer for the University of Wisconsin's research farms from 1946 to 1954, where he was responsible for the planning, design, drafting and construction supervision of administrative and service buildings for the University Branch Experiment Stations, as well as engineering and maintenance of existing structures. Bob was efficient and supremely organized, and succeeded in earning a BS in Civil Engineering from the University of Wisconsin, Madison in 1954, and an MS in Agricultural Engineering from the University of California, Davis in 1957, where he was a research and teaching assistant. He was an Assistant Professor at Colorado State University from 1956 to 1959, and then joined the faculty of the Department of Agricultural Engineering at Cornell University as an Assistant Professor. He was appointed Associate Professor in 1965, Professor in 1982, and then Professor Emeritus upon his retirement in 1982. He was a registered professional engineer in the State of New York, and served on the faculty for twenty-three years.

Bob's primary professional interests arose from his early vocational experience in farming and construction. He was especially interested in farmstead production and storage systems, with emphasis on structural integrity, labor efficiency and energy conservation. He participated in the design and construction supervision of farm-type research and demonstration facilities, and consulted on a wide variety of agricultural and other

structural designs and problems, including many as an investigator and expert witness. He also held a US Patent for a mechanical egg counter for cage laying systems.

Bob was active in teaching, research and extension. His principal courses related to farmstead production systems and their environments, and agricultural structures design with an emphasis on utilization of wood as the structural material. He was a meticulous, supremely organized recorder – one look at his lecture or research notes was convincing evidence, and he carried that trait into the classroom and onto the blackboard! His extension interests were wide ranging, including projects such as truss design for suspended cage layer systems, thermal characteristics of log walls, and prevention of collapse of farm buildings and storage structures from natural forces. Similarly, his research interests lay in moisture control and thermal insulation in agricultural buildings, safe design of agricultural production facilities, and fastener systems for use in wood structural members. He loved working with wood! He “got the word out” beyond the classroom by authoring print and radio articles for the Cooperative Extension County News Service, and wrote dozens of articles for the department’s publication, the Ag Engineer’s Notebook, that was disseminated to a broad extension audience, and authored some forty research publications and reports. He also was a recipient of a Blue Ribbon Award for Publications from the American Society of Agricultural Engineers (ASAE).

His interests and achievements were also recognized via membership in Alpha Zeta, Chi Epsilon, Scabbard and Blade, Blue Key, and Sigma Xi. He maintained professional contact with his peers through membership and direct participation in the American Society of Agricultural Engineers (now ASABE; a Life Member), National Society of Professional Engineers (NSPE), American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), American Society for Testing and Materials (ASTM; now ASTM International), Society of Wood Science and Technology (SWST), Forest Products Research Society (FPRS), and the Council for Agricultural Science and Technology (CAST).

Bob certainly wasn’t all work and no play; he had interests in poetry, photography, inventing, travelling, flying small planes, and, especially, dancing – ballroom, square and line dancing. In 1954, he married Mary Kathleen Junkman, a teacher, who became his loving wife and dance partner for thirty-eight years, until her death in 1992 from complications due to diabetes. They especially loved square dances and would travel far and wide from their home near the Cornell campus in Varna, New York to attend them. And it was the love of dancing that brought Bob his next love, Margaret Thacher Brownell, a widow whom he had later met at square dances.

Margaret was a retired nurse and author of children’s books, both aspects of her skills that would add important meaning to Bob’s life following their marriage in 1993, and operated a bed and breakfast in Dryden, New York. Their relationship blossomed, and joyfully peaked when they visited their family origins in 1996 – England for Margaret, and Germany for Bob. Eventually, Bob developed dementia and Margaret’s skill as a nurse was needed daily to watch over him. In 2007 Margaret published a book about his life, titled *A Life to Remember*, a loving tribute to her dancing partner of eighteen years.

Bob was a past member of the St. Luke Lutheran Church and was a current member of The First Presbyterian Church of Dryden at the time of his death. He is survived by his beloved wife, Margaret; stepchildren Kathlene (David) Gross, Gary (Judith) Brownell and William Brownell; eight step-grand children, four step-great grandchildren, and several nieces and nephews.

To know Bob was to know a friendly, quiet man. He had a broad smile for everyone, accented by his sparkling eyes. Borrowing one of his favorite exclamations, "Yep!", he was a great friend to love and remember.

Ronald B. Furry, Chairperson; Everett D. Markwardt, Norman R. Scott



David C. Ludington

March 22, 1934 – February 12, 2011

David Corbin Ludington was born on March 22, 1934 to Ralph Corbin and Gertrude Fenner Ludington in Holley, New York, and raised on a fruit farm. Dave, as he was affectionately called, received his BS (1956) and MS (1959) degrees in Agricultural Engineering from Cornell University, and joined the Department of Agricultural Engineering faculty as an Assistant Professor in 1959. He was promoted to Associate Professor in 1964 and Professor in 1982. He received his Ph.D. (1968) in Agricultural and Sanitary Engineering from Purdue University with support of a National Science Foundation Science Faculty Fellowship. Dave was named Professor Emeritus of Biological and Environmental Engineering upon his retirement in 1995.

During his tenure, Dave performed with innovation, quiet leadership and notable effectiveness in all three functions of the department's mission: teaching, research and extension. He was appointed Department Extension Leader in 1992 at a time when the Department's Extension program was making a significant shift from specialist centered to program centered outreach. During his career, he served on the graduate committees of over three dozen students. He enjoyed the close interaction between learning and personal development in a very wide range of technical studies. His investigations ranged from generation of electrical energy from rejected engine heat, to the handling, storage and processing of dairy and poultry wastes, to energy flows and applications of electrical energy in farming with emphasis on dairy systems. Conservation, efficiency and safe use of energy were his primary guiding principles. He authored or co-authored over 80 technical papers, articles and reports on these and related topics.

In 1989 Dave formed the Cornell Agricultural Energy Program (CAEP) to encourage the efficient use of electrical energy through innovative engineering design, conservation and load management. Electric power companies and other agencies were interested and willing sponsors of his work. He demonstrated effective energy use with its concomitant savings for milk harvesting and cooling, farm production system ventilation system selection and operation, stray voltage elimination, lighting control, water heating, and other on-farm applications. A

representative set of operating dairy farms were closely monitored and utilized for demonstration purposes. In 1992, with F. Guo, R.A. Pellerin and D. J. Aneshansley, he received a patent for a Two-Level Vacuum System Controller with Adjustable Speed Drive that reduced, by more than 50%, the energy used by vacuum pumps for milking dairy cows. He later was involved in the commercialization of this equipment. This invention has been adopted both nationally and internationally, providing a significant reduction in energy demands, noise levels associated with vacuum pumps and cost for milking. In another energy saving effort, Dave was also Co-director of the Small Business Energy Efficiency Program from 1989 to 1992. Dave had notable success in obtaining substantial research project funding from a variety of sponsors, principally those that dealt with energy. Never one to remain idle, following retirement he formed the DLTech Inc. consulting firm to support operational and technological improvements for dairy farms. He was active in this business right up to his untimely death.

Dave was recognized by the students as one of the top ten members of the Engineering Faculty as an outstanding teacher, and also received the Cornell ASAE Student Branch Outstanding Faculty Award. Recognized as a compassionate and effective undergraduate advisor, Dave was much beloved by his advisees. During his teaching career, he taught thirteen courses, five of which he originated. He was an early leader in recognizing the importance of providing instruction in environmental problems and their remediation. He participated in thirteen College of Agriculture and Life Science and College of Engineering committees, and chaired the Department's Committee on Undergraduate Teaching from 1975-79, and again in 1984-89. Dave was always willing to provide time and energy to department, college and university endeavors, and did a superlative job.

Dave was an active member of the American Society of Agricultural Engineers (ASAE), participated on several of its technical committees, and chaired the Program Committee of the ASAE North Atlantic Region's Executive Board. In 1984, he received an Extension Educational Aids Blue Ribbon Award from ASAE. He was also a member of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and served as the ASAE ASHRAE Liaison Committee Chairman. He was elected to membership in Phi Kappa Phi, Sigma Xi, and Alpha Epsilon, and was a member of the American Society for Engineering Education (ASEE). In 1996, he received the National Food and Energy Council Distinguished Service Award.

Dave is survived by his beloved wife of 54 years, Aletta (Letty) Manchester Ludington (Cornell 1957), his son Paul (Teresa) Ludington, daughters Deborah (James) Stocker and Anne (Gene) Mage, eight grandchildren and one great grandchild. He was a devoted and active parishioner of the Bethel Grove Bible Church, holding many positions of responsibility as well as devoting time to the ministry of his church. Dave was an extraordinary and generous individual and will be sorely missed by all.

Ronald B. Furry, Chairperson; Daniel J. Aneshansley, Gerald E. Rehkugler

John Clarence McCurdy

April 23, 1878 - December 10, 1973

John Clarence McCurdy, professor of agricultural engineering, emeritus, died December 10, 1973, at Oak Hill Manor, Ithaca, at the age of 95. He was born in Mercer County, Pennsylvania, on April 23, 1878.

Clarence McCurdy graduated from Fredonia (Pennsylvania) Preparatory School and then taught school for three years. He then attended Grove City College and graduated with the B.S. degree in 1905. Following this, he served as principal of Vandergrift Heights schools for one year. The next year and for several succeeding summers he was in city engineering work in Grove City, Pennsylvania. In the fall of 1907 he entered the School of Civil Engineering, Cornell University. He was a student instructor in the school and taught in summer surveying camps. He graduated with the Civil Engineering degree in 1912 and did graduate work the following year in sanitary engineering. He was an instructor in civil engineering until 1915.

In September 1915, J. C. McCurdy became an instructor in Rural Engineering (later Agricultural Engineering) in the College of Agriculture at Cornell University. He was promoted to assistant professor in 1916 and to professor in 1923.

During World War I he was employed for three summers by the J. G. White Management Co. for railway evaluation work, and for two summers he was in charge of their engineering work.

Professor McCurdy did some of the early work in agricultural waste management, having done research on the disposal of creamery wastes for the New York State Milk Conference Board.

He was a charter member of the Soil Conservation Society of America and was an engineering adviser to the Soil Conservation Service from 1936 until his retirement in June 1946.

He held a New York State Professional Engineer's and Surveyor's license in the early days of licensing, when few held such licenses. He did considerable private practice, which he continued after his retirement. One job was engineer in charge of foundations for the Plant Science building on the campus.

He has written on sewage disposal and had a College bulletin on the use, construction, and building of septic tanks. He wrote on farm road construction and had a bulletin on the use and making of concrete on the farm.

Professor McCurdy was a good teacher, having taught for thirty-

one year. He taught farm engineering, drainage and irrigation, and the use of concrete. His courses were taught with the best engineering ideals and the highest of standards. He instilled in his students the desire to do the job thoroughly and accurately. He was a disciplinarian, but he had a sincere interest in the students and they had a high regard for him. Students often sought him out and asked about him after graduation.

"Mac," as he was known by his friends and colleagues, was a family man who enjoyed having his children and grandchildren around him. He and his wife, Adda Botts McCurdy, who survives him, celebrated their sixtieth wedding anniversary in 1969. He is also survived by three daughters, Mrs. Helen Grommon, Mrs. Ruth (M.R.) Shaw, and Mrs. Mary Jaffurs; a son, Colonel Leon McCurdy; a sister, Mrs. Lucille Gibson; fourteen grandchildren and fourteen great-grandchildren.

He lived in Forest Home, next to the campus, from early in his college life until his death, having spent only a short time in the Oak Hill Manor Nursing home.

A. W. Gibson E. S. Shepardson

William Frederick Millier II

August 31, 1921 – February 13, 2002

A precise professional, an innovative engineer, and a ready resource for solving technical design problems has departed from the Ithaca scene. His teaching of the fundamentals for tractor power, and the specific needs for agricultural machines has helped many students to excel in their careers. His research with forage conveying, fruit harvesting, seed pelleting and pesticide application has helped many consumers benefit from low cost fruits and vegetables. During his lifetime, Bill Millier was also recognized as a faithful fireman, careful clock repairman, conscientious churchman, stubborn golfer, and loyal family leader.

William Frederick Millier was born on a farm in Mottville, New York, a few miles southeast of Skaneateles. His schooling started in a one room rural school in Sennett, and in spite of regular farm chores, he was one of the leading scholars of his class at Skaneateles High School. He entered the College of Agriculture at Cornell University in 1938. The advent of a war emergency program found Cornell undergraduate Millier preparing special bulletins to help farmers. His bulletins included "Tune up the Tractor", "Cultivator Adjustment" and "Common Binder Problems." As an additional contribution to the war effort, he joined the Army Air Corps in 1944, and served as an electronics technician until World War II ended.

Bill received his Bachelor of Science degree from Cornell's College of Agriculture in October 1945. He then took a position as a District Agricultural Engineer in the Department of Agricultural Engineering, which often led him to Auburn, New York, where he married his lifetime partner, Mary Sumislawski, at an August 1947 wedding.

Recognizing the need for a graduate degree and the challenges of ventilating dairy barns, Bill became a Research Assistant working with Professor Clesson Turner and earned his Ph.D. degree in 1950. Their innovative work created a ventilation system that remains a seminal development in ventilation of structures for dairy and other animals. A half-century later in 1998, this work, developing a slot inlet ventilation system, was recognized by the American Society of Agricultural Engineers. A plaque installed at the front entrance of Riley-Robb Hall on the Cornell campus honors Professor William Millier. The inscription reads:

SLOTTED INLET VENTILATION
AN HISTORIC LANDMARK
OF
AGRICULTURAL ENGINEERING

A CRUCIAL STEP IN THE EVOLUTION OF MODERN ANIMAL AGRICULTURE WAS THE DEVELOPMENT OF MECHANICAL VENTILATION METHODS FOR ANIMAL HOUSING. AIR INLETS ARE PIVOTAL TO GOOD VENTILATION.

IN 1948, WILLIAM F. MILLIER, WORKING AT CORNELL UNIVERSITY UNDER THE DIRECTION OF PROFESSOR CLESSON TURNER, TESTED AND PUBLISHED THE CONCEPT OF THE SLOTTED INLET. PROFESSOR TURNER AND OTHERS AT CORNELL UNIVERSITY SUBSEQUENTLY CONTINUED TO DEVELOP SLOTTED INLET SYSTEMS AND SYSTEMATIZE DESIGN METHODS.

SLOTTED INLETS WERE QUICKLY AND WIDELY ADOPTED THROUGHOUT THE UNITED STATES TO IMPROVE FARM ANIMAL ENVIRONMENTS AND HAVE BEEN THE MOST WIDELY USED INLET TYPE FOR MECHANICALLY VENTILATED AGRICULTURAL BUILDINGS.

DEDICATED BY THE ASAE 1998

In 1950, the opportunities in Minnesota beckoned and the Milliers went to Saint Paul where Bill became a registered Professional Engineer and a Research Associate analyzing labor needs and developing practical processing of rations on dairy farms. Bill and Mary soon realized that Ithaca was a bit warmer than Saint Paul, and accepted when Orval C French offered the position of Assistant Professor of Agricultural Engineering, effective November 16, 1952.

During his career at the Department of Agricultural Engineering, he rose through the ranks with appointments as Associate Professor with tenure in July 1956, and Professor in July 1964. He has authored and co-authored some eighty-one publications. Upon his retirement on October 1, 1986, he was awarded the status of Professor Emeritus.

His 1959-60 sabbatical leave was spent as a Design and Product Test Engineer with New Holland Machinery Company, New Holland, Pennsylvania, testing and improving forage-handling equipment. In 1967-68, the Millier family went to Riverside, California, where Bill worked with Galen K. Brown et al at the Harvesting and Farm Processing Research Branch, AERD, ARS, USDA at the University of California, Riverside. He studied the weight loss and internal atmosphere of navel oranges influenced by washing, mechanical injury, wax coating, and storage conditions. In 1975-76, Bill and Mary went to Wageningen in the Netherlands, and his search for improvements in mechanized apple harvesting took him to many parts of Europe.

Professor Millier was a dedicated teacher as well as a creative and productive researcher. His courses in farm machinery were heavily subscribed and his laboratory exercises were noted for creativity and thoroughness. Those who were enrolled in his class well remember his demands for excellence in data processing and report writing.

His research activities were wide ranging and his creative efforts resulted in several patents and unique designs. Much of his work involved unique solutions to materials handling problems. His leadership with auger conveyor research resulted in definitive descriptions of the capacities and power requirements of screw conveyors. A belt-tube forage conveyor was also developed for rapid forage handling. His leadership in mechanized apple harvesting resulted in several machines that contributed to the improvement of handling and harvesting apples for the fresh market. Numerous graduate students benefited from his creative ideas in such diverse areas as seed pelleting, forage blower design, and fertilizer distribution. His creative contributions continued throughout his retirement through his almost daily presence in Riley-Robb where he was always ready with a new idea.

As a personal friend, he was immensely loyal and sometimes painfully honest in his support and criticism. There were no hidden agendas with Bill. You always knew that you were getting a straight answer to whatever question you raised, whether it was professional or personal. His presence at the weekly coffee gatherings in the Riley-Robb seminar room is sorely missed with the passing of a great professional, friend, and colleague.

Bill is survived by his wife, Mary; sons, William and John; daughters, Kay and Barbara; grandsons, Andrew, Robert and John. He is also survived by a sister, Rachel Gardner of Penn Yan; and by six nieces and thirteen nephews.

Roger A. Pellerin, Gerald E. Rehkugler, Wilmot W. Irish

Juan Estevan Reyna

December 26, 1878 – October 7, 1974

Juan Estevan Reyna was born in the state of Morelos, Mexico; received his early education in a private school in Cuernavaca, the capital of Morelos; and then spent three years in Denver, Colorado, in a Jesuit School, College of the Sacred Heart, later called St. Regis College. In 1893 he transferred for one year's work in the Ithaca High School, after which he spent three years in Sibley College at Cornell in electrical engineering. Then, because his father was interested in mining, he transferred in 1897 to Columbia School of Mines. Upon his father's death in October of that year, he changed back to electrical engineering and received the degree of E.E. from Columbia University in 1898, after which he returned to Ithaca and took a summer course in civil engineering. After a year in the engineering department of R. Hoe and Company, manufacturers of printing presses, he returned to Mexico to settle his father's estate, a sugar plantation of fifteen thousand acres, of which he became manager. In 1906 he was construction engineer of a canal eleven miles long, carrying 106 cubic feet of water per second to irrigate approximately five thousand acres of land planted in rice and sugarcane. This involved the design and construction of a dam across the river, the dam gates, the sluice gates, and twenty-two aqueducts.

In 1910 while Professor Reyna was visiting in Ithaca, political disturbances broke out in parts of Mexico; the state of Morelos was taken over by non-government forces; the large estates were overrun and financial return to the owners ceased. In 1912, being thus deprived of income, Professor Reyna accepted a position in the Department of Drawing at Cornell, under Professor W. C. Baker, to teach mechanical and perspective drawing, a connection that continued for seven years, when that work was transferred to the Department of Agricultural Engineering, where it has since remained. In 1921 the federal government in Mexico took over the Reyna plantation and divided the irrigated land into small parcels, which they distributed among the families of the neighboring towns, promising at the same time to reimburse the owners at a fraction of the fair value of the property. Because there appeared to be no hope of ever receiving this payment or recovering control of any of the property, Professor Reyna became a citizen of the United States. During World War II Professor Reyna spent six months in Washington as engineering consultant to the coordinator of the Inter-American Affairs Emergency Rehabilitation Division in preparing designs and drawings of improvements of simple

implements and equipment to assist the less educated of the farming population of Latin America.

Professor Reyna was a master of his subject, being expert as a draftsman, a penman, and a scientific illustrator and in the special field of perspective drawing; as a teacher, while strict and demanding and always requiring accurate and correct work from his students, he was always sympathetic and cooperative with any young person who was desirous to learn, always ready to give special help where it was sought.

Professor Reyna was well known on the campus for his vigorous and skillful games of tennis and squash, which he played until his eightieth year. He developed an indoor tennis-like game that he and his friends played frequently. His other interests included floriculture, the study of diet and vitamins, and the study of the archaeology of the Aztecs of his native country.

Professor Reyna retired on June 30, 1946, but was called back to teach for an additional year.

He attributed his long life to "clean living," lots of sleep and a good wife, who died several years ago. He stopped smoking at age seventy because it might interfere with his "wind."

He and Mrs. Reyna celebrated their golden wedding anniversary in 1947, marked by a special blessing bestowed upon them by Pope Pius XII.

He leaves a son, Leon C. of New York City, two daughters, Mrs. Phillip (Nenetzin) White of Mecklenburg and Mrs. Frederick (Nancy) Todd of Stamford, Connecticut, eight grandchildren, and twelve great grandchildren.

All who knew him will remember him as a very sociable, friendly person who liked company and enjoyed living.

O. C French, E. S. Shepardson

Howard Wait Riley

May 2, 1879 - August 19, 1971

Howard Wait Riley, professor of agricultural engineering, emeritus, was invited by Dean Liberty Hyde Bailey in 1907 to develop applied engineering educational programs to improve the life of rural people. Professor Riley accepted this challenge and initiated the Department of Farm Mechanics in the College of Agriculture at Cornell, in the basement of Stone Hall. The name of the department was changed to that of Rural Engineering in 1913 and to its present name of Agricultural Engineering in 1930.

Professor Riley served as Department head until 1944 and was one of two men for whom Riley-Robb Hall was named upon its completion in 1956. He retired from Cornell in 1947.

Professor Riley was born in East Orange, New Jersey, son of William H. and Louisa Lord Riley, and came to Ithaca with his family in 1894.

In 1901 he received the Mechanical Engineering degree in electrical engineering at Cornell. Electrical Engineering was not considered mature enough at that time to award degrees, as alternating current was only then being proved as superior to Edison's direct current.

His initial employment was that of chief draftsman with United Telpherage Company in New York City. At the end of three years he resigned from this position to accept an engineering post with Morse Chain Company, then located in Trumansburg, New York.

Two important events in the life of Professor Riley occurred in 1906. He married Julia Whiton Mack of Ithaca, and he resigned his position with Morse Chain Company to accept an instructorship in the Senior Mechanics Laboratory of Sibley College at Cornell. In this position he became intrigued with internal-combustion engines, and in later years his knowledge of and interest in these engines earned him the title of "Gas Engine" Riley. During his early years on the faculty he owned and operated the only automobile making a daily appearance on the Agricultural campus.

From the time the department was organized until 1946, Professor Riley was known among students for his lucid presentation of subject matter in the courses that he taught, which included introductory mechanics, structures, drainage, surveying, and dairy mechanics. It was his aim to make his courses not only vocational, but to have his students understand sound engineering reasoning and application.

Wishing to add a firsthand knowledge of agriculture to an engineering background, Professor Riley in 1913 purchased a farm on West Hill, which he operated as a successful dairy enterprise until he sold his registered Holstein herd in 1946.

In his early days of teaching, to develop coordination between mind and hand, Professor Riley authored an extensively used bulletin on knots, splices and hitches. This bulletin became the pattern for that section of the *Boy Scout Handbook*.

Because of his innate interest in the improvement of life on the farm, it was clear to him that the most important improvement to rural living was running water in the home. This, however, required some safe means for disposing of the water following use. So he studied the problem of sewage disposal systems that would be satisfactory and at the same time simple to construct. This work resulted in a bulletin setting forth a new and original design of a concrete septic tank that is still recommended by engineers and health departments.

The work on septic tanks was followed closely by a 3,500-mile tour during the summer of 1920, when Professor Riley, equipped with a truck and trailer-load of demonstration equipment, covered the state giving demonstrations on how to install water and sewage disposal systems in farm homes.

Professor Riley was one of the judges at the last international Winnipeg Motor Contest, held in 1913, where huge internal-combustion engine tractors of the day were tested.

During World War I he conducted extension tractor schools; he also conducted one of the first tractor demonstrations in New York State and gave an early demonstration of horse-drawn grain combine harvesters. He designed the first test device to obtain a visual record of spray pattern from spray nozzles. He did research on milk cooling and electric fence controllers, and also devised an important element of the basic system for natural draft dairy stable ventilation. From 1943 to 1947 he was a consultant for Harry Ferguson, Inc., on haying machinery.

Professor Riley was one of eighteen charter members of the American Society of Agricultural Engineers, which was organized in 1907. He was a life member, and fellow, and the fifth president of this society. He was a member of Phi Kappa Phi, and for two decades prior to his retirement he served as a faculty adviser to the Christian Science Society at Cornell. He was also a devoted participating member of the First Church of Christ Scientist of Ithaca.

Professor Riley was a pioneer in the field of agricultural engineering; he was always ready to experiment with any new machine or mechanical theory if he thought that it would improve the welfare of the rural family.

Survivors include a son, Manton L. Riley, of Canandaigua, New York, two grandsons, and three great-grandsons.

Anson Wright Gibson Orval C. French, E. Stanley Shepardson

Byron Burnett Robb

AUGUST 8, 1882—JULY 8, 1961

Byron Burnett Robb, Professor Emeritus of Agricultural Engineering, died on July 8, 1961 after a long illness. He was born at Webster, New York, on August 8, 1882, to Frances and Charles Robb.

He attended the rural school at Webster, New York, and in 1904 graduated from Webster High School. After a year of postgraduate study at the same school he was granted a three-year certificate to teach in rural schools of the state.

From 1905 to 1907 he taught in School District No. 7, Town of Webster, Monroe County. In the fall of 1907 he entered Cornell University as a freshman and in 1911 received the degree of B.S. in agriculture. In the spring of 1909, his sophomore year, he was employed as a student assistant to Professor H. W. Riley, head of the Department of Farm Mechanics (now the Department of Agricultural Engineering), which position he held until graduation. After graduation he was appointed an instructor in the same department and continued his studies as a graduate student. In 1913 he received the degree of M.S. in agriculture from Cornell. He was the first student at Cornell, and one of the first in the country, to make his major study for an advanced degree in the field of what is now known as agricultural engineering. He pioneered research in this field.

On August 7, 1912, he married Miss Georgia Bills of Union Hill, New York. To this union were born two daughters, Mrs. Frances (Robb) Bowman and Mrs. Julia Ann (Robb) Newman, both of Cayuga, New York. At his death there were ten grandchildren.

In 1913, after receiving his Master's degree he was appointed Assistant Professor of Agricultural Engineering and in 1919 was promoted to Professor. He served in this capacity until June, 1950, when he retired with the rank of Professor Emeritus. During the period 1945-1947 he was head of the department.

During the summers of 1911 to 1915 he was drainage engineer for the New York State Department of Agriculture. In the school year 1923-1924 he studied in the Harvard Graduate School of Education. During World War II, as a member of the Farm Machinery Division of the Emergency Food Commission of the New York State War Council, he organized a corps of twelve district agricultural engineers who did outstanding service to the state and the nation in mechanizing agriculture for greater food production.

Professor Robb's outstanding ability as a teacher was not limited to the Cornell campus. He pioneered extension work in his field and was project leader in extension in his department until 1935. He knew New York agriculture and understood New York farmers. His exceptional ability to interpret technical subject matter into the farmer's language and his unerring judgment on what was best for agriculture made his extension work extraordinarily effective. Under his direction the extension program in agricultural engineering in New York State became one of the best known and most highly regarded in the nation. He pioneered many of the aspects of present-day extension *in* agricultural engineering.

In addition to his extension work Professor Robb managed to carry on considerable resident instruction. At one time or another he taught most of the early courses offered by the department. His outstanding achievement in resident teaching was the organization and development of a course in household mechanics for women students. Here, as in his extension work, his ability to explain technical subject matter in nontechnical terms opened a new world of experience to the woman student. The large enrollment in his classes over a period of many years is indicative of his success. At no other institution has such a course been so successful.

In addition to his extension and undergraduate teaching he skillfully and understandingly guided many graduate students through their studies and their research. Many of his graduate students now hold important positions throughout this country and abroad. He also gave freely of his time and sound advice to younger men of the department. He never turned down a sincere appeal for help from anyone.

Professor Robb was senior author of the book *Farm Engineering* (1924) and was author and co-author of a number of extension bulletins. His unusual ability to criticize constructively and to edit what other members of the department wrote has left his mark on most of the books and bulletins published in the department during the past fifty years.

In addition to his work at Cornell, Professor Robb gave a brief series of lectures at Ohio State, Missouri, and Columbia Universities. He was chairman of the G.L.F. Conference Board and was special consultant to the industrial and agricultural machinery section of the Standards Division O.P.A. during World War II. He was active in his professional society, the American Society of Agricultural Engineers, and served a term as chairman of the North Atlantic section of the society.

Active in fraternal and civic affairs, he was a thirty-second-degree Mason and for 31 years was trustee of the Ithaca Masonic Temple Corporation. In March, 1961, he received a Masonic fifty-year service pin. He was a past president of the Acacia Alumni

Corporation and a member of Phi Kappa Phi and Epsilon Sigma Phi. He was a member of the Grange for fifty-three years. For many years he was a member of the Tompkins County Fish and Game Club and served as a merit badge examiner for both Boy Scouts and the Girl Scouts of the local councils. He belonged to the Episcopal church.

Those who knew him as "Professor Robb" also knew him as a friend. He will be missed by a multitude of people whose lives have been enhanced by his long years of faithful service to his state and to his nation.

O. C. French, R. H. Wheeler, F. B. Wright

Louis Michael Roehl

October 21, 1881—September 16, 1956

Louis Michael Roehl, for 30 years an active member of the staff of the Department of Agricultural Engineering and Professor Emeritus since 1948, died in Ithaca on September 16, 1956 after a long illness. He was born on October 21, 1881 at London, Wisconsin to Christian and Sophia (Albrecht) Roehl.

As a boy he attended a country school at Helenville, Wisconsin, then did preparatory work at both Whitewater Normal, Whitewater, Wisconsin, and Stout Institute, Menomonie, Wisconsin, from which Institute he received the B. A. degree in 1919.

On August 3, 1910 he married Minnie Barbara Kaercher at Minneapolis, Minnesota. He and the late Mrs. Roehl are survived by their two sons, John and Harvey, and by two grandchildren.

Professor Roehl had a long and distinguished career as a teacher. This career began in the years 1903-1904 when he taught at Helenville, Wisconsin. From 1904 to 1908 he was principal of a grade school in Madison, Wisconsin. He then turned to the technical field where he was to find his main life work, holding in turn the following positions: teacher and Director of Industrial Arts at Negaunee, Michigan (1908-10); teacher of Farm Mechanics in the Dunn County Wisconsin School of Agriculture (1911-12); and teacher of Farm Mechanics at the Wisconsin School of Agriculture in Milwaukee (1912-18).

On February 1, 1918 Professor Roehl came to Cornell to teach Farm Shop in what was then the Department of Rural Engineering. This last position he held until his retirement, as full Professor, in June of 1948.

During his 30 years of service at Cornell, Professor Roehl spent many of his summers and sabbatical leaves giving special short courses in Farm Shop in other institutions, this work taking him into fourteen other states of the nation. A sabbatical leave of 1927-28 was spent in England, where he organized and taught farm shop courses at Dartington Hall, the Elmhurst School, in Devonshire.

In addition to being a teacher, Professor Roehl was an inventor and a writer. He acquired several patents on shop equipment, prepared a number of Cornell Extension Bulletins, and contributed numerous articles to professional magazines. His most outstanding

effort in writing was his *Farmers' Shop Book", first published in 1923 by the Bruce Publishing Company. This textbook has gone through 10 editions and 17 printings, having grown to be the standard shop text throughout the country.

Professor Roehl was a good teacher in every sense of the word—expert at presenting his subject matter and possessing a skill in relating the subject matter to life and its problems that not only added interest but also inspired his students. He was first and foremost a teacher of men. Everywhere he taught he acquired friends and enthusiastic disciples. He has probably done more than any other man to raise the standards of shop work and to *give* it a place of dignity in the halls of learning. He was affectionately known as "The Father of Farm Shop Work."

Aside from his professional duties, Professor Roehl was very active in church work and was for many years an active member of the Ithaca Rotary Club. He was a writer of poems, the printing of a collection of which, entitled "Poems of Farm, Home and Friendship", was arranged for by his friends at the time of his retirement in order that they might have at hand a clear and helpful portrayal of his unique and philosophical outlook on life.

He was a kind and considerate neighbor, a loyal friend to all his acquaintances. His influence will be missed on the Cornell Campus, particularly by those colleagues who have had the privilege of working closely with him.

Harley E. Howe, W. A. Smith, Forrest B. Wright

E. Stanley Shepardson

January 13, 1913 – December 10, 2004

Edwin Stanley Shepardson (E.S.S.) and his twin brother, Walter Stanton, were born on January 13, 1913 to Stokes and Agnes Stanton Shepardson on a farm in the Town of Otselic, and reared on a farm in the Town of Smyrna in Chenango County, New York. In his youth, Stanley assisted his father with the operation of a 120 acre dairy farm, a practice which continued through the summers while he attended college. This background not only developed his keen interest in agriculture, but set the path for his professional contributions in the years to come.

Stan, as he was affectionately called, received his BS from Cornell University in 1936, and that same fall joined the extension staff of the Department of Agricultural Engineering at Cornell as an extension instructor in agricultural engineering with responsibilities for 4-H programs in farm electrification. He was soon working with adult audiences, not only in farm electrification but also in farm machinery, farm power and related home applications. He was well suited to this work because of his farm background, readily developed a variety of related publications, and was popular with farm audiences – he knew their needs. He assisted the WWII Food Production Agency by developing and presenting programs and demonstrations throughout New York State on the repair and maintenance of electric motors and equipment, which were scarce resources due to the war effort. Later, he developed custom spray equipment for potatoes, fruits and vegetables, and trained operators in their use.

In 1941 he married his beloved life long companion, Mary Ward, and, after nine years in extension work, astutely recognized the need for advanced training to support his desire to contribute further to the field of higher education. He subsequently received his MS from Cornell University in 1947 and that same year was appointed assistant professor in the Department of Agricultural Engineering. The year 1949 marked his move to teaching and research responsibilities, where his extensive personal experience on the farm and in his highly successful extension outreach programs aptly served students whom he taught in courses on farm machinery, farm power, rural electrification and mechanics. This also began his service as a faculty advisor to undergraduate and graduate students, bringing a special real world flavor to the research programs of the latter. In 1950 he was promoted to associate professor and to professor in 1958.

Stan's specialty in research was the development of mechanical harvesting machinery and he held several patents on his work. He had a great appreciation for the removal of drudgery from food production activities. He was the recognized leader in the development of a mechanical harvester for grapes, an application that reduced labor by a factor of forty and was rapidly adopted in the US and abroad. He was also involved in the development of cabbage and lettuce harvesters, mechanical grape vine pruners, mechanical apple harvesting, and the mechanics of the milking process in dairy cows, submarine cultivation of pond soils to increase fish production, seed pelleting, waste management and environmental applications. He authored or coauthored over fifty technical or research papers. Stan worked abroad with USAID in Israel, IRRI in the Philippines on their agricultural engineering development program, and in Australia with the Commonwealth Scientific and Industry Research Organization's fruit and vegetable harvesting programs.

He made a special contribution to the Department during the 1950's when the Agricultural Engineering Department's new 2-acre building, Riley-Robb Hall, was approved for construction on campus. Stan led the effort to determine the physical system needs for the Department's teaching, research and extension programs, which included all aspects of the equipment and instrumentation required to support the faculty, staff and students, and was responsible for its selection, as well as supervision of its acquisition. In 1958-1959 he was named Acting Head of the Department while O. C French was on leave in the Philippines, was Coordinator of Research from 1960 to 1972, and Department Head from 1972 to his retirement in 1978. During his tenure, the Department gained national and international prominence under solid leadership.

Stan was an active member of the American Society of Agricultural Engineers (ASAE) and chaired the North Atlantic Region during 1968-69. In 1973 he was elected a Fellow of ASAE, and designated a Life Fellow in 1978. Within ASAE, he was instrumental in obtaining accreditation approval for the Master of Engineering degree at Cornell in this field, the first in the nation. He was also a member of the American Society for the Advancement of Science, the Northeast Society of Conservation Engineers, and the American Society for Engineering Education.

Stan was an active and enthusiastic supporter of Cornell. He served as Treasurer of the Class of 1936 for many, many years and was its local representative for organizing and operating Class of 1936 reunions. He was the first contributor to the Department's capital campaign, establishing the E. Stanley Shepardson Scholarship Fund for the benefit of its undergraduate majors. In

addition, he designated funds for unrestricted support of Cornell's football, lacrosse and hockey programs, and donated to other scholarship programs in the College of Agriculture and Life Sciences. He was a member of Phi Kappa Phi and Sigma Xi and in 1987 was honored by the Alumni Association of the College of Agriculture and Life Sciences with its Outstanding Alumni Award. Additionally, he was a past Master of Hobasco Lodge 716 of the Free and Accepted Masons, and a member of Rotary International.

Stan greatly enjoyed the outdoors, and he and Mary traveled extensively in the US and Canada, with their trailer regularly heading to Florida in later years to follow the sunshine. He also enjoyed hunting, fly tying and fishing, but the greatest of these was fly fishing, and he had the blackfly bites to prove it following trips to their summer hideaway in the Adirondacks. Surprisingly, the insect bites did not bother him one iota!

Stan was appointed Professor Emeritus in 1978, and on the occasion of his retirement it was noted that the number 13 was well suited to Stan's life. He and his twin brother came into the world at a combined weight of 13 pounds on January 13, 1913, he spent four 13 year periods of professional practice at Cornell University, and was honored at the celebration of his retirement on June 13, 1978. And he enjoyed every bit of it. He was a grand gentleman to know.

Everett D. Markwardt, David L. Call, Ronald B. Furry



Roger M. Spanswick

June 24, 1939 – February 12, 2014

Roger was born in England, in a thatched cottage in Barford St. Michael and St John, a double churched village between Oxford and Banbury. He grew up next to the tallest spire in Oxfordshire, in nearby Bloxham, where his grandfather, a self-taught historian, was the local butcher. After concentrating on math and science at Banbury Grammar School, he graduated from Birmingham University with an honors degree in physics. He went on to the University of Edinburgh where he earned a one year Diploma in Biophysics under the mentorship of Jack Dainty. Elwyn Williams supervised Roger's Ph.D. work, including his early research on ion transport, using the large internodal cells of *Nitella translucens*, which were harvested from a mountaintop pond in Perthshire. Roger continued his studies of characean cells as a Nuffield Foundation Postdoctoral Fellow with Enid MacRobbie in the Botany School of Cambridge University. Roger made major and pioneering contributions to the understanding of basic ion transport processes in plant membranes. Central to Roger's work was the integration of reductionist theoretical and experimental techniques with a systems perspective in order to understand the physical processes that make life in general, and plant life in particular, possible.

In his late teens, Roger became a Humanist, the principles of which, as explained by Bertrand Russell in "Why I Am Not a Christian", he followed for the rest of his life. Roger focused his endeavors on science and denied the supernatural. Although he tolerated the religious beliefs of others, he had no personal use for religious principles. He believed we were capable of striving to make the world a better place for all individuals, no matter their culture or creed. We did not need religion for this behavior, just a belief that we should do unto others as we would have them do to us.

Roger was first and foremost a scientist. He found the best organism to answer a fundamental question, developed a sound experimental design, built or modified apparatus to perform the experiment, and developed or used a sound theoretical framework to plan and analyze the experiment. Thus he developed the technical and analytical skills necessary to make the best use of the experimental method; questioning and re-questioning the accuracy and precision of the results; employing his encyclopedic knowledge of the literature related to the question to be answered; and honestly, fairly, and clearly communicating the results to others.

On arriving at Cornell University as an Assistant Professor in 1967, Roger joined the Section of Genetics, Development and Physiology in the Division of Biological Sciences. He was one of a new group of plant physiologists recruited along with Rod Clayton, Andre Jagendorf and Peter Davies. The Section eventually became Plant Biology, and later, the Department of Plant Biology. Roger became an Associate Professor in 1973 and a Full Professor in 1979. In 2001, he moved to the Department of Biological and Environmental Engineering, where he enjoyed colleagues who shared and appreciated his scientific philosophy and expertise. As a teacher, in *Transport of Solutes in Plants*, and *Transport of Water in Plants*, he inspired students with that expertise, his vast general knowledge, personal stories and historical anecdotes. He carried those attributes in to the development of a new course in *Metabolic Engineering*; Roger the innovator was absolutely in his element.

In 1972 Roger published a groundbreaking paper in which he presented evidence for the existence of an ATP-dependent electrogenic proton pump in the membrane of characean cells. This H⁺-ATPase was distinctly different than the ATP-dependent Na⁺/K⁺ exchange pump found in animal cells so disproving the then- prevalent assumption that plants cells were like animal cells. He showed the H⁺-ATPase generated voltage across the membrane of plant cells was greater than that produced by the Na⁺/K⁺-ATPase of animal cells. Roger published a review on Electrogenic Ion Pumps in the Annual Review of Plant Physiology in 1981 that put an end to any idea that, in terms of electrophysiology, plants were just slow animals.

Roger began to direct his intellectually diverse group of graduate students and postdocs with two goals in mind: expanding our understanding of transport in plants, and developing the human potential of each individual member of the research team. He considered each one of his students, whether undergraduate or postdoc as an individual with much to offer. Thus a library dormouse was as special as a laboratory rat. Each merely had to pass on information gleaned, and Roger was delighted. The research was focused on understanding the physicochemical basis of transport and an understanding of the integrated complexity of transport. Roger steered his research team down the reductionist path by working with purified H⁺-ATPase, and discovered that there were distinctly different proton-pumping ATPases in the plasma membrane and vacuolar membrane. They also found that the electrochemical proton gradient

established by the H⁺-ATPase was able to drive transport of sugars, amino acids and other ions through co-transport of a proton with the other substrate. Following the complexity path, members of Roger's lab also elucidated how sugars were transported from the maternal tissues of the plant into the embryos of the developing seeds, how ammonium and nitrate were transported into the roots, and how insectivorous plants generated a neuron-like action potential that allowed them to capture their prey.

Roger worked for a second time at the Botany school in Cambridge as a Senior Visiting Fellow in 1973-74, and in 1981-82, was awarded a Guggenheim Memorial Fellowship to study at the University of California, Davis. He received the accolade of Highly Cited Scientist from the Institute for Scientific Information, and was elected a Fellow of the American Association for the Advancement of Science. Roger was cited twice by Merrill Presidential Scholars as the Professor at Cornell who had most affected their undergraduate career.

Roger married Helen Walker in Edinburgh in 1963. They had two sons, Andrew and Robert, as well as three grandchildren. Roger and Helen looked on his graduate students, postdocs and colleagues as extended family and had great pride in their accomplishments. In 1996, Roger was diagnosed with prostate cancer, was treated and seemed cured. In 2008, he developed multiple myeloma. Always optimistic, he considered the treatment of his cancer as another experiment; he actually enjoyed the science behind his treatments, was grateful for the medical care he received, and never gave up hope that each new procedure would give him more time to work. He was rewarded with five more productive years, but the disease finally took him from us on February 12, 2014. Friends, colleagues and family celebrated Roger's life with a memorable symposium at Cornell in June of that year. Our loss of Roger's intellect is great. Yet he will continue to affect the lives of those of us who knew him well. We loved him and he loved the entire world.

*Larry P. Walker, Chair; David Warren Keifer; Randy O. Wayne;
Peter Davies; with assistance from Enid MacRobbie*

Cryl Waldie Terry

July 15, 1905 – April 25, 1994

Cryl W. Terry was born in Brooklyn, Pennsylvania, and during his early years he worked there with his father in a hardware and farm machinery business. He came to Ithaca in 1922 and earned all his degrees at Cornell University, the M.E. in 1926, the M.M.E. in 1929, and the Ph.D. in 1948.

With the exception of nearly four years during World War II, Dr. Terry, Emeritus Professor of Agricultural Engineering, served Cornell University continuously for thirty-six years. He began his teaching career as an Instructor in 1926 and retired as a full Professor on July 31, 1962.

From 1926-36, he was an Instructor in the College of Engineering, teaching materials testing, experimental engineering, kinematics, and machine design. During the summers of 1928-29, he served as Assistant Technical Director of Product Testing for Sears Roebuck & Company. In 1936, he was in charge of instruction in mechanics, aerodynamics, and shop processes for Luscombe Airplane Company. From 1936 to 1941, he was Assistant Professor in charge of the Aero option courses, including aerodynamics, aircraft engine design and flight test methods. He also taught diesel engine courses for the U.S. Navy.

In the fall of 1941, Professor Terry left Cornell to become Ground School Instructor for Plains Airways. During World War II, he was Director of Flight Research for Ryan Aero Company and was in charge of the flight test program for the FR-1 "Fireball".

Dr. Terry returned to Cornell in 1945 as an Associate Professor and Acting Head of the Aero Engineering Department. He joined the faculty of the Department of Agricultural Engineering in 1946 as a Research Associate and Ph. D. candidate, with thesis research on hay drying. He was promoted to full Professor in 1948. He continued in this capacity until his retirement in 1962. His research interests were in pesticide application equipment, tractor stability and ineffective braking systems. His teaching was in farm power, agricultural machine design and special problems for seniors and graduate students.

Dr. Terry's broad experience in the application of the physical sciences and engineering theory made him a valuable consultant to members of the staff and faculty of the Department of Agricultural Engineering. He often suggested simplified solutions to perplexing problems and greatly enjoyed the variety of challenges that agricultural applications posed.

Dr. Terry was active in professional and honorary societies, including American Society of Agricultural Engineers, Institute of Aeronautical Sciences, Society of Automotive Engineers, American Society for Advancement of Science, Sigma Xi and Phi Kappa Phi.

He obtained his license to fly in 1932 and was an enthusiastic member of the Cornell Glider Club in the 1930s.

An active Mason, Professor Terry was Master of the Hobasco Lodge 716 in 1948 and President of the Tompkins County Shrine Club in 1955. He also held the post of Thrice Potent Master for the Ithaca Lodge of Perfection, Scottish Rite Masons.

Upon retirement in 1962, Dr. Terry became Assistant to the Head of Mechanical Engineering at the Navy Civil Engineering Laboratory at Port Hueneme, California. This position required his presence on numerous projects in Antarctica.

Cy was an avid square dancer and in recent years was an active member of the Men's Group of the Senior Citizens of Tompkins County.

W. F. Millier, E. Stanley Shepardson

Clesson Nathan Turner

September 17, 1908 – October 27, 2001

Clesson Turner was a major force in the field of Agricultural Engineering for more than 33 years. From 1931-68, he contributed to many areas of engineering and technology in agriculture in New York State and beyond.

Clesson Nathan Turner was born in Sodus, New York on September 17, 1908. Following graduation from Sodus High School in 1927, he attended the University of Rochester for two years, and obtained a B.S. degree from Cornell University in 1931. After serving as Extension Agricultural Engineer in Maine for four years, Clesson joined the Cornell Agricultural Engineering staff in November 1935 as an Assistant Professor.

During his first four years at Cornell, he took the time to study for his Master of Science degree that he received from Ohio State University in 1939. His thesis project was the study of erosive wear of stray nozzles discs. His work resulted in a manufacturer redesigning a spray discs that gave better performance and an increased life of five times.

He was Extension Project Leader for Agricultural Engineering from 1939-44. At this time, he was the key person responsible for the War Emergency Farm Machinery Repair Program(World War II). He was also active in establishing, equipping and directing the operation of custom potato spray rigs during the war. As Extension Specialist, he was called upon to use his broad knowledge to conduct many types of programs and "schools" such as tractor and field machinery repair and adjustment, potato and fruit sprayer maintenance and use, electric wiring, and dairy barn and poultry house ventilation.

Clesson Turner was instrumental in organizing the New York State Farm Electrification Council in 1943, supported almost entirely by investor-owned electric companies in the state. He was appointed its first Project Leader and served as Project Leader for 20 years until 1964. In this capacity, he made numerous research and extension contributions to the application of electricity to agriculture. Clesson was appointed Associate Professor in July 1945, and Professor in July 1950.

Clesson's research studies and investigations led to better design and means of operating adjustments of potato diggers to minimize bruising in digging, design of barn hay driers, electric water heaters, and standby generators for emergency service on farms. In

the early 1950s, he studied and tested various designs of bulk milk coolers that would replace milk can coolers on dairy farms. These studies were influential in future designs of bulk milk coolers. He was also instrumental in developing recommendations for sizing and type used, and specification for adequate controls for the coolers.

In 1959, Paul Sturges and Professor Turner started the development of the equipment to recover waste heat from the refrigeration system on milk coolers and use that heat to preheat water in the milk house. Clesson conducted some of this investigation in the early 1960s at the National Institute for Research in Dairying at the University of Reading. This process was a forerunner to today's heat pump; removing heat from milk and using that heat to warm water. Today this process is common in agriculture, industry and in some residences.

Clesson Turner may be best known among his colleagues in Agricultural Engineering at home and abroad, and by the people of New York State, for his life-long work on Cornell's environmental control system for livestock housing. The work of Professors Turner and William Millier, dealing with negative pressure ventilation systems and the slot-inlet, led to revolutionary changes in the ventilation of livestock housing.

Most of his research studies and contributions over 20 years were documented in the Annual Progress Report of the Farm Electrification Council. Two booklets authored by Clesson, *Farm Electric Equipment Handbook* and *Wiring Specifications for Electrical Farm Equipment*, were used by power companies, electric equipment manufacturers and vocational schools. His contributions also appeared in over 250 technical and research articles, leaflets, bulletins and popular articles. While on leave from Cornell in 1961-62, he was adviser to the United States delegation to the United Nations Rural Electrification Conference in Geneva, Switzerland.

An avid collector of antique clocks, Clesson was a member of the National Association of Watch and Clock Collectors. After retirement in December 1968, when he was named Professor Emeritus, his interest in old clocks continued—owning some 40 Ithaca Calendar (perpetual) and Poole clocks. He was a charter member of Chapter 55 of the National Association of Watch and Clock Collectors. He also had an interest in cars having five Hondas, two Toyotas, and a MG midget.

Clesson and his wife, the former Elizabeth Dukes, of Denver, Indiana, were married in 1934. They had two daughters, Ann and Jean. After retirement, Clesson and Elizabeth lived in Interlaken until 1992 when they moved to Gig Harbor, Washington. Clesson and Elizabeth had been married 65 years when Elizabeth died in August 1999. Clesson Turner passed away October 27, 2001.

Robert Lorenzen, David Ludington

Carl Seymore Winkelblech

June 28, 1918 - October 30, 1995

Professor Emeritus Carl Seymore Winkelblech, 77, died at his home on Graham Road in Ithaca, New York, October 30, 1995, after a courageous struggle with cancer. Born June 28, 1918, in Aaronsburg, Pennsylvania, he was a son of the late Paul M. and Ollie Treaster Winkelblech.

Carl received the B.S. degree in agricultural engineering from Pennsylvania State University in 1939 and the M.S. degree in agricultural engineering from Ohio State University in 1961.

Before joining the faculty at Cornell, Carl spent one year in the Engineering Department of the Oliver Corporation at South Bend, Indiana and 13 years with the USDA Soil Conservation Service where he was responsible for the design and construction of many large group drainage projects. He also designed hundreds of water storage structures. In 1953 and 1954, he served as a Niagara County Extension Agent where he helped establish the County Soil Conservation District. He also developed an overall county drainage plan with priorities based on land use capabilities. Carl was appointed an Extension Assistant Professor in August 1954 with principal responsibility for conducting educational programs in soil and water engineering and tillage machinery. He was promoted to Associate Professor in July 1959 and to full Professor in July 1967.

Professor Winkelblech's background and experience permitted him to develop outstanding educational materials in drainage, water supply, soil conservation and management, water resource development, and tillage. He was one of the early innovators in the development of equipment and techniques for minimum tillage. He built one of the first plow-plant machines. Carl worked extensively with growers to minimize compaction and soil management problems through proper tillage practices. As an example of his practical approach to farmers' problems, he developed equipment for ridge planting on muck soils that was enthusiastically accepted by growers. He also designed a strawberry runner cutter to implement a new technique in strawberry culture.

Professor Winkelblech provided leadership in the development of the Land Improvement Contractors' Association and was instrumental in inaugurating a highly successful training program for New York State land improvement contractors. He also worked extensively with golf course operators on drainage and compaction

problems. Professor Winkelblech was a consultant on the technical staff of the "Temporary State Commission on Irrigation" during the summers of 1956, 1957 and 1958. He and Professor Hugh Wilson conducted a study for the Commission to determine the feasibility of developing Water supplies and the legislative requirements to distribute irrigation water to important agricultural areas of the state.

He organized and conducted many county and state plowing contests. He developed the criteria and rules for the conduct of these contests and used these principles as effective tools to teach good plowing and plow adjustment. He served as a judge at several national and world plowing contests.

His outstanding extension program in machinery Management received national recognition from his peers by being awarded four Blue Ribbons in the American Society of Agricultural Engineers' Competition for TV short courses, movies, demonstrations and publications. He was a prolific writer, contributing over one hundred articles to Extension County News and farm magazines. He also authored three excellent college bulletins: "Basic Principles of Tillage", "Farm Pond Construction", and "Drainage Around the Home".

Carl worked closely with farm machinery distributors in New York State providing leadership in the New York State Tractor Club, and the New York Farm Equipment Dealers' Association. For many years, Carl was an integral part of Empire Farm Days, a major agricultural machinery exhibition.

As an authority on rural water supply and treatment, Carl developed and disseminated information that has aided countless New York State farmers and homeowners.

Professor Winkelblech retired on July 31,1975, after 21 years of continuous service to the Department of Agricultural Engineering in the New York State College of Agriculture and Life Sciences at Cornell University. In October 1975, he was awarded the title of Professor of Agricultural Engineering, Emeritus.

He continued to utilize his knowledge and expertise in drainage after retiring. He aided many golf courses throughout the state in solving their drainage problems. He took particular interest in improving the drainage on the Robert Trent Jones Golf Course at Cornell University. "Wink", as he was known by his friends, became an avid golfer after being given a set of golf clubs for his work on drainage at the Cornell course. His most recent contribution was locating and designing a holding pond, between holes #1 and #6, for the anticipated course irrigation system. Wink played golf every day the weather permitted and frequently arrived at the course as soon as it opened. He looked forward to joining other Cornell retirees for a round of golf. Before his death,

he was awarded a lifetime membership at the Robert Trent Jones golf course at Cornell. After retirement, Carl and Olive spent the winter months in Florida where he played golf and became an excellent surf fisherman. He supplied fresh fish to all his Cornell associates in the area.

Carl was a very kind and caring person who dedicated his life to helping others. He would do anything to help someone and never asked for anything in return. His family and grandchildren were most important in his life and they respected and loved him in return. Carl dedicated his life to educating, invigorating, improving and serving agriculture.

Professor Winkelblech is survived by his wife, Olive of Ithaca, New York; daughter and son-in-law, Mary Ann and John Beno of Freeville, New York; three sons and daughter-in-laws, Kermit and Sandra of Palos Park, Illinois; Dean and Kathy of Andover, Massachusetts; David and Helen of Hawley, Pennsylvania; eleven grandchildren; two great grandchildren; and a sister, Mary Stover of Aaronsburg, Pennsylvania.

Wesley W. Gunkel, Everett D. Marhwardt, William F. Millier

Forrest Blythe Wright

October 21, 1896 - June 16, 1991

Forrest Blythe Wright was a member of the faculty of agricultural engineering in the College of Agriculture for nearly 38 years prior to his retirement in 1958. He became interested in Cornell University while stationed on the campus with the Air Wing of the U.S. Army Signal Corps. He graduated from Cornell University in 1922, and was granted the Master of Science degree in 1924. He was the second agricultural engineer in the U.S. to earn a Ph.D. degree which he received in 1933 from Cornell University.

"Doc" Wright assisted Howard W. Riley in teaching Agricultural Engineering I, Gasoline Engines, and later assisted B.B. Robb with Course 10, Household Mechanics. In time and until retirement he assumed sole responsibility for this very popular course taken by nearly 10,000 students. Students in home economics took the course to satisfy their graduation requirements in physics.

In 1934 he developed and taught a course in farm electrification when electricity was just beginning to come to some rural areas and farms. In 1935, he wrote a textbook entitled, *Electricity in the Home and on the Farm*, which became a popular text throughout the country. A third edition was published in 1950.

Another textbook, *Rural Water Supply and Sanitation*, was written in 1939. This also became a popular text. This book was selected by the New York Public Library as one of the 100 most essential technical books in 1957 following a 1956 revision. It was revised again in 1977.

Nine bulletins, such as "The Gasoline Engine on the Farm" together with others on electrification, were written by Doc. He wrote numerous articles for many publications, notable were "Electricity on the Farm" and "Agricultural Engineering". He won the 1949 American Society of Agricultural Engineers' paper award honor for one of his contributions.

Doc Wright also had time for research and development. He invented automatic egg handling, washing and drying machines marketed by the then GLF Cooperative. The basic principles of these machines were to be later used in sophisticated egg processing equipment. He also made studies of paint durability and heat transfer from the sun through roofing materials, insulation and siding. Doc developed a new design of chick brooder using an electric lamp and a dehydrator for drying laboratory samples of grain and fruits. He also investigated the feasibility of flame weeding.

Doc was a dedicated teacher, always striving to have his students interested and involved in the subject. He worked diligently and thoroughly to achieve his goal of doing the best he could and to have those around him "catch the spirit" and do the same. He organized and operated an aviation ground school in Elmira and Ithaca in the 1920s. His helpfulness and teaching skills, his popular radio programs on mechanics and care and use of the sewing machine were enjoyed by a wide circle of friends and acquaintances.

Doc Wright was well known in and around Ithaca for his civic activities. From 1923 until long after retirement he was active in the Boy Scouts of America and once served as vice president of the local Council, and received the Silver Beaver Award. He served as leader of young people's groups and served on the Board of Trustees of the Unitarian church. He served as president of the Improvement Association in the Village of Forest Home where he maintained his residence for 28 years. Here he instigated the installation of a water district and the establishment of a fire district in the area.

He was a charter member of the Kiwanis Club of Ithaca and its third president. He was a member of Rotary International in Ithaca and served on the Board of Directors. He served for a number of years on the Ithaca Community Chest teams. Doc had many hobbies. He was an ardent fisherman. He enjoyed woodworking and painting. Doc and Billie were genial hosts and had many friends. He was a great story teller.

Doc was born in Four Oaks, Kentucky and spent his early life on a farm in Falmouth, Kentucky. In 1917 he entered Transylvania College in Lexington, Kentucky, with two scholarships.

Doc was a member of ASAE, Phi Delta Kappa, Pi Kappa Alpha and Sigma Xi and listed in the *American Men of Science* and *Who Knows Who and What*.

He traveled throughout the North American continent, Hawaii, South America and Europe. After retirement Doc worked for three years in Mexico on the Montana Project to teach Mexicans about irrigation and vastly increasing crop yields.

Doc is survived by his wife Mildred (Billie) of 66 years, of Melbourne Beach, Florida; a son, Paul, of Raleigh, North Carolina; five grandsons; six great grandsons; and Enumerable friends and associates.

During his many years of service to Cornell, Doc became well known and sincerely liked by the entire Cornell family. He was looked up to by former students all over the world who consider Doc as a real friend, advisor and teacher.

His colleagues and friends have initiated a campaign to establish a memorial scholarship in Doc's name to recognize his many accomplishments and contributions to the college and university.

E.S. Shepardson, C.N. Turner, R.B. Furry