

## INTRODUCTION

The early history of the Department was captured in the book, Agricultural Engineering on the Prairie: Illinois Style, by H. Paul Bateman, William A. Foster, Benjamin A. Jones, Jr. and Walter D. Lembke. That book traced the department history from its early roots through its subsequent development up to the year, 1997. The aim of the present book is to extend that history from 1997 through 2009. Some of the key highlights of the early department history are repeated below.

The roots of the Agricultural and Biological Engineering (ABE) department trace back to the formation of the land grant college system when the Morrill Act was signed by President Lincoln on July 2, 1862. The Illinois Industrial College, later to become the University of Illinois, was formed in 1867. When the College of Agriculture was formed in 1870, Professor S.W. Shattuck was listed as a professor of Agricultural Engineering in the college, while S.W. Robinson was listed as a Professor of Agricultural Mechanics. Nathan C. Ricker, a 1872 graduate of the college, began teaching a rural architecture course in 1876. Thus, the teaching of agricultural engineering related subject matter preceded the formation of the department and of the College of Engineering that was established at Illinois in 1880.

In 1904, the first Bachelor of Science degree in Agricultural Mechanization was awarded to Charles A. Ocock. Initially, the courses in ag-

ricultural engineering/farm mechanics were taught in the Department of Agronomy. At the time, that department was housed in Agricultural Hall, now Davenport Hall. In 1906, when space in Agricultural Hall could no longer meet the demand for courses and the need for additional space for farm implements, a new Farm Mechanics Building was opened. That building was later renamed the Agricultural Engineering building.

In 1921, Agricultural Engineering separated from Agronomy when a new Department of Farm Mechanics was formed and housed in the Farm Mechanics building. The first head of the new department was Emil W. Lehman. In 1932, the department name was changed to Agricultural Engineering and an Agricultural Engineering curriculum was approved the same year. The first Bachelor of Science in Agricultural Engineering degrees were awarded in 1934. One of the first graduates, H. Paul Bateman, then joined the department faculty and continued to serve until his retirement in 1968.

The first Master of Science degree was authorized in 1948 and, a year later, the first MS degrees were awarded to Maurice L. Burgener, B. Jack Butler and Herman W. Glover. In 1950, the Agricultural Engineering curriculum was nationally accredited for the first time. In 1955, Frank B. Lanham was named department head and, a year later, the first B.S. Degrees were awarded in a newly formed Agricultural Mechanization degree. The latter degree was renamed Technical Systems Management (TSM) in 1996. The Ph.D. degree was approved in 1964 and, two years later, the first Ph.D. degree was awarded to Roscoe L. Pershing. Roger R. Yoerger became department head in 1978. In 1983, the department left the Agricultural Engineering building to move into the new Agricultural Engineering Sciences Building. Roscoe L. Pershing was named department head in 1985. When Pershing became Associate Dean of Engineering in 1994, Loren E. Bode was named as department head. That year, the department achieved the number one national ranking in a survey published by US News and World Report. For a number of years, the department had been ranked in the top five nationally.

In the economic engine that propels the US economy, agricultural, food, environmental and energy systems play a highly significant role. The discipline, Agricultural and Biological Engineering (ABE), integrates life and engineering for the enhancement of these systems. Ag-

gricultural and biological engineering are synergetic and inseparable. Thus, in concert with other former Agricultural Engineering departments across the US, the department name was changed to Agricultural and Biological Engineering (ABE). The name change occurred while Bode was department head.

When Bode stepped down in 2004, K.C. Ting was named department head. Ting set about building the biological component of the department mission by hiring new faculty members trained in that area. After a department retreat, the department developed and published (in October, 2005) the following statement of strategic intent:

***Core values:***

We are in the business of empowering human capacity with knowledge and wisdom. In everything we do, we value excellence, integrity and ethics, creativity and innovation, science-based scholarship, and inclusiveness and collegiality.

***Vision:***

We will be the best agricultural and biological engineering department in teaching, research, and outreach, while integrating biology and engineering and maintaining a collegial environment that emphasizes professional and personal development.

***Mission:***

We integrate life and engineering for enhancement of complex living systems by providing student-centered educational experiences in engineering and systems management, by conducting high-impact research and by delivering value-added information, knowledge and wisdom.

***Domains:***

We contribute to engineering and management of complex food, agricultural and biological systems. Departmental emphases include: Bio-based processing and production systems; biomass and renewable energy; precision and information agriculture; agricultural and bio-systems management; agricultural safety and health; food quality and safety;

environmental stewardship; land and water resources; spatially distributed systems; structures and facilities for living systems; indoor environmental control; bio-sensors, bio-instrumentation, bio-informatics and bio-nanotechnology; intelligent machine systems; automation of biological systems; and advanced life support systems.

Changing the department name to Agricultural and Biological Engineering did not include changing the name of the curriculum, which remained as Agricultural Engineering. In 2004, the course rubrics were changed from AgE to ABE. At the same time, all department courses were renumbered. Freshman-level courses remained at the 100-level, while sophomore courses became 200-level, junior-level courses became 300-level and senior courses became 400-level. A new 500-level was introduced for graduate level courses. In 2006, the Agricultural Engineering curriculum was renamed to Agricultural and Biological Engineering, with four standard areas of study. These were BioEnvironmental Engineering (BEE), Food and Bioprocess Engineering (FBE), Off-Road Equipment Engineering (OREE) and Soil and Water Engineering (S&W). The department continued to have a Technical Systems Management (TSM) curriculum offered through the college of ACES. The department also continued to have a dual-major curriculum that allowed a student to earn a BS through the College of Engineering and a second BS through the College of ACES. The department also continued to offer the MS and PhD degrees in Agricultural and Biological Engineering. At time of writing, the department had just received final approval from the Illinois Board of Higher Education to offer a new MS degree in TSM, to take effect in the fall of 2010. The new MS degree is described in Chapter 3. One option in the new degree program is participation in the Professional Science Masters (PSM), which is similar to the MBA. ABE students participating in the PSM program take 10 semester hours of business courses as well as TSM courses.

The chapters that follow provide more information on the teaching, research, outreach and international activities of the department from 1997 to 2009, as well as information on the department students, faculty and staff and on the departmental graduates. A chapter is also included to provide a glance ahead, i.e., science-based predictions of future developments. It is interesting to note that the department vision of being the best agricultural and biological engineering department was realized. In four consecutive years, from 2007 through 2010, the

department's undergraduate engineering program was ranked first in the nation in the annual surveys published by US News and World Report. At the time of writing, the undergraduate survey results for 2011 were not yet available, but the department's graduate program had also been ranked number 1.

Departmental students were also winning awards. In 2009, the quarter-scale tractor team won first place in national competition. In the event, sponsored by ASABE, students from universities compete annually in designing and building a quarter-scale tractor to enter into national competition. The Illinois win in 2009 was the first in the competition history. At time of writing, the Illinois team won again in 2010. Also, in 2009, ABE students were part of a University of Illinois team that designed and built a solar house that was displayed on the mall in Washington, DC. The Illinois house won second place in international competition, finishing second to Germany.

As a way of celebrating the department success and building momentum for future success, the department initiated a Celebrate ABE program. The goal was to attract as many department alumni as possible to return to campus for the celebration. The first one was held in September, 2008, the second one was held in September, 2009 and the third one was scheduled to be held in September, 2010. Each event included a meeting of the ASABE Central Illinois Section, campus tours, and a banquet at the I-Hotel on campus. Other events included a golf outing and a demonstration by the student Quarter-Scale tractor pulling team.

K.C. Ting, in an effort to continue building the department, appointed an ABE Futures Committee. The mission of the committee was to work in concert with the ABE Department to enable and stimulate closer bonding of the Department's alumni, friends and potential friends to the ABE Department, the Colleges of Engineering and ACES, and the University of Illinois. Their vision was that every ABE Department alum and friend would feel a sense of ownership and pride in the ABE Department. The initial members of the committee were Roscoe Pershing (Committee chair), Paul Benson, Loren Bode, Doug Bosworth, Phil Buriak, Bob Fry, Carroll Goering, Ben Jones, Walter Lembke, Ronda Sullivan, Kim Meenen and K.C. Ting. The committee made a number of suggestions to the department. These included upgrading the department newsletter, updating the department history

and starting a professor for a day program. In the latter program, a distinguished member of the alumni is selected each semester to come to campus to meet with students and to teach a class. The first professor for a day, John Repogle, came to the campus in the spring of 2009, at the time of the ABE spring banquet. The second professor for a day, Jim Steck, came to campus in the fall of 2009, at the time of the Celebrate ABE event. David W. Smith was professor for a day in the spring of 2010, while Gary Wells was scheduled to be professor for a day in the fall of 2010. The department also began a program of recognizing one of its alumni as a Distinguished Alumnus each year. The first one chosen was Douglas Bosworth, the second was Lyle Stephens and the third was Larry Huggins. Each year, the person selected is recognized and invited to make remarks at the ABE spring banquet.

Soon after the ABE futures committee was appointed, they began to discuss the possibility of expanding to include an ABE Futures Council. The mission and vision of the council was identical to that of the ABE futures committee. However, council members are chosen from several geographic areas around the state and later, perhaps from around the nation. Essentially, the council members became the “eyes and ears” of the department in their geographic areas, help with recruiting, help sponsor departmental events in their area, etc. Council members were invited but not required to attend the monthly meetings of the futures committee. However, they were encouraged to participate in a teleconference arrangement in which they could speak at futures committee meetings and also hear the proceedings. The initial members of the futures council were Lynda Cabrales from Kraft, Marcia McCutchan from RHMG, Anthony Rund and Dan Roley from Caterpillar, John Reid and Dave Smith from John Deere, and Brian Wills from Wills Milling.

The ABE department continued the tradition of having an external advisory committee to offer advice to the department head. Members of the advisory committees are listed in the appendix. The work of the external advisory committee was coordinated with that of the ABE futures committee/council by having two members of the external advisory committee serve as liaison members of the futures committee/council. The first two liaison members were John Reid and Anthony Rund.

On the lighter side, many departmental alumni will remember a de-

partment tradition that ended in 2003. Starting in 1975, a Fallow Furrow trophy was presented annually at the departmental awards spring banquet. The initial presentation was to Kent Mitchell, who forgot to attend a class he was teaching. In recognition of that oversight, his students designed a trophy and presented it to him at the next awards banquet. The trophy, in the form of an inverted cultivator shovel mounted on a former bowling trophy, was subsequently presented by the current holder to the faculty member who had made the biggest goof during the previous year. Since faculty members work for the department 24/7, the goof could occur any time or place, at work or away from work. Winners demonstrated their collegiality by accepting the trophy gracefully. The trophy presentation became a hilarious hit at each spring banquet but was dropped in 2003 because it was taking attention away from the true purpose of the awards banquet – to recognize achievements of the students.

