

Tentative AGENDA  
Centennial  
Biological Systems Engineering  
September 10-11, 2004  
(July 29, 2004 Draft)

September 10, 2004, Friday

9:30 am Reception- Coffee and rolls etc., Upper Carson Gulley

10:00 am Program, Upper Carson Gulley

Introductory Comments, Department Chair Moderator

Introduction of Special Guests (10 min.)

Comments Dean Aberle (15 min)

Comments Past Chair Buelow (15 min.)

Comments Alumnus Gail Janssen (15 min)

Comments undergraduate student, Naomi Uhlenhake(15 min)

History of BSE (25 min)

Department Future (20 min)

Noon Luncheon: Scholarship and Distinguished Grad Fellowship Recipients (\$10)

Scholarships-Donors and Student recipients

Wisconsin Distinguished Fellowship

Alumni Recognition

1:30 Alternative activities:

1. Tours Agr. Engr. Building, Agr. Engr. Laboratory, CALS Campus, Engr. Campus and possibly Camp Randall Stadium Construction

2. Golf; Oaks Golf Course, Sun Prairie (WALSAA Activity) \$70

3. Disk Golf, Elver Park, Madison

4:30 Barbeque Agricultural Engineering Lab

6:00 pm Wisconsin section of ASAE Meeting

8:00 pm Sheepshead Card Game

September 11, 2004, Saturday

8:00 am WALSAA Fireup, West Madison Agricultural Research Station

11:00 am Badger Football Game, stadium

(\$20 for fireup only, \$53 for football game ticket and fireup)

## History of the Department, Abridged

When an organization reaches an important milestone such as the century mark, its members review the accomplishments and evaluate the future with respect to these accomplishments and future issues facing their members. This department has a rich history of accomplishments and contributions to the College of Agricultural and Life Sciences, the University of Wisconsin, State of Wisconsin, our county and the world. A brief history is presented here but we plan to prepare a detailed history which should be available some time next year.

Although the Farm Engineering Department was established in 1904, events before that time are important to the establishment and evolution of the department. The University of Wisconsin-Madison is a federally supported land grant institution having responsibilities for teaching, research, and extension or outreach. The Morrill Act, signed into law in 1862, provides federal grants to each state to establish colleges for the education of the agricultural and industrial classes of our country. These colleges became generally known as Colleges of Agricultural and Mechanic Arts. In 1866, the department of agriculture was established University of Wisconsin. In 1887, the federal Hatch Act was approved which established the Agricultural Experiment Station at the Land Grant institutions. This act initiated the research element of this system. Two years later the College of Agriculture was approved by the Wisconsin legislature. In 1914, the Smith-Lever Act was passed which provided federal extension support to the Land Grant Institutions. The UW College of Agriculture had been conducting Farm Institutes which had many of the same goals as extension.

The Department of Agricultural Physics was the home of engineering related teaching and research before the department was established. The most widely recognized person in that department was F. H. King who developed the round silos for storing silage and ventilation systems for barns. He authored a textbook titled *The Physics of Agriculture*, published in 1898. Subjects in this book included soils, machinery, drainage, windmills and basic engineering sciences. In one chapter he discusses weight distribution for good traction; that was for horses, not tractors. Mr. King deserves much credit for his work which demonstrated a need for an engineering department in the College of Agriculture, but Mr. King departed the UW for Washington State University in 1902 before the legislature approved support for the department.

In 1903, the Wisconsin State Legislature appropriated \$15, 000 for a Farm Engineering Building. Dean W. A. Henry had the Farm Engineering Department established in 1904 and appointed Mr. George Knapp as its first chair and he served from 1904 through 1906. The building was the first building on campus to be constructed of reinforced concrete frame and brick. This was important because of the power laboratories and the potential for fires. During construction which was completed in 1907, some on the concrete was poured in cold weather, causing some concrete to freeze before completely curing. This building had about 16,000 square feet for offices and laboratories.(Image of building)

In 1907, the American Society of Agricultural Engineers was founded in the Agricultural Engineering building on the UW-Madison campus. Seventeen Agricultural Engineers met to develop the framework for ASAE and elected Mr. J. B. Davidson as its first president. Mr. Davidson was department chair at Iowa State. Two members of the charter group were members of the UW department, Charles Ocock, department chair at the time, and Frank White who later became department chair. ASAE has identified the Agricultural Engineering Building as a Historic Landmark. A plaque is located on the wall in the hall of the main entrance to the building. (Image of plaque)

The department name was changed from Farm Engineering to Agricultural Engineering shortly after the department was established. No documentation has been found as to when this occurred. In 1996, the department name was changed to Biological Systems Engineering to reflect the broader subject matter of the teaching, research and extension programs.

The Agricultural Engineering Department was housed primarily in the building on Henry Mall until 1960. Then the Agricultural Machinery Laboratory was completed at the corner of Elm Drive and Observatory Drive, near the college barns. At that time the machinery and engines laboratories were moved into this facility. The department shop expanded in the basement of the Henry Mall facility. In 1968, an addition to the west end of the laboratory was completed which provided laboratories for instrumentation, processing, agricultural mechanics and a general research laboratory. Offices were added in the Henry Mall Building at this time to reduce overcrowding. In 1981, the addition on the east end of the laboratory was completed which provided laboratory space for soil and water, agricultural mechanics, surveying, food engineering, processing, instrumentation, environmental quality, and food engineering. The laboratories on the west end were used to house the department shop which was moved from the Henry Mall site. Since that time these rooms have been modified to meet new needs such as milking equipment and structures.

The 1981 construction was considered phase one where phase two was a second floor on this addition. Phase two would have permitted all the department facilities at one location, but phase two was never completed. Now plans for phase two have been modified to construct two levels or floors on top of the 1981 addition. Campus administrators have been very interested because of our needs and the needs of other campus departments.

### Instruction

In the College of Agriculture, the first instruction was a short course, which consisted of a twelve week program initiated in 1886. In the fall of 1904, the engineering related courses were farm architecture, farm machinery, farm motors, and pump and water supply. In 1932, the program was changed to three five week sessions. Today we have a six session before the holidays followed by a three which is followed by another six week session.

The long course undergraduate program in the College of Agriculture started after the short course program was in place. During the first 25 years as a department, student enrolled in agricultural engineering courses and if they completed a sufficient number of courses they were Agricultural Engineering majors. During these years the students wrote a thesis for the Bachelor's degree. Department files contain copies of these thesis from 1906 through 1938. To compete with other engineers in the early 1930's, the department established a five year program where students received a BS in Agriculture and a BS in Engineering such as Mechanical or Civil Engineering. In about 1968, a four year program was developed which led to a BS in Agricultural Engineers. This is the program currently in place today with some small modification and has been accredited by the Accrediting Board for Engineering and Technology. The enrollment in recent years has been 60 to 80 students

Shortly after the four year program was developed, the Agricultural Mechanization and Management program was established for students pursuing careers in the sales and marketing position in industries such as farm machinery. This program was discontinued in 2000 due to low enrollments.

In 1945, Light Building Industry curriculum was developed and administered by the College of Agriculture and the Business School. Later the program changed to Construction Technology and then to Construction Administration when the Business School became less involved with the program. At times the enrollment in this program exceeded 200 students. The program was discontinued in about 1995 because it was determine not to be central to the mssion of the College of Agricultural and Life Sciences.

Shortly after World War II, students started receiving Masters degrees in Agricultural Engineering as more research funds became available. In recent years we have 15 to 20 student pursuing Masters degrees at anyone time. The PhD program in its current form was initiated in about 1967 with the first graduate in 1971. Over the past years we have 5 to 10 students pursuing a PhD at any one time. An interesting note about the PhD degree, Mr. Sven Norling received a PhD in the mid 1920's under the direction of E. R. Jones, department chair at the time. Mr. Norling is believed to be the first student receiving a PhD in Agricultural Engineering in the U.S.

## Research

The early research addressed problems faced by farmers in Wisconsin which included land clearing, drainage, animal housing and machinery. Much of the support for these research programs came from the federal Hatch funds which is a very small source of our research support today.

Many of the research results have had a major impact on agriculture. In the machinery area, the forage harvester or chopper is the most prominent which is concept in use today. (image Forage harvester research) This development is recognized by ASAE with a Historic Landmark Plaque located at the Agricultural Engineering Laboratory. Other

machinery developments include mower-conditioner, tree planter, mechanical fruit harvester, seed corn drier, and lake weed harvester. In the soil and water area the research included erosion control, small scale waste management, manure management, irrigation, and drainage. In the buildings area, structural design, ventilation, feed storage and animal comfort. The newest research area is food engineering and processing where the research has been in the area of rheological food properties and food safety. In recent years agricultural safety and health research has been receiving attention through several projects such as Healthy Farmers, Healthy Profits.

#### Extension

The department has had a well supported extension faculty with efforts being represented in all research areas except food engineering. The primary goal of extension specialist is to share the results of the research conducted on campus and research stations with the Wisconsin citizens, primarily the farmers. This is done through extension publications, field days, county meetings, news releases and radio programs.

In 1945, the department hired the first extension safety specialist in the country. The department continues to receive federal funds through the Smith-Lever Act. As a result of sharing resources across states numerous programs multi-state programs have developed such as MidWest Plans Service. Extension specialists in the twelve states have collaborated to develop publications and building plans which are marketed throughout these states.

Many important activities and accomplished have omitted due to space. Much more detail will be provided in the history to be published next year.