
DEPARTMENT OF GRAIN SCIENCE AND INDUSTRY

J. A. SHELLENBERGER 1977
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INTRODUCTION

A History of the Department of Milling Industry for the period 1910 to 1966 was completed in 1970. Over that span of years the "Milling Department", as it was commonly referred to, underwent several name changes. Since 1966 the Department name has been Grain Science and Industry.

Typed and bound copies of the Department's history were made available to the Kansas State University Farrell Library and the Department of Grain Science Reading Room. This continuation of the Department's history is made available in typed, bound form as a companion to the earlier material.

DR. WILLIAM J. HOOVER'S ADMINISTRATION

When Dr. Shellenberger reached the state's mandatory retirement age for administrators no successor had been selected; consequently, the University requested Board of Regents' consent for him to continue as Department Head until a successor could be named. Immediate intensified efforts were initiated by the University to find a person to fill the position. The final selection by the College of Agriculture and Department faculty was Dr. William J. Hoover.

Before coming to Kansas State University, Dr. Hoover was for ten years Vice-President of the Corn Industries Research Foundation, Washington, D. C. Previously he was associated with the Refrigeration Research Foundation, Colorado Springs, Colorado. Although appointed to the staff April 1, 1966, Dr. Hoover remained in Washington, D. C., for a period of time negotiating Federal grant funds before assuming active management of departmental affairs.

Figure 66-76 Pix -0001
DR. WILLIAM J. HOOVER--DEPARTMENT HEAD FROM 1966-1976

Dr. Hoover was born and reared in Illinois and obtained his secondary and university education in Champaign, Illinois. His Bachelor, Master, and Doctor of Philosophy degrees in Food Technology are from the University of Illinois. He also did graduate studies at George Washington University. Dr. Hoover brought to the Department knowledge of food science, the corn processing industry, familiarity with
various government agencies in Washington, D. C., and many contacts throughout the country with research institutes and universities.

**DEPARTMENTAL NAME CHANGE**

In 1966 the Department name of Flour and Feed Milling Industries represented a compromise reflecting the desire of two important industry groups to receive recognition in the name designation for their contributions to the Department's development. Academically, the name was hard to justify. In addition, it failed to recognize the new Baking Science and Management curriculum or the baking industry's contributions to the Department. For nearly two years an intra-industry committee had been working with the Department to recommend a suitable name change satisfactory to all three industries served by the Department, acceptable academically, and with student appeal. The subject had received a great deal of attention and more than forty suggested names had been proposed and discussed without finding any ideal solution to the problem.

However, soon after Dr. Hoover became Department Head, a decision was made to change the name of the Department to Grain Science and Industry. The new name seemingly pleased no particular group but neither did it specifically refer to one industry while neglecting the others. It requires a bit of ingenuity to associate the baking industry with grain science and the feed industry is not overwhelmingly concerned with grain. It is difficult to accurately appraise the effect of the name change on student enrollment. Probably none of the names the Department has had since its creation helped attract students. Probably students are attracted to the program by the Department’s reputation, the faculty, and the instructional facilities rather than by the Department name.

**FOOD AND FEED GRAIN INSTITUTE**

In 1966 the Board of Regents authorized the University to establish a Food and Feed Grain Institute “To expand services to American agriculture, the processing industries, and to involve the University more fully in growing international food programs.”

The "Institute" idea was promoted enthusiastically by President McCain and Vice President Glenn Beck on the basis of using the reputation and resources of the Department of Flour and Feed Milling Industries to extend the University's capabilities into areas of national and international distinction. The idea was proposed originally to Dr. Shellenberger but was rejected because no provision was made for added inputs into the Department's operational budget. The "Institute" was primarily a new name to be associated with a Department already well supported by industry, competently staffed, and internationally recognized.
Dr. Hoover became Director of the Food and Feed Grain Institute and Dr. Leonard Schruben was appointed Associate Director. The stated objectives of the Institute were:

1. Cooperate closely with the Federal Grain Marketing Research Center in Manhattan.
2. Educate and train personnel for the grain and feed processing and marketing industries.
3. Develop methods of milling and processing grains as food for human consumption and livestock feed.
4. Study both economic and physical problems associated with handling, transporting, and storing grain and grain products.
5. Study domestic and international grain marketing structures.

International concern with rising population and world food problems caused many nations to initiate food assistance programs. The United States responded to this trend by establishing the Agency for International Development and expanding the efforts of the United States Department of Agriculture to research malnutrition and food resources. Requests for AID, USDA, and Foundation-sponsored projects and support funds were associated with the Food and Feed Grain Institute and certain industry research grants were assigned to the "Institute". It thus became a multimillion dollar enterprise. Extensive AID projects are not without their drawbacks as they dissipate Departmental staff time and resources, and require extensive travel and off-campus responsibilities, which are detrimental to classroom instruction and research.

STAFF CHANGES

Dr. W. C. Hurley, Dale Phillips, Edward Hayes, and Dr. John Johnson were associated with the Department's Baking Science educational and research programs but resigned to accept other positions or retired. Dr. Hurley joined the staff of the International Multifoods Corp., Minneapolis, MN; Instructor Phillips resigned to join the Union Equity Cooperative Exchange, Enid, OK; and Instructor Hayes became Superintendent of a baking company in McAllester, OK. Dr. Johnson retired in 1976. Persons hired to fill these positions were: Dr. Cho C. Tseng, hired as professor in 1969, from the American Institute of Baking, Chicago, IL; Dr. Paul Seib, associate professor, 1970, from the Institute of Paper Chemistry, Appleton, WI; Dr. Carl Hoseney joined the staff in 1970 as associate professor, from the USDA Hard Winter Wheat Quality Laboratory in Manhattan; J. G. Ponte, Jr., appointed professor in 1975, from the ITT-Continental Baking Company, New York.

Dr. Verl Headley, assistant professor, resigned in 1968 to join CPC International, Chicago, IL. He was associated primarily with the Feed Science program. Associate professor Robert Sucher resigned in 1970 to join Anheuser Busch, Inc., St. Louis, MO. Dr. William Hoover resigned in 1976 to become President of the American Institute of Baking, Manhattan, Kansas. Professor D. R. Lineback, who joined the staff from the
University of Nebraska in 1969, resigned in 1976 to become Head of the Food Science program at Pennsylvania State University.

Dr. David Wetzel of Sangamon University joined the staff in 1973 as associate professor in charge of analytical instruction and research. Dr. Dale Eustace joined the staff in 1973 as associate professor. He was previously with General Foods Corporation. Professor Eustace's assignment is primarily in flour mill technology teaching and research. Instructor John Pedersen, formerly with The Pillsbury Company, joined the staff in 1968. He has assisted with instruction in grain storage, teaching, and research, and has managed the Department's AID programs throughout the world. Dr. Lynn Bates joined the staff as assistant professor in 1968 and has conducted biochemical research in the Department in cooperation with the Rockefeller Foundation program in Mexico.

RETIREMENT

Dr. Majel MacMasters and Dr. J. A. Shellenberger retired from the staff in 1970. Dr. MacMasters had an outstanding career as an educator and a productive researcher. Dr. Shellenberger retired as administrative Head of the Department, as required by law, in 1966, continued serving the University until reaching mandatory retirement in 1970. University associates and friends sponsored a retirement dinner at the Manhattan Country Club for Dr. MacMasters and Dr. Shellenberger. At the request of the University administration, the State Board of Regents in 1970 directed that the milling building be renamed Shellenberger Hall and industry friends of Dr. Shellenberger raised funds and obtained the talents of Mrs. Elfreda Peterson to paint his portrait, which was presented to the University and accepted by President McCain at a luncheon in 1972. The portrait hangs in the upper hall of Shellenberger Hall.

Assistant Professor Gerald Miller retired in June 1973 after many years of excellent service to the Department. His previous commercial analytical laboratory experience was invaluable in teaching and supervising the Department's many needs for various types of analysis. He was honored by a departmental farewell dinner at the Student Union.

Dr. John Johnson retired in 1976 after 36 years of service to the University. Professor Johnson first joined the staff as a research assistant in 1940 and advanced through all professional ranks to become full professor in 1954. His record as a teacher, researcher, and contributor to national professional and scholastic groups as well as to various campus and community activities was exceptional. Faculty, students, and community friends joined in honoring Dr. Johnson on his retirement by celebrating a “John Johnson Day” that included a reception at the Student Union and dinner at the Manhattan Country Club.
RESEARCH

The Department's research productivity has continued at a high level as in the past and has remained quite diversified. The main thrust of the Department's research has been in milling technology, formula feed production problems and baking technology. Cooperative projects with many other departments have provided a broad base of operation. The annual Experiment Station Report lists the titles of all major published research articles by departments; therefore, there is no need to record them here.

Additional office and laboratory space became available to the Department when the Federal Hard Winter Wheat Quality Laboratory moved into the new Grain Marketing Research Center.

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECTS

Since 1967 the Department of Grain Science and Industry and the Food and Feed Grain Institute have had a number of Agency for International Development, U. S. State Department, contracts. Projects have included technical assistance in food grain drying, storage, handling and transportation; status of grain storage in developing nations; agribusiness planning conference; grain utilization in India; and improving the nutritive value of cereal based foods.

These programs have required many of the departmental staff to be in foreign countries for extensive periods.

THIRD FLOOR EXPANSION TO SHELLENBERGER HALL

The State Legislature in 1970 appropriated $100,000 for an expansion of the Grain Science Department. Architectural plans for a third floor to the building were developed, but rising construction costs and lack of expected Federal matching funds prevented starting the project. The final result was a partial third floor expansion consisting of a general utility laboratory and a classroom.

Figure 66-76 Pix -0004
THE THIRD FLOOR EXPANSION ON SHELLENBERGER HALL

Through the courtesy of the Hubert Edwards family, $25,000 was made available for special projection, lighting, and sound equipment for the classroom and it was dedicated January 17, 1975, as the Charles B. Stout Memorial Classroom.

Figure 66-76 Pix -0003
THE CHARLES B. STOUT MEMORIAL CLASSROOM

FACULTY HONORS
The Department of Grain Science and Industry has been one of the smaller campus departments in staff members, ranging from three in 1910 to 21 in 1976, but the staff from the beginning has received much recognition and many honors. Listed below in chronological order are the main honors the staff has received. Only national or international recognitions are listed. Omitted are local awards for various contributions to community and university functions and organizations.

1923 Dr. C. O. Swanson
   Honorary D. Sc. degree, Carleton College, 1940.

1942 Dr. John Johnson
   Gamma Sigma Delta International Secretary, President, and recipient of International Award for Distinguished Service to Agriculture, 1963.

1944 Dr. J. A. Shellenberger
   Chairman, U. S. State Department delegation to Latin America, FAO grain storage meeting, Cali, Colombia, 1949.
   President, American Association of Cereal Chemists, 1950.
   Frank Schwain Memorial Award, Cincinnati Section AACC, 1968.
   President, International Association for Cereal Chemistry, 1966; Lifetime Honorary President, 1971.
   Outstanding Achievement Gold Medal, Board of Regents, University of Minnesota, 1966.
   Neumann Medal, German Association of Cereal Research, 1967.

1946 Professor Arlin B. Ward
   Amme Medal, German Institute for Milling Technology, 1974.

1954 Professor Eugene P. Farrell
   President, Association of Operative Millers, 1970.

1959 Dr. Majel MacMasters

1959  Dr. Harry B. Pfost
   Plaque for leadership and Contributions to the Feed Manufacturing Industry from the American Feed Manufacturers Association, 1976.

1960  Dr. Robert W. Schoeff
   Plaque for leadership and Contributions to the Feed Manufacturing Industry, American Feed Manufacturers Association, 1976.

1966  Dr. William Hoover

1969  Dr. D. R. Lineback
   Outstanding Educator of America, 1975.

1975  Professor J. G. Ponte, Jr.
   Secretary, American Association of Cereal Chemistry, 1975.

DEPARTMENT DEVELOPMENTS

The Milling Science and Management Program

Industry in 1976 provided 26 scholarships worth $15,500 to students enrolled in the Milling Science and Management curriculum. The Department, in cooperation with the Association of Operative Millers, offered two Operative Millers' Short Courses, one in 1970 and one in 1974. Both courses, approximately four weeks long, were attended by about 50 students each. Classroom instruction, lodging, and meals were supplied on campus. The cereal processing industries appreciated the efforts of the University to be of service. Students and sponsors were highly complimentary of the instruction provided.

The major equipment added to the milling section of the Department was a small experimental corn mill that permits corn milling to be done as it is commercially.

Both Dr. Shellenberger and Professor Ward have served as Chairmen of the Association of Operative Millers Technical Committee, which represents a cross-section of top milling executives and managers in Canada and the United States. There has been and continues to be excellent liaison between the Grain Science and Industry Department and the cereal processing industry. Unfortunately, the Millers' Advisory Committee, composed of milling industry leaders, is no longer functioning; however, Dr. Hoover has been a member of several Millers' National Federation Committees and attends the annual Millers' National Federation convention. Professor Farrell for many years has served as Chairman of the Association of Operative Millers' Education Committee.
The Baking Science and Management Program

The Bakers' National Educational Foundation annually provides $28,000 to the Department without restrictions to be used for the baking program. The $28,000 is from interest on $900,000 the Bakers' Foundation deposited with the First National Bank of Kansas City, Missouri. Baking industry funds also were provided to pay for student recruitment costs, including a part-time student recruiter. The Bakers Ambassadors Club meets each year during the annual American Society of Bakery Engineers' meeting to consider ways industry can best serve the Kansas State University baking program.

The number of scholarships available to students majoring in the Baking Science and Management curriculum has been increasing and totaled 23 worth $22,462 in 1976.

The partial, third-floor addition to Shellenberger Hall permitted installation of a large tunnel oven, an important equipment addition to the baking program. Other major items of equipment added to the baking facilities were an Oakes continuous cake mixer, doughnut and sweet goods machine, a reel oven, a high-speed dough mixer, and a tortilla-taco manufacturing machine.

The Feed Science and Management Program

There are 13 Feed Industry scholarships with a total of $8,000 available to students majoring in the feed technology curriculum. Undergraduate student enrollment in Feed Technology has remained essentially the same during the past six years. Only 34 students were enrolled in 1976.

The Feed Science and Management Advisory Committee, composed of prominent executives of major feed companies, has continued to meet at regular intervals to consider departmental needs. Under the leadership of Dr. R. C. Eaton, a broad campaign to raise $225,000 to modernize the feed mill was initiated in 1966. The first phase of the modernization program was the construction of the feed mill warehouse which was completed in 1969. Plans for modernizing the feed mill were prepared by T. E. Stivers, consulting engineer. Among the changes made were a central control panel, hydraulic drive system, modern expeller and compacting equipment, and expanded storage space. The total cost of the modernization program was approximately $350,000, including $125,000 of equipment. Except for $25,000 of Federal funds, industry provided the means for the modernization of the feed mill.

Figure 66-76 Pix -0005
THE FEED TECHNOLOGY WAREHOUSE ADDITION

The Feed Technology faculty and Extension staff, in cooperation with the American Feed Manufacturers Association and the Midwest Feed Manufacturing
Association, conducted four Feed Manufacturing Technology Short Courses during the past ten years. Each course was limited to 50 students.

The purpose of the short courses was to provide basic information for persons with some experience in feed manufacturing. The instruction includes lectures, pilot plant feed mill operation, products control, problems, and demonstrations. The course is held on the campus but meals and housing are at a motel adjacent to the campus.

The short courses have won high praise from both students and sponsors for subject matter covered, organization, and effectiveness.

**FEED EXTENSION ACTIVITIES**

During the past ten years the Formula Feed Extension staff each year has given a number of Feed Mill Workshops with attendance ranging from 100 to 500 persons representing as many as 200 firms. Topics covered at the workshops include materials handling, maintenance, feed additives, quality control, safety, and fire and dust explosions. The staff has given special attention to publicizing the need for safety from fire or dust explosions in feed mills and grain elevators. Also, they conducted a survey of pesticide use in Kansas to obtain information on proposed pesticide regulations.

The Extension staff participated in the Grain Grading Schools sponsored by the Kansas Grain Dealers Association and Kansas Wheat Improvement Association, Kansas District 4-H Shows, and Feed Mill Managers' Seminars.

**STUDENT ENROLLMENT**

A 25-year comparison of the student enrollment in the University’s College of Agriculture, Graduate School, and the Grain Science and Industry Department is tabulated. The Grain Science Department’s student growth rate is somewhat lower than that of the University as a whole or of the College of Agriculture. The recent expansion in the number of graduate students in the Department is the result of including students enrolled in the Department but majoring in Food Science. More than one-third of the total graduate student enrollment are Food Science majors now so the present graduate student numbers are not comparable to past records.

The graph shows total undergraduate student enrollment during the period the Department has existed. Also shown are the Department’s student enrollment and the enrollment in the three curriculums from the start of the programs to 1976.

Recently an interdepartmental curriculum in Food Science and Industry was established in the College of Agriculture. Both M.S. and the Ph.D. degrees in this discipline could be pursued in several departments including Grain Science and Industry. The Food Science curriculum is guided by a faculty committee with rotating membership. At the undergraduate level, the Food Science curriculum was of minor
departmental concern and involved only two new courses, Fundamentals of Food Processing and Principles of Food Analyses.

**TWENTY-FIVE YEAR COMPARISON OF ENROLLMENT IN THE GRAIN SCIENCE AND INDUSTRY DEPARTMENT WITH THE GRADUATE AND UNDERGRADUATE ENROLLMENT OF THE UNIVERSITY**

<table>
<thead>
<tr>
<th>Year</th>
<th>University College of Agriculture</th>
<th>Grain Science</th>
<th>Graduate School</th>
<th>Graduate Students in Grain Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>4,947</td>
<td>935</td>
<td>72</td>
<td>414</td>
</tr>
<tr>
<td>1956</td>
<td>6,093</td>
<td>918</td>
<td>80</td>
<td>488</td>
</tr>
<tr>
<td>1961</td>
<td>6,749</td>
<td>708</td>
<td>114</td>
<td>858</td>
</tr>
<tr>
<td>1966</td>
<td>9,908</td>
<td>1,096</td>
<td>115</td>
<td>1,377</td>
</tr>
<tr>
<td>1971</td>
<td>12,444</td>
<td>1,454</td>
<td>91</td>
<td>2,072</td>
</tr>
<tr>
<td>1976</td>
<td>13,655</td>
<td>2,331</td>
<td>117</td>
<td>2,243</td>
</tr>
<tr>
<td>% increase</td>
<td>276</td>
<td>249</td>
<td>162</td>
<td>542</td>
</tr>
</tbody>
</table>

- **Figure 66-76 Pix -0006**
- **STUDENT ENROLLMENT FROM 1910-1976**

At the graduate level in Food Science, majors had an influence on student enrollment and the overall purposes and objectives of the Department's programs. The excellent research facilities and research support funds available in the Grain Science and Industry Department resulted in students enrolling in the Department whose interests were in Food Science only. For example, in 1976 approximately a third of the M.S. students and one-half of those working for the Ph.D. degree were majoring in Food Science. Thus the Grain Science and Industry Department is devoting considerable time and effort to training food scientists.

**ALPHA MU FRATERNITY**

In 1934 a group of upperclass Milling students requested permission to conduct department seminars off campus. Advantages suggested were that informal meetings would encourage discussions, greater interest because of varied meeting locations, smoking could be allowed, etc. The request was denied because seminars were listed as an official required subject.
A group of junior and senior students then organized to form a fraternity and to hold regular meetings. Officers selected were: Armand Rousseau, Chairman, Forrest Wolf, Vice-chairman, and E. P. Farrell, Secretary. Dr. C. O. Swanson, Head of the Department of Milling Industry, encouraged the group and suggested that they form an undergraduate honor society to be named Alpha Mu from the Greek words Aleurone Mule, meaning flour milling. A constitution and by-laws were adopted in 1936.

Alpha Mu became an active honorary fraternity of milling on campus. Scholarship was a part of the requirements for membership. Regular meetings were held and specific activities were undertaken such as a fall smoker for all milling students, distribution of food baskets to the needy at Christmas time, awarding a medal to the freshman in milling with the best scholastic record, and bringing milling industry leaders to the campus to speak to students.

The University of Minnesota in 1947 initiated a Milling Engineering program, which led to students petitioning for membership in Alpha Mu. The petition was granted in 1949 and Beta Chapter was organized. The Milling Engineering program at Minnesota was discontinued in 1953 and Beta Chapter became inactive.

In 1953 the Feed Science and Management curriculum, and in 1964 the Baking Science and Management curriculum, were added to the KSU Milling Department. Students majoring in either curriculum became eligible for membership in Alpha Mu.

Alpha Mu members assisted in the dedication of the Feed Technology building in 1955 and the Milling Industry building in 1961. Also, Alpha Mu members actively contributed to the preparation and operation of exhibits that are a part of the annual Ag Science Days.

Alpha Mu fraternity was conceived and organized by milling students and its rituals reflected association with the flour milling industry; consequently, membership was less attractive to students majoring in the feed or baking science curriculums. Alpha Mu meetings were having to compete with special interest seminars and the club formed by students interested in Baking Science. The membership of Alpha Mu voted in 1969 to temporarily become inactive under the existing circumstances.