\textbf{Nothing is as certain as change,}” might be stated in the converse as “nothing is more constant than students.” They come from near and far, from tiny to large high schools, some with fear and uncertainty and some with extreme confidence. They dress differently, wear their hair differently, even talk differently, but they come year after year with the same enthusiasm and eagerness to learn, and with an expectation that they can make the world a better place in which to live if “it will only accept their ideas.” They continually challenge the faculty from their patience to their ability to find the teachable moment, and to find the spark that will develop the creativity of young minds that do not know that “it can’t be done.”

Unfortunately from a historical standpoint, when a department is generating its history by its actions day by day, both the students and the faculty are often too busy to make or keep many records. In many ways that is what happened in the Department of Farm Mechanics and subsequently the Department of Agricultural Engineering. Most of what was kept in the early years was lost either with changes in administration or in the move between buildings.

From the student standpoint, fortunately the Farm and Industrial Equipment Institute (FIEI), a group of equipment manufacturers, saw the benefits of fostering student activities through the American So-
ciety of Agricultural Engineers (ASAE). The institute provided support to initiate national competitions between student branches to determine the best in the country. The Illinois Student Branch competed year after year and prepared a report annually to submit. Those reports and some of the supporting files provide some gems of student life and activities. A selected few are incorporated here in hopes of “striking a chord” in the memory banks of some alumni.

*The Student Branch of the American Society of Agricultural Engineers*

Department records do not show the nature of student activities before the formation of the Student Branch of ASAE. Surely there were some, but perhaps the agricultural mechanization majors participated in other clubs of interest such as Field and Furrow of agronomy or the agricultural economics club. However, it is known that after the formation of the Student Branch, agricultural mechanization majors as well as other majors, were welcome and did participate; and some may have served as student officers of ASAE.

The Illinois Student Branch of the American Society of Agricultural Engineers held its first meeting on October 9, 1934 according to a letter from Hubert Myers, the club secretary and treasurer, published on page 233 of the 1935 volume of “Agricultural Engineering.” The other officers of the club that first year were president, W. D. Rusk; vice president, W. Ramsey and secretary-treasurer W. S. McKown. Ramsey graduated in Agricultural Engineering in 1935. Rusk graduated in Agriculture with a major in Agricultural Engineering and McKown graduated in Agricultural Economics. There were 12 members at the time of that first meeting with three additional members added during the school year. Professor E. W. Lehmann, the department head, was always interested in student activities and was instrumental in the organization of the branch.

Two U of I agricultural engineering students attended the annual meeting of ASAE in Detroit in June 1934. They were W. C. Gilham and R. U. Winters. Gilham, along with H. Paul Bateman, received his B.S. degree in agricultural engineering that year and Winters had graduated in general agriculture with an interest in agricultural engineering in 1933.
One of the branch activities their first year was a lunch stand set up in the machine laboratory of the Agricultural Engineering Building during Farm and Home Week held January 14 to 18, 1935. Hot sandwiches, coffee, milk, pie and ice cream were served. The net profit, $31.12, was used by the Branch to pay its various expenses. The lunch stand at Farm and Home Week became a tradition for the Student Branch until 1962 when Farm and Home Week was discontinued.

Another activity was cooperation with other student groups in the College of Engineering to provide displays for Engineering Open House. With the help of the faculty in 1935, exhibits and demonstrations were prepared as follows:

1. Demonstration of soil erosion control and water conservation.
2. Blueprints, charts, photographs and bulletins on farm building and housing improvements.
3. Developments in rural electrification illustrated by charts and exhibits.
4. A power and machinery display showing a diesel tractor and terracer and other special machines.

It is interesting to note that the agricultural engineering students have continued their interest to cooperate in Engineering Open House for over 60 years, frequently winning first place with their displays, exhibits, and demonstrations.

As mentioned earlier the Farm and Industrial Equipment Institute (FIEI) initiated a student branch competition in 1935. (FIEI has since changed its name to the Equipment Manufacturers Institute, EMI.) It was 25 years (1960) before the U. of I. Student Branch won the FIEI competition, but it has been a frequent winner since. Most recently Illinois won the competition four years in a row from 1993 through 1996.

Student engineers have participated in various other national competitions. In 1949, during its second year in existence, Benjamin A. Jones, Jr. was awarded second place in the undergraduate division of the student paper competition. Maurice L. Burgener (B.S.'48) was awarded second place in the graduate division. The competition has changed over the years, and a graduate division no longer exists, but during the time of two divisions, 1949 was the only time students from one university won in both divisions in a given year. Additional
winners have been Irvin A. Eickmeyer in 1957 and James Smith in 1962.

Student engineers have also participated in a competition to identify the ASAE Student of the Year. Since the competition's inception in 1969 two Illinois students have won the award: Ronald L. Elliott in 1972 and Thomas Glenn in 1977.

Since 1950 the Engineering Student Council has selected students who exhibit outstanding qualities of leadership in the College of Engineering to be Knights of St. Patrick. Whereas agricultural engineering students make up only about three percent of the total enrollment of the College of Engineering, they have made up about eleven percent of those honored as Knights of St. Patrick. Those selected by year have been:

<table>
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<tr>
<th>Year</th>
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<tr>
<td>1950</td>
<td>Errol D. Rodda</td>
<td>1964</td>
<td>Peter D. Bloome</td>
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<td>1951</td>
<td>David E. Cash</td>
<td>1965</td>
<td>George A. Puzey</td>
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<td>James A. Garman</td>
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<td>Lyle E. Stephens</td>
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<td>1952</td>
<td>David M. Harris</td>
<td>1966</td>
<td>Wayne A. Peterson</td>
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<td>John R. Huber</td>
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<td>Robert W. Schottman</td>
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<td>1954</td>
<td>Cletus E. Schertz</td>
<td>1967</td>
<td>Robert D. Carlson</td>
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<td>1955</td>
<td>James E. Smith</td>
<td>1968</td>
<td>Keith H. Haselhorst</td>
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<td>1956</td>
<td>John A. Replogle</td>
<td>1969</td>
<td>Wayne A. Knepp</td>
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<td>1959</td>
<td>John Brennan</td>
<td>1970</td>
<td>Daniel G. Roley</td>
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<td>Herschel H. Klueter</td>
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<td>Finis W. Schultz</td>
<td>1871</td>
<td>Robert J. Gustafson</td>
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<td>1960</td>
<td>Lyle S. Martin</td>
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<td>Gary L. Wells</td>
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<td>1961</td>
<td>Wayne L. Peterson</td>
<td>1972</td>
<td>Ronald W. Schneider</td>
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<td>Rolland D. Scholl</td>
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<td>Rollin D. Strohman</td>
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<td>Earl H. Williams</td>
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<td>1962</td>
<td>Douglas B. Bauling</td>
<td>1973</td>
<td>Melvin H. Buescher</td>
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<td>Patrick A. Duffy</td>
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<td>Albert L. Humke</td>
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<td>John R. Rosenthal</td>
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<td>Paul J. Klazura</td>
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<td>1963</td>
<td>Charles N. Anderson</td>
<td>1974</td>
<td>Dale E. Gramm</td>
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<td></td>
<td>Jerry R. Weibel</td>
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<td>James R. Steffen</td>
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1975  Michael B. Brennemann  1984  Brett S. Miller
1977  Lawrence J. Brizgis  1985  Bryan Groth
       Thomas E. Glenn  1986  Dave Griffith
       Warren R. Groth  1986  Marcia McCutchan
       Nicky D. Hoyle  1987  James W. Brown
1978  Jeffry W. Healy  1987  Robert A. Montgomery
       1987  Dale Brockamp
       1988  Christopher A. Myers
       1989  Doug Awe
1979  John Brach  1991  William C. Hughes
1980  Christine A. Berglund  1991  Kenneth Ramsay
       James D. Walker  1992  Jeannie Bloome
1981  John E. Andrews  1993  Rene Denhart
1982  Randy K. Pound  1994  Julie Madison

In addition, Frank Lanham, Roscoe L. Pershing, and Howard Wakeland have been selected as honorary knights.

*The Student Agricultural Engineer, 1937*

The department hosted the ASAE annual meeting during June of 1937. In preparation for the meeting the Student Branch published its first student publication known as “The Student Agricultural Engineer.” The publication was distributed to all attendees. Some examples from it seem relevant to this history.

**EDITOR’S PAGE**

Welcome to Illinois. For the first time in thirty-one years Illinois has the pleasure of being host to the annual summer convention of the American Society of Agricultural Engineers. It is the sincere wish of the local members that your visit be a pleasant and enjoyable one. We hope that the information contained in this publication will further increase your pleasure while visiting our campus. With this thought in mind, the Illinois Student Branch dedicates this booklet to you.

The exhibit of old plows now in the Agricultural Engineering building brings to mind the annual Wheatland and Big Rock Plowing Matches in Illinois. The thousands of spectators that annually witness these two events definitely establish them as being one of the most popular of agricultural sports. The Wheatland Match was established
in 1877 by James Patterson for the purpose of promoting closer fellowship and more profitable farming. The Big Rock Match was founded on essentially the same principles about 1900 by William T. Thomas. During the past thirty years, interest in these events has increased rapidly; they are well worth attending.

Recently I was introduced to a young business man who had graduated in Commerce a short time ago. During the conversation he asked me which field of engineering I was in. When I mentioned agricultural engineering he seemed surprised. He told me that it must be something new because he had never before heard of it. It is surprising how many other people have this same misconception. As early as 1845 comprehensive books were being written on the subject of Agricultural Engineering. A short time ago I looked through “Rudimentary Treatise on Agricultural Engineering,” by G. H. Andrews, which was published in England in 1853; this book discussed the questions confronting agricultural engineering at that time. This, however, was not the beginning; such men as George Washington, Thomas Jefferson, Colonel Fairfax, Daniel Webster, and Eli Whitney realized the need of trained men to cope with agriculture’s technical problems.

To the members of the faculty and to the students who assisted in the preparation of this issue of the STUDENT AGRICULTURAL ENGINEER I wish to express my sincere gratitude.

R. F. Skelton

Some Activities of the Agricultural Engineering Staff

R. F. Skelton, '38 A.E.

The activities of the department are divided into three types of work: research, college teaching, and extension. The head of the department, Professor E. W. Lehmann, is responsible to the Director of the Experiment Station and Extension Service, and to the Dean of the College for the activities in these fields. Fortunately these activities are headed by one man at Illinois. Professor Lehmann has had an active part in the rural electrification work of the state and is a member of the governor's committee. He has also assisted in the Soil Conservation and Drainage programs that have been inaugurated. He teaches Home Equipment and Rural Electrification, and Drainage, as well as special problem courses for advanced students.

One of the important services of the department of agricultural engineering is the preparation of farm building plans, that are made available to farmers through the plan service. Professor W. A. Foster has designed many farm homes and other farm structures, and in coopera-
tion with representatives of other departments has prepared a wide variety of circulars. Another research problem to which he is giving attention is grain storage. He teaches the farm building courses, the course in concrete construction, and a course in home architecture.

The power and machinery courses, which are leading in popularity in the department, are taught by Professor R. I. Shawl. During the past semester he had 137 students enrolled in these courses. That part of his time devoted to research is devoted to lubricating oil study, to tractor operation costs and to harvesting problems.

There is one introductory course in Agricultural Engineering that is required of all students enrolled in the general agricultural curriculum, in the College of Agriculture. Most students take this course during the freshman year. It is taught by Professor A. L. Young with the assistance of E. L. Hansen. Professor Young also teaches the shop course for teachers and the dairy machinery course. In research most of his attention has been given to problems in harvesting, including work on combines, threshing machines, and corn pickers.

While the men engaged in teaching devote a limited time to research the major part of the research work of the department is done by those men who are devoting their entire time to this work. The work on dehydration, with emphasis on the drying of seed corn, is being done largely by R. H. Reed. Mr. Reed has worked for several years with the assistance of F. R. Wiley in developing a special temperature and humidity control experimental drying unit which is of special value in studying some of the fundamentals of the problems of dehydration. During recent months Mr. Reed has given some attention to apple washing and stationary spraying.

A new field of research which is being explored by the department is a study of the power, machinery, and labor relationship in efficient and economical farm production. It is recognized, according to Professor Lehmann, that "the economical use of labor is dependent on proper and adequate equipment and machines of production and adequate power and the efficient and economical use of power is dependent on proper loading of the power unit, which is a problem in engineering." Paul Bateman began working on this problem last September and is devoting his attention particularly to soybean production.

Considerable emphasis is being given to weed control by the Agricultural Experiment Station in an organized project in which C. W. Veach of the department is actively cooperating. Mr. Veach is working primarily on the problems of seed cleaning. Representative types of
seed cleaning machines have been secured for test purposes and an air conditioned laboratory provided for studying the physical characteristics of weed seeds.

Through cooperation of the Bureau of Agricultural Engineering T. Cleaver has been stationed at the University of Illinois and is devoting attention to the problem of grain storage. A considerable part of the facilities used in this research were developed by the department for an earlier study on the storage of soft corn.

Another problem which is receiving attention is drainage improvement, the need of which is in evidence in many sections of Illinois. Work on this project is being done by H. D. Fritz, who is also on the Bureau of Agricultural Engineering staff. Mr. Fritz is studying the effect of drainage maintenance on the coefficient of roughness “n” as used in Kutter’s formula.

The extension work of the department has been given greater emphasis during the past year in the programs of the County Program Planning committees than ever before. There was a greater demand for extension help in rural electrification than in any other phase of extension work offered in the state. This work is being done by R. R. Parks.

The interest in soil conservation is also on an increase. R. C. Hay has had his time fully taken in conducting terracing demonstrations and schools. A new phase of extension work devoted to an old problem is the work that T. A. Pitzen is doing on drainage.

A departmental activity of special interest to prospective students is the curriculum in Agricultural Engineering in the College of Engineering. The freshman year of this curriculum is the same as other Engineering curricula. The chief feature of the curriculum which makes it different from most agricultural engineering curricula is the option provided at the beginning of the junior year. At this time a student may major in either the field of power and machinery or structures and drainage. These options make possible a more thorough training in design in either of these fields.

A Brief History of the University of Illinois
D. L. Seats, '37 Ag., '39 A.E.

On March 2, 1868, the doors of the University were opened for the first time, with a total enrollment of fifty men students. It could be said that Illinois was far behind her neighboring states in starting state universities. Ohio had begun in 1802, Indiana in 1820, Michigan in 1821, Missouri in 1839, Iowa in 1850, and Minnesota in 1851.
Although Illinois was slow in getting a state university under way, it was a citizen of Illinois, Jonathan Baldwin Turner, who probably had more to do than any one else with the passing of the Morrill-Land Grant Act, which has made the state universities possible.

Before its signing by President Lincoln in 1862, no state university, however early in its founding, had made much progress. The Land Grant Act gave to the states 30,000 acres of land for each congressman or delegate, to be devoted to the cause of education. For Illinois, the grant amounted to 480,000 acres. All except 25,000 acres were sold for an average price of seventy-five cents per acre within five years after the university was established.

The subjects actually taught at its opening were algebra, geometry, natural philosophy, history, rhetoric, and Latin, and the work was carried on in a brick building which was the donation of Champaign County.

The faculty for the first term consisted of the Regent and three instructors—a head farmer, and two non-resident lecturers. A decided contrast in numbers with our faculty today! The two towns likewise presented a very different appearance. Street pavements were laid some twenty years later than this; the buildings, for the most part, were of the cheaper grade of wood frame construction; and the streets themselves were more often adorned by wood piles than by sidewalks. Stock of all kinds ran at large in both towns and in the country, so all houses were securely fenced to keep out the predatory town cows and hogs.

Women were not at first admitted to the university. In 1869, the question arose and was finally decided in the affirmative in March 1870.

In spite of the prominence of agriculture in the state and the important part which the farmer took in the industrial movement, the agricultural department lagged. Meanwhile the engineering course developed rapidly. Stillman W. Robinson may be regarded as one of the most important men in developing the College of Engineering. He appreciated the educational possibilities of shop work and made it a part of the engineering instruction.

At the end of the first five years the organization of the university consisted of four colleges—the College of Agriculture, of Engineering, of Natural Sciences and of Literature and Science. These were subdivided as follows:

The College of Agriculture included the Schools of Agriculture and Horticulture.

The College of Engineering embraced the four schools of Mechanical, Civil, and Mining Engineering, and Architecture.
The College of Natural Sciences included the School of Chemistry and the School of Natural History.

The College of Literature and Sciences embraced the School of Modern Language and Literature and the School of Ancient Language and Literature.

Thus we see the beginning of a great university. Attendance increased, state appropriations were made, buildings were constructed, new colleges were added, new departments added, and the University of Illinois lifted its head out of the mud and soon became one of the leading universities of the country.

Student Activities of 1936-37

K. E. Fuller, '38 A.E.

The student branch of the A.S.A.E. enjoyed an unusual year in the environment of agricultural engineering. The reasons for such a season of wide and varied events of interest were largely attributed to the many speakers in the fields of agriculture and engineering who presented many topics pertinent to agricultural engineering.

Professor Polson, of the Mechanical Engineering Department of the University of Illinois and a nationally known authority on internal combustion engines, presented many interesting phases of diesel power.

Another speaker, in the field of agricultural engineering, was Mr. Mason Vaugh, recently returned from India. His description of Indian agriculture and its present problems presented quite a contrast to the problems which we are confronted with in this country. Mr. Vaugh graduated in agricultural engineering at the University of Missouri.

Topics presented by the members of the Agricultural Engineering Department, University of Illinois, were "Recent Developments in Rural Electrification," presented by Professor Lehmann, "Methods and Applications of Electric Fencing," presented by Mr. Veach and Mr. Hansen.

As to student presentations, Willard Bixby, '37, recounted his experience with the horse-pulling dynamometer truck which he operated at many contests held throughout the state during the summer of '36. Robert Skelton, '38, told of his experiences with the cellulose digestor operated on the University farm south of the campus. He explained the process of obtaining methane gas from the action of bacteria on soybeans and pointed out many of the limitations of the plant. Kenneth Fuller, '38, on a quite different subject, related his experiences in the field of amateur radio. Several pieces of equipment as are
used on the high frequency communication channels were displayed and operated in a demonstrative fashion. Ken’s call is (W9PSL).

The year’s student exhibits were displayed during the Little International and the Illinois Student Engineering Exhibit (Open House). At the open house, the Agricultural Engineering exhibit consisted of a replica of Cyrus McCormick’s first reaper as contrasted with the latest in the one-man combine type. Frank Andrew, Robert Skelton, Kenneth Fuller, and Richard Boardman demonstrated the accuracy and the function of the University’s constant pull horse pulling dynamometer.

Other pieces of equipment were terraces, a radio-equipped tractor, corn picker, and many of the crawler and rubber-tired tractors used by the students in laboratory.

The student branch of A.S.A.E. greatly appreciates the interest and cooperation given by their instructors and local business firms in making their school year and engineering exhibit successful.

Graduate Training Course with a Machinery Company
Richard Duncan, ’36 A.E.

On June 8, 1936, I received my diploma which stated that I had fulfilled the requirements for and had received a B.S. degree in agricultural engineering at the University of Illinois.

On June 30, 1936, late in the afternoon, I climbed off the train at Racine, Wisconsin. I was reporting to J. I. Case Co. for a two-month training course, on pay, with the prospect of further connections with the company.

On the morning of July 1, I reported for duty. I found myself one of eighteen fellows. A check-up disclosed that we were all college men. There were ten widely scattered colleges and universities represented from Dartmouth to Nebraska and from Wisconsin to South Carolina. We checked in and got started on what was to be two months spent in learning as much as possible about a large organization and its products. At that time J. I. Case Co. had three plants for production: The Main Works and the Tractor Works at Racine, Wisconsin, and the Rockford Works at Rockford, Illinois.

We stayed in Racine several days, becoming acquainted with the policies of the company. The Case Co. operates on only sound, time-proven business policies, and builds only quality products. We should endeavor to sell the customer the kind, size, and amount of machinery which would prove the most profitable to him. This meant that we, who were to go into sales work, were to make selling not only a job of
salesmanship but also a problem of the power and machinery requirements of the farmer and operator.

After several days we were sent to Rockford. All of the smaller and lighter machinery units are made at the Rockford Works. There our time was divided three ways. Approximately one-third of our time each day was devoted to taking up the sales features of the Rockford products. We were also given points and suggestions on salesmanship. During another third of our time we worked individually with inspectors. We worked with the inspector on his particular round of inspection. There are thirty-two men working in the inspection department. While working with the inspectors, we saw at first hand how closely quality and accuracy are checked. Each inspector is thoroughly familiar with his phase of inspection and could give us detailed information on the production methods. During another third of our time we set up new machinery. We took the bundles from the warehouse and set up the new machines the same way that the dealer does. One short field trip was made to observe a binder in operation. We were out on the testing grounds one full day operating tractors and different tillage tools. The sales manager and the special representative of the Rockford Works were in direct charge of our group while at Rockford.

After two weeks we returned to Racine, where we spent three weeks at the Main Works where threshers, combines, balers, silo fillers, hammer mills, corn pickers, and paints are made, and advertising literature is printed. The major part of our time was divided two ways. One part was out in the plant seeing as much as we could and learning from the workmen, shop foreman, and superintendents. The remainder of the time we were in the assembly hall or on the display floor taking up each machine in as much detail as time would permit.

Time was spent in the paint shop where the paint is made for all Case machinery, in the printing department where all advertising literature is printed, in the repair department where all branch house repair orders are filled. We visited the departments where the routine business is handled, such as bookkeeping, branch house accounts, and inventory. We also visited the Racine Branch and saw how the business is handled at the branch house. We made several field trips and observed tractors, combines, threshers, and pick-up balers in operation. While at the Main Works, the special representative of the Main Works had charge of the group.

From the Main Works we went out to the Tractor Works. We started at the drop hammers and the foundry and ended at the loading docks
where tractors were being pushed into box cars for shipment. We learned that the castings in Case Tractors and other machinery are semi-steel castings. The tolerances allowed on all machinery in the Tractor Works correspond to those allowed in making an eighteen hundred dollar automobile; cut gear teeth are closely checked to keep the tooth shape within one-thousandth of an inch of a perfect tooth. The crankshafts pass through ninety-two operations and inspections. All case hardening and heat treating are held rigidly to the best known practices. All assembly work is continuously inspected. Every tractor coming off the assembly line can be turned by hand, using the fan belt. The tractors are tested and run in for not less than three hours. After the complete tractor has been assembled it is thoroughly tested for power, fuel consumption, quietness, and general performance.

We partially dismantled a model “CC” Tractor, reassembled it and then tested it. A tractor was operated on number one furnace oil to convince us that Case tractors would operate successfully on low-grade fuels. At several different times during the two weeks, we had discussion meetings. To top the two weeks off, we were given a detailed examination on tractors. The special representative of the Tractor Works was in direct charge of our group.

During the last week we were in the assembly hall most of the time. We heard a number of interesting and instructive talks by men in charge of different lines of work. Topics were covered such as transportation, exporting, foreign business, accounting and bookkeeping, engineering department, purchasing, advertising, sales, industrial units, repairs and repair service. The Banker-Dealer Program and the approach to contacting new dealers was fully covered. While at Racine and Rockford, we rubbed elbows with and became acquainted with, to a certain degree, a number of the Case Co. officials.

Some of the benefits of this training course were the knowledge we gained of the products, the contacts we made, and the conviction that when it comes to quality and performance, we were representing products which were second to none.

After a short interview I was sent to the Branch House at Dallas, Texas. I was to see if I could put some of the things I had learned to work. Since the time of this training course, J. I. Case Co. has purchased the Rock Island Plow Works at Rock Island, Illinois, and the Shower Brothers Factory at Burlington, Iowa, and the Dixon Plow Works at Dixon, Illinois, has been reopened. Future training courses may not coincide with this particular one.
What Does a Student of Agricultural Engineering Do During Vacation?

*K. E. Fuller, '38 A.E.*

I am going to attempt, in a personal way, to bring to the reader of our publication just what the activities of any one particular student might be. So without trying to let my conscience bother me, I'm going to pick on myself as a subject careening along with agricultural and engineering problems.

As it has been my fortune to be closely in contact with my father, who manages many farms for private landowners in central Illinois, I can assure you that one comes in close contact with many and varied problems. Just to begin with, about the first week or so at home is spent in dragging the steel tape in mapping and blueprinting farms. Such maps are kept by the tenant, landowner, and manager. Another week is spent soil mapping, a little more tedious but more interesting.

As it happens, again this year there is a great need for hybrid corn drying equipment and considerable time will be spent in its construction. Such problems in the process of corn drying as efficient methods of handling of corn and controlling the air behavior must be worked out in a little more detail. By the middle of July all hands will be turned to detasseling and inbreeding work in the hybrid fields. After the period of detasseling about two weeks in duration, work is resumed on the construction of the drier until the middle of August or thereabouts. New especially in management there has always been a need for considerable drainage and soil control. Such control has been in running levels for small terraces. Many times we have laid out these terraces first by maintaining our grade line with stakes across a field and then by driving along the outside of these stakes with a car to indicate to the terracer the proper curvature. Along these car tracks, the terracer can operate with ease. By such a method farmers can efficiently do much to save their soil and educate their neighbors.

Thus, these are some of the problems anyone may come in contact with if he is at the right place at the right time.

The Value of the Tractor Short Course

*Erwin Dueringer, '40*

The tractor short course held each year by the Agricultural Engineering Department of the University of Illinois is proving to be quite valuable to the farmers attending. This is revealed by the fact that, during the last few years, there has been an increasing number of applicants desiring to attend. No doubt the large number of tractors in use
today on Illinois farms is responsible for this interest in the care and adjustment of tractors.

The course includes several interesting lectures by Professor R. I. Shawl on ignition, timing, valve grinding, and the tightening of bearings, and also includes laboratory work supplementing these lectures. Mr. C. G. Kreiger of the Ethyl Gas Corporation gave a demonstration last year on fuels and their anti-knock qualities. Various machinery companies sponsored motion pictures to show the operation of diesel motors.

After spending an entire week here at the course in 1935, I felt that I had really learned something about tractors. When I returned home, I said, “Dad, from now on we’re going to do our own tractor repair work.” “It’s all right with me,” he agreed.

So that fall he decided that I would do it. We had an eleven year old tractor; it needed quite a lot of repair work. The main trouble, however, was that it burned too much fuel. I realized I had quite a job before me, but I started right in and took off the head. As I took the different parts off, I laid them on the bench. Dad said “How many parts do you think you’ll have left over when you finish, Erwin?”

“I don’t know, but why do you suppose I went to that tractor course, anyway?” I answered. Before I had finished my job, I had spent three days of hard work, putting in new sleeves and pistons, grinding the valves, adjusting the “Mag” and carburetor, and I didn’t have any parts left over. However, I couldn’t find any reason for such fuel consumption. But without looking further, I decided to start the tractor, hoping that the work I had done would lower the amount of fuel used. I set the spark, tripped the “mag,” filled the priming cups, and lifted the crank one-quarter turn—the first time it started. The next morning I checked the amount of fuel used, only to find that I hadn’t reduced it.

That evening after supper I was wondering what I could do. Dad would be home tomorrow, and I did want to have that fuel consumption lowered. I got out my notebook that I used in the short course and looked for causes of high fuel consumption. I knew that the spark plugs were in good shape. I was very careful about adjusting the timing, so it wasn’t firing too soon. I had put in new rings and pistons and had ground the valves; therefore I was convinced that the carburetor was causing the trouble. I went out to the garage, took the carburetor off and brought it in the house. With utmost care I dismantled it, being very careful to examine each part. Since I found all other parts in perfect condition, I noticed that the cork float seemed to be slightly porous. I dried it out thoroughly and painted it with two coats of clear
shellac. I was anxious to see the results. Sure enough, when Dad brought out the usual five gallons of gasoline in the middle of the morning, the tractor would hold only four gallons.

“What in the world did you do to it, Erwin?” Dad asked, as the gas began to run over the edge of the tank. “Oh, just another one of those things I learned at the tractor school,” I replied.

But in all seriousness I did accomplish quite a lot during that week of tractor schooling. In fact, I liked it so well that I came back in 1936 for a similar course, and now I’m a student here in agricultural engineering.

The course has real value: for all that we learned pertained directly to the practical tractor problems on the farm. Now that horses are rapidly being replaced by tractors as a source of farm power, the value of a tractor course of this kind became more apparent.

A Rookie in a C. C. C. Camp

C. J. Bush, ’39 A.E.

During the summer of 1936 the Federal Government offered students of agricultural engineering an opportunity to go to the C. C. C. camps as enrollees for the summer months to gain experience in drainage and soil erosion work. I signed up to get the experience and to get out in the open for the summer. I was assigned to Camp Eldred, which was a drainage camp about one mile south of Eldred, Illinois, in Greene County. This was only about two miles from the Illinois River and about ten miles from the Mississippi River.

The camp was located on what was a former river bed and one of the banks which was a high bluff rose up on the east side of the camp; it gave the camp a pretty setting. The buildings on this camp had been well arranged; the administration building was near the entrance with parking space for cars on either side of it. All of the land in the region of this camp was drained by a network of drainage ditches and it was the work of this camp to keep these ditches in condition as well as to build roads and to build dams or spillways where needed.

I entered camp on the first of July. After receiving a health examination, I was vaccinated for typhoid and smallpox. On the second day that I was in camp, a group of new enrollees were brought into camp. That night the regular enrollees decided that the new rookies ought to be initiated, so before long we were all headed for the showers and had a swell time removing green paint with cold water and G-soap. (G-soap is a yellow laundry soap issued by the army.)
The camp itself was supervised by the army, while work in the field was supervised by the technical men employed by the Bureau of Agricultural Engineering. A number of enrollees were needed in the camp itself. The first sergeant had charge of all the work that was done in camp. The various jobs in camp were clerk and typist to keep records of the enrollees, a clerk who worked in the superintendent’s office, and men to work in the mess hall, supply room, pumping station, garage, canteen, and the library.

The camp had a good library which contained some good books and where one could also read the daily papers. There was an educational adviser in camp, and he held classes in different subjects; it was his duty to help students in their work, and if there were any enrollees who were too delinquent, they were required to take instruction from him.

Everyone was awakened at five o’clock in the morning by a bugle call and from then until seven, he had to clean up and fix up his bunk and clean around it, eat breakfast and stand for inspection. At seven o’clock everyone started for work, and if a crew was working too far from camp to return at noon, they took their lunch along in the truck. They worked until four o’clock and then returned to camp and cleaned up for supper. We worked in the field five days a week and on Saturday morning we worked around camp and occasionally one would have K.P. on Saturday or Sunday.

The camp at Eldred, Illinois, had seven draglines operating and enrollees were assigned to various machines as oilers. While I was in camp I substituted as oiler when one of the regular fellows couldn’t go out. The machines that were equipped with lights were operated day and night. There was one bulldozer which was operated by enrollees and was used to level out the dirt that the draglines dug out of the ditches. A few of the enrollees went with the engineer, and they helped him with his work by doing the chaining, holding the rod, clearing the path of any brush which obstructed the vision between the level and the rod and driving stakes, where necessary. The engineer had to survey the ditches in order to find out the amount of earth that had to be removed. The engineers also had to do all of the other engineering work, such as surveying for new roads, and making maps of the work he did.

While I was in camp the crews that went out in the trucks had to remove young saplings and trees from the banks of the ditches so that the draglines would have an unobstructed path in which they could travel and work. About half of the crews worked in Illinois while the
other half crossed the Illinois and Mississippi Rivers every day and worked in Missouri. We crossed the Mississippi on a ferry boat and at the latter part of the summer, the water got so low that the ferry could hardly cross because of the great drought that summer. In some of the ditches we worked along in Missouri, thousands of fish were dead or dying because these ditches had gone dry. This was quite a contrast to the great floods we had a few months later.

**Students Exhibit Their Creativity**

One of the exciting and rewarding things about teaching is the opportunity to work with young people in their formative years. At a university you see their creativity develop in many ways, but the ultimate creativity often shows itself when the students have the opportunity to poke good-natured fun at their professors. Then you have the opportunity to learn the faculty’s peculiarities and the way students see them. One example of student creativity has been preserved from the second annual banquet of the Student Branch of ASAE, May 24, 1941. The identification of the author or authors has been lost, if it was ever known.

**The Senior Class**

And in those days it came to pass that a blessed event occurred in the fair city of Urbana which was in the land of the Illini. In that town there was an institution known as a quiz factory. And in that quiz factory many great men did work with grim determination in a manner not unlike that of a butcher in his slaughter house. The unhappy victims corralled within the confines of quiz city were known as students. Theirs was an unhappy lot. Day unto day they arose from fitful slumber. Night unto night they dragged their aching bodies into Bidwells.

And the years passed and many things happened. Everything happened. Students came and went. Great men came and stayed. And that is how it happened that all the great men of the world were drawn by a force not unlike the current of the mighty Mississippi right to the Agricultural Engineering Department.

And in the year 1941 the great men gathered together under the mighty roof of the colossal Agricultural Engineering Building were known by various and sundry names:

There was Emil Wilhelm of the House of Lehmann, lord of all he surveyed, Chief of Agricultural Engineers, mighty potentate of the campus, and owner of a 12 cylinder white elephant. Gathered about
him were the others. There was George of the House of Petersen. Tall and mighty was he. His strength not unlike that of the angered bull. In those days he was called the Great Dane from Nebraska. Sir Veach was also gathered together with the flock of learned men. Strong was his mind though weak and trembling his desecrated body. By various and sundry names was he known. Some called him windy, stinky, dopey, honey, etc., etc., ad infinitum.

And Ralph the Duke of Hay was drawn by that mighty force to the Agricultural Engineering Department. Out of the west rode he. He did not ride to escape the Rose Bowl, the Cotton Bowl, the Orange, or the Sugar Bowl. Ralph, the Duke of Hay, the tall, the strong, the mighty man of Kansas rode to escape the dust bowl.

And there was Paul of the House of Bateman, better known as “skippy,” short of stature was he with a draft number subject to immediate call to arms. Afraid of no man was Paul. On his mighty charger he rode to do battle with the wicked oil filter, the villainous air cleaner, the treacherous breaker points and the unfaithful radiator. No enemy should harm his beloved tractor.

Who was the mighty Skelton, who was he that every Mother’s boy should long to be? Skelton, a man of many abilities, wielder of the red pencil, weak of mind but strong of purpose, Casanova of the campus, report grader extraordinary. Colorful was the name of Skelton. Skelton who made no bones about the matter.

And there was Hansen, the tall man from Iowa. With his mighty stride he roamed the world. Keen was his mind and strong his throwing arm. But baseball was not destined to keep the talents of Hansen. Other things had he to do. Mud bricks were to receive his attention. And within a few years he was the world’s greatest mud slinger. Here are his latest stories. Story No.1—censored. No. 2 censored. No.3—censored!

In those days Big Harted Guy was the over lord of the learned group of men. His was a hard lot. Never a moment’s rest did he get. From 7 to 5 he roamed the building, his mind profoundly working on devious schemes to keep the boys of NYA busy. He was a great success.

Fred of the House of Wiley was there. A cunning villain was he. How he loved to tease. Day unto day he shorted magnetos, stoppered gas lines, unseated exhaust valves and ruined the engine timing. But everyone loved the precious rascal.

And Ray, the Prince of Shawl, was there. Rollicking Ray was a playful boy. He loved his binders, his tractors, his picker sheller, and his talkington hitch. But his bassoon was his real love. And how he
could blow the horn that sounded not unlike the roar of the mighty Niagara.

Even in those days humanity was blessed with twins. Two men with but a single mind were Rucker and Henderson. Never before, since the beginning of time, had man been produced in four dimensions. To the combination Rucker gave height and depth. Henderson gave width and breadth. Burning fuses was their specialty.

And there was Sir Arthur Leighton, of the House of Young. Young in name but old in experience. A business man was he, master of mass production, instructor in funnel making, belt lacer extraordinary, and authority on domestic problems. A lover too was he, but alas and alack, he loved them and left them.

To the distinguished group of mighty men there came another known as Herman the Hermit. Others called him Rip Van Finkel—not because of a 20-year sleep but because of 20 sleepless years. No rest was there for Herman the Hermit. Night unto night he endeavored to escape the hand of fate which pursued him in a manner not unlike that of the hungry hound after the injured deer. A sad story it is. Herman the Hermit is now the dear that was sought.

And so it came to pass that a great banquet was prepared in a great banquet hall. And to the banquet all those greats eagerly and hungrily made their way. The first to arrive was that distinguished scholar Emil Wilhelm, of the House of Lehmann. And the sumptuous feast was carried in on mighty trays. And Emil Wilhelm was carried out on a mighty stretcher, and straightway taken to his home. In his peaceful slumber he saw visions and dreamed dreams. And it happened that in his dreams there came to him a beautiful blue-eyed blond. A strange thing occurred. For the first time in all his life he could not speak. Not a word could he utter so transfixed was he at the beauty of the vision. And the vision said to him “Hush, I am Psyche. If you love me you will listen. When the next year comes all the cattle will be slaughtered—gone to feed a starving Britain. Come next year and all the world will be without the most precious food that nature gives us. There will be no cows, there will be no calves, there will be no milk. What does it mean to you?”

And Emil Wilhelm thought of a starving land. No milk for the babies, no milk shakes, and no ice cream cones. Dark was the picture and sad were his thoughts. But the psychic smite him with her wand and caused a great plan to enter into his mind. And so thinking he fell asleep. Straightway in the morning he made his way to the colossal Agr. Engineering Building. Impatiently he awaited for the appointed
hour of eleven for the gathering together of the learned men in a staff meeting.

And so it happened that Emil Wilhelm stood up in the midst of the great men and spake as follows, saying: "Fellow great men and Ag Engineers all, give ear to what I say. In but a few months all the sown on the face of the earth will be dead. The spirit has spoken. It is our duty to save for humanity the products of the cow. Gentleman, we must design and construct a mechanical cow that converts the luxurious grass and the waving corn of our great prairie state to delicious milk. I have spoken." So saying he sat down.

Then did Ralph, the Duke of Hay, arise to his feet and in a clear voice he spake and said, "Oh learned one, it is right that we should build a mechanical cow. And I offer the suggestion that the cow must also be made to eat hay. I myself will design the hay eater. I have spoken."

Rollicking Ray then arose to his feet and with one accord the great men around fell asleep. And Ray spake to unhearing ears saying, "My services I offer. A modern cow must have a duel horn system. One bassoon and a slide trombone shall it have. I have spoken, class dismissed."

Sir Arthur Leighton of the House of Young awoke with a start and with a loud voice spake and said, "The cow must hold together. Therefore rest assured gentlemen, that I will supervise the fitting of the skin and personally direct the lacing operation. I am finished."

Then did Sir Veach jump to his feet. "Partners in cattle making," he cried, "A cow must smell like a cow; my great ability now stands us in good stead. As chief maker of insecticide machines, I volunteer to provide the odor of the narcissus to the glorious cow." And as he spoke, wiley Fred Wiley toppled over in a faint. He knew that Sir Veach would nauseate then all with his foul odors.

Then to his feet sprang Paul of the House of Bateman, and George of the House of Petersen came to stand beside him. "Gentlemen," they said in a voice as though but one were speaking, "We have gone too far. We must start with a calf for is it not written that the calf shall grow to a cow? Our cost of production shows that a calf eats less than a cow." And they sat down, George sitting on Paul's knee. Wiley Fred then regained his consciousness and promptly fainted away again.

Handsome Eddie Hansen rose to his feet. "That reminds me," he said, "have you heard the one about the cow and the—(the rest is censored). He finished and amid great guffaw of laughter took his seat. Wiley Fred who had again revived to hear the story fainted away again.
And Herman the Hermit sat in the corner. In his hand was a book, and in the book was a review of drainage methods. And in an inspired voice he said with a sweet quaver, “Oh mighty men, what about the drainage problem.” Then did Emil Wilhelm exclaim, “An excellent question. You may solve it for us. Assume all the conditions and work out the answer.” And as he spoke he winked at the handwriting on the wall which said, “Opinions are tolerated only when facts are lacking.”

Then the great man Skelton spoke. With words of wisdom he said, “Who is to work on the milk production,” and in one voice all the men answered, “The udder guy.” But even as they spoke, far off in the distance they heard the mighty clock. Then the bell rang and rang and all the great men followed wiley Fred Wiley down the stairs and so to lunch.

Another example of the creativity of students was an ode written to immortalize the passing of one of “Pappy Shawl’s children.” The students wrote the following.

**A Memorial to “FRIEND”**

We felt deeply impressed and want to pause at this time to pay tribute to a friend who has passed on. It is fitting that we pause at this time of year to pay tribute as Memorial Day draws near and it is with increased feeling that this day means to us this year.

I know you all feel deeply moved in the passing of our much needed friend in the great project which our country needs to accomplish to win the war. However we will have to struggle along without her in the future. The future looks rather dark without the help of our dear friend. True indeed were we to learn of the untimely death of your good comrade and mine the Farmall.

The IHC Farmall was brought into this world in 1924, the daughter of Mr. and Mrs. McCormick-Deering. Due to their many children she was soon adopted by Professor Shawl who was a loving and faithful father during all her life, in caring for her many needs. Her early life was spent on the South Farm of the University of Illinois and most of her life was spent on the farm of Mr. Riegel of Tolono.

She received her education in the Agricultural Engineering Department each winter and put the theory into practice each summer in difficult and long hours of work. She received an education through the efforts of her tutor Professor Shawl and his assistant Fred Wiley. Her efforts and experience were the basis for many articles, talks and opinions of her tutor.
She passed on May 4, 1942 at the tender age of 17½ years as a result of a sudden attack of a broken connecting rod.

Her example set the pace for many other people of her race. Her example of a long life will be long remembered and striven for by other engineers.

After her passing we all reflect and wonder how we will get along without her. However we realize she felt her work in the present form was complete.

In her memory the following poem was written.

_The Shawl’s Masterpiece, or,_
_The Wonderful IHC Farmall of 1924_

Have you heard of the wonderful IHC—Farmall,
That was built in such a logical way
It ran seventeen and one-half years to a day,
And then, of a sudden, it—ah, but stay,
I’ll tell you what happened without delay,
Scaring the hired man into fits,
Frightening people out of their wits,
Have you heard of that, I say?

Nineteen hundred and twenty-four.
Claude Chapman was then foreman
Of the expanding South Farm.
That was the year when Chapman
Saw the corn come up on the South Farm
Along with the terrible weeds so green.
Chapman in this hour of trouble,
To Shawl came he for assistance.
Shawl with a spirit to help,
Called upon the great company, IHC.
And it was on that troublesome day,
That IHC had finished the wonderful Farmall.

Now in building of chassis, I tell you what,
There is always somewhere a weakest spot,
In hub, tire, ring, in valve or radiator cap,
In piston, bolt, magneto, condenser or spark plug gap,
In screw, bolt, thorough brace, lurking still,
Find it somewhere you must and will,
Above or below, or within or without,
And that's the reason, beyond a doubt,  
That a chassis breaks down, but doesn't wear out.

But Shawl swore (as professors don't, with an "I dew 'um  
or an "I tell you") He would build one tractor to beat d  
town

'N' the county 'n' all the country raoun';  
It should be so built that it couldn't break down  
"Fur," said Shawl, "T's mighty plain  
Thut the weakest place mus' stan' the strain;  
'N' the way t' fix it, uz I maintain,  
Is only jest  
T, make that place as strong as the rest."

So Shawl inquired of the village folk  
Where he could find the strongest steel,  
That wouldn't be wore nor bent nor broke,  
That was for spokes and frame and rings,  
He sent for pistons to increase the compression ratio,  
The block was cast from the best of iron  
In which many cylinder sleeves were installed.  
The shocks on the aging steel  
With rubber tires were softened.  
The best of oil was used  
On which tests galore were run.  
On and on it ran in dirt and grime  
Without an oil filter during all this time.

To improve its compression  
New types of valves were tried.  
Repairs ad infinitum by Shawl were ordered  
Each year for replacements wore out,  
And skillfully assembled by Wiley.  
Each winter did this happen  
With great care and  
Part by part was it replaced  
until only did the frame, wheel steering, remain,  
along with the seat many of the human kind  
Which it did wear upon.  
Tests of its power did reveal  
A few horses had faltered  
But the Faith of Shawl  
And the great mechanical skill of Wiley
These horses did they revive.
That was the way he 'put her through.'
"There!" I said Shawl, "naow she'll dew."

Do! I tell you, I rather guess
She was a wonder, and nothing less:
Colts grew to horses, and passed out of the picture,
Other tractors came and to the junk pile did go,
While Old Betsy did purr on and on.
Farmers the question would ask,
How long will a good tractor last?
To answer is quite a task,
Shawl would answer to this question so indefinite,
"It all depends!
Old Betsy, down on Mr. Riegel's 1,400 acres
Has run 15 years now," he would reply,
"For 100 to 1000 hours per year to boot
And we expect her to do some more,
Twenty years or more I hope.
Her cost of operation real low was kept,
As low in fact as other tractors in use.
But these many parts did cost
Enough to invest in and enjoy
the advantages of a tractor right new.
But there stood the stout old Farmall
As fresh as on the day she was made."

Nineteen Forty—it came and found
the Shawl's masterpieces strong and sound.
Nineteen forty-one game;
Running as usual; much the same
And then came forty-two.
And finally the morn of May 4th.
Little of all we value here
Wakes on the morn of its seventeenth and one-half year
Without both feeling and looking queer.
In fact there's nothing that keeps its youth,
So far as I know, but a tree and truth.
(This is a moral that runs at large;
Take it. You're welcome. No extra charge.)

May 4th—the fatal day,
There are traces of age in the old Farmall
a general flavor of mild decay,
But nothing local, as one may say.
There couldn’t be, for Shawl’s art
Had made it so like in every part
That there wasn’t a chance for one to start.
And yet, as a whole it is past a doubt
in another hour it will be worn out.
This afternoon the hired man takes a drive.
Now, horses, chickens, and cows, get out of the way!
Here comes the wonderful Farmall.

A turn of the crank. Off she went.
All at once the engine its purring did cease,
First a tick and then a clatter,
Then something decidedly like a rattle’t bang-
And the hired man was off with a “Gol Dang.”
What do you think the hired man found,
When he got up and started around?
The poor old cylinder number one and block
Had taken terrific sock,
From the flying connecting rod which broke.
You see, of course, if you’re not a dunce,
How it ended, all at once,
All at once, and nothing first,
Just as the bombs do when they burst.

End of the wonderful IHC Farmall
A long life of many hours in all
To prove for deprecator’s of cost of tractors,
That the maximum tractor life for
the IHC Farmall No. xxx to be an age
Before the obsolescent age of twenty years
An elapsed time of many hard hours
At the tender age of seventeen and one-half.
Logic is logic. That’s all I say.

The Agricultural Mechanization Club
With increased enrollment in agricultural mechanization in the late 1950s and with a desire to have programs more closely attuned to their specific interests, the department encouraged the formation of a new club for those majors. At the time the national society of ASAE
was beginning to encourage the separation of student groups to help the total profession grow by providing leadership opportunities in different segments of the profession. With this as a backdrop Richard G. Wilson, an Illinois student, with the assistance of Donnell Hunt, became the catalyst for the formation of the Illini Agricultural Mechanization Club in 1960. Unfortunately Wilson was killed in an auto accident in 1961 and never had the opportunity to see the club mature. Jim Rowley, '60, became the club's first president. After graduation he became the owner of an insurance agency in Plainfield, IL. Bob Fry, another charter member, still has intimate ties with the club as a resource and policy analyst for the department.

The Ag Mech Club has always been very active and public spirited. During its first year it began a farm machinery restoration project. A corn planter and a mowing machine were stored in the attic of the old Agricultural Engineering Building. These old machines were disassembled by the students, cleaned, reassembled to working order, and painted. The funds necessary were donated by the students themselves. The machines were frequently used in classrooms to illustrate the progress of farm machinery over the years. They are now displayed in the Champaign County Historical Museum at Mahomet.

Since the early 1980s the club has been active in the ASAE promoting programs of interest to ag mech students and graduates. They enthusiastically supported the development of the national Agricultural Mechanization Club organization and several members have served as national officers. Beginning in 1976 an FIEI/EMI trophy competition was initiated for agricultural mechanization clubs. The U. of I. Ag Mech Club won this trophy the first time in 1986. From 1986 through 1996 they were winners nine out of eleven years.

The Ag Mech Club has matured and grown substantially since its start thirty seven years ago. Some of its most successful current activities were started when the club was new. For example, lawnmower winterization, still the club's largest money making project, was started in 1961 by the first club adviser, D. R. Daum. Tours have always been popular events so students and faculty can visit equipment companies, engineering projects in progress, machinery shows and other activities that extend the student's education beyond the classroom. The first club tour took the students to International Harvester and Allis Chalmers in 1961. A current activity is the club's annual fall
Sweater Drive. Warm clothing is collected and distributed to those in need through local charity organizations.

**Contributions of Graduates**

Even before the Department of Farm Mechanics was approved five men interested in farm mechanics graduated. They subsequently made many significant contributions to teaching and research in agricultural engineering.

C. A. Ocock (B.S. 1904) became the chair of the Department of Agricultural Engineering at the University of Wisconsin. Later he was an engineer for the Avery Manufacturing Company and the J I. Case Company. He became one of eighteen charter members of ASAE, which was founded in December 1907 at the University of Wisconsin.

E. A. White (B.S. 1908) was an instructor at the University of Illinois from 1908 to 1919. During that period, he earned an M.S. degree at the University of Wisconsin and a Ph.D. at Cornell University. Later, he helped promote the expansion of rural electrification in the United States as chair of the Committee on the Relation of Electricity to Agriculture. He was active as a student in the formation of the American Society of Agricultural Engineers and was a charter member of the society.

C. O. Reed (B.S. 1911) was an instructor of farm machinery at the University of Illinois from 1911 to 1917. In 1922, he became a professor of agricultural engineering at The Ohio State University and remained in that position until his death in 1940. Recognized by college presidents and university students as an outstanding teacher, he refused administrative positions to pursue the teaching of undergraduates. In 1937 he was awarded the Cyrus Hall McCormick Medal of the American Society of Agricultural Engineers.

G. W. McCuen (B.S. 1915) became chair of the Department of Agricultural Engineering at The Ohio State University in 1924. He directed the teaching, research, and extension programs of that department until he retired in 1956.

R. I. Shawl (B.S. 1916) taught power and machinery courses from 1916 to 1958, when he retired. During that forty-two year period, Shawl conducted research and taught courses on the many new tractor and machinery developments that took place during this period.
S. W. Shattuck was the first professor appointed to teach courses in agricultural and civil engineering for the University of Illinois.

A mid-1920s class studying home lighting in the Farm Mechanics Building.

The Tractor Laboratory in the late 1920s.
Engine short course in 1920.

Farm Mechanics 3, in the late 1930s, provided a laboratory session to study magnetos in the Tractor Laboratory.
East side of Farm Mechanics Building after the Tractor Laboratory was completed in 1924. Note Dairy Manufacturer's Building in background.

Agricultural Engineering Building (left) surrounded by Tractor Lab and Agronomy Seed House (right) with the "new" Agriculture Building (Mumford Hall) in the background. Circa 1942.

1926 Farm Gas Engine Contest. One hundred and sixteen club boys listening to a talk on gas engines before taking an examination on the subject. Six of the individuals tied in the contest.
The water system truck set up to demonstrate simple and complete water systems.

Professor Shawl's "Harvesting Machinery—Ag. Eng. 17" class. O'Cock at left front.

T.E. Laydon, Leland S. Stallings, Arthur M. Brunson and W.C. Vauble demonstrate their surveying skills in 1913.
J. A. Weber served as project leader when a 350 horsepower dynamometer to test tractors was added to the tractor maintenance research program in 1961.

Fred Wiley, long remembered for his “fouling up of tractors,” and his wife attend his retirement dinner in 1959.

Ray Shawl conducts studies on tractor maintenance using an early McCormick-Deering Farmall tractor. Circa 1935.
Ralph Hay conducts a Tractor School in LaSalle County, 1939.

Ben Jones demonstrated for the College of Agriculture faculty the potential for closed circuit TV on April 27, 1954. Studio was the Great Hall of Memorial Stadium.

A clear-span, plastic-covered building houses Agricultural Engineering's exhibits at Engineering Open House on Burrill Avenue in the early 1960s.
Roger Curry serves as toastmaster at 1965 Spring Banquet. To his right are Frank and Mrs. Lanham.

Third row: Harlan Baker, Henry Grein, Murray Forth, Norman Slack, Edward Hunley, David Cash, Maurice Shaff, Almohamed Memon
Second row: Albert Rust, Lawrence Bittermann, Benjamin Jones, Maurice Burgener, Robert Eagleton, Ralph Williams, John Mattingly, William Fletcher
Bottom row: William Zumwalt, Leo Stoebler, William King, Sanford Brock, Thomas Brock, Henry Thomas, Earl Moss
Not pictured: Eugene Barnes and William Bowers

Elwood Olver, on right, explains his automatic-feeding system at a farm electrical controls workshop about 1962.

Frank Andrew piloted himself to many Extension meetings throughout Illinois. Andrew prepares to “take off” for a meeting in 1967.
A little old time fun at a faculty social event: on guitar Don Jedele, seated, Donna Jedele, Dottie and Wendell Bowers; standing, Dottie and Don Day.


Third row: Curtis Freeberg, Dick Moyer, Reynold Durre, Alan Chidley, Neil Whitely, Don Jones, John Heath, David Heath, David Hopkins, David Daniel, John Miller, Gerald Mundy, Merrill Pinter, and Larry Thompson

Second row: Richard Fenzl, John Litherland, Roger Curry, Wayne Peterson, John Tunnel, Ray Hauck, Lyle Stephens, Lester Thompson, and James Curtis

Ed Hansen, Maurice Paul, Charles Spillman, and Jim Curtis, at table, test rigid concrete frames for farm buildings.

Frank Andrew, center, demonstrates the use of augers for automatic conveying of grain and feed.

Rear Irgens, a microbiologist, led the way in the departmental aerobic research program.
Don Day conducts some of the first oxidation ditch research in the country.

Ralph Parks, third from left, demonstrates electrical principles to students in a lab in the Agricultural Engineering Building.
Alexander Zhivot, an academic professional from Russia, conducting clean air research in Les Christianson's laboratory.

Ronald Maghirang, a post-doctoral student with Gary Riskowski, conducts a NASA funded research project involving animal cages to be used in future space missions.

Don Day with undergraduates and graduate students who helped him with his research and teaching in 1979.

Kent Mitchell, right, and Steve Maddock, left, build equipment to make soil erosion measurements.

Steve Maddock prepares a large glass-lined flume in the hydraulics laboratory for an erosion control study.
Carroll Goering adjusts a dual fuel tractor engine that burns either ethanol or diesel fuel.

Loren Bode tests spray distribution in the spray laboratory of the new Agricultural Engineering Sciences Building.
It is difficult to measure the specific contributions of the graduates. However, a few additional examples of early graduates will illustrate the types of responsibilities and the contributions made by them.

J. W. Randolph, B.S. '20, contributed to a number of machinery developments for tillage machines, for harvesting sugar cane in Florida, and for processing forage crops. For several years he was on the staff at Auburn University and the USDA National Tillage Laboratory at Auburn. Before his death in April 1960, he developed new processes to dewater forages to improve the utilization of these crops under tropical and subtropical regions.

Lee H. Ford, B.S. '23, made important contributions to farm machinery in his many positions in the International Harvester Company. Before his retirement he supervised engineering product publications, parts catalogs, and manuals.

D. A. Milligan, B.S. '24, M.A. '25, was a member of the Department of Farm Mechanics faculty from 1928 to 1930. Later he was employed by a number of tractor companies to supervise industrial machinery development and sales. He later became vice-president of J. I. Case Company in charge of the industrial division.

T. J. Shambaugh, B.S. '30, managed a farm near Cerro Gordo, Illinois, until 1950. He then took foreign assignments to advise on farm machinery problems in Israel, Yugoslavia, and northern Nigeria.

Lynn K. Huffman, B.S. '40, became a manager of the farm machinery service department for Montgomery Ward Company a few years after graduating. For many years he helped Finlay, Morley and Hodgsons, Inc., Chicago, plan advertising programs for several large farm machinery companies.

Some graduates have made major contributions to improve machines for special crops that are not grown in Illinois. For example, R. A. Duncan, B.S. '36, spent most of his life in Hawaii. As chief engineer of the Hawaiian Sugar Planters Association, he made many improvements on machines for harvesting sugar cane.

R. M. Ramp was the leader of an ARS, USDA project to develop a sugar cane harvester for use in Louisiana. Ramp graduated in general agriculture in 1936 then obtained degrees in mechanical engineering and electrical engineering at the University of Delaware.

H. J. Finkel, B.S. '40, founded and became the first head of the Department of Agricultural Engineering at the Israel Institute of Technology at Technion, Haifa. In addition, he traveled to Peru and the
West Indies to plan drainage, irrigation, and soil conservation projects for the government of these countries.

Administrative responsibilities for design work on agricultural machines is illustrated by the positions of four graduates. O. E. Johnson, B.S. '43, was chief engineer for the advanced implement engineering department of International Harvester Company. Johnson was in charge of the design of tillage and planting machines.

W. E. Hartman, B.S. '51, M.S. '52, used his education to advance to the position of department engineer for the J. I. Case Company where he was in charge of engine design.

R. W. Whitaker, B.S. '46, M.S. (Civil) '47, was engaged in planning research projects to develop new storage uses for the Harvester manufactured by A. O. Smith Corporation.

M. W. Forth, B.S. '48, M.S. '53, made many improvements in machines manufactured by Deere and Company in his position as senior development engineer in the product development department. A specific contribution was the unique design and patent obtained for a bale thrower.

Contributions also were made in research and development of new building materials. M. L. Burgner, B.S. '48, M.S. '49, was an assistant to the vice-president for the Portland Cement Association.

Barbara E. (Emily) Jordan, B.S. '48, the only woman to graduate in the agricultural engineering curriculum before 1950, taught high school mathematics in Kansas for many years.

A. A. Memon, B.S. '50, M.S. '50, directed the teaching program for all the college courses in his position as principal of the Government Agricultural College of Maharashtra, Kolhapur, India.

E. J. Monke, B.S. '50, M.S. '53, Ph.D. (Civil) '59, directed soil and water engineering teaching and research programs for the Department of Agricultural Engineering at Purdue University from 195 until his retirement in 1990.

Similar administrative duties were assumed by two Indian students who manufactured simple tools for Indian farmers. D. C. Borpujari, B.S. '54, M.S. '55, was manager of the manufacturing plant at Allahabad, India, and A. A. Swamy Rao, M.S. '58, was chief engineer of the same plant.

L. K. Pickett, M.S. '62, was senior project engineer with J. I. Case in East Moline.
D. L. Bosworth, M.S. '64, was manager of engineering testing and reliability at Deere Harvester Works in East Moline. He was president of ASAE in 1992.

Allen R. Rider, Ph.D. '73, is vice president of operations, New Holland North America, Inc., New Holland, Pennsylvania and is currently (1996-97) president of ASAE.

Other graduates have made contributions by establishing their own small companies to render an engineering service.

R. F. Skelton, B.S. '38, M.S. (TAM) '41, made a significant contribution in the processing and handling of feed by designing and manufacturing a small hammermill that automatically metered several feed components into the mill. These mills were used in feeding systems in all parts of the United States. He was vice-president of the Belle City Engineering Company at Blufont, Indiana.

K. E. Fuller, B.S. '38, provided an engineering service to farmers as manager of the Fuller Seed Company at Lincoln, Illinois.

E. C. Dueringer, B.S. '40, formed a plastics company to develop plastic structures to store farm products.

Lyle G. Reeser, B.S. '46, was president of Global Energy Systems, Peoria, Illinois, and Blanco, Texas. The company researches the production and utilization of liquid fuels from biomass.

William Ayers, B.S. '74, is president of CIMCO, a company in Bement, Illinois that manufactures fuel filters and industry accessories. The company was originally started by his father A. R. Ayers who was an extension agricultural engineer in the department from 1945 to 1951. The company is expanding into the production of a fuel preparatory system to remove air from diesel fuel to improve performance. Another product is an absorbent that takes oil out of water.

Bill Hughes, B.S. '91, is owner of a business in Woodstock, Illinois, that manufactures electronic digital rain gauges.

Agricultural engineering graduates have made contributions in many other engineering activities. Probably the most advanced type of engineering responsibilities has occurred in space and missile programs. Dean F. Hopkins, B.S. '51, M.S. '58, Ph.D. (M.E.) '62, was a research engineer for the Douglas Aircraft Company at Santa Monica, California. M. Lenard, B.S. '50, had similar work as research engineer for the General Electric Missiles and Space Vehicles Department at Philadelphia.

W. J. Fletcher, B.S. '50, made a contribution in agricultural journalism by making agricultural information available to a large number of farmers. He was associate agricultural engineering editor for Successful Farming magazine. Later in his career he was with the National Safety Council.


In departmental newsletters from 1988 to 1996 the following alumni were listed as having college-wide program responsibilities as deans or department heads at various academic institutions.

DEANS OR DIRECTORS

Wendell Bowers, B.S. '48, M.S. '56, assistant director of extension agriculture programs, Oklahoma State University, Stillwater.

Benjamin A. Jones, Jr., B.S. '49, M.S. '50, Ph.D. (Civil) '58, associate director of agricultural experiment station, University of Illinois at Urbana-Champaign.
Howard L. Wakeland, B.S. '50, M.S. '54, associate dean of the College of Engineering, University of Illinois at Urbana-Champaign.

Surenda V. Ayra, M.S. '56, dean of J. Nehru Agricultural University of Jabalpur, India.

Larry F. Huggins, B.S. '62, M.S. '64, head of the Department of Agricultural Engineering, then associate dean of College of Engineering, Purdue University, Lafayette.

Pershing, M.S. '64, Ph.D. '66, head of the Department of Agricultural Engineering then associate dean of the College of Engineering, University of Illinois at Urbana-Champaign.

Peter D. Bloome, B.S. '65, M.S. '69, and Ph.D. '70, assistant director, Cooperative Extension Service, University of Illinois at Urbana-Champaign.

Elbert C. Dickey, B.S. '70, M.S. '74, Ph.D. '78, assistant dean, Cooperative Extension Service, University of Nebraska, Lincoln.

Gerald F. Arkin, Ph.D. '72, associate director, Georgia Agricultural Experiment Station, Griffin.

Soedoda Hardjoamidjojo, M.S. '78, dean of College of Agriculture, Engineering, and Technology, Institute Pertanian, Bogar, Indonesia. He was head of the Department of Agricultural Engineering from 1981-83 before becoming dean.

Thomas E. Glenn, B.S. '78, assistant to the dean of the College of Engineering, University of Illinois Chicago.

DEPARTMENT HEADS OR CHAIRS

Joe T. Clayton, M.S. '51, Agricultural Engineering, University of Massachusetts, Amherst.

C. Gene Haugh, M.S. '59, Agricultural Engineering, Virginia Polytechnic Institute and State University, Blacksburg.

Melvin Ray Smith, M.S. '59, Agricultural Engineering, University of Hawaii, Honolulu.

Charles K. Spillman, B.S. '60, M.S. '63, Agricultural Engineering, Kansas State University, Manhattan.

James L. Smith, B.S. '61, Agricultural Engineering, University of Wyoming, Laramie.

William E. Larsen, Ph.D. '68, Agricultural Engineering, Montana State University, Bozeman.
Jaipal S. Panwar, M.S. '68 and Ph.D. '71, Division of Agricultural Engineering, Indian Agricultural Research Institute, New Delhi.

Michael F. Walter, B.S. '68, M.S. '70, Agricultural and Bioengineering Department, Cornell University, Ithaca.

James C. Converse, Ph.D. '70, Agricultural Engineering, University of Wisconsin, Madison.

Gary D. Bubenzer, Ph.D. '70, Agricultural Engineering, University of Wisconsin, Madison.

W. Cecil Hammond, Ph.D. '70, Extension Engineering, University of Georgia, Watkinsville.

Robert J. Gustafson, B.S. '71, M.S. '73, Agricultural Engineering, The Ohio State University, Columbus.

Lalik Kumar, Ph.D. '72, University of Zambia, Lusaka.