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The First 50 Years: Agricultural Engineering

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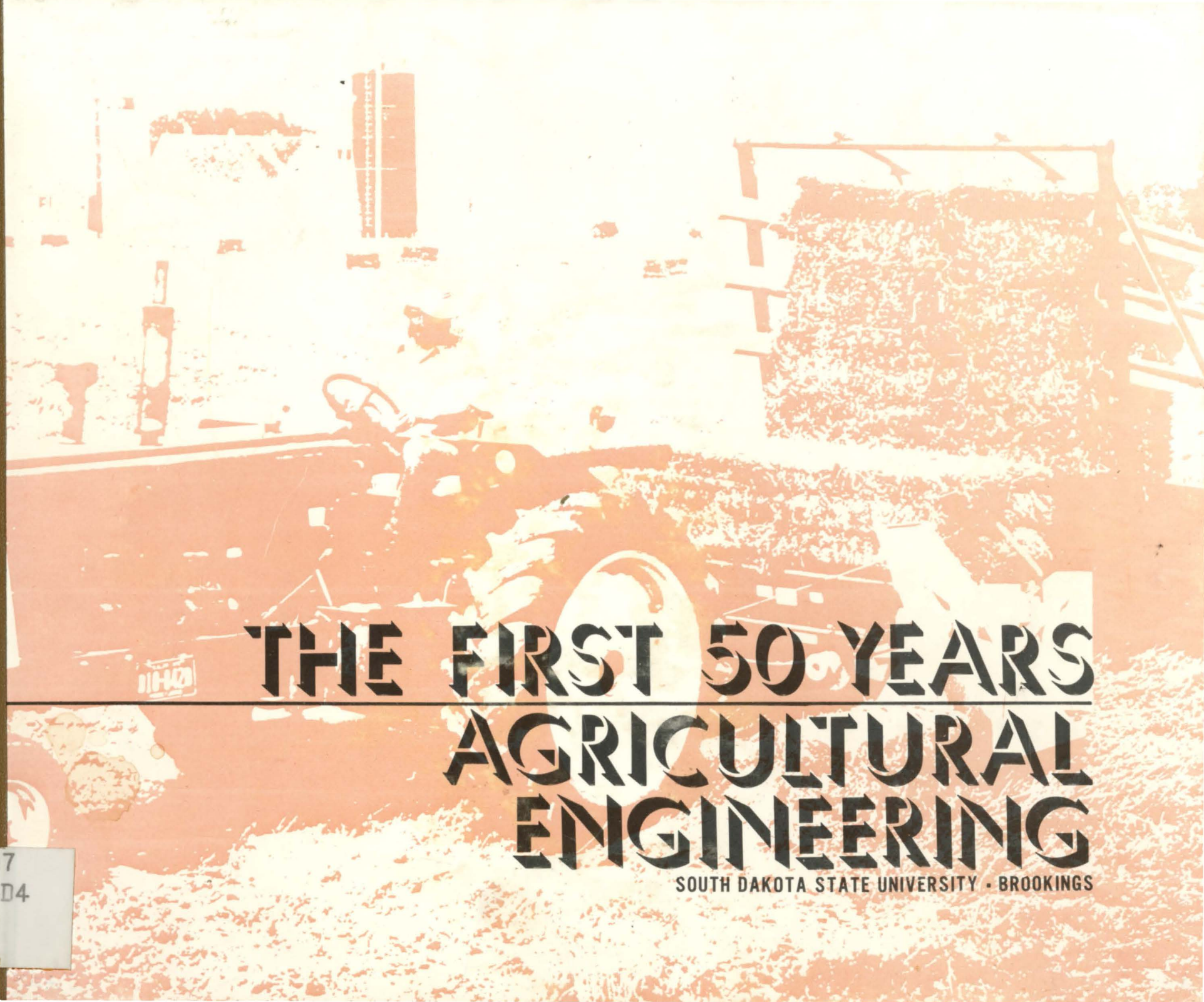

THE FIRST 50 YEARS
AGRICULTURAL ENGINEERING

SOUTH DAKOTA STATE UNIVERSITY · BROOKINGS

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Introduction

In the summer or fall of 1924 a news story was released to the papers of South Dakota. It told of a new department and new course of study at South Dakota State College, Brookings, South Dakota. This story described subjects to be given about farm machinery and tractors, farm buildings and utilities, land drainage or irrigation, and perhaps some other items.

The story was eagerly read by a Spink County boy by the name of Henry DeLong who had graduated from high school the previous June and who planned to go to college if he could. Part of the preparation was to work on the home farm in the summer and to pick corn by hand method for a steady six weeks during the fall months. The first week of January 1925 was the time to take the train to Brookings and enroll at South Dakota State College at the beginning of the winter quarter.

Compared to 1975 standards the campus was small in 1925; but it looked very large and complicated to a farm boy. Henry proceeded to locate Mr. R. L. Patty, new head of the Agricultural Engineering; but also found it a bit too soon to really start Agricultural Engineering. Courses available seem to lead more logically to a degree in Agriculture with a major in Farm Mechanics. This was the first degree for Henry--with the class of '28. The honor of being the first Agricultural Engineer from State was for Lee Minnium, who came in the fall of '25 and graduated with the class of '29.

Where and how did Agricultural Engineering start? Its beginning in institutions can be traced to the first departments at Iowa State, Kansas State, and the University of Nebraska. Other early departments were formed at Minnesota, Illinois, Wisconsin, and Cornell in New York. All departments came after the turn of the century. There was a need felt by many people in many places that farming was rapidly moving into an era of mechanization; and that farming was becoming much more technical in many ways. These concerns came as a natural consequence of the beginning of the era of farm mechanization about 1830.

Invention followed invention rapidly after 1830; with the first steel plow, the reaper, the first drills and planters, the mowers, rakes, the harvester, the binder. All speeded up farm work by the application of animal power to mobile machines; and also to stationary machines like the early threshers and balers. Such machines were complimented by much human muscle power on the forks and shovels; and by the walking and shocking and lifting by people.

Then came steam power applied to threshing and breaking prairie sod from 1890's to the 1920's. Steam power gave way to clumsy gasoline and kerosene engines of large size to replace the steamers. World War I brought on a labor shortage and the urge to increase agricultural output, and the small farm tractor for general field work came into prominence. It was in these years just preceeding the 1920's that farm mechanization was making great strides, and that the Agricultural Engineering Departments were being formed in the Land Grant Colleges.

There were other problems arising that called for engineering on the farm. Wet lands needed to be drained. Dry land needed irrigation. Farm buildings needed ventilating, and to be designed to store and move feed more easily. Waste products from the livestock enterprises increased disposal problems as the size of operation increased.

Improvement in living in the farm home called for modern water systems, better lighting, improved heating, and sewage disposal. There were many attempts to bring modern services to the farm through individual farm electric or gas generators.

So, all of a sudden, there were a host of new things to teach. The departments came on demand; and in quite a variety of ways. Perhaps the first need was adult education via the Extension Agricultural Engineer. But in the College or University the departments developed one or more of the following things: (1) A major leading to a B.S. degree in Agricultural Engineering;

(2) Service courses in the College of Agriculture and many times enough for a major in Mechanized Agriculture; (3) Short courses for high school age people; and

(4) Research projects, usually with the Agricultural Experiment Station. The Agricultural Engineering Department at South Dakota State began its work in all of these fields.

Chapter II

The Beginning Of Our Own Department

Mr. Ralph L. Patty was the first department head of the Agricultural Engineering Department at South Dakota State University. There were some interesting events that led up to his coming. He was from Redfield, Iowa and received his first college degree from Iowa State Teachers College in 1907. In 1909 he became principal of Brookings high school. He returned to college some years later and earned his B.S. degree in Agricultural Engineering at Iowa State University in 1916.

Mr. Patty came that same year to Brookings to become the first Agricultural Engineer on the Extension Service staff. He immediately began to develop a service of farm building plans for use by farmers. Some plans carried the "South Dakota" title and number; others were from USDA plan service.

Due to a few wet years in South Dakota, about that time; Mr. Patty laid out quite a few tile drainage systems. These systems allowed farmers to drain wet land and sloughs that were interferring with farming procedures. The writer has seen some of the old field notes, seen some of the plans; and indeed went out to find the old drain tile still delivering water 25 years after installation. Drain tile were laid by hand labor and spade work in those days.

In the early 20's the Agricultural Engineering Departments across the country became interested in electricity on the farm. Individual farm plants with gasoline engines and battery sets were being used. Also, the wind-electric plant was used. But central station service with farm distribution lines had something more to offer. Several experimental rural test lines were organized over the U.S. and the one in South Dakota was an early one. It was operating in 1925 and was built from Sioux Falls to Renner. Mr. Patty helped conduct the tests on this "Renner Test Line" and wrote three bulletins on the work there.

Farm building plans were also drawn by Mr. Patty for the College and its Agricultural Experiment Station. The brick horse barn, still standing, is a monument to his engineering work. The first country club house at the Lake Campbell golf course was designed by him; and the plans remained in the files for many years. Mr. Patty loved the game of golf.

In 1925 the teaching department of Agricultural Engineering was established. The tractor mechanics and auto repair courses had been given for some years in the old Gymnasium building. These courses were terminated at the end of 1924-25 school year; and the old Gym was assigned to Agricultural Engineering. A new professor was secured to teach farm power and machinery courses. Mr. Patty taught the structures courses and the farm land engineering courses. The forging shop and the wood working shop; together with these two instructors were assigned as part of the new and beginning department.

The writer remembers those beginning years when the classes of the new department were small; two or three, to ten was not unusual. Service courses to the College of Agriculture students were larger; often crowded for our facilities. And then the short course students, the "Aggies" came for five months during the winter and these classes were large. It all added up to a strenuous work load. If a heavy load leads to success--the opportunity for success was there.

It was 1928 when the first farm mechanics major was graduated with a B.S. degree in Agriculture. In 1929 the first degree in Agricultural Engineering was granted. It must be remembered that these were hard years. Not only was there the 1929 financial disaster year; but soon after there followed the "dust" bowl years of the early thirties and the very low prices of the depression years.

The financies of the State government were in critical condition following the "Rural Credits" disaster. No new buildings were built after the Lincoln Memorial Library for ten years or more following the year 1927.

Enrollments to college surely were held back during the depression years; but some determined and hardy students came in spite of hard years. It was a way to success, and they persisted.

Beginning about 1930, R. L. Patty initiated a research project on "Rammed Earth". This was construction of building walls with soil and sand by a tamping process. The idea was not new since it is referred to in history by Pliny. Building with earth is nearly world-wide and appears in several different forms. Construction such as this called for manual labor, and students were the logical laborers.

And in the depression days students were willing to work and work hard to earn their way through school. More than one reader of this history will look back on these days and feel of his hands to see if the callouses are still there. Four or five projects had been completed by 1935, when the writer came back to join the department staff. In the next five years he supervised the building of five more structures. The student work went on until the 40's. A brief chapter later on will be devoted to the subject of Rammed Earth Research.

Chapter III

Progress In The 40's

During the 1940's some of the greatest fluctuations came to the enrollment of students at S.D.S.U. The depression of the 1930's came to a close and farming made a great recovery after 1938. Farming was profitable, and farm size increased. Farm boys came to college in larger numbers. A few statistics of graduating seniors in Agricultural Engineering will be shown in Table 1.

Table 1. Bachelor of Science degree in Agricultural Engineering given in the 1940 decade.

Year	Degrees	Year	Degrees
1940	5	1945	0
1941	8	1946	2
1942	7	1947	7
1943	1	1948	10
1944	2	1949	15

Just as conditions in South Dakota were improving the World War II situation was generating. The rubber tired tractor was a greatly improved source of power. Power take off equipped tractors soon put an end to ground driven machines. Farm work with horses was a thing of the past. The small combine came in and ended the dominance of the binder as a harvesting machine; and the large thresher. These new and better methods enabled the farmers to produce much food for the world markets during the war time period.

How well the writer remembers the shock announcement of the attack on Pearl Harbor. He was listening to a newscast over the radio on Sunday afternoon; just before returning to Minneapolis-St. Paul to the University of Minnesota campus where he was completing his M.S. degree work in Agricultural Engineering. We were at war! The university began its adaptation to the the times. Boys began leaving for the service, but those near graduation were apt to finish before entering their military duty. In 1941 we had eight seniors and in 1942 - seven seniors.

For the next four years we had few men students on the campus who were regular students. We did have the military training program, ASTPR. This was an accelerated program of mathematics, and science courses to help train soldiers for technical positions. Since our own classes were not being given, many of our S.D.S.U. staff members were drafted to teach soldiers. The writer taught physics for about two years; and worked day and night, fall, winter, spring, and summer. There were war time restrictions; gas rationing, and no vacations.

By the summer of 1945 things began to get reorganized to normal college procedures. My regular department duties were resumed. One reason for this was R. L. Patty's sickness. Our Agricultural Engineering staff had dropped to Mr. Patty, myself, and Miss Hazel Fetherhuff, our secretary for many years. One of my last visits with Mr. Patty in the fall of 1945 was to tell him about how many boys I had heard from who were coming back to school after their military service. He knew at the time, I believe, that he would never be there to help teach them. He passed away on November 6, 1945.

From then on it was a struggle to build back the department and staff to an effective teaching organization. By 1948 we graduated 10 seniors, and by 1949 there were 15. This was the result of the regular students completing high school plus the backlog of those whose education had been interrupted by the war.

A detailed listing of staff members and the years they served can be best shown in a later chapter. The service courses to the College of Agriculture were large at this time and the "Aggie" school load continued.

Our staff increased to the place where there was a specially trained man for; (1) soil and water field, (2) farm structures, and (3) power and machinery. Expansion came in the rural electric course and the crop processing course. The rural electric work was also offered for the Agricultural College and for the Aggies. These courses rounded out the four general areas of work then considered to be the proper fields of agricultural engineering.

The rapid turnover of staff members made it seem desirable to initiate a graduate program so that a masters degrees program in Agricultural Engineering could be offered. Such a curriculum was planned; asked for and granted. John Wiersma, our soil and water staff member, began his graduate program; with some of his course work taken at Colorado A&M. Soon two seniors of the class of 1948 joined him. They were Frank Wiersma, and Dennis Moe. In the spring of 1950, the three were awarded their masters degree in Agricultural Engineering.

During this period our research work had been mostly in the machinery field. D. E. Wiant had a project in converting horse drawn machinery to use with tractors; often in multiple hitch arrangement. During the war years when little new machinery was available, L. F. Larsen worked over mowers for tractor mounting, old binders for tractor drawn swathers; and developed tractor mounted hay bucks, stackers, and loaders. These things were very popular for a time. They logically gave way to a new class of farm machines that came surging onto the market after the war. There were tractors complete with P.T.O., rubber tires and hydraulic lifts; the three-point hitch, and detachable implements. The self-propelled combine had arrived with the World War II era; the corn picker sheller and the need for drying equipment set the pace for machinery research work in the 1950's.

Even before the war years the Pick-Sloan plan had been adopted for the Missouri River development and Fort Peck dam had been built. The other large dams were being started and the future irrigation projects were in the planning stage. This set the pace for the soil and water research work. Where dry land farming and soil and water conservation had been emphasized for our area; now irrigation and drainage work came in for serious study. The coming dam and power plant structures along the Missouri River helped promote the spread of Rural Electric service to the farms. Electric power from the Federal system also assured an abundant and low cost source of electric power to the farming industry.

Chapter IV

The Growth Picture Of The 50's

Enrollments in Agricultural Engineering from 1950 through 1959 were irregular. Starting with a graduating class of 10, ending with 16, and having a high of 18 and a low of 3, this would average out to be the usual 12 graduates per year. In addition, there were 13 M.S. degrees issued in this 10-year period.

Progress was slow in these years in the field of physical plant and teaching and research equipment. The 1940's had seen great progress in farming. But increases in appropriations to state educational institutions were very slow in coming. But after a long lapse in the building program; in the early 50's came the large Agricultural Hall. This was placed to the west of our old building and "surrounded" the old Dairy Building on the west and south. With Plant Pathology, Agronomy Seed House, Wenona Annex, Scobey Hall and Pugsley Union added to the older buildings; by 1954 the campus suddenly began to expand in all directions.

The new Engineering Hall was being built in 56-57 and the new Agricultural Engineering Building was appropriated for in 1957 and we moved to it in September of 1959. More will be said about this later.

In 1954 our department had a staff of four people, with no specialists for research and no extension workers. By 1961, there was a staff of 13, with three full time extension people. Two things just had to change to make this possible; a greatly increased budget and a larger building to house the larger staff.

Time was right for a great expansion in soil and water research. The Irrigation Research Farm, operated by the Agricultural Engineering Department, was established on the Sioux River location south and west of Brookings. The experimental farm at Redfield called for experimentation in irrigation and drainage in that soil area.

Since 1938 the Rural Electric Coops of our state were literally covering the state with electric service to every farm. This progress was held back by the war years in the 40's, but continued out through the ranch country and was largely completed by 1955. This had aided in enlarging our teaching, research, and extension staff in the rural electric field.

The "Aggie School" or short course was dropped which ended a sector of the teaching load. But this also allowed more emphasis to be placed on our Mechanized courses. Late in the 50's, a staff member skilled in the Vocational Agriculture training was added. As a result, the group of Mechanized Agriculture students became larger than our Agricultural Engineering group.

Colleges of Agriculture have no organization for national accreditation; the Engineering Colleges do. We had been looking ahead to the day when our Agricultural Engineering curriculum could be accredited by ECPD (Engineering Committee for Professional Development). Since this is an area of the engineering college administrators; they made no inspections of departments that were administered by an Agricultural College.

It seemed advisible to have our department accredited; so that our graduates would have equal rating with engineers from other schools. The first step was to have the Agricultural Engineering curriculum administered by the Engineering College, and this step was accomplished in the mid-50's. The Mechanized Agriculture curriculum, the Agricultural Experiment Station work and the Extension work were still under the administration of the College of Agriculture.

The first inspection was carried out with the limited staff and the old building and old facilities, and at this stage accreditation by ECPD was not granted. The attainment of this goal had to await the expanded staff and the new building with its improved facilities.

The change of buildings is a story in itself. The Agricultural Engineering Building as of 1925 was the university's first Gymnasium and Armory built in 1899. It was sturdy and well-built, and probably well-suited to its first use. World War I times brought a new gymnasium of much larger size; so the old structure became a "hand-me-down" to the "tractor short course" and the "auto mechanics" program. In 1925 the writer took one of the auto mechanics courses and worked on the repairing of model T Ford engines which were plentiful at the time. In the year of 1935-36 a "WPA" cement block addition was built on which gave five additional rooms. They were not fancy, but in some ways they were better facilities than the old building. In the early 50's, the staff members had a roof raising party and built a roof over the open "C" of the north addition. This added the sixth room and sealed out a bad snow bank.

From here on, to keep up with class size, expanded load of research, added courses, and increasing staff, we had to improvise. Offices were built on second floor, and many shifts were made. And then it happened! On a very cold night in January 1957, the old building caught fire and burned.

The fire department came, found the first fire hydrant frozen, and were delayed in their efforts. They could not control the fire, which started in the north-west corner of the Annex. People in the old dairy building saw the fire and sent in the alarm. We got out a few pieces of equipment from a north room; the pickup and a self-propelled picker-sheller. How well the writer remembers driving that out of the smoke-filled room, with a few minor explosions going on in the adjoining rooms. The fire destroyed the entire building beyond any hope of repair or rebuilding. The firemen did have the fire checked long enough for us to work part of the night and get out all our school records, course outlines and books; together with our accumulated experiment station records. The people whose offices were on second floor lost everything they had.

This was during a regular legislative session at Pierre. To make a long story short: our priority on the building list was moved from second to first and an appropriation was made for a new Agricultural Engineering Building in the last hour of the last day of the 1957 session. The new building was started the next fall and was ready in the fall of 1959. The new structure was approximately 51,000 square feet of floor space, and cost $683,153.00; thus the cost was $13.40 per square foot.

As a departmental staff we had worked on plans for a new building and had many ideas of what we needed. We therefore had the opportunity to work with the architects and see many of our ideas incorporated in the new building. We chose a spot to the east of the old Dairy Barn, which was then at the edge of campus. As the campus has developed in the following 15 years, we are now in the center of building activity. The football stadium is near to the northeast; the Physical Education Complex to the east; and the new Student Union just south of our location. The new Home Economics-Nursing Building is southwest and the new Library is to be our next-door neighbor to the west.

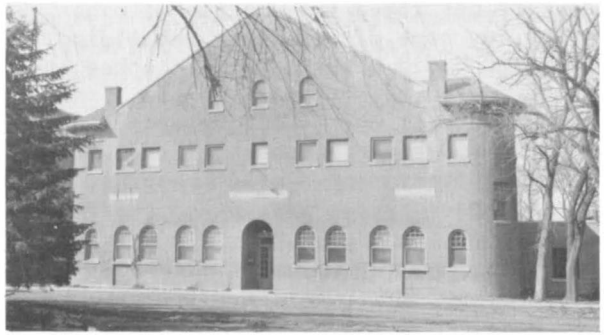

Figure 1. The Old Building, 1899-1957.

Figure 2. The New Building, 1959 ---- .

Chapter V

The Expanding 60's

The picture of college enrollment during the 60's is impressive. The total student count at S.D.S.U. is shown here in 10-year intervals for the past 50 years (see Table 2).

Table 2. Total college enrollments, 1920-1970.

Year	Number	Year	Number
1920	416	1960	3,050
1930	1,161	1970	6,256
1940	1,427	1974	6,181
1950	1,732		

The surge of students to college in the 60's would be a natural result of the population explosion of the early 40's. There was also an emphasis on the arts and sciences; so the trend did not necessarily reflect an increase in the engineering enrollment. This was a nationwide trend, and has resulted in a scarcity of new engineers.

The 60's was the time of rapid growth of our Mechanized Agriculture student group. The following statistics show this growth by listing the graduating seniors receiving degrees (see Table 3).

Table 3. Graduating seniors receiving degrees, 1961-1970.

Year	Number	Year	Number
1961	2	1966	18
1962	7	1967	16
1963	6	1968	20
1964	9	1969	20
1965	8	1970	20

With the facilities of the new building and with increased staff, the popularity of the mechanized agriculture program increased rapidly. It is quite logical to choose such a course of study in a day and age where farm mechanization has increased so rapidly. A high percentage of these graduates remain in the state as farm and ranch managers or in industry that is closely related to agriculture.

The 60's was indeed a growth period in campus expansion of the physical plant. Six new dormitories, three new dining halls, a new Dairy-Bacteriology building, and the planning of the Veterinary Laboratory came in rapid succession. A master plan for an enlarged campus was prepared. By the mid-60's, all of the college farms were moved farther out and rebuilt into modern plants.

Certainly the 60's was a great time of expansion for the agricultural engineering people. Crop drying equipment was obtained, and the crop processing courses were started. The rural electric courses had their own classroom and laboratory.

The fine equipment for the hydraulics laboratory added much to the development of the soil and water courses; especially

in the facilities available to the graduate students and faculty. The hydraulics laboratory is used by the Civil Engineering Department as well as the Agricultural Engineering; since the fluid mechanics courses are taught by the Civil Engineering Department.

The farm machinery and motors laboratory was large and had a large classroom. The lab needed equipment and many new and current motors were located and installed. A fine loading and test dynamometer was mounted. What a delight, as compared to the old "Prony Brake" that we formerly used.

The large farm structures laboratory room was left open and adaptable for wood construction, concrete work, truss construction, model buildings, etc. The writer would guess that no other branch of agricultural engineering is in a more rapid state of change than the farm structures work. A 50 foot long loading apparatus was constructed for the destructive testing of structural members such as beams and trusses. Testing service is offered to companies in the construction business.

Many thousands of weather record cards were processed and stored by the meteorologists. Three rooms were set aside for such work. Visitors to our part of the campus will see a little "pent house" on the roof of our building. This is the weather observation station for daily records of the temperature, rainfall, etc.

Some of the "old timers" may have had the experience of blueprinting, by using the old frame which we pushed out the upstairs window and exposed the print to the sunlight. The present equipment provides a variety of copiers and printers; with the large Bruning ammonia process copier as the largest one. The plan service is in larger quarters. We make use of the "Midwest Plan Service" which is an outstanding example of Regional cooperation of 12 states working together.

The above description of some of the new facilities is only a beginning. The former graduates (prior to 1959-60 year) will have to see the new building and have a tour of it to appreciate the change. Every college teacher and research man deserves one new building in a lifetime, we believe. Those of us who worked through the 60's had that thrilling experience.

Chapter VI

The Unique Project Of Rammed Earth Construction

Perhaps the most unique project that the Agricultural Engineering Department staff undertook was that of Rammed Earth. It was remarkable for the following reasons: (1) it attempted to bring a low cost structure to the depression days of the 30's, (2) it proposed hand labor and "self-help" in an era when it was desirable, (3) it provided work for many students during the hard times who needed to earn their way through school, and (4) the bulletins and letters about the project had worldwide circulation.

Building with earthen materials is certainly not new. There were many ways, and most techniques needed improvement. Adobe had been popular in the Southwestern part of the country and in Mexico for many years. The depression years brought on a need for low cost construction; and what material could be lower in cost than soil right at the building site.

Prof. R. L. Patty began investigating the possibilities of the project near the 1930 period. Many types of soil were gathered and of each type an experimental test wall was made. These walls were placed in a little outdoor testing yard just north of the old Agricultural Engineering building. It was sometimes referred to as the "grave yard", since the little test walls reminded one of tombstones in a cemetary. When exposed to the weather of all seasons; some of the soil failed, but others proved to be very good. This prompted inquiries into "why" one soil was satisfactory and why another failed. Mr. Patty determined the optimum mixtures and the optimum procedures.

In the fall of 1935, when the writer returned to the campus, several retaining walls had been built, one poultry house finished, and a large machine shed was half built. His first job then was to supervise the construction crews of four to eight student workers and finish the machine shed. Students worked one or more afternoons per week in fall and spring quarters, and usually all day Saturday. These boys needed to work these hours, even at the wages of 25¢ per hour, to help pay for their room and board at school. The work was hard, too, since it was all done by hand shoveling and hand tamping. The ramming forms were heavy, too, and usually took a crew to reset them.

In the next five years, and several student crews later, we had constructed five

farm buildings on the campus. A few people out over the state had tried out the method on small buildings. The general theme of earth construction was expanded to earthen floor mixtures; and protective covering of rammed earth such as paints and plasters.

R. L. Patty wrote the bulletin 277 entitled "Rammed Earth Walls for Farm Buildings" which was circulated widely and caught the fancy of people with building needs in the depression years. This bulletin was reprinted (3rd edition) in 1945. In addition, five other bulletins were published. By now the supply of all is exhausted. Visitors have come from many states, Alaska, Germany, Korea, and Israel to see the buildings and talk about the work. Correspondence has been carried on with people in many countries.

In 1959, the writer prepared Cir. 149, "Rammed Earth Walls", to send out to people who continued to write for information. Such requests have slowed down, but they are still coming. This last bulletin has a "25-year observational summary" of the buildings which we built, and how well they stood up under actual use. This was a timely record and carries the pictures of the work. In the 60's, all of the buildings except the machine shed were torn down to make way for new structures on the campus.

Rammed earth proved to be substantial and durable for walls; but did not solve the problem of windows, roof, floors, utilities, insulation and many other things. It may or may not have been low cost, depending on the cost of labor, but it did not solve the total building needs. We live in a day when lumber is shipped from the costal states, brick from another area, cement from the Black Hills area, steel from Chicago or Pittsburg; but we make no effort to use the material we walk over every day. Architects will not specify it; and building codes do not mention it.

The history of the first 50 years of the Agricultural Engineering Department would be incomplete without mention of this unique experiment in the construction field.

Figure 3. The last of the Rammed Earth Poultry Houses to be built by the Agricultural Engineers.

Chapter VII

Agricultural Extension Work By The Agricultural Engineers

It was the year 1916, as mentioned before, when Mr. R. L. Patty came to the South Dakota State College to be the first Agricultural Engineer in the Extension Service. This was in the formative years of the service, when the County Agricultural Agent was new. Specialists in various subject matter fields were being established in the State Extension Office.

This came during a period of more than normal rainfall. Prairie ponds and low spots were full of water, or at least muddy. The writer remembers those years when it was difficult to get corn cultivators or harvest machinery through the "muddy places" in the fields. There was need for and farmer interest in the drainage of such places. Mr. Patty had had experience in installing tile drains on Iowa farms; so this became one of his early projects. In those days much of the tile drains were layed by hand work. Some of their projects were as far away from Brookings as Spink County.

Twenty five years afterwards the writer used some of the old field books and maps and hunted up two Brookings County drainage projects. The tile were still functioning.

The farm building plan service was a major project from the very first. The big farm barn was a dominant part of the farmstead; and stood as a trademark of success. It

was designed to store great quantities of hay above; and had ample space for the work horses. Soon there was need for the specialized dairy barn with its stansions, milk room, silo, and special feed storage. The mechanical milker was developing. There was also need to develop better poultry houses with more light, warmth, and ventilation. The hog farrowing house, with its pens, alleys and roof windows appeared.

Suddenly garages were needed for cars and trucks and the plans for farm shops developed. Some South Dakota State plans were developed for each of these. There was much duplication of effort with each state drawing its own plans, so at an early date the 12 North Central states cooperated on a centralized plan service called the Midwest Plan Service.

There were also many changes going on in the farm home. Plans were mostly those of the U.S. Department of Agriculture; with only a few state plans. After the 1940's the Midwest Plan Service was used to provide a greater variety of house plans. After the 1910's, great changes were made in farm housing. The extension agricultural engineer had to deal with the developing central heating system, the farm light plant, farm gas plants, the first crude water systems, flush toilets, septic tanks, and new building materials.

The beginning electric service to the farm, from a central station, began before 1925, with the Renner Test Line. Mr. R. L. Patty supervised some of the test work done. Three bulletins were written about this work, and the project was a huge success. The line, by the way, is still in existance and the people of that area had a meeting to observe a 50th-year of operation.

Old blueprints, and old methods, have a way of becoming obsolete. There is always something new to work on. In the depression years (1930's) there was very little extension work carried out. The extension time was cut from $\frac{1}{2}$ and then to $\frac{1}{4}$ of one man's time, so little was done except the plan service.

The drought years signaled the beginning of the Soil Conservation Service, which expanded to most areas of the state. We began placing our graduates into the engineering position of this organization. This greatly extended the technical services to the people of the State. The rapid organization and growth of the Rural Electric Cooperatives after 1938 added a new phase of Extension work; that of farm wiring, electric appliances, automatic control of heating in homes and buildings and many other items. To help the extension program; the Cooperatives employed their "power use advisors" and several of our graduates entered this work.

In the 1940's our department began to build back in to a program of extension specialist. In 1946 a full time specialist was employed. In 1947, two more were added; one in structures and one in rural electrification. A specialist in soil and water was added in 1949, and in 1952 came the power and machinery specialist. By now, many of the engineering problems on the farm were not to be solved by the County Agricultural Agent. The specialists worked through the county offices; but worked more directly with the farmer and his specific problem.

It is not so much that the subject changes as it is the complexity of the subject changes. General purpose farm buildings have given way to specialty buildings. A real revolution has been going on on all agricultural fronts; in buildings, in power and machinery, in soil and water conservation, and in rural electrification.

We have seen the Pick-Sloan plan for the Missouri River development take place. The six major dams, together with their power plants are now all complete. The flood control is accomplished. Their power plants have been providing nearly 100% of our farm electric energy. Recreation facilities and wildlife preservation are being improved. The long awaited irrigation system in the James River Basin is the feature that has lagged behind. The agricultural engineers on our Extension force have been very busy, helping individual farmer irrigators as they pump from streams or wells. Much progress has been made.

Crop drying is one of the newer duties of the agricultural engineer. With large corn picking and picker sheller outfits; it becomes desirable to dry the corn crop. With the fuel and energy pinch coming on there is interest in "solar" drying. All of the new development in fertilizers, weed sprays, and insecticides has brought in new machines for the power and machinery specialist.

Farm safety has also been emphasized, and especially now when federal controls and restrictions have to be reconed with. For many years farm safety was emphasized in connection with the State Mechanical Corn Picking Contest. This contest followed the old state and national hand corn picking contest that was so popular. Many

years we would take most of the Agricultural Engineering staff and also a group of students to help with these contests. The students gleaned the field for losses, the professors were the judges and the calculators. The total job was to arrive at a score to determine the contest winners.

We are sure that our extention agricultural engineers will never run out of a job. Our guess is that the job will get harder as time goes on.

Chapter VIII

Ag Engineers Take Part In Experiment Station

The Agricultural Experiment Station is an integral part of the College of Agriculture in the Land Grant College System. Many Agricultural Engineers, therefore, work solely or jointly in the experimental field. At South Dakota State University almost everyone with teaching duties has also experiment station duties. This allows for a 12 month contract, gives variety to the years work, and enables many graduate students to work in interesting and timely projects. Mention has been made before of some of these projects; and a chapter was given to the unique projects on rammed earth.

It would take volumes to describe completely the nature of all of the projects, their goals, reasons for beginning the study, and the benefits of the results. It seems best to only mention the project number, the year, the title, and the name of the project leader. Very often, there were additional staff members involved; and many times students and graduate students. Other projects were cooperative with other departments. After 1940 there often were regional connections so that several states were involved in the same project.

The following letters will be used to point out these involvements: (1) (S) for student workers, (2) (G) for graduate student participation, (3) (C) for cooperation with other departments and (4) (R) for regional connections (see Table 4).

Table 4. Research projects, 1925 to 1975.

Project Number or Fund	Title of Project and Year Started	References S G C or R	Project Leader
Purnell	1925 Electricity on the Farm. "Renner Line"	(S)	R.L. Patty
Purnell	1927 Feed Grinding for Livestock	(S) (C)	J.F. Goss
Purnell	1927 Combine Operation		J.F. Goss
Purnell	1930 Corn Harvesting Machinery	(S)	R.L. Patty
Purnell	1930 Rammed Earth for Farm Building Walls	(S)	R.L. Patty
15 S.D.	1932 Steel Fence Posts Galvanized or Painted		R.L. Patty D.L. Moe (49)
Purnell	1933 Field Machinery Hitches for Tractors and Large Horse Teams		D.E. Wiant
S.D.	1933 Rammed Earth in Poultry Houses	(S) (C)	R.L. Patty
73 S.D.	1939 Use of Rubber Tires for Farm Vehicles		H.H. DeLong
83 S.D.	1940 Hard Surfaced Floors (Earthen Mixtures)	(S) (C)	R.L. Patty J.S. Boyd (45) J.L. Wiersma (46)
84 S.D.	1940 Mechanical Injury of Barley in Threshing and Combining	(G)	H.H. DeLong
34 S.D.	1941 Conversion of Horse Drawn Machinery to Tractor Use	(S)	L.F. Larsen H.H. DeLong (45)
35 S.D.	1941 Rammed Earth Poultry Houses (Mechanical Ramming)	(S) (C)	R.L. Patty H.H. DeLong
22 S.D.	1942 Side Thrust Studies of R.E. Walls		R.L. Patty
114 S.D.	1942 Finding Best Ways to Store Grain Sorghum	(C)	H.H. DeLong

Table 4. Continued.

Project Number or Fund	Title of Project and Year Started	References S G C or R	Project Leader
136 S.D.	1943 Soybean Harvest and Threshing Machines	(C)	H.H. DeLong
152 S.D.	1944 Storage of High Moisture Ear Corn	(C)	H.H. DeLong
136 S.D.	1945 Performance of Self Tying Pickup Hay Baler		H.H. DeLong
83 (Revised)	1946 Outdoor Feeding	(S) (C)	J.L. Wiersma
36	1947 Performance of Field Silage Harvesters		H.H. DeLong
165	1947 Concrete Silage Staves for Cisterns and Septic Tanks	(S)	N.B. Anderson T.R.C. Roknby (52)
192	1948 Supplemental Sprinkler Irrigation in S.D.		J.L. Wiersma
U.S.D.A. S.C.S.	1948 Effect of Irrigation on Soil Drainage	(C)	L.J. Erie
188	1949 Farm Electrification by Wind. Electric and Automatic Engine Plants	(C) with Industry (G)	H.H. DeLong
203	1949 New Farm Building Materials. (lightweight aggregate from expanded shale - "Molite".)	(C)	D.L. Moe
237 and 237 A	1952 Temporary Silos for Grass Silage	(C)	G.C. Zoerb H.H. DeLong (55) Harvey Young (57)
232	1952 Poultry House Ventilation	(C)	T.R.C. Rokeby D. Hamann (56)
246 and A.R.S. C.C.C.	1953 Conditioning Wheat on Long-Time Storage, Field Picker Sheller Operation and Corn Drying	(G) (C)	H.H. DeLong
280	1955 Poultry Brooding with Electric Power	(G) (C)	V.H. Flesher Myron Paine (58)

Table 4. Continued.

Project Number or Fund	Title of Project and Year Started	References S G C or R	Project Leader
281	1955 Toxic Effect on Plants of Iron Laden Irrigation Water	(G)	J.L. Wiersma
H-291	1955 Weather Modification for Agriculture	(G)	Wm. F. Lytle
317 and 370	1957 Drying Crops with Supplemental Heat and Low Voltage Controls for Feeders		Myron Paine H. Winterfield
275 and 348	Water Conditioning and Demineralizing	(C)	H.H. DeLong
320	1957 Mechanical Properties of Agricultural Seeds (Combines and Crackage)	(C)	G.C. Zoerb
316	1957 New Construction Concepts in Farm Structure Design (Swine Shades)	(S)	Charles N. Hinkle Milton Shute (66)
340	1960 Effect on Plow Draft by Killing of Plants by Spraying	(C)	G.C. Zoerb Donald Hamoun (61)
	1960 Hail in South Dakota		E.M. Frisby
321	1961 Transfer of Radiant Energy between Object and Reflective Enclosures	(R)	Charles N. Hinkle
H-335	1959 Hydrologic Studies of Small Watersheds		Wm. F. Lytle
H-338	1961 Drainage Investigation of Proposed Oahe Soils		Walter Lembke
S-339	1959 Cloud and Weather Study as Related to Weather Modification		Wm. F. Lytle
H-291 (NC-26)	1960 Weather Information for Agriculture	(R)	Wm. F. Lytle

Table 4. Continued.

Project Number or Fund	Title of Project and Year Started	References S G C or R	Project Leader
S-340	1959 Application and 1964 Development of Equipment for Conservation Farming		Henry Waelti
S-341	1961 A Study of Ultrasonic Treatment of Grain		Myron Paine
H-395	1961 Design of the Farm Feed Handling Center	(R)	H.H. DeLong
H-398	1963 Irrigation Management in S.E. South Dakota		John L. Wiersma
S-400	1964 State-wide Services. Res. findings on Clinics, Workshops and Short Courses		Marvin Larson
S-437	1964 Analysis of Management Systems of Livestock Production Systems	(G)	Harvey Young
S-448	1965 Application and 1968 Development of Principles for more Efficient Harvesting of Sorghum and Corn	(G)	Paul Turnquist
H-474	1967 Livestock Poultry and Human Environmental Studies	(C) (G)	Milton Shute M. Hellickson (69)
S-977	1966 Agricultural Engineering Research Farm	(S) (G)	Tom Klosterman
WRI-3559	1966 Effects of Marginal Quality Irrigation Water on Accumulated Salts		Walter Lembke
WRI-3560	1968 Hydrology of Small Drainage Basins		Wm. F. Lytle
WRI-3557	1968 Low Rates of Water Applications by Sprinklers		John Wiersma

Table 4. Continued.

Project Number or Fund	Title of Project and Year Started	References S G C or R	Project Leader
WRI-3549	1968 Water Quality Lab. Storage and Retrieval of Data		John Madden
WRI-3566	1968 Salinity Above the Water Table as Effected by Rainfall		Walter Lembke
ARS SD-M-2	1968 Runoff and Erosion of Poinsett Soils		Charles Onstad
ARS SD-M-14	1968 More Easily Farmed Terrace Systems		Charles Onstad
ARS SD-M-15	1968 Water Storage Capacity of Various Surfaces and Shapes		Charles Onstad
S-423	1968 Long Span Fence Research	(C)	Harvey Young R.A. Moore
WRI-SD-017	1968 Evaluation of Functional Operation of Irrigation Systems	(C)	Delvin Brosz
WRI-SD-025	1968 Polution Potential of Runoff in Livestock Feeding Installations	(C)	John Madden
S-483	1969 Farmstead Electric Power Use and Safety	(G) (C)	M. Hellickson
S-536	1970 Application of Anhydrous Ammonia to Grasslands	(G)	Clarence Johnson
H-562	1970 Drainage Investigations of Oahe Soils	(C)	Darrell DeBoer
S-563	1970 A Saline Water Balance Mathematical Model		Darrell DeBoer
S-564	1970 Components for Greater Comfort and Efficiency of Tractor Operators	(G)	Paul Turnquist

Table 4. Continued.

Project Number or Fund	Title of Project and Year Started	References S G C or R	Project Leader
H-565 NC-94	1970 Climatic Resources of the N.C. Region	(R)	Wm. F. Lytle
WRI-SD-027	1971 Ground Water Management for the Big Sioux River	(C)	John Wiersma
S-617	1972 Evaluation of Systems for Disposal of Livestock Waste	(C)	J.L. Wiersma A.L. Dittman
NSF-GR	1972 Heat and Moisture Production in Beef Confinement Unit	(C)	M. Hellickson
WRI-SD-023	1972 Investigations of Time Parameter of Watersheds	(C)	S.T. Chu
H-628	1973 Forage Production and Utilization--A Base for Livestock Production	(R) (C)	Paul K. Turnquist
S-635	1972 Principals and Methods for Incorporating Livestock Wastes in Soils	(G)	Clarence Johnson
S-636	1972 An Evaluation of Multifield Irrigation Systems	(G)	Darrell DeBoer
S-658	1973 Drainage Investigation of Irrigated Soils	(G)	Darrell DeBoer
S-962	1970 Administrative Project		D. L. Moe
S-977	1974 Agricultural Engineering Farm	(C)	DeBoer and Chu
A-030-S.D.	1971 Operational Evaluation of Irrigational Systems		Delvin D. Brosz
A-032-S.D.	1972 Development of Irrigation Water Management Practices	(G)	Delvin D. Brosz

Table 4. Continued.

Project Number or Fund	Title of Project and Year Started	References S G C or R	Project Leader
EPA-3650	1973 Animal Waste Management in Northern Great Plains		John Wiersma
A-042-S.D.	1974 Linear Programming Analysis of Branched Pipe Network Systems		Shu Tung Chu
S-707	1974 Trickle and Sprinkler Irrigation on Shallow Rooted Vegetables	(C)	Darrell DeBoer

Chapter IX

Staff Members Of The Agricultural Engineering Department 1925-1975

Table 5. Staff members, duties, and years of service.

Name	Duties	Year	Training and Type of Work
	Ext.	1916	Extension Agr. Engr.
Ralph L. Patty (Dept. Head)	Teach Res.	1925 1926-45	BSAE (Iowa State) Teaching in Structures, Soil & Water Research in Structures & Rural Elect.
J. Fletcher Goss	Teach Res.	1925-27	BS & MS in Agr. Engr. (Iowa State) Power and Machinery
J. A. Bonnel	Teach	1927-41	Stout Institute Wood Working Shop
Freeman Andrews	Teach	1927-35	Instructor in Forging & Welding
D. E. Wiant	Teach Res.	1927-38	BS (Iowa State), MS (Kansas) Power and Machinery
Lee Minium	Teach Res.	1929-34	BS (SDSU)
Henry H. DeLong	Teach Res.	1935-Pres.	BS (SDSU), MS (Univ. of Minn.) Power and Machinery Rural Electric & Crop Processing
Henry Bloem	Teach	1936-41	BS (SDSU) Instructor in Forging & Welding
Albert Snethen		1938-39	Assistant in Research
Lester F. Larsen	Teach	1939-43	BS & MS (Nebr.) Power and Machinery
Henry H. DeLong		1945	Department Head
Ray F. Lien	Teach	1945-46	BS (SDSU) Power and Machinery
James S. Boyd	Teach Res.	1946-47	BS (SDSU), MS (Texas) Farm Structures
Merle Esmay	Ext.	1946-47	BS (SDSU) Farm Structures

Table 5. Continued.

Name	Duties	Year	Training and Type of Work
John L. Wiersma	Teach Res.	1946- Pres.	BS & MS (50) (SDSU) PhD (Calif.) Soil and Water Conservation
Niels B. Anderson	Teach Res.	1946- 50	BS (Univ. of Minn.) Farm Structures
George McPhee	Ext.	1947- 48	BS (SDSU) Rural Electric Specialist
Louis Lubinus	Ext.	1947- Pres.	BS (SDSU) Farm Structures
Dennis L. Moe	Teach Res.	1948- Pres.	BS, MS (50)(SDSU) D.Sci.(Augustana) Power and Machinery Farm Structures
Martin Fogel	Ext.	1949- 60	BS & MS (Univ. of Minn.) Reclamation Specialist
Gerald C. Zoerb	Teach Res.	1950- 60	BS (Sask) MS (Minn.) PhD (Mich.) Power and Machinery
Leonard J. Erie	Res.	1950- 52	BS (SDSU) Soil and Water Research (USDA)
T.R.C. Rokeby	Teach Res.	1951- 55	BS (Ont) MS (Toronto) Farm Structures
Virgil Flesher	Teach Res.	1951- 55	BS & MS (SDSU) Rural Electrification
Niel Dimick	Res.	1952- 54	BS & MS (SDSU) Irrigation Engr. (BR-USDI)
Wm. T. Welchert	Ext.	1952- 54	BS (SDSU) Power and Machinery
Harold Holman	Res.	1954- 55	BS & MS (SDSU) Research in Crop Processing and Rural Electrification
Harvey G. Young	Teach Res.	1955- Pres.	BS (NDSU) MS (SDSU) Farm Structures Mechanized Agriculture
Donald Brosz	Res.	1955- 60	BS (SDSU) Irrigation Engineer

Table 5. Continued.

Name	Duties	Year	Training and Type of Work
Geo. R. Durland	Ext.	1955- Pres.	BS (SDSU) MS Power and Machinery
Wm. H. Peterson	Ext.	1955-	BS (SDSU) MS Rural Electrification
Dennis L. Moe		1956	Department Head
Donald D. Hamann	Teach Res.	1956- 61	BS (SDSU) MS Power and Machinery
Paul Wheeldon		1956- Pres.	BS (SDSU) Department Draftsman
Chas. N. Hinkle	Teach Res.	1957- 65	BS & MS (Purdue) PhD (Missouri) Farm Structures
H. Winterfield	Res.	1957- 70	BS (SDSU) Rural Electrification
Myron D. Paine	Teach Res.	1958- 64	BS (SDSU) MS (Illinois) Rural Electric, Crop Processing
Marvin Larson	Teach	1958- 70	BS & MS (59) (SDSU) Mechanized Agr. and Voc.-Agr.
Foster F. Kerr	Ext.	1960- Pres.	BS (USD) Extension Water Resources
Walter D. Lembke	Teach Res.	1961- 69	BS & MS (Illinois) PhD (Purdue) Soil and Water Engineering
Wm. F. Lytle	Teach Res.	1961- Pres.	BS & MS (Univ. of Illinois) Climatology and Soil and Water
Walter Sphuler		1962- 73	BA (Nebr.) MS (Cal Tech) State Climatologist
Henry Waelti	Teach Res.	1963- 69	BS (Oregon) MS (Purdue) Power and Machinery
Fred Schmer	Ext.	1963- 69	BS (Colo.) MS (SDSU) PhD (Texas) Area Irrigation Engineer Remote Sensing
Arthur Vandall		1963- 69	BS (SDSU) Rural Civil Defence Specialist

Table 5. Continued.

Name	Duties	Year	Training and Type of Work
Tom Klosterman	Res.	1964-Pres.	BS (SDSU) Superintendent of Irrigation Farm
Charles R. Umback	Res.	1964-65	BS (SDSU) Assistant in Agr. Engineering
Paul K. Turnquist	Teach Res.	1964-Pres.	BS (Kansas) MS & PhD (Okla.) Power and Machinery
Coy W. Doty	Res.	1964-68	BS (Auburn) MS (SDSU) Soil and Water Research
Dwayne Konrad	Ext.	1964-67	BS (SDSU) MS (Ariz.) Extension Irrigation Specialist
Delvin Brosz	Res.	1964-74	BS & MS (SDSU) Soil and Water Engineering
Sidney Black	Ext.	1965-67	BS & MS (SDSU) Extension Specialist in Irrigation
Milton Shute	Teach Res.	1965-69	BS (Georgia) MS (Cornell) PhD (Mo.) Farm Structures
John Madden	Water Resourses		Water Resources Lab.
Roger Svec	Res.	1966-71	BS (SDSU) Assistant in Research
Darrell DeBoer	Teach Res.	1969-Pres.	BS, MS, and PhD (Iowa State) Soil and Water Engineering
Shu Tung Chu	Teach Res.	1967-Pres.	BS (Taiwan) MS & PhD (Univ. of Minn.) Soil and Water Engineering
Clayton Hansen		1967-73	BS (NDSU) MS (Idaho) Belle Fourche Station
Charles A. Onstad		1968-72	BS & MS (Univ. of Minn.) Soil and Water Research (Madison)
M. Hellickson	Teach Res.	1969-Pres.	BS & MS (NDSU) PHD (West Virginia) Farm Structures and Environment
Victor Myers	Teach Res.	1969-Pres.	BS & MS (Idaho) Director of Remote Sensing

Table 5. Continued.

Name	Duties	Year	Training and Type of Work
Edward Dowding	Teach Res.	1969-Pres.	BS (SDSU) MS (Wyoming) Power and Machinery
James R. Hoover	Res.	1969-73	BS & MS (Ohio) USDA Soil and Water Research
Clarence Johnson	Teach Res.	1970-Pres.	BS (Okla.) MS & PhD (Iowa State) Power and Machinery
Gary McVey	Teach	1970-73	BS, MS, PhD (Iowa State) Mechanized Ag. - Vocational Ag.
Darrel Pahl	Ext.	1970-Pres.	BS (SDSU) Ext. Specialist - Soil and Water
Albert Dittman	Res.	1971-Pres.	BS (SDSU) Research Assistant
Marion Kimmons	Teach	1974-Pres.	BS, MS, PhD (Missouri) Mechanized Ag. - Vocational Ag.

Figure 4.

Ralph L. Patty

Henry H. DeLong

Dennis L. Moe.

Table 6. A listing of our Agricultural Engineering graduates (B.S. in Agricultural Engineering).

Year	Name	A. Present Address B. Work	C. Branch D. Advanced Degrees
29	Lee Minnium	4848 Calver, Lincoln, NB 68506 College Teaching--Prof. Emeritus	General College M.S.
30	Harry Hadler	1108 Hunter Road, Glenville, Ill. 60025 37 yrs., International Harvester--Retired	P & M
32	Leslie W. Johnson	General Delivery, Zapata, TX 78076 with John Deere - Moline	P & M - Design M.S.
33	Dale L. Bidwell	Rt. # 1 Arp, TX 75750 with SCS - now private business	Soil and Water P.E.
33	Lowell M. Graves	1561 E. Doyer Cr., Mesa, AZ 85201 Farmer - Co. Agr. Program--Retired	
33	Ward Henden		
33	Harry H. Leonhardt	RR 13, Box 76, Ft. Worth, TX 76119 with SCS - Engineer	Soil and Water
34	Walter W. Johnson	Frankfort, S.D. 57440 SCS, Farmer, Rancher, Legislator	
34	J. Emerson Wolfe	507 Hansing, Volga, S.D. 57071 SCS - Lumber Dealer	Soil and Water - Structures
34	William D. Test	415 May St., Elmhurst, Ill. 60126 with Sears, Roebuck & Co.--Retired	M.S.
35	Ingram R. Hermanson	2657 Sewell St., Lincoln, NE 68502 SCS--Retired	Soil and Water P.E.
35	Dale Ryman	760 Patrol Road, Woodside, CA 94062 SCS - Military - Calif. Hwy. Dept.	Soil and Water P.E.

Table 6. Continued.

Year	Name	A. Present Address B. Work	C. Branch D. Advanced Degrees
35	Delbert S. Taute	103 W. 41st, Sioux Falls, S.D. 57105 Lumber Business	Structures
36	Joe E. Cranston	1207 E. Kentucky, Woodland, CA 95695 International Harvester Dealer	P & M
36	Raymond Ellis	Deceased SCS in South Dakota	Soil and Water
36	Leonard Kulish	5308 N.W. Drive, Omaha, NE 68104 Federal Land Bank--Retired	Soil and Water
36	Martin Kloster	Clark, S.D. Farmer and Rancher	
38	Howard R. Test	1422 S. 13th, Edinburg, TX 78439 Farm Implement Dealer	P & M
38	Oscar Tiegen	Deceased J. I. Case Branch Manager	P & M
38	Elbert Snethen	25 E. Orchard, Council Bluffs, IA Chief R & R Section Army Engineer	Structures
38	Fred Larson	2604 S. First Ave, Sioux Falls, S.D. 57105 Co. Agent - J.D. Implement Dealer	Power and Machinery
38	Henry DeLong	421 12th Ave., Brookings, S.D. 57006 Ag. Engr. Dept., SDSU--Retired	Elect. Power & Proc. M.S.
38	August Taute	Military Service Col. in U.S. Air Force	
39	Marvin Ellis	1806 Madison St., Bellevue, NE 68005 Asst. Chief - Eng. Div. - Corps. of Engr.	Govt. Serv.
39	John Wolfe	3235 N.W. Crest Drive, Corvalis, OR 97330 Ag. Engr. Dept., Oregon State Univ.	Soil and Water PhD., P.E., D.H.E.

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advanced Degrees
39	George McPhee	Port Tobacco, MD 20677 Rural Electric - Real Estate El. P & P
39	Cameron W. Lane	108 High Street, Villisca, Iowa U.S. Air Force - Implement Dealer Power and Machinery
39	James S. Boyd	127 Orchard, East Lansing, MI 48823 Prof.--Ag. Engr. Mich. State Structures PhD., P.E.
39	Paul Ellingson	3020 N. Shore Drive, Wayzata, MN 55391 Federal Housing Adm.--Retired Structures - Govt.
40	Leo Larson	2161 S.W. 122nd Pl., Seattle, WA 98146 with Deere and Co. P & M
40	Ernst Olson	Lake Nordon, S.D. Farming
40	Wayne Skow	
40	Edwin Townsend	Deceased (World War II casualty)
40	Thomas H. Weeks	LeMars, IA 51031 Consulting Engr. & Surveyor Soil and Water
41	Leonard Bonhorst	Box 4338, Huachuca City, AZ 85616 Govt. Services (many places) Soil and Water - Construction
41	Harold Campbell	Hayti, S.D. 57241 County Agricultural Agent Education
41	Robert Dirksen	Box 209, Madison, S.D. 57042 Insurance Business Govt. Services for Lake County
41	Burdette Hinsey	5221 Rosehill, Shawnee, KS 66216 Soil and Water
41	Gerald Karstens	2301 Jess-Davis - # 826 Arlington, VA Feed Processing (V.P.-VFMA) Feed Processing

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advanced Degrees
41	Ray M. Lien	427 S. Sharon Chapel Rd., W. Layfaette, IN 47906 Assoc. Prof. of AE - Purdue Univ. P & M and Ed. & Res. M.S.
41	Leroy Mernaugh	627 N. Jackson, Pierre, S.D. 57501 Soil Conserv. Serv. Soil and Water
41	Paul R. Rist	724 11th St. S.W., Huron, S.D. 57350 S.D.S.C.S. - Watershed Planning Soil and Water
42	Milo Arms	462 Siesta Drive, Marion, OH 43302 Design Engineering P & M
42	Merle Esmay	1272 Scott Dr., East Lansing, MI 48823 Prof. - AE, Michigan State Structures - International Assign. PhD.
42	Ralph Frevik	Deceased with Ford Motor - Machinery P & M
42	Sheldon Holt	Orient, S.D. 57467 Farming and Ranching
42	Ray R. Huxtable	1055 Cinderella Dr., Reno, Nev. 89503 SCS - RC & D Soil and Water - Government
42	Moyne H. Kirby	Deceased - Newell, S.D. Engineering - Government Service Soil and Water
42	Paul C. Venard	1305 14th St., Hawarden, Iowa 56023 Owner-Manager, Lamberton Elevator Grain and Feed Business
43	John L. Wiersma	RR # 2, Box 8, Brookings, S.D. 57006 Director of Water Resources Inst. Soil and Water PhD., P.E.
44	Roy Brandt	430 12th Street, Mason City, Iowa Design Engineer - Farm Machinery Power and Machinery

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advanced Degrees
44	Norman Evans	1847 Michael Lane, Ft. Collins, Colo. 80521 Water Res. Inst. - Colorado Soil and Water PhD.
46	Leonard J. Erie	4233 East Indianola, Pheonix, Arizona U.S. Water Conservation Lab Soil and Water M.S., P.E.
46	Gordon Olson	913 Liberty Street, Dubuque, Iowa 52001 Deere & Co. of Dubuque Power and Machinery
47	Keith Emerson	RR, Phillip, S.D. Farming and Ranching - Surveyor
47	Stanley Kvinge	2854 Edgewood Drive, Fargo, N.D. 58102 Lutheran Minister
47	Louis Lubinus	103 Sunnyview, Brookings, S.D. 57006 Extension Agr. Engr., SDSU Structures and Education
47	Emil Sederstrom	612 Cedar Street, Ventura, Calif. 93001 Highway Department
47	Leslie Thompson	Deceased Consumers Coop, Mitchell, S.D. Business Management
47	Ward Wallace	4631 White Horse Trail, Rockford, Ill. 51103 Plant Engineer - Amerock Co. Power and Machinery
47	Clinton Weldert	
48	Ray H. DeKramer	110 19th St. S.W., Huron, S.D. 27350 Irrigation Spec., Bureau of Reclamation Soil and Water
48	Thomas B. Durland	873 Naomi Ave., Chico, Calif. 95826 Zone Manager - Ford Tractor Power and Machinery
48	Lowell Endahl	8633 Ft. Hunt Rd., Alexandria, Va. 22308 Research Division, NRECA El. P&P
48	Francis Guptil	Interior, S.D. 57750 Farm Owner and Operator
48	Marvin L. Haag	Rt. 1, Box 52, Hoven, S.D. 57450 Farming and Ranching

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
48	Darold C. McCrossen	1020 Casa Crande Pl., N.E., Albuquerque, NM NSDA - SCS Soil and Water
48	Dennis L. Moe	RR # 3, Brookings, S.D. 57006 Dept. Head, Agr. Engr., SDSU AE Education and Research M.S.
48	Dale L. Persinger	5116 Ryan Ave., Edina, MN 55924 Credit Dept. - Deere & Co. Power and Machinery
48	Frank Wiersma	1425 N. Endigo Drive, Tucson, Arizona 85705 Prof. - AE, Univ. of Arizona Structures PhD., P.E.
48	Paul Winckler	RR 3, Roanoke, Texas 76262 Dept. Director - Civil Defense Government
49	Joe Berge	114 Belmonte Drive, Mankato, MN 56001 Territory Manager, M&M Gear Co. Power and Machinery
49	Harlan Collins	3735 SW Bridal Mile, Portland, Ore. 97221 Soil and Water
49	Henry Dahlquist	3508 Reder Street, Rapid City, S.D. 57701 SCS Soil and Water
49	Donald Minehart	SCS in South Dakota, Foreign Missions Soil and Water
49	Leslie Roberts	Ashton, S.D. 57424 Farming
49	Lowell E. Rangaard	1909 Franklin, Glencoe, MN 55335 Plant Engr. - Green Giant Co. Engr. & Food Processing
49	Maynard Sommers	1209 E. Erskine, Pierre, S.D. 57501 Engineer, State Highways, S.D. Soil and Water
49	Myron Stevens	Deceased Engr. Contractor
49	Thomas Murley	1281 Arlington Ave., Columbus, Ohio 43212 Engr. for General Equip. Co. Power and Machinery
49	William F. Ryan	

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
49	Clarence Peterson	Box 361, Pelican Rapids, MN 56572 Manager - REA Coop. Elect. P & P
49	Robert Victor	116 N. Van Buren, Pierre, S.D. 57501 Private Business - Trucking Business
49	James Thompson	RR # 1, Ashton, Ohio 43003 Engr. Design and Management - Huber Corp. Power and Machinery
49	Thomas Wright	Deceased - 1971
49	Leslie Wyborny	Deceased Soil and Water
50	Lester Aeilts	417 N. Washington, Carthage, Ill. 62321 Manager, REA Coop Assoc. EP & P
50	Kenneth Huchendorf	4625 98W, Bloomington, Minn. 55431 International Harvestor Co. Power and Machinery
50	Glen L. Johnson	717 E. 6th Street, Willmar, Minn. 56201 Dist. Soil Manager, Massey Ferguson Power and Machinery
50	Elmor P. Jordeth	
50	Robert Lees	2135 Elmwood Drive, Brookings, S.D. 57006 Partner, Lemco Construction Contractor-Builder
50	Harvey Mills	RR # 4, Box 29, Brookings, S.D. 57006 Pres., H. E. Mills Const. Co. Contractor-Builder
50	Donald R. Nickelson	1020 National, Belle Fourche, S.D. 57717 Rancher and Feeder
50	Curtis Otterby	Renner, S.D. 57055 Farming
50	Lorrin Schwartz	297 Davis Lake Road, Oxford, Mich. 48051 Engr., Ford Motor Co., Machinery Power and Machinery
50	Keith Taylor	Conde, S.D. 57434 Farming
51	William Peterson	221 17th Ave., Brookings, S.D. 57006 Ext. Agr. Engr., SDSU EP & P M.S.

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
51	R. Louis Scott	Box 905, Pierre, S.D. 75501 State Dept. of Education Education
51	George Van Sherril	841 Colo. Ave., Huron, S.D. 57350 Program Spe., ASCS-USDA Government
51	Charles Anderson	399 Riverview, Auburn, Calif. 95603 Adm. Ser., Dept. of Transportation Engr. and Adm., Highways M.S.
51	Arlo Clemenson	Conde, S.D. Farming and Feeding
51	Niel Dimick	Islamabad ID State Dept., Wash., DC Foreign Service, Land Engineer Soil and Water in Pakistan M.S.
51	Arthur Fenn	425 S. 39th Street, Lincoln, Nebr. 68510 Design Engr., SCS-USDA Soil and Water P.E.
51	Albert Hamelstrom	2990 Bonnie Brae, Salt Lake City, Utah State Conservationist, SCS Soil and Water, Government
51	Lewis Kuehl	
51	Virgil Flesher	Veterans Service-Hospital Plant, N.Y. Government M.S.
51	Donald Lippke	W285 N2052 Louis Ave., Pewauke, Wisc. 53072 Power and Machinery
51	Herbert Rohrback	P.O. Box 71, Ipswich, S.D. 57451 Supervisor, F & H Adm. - USDA Government
51	Kenneth Rowen	RR 5, Box 53, Lawrence, Kansas 66044 Res. Engr. - Army Corps of Engrs. Soil and Water M.S., P.E.
51	John Peterson	Civil Engr., Oregon State Univ. Prof. of CE, Corvallis, Oregon Structures and Environment PhD., P.E.
51	William T. Welchert	2909 E. Devon, Tuscon, Ariz. 85716 Ext. Agr. Engr. - Arizona Structures and Environment M.S., P.E.

Table 6. Continued.

Year	Name	A. Present Address B. Work	C. Branch D. Advance Degrees
51	Calvin Meyer	3705 Clear View, Cedar Falls, Iowa P & M	
51	Russel Dodds	P.O. Box 9, Eden, Wyoming 82926	
52	Willard Ambur	Beresford, S.D. 57004 Farming	
52	Jaime Cardenas	Bogota, Columbia, SA	
52	Anthony Dylla	RR 1, Morris, Minn. 56267 Res. Leader - Irrigation ARS Soil and Water M.S.	
52	Bruce Foster	Rt. 2, Box 303, Tayler Ridge, Ill. 61284 Adv. Manager, Deere & Co. Power and Machinery	
52	Eugene Doering	1705 6th Ave., N.W., Mandan, N.D. 56554 Res. Engr. - ARS - USDA Soil and Water M.S., P.E.	
52	Harold Holman	Deceased, 1972 Prof. of AE, NDSU Soil and Water M.S.	
52	Alvin Iverson	Rt. 2, Spicar, Minn. 56288 Chief Engr., Telephone Engr. Service Engr. Services P.E.	
52	Charles Miller	Deceased J. I. Case, Rockford Power and Machinery	
52	Thomas Perry	6 Falcon Lane, St. Paul, Minn. 55110 Air Conditioning Engineer	
52	Leon Reinecke	2712 Arrow Head Drive, Rapid City, S.D. Mosler Safe Co. Sales Engineer M.S.	
52	Virgil Sluka	Box 24 DTC, Omaha, Nebr. 68101	
52	Glen Vanderburg	1003 Broadmore Circle, Silver Springs Administrator ARS - ISDA Education and Research M.S., PhD.	

Table 6. Continued.

Year	Name	A. Present Address B. Work	B. Branch D. Advance Degrees
52	Jack Wanstedt	Keldron, S.D. 57634 Farming and Ranching	
52	Richard Wilson	12249 Willidus St., Omaha, Nebr. 68144 Systems Analysis, Univac M.S.	
52	Lloyd Wall		
52	Frank Whitehead	1141 S. 7th, Aberdeen, S.D. 57401 Gen. Engr., Bureau of Indian Affairs	
52	Robert Raymond	1707 Las Trampas Rd., Alamo, Calif. 94507 Materials Manager - Crown Zellerback, Manufacturing P.E.	
52	Darwin Wendland		
53	Walter Christman	Box 52, Lemmon, S.D. 57638	
53	Maurice Cranston	Rt. 2, Trafalgar, Indiana 46181	
53	Geo. Robert Durland	Agr. Engr. Dept., SDSU, Brookings, S.D. Ext. Agr. Engr. 57006 Power and Machinery M.S.	
53	Franklin E. Fischer	Box 265, Santa Clara, Calif. 95052 Engr. and Manager with FMC New self employed MBA P.E.	
53	Marvin Knaback	2121 Gilbert Rd., Madison, Wis. 53711 State Engineer SCS Soil and Water	
53	Ronald Jarrett	Britton, S.D. 57430 Jarrett Ranches, Inc.	
53	Roger A. Miller	117 Westwood Road, Columbus, Ohio 43214 Ext. Agr. Engr., Ohio Structures M.S.	
53	Robert Rudebusch	809 Franklin, Rapid City, S.D. 57701 Sales and Training, Rushmore Ins. Soil and Water - Business	
53	Clarence Simonson	504 N. 4th Street, Marshall, Minn. 56258 Area Engr., SCS Soil and Water P.E.	

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
53	Gordon Stroup	508 N. Van Buren, Pierre, S.D. 57501 Soil and Water
53	Wilbur Groeneveld	1017 Hemlock St., Celinia, Ohio 45822 Engr. Manager - New Idea Co. Power and Machinery
54	Maurice Hastings	
54	Albert Keller	Chinele, Arizona 68503 Soil and Water
54	Bruce Kidman	129 Lu Placita Circle, Santa Fe, N.M. 87501 Soil and Water
54	Francis Noonan	817 Sheritan Drive, Virginia Beach, Va. Air Force Officer - SACLANT Armed Services M.S., P.E.
54	Richard Walker	5731 Hunter Ridge, Dayton, Ohio 45431 Chief Design - Flight Dyn. WPAFB Armed Services PhD.
54	Earl Wellborn	1018 N. Lehmberg, Casa Grande, Ariz. 85222 Ins. Agent - Farm Ins. Gr. Power and Machinery - Business
55	Donald J. Brosz	1905 Spring Creek Drive, Laramie, Wyo. 82070 Ext. Irrigation Engr. - Wyo. Soil and Water M.S.
55	Donald D. Hamann	4205 Weaver Drive, Raleigh, N.C. Assoc. Prof. - Food Engr. Food Processing M.S., PhD.
55	Don Magnus	Box 208, Elkton, S.D. 57026 Math Teacher - Elkton Education M.S. - Ed.
55	Dwayne Konrad	850 13th Street, Burlington, Colo. 80807 Ext. Irrigation Engr. - Colo. Soil and Water M.S.
55	Mausour Karim	318 N. Jefferson, Pierre, S.D. 57501 Hydraulics Engr. - Highway Department Soil and Water M.S.

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
56	Noel Egan	517 E. Benton, O'Neil, Nebr. 68763 Territory Manager - Deere Co. Power and Machinery
56	Carol Hackbart	1122 N. Cedar View Dr., Bozeman, Mont. Planning Engr. - SCS - USDA Soil and Water P.E.
56	Myron Paine	# 4, Pecan Drive, Stillwater, Okla. 74074 Extension Service Specialist Education and Research PhD., P.E.
57	Odel Aldrich	Box 274, Jollet, Mont. 59715
57	John C. Barnes	2303 Lake Ridge Drive, White Bear Lake, Minn. 55110 Patent Attorney Field of Patent Law J.D.
57	Derald Cox	3504 Parsifal St., Albuquerque, NM 87111 Contract Engineer - BIA Government
57	Charles J. Hendricks	114 W. Lincoln St., Harrisburg, Ill. 62946 Forest Supervisor - Shawnee Government -- National Forest
57	Howard Horner	Toronto, S.D. 57268 Farm Operator Farming
57	Lawrence E. Little	812 LaBarge, Pierre, S.D. 57501 City Engineer - Pierre Government
57	Walter Ochs	6731 Fern Lane, Anandale, Va. 22003 Wafer Management Engr. - SCS - USDA Soils and Water, Government P.E.
57	James Shurr	2112 Cascade Drive, Walnut Creed, Calif. 94598
57	John T. Swenson	3512 Valley Wood Lane, Napa, Calif. 94558 Flood Control Engr. - Solano County Government P.E.
57	C. Russel Umback	Lemmon, South Dakota 57638 Farming and Ranching Soil and Water M.S.

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
57	Robert A. Wiles	12462 West Miss. Ave., Denver, Colo. 80228
58	John Neuberger	1710 S. 139th, Omaha, Nebr. 68144 Chairman-Missouri Basin Commission Soil and Water, Government M.S., P.E.
58	Ronald Lee Ball	Box 519, Berthood, Colo. 80513 Chief, Water Schedule Div. USBR Soil and Water, Government
58	David Brietung	712 Fair Street, St. Pater, Minn. 56082 Engr. - Kato Manufacturing Co. EP & P
58	Charles O. Danielson	1137 Washington Rd., Rye, N.H. Pilot - American Airlines
58	Lowell Erickson	315 Topaz, Blackfood, Idaho 83221 Agr. Engr. BIA - Fort Hall Soil and Water
58	Leo E. Grimm	
58	Harwood Hoeft	2201 Lock Lane, Walnut Creek, Calif. 94598 Pilot - Airlines
58	Howard V. Hoscheid	558 13 Street, SE, Huron, S.D. 57350 District Engr. - S.D. Highways Government
58	Leland Jost	28 Pick Avenue, Ft. Leavenwork, Kan. 66027
58	Harlan Lewis	1910 Wayne, Bellevue, Nebr. 68005
58	Kenneth Lucke	609 Pioneer Lane, Colorado Springs, Colo. 80904
58	Cleyon L. Mulder	7023 Teller Court, Arvada, Colo. 50002 Plant Manager - Ralston Purina Food Processing
58	Musa Nasir	Egypt
58	Virgil Pochop	1201 N. 4th Street, Aberdeen, S.D. 57401
58	Howard Reese	Rt. 2, Neola, Iowa 51559
58	Eugene L. Rowen	124 Lake View Drive, Pierre, S.D. 57501 Deputy Sec. - Dept. of Transportation Government P.E.

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
58	Darrel Veal	Deceased
59	Bernard Hengel	1809 S. Lincoln, Aberdeen, S.D. 57401
59	Kenneth Huber	1710 Utah SE, Huron, S.D. 57350 River Basin Planning - SCS Soil and Water
59	Roger Iverson	Box 127, Harrisburg, S.D. 57032 Area Service Manager - Deere & Co. Power and Machinery
59	Henry T. Knudson	648 Old Friars Road, Columbia, S.C. 29210 Sr. Products Engr. - Estate Lawn Power and Machinery Tr. B.S.
59	John R. VanLent	
59	Ivan Fischer	1113 Lark Lane Drive, Brandon, S.D. 57005 Division Manager -V. P. Pace Co. Power and Machinery
59	David Sveum	317 Morris, San Ramon, Calif. 94583 Chief Hyd. Engr. - Army Corps Engrs. Soil and Water, Government M.S.
59	Richard B. Cullen	
59	Roger L. Davis	2266 NW 71st St. Place, Ankeny, Iowa 50021 Pres. - Davis Equipment Corp. Soil and Water
59	Walter E. Gassman	RR 8, Silver City, N.M. 88061 Agr. Engr. - SCS - USDA Soil and Water
59	David L. Paine	RR 1, Ellendale, Minn. 56026
59	Vernon D. Pepper	Rt. 1, Apple River, Ill. 61001 Airline Captain, American Airlines Soil and Water, P&M M.S.
59	Daryl J. Siebens	RR 1, Akron, Iowa 51001 Farming Power and Machinery, Farming
59	Richard E. Sievert	1616 McClelland Drive, Huron, S.D. 57350 Public Utilities Spec., USBR Government

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
60	Fred Bement	3421 S. 94 Ave., Omaha, Nebr. 68124 Land Appraisal - Federal Land Bank Soil and Water
60	Odean A. Bierman	Rt. 1, Mansfield, S.D. 57460 Farmer and Rancher
60	Marvin V. Breitung	Gainsville, Georgia Engr. - Gainsville Feed and Packing Co. Processing
60	Richard L. Carr	206 Tyler, Pierre, S.D. 57501 Dana, Larson, Roubal, Associates Structures - Consultant P.E.
60	Donald M. Edwards	Room 181 - Nebraska Hall, Univ. of Nebr. Asst. Dean and Director - Lincoln, Nebr. Engr. Research M.S., PhD.
60	Leonard P. Kuck	3109 S. 7th, Sioux Falls, S.D. 57105 Area Agr. Engr. - SCS Soil and Water P.E.
60	Paul Otte	3217 Cedar Lane, Bemidji, Minn. 56601 Highway Engineer S & W - Government
60	Lance L. Otto	Rt. 3, Box 12, Hinckley, Minn. 55073 Prof., Engr.-Resource Development - SCS S & W - Government
60	Louis A. Pertl	
60	Harlan Peterson	11303 Larry Lane West, Hopkins, Minn. 55343 Sr. Proj. Engr. - White Motor Co. P & M
60	Aron M. Schiable	Deceased, 1971 with J. I. Case
60	Arnold Sorensen	Rt. 1, Tyler, Minnesota
60	Gerald Stoick	Box 158, Rosebud, S.D. 57570 Supt. Hwy. Engr. - Rosebud Hwy. Engr.
60	Duane J. Sveum	5514 N. 78 Ave., Omaha, Nebr. 68134
60	Lyle H. Tufty	2501 E. Blvd. Ave., Bismarck, N.D. Chief Engr. - Clark Co. - Melroe P & M

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
60	James H. Hammer	410 Glenview Drive, Des Moines, Iowa Pres., Mech. & Electr. Warehouse Ind. Power Distributor
60	Lyle E. Jarvis	Cottonwood, S.D. 57728
60	Lyle M. Johnson	Winifred, S.D.
60	Shin Chuam Wang	1100 E. Church, Pierre, S.D. 57501
60	Kenneth Lawver	
60	Robert Sestak	14254 S.E. Fairwood, Renton, WA 98055
61	John W. Addink	Nebr.
61	Jerald M. Buseman	
61	Royce C. Decker	933 Utah S.E., Huron, S.D. 57350
61	Max M. DeLong	60 S. Mississippi Riv. Blvd, St. Paul, MN Proj. Engr. - NSP 55104 Nuclear Power M.S., PhD.
61	Fredrick E. Fischer	Box 2, Oelricks, S.D. 57763
61	Arthur E. Isom	RR 1, Donaphan, Missouri 63935
61	Robert E. Jones	
61	Jay L. Leonhardt	3425 Guadalupe, Ft. Worth, Texas 76116 Soil and Water
61	Charles Linn	211 Polk, Pierre, S.D. 57350 State Highway Dept. S & W
61	John M. Madden	104 Brian Lane, Rock Rapids, Iowa 51246 Consulting Engr., D,G,R, & Assoc. S & W M.S., P.E.
61	Raymond A. Ninke	RR 1, Box 54, Webster, S.D. 57247
61	James L. Shurz	7317 39½ Ave. N., New Hope, Minn 55428
61	Eugene A. Ulring	Star Route, Staples, Minn. 56479 Irrig. and Well Drilling Instr. Educ. and Res.

Table 6. Continued.

Year	Name	A. Present Address B. Work	C. Branch D. Advance Degrees
62	Jay. L. Duenwald	Hoven, S.D. 57450 Farming	
62	Richard L. Eide	133 Nichols Drive, Saline, Missouri 48176 Test Engr. - Chrysler Corp. P & M (Air Cond.)	M.S.
62	Robert Horning	Rt. 2, Box 27, Northfield, Minn. 55057 Co-pilot, N.W. Orient Airlines	S & W
62	Ching Hong Kim	South Korea	
62	Lowell J. Koepsel	Box 109, Rosebud, S.D. 57570	
62	Charles F. Moeller	633 Mtn. View Dr., Twin Falls, Idaho 83301 Prod. Manager - Asgrow Seed Co.	Structures
62	Richard Pederson	Farm Hand Corp. - Green Isle, Minn. 55338 Engr. Farm Hand Corp. P & M	M.S.
62	Larry Pochop	Ag. Engr. Dept., U. of Wyo., Laramie, Wy. 82070 Assoc. Prof. - Teaching, AE	Structures - Education
62	Glenn Sanders	3366 Grant Pass, Oregon 97526	
62	Leo Soukop	3334 E. Swiss, Flagstaff, Arizona 86001 Gen. Engr., Irrig., USE	S & W - Government
62	James Suhr	Box 24, 113 E. 2nd St., Kewaunee, Ill. 61443 Real Estate	
62	Wm. D. Van Eldik	2717 Magnolia Ct., Sioux City, Iowa 51106 Systems Gas Engr. - IPS	EP & P
63	Daryl C. Anderson	1437 23 Ave. Ct., Grealey, Colo. 80631 Prod. Manager - Farmhand Corp. P & M	M.S.
63	Edwin Dowding	2013 Iowa St., Brookings, S.D. 57006 Inst., AE, SDSU P & M, Structures Ed.	M.S.
63	James C. Folkerts	RR 2, Jasper, Minn. 56144	

Table 6. Continued.

Year	Name	A. Present Address B. Work	C. Branch D. Advance Degrees
63	Arlo D. Levi	Peninsula Rd., DLLWD, White Bear Lake, MN 55110 Engr. & Management - 3M Corp. M.S., Bus.	
63	Neal C. Knights	Box 198, Epworth, Iowa 52045 Prod. Engr., Scovill Corp. P & M	
63	Harry A. Martens	Pierre, S.D. 57501 Computer Services - State Govt.	
63	Verne E. Matter	709 Lynn St., Horicon, Wisconsin 53032 S & W M.S.	
63	Lawrence E. Weiss	904 E. Capitol, Pierre, S.D. 57501 Tech. Serv. Engr., State Highways	S & W
64	Sidney Black	3105 N. Ninth, Fargo, N.D. 58102 Sales Engr., Butler Mach. S & W M.S.	
64	Delwin Brosz	Dept. Nat. Res., Office Bldg. 2, Pierre, S.D. 57501 Water Res. Engr. S & W - Government M.S., P.E.	
64	Alfred H. Christenson	1416 S. Lake Dr., Watertown, S.D. 57201 AE - SCS S & W	
64	Charles E. Ditmar	607 N.E. 6th St., Madison, S.D. Man. of Engr., Gehl Mfg. Co. P & M	
64	Ronald H. Jones		
64	James J. Jacobson	233 Belle Ave., Des Moines, Iowa 50315 Sales Rep. Traffic Control Prod., 3M Sales	
64	John Swanda	Box 708, Beresford, S.D. 57004 AE - SCS S & W	
65	R. Kent Anderson	12000 Maddox Lane, Bowie, MD 20715 USPHS, Officer Engr., USEPA Government M.S.	
65	Marvin Antonen	Arlington, S.D.	

Table 6. Continued.

Year	Name	A. Present Address B. Work	C. Branch D. Advance Degrees
65	Loren R. Blankenhorn	RR 1, Flandreau, S.D. 57028 C.E. with Corp. of Engr., Omaha, NE S & W	
65	Thomas R. Gannon	7618 Chancellor Way, Springfield, VA Asst. Coord., Naval Facilities Engr. Government M.S.	
65	Larry J. Holton	Sisseton, S.D. 57262	
65	David F. Konechne	1220 1st Ave. West, Mobridge, S.D. Area Engr., SCS S & W	
65	Norman L. Knoechne	409 N. Tyler, Pierre, S.D. 57501 Res. Engr., Dept. of Highways S & W	
66	Larry Selken	Deceased, 1972	
66	Jerry Cotton	98-1649 Hoomaika S.F. Pearl City, HI 96782 Chief Air Crew Eval. - Kickam AFB P & M	
66	William Maas	111 14th St. N.E., Owatonna, Minn. 55060 Sr. Proj. Engr., Owatonna Mfg. Co. P & M	
66	Glenn Kanengieter	RR 2, Blooming Prairie, Minn. 55917 Sr. Proj. Engr., Owatonna Mfg. Co. P & M	
66	Robert Nogle	Vardon, S.D.	
66	Clayton Melrose	490 W. 3rd St., Cocato, Minn. 55321 Design Engr. - Mobile Equip. P & M	
66	Delbert Rust	St. Maries, Idaho 83861 U.S. Forest Service S & W	
66	Gerald Stangl	Box 49, Perry, Oklahoma 73077	
66	Harlan Trefz	5630 S. Tennessee, Claranden Hills, Ill. Project Engineer, IHC P & M M.S.	
67	David Boyenga	1109 S. Paine St., New Ulm, Minn. 56073	

Table 6. Continued.

Year	Name	A. Present Address B. Work	C. Branch D. Advance Degrees
67	Dale A. Bucks	1730 E. Campus Drive, Tampa, Ariz. 85282 Ag. Engr. - USDA - ARS Government M.S.	
67	Marvin N. Egan	Rt. 229 C-1, Brush Prairie, Wash. 98606	
67	Dennis Ryland	1041 3rd Ave., Brookings, S.D. 57006 Asst. Hydrologist - Remote Sensing P & M M.S.	
67	Lloyd E. DeJong	3701 Autumnwood, Clovis, NM 88101 Pilot - USAF S & W - Armed Service	
67	Richard O. Hegg	2953 N. Pascal Ave., St. Paul, Minn. 55113 Ag. Engr. - USDA - ARS Structures M.S., PhD.	
67	Lloyd Herbst	1427 16th, Ames, Iowa 50010	
67	Jack B. Hippen	RR 1, Wilmot, S.D. 57279	
67	Francis James	Lilly, S.D. 57250 Farming and Livestock S & W	
67	James R. Lucas	3614 36th St., Moline, Ill. 61265 Test Engr., Combines, IHC P & M P.E.	
67	James L. Reeves	P.O. Box 245, 2020 Milvia, Berkely, Calif. C.E. in Transportation Planning Transportation Planning M.S.	
67	Dennis Vehe		
68	Alan J. Anderson	6294 Murfield Dr., Galeta, Calif. 93017 Air Pollution Meteorologist - Weather Cons. Str. & Environment M.S.	
68	Theodore Maunu	22 Columbia Cir. S.W., Tacoma, Wash. 98499 E.E. with Consulting Engr. Co. P & M and E.P.	
68	Edwin L. May		

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advance Degrees
68	John F. Ourada	418 W. Owatonna St., Duluth, Minn. 55803 Proj. Engr. Western Lake Superior - EPA Soil and Water M.S.
68	Charles W. Richter	Colman, S.D. 57017 Farming P & M
68	James D. Sorensen	10440 Paramount Blvd. H-177, Downey, Calif. Proj. Engr., Container Corp. Paper Processing
68	Rodney TeKrony	Redfield, S.D. 57469 Hydrailics Engr., Oahe Irrig. Proj. S & W
68	Michael Vig	613 8th Ave., S., Hopkins, Minn. 55348 Des. Engr., Tractor Cabs, White Motor P & M M.S.
69	William F. Cherp	Rt. 2, Henderson, Minn. Area Engr., SCS S & W - Government
69	Robert D. Davis	429 13th St. N.E., Owatonna, Minn. 55060 Proj. Engr., Owatonna Mfg. Co.
69	John R. Durfee	554 Sundance Dr., Bolingbrook, Ill. 60439 Design Engr., IHC P & M
69	Dale L. Johnson	3007 Wayne, Bellevue, NE 68005 Weather Forcaster, USAF Armed Service
69	Keith E. Pieper	1944 Willow Ave., Worthington, Minn. 56187
69	Gary C. Polk	934 Westbrook Way, Apt. 6, Hopkins, Minn. Hydraulics Engr., White Farm Equip. P & M
69	Robert S. Snoozy	Lindsay Mfg. Co., Lindsay, NE 68644 Res. Engr. Center Pivot Irrigator S & W M.S.
69	Robert L. Tibbits	Porter, Minn. 56280

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advanced Degrees
69	Jerold L. Andal	3950 Fallbrook Dr., NE, Cedar Rapids, Iowa Design Engineer, FMC P & M
69	Richard L. Herther	Hecla, S.D. 57446
69	Wesley G. Tschetter	111 So. Poplar, Pierre, S.D. 57501 Legislative Fiscal Analyist - St. Capitol Government M.S.
69	Dale M. Wormstad	Artesian, S.D. Farming P & M
70	Garry L. Akkerman	RR 1, Box 95, DeSmet, S.D. 57321 Farming
70	Vincent J. Alsaker	c/o Kermit Alsaker, Rosholt, S.D. 57260 Chief Consol. Maintenance - FUERTH Armed Service M.S.
70	Daniel P. Apland	20409 42nd Ave. E., Spanaway, Wash. 98387 Pilot in Air Force Armed Service
70	Robert D. Lease	1713 4th Ave., Grinnell, Iowa 50112 Proj. Engr., FarmHand, Inc. P & M
70	Hal D. Werner	421 N.E. 2nd St., Staples, Minn. 56479 Ext. Ag. Engr. - Cent. Minn. Demo. Farm S & W M.S.
70	David L. Willard	1465 40 St. N.E., Cedar Rapids, Iowa 52402 Proj. Engr., Crane Div., FMC P & M
70	Arthur E. Bich	A. R. Wood Mfg. Co. Luverne, Minnesota
70	James H. Eidet	Ortley, S.D. M.S.
70	Roy E. Ireland	Martin, S.D. 57751 Farming
70	Keith Kettering	Mellette, S.D. 57461 Farming

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advanced Degrees
70	Kip R. Matkins	Howes Rt., Box 11, Sturgis, S.D. 57785 Farming and Ranching M.S.
70	Burton E. Tulson	
71	Michael Kuck	403 S. Harrison, Gettysburg, S.D. 57442
71	Carol D. Langland	c/o Ray DeWald, Tripp, S.D.
71	Kent S. Leibsch	RR 4, Arlington, S.D. 57212 Farming
71	William Shellbourn	c/o N. Shellbourn, Valentine, Nebr.
71	Joseph C. Thomas	M.S.
71	Jon W. Henslin	2930 Miller Trunk, Duluth, Minn. 57811
71	Paul G. Remele	528 E. 18th St., Spencer, Iowa 51301 Farm Buildings and Constr. Structures M.S.
71	Dale E. Shjegstad	1017 N. Main, Brookings, S.D. 57006 Farm Buildings, Great Plains Co. Structures
71	Larry E. Wiebesjek	Box 407, RuthDrum, Idaho 83858
71	James Winterton	Pierre, S.D. 57501 Dept. Natural Resources, Pierre, S.D.
72	John P. Dieltz	Pierre, S.D. 57501 St. Voc. Ed. Education
72	James N. Keinholz	c/o M. Keinholz, Bird Island, Minn. Armed Services M.S.
72	Steven C. Otterby	2103 4th Ave., Aberdeen, S.D. 57401 Farm Buildings and Construction Structures
72	Steven Saianga	5455-B Iowa St., Ft. Knox, Kentucky 40121
72	Robert E. Wagehaupt	727 Carnegie Ave., C2, Akron, Ohio 44314

Table 6. Continued.

Year	Name	A. Present Address B. Work C. Branch D. Advanced Degrees
72	Keith E. Anderson	Countryside Estate 12, Redfield, S.D. 57469
72	Roger Burnett	RR 1, Huron, S.D. 57350
72	Jerry M. Christensen	RR 2, Lake Preston, S.D.
72	Donnel P. Froehlich	M.S.
72	Steven A. Quissel	Box 594, Pickstown, S.D.
73	Normal Andenas	Howard, S.D.
73	Michael Bjerke	M.S.
73	Jerold D. Gregg	Harold, S.D.
73	Gene L. Halsey	Springfield, S.D.
73	Calvin Luebke	RR 2, Box 48, Parkston, S.D. 57366 Farming
73	Donald Tomac	Keldron, S.D.
73	Mark Venner	Pierre, S.D. 57501
73	Darrel Winterton	Brandon, S.D.
73	Thomas A. Anderson	FA-OBC 5-74 Off. Stu., Ft. Sill, OK 73503 Armed Services
73	Carrol Gilbertson	8136 Harold Ct. 3A, Glenn Burnie, MD 21061 Lehtola
73	Gale W. Paulson	
73	Marvin Swanda	901 S. Ruth, Lot 66, Sioux Falls, S.D. 57106
74	Robert K. Egan	Ag. Engr. Dept., SDSU, Brookings, S.D. 57006 Graduate Student
74	Stephen H. Pohl	Ag. Engr. Dept., SDSU, Brookings, S.D. 57006 Graduate Student
74	Richard H. Smith	
74	Roger J. Bertsch	

Table 6. Continued.

Year	Name	A. Present Address B. Work	C. Branch D. Advanced Degrees
74	Ronald E. Beyer	Water Res. Inst., SDSU, Brookings, S.D. 57006	
74	Leslie L. Christansen	Ag. Engr. Dept., SDSU, Brookings, S.D. 57006 Graduate Student	
74	Kenneth E. Jacobson		
74	Lyle L. Jensen		
74	Thomas C. Hazelton	7323 Grant St. Apt. 5, Omaha, Nebr. 68134	
74	Danny S. Brosz	Tripp, S.D. Structures	
74	Kenton R. Kaufman	Marion, S.D. Ag. Engr. Dept., SDSU Graduate Student	
74	Kenneth J. Storm	Mt. Vernon, S.D.	
74	John F. Westra	Centerville, S.D.	

75 Spring Commencement:

Orlin L. Jibben
Robin Leo Lovely
David P. Yexley

Our PhD Degrees

72 Charles A. Onstad
72 Robert A. Young
75 James R. Hoover

Table 7. A list of our graduate students, M.S. in Agricultural Engineering.

Year	Names	
1949	Dennis L. Moe	
1950	John L. Wiersma	Frank Wiersma
1954	Leonard Erie	
1955	Niel Dimick	Harold Holman
1956	Virgil Flusher	
1958	Eugene Doering	
1959	Donald Hamann John Neuberger	Kenneth Rowen Harvey Young
1960	Donald Brosz Henry Knudson	Anthony Dylla
1961	Vernon Pepper Donald Edwards	Ali Hamidi
1962	Mansour Karim	
1963	Conrad Gilbertson Fred Schmer	Wm. H. Peterson
1964	Richard Pederson	Kuan Lo Yung
1965	Daryl C. Anderson William T. Welchert	Russel Umback Robert A. Wiles
1966	Sidney Black	Delwin Brosz
1967	R. Kent Anderson Verne E. Matter	Tom S. Chisholm
1968	Dale A. Bucks George R. Durland John W. Madden Dennis Ryland	Coy W. Doty Rudolpho Laudencia Luther Mathison Gerald A. Stangl
1969	James L. Reeves	Harlan J. Trefz
1971	Thomas Gannon Robert Snoozy	Hall Werner
1972	Vincent J. Alsaker Martin Hellickson James J. Rother	Ivar Dybwad Ronald O. Disrud
1973	Paul G. Remale Ronald Frankenstein James Keinholz	Rodney Devine Michael Vig
1974	Donnel Froelich Joseph C. Thomas	David E. Kramer

Chapter XI

The Agricultural Engineering Department at South Dakota State University has always had two majors to provide for. These are the Agricultural Engineers and the Mechanized Agriculture majors. The first group now get their degrees through the College of Engineering; the second get their degrees from the College of Agriculture.

Our commencement programs have always listed the Agricultural Engineers as a distinct group. Their names and respective classes are easy to find. The Mechanized Agriculture group records are not so easily retrieved from old commencement booklets. However from 1954, the Agriculture graduates were listed along with their major, and from here on our records are quite complete. With the new building and the expansion of the staff during the 60's this list of Mechanized Agriculture students grew rapidly. Lately it is one of the larger groups in the College of Agriculture. We will now list the Mechanized Agriculture Majors to the best of our knowledge. With two or three commencements per year, as is the present custom, we may not have all the names in the class year that will suit everyone.

Table 8. Mechanized Agriculture Graduates with B.S. degrees in Agriculture.

Class of '28

H. H. DeLong

Class of '29

Fred Kiser

Gerald Kotas

Class of '30

???

???

Class of '40

Allen Kettering -- Farming, Mellette, South Dakota

Class of '47

Ralph Sorenson, deceased

Class of '48

Thomas Snell

Class of '50

Donn Bastian
Christian Back -- Michigan, North Dakota
Alfred Briggs -- Howard - Retail
Leonard Otterby -- Rt. 4, Sioux Falls, South Dakota
Harold Winterfeld -- deceased, 1968
Arnold Anderson -- Frederick, South Dakota
David Blanchard -- Howard, South Dakota

Table 8. Continued.

Class of '51

Robert Bullard -- Wilmette, Illinois
Carl G. Renz -- Lemmon, South Dakota
Gerald W. Strub -- Iroquois, South Dakota

Class of '53

Verlyn G. Howe -- SDSU Ext. Service, Brookings, South Dakota
Herbert A. Papendick -- State Highway Department, Pierre, S. D.

Class of '54

Chalmer J. Hottman -- Gettysburg, South Dakota, Implements

Class of '55

Clarence D. Fox -- Ford Tractor and Machinery Co., Michigan
Thomas William Zimmer -- Retail Credit Co., Sioux Falls, S. D.

Class of '56

Harry A. Jones -- Coast-to-Coast, Brookings, South Dakota
Russell Waltner -- Freeman, South Dakota

Class of '58

Marvin L. Hanson -- Farmer, Clear Lake, South Dakota
Odean Theodore Olson -- Raven Industry, Sioux Falls, South Dakota
Verle L. Peterson -- Farmer, Willow Lake, South Dakota

Class of '59

Widstrom Neil

Class of '60

Clarence Deibert -- Farmer, Herreid, South Dakota
William Hickey -- 834 W. Arrow Hwy., San Dimas, California
Paul John Ruppert -- Farmer, Iona, Minnesota

Class of '61

Herold Arnold -- Rancher, McIntosh, South Dakota
Robert Carroll -- Lumber, Madison, South Dakota

Class of '62

Robert Cottingham -- John Deere, Fargo, North Dakota
Norman Kempf -- Soil Conservation, Huron, South Dakota
Bruce McPhell
Leonard Nagel -- Farmer, Gettysburg, South Dakota
Edwin Dean Pearson -- Farmer, Hadly, Minnesota
Merle A. Peterson
Dennis Schaefer

Class of '63

Lester Chizek
David Hand
Robert Rolland Schrunk
Vincent Gunn
Donald Hellem
Lester P. Palmer

Class of '64

Terry Benson
Jon Paul Gunderson
Robert Walter Harden
Robert Lawrence Nielson
Charles William Rang
Robert Carlson
Conald E. Habicht
Donald Lee Kerr
Roger Svec

Table 8. Continued.

Class of '65

Darrel D. Bahn
Gary J. Copelan
Roger K. Hermanson
Robert L. Morrison
Lawrence A. Benson
Donald L. Healey
Marlyn L. Jerke
Frank R. Puglia

Class of '66

Allen M. Anderson
Arlen V. Bensen
Daniel L. Carlson
Leslie R. Downer
Robert H. Holzworth
James H. Meyer
Clark Moeckley
Dennis Neuharth
Harvey Reimer
Larry D. Anderson
Berwin L. Bryan
Gary L. Cramer
Earl R. Hammil
Robert M. Keith
Dallas Michelson
James H. Moxon
Allen A. Opp
Donald E. Smith

Class of '67

Lewis Barondeau
David Fauske
Bradley Herman
Larry Holbeck
Norman L. Johnson
Theodore Risty
Lee A. Svatos
Maurice Ugland
William Duenwald
Wayne Flury
Vernon Hofman
Thomas E. Jewett
Curtis Pansch
Douglas D. Stormo
Paul E. Thomas
Albert H. Vitters

Class of '68

Darrell D. Bentz
Dean R. Dostlow
Wallace V. Holter
Richard J. Jefferies
Loren W. Kaufman
Richard W. Lenth
Christopher McConnville
Harlan O. Silbaugh
Garry T. Tollefson
Calvin E. Willemssen
Darrel Brown
Verdeen L. Gross
Robert L. Iverson
Gary A. Jorgenson
Gerald Kettering
Larry W. Schlomer
Douglas C. Schaeffer
Harris W. Swanson
Dennis F. Shoup
Dennis R. Johnson

Class of '69

Dennis D. Anderson
Max M. Evans
William J. Folkerts
Berdean W. Haupt
Harlan D. Heimgartner
Gordon D. Moes
James L. Nickeson
Roger E. Stockland
Carl E. Schmeider
Michael E. Seefeldt
James L. Engel
Richard R. Gab
Doule C. Haar
Ralph W. Horman
Barton L. Larson
Charles W. Martel
Raymond Meligan
Merle D. Poppen
Dean A. Sievers
Paul D. Smith

Class of '70

Raymond Beard
Kenneth D. Biteler
Charles K. Gilware
David A. Hetland
Duane J. Lemke
Dale McDowell, deceased-'75
Donald Jahraus
George Leitheisar
Gary C. Sutherland
Ronald D. Timmons
Rodney O. Cook
David Denke
Lawrence Garvin
Terrance Geary
David Gleason
Leonard Heinemann
Robert McClura
David Milbrodt
Terrance Moe
Alan W. Wieczorak

Table 8. Continued.

Class of '71

Gilbert Martin Kloster
Merle Jay Rose
Kent L. Heubner
Wendall R. Jibben
Steve E. Peters
Eldon L. Pust
Douglas J. Stengel
Lee W. Thormodsgaard
Glen Garhard Storm
Bruce Aaron
Gary G. Bender
William H. Bisgard
Lynn A. Frick
Ronald L. Garvin
David G. Gleason
David A. Twedt
Darrel K. Vig

Class of '72

Daniel Hefner
John D. Majeres
Robert H. May
Ronald R. Ruff
Marvin Seibrecht
Harold J. Warner
Stephen Wattnem
David A. Klapperich
Richard L. Oechsle
Edwin L. Watkins
David M. Siglin
Dennis J. Steffin
Roger Arbach
Michael J. Coulter
Timothy Goldammer
John T. Griffiths
Charles E. Harr
Roger L. Hazuka
Kurt F. Kaiser
Gregory S. Kampfe
Jeffery J. Peters
Robert H. Rose
Dennis J. Serie

College Year '72-73

Fall Semester '72

Morris H. Anderson
Danny Booze
Jerry J. Engstrom
William L. Fargo
Terrance A. Hill
Michael T. Ommen
Darrel W. Wintertan

Spring Semester '73

Knute K. Brock
Donald D. Dunbar
David Blaine Goos
Larry E. Hastler
Kevin L. Johnson
Randy R. Law
Phillip G. Meeder
Gary A. Manson
Martin J. Murphy
Myron R. Meuhauser
William Orr
Gerald A. Pearson
Lynn L. Peterson
Steven L. Prasels
Terry L. Rydell
Marvin L. Schlomer
Michael L. Schmidt
James L. Tafty
Jack R. Tolls
Ronnie L. Twedt
Richard L. Wertz

College Year '73-74

Spring Semester '74

Jerald L. Cook
Dennis C. Hensen
Dennis D. Heyrel
Noel L. Hofer
James C. Klauser
Anthony J. Doenig
Daniel D. Lamp
David D. Mendel
Wayne O. Peterson
David E. Runge
Ronald W. Starr
Michael D. Stout
Daryn F. Swanhorst
Reed Tieszen
Daniel B. Westegaard

Fall Semester '74

Bruce M. Bowers
Douglas D. Haber
Jerry Abner Hofer
Albert C. Trumble

Student Organizations

As soon in the departments history as there were students enough to warrant it; there was formed a student Agricultural Engineering Society. The writer remembers those very first years with a group of a few students and a few professors gathering for a combined seminar and society meeting. As the years passed there were a few ideas and activities that gave purpose to, and reasons for, the organization.

The first reason was to have contact with the senior A.S.A.E. organization; which pointed the student toward memberships in the National professional organization of Agricultural Engineers. The faculty has always encouraged the students to become members when they graduated. The student society memberships brought the opportunity to become student members in the National society, and receive the A.S.A.E. Magazine. Occasionally some students attended the National meetings; and on rare occasions one of our students would be elected to a National officers post.

A second reason for a student branch society was that of "Hobo-day float building", which helped to advertise Agricultural Engineering on the campus and throughout the state. The Agricultural Engineers were dedicated float builders; and over the years won prizes more often than the average. Usually, the float entry was in the unusual or "clever" category. It would be interesting to show several pages of pictures of floats, but we will show only two. Figure 5 shows an early entry (about 1932) and Figure 6 shows the entry of 1972, and 1973. When the campus organizations increased, the parade got too long and unwieldy; so organizations were urged to combine efforts and reduce numbers. Of late years, the Mechanized Agriculture students share the work and management of float building with the Agricultural Engineers.

Early in the student society, there arose a need for fund raising. At first there were nominal dues. More funds were usually needed for a group picture in the annual. An opportunity came for fund raising by a group going out to pick up corn that had been blown on the ground by severe wind. This was done on more than one occasion. Sometimes it was even hand corn picking with a large crew. Occasionally there was a chance to sell hot dogs or ice cream at some meeting. In later years the sawing and splitting of firewood for sale to fireplace enthusiasts was done.

Funds raised were used for travel to national meetings by delegates or more often used to help pay expenses on the spring senior trip to factories or industrial sites.

The "F.E.I." report was a strenuous task for a few Agricultural Engineers each year. The contest sponsored by the Farm Implement manufacturers; called for a report on the activities of each student branch. It became a real honor to receive a high rating in such a contest. The students won top honors for the years '72-'73 and '73-'74; and were second place in '70-'71.

The machinery and tractor exhibit was added to the "Little International" show in the early 40's. The first time there were only three machines on display--and there was barely room for those. One year the machine show was in the old Agricultural Engineering building. Then for several years it was in the R.O.T.C. Armory. With the new building for Agricultural Engineering, of course that became headquarters for the show. When necessary, additional space was found. The Mechanized Agriculture society takes the major responsibility now in carrying on the machinery show.

The "Green Sheet" was a Christmas newsletter to the Agricultural Engineering Grads, and was prepared for many years. Many of the old ones are on file and the years 1935 to 1972 are included. At first there were not too many to mail out but in the later years the job of mailing and addressing became a difficult task. Students often helped with this activity, but the Agricultural Engineering secretaries usually had the "lions share" of the work.

The Mechanized Agriculture student organization began as soon as the group of majors was large enough and this was in the 60's. This club shares the activities of float building with Agricultural Engineers. A very unique project was to sell "ear muffs" designed for noise suppression. The noise level near tractor motors, and some other farm machines, is high. One way to guard against ear damage is for the operator to wear these special earmuffs. Few, if any, dealers stocked them. The Mechanized Agriculture Club stocked a few dozen and offered them for sale; and suddenly found themselves in business. They have sold over 2,000; but by now such equipment is for sale in many stores and mail order houses.

It is our observation that the Student Branch of A.S.A.E. and the Mechanized Agriculture Club have been large enough to be effective organizations; yet small enough for good fellowship. They have offered many opportunities for leadership training.

The first Agricultural Engineers were eligible to memberships in Alpha Zeta honorary Agricultural Fraternity and many were members. When the Agricultural Engineering Curriculum was administered by the Engineering college, our honor students were eligible to Sigma Tau, a National honorary Engineering Fraternity. During the 60's a chapter of Alpha Epsilon was established on the campus. This is an honor society specifically for Agricultural Engineers.

Figure 5. An early day entry of the Agricultural Engineers in a Hobo Day parade.

Figure 6. A recent entry of the Agricultural Engineers and Mechanized Agricultural Engineers in the Hobo Day parade.

Chapter XIII

Statistical Summary

For the sake of a historical record, it is well to look at the statistical summary of several things such as: (1) a student's choice of subject matter, (2) his present work, and (3) how much additional work he has taken. Such a summary analysis is never complete or perfect; because the questionnaires to compile such data is never complete. We did have an excellent return, but some folks move frequently and keep ahead of our record of addresses. In the giving of present addresses and occupations we fully realize that changes will occur before the ink is dry on the book pages.

From 1929 through the Fall commencement of '74, we have had 363 Agricultural Engineering students receiving their B.S. degrees. Our M.S. degree students, for the same period number 57. Not all of these M.S. degree men were from South Dakota State University, and not all had their first degree in Agricultural Engineering. Two men have received their PhD degree from our department.

Of the questionnaire returned, and from our records, we find from our original B.S. degree men, 65 have obtained their M.S. degrees. This is near 18%. Of the same number, 14 have received their PhD degrees. Thirty have obtained the registration as Professional Engineers.

Geographic distribution of a group is always an interesting study. Where do our students go? Eighty-six are located in South Dakota for a percentage of 23+% locating in the state. The concentration points in the state are at Brookings, Huron and Pierre. There is a fairly good scatter of individuals to most areas of the state. Figure 7 shows this state-wide distribution.

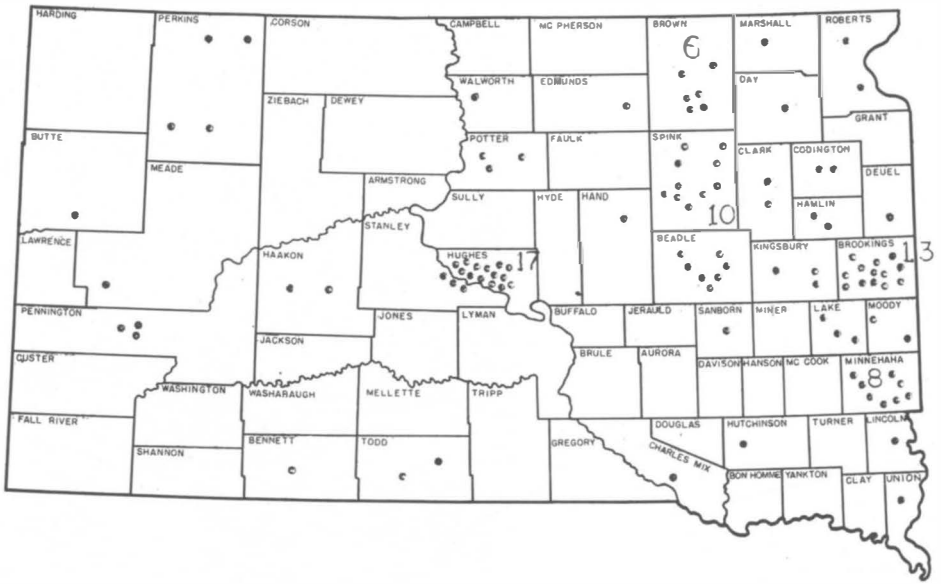

Figure 7. Geographic distribution of S.D.S.U. Agricultural Engineering graduates living and working in the United States.

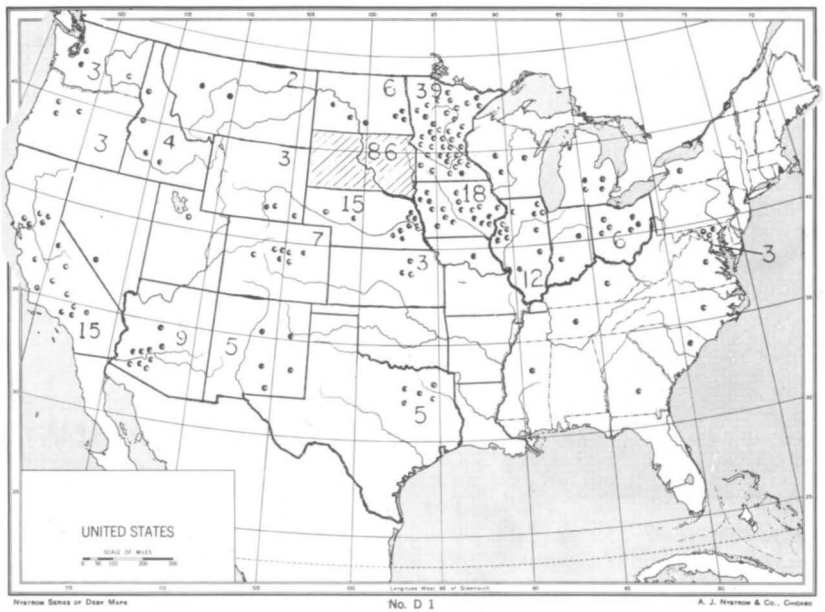

Figure 8. Geographic distribution of S.D.S.U. Agricultural Engineering graduates living and working in the United States.

Figure 8 shows the distribution of former students in the North Central group of states surrounding South Dakota. Engineering job opportunities are greatest near the population centers, in manufacturing areas, and in central cities where large organizations have their headquarters. Of the surrounding states, North Dakota has 6 graduates, Montana 3, Wyoming 3, Colorado 7, Nebraska 15, Iowa 18, and Minnesota 39. This is a total of 91 in surrounding states, and when added to the 86 in South Dakota it accounts for almost $\frac{1}{2}$ of the total graduates in Agricultural Engineering from SDSU.

Of the other states the Table 9 will show the states where there are 5 or more graduates.

Table 9. A list of states that have five or more Agricultural Engineering graduates.

State	No.	State	No.
Arizona	9	Ohio	6
California	15	Texas	5
Illinois	12	Maryland and D.C.	6
New Mexico	5		

We have the addresses of several in the Armed Services, but usually these were not recorded for any state of locality, as they change rapidly. It was also very difficult to gather data on the recent graduating classes, due to armed service commitments and to the entering of graduate work in other places.

Our college catalogue carries the designation of four fields of specialization within the field of Agricultural Engineering. There are: (1) Power and Machinery, (2) Electric Power and Processing, (3) Soil and Water, and (4) Structures and Environment. We asked the respondents to indicate the area they were in, but also listed some other categories. To these we will add two more: (1) private business, and (2) retirement. When this tabulation was made a given person may have been placed in more than one; such as (soil and water) and (armed services), or (power and machinery) and (private business).

Table 10 shows this tabulation as best as we have it now. There are some, of course, that we did not hear from, a few lost, and several are deceased.

Table 10. The choice of occupations and/or fields of work.

Fields of Work	No.
Farming and Ranching	44
Power and Machinery	64
Electric Power and Processing	19
Soil and Water	92
Structures and Environment	23
Food Processing	3
Education and Research	18
Government	23
Armed Services	16
Retired	9
Private Business	19

Even with some double entries the total here (330), falls short of the 363 total B.S. degrees granted.

One can see the real diversity of occupations, by reading over the names, addresses and titles of present work. These go from real estate to the ministry, machine design to weather observation, aviation to manufacturing of pet foods. It has been a real pleasure to read about the individual records and the letters and greetings. Many thanks for your letters.

Chapter XIV

The 70's And Looking To The Future

One half of the 70's decade is passed. The first half is now history, and some hopes and predictions must be used for the future.

After a fabulous growth period of the 60's, there came the leveling off of college enrollments. This was partly due to population statistics and birth rate decrease in the 50's. There was also a noticeable increase in interest in technical schools, and education in trades and industries. Wages in these areas of work were good, jobs plentiful, and the preparation period was shorter.

The Viet Nam War, with all of its complications, had an influence on the general atmosphere of the campus. Our campus was fortunate in not having turmoil and open disruptive acts. There was some agitatior for such things, but the majority of good stable midwestern students kept things on a quiet and steady pace. There was a lowering of general moral of the student body, and a drop in the quality of work done. Fortunately, this did not last very long.

Very prosperous times in the early 70's were quickly followed by harder times due to the inflation of the present year. Faculty salaries were increased substantially, tuition was increased, and may be increased again. Students have a substantial bill to pay for a college edu-

cation now, and most students who come are here for business and not for pleasure.

The campus has experienced an ambitious building program in that three major buildings have been added. Just south of our Agricultural Engineering Building stands the new Student Union Building. To the southwest stands the huge Home Economics, Nursing, Rotunda complex. To the east is the new Physical Education structure. We are now on the new "walking mall" around which much of the new campus will be built. We are no longer out at the "edge" of the campus.

The plans for building continue in that the 1974 legislature appropriated for a new Library and a new Animal Science structure. Both are large appropriations, but neither building has been started yet. There is a race between inflationary cost increases and space wanted. We await the final decisions. The new Library is to be built just west of our building.

The history of the Agricultural Engineering Department during the 70's would not be complete without some reference to the "Engineering College" struggle. The alumni of South Dakota State University have been informed by the "Alumnus" publications about some of these activities, dates, hearings, legislative battles, etc. At first much of the planning was secretive. It soon developed that for the stated reasons of economy, there should be only one engineering college in the State. This, when voted by the Regents of Education, caused an immediate battle between east-river and west-river area groups of people. Students, alumni, legislators, citizens of all kinds were soon involved. It seems that "economy" was not the real reason, since some other new colleges have since been added to the States system. After much controversy, the decision was to allow both SDSU and SD Tech to continue their Engineering Colleges. Some course offerings and some graduate work was curtailed, however. Throughout all of this controversial period, there was never any action to discontinue the Agricultural Engineering work or to move it to another location. The removal of the Engineering College from SDSU would have been a serious handicap to our students. The period of turmoil did nothing to encourage prospective engineering students to attend either school.

Enrollments in Engineering Colleges, nationwide was reduced in the beginning of the 70's. This was probably due to a great emphasis on the humanistic studies and the social science field. Soon there was a great surplus of teachers and a scarcity of engineers.

The enrollment in Agricultural Engineering has continued in a steady pattern. Over the years there has been less of a fluxuation in enrollments than in the engineering field in general. Table 11 shows the statistics in enrollments and graduations in Agricultural Engineering for the early 70's.

It is confusing to get exact counts of students in a designated year. Usually they are not the same by fall and spring semesters. Also we have commencements now three times a year--fall, spring and summer. The fall semester used to come in January and now comes in December, across the years date line. We hope we have most of our people credited with the proper commencement date.

Table 11. Agricultural Engineering Student Group and the Degrees Granted 1970-74.

Year	Enrollment in Agricultural Engineering	B.S. Degrees given	M.S. Degrees given
1969-70		12	
1970-71	55	10	3
1971-72	73	17	3 & 2 PhD
1972-73	47	7	6
1973-74	40	10	3
1974-75		4+	1+

Table 12. Mechanized Agriculture Majors receiving B.S. degrees, 1969-74.

Class Year	B.S. Degrees	Class Year	B.S. Degrees
1969-70	20	1972-73	28
1970-71	17	1973-74	15
1971-72	23	1974-75	4+ Spring Group

Mechanized Agriculture majors have been large groups in this last period. Several in this group are remaining for graduate work. In the near future we hope to offer a M.S. degree in the Mechanized Agriculture curriculum. Table 12 shows the B.S. degrees granted by S.D.S.U. to our group in the College of Agriculture.

Course contents have to change to keep up with the rapid changes in farming and in the technical information that the engineers need in aiding the agricultural industry. Engineering students of the past used the slide rule. Now they are using pocket calculators. All take courses that introduce them to the computer method of solving problems.

The students of tomorrow will rise to meet the challenges of their day. They must, and they will. Figure 9 shows a picture of a "dream farm" of the year 2076. This model farm was built by our Agricultural Engineering students to be used along with many other efforts to celebrate the Bicentennial Effort of the University. The model has been shown on several occasions and has received some fine publicity. When I say "dream farm", the term is well chosen, for these students have some big ideas ahead. In the little folder entitled "Model Farm for 2076" they speak of "harvesting by air-supported remote control vehicles", and show a 15 story farm factory. We should not dismiss these ideas as impossible.

The brief history of the S.D.S.U. Agricultural Engineering Department (1925-1975) should come to a close. We have intended to recall a few things and invite your memories to recall many more of your four-year stay at college. Our very best wishes go to the faculty and students who will make history in the next 50 years.

Figure 9.

The "dream farm" for 2076 as constructed by A.S.A.E. Student Branch in 1974. (Left Lyle F. Jensen, senior and right, Dr. Milo Hellickson of the staff).

A List Of References

1. South Dakota State University General Catalogues: for University Staff 1925 to present.

2. South Dakota Agricultural Experiment Station Annual Reports: 1925 to present, for experiment station project records.

3. S.D.S.U. commencement programs; for graduate names and class years.

4. Annual reports of the South Dakota Extension Service, for extension activities.

5. The "Green Sheet", a Christmas time newsletter from students and staff to the graduates: with copies on file back to 1935.

6. Returned questionnaires from many former students.

A List Of Tables

A List Of Figures