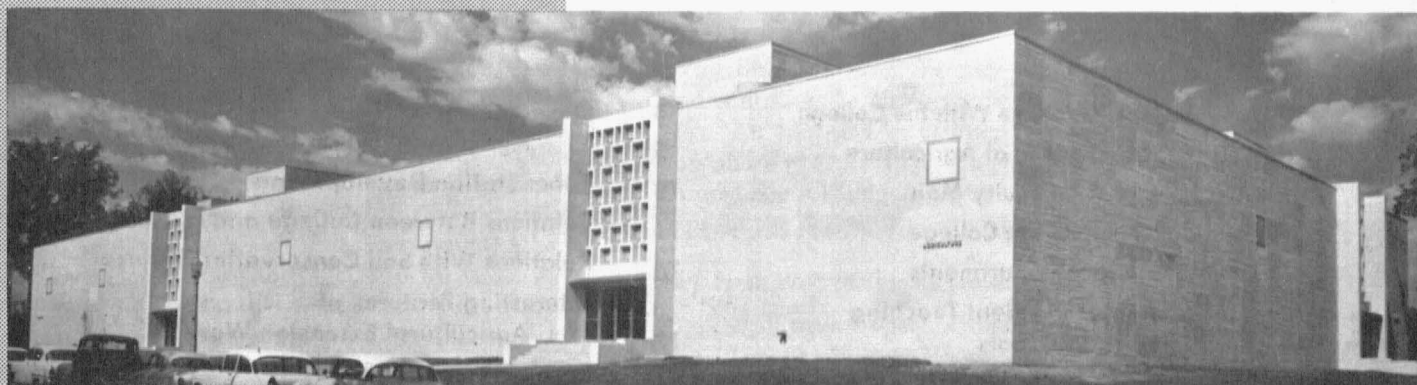




MISSOURI COLLEGE of AGRICULTURE

*Through A
Half Century
In Retrospect*



BULLETIN 769 - JULY, 1961

UNIVERSITY OF MISSOURI AGRICULTURAL EXPERIMENT STATION



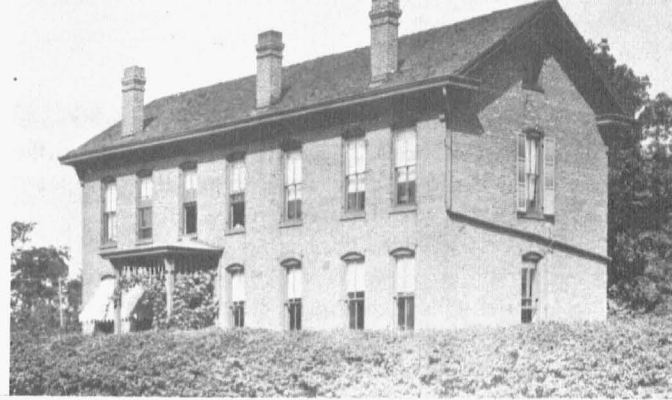
A view on the farm campus in 1922, with the old "dipping pond" in the foreground. This pond has long since been filled, as it gave way to what we now call *progress*.

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The first Agricultural Experiment Station building, which stood near where Whitten Hall now stands. 1896.



The

Missouri College of Agriculture THROUGH HALF A CENTURY - in Retrospect

by M. F. Miller, Dean and Director Emeritus

A man who has spent his life in association with one of the leading Land Grant Colleges of the country is certain to have had many interesting and rewarding experiences. It is well-known that the staff members in such an institution have a feeling of dedication to what they consider a worthy cause. They are devoted to their work and one finds them a very congenial group with which to associate. There is also the constant contacts with the younger generation represented by the student body, which tends to keep them young in spirit. As one who has had these various experiences through a period of almost sixty years, I feel exceptionally fortunate.

For many elderly people the memory of things in the past is often more vivid than the memory of things which have happened during recent years. Then there are others whose memories of the early days are not so vivid and who are more interested in current events. A blending of these two is probably the ideal for those in the seventies and eighties. It is hoped that this account of interesting developments in the Missouri College of Agriculture through over a half century represents a happy medium.

First Acquaintance with the College

My connection with the Missouri College of Agriculture dates from September 1, 1904. Just 57 years ago, I was an Assistant Professor of Agronomy at Ohio State University, from which I had graduated with a Bachelor's Degree in Agriculture. I had also taken a year's graduate work at Cornell University and had secured a Master's

Degree. I did not continue for a Doctorate because such degrees were uncommon at that time, even at Cornell. Those were the days when Isaac P. Roberts was Professor of Agriculture at Cornell and Dean of the College of Agriculture. His lectures were valuable, mainly because of his experiences in agricultural practice and because of his wise rural philosophy. L. H. Bailey was Professor of Horticulture. He was an amazing and most inspiring man. I think he was the most remarkable man I ever knew in Land Grant College circles. He was interested, at the time, in writing the early volumes in horticulture, and contributed a large number. He once said in class that "All you need for writing a book is a pair of scissors and a pastepot." He was not particularly interested in graduate teaching and forgot to attend my examination for the degree.

My First Visit to the Missouri Campus

I shall never forget the time when I first walked on the West Campus at Missouri and saw the columns standing in the middle of it. They looked like a remnant of some ancient Grecian temple and I could not understand why they were there. I, of course, soon learned of their history and of the reverence in which they are held. I was 29 years old, at that time, which was perhaps too young for a full professor. Certainly, I was inexperienced in college teaching and research. Moreover, I came into a state which I had not known before and in which everything was new to me. The systems of farming, were

in general, not greatly different from those in Ohio, where I had been raised, but they were sufficiently so, that I did not feel sure of myself in appearing before audiences of Missouri farmers.

It was also interesting to note the differences in the attitudes of students between those of Ohio and Missouri. I had, of course, heard that Missouri was a state where the people needed to be shown, before they were convinced, and I found this was really true of Missouri students. In Ohio, the students accepted what one told them, with few questions raised. They believed what I said regarding agricultural matters. In Missouri, they did not accept my statements completely, without question. This was chiefly because practically all agricultural students were from farms, in those early days, and many of my farm observations, in Ohio, did not quite agree with their experiences in Missouri. Therefore, the Missouri students, on the whole, did not take my statements for granted as those from Ohio had done. However, I found these young men very fine individuals with whom to work, and I enjoyed my associations with them very much. They were more mature in their attitudes than the students in Ohio. They were "longer-headed" and had many judgments pretty well formed. I tried to be very frank and helpful to them and they showed their appreciation.

Early Attitudes of Farmers

I found about the same attitudes among Missouri farmers as I found among Missouri students. They also wanted to be shown, and as already indicated, I had some difficulties in speaking before farm groups in the early days. This was due, I think, to my youthful appearance and to my lack of familiarity with many of the details of Missouri agriculture. Few Missouri farmers had, at that time, adopted crop rotations, and they scarcely knew what the term meant. They were accustomed to growing corn for three to five years on a field, then shifting to a small grain, mostly oats, and then to grass or grass and clover. However, there was little regularity about it. I began talking to them about crop rotations but they rarely showed much interest. Cropping systems would have been a better term, but, at the best, their systems were quite irregular.

I found, before long, that I was dealing with a region where the agriculture was less well standardized than in the states of the eastern Cornbelt, where it was older and had reached a condition of some stability. I also found that one of the principal reasons regular crop rotations were more commonly used in the older states was that the number of serious drouth years was much less than in Missouri. Professor Etheridge, former chairman of the Department of Field Crops in Missouri, used to say that summer drouths are *normal* for Missouri, and that statement is close to the truth. With frequent summer drouths, it is difficult to keep a clover and grass stand. As

a result, a crop rotation such as the one I was familiar with in Ohio—corn, wheat, clover, was not so well adapted to Missouri. The frequent crop failures due to drouth served to upset the system. It is easy to see, therefore, why Missouri farmers were slow in adopting established rotation systems.

Another technique new to the farmers was the use of fertilizers, which was not common in Missouri at that time. The three common ones on the market were bone-meal, super-phosphate (acid phosphate as it was called in those days) and a 1-8-1 mixed fertilizer. The later was the lowest grade mixed fertilizer ever marketed in Missouri. It could scarcely have been of lower grade. Some farmers who had used these fertilizers in the row or hill for corn, got some stimulation in the early growth of the crop, and when a drouth came, in July and August, this corn was sometimes cut back in yield. This was due to the stimulation to early growth with a so-called "firing" later, because of the large leaf development. A few such results made a great impression on farmers so that many of them decided that fertilizer injured the soil. This and other misconceptions, regarding fertilizer use, made it difficult to sell the idea. For a man coming into the state, this was quite a strong deterrent to the development of his popularity. There were also instances where skepticism of other new practices was strong.

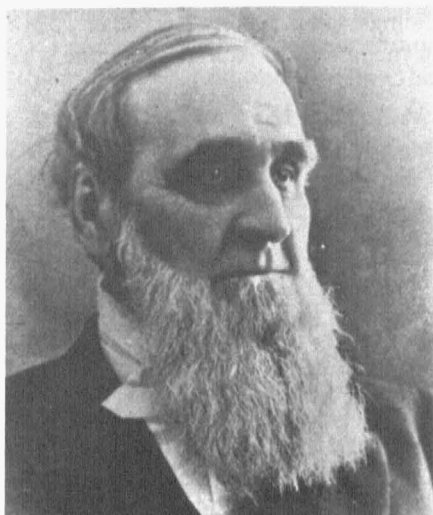
In spite of these obstacles to forward movements, there were farmers who were interested, and I found the mass of farm people most friendly. There was enough Southern blood among them to develop Southern courtesies, and I found them fine people with whom to deal. These experiences have continued through the years.

Early Acquaintance with President Jesse and the Business Office

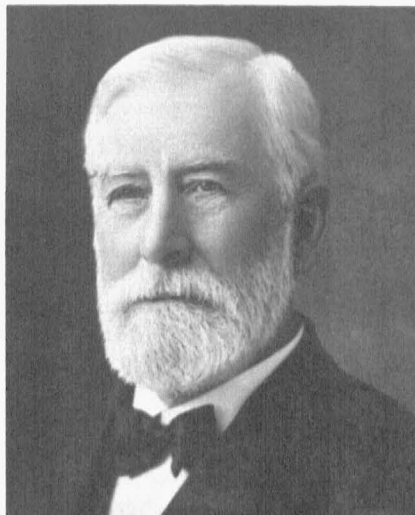
It is interesting to know that in the very early days of my connection with the College, heads of departments were expected to take up some, or most, of their important problems with the president or the business office. Matters were not so dependent on the deans as they later came to be. As a result, I sometimes talked things over directly with President Jesse, who was always ready to discuss them with me. He was a positive and forceful man upon whose decisions one could depend. He was a tremendous force in the University and a most important man to know.

The funds one had to expend in those early days were meager, and we were expected to discuss allotments and balances with the man who knew most about them, J. G. Babb, Secretary of the Board of Curators. While he was not known as a business manager, he functioned as such. His office in Jesse Hall represented what there was of a business office in those days. Later Walter Williams, who was chairman of the Board of Curators, maintained an office in Jesse Hall, for a number of years, and department heads were expected to consult him on im-

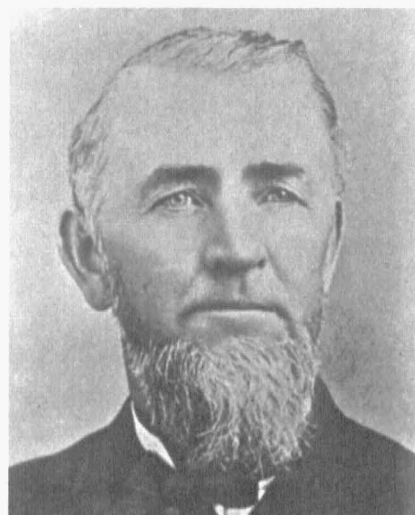
DEANS OF THE UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE



G. C. Swallow
1872-1882



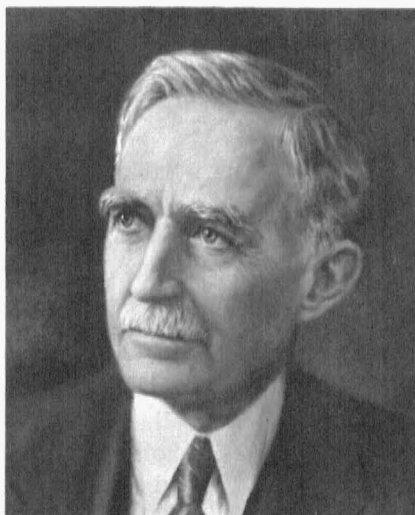
J. W. Sanborn
1882-1889



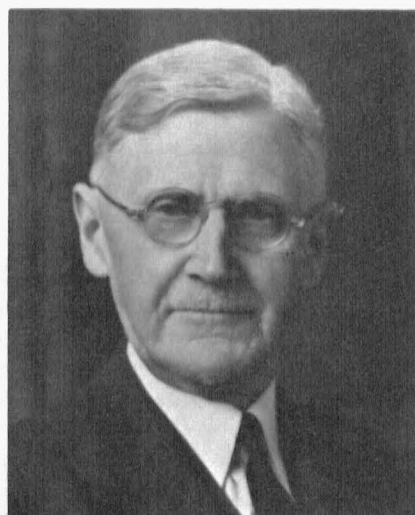
E. D. Porter
1889-1895



H. J. Waters
1895-1909



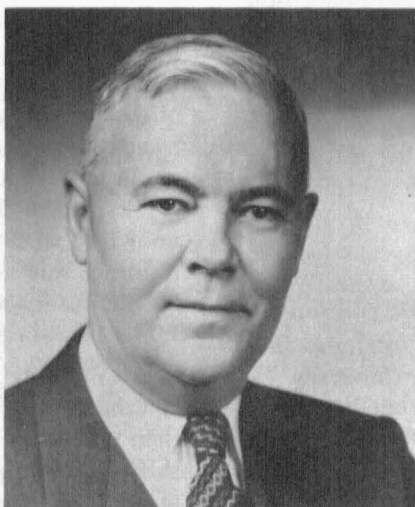
F. B. Mumford
1909-1938



M. F. Miller
1938-1945



E. A. Trowbridge
1945-1948



J. H. Longwell
1948-1960



E. R. Kiehl
1960-



Switzler Hall, the original home of the College of Agriculture and remembered by every graduate, was built mainly for the College in 1872. It housed most of the activities of the College including the administrative offices and those of Agronomy and Animal Husbandry until 1909 when Waters Hall was built. The belfry contains a large bell with beautiful tones which formerly signaled the change of classes.

portant fiscal matters. I saw him a number of times in connection with funds and appointments of individual staff members.

I shall never forget my first contact with Mr. Williams and the impression he made on me. It was at a meeting of the Board of Curators in St. Louis in 1904, when I had been invited there by Dean Mumford so that I might be interviewed. Among the board members present was this man whose name was Williams. I remember particularly that he was partially bald and the remaining hair on his head was long and it was brushed sidewise over the top, to partially cover his baldness. One of his outstanding characteristics was a high, falsetto voice which made a lasting impression on me. In later years, as I came to know him and heard him make most eloquent speeches in this same high-pitched voice, I came to have a very high respect for him.

Soon after I came to Missouri, Mr. Williams was taken to the University Hospital with typhoid fever, a very severe attack, that lasted a good many weeks. When he came out, it was found that his falsetto voice had dropped an octave, to normal, for a man of his physical build. The first time I heard him speak after that, was at a banquet in connection with one of our old Farmers' Week meetings and I could scarcely believe my ears. Only a very few people around the University, at this time, are old enough to remember this change in Walter Williams' voice. It was an amazing thing. This was the man who founded the Missouri School of Journalism and who later served as President of the University. He was a gentleman, amiable, broadly read, intelligent, and an effective speaker—the man who became a University Dean and President, although he never had a college education.

Early Buildings

Those who know the College of Agriculture as it is today, with its buildings, lands and its large staff of resident and extension members, can scarcely imagine what it was in 1904.

Switzler Hall was built in the early days to provide a center for the College of Agriculture. In 1904, it housed the two offices of Dean H. J. Waters and a secretary, Miss Estelle Hickok, who later was secretary to the President. It also provided space for the Departments of Animal Husbandry, and Agronomy, as well as for an agricultural museum. There were, in addition, rooms for the Secretary of the State Board of Agriculture and his staff, along with the Weather Bureau.

There were three buildings erected immediately after 1900, the most important of which was the horticultural building, now known as Whitten Hall; an animal husbandry building, with a small room for stock judging; and a building for displaying modern farm machinery. The last two mentioned were farm campus buildings, now occupied by Agricultural Engineering.

There was an old frame building located on what is now the northeast corner of the East Campus, along with a building for veterinary science and a rather large greenhouse. Just east of, and attached to the horticultural building, were two small greenhouses. Attached to the basement of the building was an old wine cellar. This was no longer used for experimental work with wines but Dr. B. M. Duggar, Professor of Botany, used it experimentally in developing spawn for the propagation of mushrooms.

On the farm campus was a small dairy building, later enlarged and developed into what is now Eckles Hall. There were also on the farm campus, barns or sheds for horses, cattle, sheep and hogs. The large feeding sheds with adjoining lots, still in use, were constructed in 1903-1904.

A building which requires special mention was a large Southern-type residence, known as the "Hudson Mansion." It was built on what was then the edge of the farm lands of the College and was the home of the Dean of Agriculture, who was really the general manager of the farm. It was occupied through the years by Deans Swallow, Sanborn, and Porter, but it was destroyed by fire in 1897. A second house was built on the same foundation in 1898. This was occupied by Dean H. J. Waters until 1908 when it burned, after which the existing stone residence was constructed. This has been occupied during various lengths of time by Deans Waters, Mumford, Miller, Trowbridge and Longwell.

It might be said that supplying deans of agriculture, at Land Grant Colleges in the cornbelt, with houses for their occupancy was originally more or less common. I think the original idea was that these men were in charge of all college farm lands, buildings, and livestock on the

farm and needed to be near them. As time has passed, the great development in agriculture requires widespread administrative duties which virtually set apart agricultural deans from others in the institution. However, there is always some question, among other deans, of giving the modern deans of agriculture this special recognition, and the plan is gradually becoming outdated. It has recently been abandoned at the University of Missouri.

Some Early College Developments

At the end of the 1890's the College of Agriculture was still in a formative period. No regular faculty was organized until 1893 and real progress did not begin until 1895 when H. J. Waters was made dean of the College and director of the Agricultural Experiment Station. Dean Waters was a man of great sagacity. He was a native Missourian, a graduate of the College, and he knew the minds of Missouri people. A few years earlier, in 1891, Dr. Richard Jesse had become president of the University. He was a very far-sighted man of great vigor and high ideals. He made a powerful impression on the University. It has often been said that President Jesse "made the University" and it can be said with almost equal emphasis, that Dean Waters made the College of Agriculture. Actually, these two men worked together as a team from 1895, when Waters was appointed Dean, until 1906 when ill health resulted in President Jesse's retirement. During this time they accomplished much for the University as a whole, and particularly for the College of Agriculture.

Dean Waters' knowledge of Missouri people and the respect the members of the legislature had for his ability and honesty, made him the right-hand man of President Jesse in dealing with legislative matters. Between them, the University was placed on a firm foundation.

After Dean Waters became dean, the faculty of the College was enlarged to include J. W. Connaway, Professor of Veterinary Science; J. G. Whitten, Professor of Horticulture; C. H. Eckles, Professor of Dairying; J. W. Stedman, Professor of Entomology; and F. B. Mumford, first Professor of Agriculture and a little later Professor of Animal Husbandry. About this time too, M. F. Miller was appointed Professor of Agronomy. These men, along with Dean Waters formed the nucleus of the College faculty in those early years.

As time went on, other men were added, as instructors and assistant professors, and the number was augmented until in the later 1920's the faculty numbered about fifty. Today the total number on the resident agricultural staff, with the rank of assistant professor and above, is 157 including 7 in forestry, 18 in home economics, and 22 in veterinary medicine.

My appointment as Professor of Agronomy was made on the recommendation of F. B. Mumford who



The first dean's residence (top) was generally known as the "Hudson Mansion." This and a house following it on the same location (middle) were both destroyed by fire. The one standing today (below) on the same site was built after the second one burned in 1909.

was Acting Dean of the College of Agriculture in 1904. Dean Waters was on leave of absence in order that he might prepare and superintend the installation of the Missouri Agricultural Exhibit at the World's Fair in St. Louis at that time. Mumford used to say, jokingly, that as an added inducement to me to come to Columbia, he made me Curator of the Agricultural Museum, then housed in a room on the second floor of Switzler Hall. This consisted of ancient implements and agricultural trophies of various kinds. It was a rather decrepit old exhibit, having little value. I must admit that I was too busy with other things to give it much attention. I am sorry to say that it did not flourish in my hands. When the headquarters of the College were later moved to the East Campus, the museum, as such, was abandoned and such articles as seemed worth preserving were moved to Mumford Hall. What remains of this exhibit is now housed partly in Mumford Hall and partly in the New Agricultural Building.

Dean Mumford was very helpful to me in those early days, and this continued until his retirement in 1938. Dean Waters was just as helpful on his return to the office of dean. I worked with him until he left the College to go to the presidency of Kansas State College in 1909.

Interesting Early Faculty Men

It was through the personalities and activities of the older men, that much of the prestige of the College was developed. These men were sincere, with a tremendous interest in the College and their work. In those days, no one had heard of a time clock, a coffee hour, or a definite closing hour for offices. Their interest in their college activities never flagged. They worked without regard to hours during the days and many of the evenings. I often wonder how the College would have developed if we had been working under the conditions and regulations of today. With the small amount of funds available, we could not possibly have fitted into the present manifold rules and regulations, yet, much was accomplished in those days.

Dean H. J. Waters

Dean Waters has been mentioned elsewhere as the man who, in cooperation with President R. H. Jesse, put the College of Agriculture on its feet. Up to the time of his administration, which began in 1895 and ended in 1909, the College had been hampered by petty politics and a great shortage of funds. His wise judgments and his popularity among people, were largely responsible for his success. He was from a Southern farm family liv-

ing in Ralls County, and he knew how to deal with people of both northern and southern lineages. His father was a well-read and able farmer, who in the early days, sometimes assisted the State Board of Agriculture as a lecturer at farmer institutes over the state.

Dean Waters made a great impression on me. He was certainly a fine gentleman. No man, aside from my own father, had more influence on my life, than he. He was especially good to me and aided me in my new work in every way. His advice and recommendations were of the highest order, and he certainly tried to give me a good start in my new position.

I was unmarried during most of the years I worked with Dean Waters and for several one-month, summer vacations he took me fishing, with the Waters family, in the lake regions of Minnesota and Wisconsin, usually in August. It is said that the way to learn to know a man is to go fishing with him. Acquaintances either improve or deteriorate with such experiences and for Dean Waters they were most enjoyable. We spent these vacations fishing by boat during every day the weather was good. We fished mainly for bass and muskellunge, and he taught me all I know about this type of fishing. We usually started out each morning after breakfast, at the lodge, wherever we were staying, and fished all day. We took time out at noon for a lunch on shore often frying over a campfire some of the fish we had caught in the morning. We took turns rowing and casting, so that at the end of four weeks we were hard as nails and tanned as brown as our complexions would permit.

There are few types of vacation which are more effective in building one's body and nerves for the year ahead. I might mention, incidentally, that after Dean Waters left Missouri, and my children grew into the teen-age group, our whole family took several vacations in the northern lake region where my three sons and even my daughter, learned to cast as well as I, or they surpassed me in this skill. I considered this good training for their lives that lay ahead.

Those vacations with the Waters family were exceedingly enjoyable. Muskellunge fishing was good in those early days, as these fish were abundant in northern waters. The largest we ever caught was a 26 pounder which pleased us very much. However, one time, after Dean Waters' death, I brought in a 32 pound muskellunge from northern Wisconsin. It was 52 inches long when it came out of the water after a 30 minute fight. It now hangs in the quarters in Columbia where I live.

Later in life, Dean Waters gave up fishing for duck hunting. The last time he was out, he took cold in a blind and died as the result of an attack of pneumonia which followed. He was only 60 years old, and I have often thought that if he had stayed with fishing as his principal recreation, he might have lived twenty years longer, when his knowledge and experience would have continued to be of tremendous value to agriculture. It

sometimes seems disconcerting to observe how some men of great value in the world should die early, while some that have seemingly little worth, live into the eighties or nineties.

Dr. J. W. Connaway

The oldest of these early faculty members, from the standpoint of appointment, was Dr. J. W. Connaway. He really was a most interesting character, in the most complimentary sense of that term. Trained in both human and veterinary medicine, he found this double training quite advantageous. He was greatly interested in research, both fundamental and applied. One of my earliest recollections when I came to Missouri, was having Dr. Connaway show me large 8 x 10 photographs of the paths of Texas Fever ticks on a glass plate covered with dust. That was when he was working on a method of controlling this tick.

Dr. Connaway of Missouri and Dr. M. Francis of Texas, were the men who worked together in developing the plan of dipping cattle, to remove the ticks which carried Texas fever from one animal to another. The experimental cattle they used were kept in small lots on the land where Rothwell Gymnasium now stands. The animals had no protection excepting a pole frame covered with tree branches. The total cost of this work was probably not over \$10,000, but the results meant untold millions to the great cattle states of Texas and Oklahoma, as well as a great deal to all other Southern states in the original Texas fever area, extending as far north as the Missouri River.

The plan of treatment developed was that of dipping animals in a solution which would kill the fever-carrying ticks on their bodies. There was, at first, much objection to this dipping process among the farmers and the project moved ahead slowly. The U.S. Department of Agriculture adopted the plan and the ticks were finally eliminated to the Southern boundary of the United States, with the exception of a very narrow strip which remains in the swampy area bordering the Gulf. In visiting with a federal veterinarian at Brownsville, Texas, a few years ago, he said that the ticks in this Gulf fringe would move north gradually carrying the fever with them. The veterinarians would then put on a dipping campaign and eliminate them back to the swamp fringe again. This had to be repeated every few years.

Another activity in which Dr. Connaway engaged was that of the serum treatment for controlling hog cholera. This program was greatly increased in 1915 when the legislature appropriated money for establishing a central laboratory at the College, for manufacturing and distributing serum. While Dr. Connaway was much interested in this development, he was also interested in research which would provide a method of eradicating cholera from the state.

The veterinarians of Missouri were more interested in partial control of the cholera, than in eradication,

since the serum vaccination would give immediate returns on herds so treated. Dr. David Luckey, who was state veterinarian at the time, was violently opposed to giving any great amount of attention to eradication, arguing that it was impractical. The controversy between the two men lasted as long as Dr. Luckey was veterinarian. It is interesting to know, however, that long after Dr. Connaway's death, Dr. Luckey also adopted the idea that hog cholera should be eradicated and wrote a strongly worded paper to that effect. There is little doubt that it will be eradicated in years to come. Dr. Connaway was the far-sighted one, much ahead of his time, although the temporary control by vaccination has been necessary for immediate benefit to hog raisers.

In his earlier research, Doctor Connaway was largely responsible for the development and use of a serum for the control of blackleg in cattle, and the ramifications of his research were widespread. There was never a man who was more honest, more sincere, or more interested in the welfare of people. He had certain rather peculiar characteristics, but he was a wonderful gentleman, whose medical interests were in both domestic animals and people.

Dr. J. C. Whitten

Another man who was much like Dr. Connaway was Dr. J. C. Whitten, Professor of Horticulture and head of the department. A native of Maine, he had spent some time at the South Dakota Experiment Station, so that he had some of the experiences of a pioneer, although he had the characteristics of a cultured gentleman. A part of these were native born, and a part were from his college experiences. After coming to Columbia, he married a Miss Todd, a relative of the Todd family to which Mary Todd, wife of Lincoln belonged. There is little doubt that Professor Whitten's association with this Todd family, of the old South, had an influence on him and added to his gentlemanly characteristics.

It might be interesting to note that, according to an old Columbia legend, an uncle of Mary Todd lived in a large house, which I remember well, located where the north edge of Columbia cemetery now lies, and that Mary Todd is said to have visited her uncle's family there in her younger days. This can only be given as legendary but I think it was true. The legend goes further, however, and holds that Lincoln once called on Mary Todd there, when she was on a visit in her uncle's home. Lincoln was supposed to have gone up the Missouri River by steamboat to attend a large political rally, I think at Brunswick. It was said that on his return he got off the boat at Rocheport and took a hack to Columbia to visit at the Todd home. However, no official records exist in the archives of the Historical Society of Missouri that this visit ever took place.

Whitten was a man of fine character, and all his students and friends recognized him as such. He was a wonderful teacher, admired and revered by the many stu-

dents who came under his influence. While Connaway was most famous for his research, Whitten was most famous for his teaching.

One of Whitten's well-known habits was pipe smoking. He nearly always had his pipe with him, smoking both in and out of his office. Another of his characteristics was that of allowing the pipe to go out, shortly after lighting. When one went to his office and stayed ten minutes, he would usually light his pipe 6 or 8 times during that period.

Whitten had a great deal of vigor for a man his age. He was about 10 years older than I, and my age at that time was about thirty-five. One day we were walking over the farm east of the farm buildings, near Hinkson Creek. Finally, he said to me, "Miller, I'll race you up to the barn." He started out and I followed. I actually followed all the way. This, however, shows something of the interesting type of man he was. Like Dr. Connaway, Whitten was a rare individual. He had one of those magnetic personalities which one remembers vividly through the years.

Professor C. H. Eckles

Another very remarkable man on the early faculty was C. H. Eckles, Professor of Dairy Husbandry and head of the early Dairy Department. He came to us from Iowa State College in 1901. He was one of the rare individuals who came to Missouri from that institution and fell completely into our ways. He was a rather large, fleshy man, and an incessant worker. His research work was of high order, and he gathered a large number of graduate students about him. He accomplished a great deal. One time I asked him if he worked much in the evenings, to accomplish as much as he did. He replied, "I don't do much on my projects excepting to think over what has been done and then to plan for the day ahead." That was very interesting to me and I thought of my days with German scientists, at the University of Gottingen, where the men not only worked methodically but gave much time to the consideration of what they accomplished.

I have often thought of the money that is spent on equipment and materials for research at some of our experiment stations in this country. It has seemed to me that under such conditions men often spend too much time organizing equipment and too little on the work of pure research. Another thing we do, and I myself have been guilty, is to go ahead collecting and collecting data on a project and giving far too little thought to the results as they accumulate. Eckles was not one of these; he thought through what he was doing from day to day, evaluating his data and making plans for the future.

Professor Eckles left Missouri to go to the University of Minnesota, which, in my opinion, was the mistake of his life. He had built up such a following among his graduate students and young assistants here, that they had formed the "Eckles Club" which is still in

existence, as a national organization. The reason he left Missouri was because the President of the University, at that time, did not appreciate his worth, and would not support Dean Mumford sufficiently in the dean's efforts to retain him.

Eckles encountered some unfavorable conditions in Minnesota. At that time, the University was just making plans for a new dairy building, which occupied much of his attention for a couple of years. Then, as I understood it, there were some troubles among the dairymen of the state. He never got back to real research, except for a short time when he worked on the relationship of certain mineral deficiencies in soils to the health of dairy cows. The situation in Minnesota did not really suit him, I think, and he died in his sixties.

I have often thought that if Eckles had remained in Missouri he would have built a wide national following and would have completed a great deal of research, which would have been much to his advantage and to that of the University. Here was a case where the President of a University acted in such a way as to affect very unfavorably, the life of an individual and the good of an important department. Of course, the Department of Dairy Husbandry has flourished greatly, in more recent years, but some time had to be taken for it to reach its present position.

Dr. John W. Stedman

John W. Stedman was made Professor of Entomology in 1895 and continued in that position until 1909. He was also entomologist to the experiment station. He was a good entomologist, but he was a man of certain peculiar characteristics and was never very popular among his colleagues. This was just one of the beginning attempts at insect control which had not reached far. Almost all the insecticides have come into use since that time. An interesting development took place during that early period in an attempt to control the chinch bug. It has been observed that, at times, a fungus attacked the chinch bugs, killing them in great numbers. As a result, insects that appeared to have this fungus developing on their bodies were brought into the laboratory and placed with large numbers of the supposedly healthy bugs, brought in from the open field. After a few days these supposedly infected bugs were distributed to farmers for scattering around in their fields in an attempt to spread the disease. The old records of the department show that hundreds of farmers were supplied these supposedly diseased bugs. At times, this plan seemed to work satisfactorily but it was later shown that this was during wet periods, when the fungus would often have an extraordinary development, whether the infected bugs were introduced or not.

Dean F. B. Mumford

I have left to the last, the information concerning F. B. Mumford, who was first appointed to the staff of

the College as Professor of Agriculture, in 1895. He was made Professor of Animal Husbandry in 1904 and Dean and Director in 1909. His tenure as Dean and Director was from 1909 to 1938. He started as one of the early faculty members and carried on for more than 40 years. His principal contributions were, of course, during his long service as Dean of the College. Coming in, as he did, after Dean Waters and President Jesse had established the College on a firm foundation, he brought it to the position of one of the leading Colleges of Agriculture in the country. He was a remarkable administrator. While some people considered him stern and rather cold, he got things done and certainly had the respect of every man on the faculty. While Waters put the College on its feet, Mumford guided it to a top-ranking College of Agriculture.

Mumford was a fast automobile driver, seemingly reckless, at times. I shall never forget my first ride with him, when he took two or three of us on a ride down to McBaine, and over a very poor river road to Huntsdale and back. He was driving a new Chandler car and it was one of my first automobile rides. At times, I feared we would never reach Columbia again, but we did. It was a rare experience in those early days.

Unfortunately, the dean's fast driving ultimately caught up with him, when his car crashed into the abutment of a bridge over a small stream, on old Highway 40, on the way to St. Louis. The crash caused the death of Mrs. Mumford within a couple of hours, and the Dean's death after about three weeks. It is really startling to know that his brother, H. W. Mumford, who was Dean of Agriculture at the University of Illinois, was also killed in an automobile crash. Thus, the automobile caused the death of two of the most able deans of agriculture the country ever knew and within a very short period of time. Dean F. B. Mumford and his long administration will be mentioned frequently during the accounts of some of the interesting development of the College.

I have often thought of the quality and the sincerity of these early faculty men. I had a real affection for them, which has not changed with the years. They were most remarkable individuals to whom the College of Agriculture owes a tremendous debt.

Early Activities of the College

There were many of the early activities of the College which were very interesting to me, some of which are particularly worthy of mention. Most of these were naturally, the ones with which I was most closely associated.

Cooperation with the State Board of Agriculture

In the formative years of the College, the State Board of Agriculture was greatly interested in its welfare, even to the point of attempting to dictate many of its policies. However, when the College became firmly established, the Board assumed a more cooperative relationship which it held thereafter. Throughout many of the early years the Secretary of the Board was housed in the College of Agriculture quarters, first in Switzler Hall on the West Campus and later in Waters Hall on the East Campus. This provided very close cooperation for mutual assistance. I enjoyed very much the work which I did in this cooperative relationship.

Farmers Institutes

Some of the earliest work of the Board of Agriculture was that of establishing a plan for farmers' institutes. These were inaugurated in 1883 and continued until 1933, a total of 50 years. The plan consisted of holding one or two-day farmers' meetings, usually in the county seats, or other towns of similar size. The speakers, usually two men, sometimes three, traveled together and each would be scheduled for one talk, with a discussion period, in the morning and another in the afternoon. While the Board supplied regular lecturers for these meetings, the College men helped in this from about 1910 to 1925, giving much time to the project. We would plan to close each meeting in the afternoon early enough to get a train to the next stop; or possibly we would have to postpone this until the next morning. There were some very interesting men who appeared on these institute programs.

I was new in the state and was somewhat unfamiliar with Missouri agriculture at that time, although fundamentally it was not greatly different from that on the farm where I had been raised in Central Ohio. Nevertheless, I felt uneasy in speaking to these Missouri farmers, many of whom were quite skeptical of the ideas the College men were putting before them. I looked young and I felt younger, when I appeared before these audiences. As a result, I decided to grow a beard. It was quite common for University men to wear beards, in those days, especially the close-cropped Van Dyke style. I wore this beard for a number of years and enjoyed it. I was in fashion so far as many University men were concerned and I felt more sure of myself with the farmers. One day I was visiting with an elderly farmer and we were talking about the Civil War. He finally asked if I had been "in the service," meaning that of the war between the states. It may have been that his eyes were not good, but it interested me, since it seemed to put me in somewhat the age group with my father, who had been in that conflict. I decided that the beard was functioning well.

I am glad to report that, in the earlier days, even when most farmers were quite skeptical of the recom-

mentations of the College, we were treated well. Farmers were courteous, at least most of them, exhibiting a typical Southern courtesy, even if they might have been doubtful of many of the suggestions we made. The only real discourtesy I remember, and this was probably justified, was years ago when I was judging farm and garden crops at the State Fair. There was a very large watermelon on display, and the catalog called for the "largest and best." There was no doubt that a certain melon was much the largest in the display, but only a casual examination showed evidence that it had been displayed before, possibly several times, as it was considerably scratched. In an attempt to cover the scratches, someone had touched it up with green paint. As a result, I threw it out. The owner complained bitterly to me, and since I gave him little help he took the case to the Secretary and finally to the Fair Board, where his complaint was ignored.

Some of these judging experiences at the early fairs were somewhat disturbing. Many classes of garden vegetables, of all kinds, were in the State Fair displays some of which, as an agronomist, I did not know well. As a result, after these were spread out for examination, I listened to the comments of those looking on, until I discovered the samples which seemed most generally favored and if I was somewhat uncertain, I gave the prizes to these samples. This may not be a very good admission to make, but since I was compelled to make a decision, it seemed best to have someone who at least joined me in my judgment, or it might be better stated to say that I joined them.

The whole matter of judging animals, or samples of crops, which are in competition at shows, is usually one in which two judges might disagree in many instances. Where the selection lies with one individual, he must use his best judgment in the placings. When the placings are close, the judge knows full well that some other judge, as well qualified as he, might place some animals or samples in a different order. However, showmen are familiar with this situation and usually make the best of it, even when they think that some of the animals or products should have been placed differently.

Agricultural Trains

One of the most interesting activities in which the College ever engaged was supplying lecturers for the agricultural trains run by some of the railroads, beginning about 1910 and continuing for several years. This was before the days of organized extension work and the regular resident men took part. The trains served a very useful purpose in early times in familiarizing the farmers with the work of the College.

These trains usually consisted of two regular day-coaches with a raised platform in the front end of each, on which the lecturers stood. It's surprising how well people can hear, in a coach of that sort, as it's like speaking through a long tube. The railroads made out the schedule of stops, in advance, advertising the train and



Five of the first College department heads in the early days (about 1912), standing in front of a lecture coach on one of the early agricultural trains. From left to right they are M. F. Miller, F. B. Mumford, J. C. Whitten, J. W. Connaway, and C. H. Eckles.

the stops widely. The towns chosen were the ones where the crowds would likely be largest, so that the attendance was usually good. At most stops the two coaches filled quickly and there was sometimes an over-flow crowd, to which one of us would speak. The stops were about thirty minutes long and the lectures cover such subjects as soils, field crops, horticultural crops, animal husbandry and dairy husbandry. On two or three of the later trains, Chief Josephine, a record Holstein cow from the College herd was exhibited.

It was interesting to have the experience of making practically the same talk over and over, at the various stops. At first, one had trouble finishing before the whistle blew for emptying the cars, preparatory to moving to the next stop. As time went on, however, the speech seemed to shorten automatically, until at the end of the first day, one usually finished in time to allow for questions.

On one of these trains in northwest Missouri, in midwinter, a heavy drifting snow came and we were snowed in for a couple of days. Colonel Waters, Dean Waters' father, was one of the speakers and as the train lay in the snow, we sat in the lounge of the private car, always furnished the speakers, while the Colonel, who was a good story teller, entertained us for hours. Toward the end of the second day, however, he became quiet, as his list of stories seemed to be completely exhausted.

On that same train we stopped at Tarkio, after we were free of the snow block and this was the town where David Rankin, the celebrated millionaire Missouri farmer lived. We wondered if it might be possible that he would meet the train, although we had grave misgivings. However, when the train pulled in, Mr. Rankin placed himself on the front seat of one of the coaches which pleased us a lot.

On another occasion, just before the beginning of the trip, the railroad officials had stocked the refrigerator



At the early Farmers' Week meetings some of the departments put up special displays. This is one prepared by the Department of Horticulture.

of the private car with a liberal supply of drinks. As soon as the last lecture had been concluded at the end of the first day and we were gathered in the car lounge, the porter brought out the drinks. However, the officials had misjudged the agricultural college men, since none of them participated, which seemed to amaze the railroad people. On the whole, we were treated royally on those trains. The private cars had state rooms for sleeping quarters, and the meals were excellent. Traveling in a private car was new to most of those agricultural college men over 40 years ago.

A thing which interested the farmers was some large photographs of ears of corn we had brought along and which were hung just back of the speaker's platform. Those were the days when we gave great emphasis to what we considered "quality" in an ear of corn. We argued that ears should be of good length, well shaped, with straight rows of deep kernels, and that they should be well filled at tips and butts. The photographs showed ears of this kind, enlarged to the height of a man. There was little doubt that the farmer who gazed at these big photographs during a 20- or 30-minute speech, had the qualities of a good ear, as we saw them, pretty well burned into his memory. I suppose any of those who had the so-called photographic memories and are still living, can see those ears today.

Those were the days when the first public address systems were coming into use, and when we had an overflow crowd, we used one. At one stop, when I was off duty, I strolled up to the main street of the town, an eighth of a mile away, where one could hear every word the speaker used. This was amazing to the population of some of the small country towns in those early days as it was to me.

These trains represented an early type of extension work, which was very successful. The farmers came to



Tables set for one of the famous Farmers' Week banquets which featured the Farmers' Week meetings in the 1920's. These were organized through cooperative efforts of the College and the State Department of Agriculture.

these train stops, partly because of the novelty of such meetings and partly because they hoped to see why the railroads were interested. As a result, thousands of farmers were reached through those educational efforts, at that early date, who would not have been reached otherwise.

Farmers' Week

One of the most effective means of reaching Missouri farmers, in the early part of the century, was through the Farmers' Week meetings which were held in Columbia, usually during the month of February. As one looks back on this early project, the success of these meetings was amazing. This was long before the days of cars, buses, or good roads, but farmers came by train, often with their wives. The College secured living quarters for them in Columbia homes, and most of them spent four days in the meetings. It must be remembered, too, that this was in midwinter and weather conditions were often very bad. Naturally, the farmers attending these one-week short courses, as we would call them today, were the most progressive ones in the state, otherwise they would not have come.

The program was handled by different departments, such as animal husbandry, dairy husbandry, agronomy, and horticulture. Programs in each of these lines were held in separate classrooms and the lectures were given by members of the faculty. The departmental staffs were small and I remember that I used to lecture almost continuously every day, so that young and vigorous as I was, I was almost completely exhausted by the end of the week.

The State Board of Agriculture cooperated in these Farmers' Week programs, paying the expenses of good speakers to appear each evening on a general program held in the old Jesse Hall auditorium. Actually, the College was mainly responsible for the daytime programs

and the State Board for those of the evening meetings. These Farmers' Week meetings were inaugurated in 1910 and were continued, with some variation, for over 25 years. Later the type of program was changed to that of a "Farm Forum" of one day, which is still continued. However, instead of only one, held at Columbia, there are also others conducted in different parts of the state.

The attendance at these early Farmers' Week meetings varied considerably. In the early days when travel was entirely by railroad, the numbers ran from about 1,200 to 2,000, which was amazing for a four-day period in midwinter. In later years, when good roads and cars came into use, the attendance sometimes reached 3,500, but in those days people would drive in and often spend one or two days instead of four.

The Farmers' Banquet

One of the most interesting features of Farmers' Week was a large banquet, usually held on Wednesday or Thursday evening. This event was a most interesting one. It was held in Rothwell Gymnasium, which was just after this building came into use. The attendance was very large, sometimes 1,000 people, with tables filling almost the entire gymnasium floor. The costs were met by the State Board and the College so that it was a complimentary banquet.

The tables were long, usually providing for about twelve guests at each. A faculty man, as host, sat at one end and his wife, as hostess, sat at the other, so that the attempt was made to provide all the features of gracious living. The meat was always prime roast beef from the best animals of the College fat cattle herd. There was no place around the College where the required number of roasts could be cooked at one time, so they were distributed among the faculty wives for roasting in their home ovens. Dr. P. F. Trowbridge, Chairman of the Department of Agricultural Chemistry, was in charge of these banquets and he would have these roasts delivered hot, when the people were seated. The host carved, seeing to it that each guest had all of the meat he or she could eat, including seconds or thirds, where desired. It was the impression of people coming from other states, that nowhere in the country were farmers' banquets at Colleges of Agriculture served with such elaborate preparations or with such good food. There were always several banquet speakers, chosen largely for their eloquence, by Mr. Jewell Mayes, Secretary of the Board of Agriculture and the banquet programs were very enjoyable. The older people around the state still comment on the pleasure they had when attending these Farmers' Week Banquets.

Corn Shows

A feature of the Farmers' Week program, in the early years was a state corn show. This was held under the auspices of the Missouri Corn Growers' Association, established in 1903. The first state corn show was held in Columbia in 1904 and for many years it was a most

important event. Those were the days when people interested in field crops became very active in selecting seed corn, mainly on the basis of ear quality. According to the score card, ears should be of good size, with straight rows of deep kernels, and with tips and butts well filled. In the ordinary corn shows most of the exhibits were on the basis of ten ear samples and absolute uniformity of the ten ears was essential. In some cases, there were classes for twenty or even fifty ear samples and in a few cases a single ear class was included.

The various classes in the shows were usually on the basis of yellow corn and white corn, with different varieties of each shown in competition. It is interesting to know that among the yellow varieties, one known as Reids' Yellow Dent was by far the most popular throughout Missouri and even the Cornbelt. A few ears, selected as typical, by Mr. Reid himself, taken from his home farm in Indiana are still preserved in a trophy case of the College.

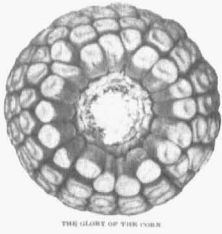
The state corn show stimulated the organization of county and small fair shows throughout the state, as well as one at the State Fair and it fell my lot to judge a good many of these. It should be remembered that this was long before the idea of hybrid corn developed. The belief was common then, that by selecting what were considered good quality ears, a greater yield of good corn could be produced. At that time too, a plan was developed of selecting good ears and planting them in small plots, an ear to a row in an attempt to find the best producing ones.

When I was a young instructor at Ohio State University, the Dean of the College assigned to me the job of carrying out such an ear to row trial. I therefore, came to Missouri with some experience in that line and I did some such trials on the experiment field at Columbia. Sam Jordan later known as the "corn man" of Missouri, did some of his early work with corn by using this ear-to-row testing plan.

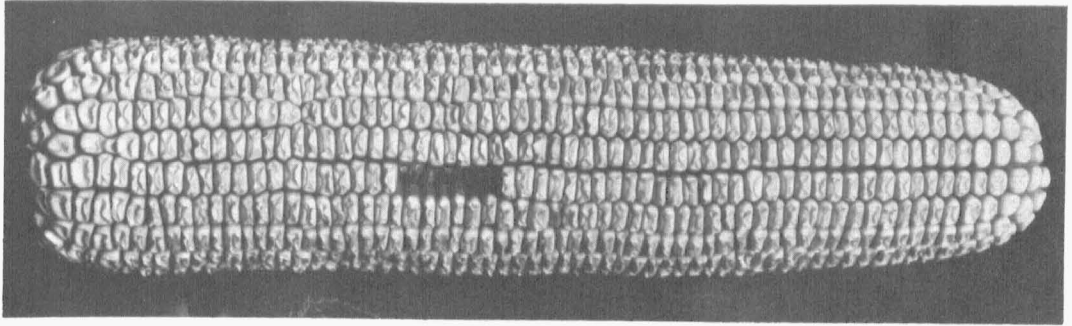
It was finally discovered that while selection of good ears was better than no selection at all, it really had little possibility for providing greater corn yields. Soon after this, the production of corn hybrids came into use. As a result, the idea of selection of fancy ears was abandoned, and the use of hybrid corn was substituted. Following this, the corn shows were largely abandoned throughout the state.

The Missouri Corn Growers' Association had a great place in developing an interest in improved corn production. It was my duty and privilege, as a young college man, to act as Secretary of the Association, so that I was associated with all its activities. It was really quite an educational force in those early days, and the acquaintances I made among the farmers of the state who were interested in improved corn were among the best friends I ever had.

As time went on, the interest in all types of grain crops developed and the name of Corn Growers' Associa-



The grand champion ear of corn at the State Corn Show in Columbia in 1925. A few kernels had been removed to determine their depth, which was considered very important at that time. Such "beautiful" ears were much prized in those days. It was one like this that was



sealed in a metal container and placed in the cornerstone of Waters Hall in 1908. The idea was to allow some future generation to see what Missouri scientists considered a good ear of corn in those early days.

tion was changed to Missouri Seed Growers Association. The secretary of this organization is still one of the members of the agricultural faculty. The late Professor C. A. Helm of the Department of Field Crops, filled the position for many years and was the main force in the development of the Association. The work of this organization now includes the certification of pure seeds of the good growers throughout the state. In place of the original state corn show there is now held an annual show of samples of most all the improved farm seeds in the state.

A rather interesting development from the early belief in the value of what might be termed beautiful ears of corn should be mentioned. Interest in the fancy ears was so keen that when Waters Hall was built, a near perfect ear, according to the score card, was placed in the cornerstone. To secure this ear, an announcement of the plan was carried in the county papers. As a result, many ears were received by the College and they were all judged by the standard score card. The winning ear, with its score card wrapped around it, was placed in a copper tube which was then soldered shut. It remains there for field crops specialists to puzzle over when the building may eventually be torn down. This was an activity for which I was mainly responsible, but today, after half a century, I am not certain whether it was a good idea or not. Anyway, it has some interest.

White vs. Yellow Corn

Thinking of corn quality, reminds me of an early controversy between the college men and farmers, regarding the feeding value of white and yellow corn. Most field crops men have forgotten it by this time. The farmers insisted that in their experience, yellow corn fed better than white corn. The college man, on the other hand, insisted that there was no difference in the feeding value of the two. They reported that their laboratory analyses of many samples, as to carbohydrates, protein, fat, and crude fiber, averaged the same for the corn of the two colors. Later, when the value of vitamins was discovered,

it was proved that the yellow corn contained considerably more Vitamin A than the white corn, so that it actually did feed better and the farmers were right all along. The Missouri College men were not the only ones who had this erroneous idea about the feeding value of white and yellow corn, but men in other colleges had the same beliefs.

I have long been of the opinion that any well established idea among the majority of farmers should not be considered too lightly. There may be real reasons for farmers' opinions which later research and study may prove to be right. It is doubtless true that many of these farmer ideas are wrong, such as some of the moon influences and water witching. As to the moon, however, space research may show that it has certain influences on vegetation, for instance, that have not yet been substantiated by research. Certainly, the moon affects the tides and future research may show that it may, in some ways, influence agriculture.



One of the state corn shows at Columbia (1929) which created so much interest in the early part of the century. The exhibits from many parts of the state helped to develop a greatly increased interest in corn selection and production.

Development of Departments of Soils and Field Crops

Department of Agronomy

My relations with the Department of Agronomy, in the early days and later with the Department of Soils, are unforgettable. However, only a general sketch of the highlights of the work in these departments can be given.

I came to the University as head of the Department of Agronomy, which had just been formed. This was one of the first departments in the country with that name, and I think I was one of the very first full professors to have the title of Professor of Agronomy. Up until that time Mumford had been Professor of Agriculture, but he now became Professor of Animal Husbandry with a new department in that field.

In the new Department of Agronomy was included the work in soils, field crops, and agricultural engineering. In those early days, I handled all three subjects. My contacts with agricultural engineering as a student at Ohio State University, included courses in farm shop, mechanical drawing, farm machinery, and land drainage. At that time seniors were required to present a thesis, something like a watered-down Masters thesis, and I chose to work on the development of reaping machinery. The finished thesis seemed to have made an impression on the dean, at that time (Thomas A. Hunt) and he persuaded the Federal Department of Agriculture to publish it. It came out as Office of Experiment Stations Bulletin 103, but it is long since out of print. Anyway, the work I had covered in this and other fields of agricultural engineering, provided some background for teaching these subjects.

We soon brought into the new Department two instructors with their first jobs. They were H. D. Hughes, a graduate of the Illinois College of Agriculture, and C. B. Hutchison, a graduate of the Missouri College, who had really been interested, as a student, in the field of Animal Husbandry. I considered him an exceptional man who I felt would soon work into the field of soils and crops. That my judgement was accurate regarding these two individuals was shown in later years, when Hughes became professor of field crops at Iowa State College and Hutchison later became Dean and Director of the California College of Agriculture and finally a vice president of the University at Berkeley.

After Hughes left for the position in Iowa, I delegated most of the work in field crops to Hutchison, while I gave special attention to soils. We initiated some experimental work, mostly in field crops, using plot tests, without replication in those days, covering quite a wide field and including wheat and corn selections for the determination of yields. Professor Hayes, of the University of Minnesota, had just published some data dealing with

small plots of wheat, each from the grain of a single selected head, so we adopted this plan. This was carried on for several years, or until we had developed some special strains of some of the varieties common at that time, such as Fultz, Fulcastar and others. Some of these were developed in sufficient quantities to put out with farmers for trial, but the method was really faulty and it never attained popularity.

I remember one time we had some of these wheat strains we were propagating, on a rented piece of land where the airport is now located. That seemed quite a long distance out, in those horse and buggy days. I had hired a livery rig (a mare and an open buggy) to drive out to see how the wheat looked, just after it had been cut and put into shocks. I got out of the buggy to examine the quality of the grain in one of the shocks, leaving the mare standing two or three steps away. The mare, which proved to be a somewhat skittish one, started forward and I stepped over to pick up the lines which were stuck in front of the whip socket. This simply encouraged her to move more rapidly. I managed to get hold of the lines, but by that time she was going so fast I couldn't hold her and I was slammed down, breaking a couple of ribs. However, I had closed the gate to the field when I came in and the mare ran there and stopped. I drove back to the livery stable and then went to the doctor to have my chest taped. I throw in this simple story just to show what sometimes happened in pre-automobile days. After all, however, such a thing as this is nothing like some of those that happen in these automobile days.

In 1914, Hutchison, who had attained the rank of a full professor, was offered a position at Cornell University. The money we had to pay was insufficient to hold him and we gave him a department of his own—the Department of Farm Crops, as it was then called. I retained the work in soils, under the name of the Department of Soils. Hutchison remained as head of the new Farm Crops department for two years. When a second offer came to him from Cornell, he accepted and W. C. Etheridge was brought in as his successor.

These departments of Soils and Farm Crops, took over the work in these fields. Whether this division into two departments was wise, it is difficult to say. I have never been entirely sure of it. However, I believe that, in Missouri, more has been accomplished through the two departments than would have taken place through one. I think the total allotment of funds for the two departments has been larger than it would have been under a single department. The men have worked harmoniously, about as well, I think, as the two groups would have worked under a single type of administration. The situation among Land Grant Colleges is that about ten have separate departments, and the others have departments of agronomy or those with some such title, including both lines of specialization.

The present outlook under our rapidly changing agriculture seems to be that we are lessening our interest

in special fields. It may be that as time goes on, the departmental divisions will be simplified into such lines as plant science, animal science, agricultural economics, social science and agricultural engineering. Probably such changes will come slowly in some institutions and more rapidly in others.

The Department of Soils

During the first year following the organization of the Department of Soils, R. R. Hudelson and C. A. LeClair were brought in as instructors. The numbers of courses were gradually increased to include the general introductory course, which I taught; courses in soil fertility and physics; soil biology; soil management; and somewhat later, soil conservation.

In bringing in new staff members, I did my best to find the most promising young men available and then keep them as long as possible. Of course, such men were in demand elsewhere, as they gained reputations, so that some left us all too early. Important examples might be given.

Dr. Richard Bradfield left us to go to Ohio State University where he had received his first degree. Later he was made head of the Department of Agronomy at Cornell University. He is now one of the best known soils men in the country.

Dr. Leonard D. Baver left us to return to his home institution in Ohio and later went to North Carolina, as director of the experiment station, where he became a public figure. He was to a large extent responsible for securing the passage of the Hope-Flannigan Bill by Congress, which added greatly to the federal research funds, particularly in marketing. Later Dr. Baver went to Hawaii to become director of the large sugar experiment station there, a position he still holds.

Dr. Hans Jenny, who came to the department from Switzerland, made very valuable contributions to our knowledge of soil organic matter and soil colloids. He later went to the University of California, to a position which he still holds.

R. R. Hudelson, who came first into the Department of Agronomy, was later brought into soils where he served for a number of years and did excellent work. He finally became Associate Dean and Director at the Illinois College of Agriculture and later Dean and Director.

F. L. Duley who was with the Department from 1916 to 1920 was responsible for carrying out the original detailed work on the soil erosion measurement plots. He later joined the Soil Conservation Service and for years was stationed at the University of Nebraska, where he and Dr. J. C. Russel carried on experiments with the "trash or stubble mulch" which has had a great influence on the production of wheat in the Great Plains.

Some of the men we have been able to hold in the department are W. A. Albrecht, who was chairman from

1938 to 1959; George E. Smith, the present department chairman; Dr. C. E. Marshall, who is internationally known for his work on soil minerals; Dr. Ellis Graham, who is a leader in the country in soil chemistry; and Dr. C. M. Woodruff who is doing outstanding work in soil physics and plant nutrition. These men have made most important contributions and have assisted greatly in giving the department its present high standing.

Among the earlier accomplishments of the Department of Soils were the early developments in the study of soil colloids and the measurements of runoff and soil erosion. The findings in both these fields have been widely publicized and are known around the world. The more recent studies in soil minerals, soil fertility, and plant nutrition are also widely known. It is interesting to know that the esprit de corps of the men in the department has always been high and it continues so.

I have given greater attention to the work of the Department of Soils than I will to that of Field Crops, because my interests have been largely in that field.

The Department of Field Crops

Since the founding of the Department of Field Crops, formerly Farm Crops, the work has largely reflected the ideas and interests of Professors W. C. Etheridge and C. A. Helm. These men acted together as a team, the work of one supplementing that of the other.

Dr. Etheridge was the thoughtful, philosophical type, with much resourcefulness as to ideas and problems. He had a brilliant mind and could be depended upon to see a problem in its entirety.

Professor Helm was a hard-driving individual who had pronounced opinions on any subject he espoused. He was very practical-minded and could be depended upon to get things done. He was an individual in whom farmers had confidence and he worked especially well with them.

There were two large projects on which Etheridge and Helm worked together with great efficiency. One was the development of soybeans, bringing this crop to a place of competition with corn and cotton in total state income. The other was the development of Korean lespedeza which they brought to a position of tremendous importance in the state. The farm return from these two crops has reached far into the millions annually, this amount equalling far more, in one year, than the cost of the College of Agriculture during its existence.

A third project with which Dr. Etheridge had to deal, but which was largely in the hands of the late Dr. Lewis Stadler, was that of developing strains of hybrid corn adapted to Missouri conditions. Dr. Stadler was known as one of the leading geneticists of the world at the time of his death on May 12, 1954. These three projects gave the Department of Field Crops a very high standing among the field crops specialists of the country. There are, of course, many other projects to which the

department has given much attention, but these three represent the more spectacular contributions through the years.

Observation of Resident Teaching Through the Years

When I came to the campus, there were eight departments organized and functioning, in the College of Agriculture—Agricultural Chemistry, the newly established departments of Agronomy and Animal Husbandry, Dairy Husbandry, Entomology, Horticulture, Farm Shop, and Veterinary Science. The total undergraduate enrollment was 105, with one graduate student. The number of courses listed, in each of the various departments, was small, around a half dozen. The number of men on each departmental staff included one professor and, in most cases, one instructor or assistant.

It is interesting to know that in the very early teaching program, under the Morrill Act, much emphasis was given to courses in liberal arts. This was largely because agricultural information, to be used as subject matter, had not yet been developed and organized, to any extent. Moreover, the Morrill Act states expressly that subjects in "other sciences and classical studies" should not be excluded. Finally, the early deans were trained largely in the old classical curricula.

With the development of the Experiment Stations of the United States, under the Hatch Act, in the late 80's, experimental findings began to accumulate and be published. It then became possible to enlarge the number and quality of the pure agricultural courses. By the time I came to the University in 1904, these agricultural courses were given an important place in the curriculum. However, and wisely so, a considerable number of courses in liberal arts were still included.

Later Four-Year Curricula

The four-year curriculum which was in use in 1910 was carried through into the 1920's with little change. In 1925-1926, 35 hours of science courses were included, of which 10 were in chemistry, 12 in botany, 5 in zoology, 5 in physics and 3 in geology. Ten years later these science subjects numbered 34, of which 18 were in chemistry, 5 in botany, 3 in geology, 5 in physics, and 3 in zoology. In both of those years a large number of agricultural courses were required. This type of curriculum filled the needs pretty well. Increased production was very important, at that time, so that many courses in agriculture were thought to be necessary to train graduates going out to farm. Moreover, the fields of science were pretty well covered.

When mechanization became important, as it did in the 1930's, the use of other new techniques was coming in. Along in the 1940's, it seemed to me, as dean, that some curricular changes might be advisable, at that time. Therefore, I asked the committee on policy, for the College, to consider the matter and if they thought it advisable, to bring in recommendations for a revised curriculum. After due consideration, they brought in a recommendation for a curriculum which they thought was more suitable than the old one. This curriculum provided for a much wider choice of electives, among the students, under advisors to whom they were to be assigned. However, it seemed to me that it was a curriculum which allowed entirely too many options. So much depended on the action of the advisor that I feared many students would not receive the guidance they needed. I therefore, asked them to reconsider this recommendation and see if it could not be modified to include fewer electives. However, after further consideration, they brought in a recommendation not too greatly different from the first. Since the ages of members of the committee averaged much less than mine, I decided that I might be too conservative. I, therefore, approved the plan and the curriculum was adopted by the faculty. The required hours in science in this curriculum were 38, not greatly changed from the one it replaced, but the freedom of choice among agricultural subjects was greatly widened.

This curriculum was in operation about 10 years, while the numbers of people on farms declined to about 13 percent for the country as a whole, and agriculture was steadily becoming more technical. As a result, revisions were made to bring the curriculum more nearly in line with the latest agricultural developments. A very recent revision stresses still more, the sciences and humanities, including economics and sociology. It is recognized that the great growth of industries related to agriculture, such as fertilizer production, the production of insecticides, fungicides, herbicides, and farm machinery, has brought a large demand for agricultural college graduates. Moreover, there are many opportunities for agricultural graduates in other types of industry, so that only about 13 per cent of Missouri graduates are going into farming. There are many reasons for this. One of the most important is the great cost of getting started on a farm of any size. About the only young men who can start farming are those whose fathers will join in partnership with them, or those who have an inheritance on which to begin. Very few can now begin as tenants and get sufficient money ahead to buy a good farm and stock it with equipment and animals. Those who can are exceptional individuals.

All of these things are changing the types of farming. Certainly, the men who will operate the larger farms of the future must have a greater amount of technical information than was formerly needed, and the courses of

study in Land Grant Colleges will be more technical. Then, there are the various types of contract farming coming into the picture, such as the contracts in broiler production, and the prospects are that more of this will come in the production of livestock.

It seems likely, that as time goes on, the various types of farming which *pay best* will be adopted. In other words, the economics of the situation will largely determine the types of management for the future. Those types of farming will develop which are most economical for the different regions of the country. There may be a great diversity among these, but only the future will tell. It is certain, however, that the type of curriculum in agricultural colleges must conform to the needs under these new conditions. Otherwise, these colleges may ultimately be superseded by educational institutions not envisioned at the present time.

Training of Students in Vocational Agriculture

The federal law known as the Smith-Hughes Act, passed in 1917, provided federal aid to those high schools which would set up acceptable courses in vocational agriculture, provided the state legislatures appropriated offsetting funds. Soon, after the bill's passage, the Missouri legislature supplied the additional matching money, and the work was inaugurated in the state. Professor J. D. Elliff, of the University School of Education, was very much interested in this new field and he was given a year's leave of absence to set up the plan of vocational training in high schools, with offices in Jefferson City. Soon he had several high schools with divisions of vocational agriculture in operation.

One of the requirements, as Professor Elliff worked out this new line of study, was that several hours in methods of teaching should be included. He asked Professor Trowbridge, of the Department of Animal Husbandry and he asked me, in the Department of Soils, to take over these first courses in methods of teaching agriculture. Neither of us had any training whatsoever, in the methods of teaching, but we took up the work and did the best we could. As I look back now, we really taught subject matter, and included some of our own suggestions regarding teaching methods.

I often wonder if most of the time now required for completing methods courses would not be far better spent if applied on courses in subject matter. I believe that, considering the number of hours in methods now required of teachers for certification, if more than half of these were devoted to subject matter courses, the teacher would be far more effective in the classroom.

The plan of requiring teachers to secure more college hours in order to be advanced in high school positions would be quite satisfactory if these additional hours were mainly in subject matter fields. As it is now, when the teachers return to the University for advanced degrees, usually in summer sessions, few are sufficiently

grounded in any subject matter field to carry on satisfactory graduate study. As a result, they take *more* methods courses which, in my opinion, help them very little.

It has always been disconcerting to me, to note the hold the schools of education, in the different Universities, have on the University administrators. Fortunately, the recent general criticism of the training of teachers, particularly at the high school level, has resulted in a re-examination of the whole field of training of high school teachers. Special efforts are now being made for giving such teachers courses in the sciences during the summer periods. In both elementary and high school programs, greater emphasis is being placed on courses in mathematics, chemistry, physics, biology, English, and foreign languages. This may be the beginning of the way out of these difficulties, moving toward the time when the more fundamental courses, rather than other courses in education, will be required of teachers.

The whole field of vocational agriculture in the high schools has had tremendous development. It has had a great influence on thousands of farm boys in teaching them better methods in farm practice. Over 225 high schools in Missouri have set up courses in vocational agriculture, with over 10,000 farm boys enrolled. The development of the organization of Future Farmers of America among these boys has really had a very important influence on their morale.

It is interesting to note that the number of high school graduates in vocational agriculture has, for many years, been exceeding the number needed for replacements on farms, as older farmers retire. This doubtless means that more attention must be given to instruction in other vocational fields. The greater complications which are developing in the handling of agricultural operations, also means that the courses for training teachers of vocational agriculture must be more technical than formerly.

I have, of course, known many students, through the years, who were training in vocational agriculture. I have attended many of the annual meetings of the teachers in service, usually held at Columbia. Most of these young men have been much interested in helping farm people in their neighborhoods and I have enjoyed keeping in contact with them. I have been concerned, however, with the fact that while they have been training young men to do a good job of farming, a small per cent of them really go back to the land. It would seem, therefore, that much of this training now given in these high schools, should be modified so as to provide a sound background for many of these farm youth who will broaden their training and go into industries serving agriculture.

Methods of Teaching

In the early days, most American universities developed the lecture system, copied largely from German



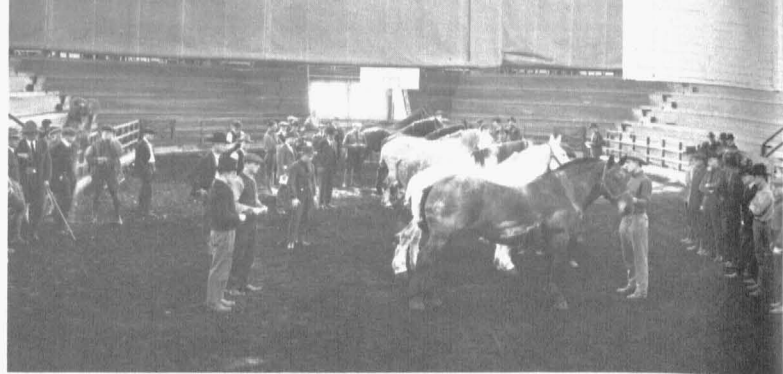
A group of the early two-winter short course students. This course, which ran from 1910 to 1933, was one of the most successful educational enterprises attempted for young farmers. These short course classes were most interesting ones to teach.

universities, which were considered as models. This system has, to a large extent, been continued through the years. However, at the University of Missouri, and many others, some attention is now given to discussions during part of the class periods, using library assignments to provide much of the subject matter. In this plan, problems are usually assigned and an attempt is made to teach students to think.

My teaching, going back to the early days, was largely based on the lecture system. It included the assignment of papers on different subjects as a means of getting students to work on their own. I certainly tried to encourage them to work on the subject matter, to treat them fairly, and they responded. However, I fear that I did not do much to develop the thinking habit among them.

My own opinion is that good teachers are good, because they have an inborn ability to appeal to students and because they know their subject matter. Without these two qualities, methods courses in teaching cannot be of much help. The teacher who knows the subject matter and who is able to get students to think, is probably the ideal, provided he has a love for teaching and likes students. Unfortunately, a good many teachers fail to have these qualifications and they do not seem to know it.

Then, there is the frequently discussed question as to whether a University man should carry a heavy load of research at the same time he is teaching. I have long been of the opinion that good teaching and research go together. The difficulty, as I have observed the situation in the Missouri College of Agriculture, is that men working on experiment station problems, in which they are much interested, often fail to make proper preparation before going into the classroom. This is unfortunate, but it's certainly wise to continue in research and then try to do better in the teaching schedule. As is well known, one reason why men are inclined to give more time to research, than to teaching, is that their advancement in



Short course men judging a class of horses in 1922, when horses and mules were still in wide use for farm power.

the University is determined largely by the number and quality of the publications they produce. It is difficult for an administrator to judge the quality of one's teaching. Actually, good teaching is as important as good research and there should be better ways of judging the quality of a man's work in this field. In any case, however, good teaching and good research complement one another.

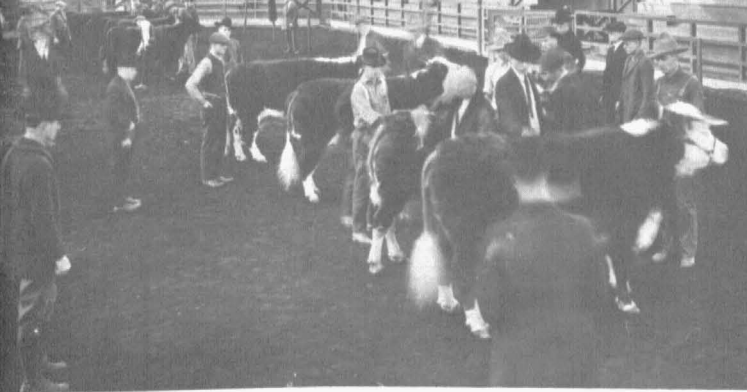
Modern Short Courses

Some of the most valuable work the College has ever done, for the practical farmers, has been through its various short courses offered at Columbia. These were first given in the early days of the College and represented a variety of simple courses in specific fields, such as horticulture, dairying and animal husbandry. However, the most significant of these courses was known as the two-winter course. It ran through two winters, two months before the Christmas Holidays and two months thereafter. The second year was advanced material, beyond that given the first year, so that there were courses for first year men and second year men, running simultaneously. At the end of the second year's course, certificates were given to those who had completed the work.

The material offered during these two winters covered, in popular form, almost all phases of practical agriculture, so that those who finished had a pretty good grounding in the simple principles of improved farming. The men who came in for this course were mostly of high school age or a little older. It must be remembered, that Missouri had few high schools in the rural districts and small towns until about 1910 and many of these men were those who had only finished the eighth grade. The young men were eager to learn and developed a spirit in their work which was very laudable. They, therefore, took much with them when they went back to their farms.

As one travels over the state today and attends farmers meetings, men who took this short course, will often come forward and make themselves known. They have always had a loyalty, not only to the College of Agriculture, but to the University, which really surpasses that of many of the long course graduates who are on farms.

I always found it very enjoyable to teach these two year short course classes. This teaching was, of course,



A contest in cattle judging. The various livestock judging courses have long been among the most popular ones offered in the College curriculum.

thrown in when the long course classes were in full swing, and it added much to the teaching load during the four months, but the men were so earnest that it was a joy to teach them. The way they entered into University affairs was really amazing, although sometimes they would become a little confused. I remember at a banquet which they held one time before the close of the year, they had a song leader who performed very well in handling the old country airs. At the end someone suggested they should sing Alma Mater and the leader began in a loud voice, "I'm a son, a son, a son, a son, a son of old Missouri" which they had learned and they all sang with great gusto. It was very amusing, since it was a version of Alma Mater not usually known around the campus. However, they had learned this and it was a tribute to their University spirit.

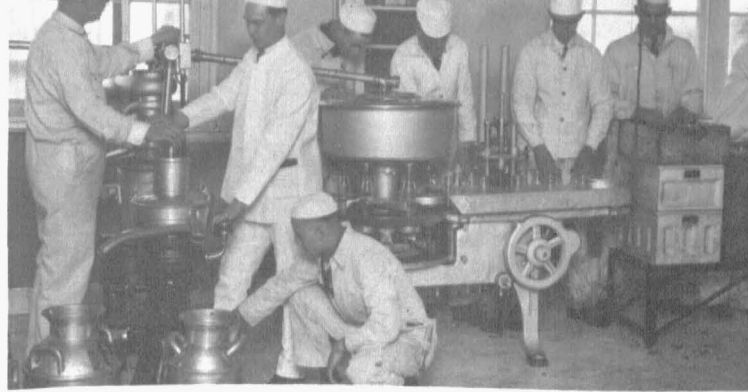
As the extension service and vocational agriculture in high schools came in, the numbers in this course declined and it was finally abandoned. However, as the two-year course went out, others of much shorter periods came in. These now include a great variety of such courses, lasting from one day to a week. One or more such courses are held almost every week of the year, mostly at the Student Union.

The numbers attending these courses vary from 20 or 30 to several hundred. The largest, in more recent times, have been the Feeder's Days, put on by the Department of Animal Husbandry which usually includes 1,000 or more registrants. It is during these special short courses, covering a wide variety of subjects, that farmers are able to learn of the very latest discoveries of the experiment station and the latest recommendations of the College.

The subject matter in these condensed short courses is given in an entirely different manner from that formerly given in the completely organized course material of the former two winter course. This is one of the great changes that has come about in the instruction of farmers.

Forestry in the University

The teaching of forestry in the College of Agriculture goes back to early times when it was included

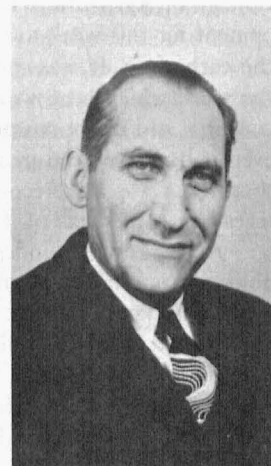


A short course laboratory section in the dairy building.

among the courses of the Department of Horticulture. In 1910 a Department of Forestry was established in the College, Frederick Dunlap becoming head of the Department in 1913. The work progressed satisfactorily until World War I reduced the number of students to a handful. As a result the Department was abandoned in 1919. For about 15 years no courses in forestry were given, excepting one in farm forestry, offered in the Department of Horticulture. In 1935, Professor Ruthford H. Westveld took charge of the work, and continued for three years, after which he went to the University of Florida, and later to the Alabama Polytechnic Institute, leaving Ralph H. Peck in charge.

When the influence of the war was over, an interest again developed in forestry. Professor Westveld was brought back and the Department re-established. Since then, it has grown rapidly with several men serving on the staff. The work has become so important that a School of Forestry was established in 1957, with Professor Westveld as Director.

These developments in forestry in the college are largely the result of an upsurge in forestry interest throughout the state. Both the Federal Forest Service and the Forestry Division of the Missouri Conservation Commission, are very active in the state, controlling fires, introducing improved forestry methods and assisting in the development of improved methods of tree cutting, or harvesting, as it is now called. There has also been established, in Columbia, a Missouri branch of the Central States Forest Experiment Station, Columbus, Ohio. As a result of these developments, the future of forestry, both at the University and throughout the state, seems very promising.



R. H. Westveld



Buildings of the School of Home Economics, including the recent addition. The school is now well housed and equipped for much more effective work than when it was merely a department of the College.



A class in interior design. Such classes, now held in the modern School of Home Economics, include some of the most valuable types of instruction offered in the University. It is of interest to note that two men are in the class.

Home Economics Instruction

During the years 1959-1960, an addition was added to the former home economics building, almost doubling the space. With these increased facilities the department has been made a School of Home Economics with Dr. Mangel as Director. This should mean a great expansion and an increase in the efficiency of the work during the years ahead.

I have felt for many years, that simply a department in the College of Agriculture, did not give the work for women enough prestige. The enrollment in Missouri has been much lower than in some other cornbelt states, where there are Divisions, or Schools of Home Economics. Many girls who came from the two large cities of St. Louis and Kansas City are interested in taking this work, but I can see how a city mother would hesitate to send her daughter to a College of Agriculture, where the work in Home Economics is confined to a single department. With the new school, under a director, although it is still within the Division of Agricultural Sciences, should have a much greater appeal to city girls than before, as well as to city mothers. The fact that the number of graduate students in the home economics courses, in the 1960 summer session increased to 50 which is double the number in 1959 is certainly encouraging.

I have long questioned the plan of having the work in Home Economics organized as a department in the College of Agriculture. However, it was a natural development for this work to be connected with agriculture in the early days. It was considered largely as training for the work which farm women do, such as family sewing, cooking and other women's work on the farm. However, it has developed into something much broader than that. This was first recognized when Land Grant Colleges began to speak of it as Domestic Science.

A Department under the name of Household Economics was established in the College of Agriculture in 1900 with Jane Zabriskie in charge and with an enrollment of 31. In 1910 Louise Stanley was made head and under her guidance the work developed steadily. The name was changed to the Department of Home Economics which it has retained throughout the years, under a number of department heads or chairmen as they are now called. Dr. Margaret Mangel has been Chairman since 1955.

Interest in College

Land Holdings

At the opening of the present century, the land holdings of the college were made up of approximately one section. This was donated by Boone County people when the College was established with the University. The land included that adjacent to the farm buildings, what is now Sanborn Field and the dairy pastures southeast of the barns. It also covered the old soils and field crops experimental plots where the Medical Center and the men's dormitories now stand, along with the beef cattle pastures south of these.

In 1931, a tract known as the Beasley farm, about two miles southeast of Columbia, was purchased to be used mainly for soils and field crops experiments. In more recent years, these holdings, now known as the South Farms, have been expanded to provide land for beef cattle, for dairy cattle and farms for hogs and poultry. Altogether, the South Farms now cover 1,475 acres. Recently, a farm known as the Bradford farm of 565 acres, located considerably east of the South Farms, has come to the College, through a donation.

In the environs of Columbia, there are other University lands most of which have come to the College in rather recent years. Near Highway 70 west of Columbia, is a recently acquired horticultural farm of 270 acres and a dairy farm known as the Foremost Guernsey Farm. This dairy farm was presented to the College, along with a large Guernsey herd, through the generosity of J. C. Penney. The farm now totals 938 acres, 610 of which came from the gift of Mr. Penney and an additional 328 acres which were purchased.

Two years ago, through Congressional action, the 320 acre erosion experiment farm at McCredie, east of Columbia, formerly owned by the Federal Government, became the property of the College. There is also a farm of 87 acres near Columbia which is used by the Department of Veterinary Medicine; and one of 160 acres, in the same environs, which came as a gift, and is used as a turkey experiment farm by the Department of Poultry Husbandry. These various holdings in and near Columbia, now total 3835 acres.

The acquisition of lands at a distance from Columbia make up a much larger acreage. The largest of these holdings is one of 7920 acres at Weldon Springs, in St. Charles County, which came from the Federal Government, after the Second World War, when the large munitions center in that area was closed. About 4500 acres of this is in forest land now handled by the School of Forestry. Most of the remaining 3420 acres is under the control of Animal Husbandry with a lesser acreage under the direction of the Department of Soils.

The gift of a farm of 116 acres known as the Hatch Farm was accepted a good many years ago. Another gift was that of a farm near Trenton, of 1600 acres, on which no complete plan of experimentation has as yet been adopted. A farm of 666 acres, a donation, is of much significance, because of its location in Southeast Missouri. It is as yet, not in operation experimentally. A farm of 590 acres has been purchased in Southwest Missouri, from a legislative appropriation, although no funds were made available for its experimental use.

These various farms, acquired by donations or legislative appropriations and lying a considerable distance from Columbia, total 2856 acres. When all of these holdings for agricultural use, are brought together the total is 10,217 acres.

The forest lands, under direct management of the School of Forestry, include 7000 acres in Butler County, used as a teaching forest, 4500 acres of the Weldon Springs tract and 120 acres near Columbia, used for forest management studies, or a total in forest lands of 11,620 acres. When this acreage is added to the 10,217 acres of strictly agricultural land, the total is 21,837 acres.

To a man of the older school, these holdings of approximately 10,000 acres, to be used purely for cropping and pasture purposes and 11,000 acres for forestry, make it seem that the College may be "land poor". It is certainly expensive to manage, in an experimental way, these widely separated tracts of agricultural land, particularly where many experimental plots are concerned. Moreover, the rapid changes in agriculture make it almost impossible to plan systems that will not be at least partly out of date within a comparatively short time.

About the only way in which really satisfactory experiments can be carried out, is through the establishment of permanent substations, or research centers, such as those now being organized in southwest and southeast Missouri. These will necessarily be in competition with the main station at Columbia, for funds and personnel, so that great difficulties may arise in financing them. When a couple of these centers have been established, pressure groups from other parts of the state are likely to become active in an effort to bring similar centers to their areas. When the idea of establishing such centers through pressure groups, has developed, it is very difficult for the College to control the situation.

These are musings of a man in the eighties who has followed Land Grant College developments for a good many years. Probably such elderly men cannot adjust themselves to the very rapid changes now taking place. A short time ago, another of the older generation was discussing such matters with me and I remarked that we were probably born twenty-five years too soon. He dryly remarked, "Possibly we have lived twenty-five years too long." Anyway, the changes taking place in field experimentation, under modern conditions are very great, and they will require the best trained minds and the most experienced judgments in coping with them.

A word might be said about the acceptance of donations of land for experimental purposes. People who are interested in the College and have ample funds, occasionally make such donations all in good faith, and the College has difficulty in gracefully refusing to accept them. What is really needed is for the donor to make provisions, in the articles of transfer, that if the land does not prove satisfactory for experimental use, it may be sold and the money used for purchasing land that is suitable experimentally, or for other agricultural purposes in which the College is interested.

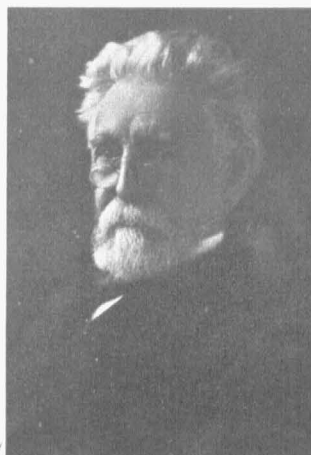
An interesting example of the acceptance of land for College use is that of the Hatch Farm at Hannibal, which came to us in 1924. Representative Hatch was mainly responsible for securing the passage, by Congress, of the Hatch Act, which provided funds for the establishment of the agricultural experiment stations throughout the nation. In later years, long after Representative Hatch's death, his daughter donated the old home farm to the College, in memory of her father. This was, of course, an admirable thing for her to do and under the circumstances the College was pleased to accept it. However, the farm was only 120 acres in size and of rolling to rough topography, suited only to pasture or orcharding. In 1929 the Legislature provided funds for its use in dairy husbandry experiments. However, the farm was so small in size that it has been very difficult to use it experimentally, even when some additional land has been leased. The farm has, therefore, had a very limited use for experimental purposes. This is a good example of what the College may encounter when it feels obligated to accept a donation of land which is poorly adapted to experimental use.

Some Friends of the College

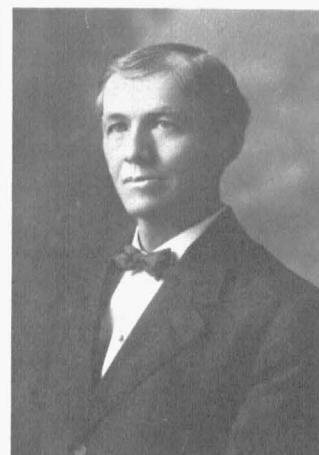
There were many Missouri men I knew who were friends of the College in earlier days and some in recent times, which should be mentioned.

Norman J. Colman

Probably the most famous of the early men who befriended the College, was Norman J. Colman, who became widely known among Missouri farmers through his editorship of Colman's Rural World. This was a classic among farm papers in those days (if a farm paper may be called a classic). Colman was much interested in the College and helped guide its early development when the waters were so troubled. He was Lieutenant Governor of Missouri, at one time, and later went to Washington as the first Secretary of Agriculture. Men like Colman can almost make or break a faltering institu-



Norman J. Colman, editor, in the early days, of the very influential Colman's Rural World. He had a very important influence in the early development of the College.



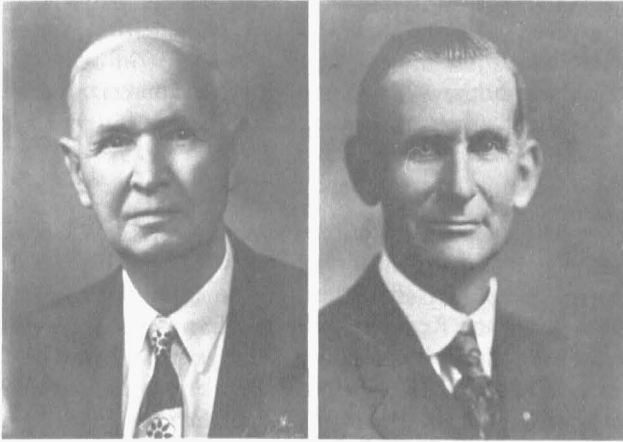
George B. Ellis, Secretary of the State Board of Agriculture in the early years of the century, with offices in the old Switzler Hall. He was a most remarkable man whose advice on all matters dealing with practical agriculture could not have been surpassed. He was of very great help to those connected with the College.

tion in its younger days, and he certainly helped to make the College of Agriculture.

George B. Ellis

My mind goes back to the Secretary of the State Board of Agriculture when I first came to Missouri, who had his offices in old Switzler Hall, the home of the College of Agriculture at that time. I had offices and laboratories in Agronomy in this building and I became well acquainted with Mr. Ellis. He owned a farm at Appleton City where he had raised a family, but when he was made Secretary of the Board of Agriculture he lived in Columbia for several years. I have never known a man with better judgment, regarding Missouri agriculture and agricultural people than Mr. Ellis. He was quite conservative, to be sure, but only where conservatism was needed most. He was progressive in his agricultural thinking and was a great friend of the College. His aid to me, in adjusting myself in this agricultural environment, which he knew so well, was tremendously appreciated.

Those were days when much was said and written about Missouri razor-back hogs, whose snouts were said to be so long, that when picked up by the ears, they tilted forward. Mr. Ellis who had been raised in the prairie country near Appleton City, had never seen one of these hogs and he doubted if there were such animals. So one time he rented a livery rig of two horses and a carriage, with a driver, and took me on a trip of several days over the Ozark Region. I am sure he was doing this mainly to acquaint me with the Ozark country and



John Case, one of the most remarkable agricultural men Missouri has known. He was editor of the *Missouri Ruralist* for almost 40 years, president of the State Board of Agriculture for 17 years and a member of other boards and commissions, as well as the author of several books. One of the best friends the College ever had.

"Sam" Jordan, long associated with the State Department of Agriculture as a lecturer and later with the extension service of the College. At one time he was probably known by more Missouri farmers than any other man in agricultural education circles.

to look for razor-back hogs. Anyway, it was a wonderful trip but we didn't see a single razor-back during the whole drive. I have always revered the name of George B. Ellis, as a wonderful friend and as a fine Missouri gentleman.

John Case

One of the best friends the College has ever had is John Case. He is still active, although his life goes back a long way to the time when his family was among the early settlers in North Dakota. There he received his first days of schooling with the Sioux Indians. Later, his family moved to Missouri where he finished his formal schooling at the sixth or seventh grade. Following various experiences, he became attached to a small town paper which he later edited. He finally became editor of the *Missouri Ruralist*, a position he held for thirty-nine years, when he was made "editor emeritus", as the paper designated his retired position.

During the years, Mr. Case held positions on a multiplicity of state boards and commissions. He was for twelve years president of the State Board of Agriculture, during which time the board worked very closely with the College. He was a member of the first Highway Commission and of the first Conservation Commission. For several years, he was a member of the Governor's Board of Visitors to the University and served in other important positions. After two rather lengthy visits to the Tuberculosis Sanitarium at Mt. Vernon during recent years, he is again in fairly good health and has continued to write. I esteem it a great privilege to have worked with him through many years. The world does

not see men like John Case, excepting in the rarest of circumstances. We may not see his like again.

S. M. Monsees

One of the very interesting men of his generation was S. M. Monsees, the most famous jack breeder of his day. For many years he took the major prizes in jack and mule shows all over the country. The S. M. Monsees family lived on a farm at Smithton and he was one of the older members of a celebrated family by that name. A nephew is now president of the Missouri Farm Bureau Federation. Mr. Monsees was a regular attendant at all important meetings at the College. Most of his ribbons and other trophies of the shows, are now in the possession of the College of Agriculture. It was his production of large jacks which was so important in making Missouri famous for her large, high-quality mules.

N. H. Gentry

A most interesting man of quality, was N. H. Gentry, the most famous of all Berkshire hog breeders. He lived on a farm near Sedalia, where for years, he set the pattern in Berkshire hogs. Practically every Berkshire herd in the country in those days, carried the blood of Mr. Gentry's hogs. "Uncle Nick," as he was affectionately called, was a fine gentleman who was much interested in the College of Agriculture. He was the type of man which any College of Agriculture would be pleased to have as a friend.

Samuel (Sam) M. Jordan

One of the most colorful figures ever associated with Missouri Agriculture was "Sam" Jordan. During his active life, he was probably known by more Missouri farmers personally, or by reputation, than any other man. Starting as a teacher in an academy in Gentry County, where he was raised on a farm, he continued until failing hearing compelled him to give up classroom work. He went back to the farm where he became so much interested in corn growing that he wrote freely about his experiences. This he did so well that he was employed by the State Board of Agriculture as a farmers' institute lecturer. Later he joined the extension staff of the College and was one of the first two county agents appointed in Missouri. His hearing became worse so that he could not deal well with farmers and he went back to the Board of Agriculture as an agricultural lecturer, remaining in this capacity until his retirement.

During the years with the State Board, Mr. Jordan lectured and wrote on corn selection and corn growing until he became so well known that he was called the "corn man" not only in Missouri, but in other Cornbelt states. He was an Abraham Lincoln type man who had natural wit and a type of country philosophy that made

him an exceedingly popular speaker and writer. Missouri will probably never have another Sam Jordan.

David Rankin

One of the most interesting farmers ever known in Missouri was David Rankin, of Tarkio, in Atchison County. He was a friend of Dean H. J. Waters and attempted to follow some of the recommendations of the College in his farm operations. Mr. Rankin was born in Indiana where he grew to manhood. His people were poor and Mr. Rankin says that he went barefoot, in the summers until he was 28 years of age. His first farm venture was in Indiana where he worked with another man in growing 80 acres of wheat, which they sold for 40 cents a bushel. Later he managed to acquire a team and some implements and began to grow corn, which he fed to cattle. He moved to Illinois where he continued to increase his operations of corn growing and cattle feeding, buying land at a few dollars an acre, and borrowing money for operating expenses. Later he moved to Missouri, where he continued with his farm enterprises in the same way, until his death. During his time he accumulated a very large amount of land and, at his death, a careful inventory showed that his estate was valued at about 3¼ million dollars. Mr. Rankin was very progressive-minded and made an enviable record as a Missouri farmer.

J. C. Penney

One of the very good friends of the College is J. C. Penney. Everyone knows of the great success and wide distribution of the Penney stores. Mr. Penney was born at Hamilton, Missouri, and, in addition to his widespread commercial activities, he has been interested in agriculture, owning several good farms in Missouri. Probably his most remarkable farm has been the Emmadine Farm in New York, where he built up one of the largest and most valuable Guernsey herds in the country.

I became acquainted with Mr. Penney at times when he visited the University, largely in connection with his proposed gift to the College, of this Emmadine Farm herd of about 250 top quality Guernsey cows. This herd was turned over to the Department of Dairy Husbandry in 1953 along with sufficient funds to buy land and construct buildings for its use. This farm and herd, now known as the Foremost Guernsey Farm, has been a most remarkable gift to the College.

I enjoyed my visits with Mr. Penney while I was Dean as he is a most affable and personable individual. I remember one time we were going over the farm and a workman walked by with a sign of Penney on his coveralls. Mr. Penney laughed and said "there goes some of my coveralls". The most recent visit I had with him

was at an agricultural faculty picnic, on the dairy lawn. He asked me how old I was and when I told him he said, "that's just my age," so we have that in common. No one can know Mr. Penney without appreciating the very fine qualities of the man.

Jewell Mayes

Jewell Mayes was a long-time secretary of the State Department of Agriculture after it was moved to Jefferson City, holding office through the administrations of Democrats and Republicans alike. He was very cooperative with the College through the years and provided great assistance in the Farmers' Week programs, which were so popular in the earlier days. Having spent much of his early life as a newspaper man in Richmond, Missouri, he was well fitted for the type of work required of a board secretary. He was a terrific worker and served Missouri agriculture long and well. He was a colorful figure and made his mark on the agriculture of the state.

Many other men might well be included in this list, but these were some I knew well personally, with the exception of Colman who was active mainly before my connection with the College.

Student Activities

I remember when I came to the University, there were several senior students in my classes who were especially good and very practical minded. They knew the practical side of Missouri Agriculture much better than I, and I must admit that it was necessary to handle them carefully. They would often question some of my statements on practical matters, in Missouri agriculture, on which I was not so well informed. However, they were fine young men. Several of them later assumed positions of great responsibility in the state which indicated their ability and good judgment.

Early Students and Present Day Students Compared

On the whole, the freshmen students of those early days were not as well trained, when they entered the College, as are students today. High schools in the small towns were poorly developed and the requirements for admission to the University were lower than they are now. However, almost all were farm-reared and they had more natural resourcefulness than most entering students of today. There is something about early life on the farm which develops a practical judgment and the ability to do things with a limited amount of facilities, that is not found among city youth. It is sometimes said "There are many things a farm youth can do with a piece of baling wire." This is a recognition of his resourcefulness.

It was during my second year at the University in 1905 to 1906, that the total enrollment at Columbia reached 2,000 and a cannon was fired, on the west campus, to celebrate the event. This was a memorable occasion and a general celebration was held. During that same year the number of regular agricultural students was 105, with 26 special students, a total of 131.

There were many agricultural students who worked a part, or even all their way, during those early years. When I first came to the University, the prevailing hourly pay for students was ten cents. This was the wage for students doing the usual farm work, but the pay for the more experienced ones, particularly those who had learned special techniques, was 15 cents. That is certainly in strong contrast to the present rates which are 75 to 85 cents for general work, while those with special training may secure up to a dollar an hour. Naturally the cost of attending the University has increased greatly. Many students are now receiving scholarships or fellowships of various sorts, to help meet their expenses. It is almost unbelievable to students of the present day when they hear of the low living expenses of the earlier students, when board could sometimes be secured at two or three dollars a week. The cost at the old University Dining Club, which ran for so many years in Lathrop Hall, was near these figures.

The outside expenses of students in those earlier days, as compared with those of the present, were very low. There were no cars, no picture shows, no radios, and among agricultural students, there were few social events. Excepting those who put in a large share of their time working their way, most students had more time for study than those of today. Of course, they had poorer training, before entering the University, so this was a handicap. On the whole, however, I believe they were more conscientious workers than most present day students. At least, in my classes, I felt that the students did practically as good work as could be expected of them. There was little to distract their attention which was to their advantage. Today, many of the students drive home, or elsewhere, over the week-ends. I often think, when I go through the lounge room at the Union, or into the cafeteria, on Saturdays and Sundays and see the small numbers of students, as compared with other days, that the study and reading time of these absent students must be greatly curtailed. This is one of the influences of the modern car on the lives of students.

It has seemed to me, for a long time, that cars should not be allowed among students, excepting in special cases where they live too far from campus to allow them to walk to classes. While cars are already barred from the freshman class and from sophomores unless their grades are good, I think this should also be extended to juniors. This would help weed out many students who come to the University largely for the social life and make poor

grades. I think it would certainly improve the scholarship of those who attend and it would aid greatly in solving the parking difficulties which present such a problem on the campuses.

Early Student Escapades

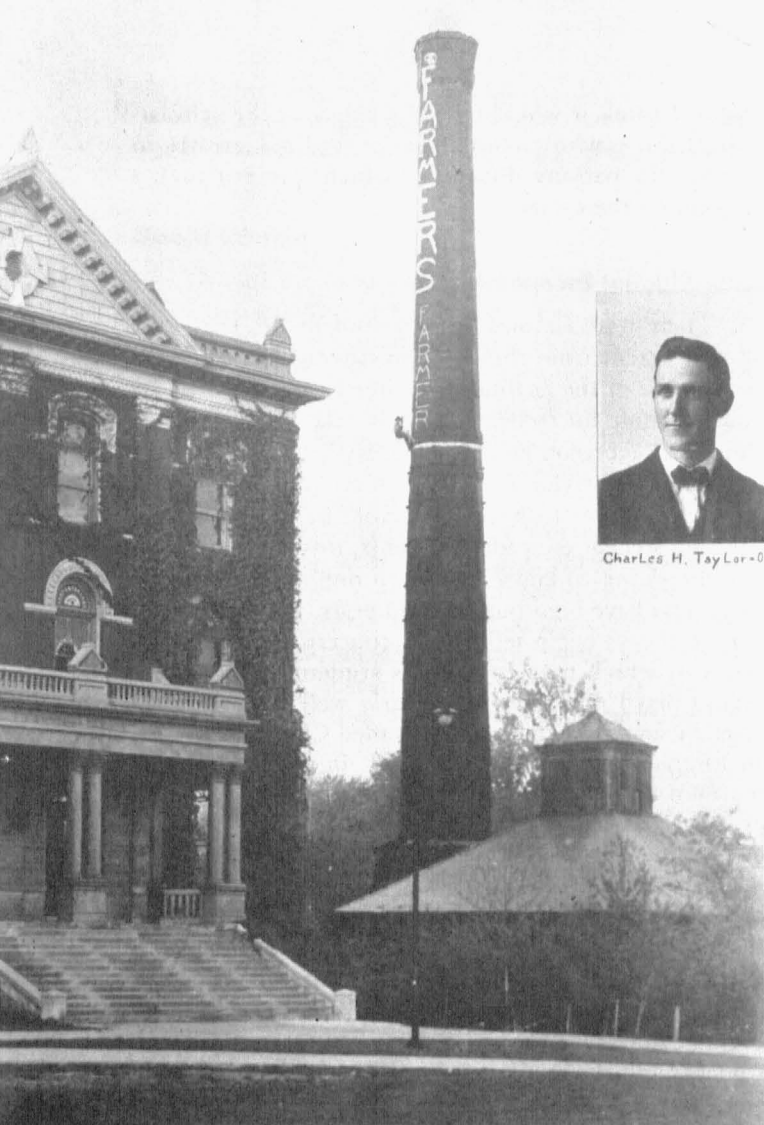
There were features of early student life that were quite different from those of the student life of today. With none of the facilities for entertainment which are now available for students, such as cars, picture shows, radios and television programs, the students of the earlier times had to provide their own entertainment. As a result, there seems to have been more harmless, but interesting student escapades, or stunts, than we have now. It's interesting to know that when one meets old graduates who have been out 40 or 50 years, the things they almost always begin telling you concern the wild escapades in which they engaged as students. One of the pranks that I remember particularly well was when the boys, in some way, got out the stuffed Chillingham cow, an English breed, which was kept in the agricultural museum in the old Switzler Hall, and placed it on top of Jesse Hall. It concerned me directly, as I was in charge of the museum, and I never found how the boys got the cow out. This is a sample of things they did in the early days and there were many others that were similar.

As time went on, the escapades were modified somewhat and the agricultural students became more prominent on the campus. A situation which fostered these events came from the rivalry between the agricultural students and the engineers. This led to the agricultural students attempting to out-do the engineers in various ways. One was the time when the agricultural students placed the word FARMER with one very large letter on top of each column of the West Campus. How they managed to get to the top of the columns and place the letters there, without being discovered, I have never known. Then there were attempts to float banners from Jesse Hall to one of the engineering buildings, carrying agricultural advertising. There were others of similar nature.

Painting the Smokestack

The most spectacular of all the events was that of painting the word FARMERS on the old power house smokestack that formerly stood just west of Jesse Hall, where the north end of Hill Hall is now located.

A few of the boys worked almost all night in getting a series of box kites aloft to carry a wire over the top of the stack. To this, they attached a rope which they pulled over, carrying a pulley sling and a two-by-four seat, by which they lifted a man with a bucket of paint almost to the top. This man was Charley Taylor who has always been famous as the man who painted the word FARMERS from the top of the stack, downward. It became daylight before the job could be finished and they caught



Charles H. Taylor

Painting the smokestack of the old University powerhouse which stood on the West Campus just west of Jesse Hall. This was the most daring feat attempted by agricultural students.



The parade which was the forerunner of the first Farmers' Fair in 1905.



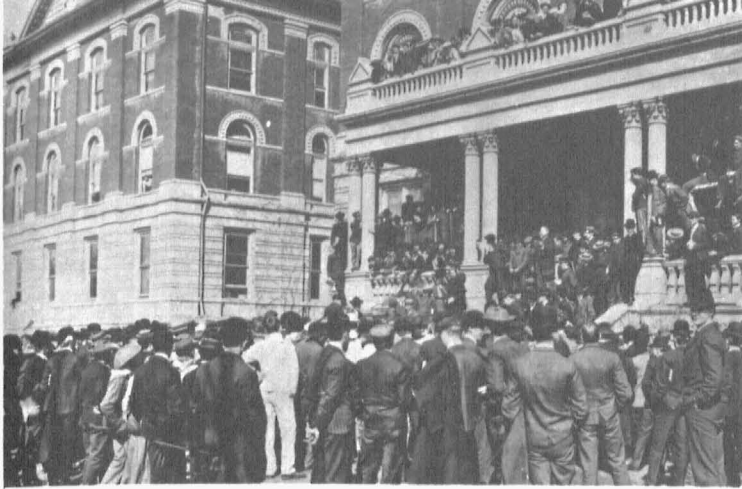
The five officers of the Farmers' Fair, 1920. This is a picturesque group, in the days of the big Western Stetson hats. From left to right are: Maxwell, Gaines, Kershaw and Angle.

a picture of Charley and the stack, with the work almost completed. The picture is a prized possession of the College of Agriculture. This was probably the most outstanding and daring feat ever performed by Missouri agricultural students.

Farmers' Fair

The Farmers' Fair, which was first held in 1906, had a most remarkable development. The idea seems to have originated at the Missouri College of Agriculture and it was later copied in other institutions. It really started in 1905 with a Farmers' Parade. The students, armed with farm tools—hoes, pitch forks, shovels, etc., marched around town leading some livestock and driving teams of mules pulling farm machinery such as a mower, a binder, and a manure spreader. Of course, the boys were dressed in rough, farm work-clothes and they made quite a display. One part of the plan was to go to the auditorium in Jesse Hall, where a convocation was scheduled. President Jesse was on the platform and when the students appeared in rough dress with all their farm tools, he immediately ordered them out. When the convocation was over they were still lingering outside, so the President went out on the south steps of Jesse Hall and told them some things he thought would be good for their souls. There is a picture of this still extant, with President Jesse lecturing from the upper steps of the building.

The early fairs had a whole string of small canvas booths for side shows, at one cent admittance. I was going the rounds with a couple of my small boys at one time, and we came to the one which was to tell whether you would ever marry. It consisted of two kinds of water, one plain and the other lime-water. They would pour one or the other in a glass, and the visitor was to blow through a glass tube into the water. If they poured in the limewater, there would, of course, be a cloudy precipitate indicating that you would surely marry. If it was pure water there would be none and you would remain



President Jesse lecturing the agricultural students who made up the first parade, after he had expelled them from a morning convocation in the old Jesse Hall auditorium.

single. One of my small boys took the tube and not knowing quite what it was all about, proceeded to drink the water, so he missed his prediction.

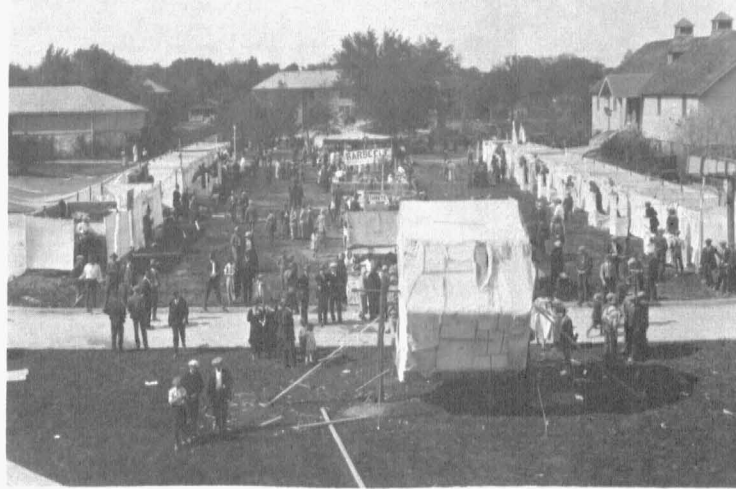
I remember another time, when the faculty had censured a picture that appeared in one of the shows. The students hurriedly arranged for a small booth with the sign "The Picture the Faculty Censured". Of course, business was very good, at that booth, but when one entered, there was the picture frame but it was hung with the picture facing the wall.

A Follies Show was also a feature of these early fairs. The faculty always had a censoring committee, at the last rehearsal, to eliminate anything that was questionable. However, the boys sometimes changed the objectionable words to perfectly good ones when the real show came on, but so arranged that everyone could understand what the censored words had been. Often this caused more merriment than might have been caused by the originals.

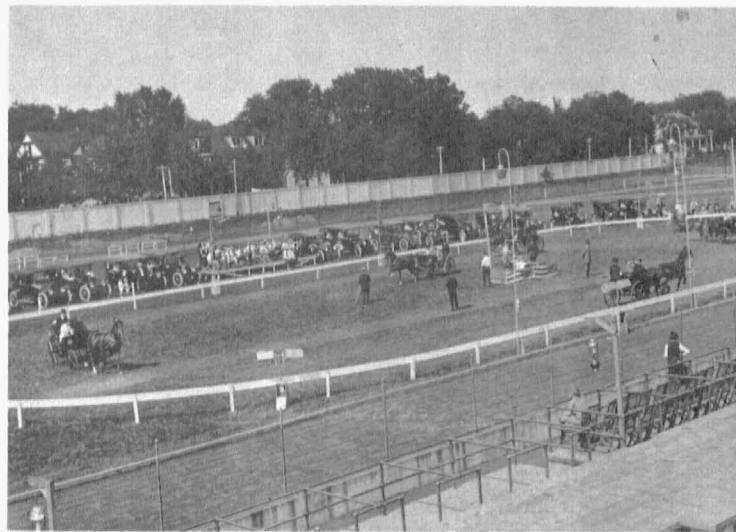
My son, Bob, who graduated in agriculture in 1940, was one of the singers in the Follies. He was quite a clown and got a lot of fun out of it. Not so long ago, I attended a party where he was present, and he sang for the crowd one of the hits of the old follies show, which had been held many years earlier.

Later, the Fair developed a Ferris wheel, a chute into the old "dipping pond" east of the old power house on the farm campus and other exceptional things. Still later, a horse show was made a part of the afternoon and evening entertainment, which, as the years went by, came to be a high-class show, with horses from several states. This continued for a good many years, gradually assuming greater and greater importance, to the detriment of the other features of the Fair, until it finally overshadowed everything else. Later, the horse show ran into financial difficulties, so it was abandoned and with it the entire Fair.

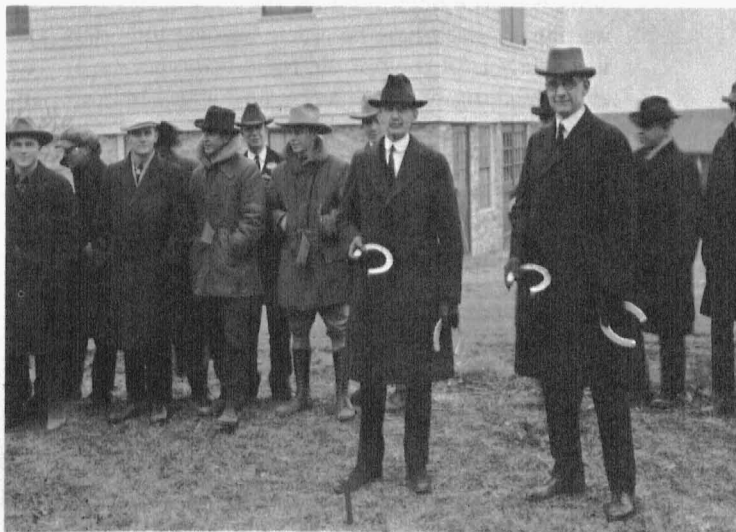
I was very sorry to see the Fair discontinued, as it had been advertised as "the greatest student stunt in



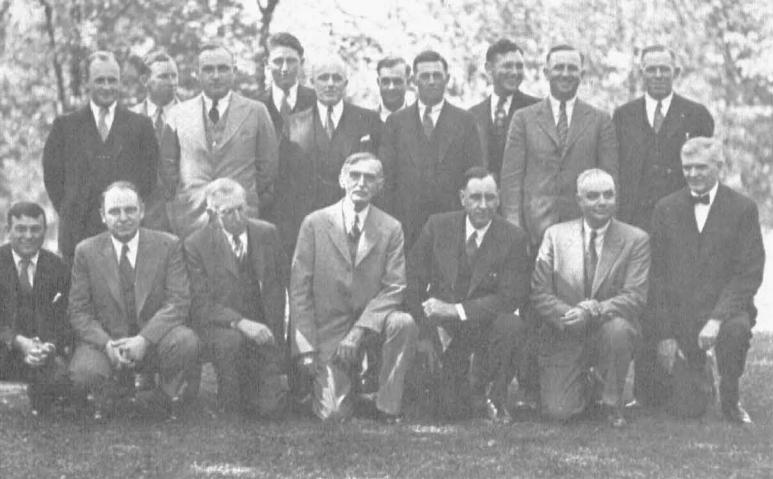
The main grounds of the Farmers' Fair in 1924. The rows of canvas booths, about ten feet square, each housed a show or exhibit, for which the entrance fee was one penny. They did a big business.



A horse show of the Farmers' Fair when this event was at its best.



Dean Mumford and Governor Arthur M. Hyde pitching horseshoes at the Farmers' Fair.



Sixteen of the very earliest Farmers' Fair managers, along with Dean Mumford. Lower row—left to right, Hill (Bob), Rusk (Earl), Doane, Mumford (Honorary), Tillman, Starr, Cochel. Upper row—Slate, Potter, Drymon, Rutter, Miller (Ray), Powell, Sheppard, Statton, Reed, Helm.

America" and it was certainly near that. To take its place the students have initiated what they called the "Bonde Fest," Swedish for Festival or Fair. As inaugurated, this is a rather simple plan of providing roast or barbecued beef, cooked over an open fire, to be eaten in sandwiches, and followed by square dancing. It is held in the live-stock pavilion with the cooking of the meat in the open. Time only will tell what the future success of this enterprise may be.

The Barn Warmin'

Back in the early 1900's when horses and mules were the only sources of farm power, the College of Agriculture owned several teams. They had been housed in poor, small barns or sheds, up until 1905 when the horse barn, as it was first called, was constructed. This barn was a two-floor structure with arrangements for driving to the second floor which was used for grain and hay storage.

Soon after the building was finished the students conceived the idea of holding an old type barn warming. This was the beginning of the long series of "barn warmin's" which have been held for over fifty years. This first one was of the real old fashioned type, including a corn shucking bee with a few unshucked red ears scattered through. Cider and doughnuts were supplied in abundance and the program, of course, included square dancing. Practically all the faculty and their wives attended. It was a "big affair" and a very enjoyable occasion. Pictures of this first crowd are still to be seen in one of the show cases in Mumford Hall.

As time went on, the dance was moved to Rothwell Gymnasium. It is now modernized, and has a big-time orchestra along with other modern features. However, it has clung partly to the old farm-type costumes, of overalls for the men and rural type dresses for the girls, often with aprons. Of course, a queen crowning has been introduced and it is a modern dance with something like a barn setting.

It has always been the custom for the Dean of the College to crown the queen and I think the deans have



A group of agricultural students and faculty people at the first Barnwarmin' held in 1906.

enjoyed this, or at least I did. The only thing that worried me at the crowning was that the name of the queen was not announced until the time for crowning, when the five finalists were waiting for the verdict of the judges. As I climbed to the throne, it was sometimes difficult to remember the queen's name, which was to be repeated as she was crowned. Usually, it was a young woman I didn't know and her name was sometimes difficult to understand. Of course, these young women were always beautiful and the crowning event was an enjoyable one, for the dean, as well as for the queen and the onlookers. The only ones who did not enjoy the occasion completely were the queen's four beautiful attendants, who were not chosen.

The Agricultural Club

One of the most outstanding developments among the students of the College of Agriculture has been the Agricultural Club, organized in 1904. This Club has represented the students of the College in all affairs in which they were generally interested. Membership has been a voluntary matter for its members, with modest dues. All of the principal activities, such as the Farmers Fair, the Barnwarmin', the College Farmer and the management of the paddling line, have been under its jurisdiction. During the years, the Club has had a large membership and it has been one of the important agencies which has made the activities of the agricultural students outstanding. As time has gone on, however, many things have changed and the importance of the Club has waned. With the large increase in the numbers of agricultural students during the last 20 years, the percentage joining the club has declined sharply. Another important change is that over half the students now have cars and many go home over week-ends. Then, the movement to provide more fundamental courses in the physical and social sciences and a less number of purely agricultural courses, has brought the arts, engineering and agricultural students closer together. Agriculture is not set off quite as distinctly as it once was. All of these things have served

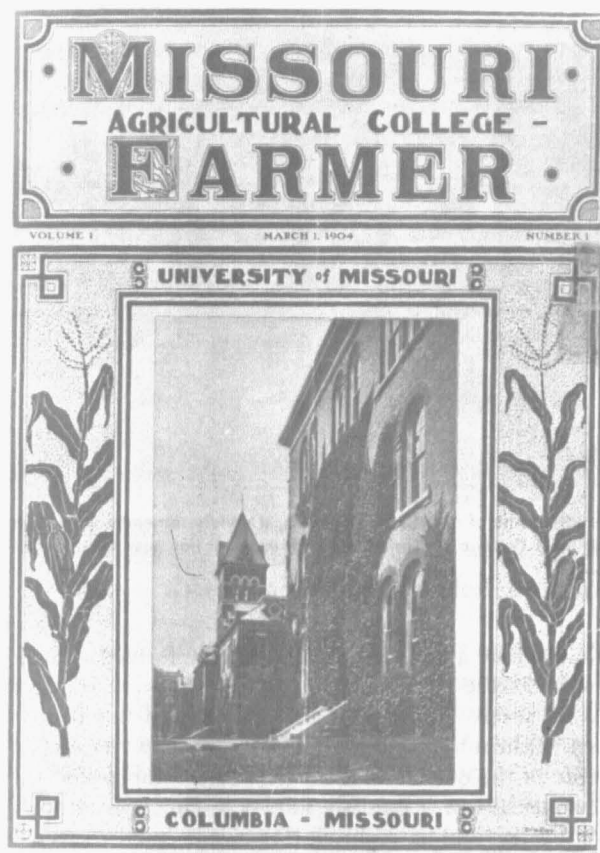


Crowning the Barmwarmin' queen in 1918. That was at a time when the decorations were of the most rustic type.

to lessen the influence of the Club. As a matter of fact, at the time of this writing, a plan is under consideration of setting up an agricultural student council to take over most of the things that have been under the jurisdiction of the Club.

The College Farmer

The agricultural student publication, the College Farmer, (the Missouri Agricultural College Farmer, as it was first called) made its appearance in 1904. It will be seen, therefore, that it's an old publication. It frequently had financial troubles, in the early years, and faculty members often went into their pockets to get it into the black. However, it has really had a very interesting career, changing its make-up and the type of its subject matter somewhat, as time has gone on. It has usually stood high among similar agricultural publications in agricultural colleges, often receiving top rank in yearly contests. A situation which has been very favorable to the development of the publication is that the School of Journalism has certain curricular offerings designed for the training of young men and women interested in agricultural journalism. This has been very helpful to the Farmer's editorial staffs, since most of these young men and women elect some of these special journalism offerings. Actually, one course of study leads to the Degree



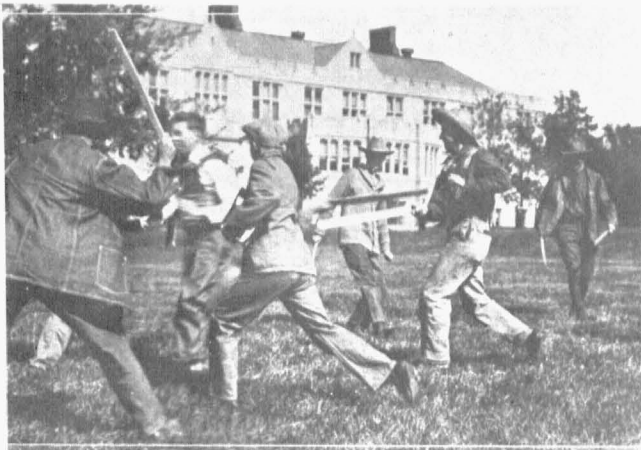
The first edition of the *College Farmer*, published March 4, 1901. This magazine has been published for almost 60 years.

of Bachelor of Science of Agriculture (in Agricultural Journalism).

As a result of the cooperative efforts between the College of Agriculture and the School of Journalism, several outstanding men have gone into the field of agricultural journalism, where they have been very successful. However, as economic conditions have changed, the character of agricultural publications has been modified. Much more advertising has been introduced and the College Farmer has had some difficulty in maintaining its former prestige.

The Paddling Line

A famous tradition among the activities of the students of the College of Agriculture, has been the so-called "paddling line". This idea originated in the early days of the Barn Warmin' and the Farmers' Fair, as a means of inducing all agricultural students to give full cooperation in the large amount of work connected with these enterprises. An ample supply of paddles about 3 inches wide, over half an inch thick, and two feet long was stored in a secluded place, for use when needed. When one or more guilty men were apprehended by the leaders, the "hog call" rang out over the campus and students came racing to the quadrangle, south of Waters



Paddling line of agricultural students, a vividly remembered activity for most College of Agriculture graduates. It has now been discontinued.

Hall, where a double line was quickly formed and the victims were compelled to run the gauntlet. It was a rather severe punishment and few allowed this to happen to them a second time. Sometimes, however, one or more of the officers of the Agricultural Club would run the line to test it out. My son, Bob, ran it once to test its severity and he reported that it was "plenty severe." It worried me, when I was dean, as I feared someone would get bones broken, in a hand or arm, but this never occurred.

The paddling line finally came into some disrepute when the agricultural students decreed that no student should walk across the grass on the East Campus. This was made to include all students, which was of course, going too far. As a result a number of the huskies on the football team attempted to defy the men in the paddling line, one morning, and a general fight was narrowly avoided. As a result of this and some other untoward incidents, Dean Longwell ruled against this famous paddling line, so that it went out of existence.

The paddling line was very effective in giving the agricultural students a special prestige on the East Campus. It was, a most interesting tradition among agricultural students at Missouri, which every old alumnus remembers. Actually, I was sorry to see it go out of existence. As a faculty man and later as dean, I was always greatly interested in those activities which became traditional, in the student body, and I was sorry when one of them became obsolete.

Agricultural College Fraternities

The three agricultural fraternities, Farm House, Alpha Gamma Rho and Alpha Gamma Sigma, have been in existence a long time. I think they have performed a good service. Agricultural college men coming from the farms have for the most part lacked somewhat in the social graces and the men who have been made

members of one or the other of these organizations have benefited from the associations. Of course, there are always some, in almost every fraternity, for which these associations mean a serious loss of time from their studies. However, in these agricultural groups the numbers of these have been rather few. Actually, among fraternities as a whole, the grade averages of these agricultural groups are usually at or near the top. It is possible, however, that the future may see less value to the members of these organizations as the characteristics of the Colleges of Agriculture change with the times.

As good high schools have developed and the many means of communication have come in, such as good roads, the radio, television, 4-H Clubs and Future Farmer organizations, the country youth have kept up to date in the world's progress to about the same degree as city youth. They, therefore, come to college about as well adjusted as their city cousins. To a certain extent, this offsets the value of fraternal organizations among incoming students. The raising of curricular requirements, now taking place, in all land grant institutions, due to the invasion of agriculture by business, will doubtless make it more difficult for agricultural fraternities to excel in grades.

Other Student Organizations

The last quarter century has seen a large development of student clubs among agricultural students, mostly departmental organizations, such as the Block and Bridle Club, the Dairy Club, the Agronomy Club and many others. There are also some inter-department Clubs. One of these is the Ruff Necks, a semi-secret organization which selects men on the basis of their popularity and accomplishments in University student affairs. As the name would indicate, some of their activities might border on rowdiness. Several years ago, when some of these men got into trouble, through some sort of escapade, Dean Mumford was at the point of abolishing the organization. Personally, I have always thought that their principal activities have to do with services to the College and their occasional escapades are student fun and even if they may be somewhat rough, this may be condoned.

Mention is made elsewhere of the fact that the Agricultural Club is losing ground and at this writing it looks as if it may be abandoned, which I should greatly deplore. There is little doubt that one reason for this is the development of the large number of departmental student clubs. They have a real educational function and are certainly to be encouraged, even when their popularity may have a detrimental influence on certain other student activities. One thing is certain, with the changes taking place in the student body in these turbulent times, only those student organizations and activities will continue which have a real place in student life.

Some Interesting Faculty Men of More Recent History

In every group there are men who have outstanding personalities, or individual characteristics which cause one to remember them. During recent years there have been many of them on the faculty of the Missouri College of Agriculture. It is impractical to include all of these but a few should be mentioned.

E. A. Trowbridge had a colorful personality. He came to the University of Missouri from the University of Wisconsin in 1906, as an assistant in Animal Husbandry. His interests were primarily in beef cattle and horses. He advanced steadily in rank to a full professorship, while he was becoming widely known as a beef cattle and horse judge at shows, throughout Missouri and other states. He judged the livestock show in the Argentine in 1942. He also judged horses in the big horse shows from coast to coast and became one of that great fraternity of horse lovers which has had such an important influence on horse breeding, from the heavy draft animals to riding and saddle horses. Of course, the most spectacular of these shows were in the saddle and light harness-horse classes which still hold a place of much importance in Missouri.

It was most interesting in the early days to see Trowbridge in full dress and high hat, in the ring with the fancy-stepping light horses. He attempted to avoid full dress at many social events, where such attire was common and this made him look odd with these clothes when in the evening show rings. Trowbridge was very widely known among cattle and horse men throughout the country. His portrait hangs in the Hall of Fame in the Saddle and Sirloin Club in Chicago.

Trowbridge was a man of positive ideas. He stood for the right, as he saw it, and could not be moved. His temper could be aroused rather easily, and those who knew him best scrupulously avoided this. He was a man the students trusted, and he always treated them fairly. He was a father confessor to great numbers of them. He was a member of the important University committee on policy, where his influence was strongly felt. He carried all these good qualities into the deanship, but he was cut down within two years by a fatal illness. His early death was a great loss to the institution.

Wm. C. Etheridge spent over 40 years as Chairman of the Department of Field Crops. He was a North Carolinian by birth, his boyhood home having been located on Roanoke Island. He worked on the farm during the cropping season, and during the winter months served on ships engaged in catching rough fish for the early fer-

tilizer trade. He was graduated from the North Carolina College of Agriculture, after which he took his doctor's degree from Cornell University.

Etheridge had one of the keenest minds of any of the individuals on the University faculty. Moreover, he was a prodigious reader, covering a variety of fields, which gave him a great background of general, as well as agricultural information. This familiarity with good literature developed a style of writing which was outstanding. In preparing papers, particularly those in which he wished to express himself well, he always did them in long-hand, on yellow sheets, from which they were later typed.

Etheridge's life in the South gave him a proficiency in dealing with affairs of a political nature, which was almost unique. He knew how to handle men having political ambitions and in my occupancy of the Dean's office, I could always depend on him to deal with such individuals.

His work in the Department of Field Crops and his long service to the University were most outstanding. I have mentioned elsewhere his work with Professor Helm in the development of lespedeza and soybeans, in particular, which had an almost unbelievable influence on Missouri agriculture. He was one of those department heads who insisted on teaching the beginning course in his department, which he continued until his final illness. Too often in modern times, the beginning courses are turned over to the younger staff members. This was a plan in which he did not believe.

Etheridge had some peculiarities as seen by most individuals of modern times. One of these was that he never owned a car. His home was on Thilly Avenue, about a mile from his office and he usually walked this round trip twice a day. He walked rather slowly, as if in deep thought, and I always believed that it was during these walks that he thought through his plans for research, or other activities which deserved special attention.

Etheridge had many good friends, probably as many on the west campus as on the east. His breadth of knowledge made him as much at home with men in the Arts and Sciences as with those in Agriculture. His death occurred following a three-day illness, just a short time before his intended retirement.

Charles A. Helm. Professor Helm spent the early years of his life in the range states, where he herded sheep and cattle and did other things which young men of the West are called upon to do. He therefore, knew the hard knocks of the range and he had acquired a fund of hard sense before entering the University of Missouri, where he took his degree in Agriculture, followed by a Masters Degree from the University of Nebraska. He returned to the University in 1916, as an instructor and was advanced steadily through the years to a full professorship. His connection with the University extended through a period of over 40 years, during which time he

rendered signal service in the Department of Field Crops. His interest was in grain crops, as well as in lespedeza and soybeans where he worked directly with Dr. Etheridge.

Professor Helm was a man of definite ideas which he would support positively, whenever called upon to do so. His early practical experience, his knowledge of field crops and his persistent and hard work, made his influence widely felt throughout the state. He came to know a great many Missouri farmers, to whom he gave abundantly of his time. During the latter part of his life, he gave much attention to the Missouri Seed Growers Association, of which he was secretary. Under his guidance, this association became of great importance in the production of certified seed.

Professor Helm was a very public spirited man. He served on the Columbia city council for many years. His progressive ideas and forceful character made him an excellent councilman. He was highly respected in this field, by town people and University people alike.

Professor Helm had just been appointed to the chairmanship of the Department of Field Crops, following Etheridge's retirement, but had not yet assumed the duties of the office when a heart failure carried him away as he slept. In his death the College of Agriculture and the farmers of the state lost a most resourceful man and an exceedingly able worker.

S. D. Gromer. Professor Gromer, generally known as "Daddy Gromer", was one of the most interesting figures ever connected with the College of Agriculture. He was appointed in the Department of Agricultural Economics where he served from 1915 to 1929. Before accepting this appointment he served for a short period as Governor of Puerto Rico.

Professor Gromer was a large, portly man with interesting ideas regarding agricultural economics which he applied on his own farm in Gentry County and where he was said to have made money during good times and bad. He was a man of most pleasant personality who liked people and was always interested in talking to them. His jovial disposition and his sound practical judgment of things in the field of economics, made him an outstanding character. He had a great host of friends, and the designation of "Daddy Gromer" fitted his personality exactly. Ill health compelled him to give up teaching rather early in life, which was a great loss to the College of Agriculture. He is included in this group of outstanding men because he *was* outstanding. Ask any of the older men who had classes with him, and they will tell you this same thing. It was very unfortunate that he could not have served on the faculty for many more years.

Samuel Brody. One of the best scientists and most interesting characters that ever served on the faculty of the College of Agriculture was Samuel Brody. He was born in Lithuania, but he came to this country in 1906 and was naturalized in 1912. He took his Bachelor's and

Masters' Degrees from the University of California and his doctorate from the University of Chicago. He came to the University of Missouri in 1920, as Assistant Professor of Dairying and Agricultural Chemistry, advancing steadily to the rank of a full professor.

Dr. Brody's principal field of study was the growth of domestic animals, running from mice to elephants. This work was under the project, Animal Growth and Development, to which reference is made elsewhere. He did an enormous amount of work in this field and during his association with this project published over 50 research bulletins. In 1945, he published a book entitled Bioenergetics and Growth. This is an immense volume covering over 1000 pages and including a vast amount of scientific data.

Dr. Brody's personality was foreign in its general characteristics. He had a keen mind and was a prodigious worker. He had a wealth of interesting ideas and was a stimulating conversationalist. He was always posing questions which one could not answer. His death, from a heart condition, occurred entirely too early in life. This was a great loss to the University.

Lewis J. Stadler. A man who made a great reputation in genetics, both for himself and the University, was Dr. Lewis J. Stadler. He took his bachelor's degree at the University of Florida and his doctorate at the University of Missouri. He had one of the keenest minds and best memories of any man I have ever known. I sat in on his doctoral oral examination and there wasn't a question asked by the corps of examiners, even in the literature, that he could not answer. To me, it was an amazing performance.

Stadler became interested in genetics at an early stage in his career and he buried himself in it during all of the latter part of his life. He was more of a theorist than an experimentalist, although his research on the influence of the X-ray on the genes in the cells of plants was outstanding. This resulted in what would now be termed a "break through" in securing mutations which lent themselves to selection in the production of new entities or strains. This work alone gave him wide recognition among the geneticists of this country and abroad and led to the development of new strains of grain crops that were very important. Through this and other work, he came to be recognized as one of the leading geneticists of the world. He had the distinction of having been elected to the National Academy of Science.

Dr. Stadler was stricken with a fatal illness early in his career and died in 1954. This was a tremendous loss to the University of Missouri and to the whole field of genetic research.

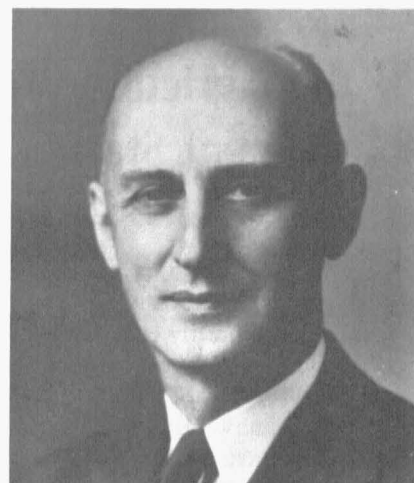
P. F. Trowbridge was appointed to the Department of Agricultural Chemistry in 1907, remaining until 1918. As a department chairman, he was one of the most dynamic department heads on the campus. He organized his department for carrying forward a great deal of work. He



S. B. Shirky



W. C. Etheridge



J. W. Burch



C. A. Helm



L. J. Stadler



Samuel Brody

became very active in the chemical determinations under the Use of Food project, organized by Dean Waters. He carried forward an immense amount of studies on the composition of different parts of an animal's body under different planes of nutrition. This brought him into the field of meat studies which he prosecuted with great vigor. I shall always remember the time, during the first World War, when he provided good horse meat steaks and roasts for any faculty family who wished to sample them. When properly cooked, I thought the meat was very good, although a little coarser than beef. Dr. Trowbridge left us to accept a position as Director of the North Dakota Experiment Station where he served for several years thereafter, although he died rather early. I always thought he made a mistake in leaving Missouri.

Samuel (Sam) B. Shirky. "Sam" Shirky, Associate Dean and Director, is one of the most active and efficient men I have ever known. Reared on a good farm near Norborne, Missouri, a farm which he still owns and operates, he came to the College of Agriculture from which he was graduated in 1918. He was Assistant in

Agricultural Chemistry during 1918-19 and received a Masters Degree at the end of that time. He was brought into the Dean's office, immediately thereafter, as Assistant to the Dean and was later advanced to Associate Dean and Director, a position he now holds.

During his University career Dean Shirky lettered in basketball and he has always maintained a great interest in athletics. For many years he was chairman of the University Committee on Intercollegiate Athletics, during which time he was largely responsible for paying off a large debt which had been hanging over the Athletic Department for years. This was an outstanding accomplishment.

In recent years Dean Shirky has been given much responsibility in the administration of the College, particularly in many fiscal matters and administrative details. The basic plans for the new Agricultural Building were also largely his and he gave much attention to the details of its construction. He has been a great force around the University and is very highly respected. The institution is much indebted to him.

Observations on Work of the Agricultural Experiment Station

When I first became familiar with the work of the Missouri Experiment Station, it was not too far from its beginning. Very early experiments were rather simple, such as crop variety tests, simple animal feeding trials and tests of some of the early farm equipment. It is interesting to know that studies of the draft of farm wagons with different sizes of wheels and different widths of tires were among the very early trials. All of these studies were simple and if they could be designated as research, it was of course, applied research. There was nothing very fundamental about it.

There was some early work done by Dr. Connaway, who was trained in both veterinary science and human medicine, which was really fundamental, such as studies of the causes and the control of blackleg in cattle. As mentioned elsewhere, he and Dr. Francis of the Texas Experiment Station, did some of the most important work in determining the means of controlling the cattle ticks, which carry Texas Fever from one animal to another. This was fundamental work in its broad relationships and might be so classed. Some research projects of special importance are listed below.

Carotin Content of Milk

Professor C. H. Eckles became head of the Dairy Department, as it was first called, in 1901, and within a few years was engaged in research of outstanding importance. One of the most interesting of these early studies dealt with the carotin in milk. This was carried out through L. S. Palmer, a Missouri graduate, working under Professor Eckles direction. It was finally shown that the yellow pigment in carotin contained Vitamin A, one of the first vitamins discovered that was related to agriculture. A little later, Palmer cooperated with Professor H. L. Kempster of the Department of Poultry Husbandry, in studies of the influence of Vitamin A in the growth of chickens. This study, dealing with both milk and poultry, was one of the outstanding pieces of research which had to do with the understanding of the great importance of Vitamin A in agriculture. It was fundamental research of the first order to be attributed to the Missouri Experiment Station. Dr. Palmer proved himself to be a most important aid to Professor Eckles. However, as mentioned elsewhere, Professor Eckles left Missouri for the Minnesota College of Agriculture and Palmer followed him, where both men died early. The loss of these men was a tremendous blow to the College of Agriculture.

Research in the Physiology of Milk Production

A study of great fundamental importance, in the field of dairy husbandry has had to do with the factors determining the flow of milk in dairy cattle (endocrinology). This was inaugurated by Professor Eckles, but the man who took it over was Dr. C. W. Turner. He joined the faculty in 1919 and was soon deeply engrossed in this study, which bore largely on the influence of hormones in determining milk secretion. This research has been continued until the present day and one or more research bulletins, giving results of the study, have appeared annually since 1933. This is one of the most fundamental studies in which the experiment station has engaged, showing the importance of hormones as related to the pituitary gland, in determining the volume and extent of milk production.

Animal Growth and Development

Another very important and monumental study which can be largely attributed to Professor Eckles, had to do with animal physiology, beginning with dairy cattle. The man brought in to head this study was Samuel Brody, coming to us from the University of California. He actually succeeded Dr. Palmer on the dairy staff but his work followed a different line. Brody studied the physiology of dairy cows first, then broadened the study to include other animals.

This study, which was begun in 1920, received large grants, from outside sources and provided material for the publication of scores of research bulletins. This has been one of the most extensive fundamental research projects ever undertaken by the Missouri Experiment Station.

During the latter part of Dr. Brody's connection with the College, he had constructed a growth laboratory, which would accommodate a dozen beef or dairy animals, under absolutely controlled conditions as to temperature and humidity. Here he carried on a long series of studies with dairy cattle, keeping careful records of the changes in the various bodily functions of the animals, as the air conditions were modified. This laboratory, now designated as the Climatic Laboratory, is providing much data on the influence of controlled air conditions on the various functions of the animal body.

Use of Food by Animals

One of the most fundamental of the early projects was inaugurated by Dean Waters, in 1907, on a study of the use of food by domestic animals. His principal assistant on this project, at the time, and the man who directed the chemical work, was Dr. P. F. Trowbridge, Chairman of the Department of Agricultural Chemistry. This experiment included the determination of the chemical composition of the different parts of the animal

body, when the animals had been fed at various planes of nutrition. The work was inaugurated early in 1907 and was carried on with various modifications until rather recent times. Many faculty men, in both animal husbandry and agricultural chemistry, have participated in the work of this project through the years, and many publications regarding the results of the study have been issued. The Missouri Experiment Station has gained wide recognition from the published results of this study, and it can be listed as one of the remarkable and extensive research projects ever undertaken.

This use-of-food study was one of the early ones, inaugurated under the funds coming from what is known as the Adams Act, of the Federal Government. The money from the Adams Act was designated for fundamental studies only. I remember that Dean Waters, in attempting to pinpoint what was meant by fundamental research in those days, said, by way of illustration, "The determination of the manner in which the growth of hair is influenced, on a square inch of a steer's back, when he is fed a certain ration, is fundamental research." Such an influence was probably of little importance, and I do not suppose it was ever determined, in this experiment. However, it certainly illustrated a point, and I have never forgotten it.

Research in Genetics

The Missouri Experiment Station is widely known for its work in the field of genetics. Some work was begun in the early days, in the experimental breeding of cattle, some also in wheat selection, looking toward the development of new varieties. However, really fundamental studies were not included. It was not until Dr. Lewis Stadler got his work under way in the late 20's that fundamental work in this field was recognized. He was interested in the mechanism of heredity and in the means through which mutations came about. Stadler was one of the first research men to work on the influence of the X-ray in causing the development of mutations.

Dr. Stadler's work has, in considerable measure, been continued by other men. Dr. E. R. Sears, a cooperative agent with the U. S. Department of Agriculture, and attached to the Department of Field Crops as Research Associate, has done most important fundamental work in the genetic mechanism of heredity in wheat, for which he has been honored with outstanding awards. The most important of these was the Hoblitzelle Award, carrying an allotment of \$10,000, the third time it was ever given. (It might be mentioned that the first time this award was made it went to Dr. C. E. Marshall of the Department of Soils, in the College, which means that Missouri men won two out of the first three of these).

Dr. Marcus S. Zuber has taken over the work in the development of corn hybrids. He and his assistants have developed a number of high quality hybrids, especially adapted to Missouri conditions. From the standpoint of

the farmer this is the work that has most appeal.

I followed the work in genetics rather closely while I was dean and found that there were some administrative difficulties in its development. While Dr. Stadler was attached to the staff of the Department of Field Crops, the Department of Zoology was very much interested. Some of the zoologists seemed to think this should be their work, although the research was in the plant field. To a certain extent the zoologists were right, as genetics proper is, of course, in the fields of both zoology and botany.

Dr. W. C. Curtis, Chairman of the Department of Zoology in those days, was the moving spirit, from the standpoint of general genetics, and it was through his efforts that the Rockefeller Foundation was induced to give considerable sums of money in support of the project, finally providing funds for the construction of the present Genetics Building. This was done without special cooperation with the Department of Field Crops, which created an awkward situation. Dr. Stadler seemed to feel that he owed his main allegiance to Zoology, which created unfortunate relationships with Dr. Etheridge in Field Crops. However, these were merely administrative details which were later ironed out. It was certainly through the assistance of Dr. Curtis that the work in genetics owed much of its advancement. This is a detail with which most people have not been familiar, but it may be well to have some statement regarding it in the records.

Relation of Weather to Agriculture

A research project, in which I have been much interested, has to do with climatology and meteorology as related to agriculture. This project was inaugurated following the last World War when it seemed to me that the National Weather Bureau, which had been giving almost all its service to the air forces during the War, was not giving enough attention to agriculture. One day I wrote a letter to the Chief of the Bureau in Washington, expressing my feelings regarding the matter. He replied immediately, saying that one of his older men would be in Missouri soon, and he would have him stop and see me. When this man came, I called in some staff members who I thought would be interested. We spent most of an afternoon in this discussion and finally agreed on a cooperative project dealing with *weather and agriculture*. As soon as we could locate a man with the proper training, the details of the project were laid out and it has been going on ever since.

The man selected for this work was Wayne L. Decker, who is still with us and the project has made important advances. A cooperative committee was set up early, consisting of interested men from the station staff and two or three Federal Weather Bureau men. This committee met at intervals throughout the early

years when the details of the project were being worked out.

Dr. Decker has published several bulletins in connection with studies of Missouri climate and agriculture. He is currently working on the water supply of crops as affected by various soil and climatic factors. It is of importance to note that Dean Longwell became so much interested in this weather and agriculture project that he was appointed to the national advisory committee in this field. Three years ago the Weather Bureau appointed J. D. McQuigg to have charge of the Columbia Weather Station. He was also made climatologist for the state. He has been appointed by the University as a member of the experiment station staff, and this has proved to be a very good arrangement.

Climate and Soil Formation

One of the very interesting pieces of research in which the Experiment Station has engaged was directed by Dr. Hans Jenny. It was primarily a study of the relations of climate to soils and soil formation. Dr. Jenny collected soil samples not only from Missouri, but across the country, particularly from East to West, where the rainfall varied widely, and studied the soils as the climate had affected them. He gave special attention to the effect of climate on the amounts of nitrogen and organic matter in the soils, the results of which were published in experiment station bulletins and also in a book covering his studies.

Dr. Jenny was born in Switzerland and came to this country on a year's exchange fellowship, working at the New Jersey Agricultural Experiment Station. I became acquainted with him at the time of the first meeting of the International Society of Soil Science, which was held in this country in 1927. He was appointed on our soils staff the year following, where he remained for 9 years, leaving us for the University of California, where he has made an excellent record as a soil scientist.

A few years ago Dr. Jenny went to Russia to study climatic influences on the soils of that country which has such wide climatic differences. He drove in a jeep for several thousand miles over Soviet territory, doing much of the driving himself while collecting soil samples. These samples were brought to his laboratories in California, where they have been studied and reports made on their chemical make-up.

Studies in Soil Colloids

Some of the early fundamental work in soils was in the field of soil colloids. Missouri with its clay-pan subsoils full of colloidal material, was a proper field for these early studies. I had become familiar with research of this nature in Germany, during a sabbatical leave in 1910-11, studying at the University of Gottingen. Work at Mis-

souri did not get under way in this field, however, until we brought in Richard Bradfield, from Ohio State University in 1920, when he began some very interesting studies. He worked primarily on the colloids in the subsoil (clay-pan) layer of the Northeast Missouri prairie.

Dr. Bradfield is a remarkable man. When he came to Columbia for consultation regarding a position with us, he was at that time working toward his doctorate at Ohio State University. He was running his father's farm, not far from the University where he would drive a tractor much of the night and attend the University during the day.

When we were discussing the prospective position in Missouri, he made a great impression on me, as a most interesting man. I remember going home in the evening and telling Mrs. Miller that we had brought in a man from Ohio to be looked over, but I was not quite sure whether he was a genius or a freak. Actually, he turned out to be a genius of the first order, and his work on Missouri's soil colloids was most outstanding. After ten years, during which time we really had him broken in well, his old institution in Ohio took him away from us. Later, he went to Cornell University as head of the Department of Agronomy and became known as one of the leading soils men in the country. Dr. Bradfield gave these colloid studies a most important start in Missouri and they have been continued under other men, so that this soil colloid investigation has made Missouri stand out among Land Grant Colleges.

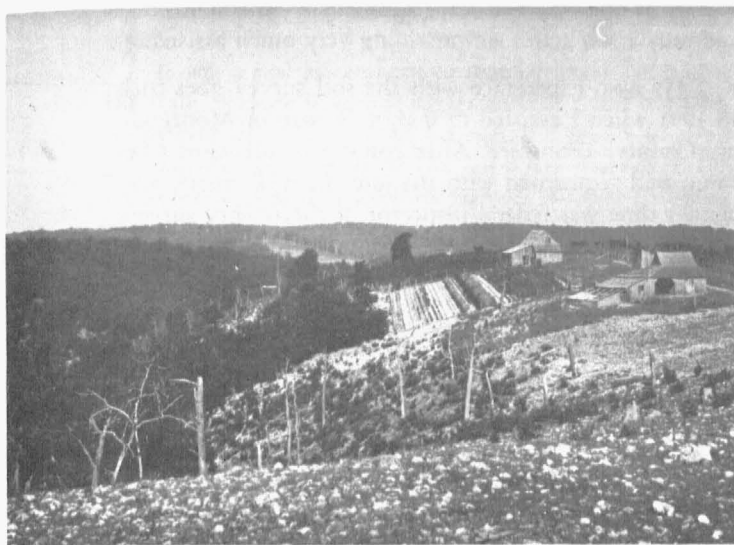
Vitamin Research

A most interesting piece of research carried on by the experiment station, has been conducted by the late Dr. A. G. Hogan, extending through a long period of years. This study has been largely directed toward the influence of vitamins and of vitamin deficiencies on the growth of animals. These experiments have shown types of abnormal growth due to certain vitamin deficiencies, which are very significant. Likewise, the influences of certain vitamins in improving the growth of the smaller animals, in particular, are very interesting. There have also been studies on what were designated as unrecognized factors in animal growth. In connection with all these studies, certain components of the Vitamin B complex were discovered that had not been known earlier. On the whole, these studies have been very exhaustive, covering a long period of years and bringing great credit to Dr. Hogan and to the experiment station. This work brought to Dr. Hogan personally, some of the most important honors and awards accorded scientists in Land Grant College circles.

Other Station Developments

The State Soil Survey

The Missouri soil survey was established through a legislative appropriation of \$5,000 in 1905. It was organized through the efforts of Professor C. F. Marbut,



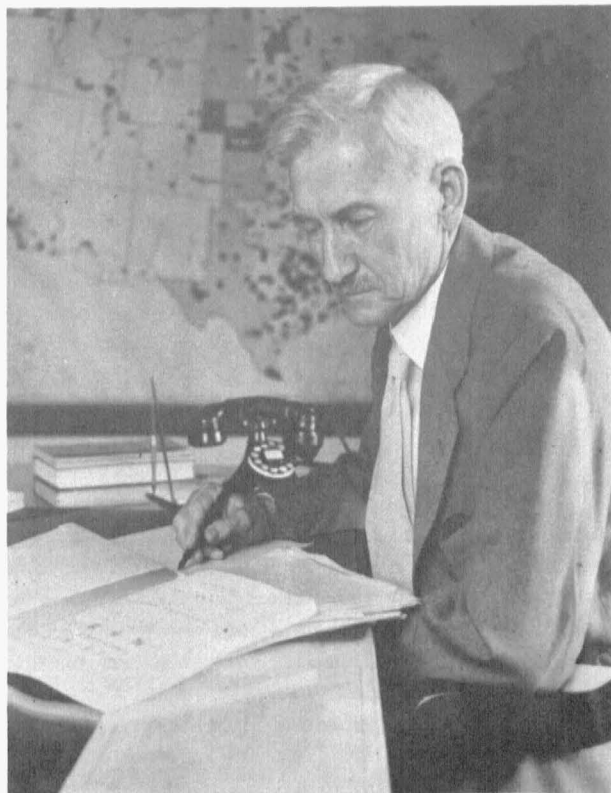
The soil surveyors of the College who work in this type of country in the Ozark region experience some difficulties. Fortunately, little of the Ozarks is like this.

head of the Department of Geology at the University, in cooperation with the Department of Agronomy, which had been formed in 1904. The work was done in association with the Federal Bureau of Soils, of which Milton Whitney was Chief. The plan of soil classification already developed by the Bureau, was followed. A soil survey field party consisted of one federal man and one state man, assigned to the survey of an individual county. Maps were made on the scale of one inch to the mile and the number of soil types mapped, in individual counties, varied from about fifteen to twenty.

As a rule, a two-man party was able to complete the mapping of a county in one working season, from April to November. The reports and final maps were prepared during the winter months, by the men who had made up the survey party. The maps were lithographed, through contract, by the Federal Bureau in Washington and these, along with the reports, were published at the expense of the Bureau. These were made available to the cooperating colleges, while stated numbers of copies were allotted to national Senators and Representatives in whose districts the individual counties were located.

The early Missouri survey was followed by increasing allotments from the legislature, until there were two or three groups in the field from about 1915 to 1940. In this period about half of the counties of the state were covered.

During the early years of this survey, Professor Marbut gave much time to it, particularly to the matter of soil classification. His work came to the attention of Whitney, Chief of the Federal Bureau, who invited him to Washington to work on the classification of the soils of the country. Not long thereafter, he was placed in



C. F. Marbut, Professor of Geology in the University at the beginning of the century. He became interested in soil classification and in cooperation with the Department of Agronomy inaugurated the Missouri soil survey. He later went to Washington as head of the national soil survey and became world famous in soil classification. He was one of the most able and interesting scientific men that Missouri ever supplied the world.

general charge of the soil survey of the United States. Under his direction, the system of classification for the country was much further developed, and he soon became well known, not only in the United States, but in European countries as well.

Marbut was a most remarkable man—a true scientist, through whose inspiration and tireless efforts the system of soil classification was greatly improved. However, he was not an administrator and he left administrative matters, as to the detailed conduct of the survey, to his best subordinates. Most of his time was spent in the field examination of soils, from coast to coast, and in setting up a system of classification that interested the scientific men of the world. Those who traveled with him learned, by hard experience, the pace he set, and few were able to keep up with him in boring holes and digging.

Mrs. Marbut died of pneumonia while the family was still in Columbia and when their five children were still in high school and the grades. When Marbut left for Washington, he employed a good woman as housekeeper, and left the family in Columbia to complete their schooling, coming back to see them whenever it was

possible. The oldest of the children was a daughter, Louise, (now Mrs. Leroy Moomaw) who, with the housekeeper, took charge of the family, until all but the youngest had finished the University. This youngest son, Fredrick, transferred to an eastern college to finish.

Marbut was a delightful man to know—honest, forthright in all his approaches, friendly and inspiring in his broad knowledge. He had a host of friends in this country and in European countries as well. When he reached retirement age with the Federal Government, he was appointed on the Missouri staff as Honorary Professor of Soils. However, in 1934, he was invited by the Chinese Government to come to China for consultation regarding the establishment of a soil survey in that country.

In July, 1935, he went to England to attend a meeting of the International Society of Soil Science. After the meeting he left England for China, but on the long journey over the Siberian Railroad, in cold coaches, he contracted pneumonia, which he had always feared after Mrs. Marbut's death. His case became so serious that he was taken from the train at Harbin, in a delirious condition. The American consul placed him in a hospital where he died a few days later. His ashes were shipped back to this country and to a new home he had built on his farm in the Ozarks, where a funeral was held. They were interred in the nearby cemetery at Cassville, beside the grave of Mrs. Marbut. The cemetery is a beautiful one and very well kept. The graves of the two are marked by a dignified and appropriate monument.

This practically ended the great development of the national soil survey under the jurisdiction of the Federal Bureau of Soils. Soon, thereafter, the work of the survey was transferred to the Agricultural Research Service and later to the Soil Conservation Service of the Federal Government. A great deal of soil mapping has been carried on, under the direction of the Soil Conservation Service, but almost entirely on the farms of individuals cooperating within the soil districts set up by the Service. Under this plan, much attention is given to the utilitarian features of the soil map, such as slopes, degrees of erosion and the so-called land capability classes.

In recent years, the Soil Conservation Service announced that it is planning again to take up the preparation of the standard county soil survey maps and it has made a beginning in this direction. Dr. Kellogg, who has long been head of the federal survey, is now under the Soil Conservation Service. He is planning to push the work of making the standard county maps with the hope that the country may be covered within 15 years. Of course, that is a time limit which it may be impossible to meet, but the work is beginning. It is hoped things may be so adjusted that the preparation of these county maps will proceed regularly. Unfortunately, under the plan of making scattered individual farm maps,

the work done by the state agencies has been limited and only a few states are providing very much assistance.

My own experience with the soil survey goes back to 1901 when I assisted in making a map of Montgomery County, Tennessee. After coming to Missouri I became well acquainted with the late H. H. Bennett, who at that time was federal inspector of the county surveys for the Southern states, reaching north to the Missouri River. I traveled with him, in horse and buggy days, during his inspection trips over many south Missouri counties and came to know him very well. He was an excellent soil survey inspector. No barbed wire fence was too high for him to go over when he wanted to be sure about a certain soil type.

Later, Bennett became the world's greatest advocate, or apostle, of soil conservation. When he was made head of the Soil Conservation Service, he became much more interested in soil conservation proper, than in the soil survey as such. As a result, his leading administrative men took over the management of the survey. If he had aligned himself more with the administration of the Conservation Service and somewhat less with the purely promotional work, I think the people in Missouri would have had better relations with his organization. Bennett was a fine man—dynamic, capable, able and friendly. I have always appreciated my acquaintance with him.

The Outlying Experiment Fields

An activity that assumed considerable prominence, just after the inauguration of the soil survey in 1905, was that of the outlying experiment fields. As a matter of fact, at about the time the soil survey was established the legislature made an appropriation for these fields, for the study of soil treatments and crop adaptations. The early direction of these fields, I handled personally. We first put out crop adaptation studies with different crop varieties, particularly grasses, in the different parts of the state. Another plan of studying the grasses actually in use, was to travel the state and observe. One summer we put a man on horse-back to spend the summer in the Ozarks, recording his observations on Ozark grasses and pastures, which data were later incorporated in a bulletin for farmers.

As time went on we took up soils studies, renting small tracts of land, from five to ten acres each, on different soil types, on which plots were laid out for special treatments. These included lime and different kinds of fertilizer, that is, those carrying the three important fertilizer elements, nitrogen, phosphorus, and potassium, either singly or in combination. The farmers on whose lands the experiments were carried out, were paid for the work on the plots, including the harvesting and weighing of the crops. Some of these fields were continued for eight or ten years, under regular crop rotation and fertilizer plans, so that much data was accumulated. The results of these studies, on different soil types, were pub-

lished in a series of bulletins, mostly between 1910 and 1926.

It was a real assignment to manage these fields over the state, because it was necessary to visit them frequently, to give directions to the farmers and finally to assist in securing the records of the harvests. However, the bulletins were widely used by farmers, so that the work was of much value. Of course, as time went on, and the Department of Agronomy expanded, different men handled these experiments, and I was relieved of most of this travel. It must be remembered that those were the days before cars were used, and the trips were made entirely by train, to the nearest town where a field was located, then a "livery rig" of one or two horses and a buggy was used to reach the farm.

The railroads became interested in the efforts of the College to assist farmers along their lines, so most of them furnished passes to those of us handling these fields. This was before the legislature ruled against the use of passes and we saw nothing wrong in accepting such a courtesy, when we were really giving service to the farmers and thus to the railroads. There was a time when I would carry quite a deck of card passes, and I would hold up the appropriate one, when the conductor came by. Those were the days!

There were also the soil survey parties in the field, which I visited frequently, and there were farmers' institute meetings which I often attended. I was, therefore, out of Columbia about one-third of the time while I was still teaching my regular classes. I must say, however, that the students were quite serious-minded, so that when I was to be away several days I would assign certain readings and often papers to prepare. When I returned, I found that the students had taken the assignments seriously, at least most of them. I sometimes thought that the preparation of these assignments did the students as much, or more, good than if I had been lecturing to them regularly, which was the custom in those days.

Another thing connected with all this travelling was the "two dollar hotels" which were the standard ones in county seats and similar-sized towns. The two dollars meant 50 cents for each meal and 50 cents for a bed. These hotels were crude, as compared with most modern ones, but they supplied abundant food, of a home-cooked type, in most places, and as we were not accustomed to using city hotels, they suited us very well. I must admit that some of them were much poorer than others. Occasionally, one would be found with some creeping things, but such hotels, even in those early days were rare.

J. C. Penney in an interesting pose, doing one of the things he likes to do, in connection with his Guernsey cattle.

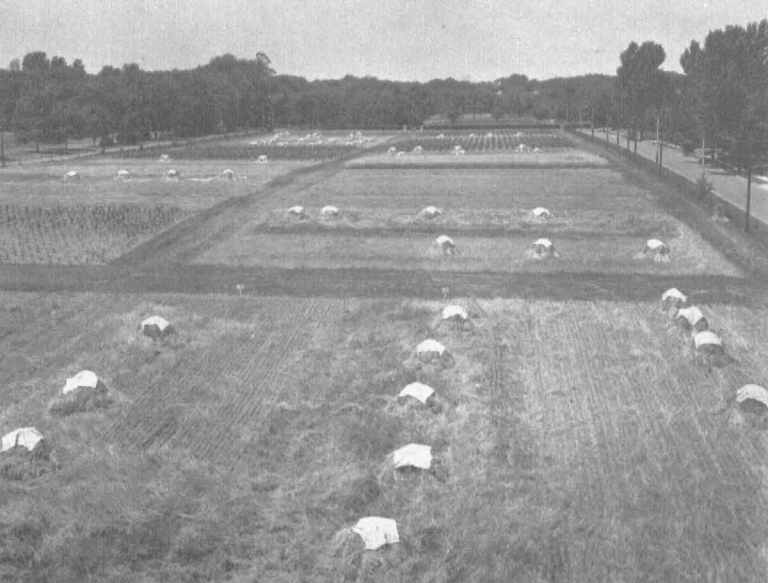


A part of the Soils and Field Crops Experiment fields on the South Farms. Many students have earned much of their way through the College by working on these plots.



The Foremost Guernsey Farm, near Columbia. In 1953, J. C. Penney made a gift to the College of his herd of 250 highly bred Guernsey cattle, from his large Guernsey farm in New York. He also provided most of the land for this development.





Sanborn Field, just north of Eckles Hall. Established in 1888, it is the third oldest experiment field in the country. This gives it great value from the standpoint of soil and crop differences due to this long period of varying cropping practices and soil treatments. From a plot on



this field came the soil sample which supplied aureomycin to the world.

Dean and Director Sanborn who visited the experiment field in 1926, almost a half century after its establishment.

Sanborn Field

Sanborn Field is one of those things for which the Experiment Station is famous. Planned and laid out by Director J. W. Sanborn in 1888, this is one of the oldest in the United States. It was established when the use of fertilizer was little known and only three of the thirty-nine plots were planned to receive it. The plan of the field was to show the influence of different cropping systems, without treatment, and the same systems with farm manure, along with the three which received fertilizer. This was before the days of plot replication so that each of the plots, 1/10 acre in size, was really a small field in itself. They have therefore, been difficult to manage, but they have now gone through seventy-two years.

When I came to the University, Dean Waters was considering the idea of abandoning these experiments entirely, but it was finally decided to continue the field and it fell to my lot to look after it. It was interesting to me to find that the farm foreman who was directing the field work on the plots at that time was a young fellow by the name of Merritt W. Harper, who had been a schoolmate of mine in the country school located on the corner of the farm where I was raised in Central Ohio. He was a little younger than I, and was named for me. He later went to a position at Cornell University where he became a Professor of Animal Husbandry, specializing in horses. It's certainly interesting the way in which things sometimes develop. How little we dreamed in the old country school days that either of us would ever be connected with a College of Agriculture! In those very early days we had never heard of these institutions.

Sanborn Field has had a colorful history. I remember that Sanborn visited the College about forty years

ago and Dean Mumford and I took him out to the field so he might see how it was going. I was interested in telling him about the experimental results from some of the plots, but I could not keep his mind on the subject. The field so reminded him of the earlier days, when the College was always in political troubles with the legislature and with people who wanted to separate it from the University, that he would talk of nothing else.

I have been told that the land on which Sanborn Field was laid out was originally a tract of pasture with scattered elm trees and with buck brush undergrowth. When Sanborn wished more crop land near the farmstead, he had this land cleared and put into cultivation. The records aren't clear, but no doubt it was planted to corn for one or more years after which he laid out these plots with different cropping systems and soil treatments.

When H. J. Waters became Dean and Director he looked after the general direction of the field, with the farm foreman in charge of the field operations. The foreman was not a trained experimentalist, and the fact that each of the 39 plots was an entity in itself, and had to be handled as an individual unit, was really almost too much for him.

It has not been generally noted in the discussions regarding Sanborn field, that there was an adjustment in the size of the plots in 1904, when the street on the north, Bouchelle Avenue, was widened. This meant that plot 8 which ran longwise with the street, was abandoned and the rest of the plots on the north side were cut down to 1/13 of an acre. This also meant that the rest of the plots were cut to this reduced size, with only 38 instead of 39 plots, as in the original plan.

In the early days, the block in the southwest corner of the field, west of plot 28, was low and rather wet, so

this was not laid out as a part of the original plan. Later it was planted to what Dean Waters called a grass garden. Some of these grasses persisted for many years. One was the Johnson grass of the South. It really remained for many years, along the south fence and I think some of it is still there. The climate is too severe for it to thrive well, however, and it was mainly a curiosity. In later years, this southwest block was thoroughly tile drained and it is now laid out in plots, in no way related to the original plan.

The field management of the plots has been under several men during the years. As time went on, it was found that some of the early treatments and cropping systems were entirely out of line with more modern developments, so that many of the treatments were changed. However, some of the important plots with continuous cropping of the same crops, such as corn, oats, wheat, and timothy, along with certain rotations and treatments have been continued, and now have great value in studying the yields and soil changes through 72 years.

One of the very interesting developments from this experiment field was that of supplying the soil sample from which *aureomycin* was developed. This sample was taken from the plot in continuous timothy, without treatment. It came about through the work of Dr. B. M. Duggar, who was Professor of Botany at the University, in the early 1900's. Duggar later became head of the Department of Botany, at the University of Wisconsin. After his retirement, he was associated with the Lederle Laboratories at Pearl River, New York, where he worked on antibiotics. The particular soil sample which supplied the organism, *streptomyces aureofaciens*, from which aureomycin was developed, was sent to Dr. Duggar by Dr. W. A. Albrecht, along with a number of others. The remnant of this sample was later placed in the Smithsonian Institute, Washington, D. C. Aureomycin is one of the most important of the antibiotics and it has been distributed throughout the world. Millions of people and domestic animals have been benefited by its use and its sale has brought in untold millions of dollars, all from the small sample of soil from Sanborn Field. A bronze plaque on one of the stone posts of the gate, at the west entrance to the field, was placed there in recognition of this very significant development.

Research and Wildlife

A development that has interested me very much is the association of the University with the Missouri Conservation Commission, an agency which was established through an amendment to the Constitution, in 1920. This Commission has set up a research division which has cooperated actively with the University. A building known as the Wildlife Building was constructed on the campus in which some of the faculty men in zoology have offices and laboratories. When I was dean

there was a cooperative research committee, of which the Dean and Director was an ex-officio-member. I, therefore, became very well acquainted with the research going on. As a fisherman and a general wildlife enthusiast, I enjoyed very much my associations with the wildlife program.

The University has been responsible for training many of the personnel connected with the wildlife work of the Commission. Some of these men are agricultural graduates who took elective courses in this field.

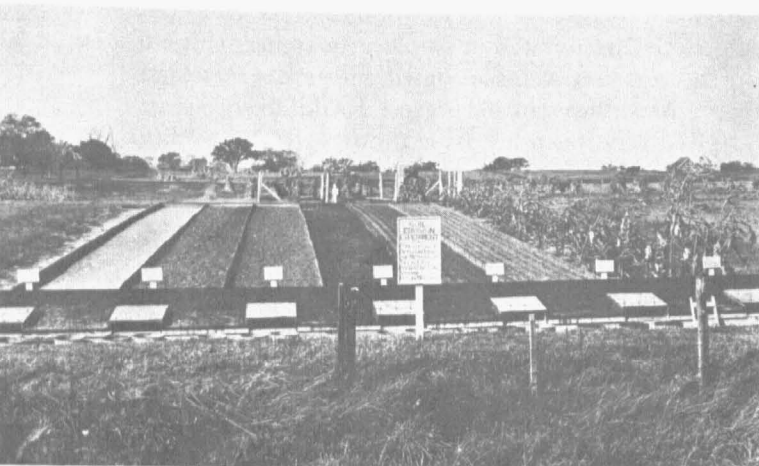
It was while I was dean that the federal government purchased the land for what is known as the Ashland Wildlife Area. A large sum of money was spent in building a dam for a reservoir, while a very good building for laboratories, to be used in wildlife studies, was constructed near it. This area has provided the University with the opportunity for effective wildlife research including forestry. Unfortunately, the institution has never been



A good field of Missouri soybeans. Within a period of 20 years, and under the stimulus of the College, this comparatively new crop developed to such an extent as to compete with corn and cotton in commercial value in the state.



A field of lespedeza, a crop which made a most remarkable development in the thirties and forties. This meant millions of dollars to Missouri farmers during that period. It is said to have saved thousands of farmers from bankruptcy during the depression years.

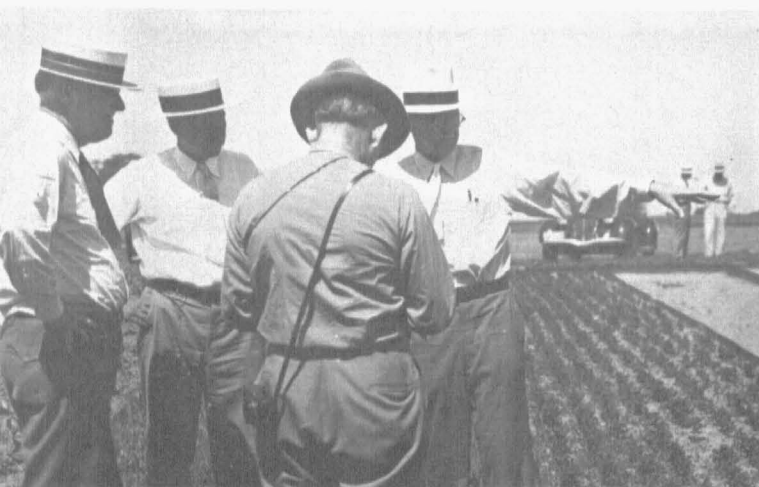


The original erosion experiment plots on land just east of the new Medical Center. Data from these plots, showing erosion losses under different cropping systems, were the first made available in the United States. These data have been used around the world. The plots are still preserved for their historic interest, although surrounded by dormitories and parking lots. Bennet appears at left in center and bottom pictures. Lowdermilk's back is to camera, center.

provided with sufficient funds to equip the building properly for research, or student training, so that it has thus far, not served the purpose for which it was designed. It has always been my feeling that the University should provide funds for its proper use. I remember when the building was turned over to the University, I made the acceptance speech in relation to agriculture. I had great hopes for its future use, at that time, but these have never been completely realized.

The Fertilizer Control Law

When the use of fertilizers first became important in Missouri, it was soon found that some state control was necessary. As a result, a fertilizer control law was passed, the administration of which was placed in the hands of the director of the experiment station. This law provides for the collection of samples, on the open market, of all fertilizers sold in the state. The samples are brought to the station laboratories and analyzed for the fertilizing elements they contain. The results are then published in a station bulletin, along with the analysis guaranteed by the company, so that farmers and others can see if any infringements are taking place. In order to defray the expense of the collection and analysis of these fertilizer samples, along with the publication of results, a fee is collected from the fertilizer companies, which goes into a station fund, known as the fertilizer control fund. The bill also provides that any excess in the amount of these fees, above the expense involved, may be used for the work of the station.



In my days, as director of the station, this fund while significant, was not large. However, in the last 15 years fertilizer usage has increased 1000 per cent in Missouri and this fund has become a very important one. Moreover, that part of the fund which may be used for the work of the experiment station, has no strings attached. The director may use it, wherever it is needed most. Regular balances may be carried over, from year to year, giving its use a great flexibility. With the great increase in research by the station, during recent years, this fund has been a cushion for unexpected demands, which has been very useful indeed. There has been no objection by the fertilizer companies regarding the fees set up by the law, and in general, they recognize that such a control law is to their benefit.

The question has sometimes been raised as to the desirability of providing a new law which would transfer this control function of the state government from the Agricultural Experiment Station to the State Depart-

ment of Agriculture, at Jefferson City, under which all state control measures are organized, excepting this one. There are, of course, some good arguments for this change, but since the extra funds from these control measures are used for agricultural research and since the station has long had completely equipped laboratories for analyses, it seems logical to leave the control as it stands.

At one time, when I was dean, the state farm organizations which honestly wished to be of help to the state, proposed that the fertilizer control work be transferred to the State Department. Then, as an offsetting plan, the Fruit Experiment Station and the Poultry Experiment Station, both located at Mountain Grove, would be placed under the jurisdiction of the College of Agriculture. The plan seemed reasonable and I could do little but allow them to appeal to legislative committees regarding the matter. However, when the matter of transferring the Fruit and Poultry Experiment Stations to the College came before the Senate committee on agriculture, the state senator from that district brought senatorial courtesy into play and the committee voted down the proposal. As time has gone on, however, studies in the improvement in methods of analysis by station research men and the increased returns to the experiment station from the fertilizer control fund have indicated that, so far as the station is concerned, this was fortunate. This, however, still leaves the two Mountain Grove stations under separate political boards, when they should either be under University control or they should be abandoned. The time will doubtless come when some adjustment regarding these stations will come about.

Relations Between College and Industry

The great developments in industry in recent years, are having a profound effect on the economic situation of the country. Some of the most important of these industries, in so far as agriculture is concerned, are those which manufacture products for agricultural use, such as farm machinery, fertilizers, insecticides, fungicides, and herbicides. In all of these fields there have been remarkable developments. The modern farmer is largely dependent on these products in his farm operations. The use of them has brought a complete revolution in American agriculture. One has only to think of farm mechanization to be convinced of the truth of this revolutionary change. As a result, agriculture and business are working more and more closely together. Some have applied the name of agribusiness to this association and this may be an appropriate term. Under these conditions, the modern farm operators and the management of these industries must work together, if either is to succeed.

This places the Colleges of Agriculture in a position that they must adjust their operations and their relations to farmers in order to meet these developments. The Missouri College is an important one of these.

In general, the funds which industry is using in the prosecution of research, far surpasses those available, for such purposes by the Land Grant Colleges. As a result, industrial research in the fields of agriculture may completely overshadow that done by the agricultural experiment stations of the country. This is a matter which the administrators of Agricultural Colleges should keep in mind.

Relations With Soil Conservation Service

To those who have wondered about the rather poor relations between the College of Agriculture and the Soil Conservation Service, during the years, I suppose I should take as much responsibility regarding this situation as anyone. We did not like the model law which President Roosevelt sent to the governors of the states, with the recommendation that *it be passed*. We did not like the manner in which the early regional conservation office sent men to our legislature to work for its passage. We felt that we should have a state-written law and not a federal one. The representatives of the Regional Soil Conservation Office, at Milwaukee, seemed determined to enforce certain regulations which we did not approve. As a result, we decided to write a law which we thought would fit our conditions and which after long delay, was given approval by the Soil Conservation Service in Washington.

This proposed state law was presented to the legislature and passed with little change. It included an important provision that the Soil Conservation Service representatives in the state should follow recommendations of the College, regarding conservation practices. Unfortunately, the Regional office did not feel obliged to do this in many cases, and our relations did not improve. As a result, the College has not recommended that the county extension agents go out and urge the farmers to organize soil districts provided under the law, so that at this writing only 40 of the 114 counties have established districts. Actually, the statistics show that considering the conservation accomplishments in the counties having districts, in North Missouri, for instance, these are no greater than in the counties having an extension agent and a balanced farming specialist, while the costs in the district counties are very much greater. It would seem, therefore, that since the county agents have long been operating and the balanced farming representatives are doing a good job in bringing about conserva-

tion practices, the large federal expenditures in the district counties are not entirely justified. However, the activities of the Soil Conservation Service are going forward and there seems little that can be done about it. If this is the case, it is possible that our objection to the Soil Conservation Service procedures may have been for naught. It might have been better, therefore, to have cooperated more fully with the Service, throughout the years, rather than half-heartedly. I find it very difficult, however, to bring myself to that point of view.

Administration of Agricultural Research

As dean and director, I found that the administration of the work of the experiment station was one of the most difficult tasks I faced. This was partly because federal funds were involved, although during the latter part of my administration these amounted to only \$167,000 annually. This was not a great amount as compared with modern times, when federal allotments are over four times this figure, thus causing greatly increased difficulties for the administrator. During my last year as dean (1944-45) the number of major research projects underway in the station totaled about ninety, in addition to a number of auxiliary projects. Today the number is almost two hundred.

In the earlier days of federal aid, the projects were outlined by individual research workers and submitted to the station director for approval. If approved, a certain amount of money would be allotted to each project for the fiscal year. This was entirely through an agreement between the administrator and the researcher. The federal government sent a man each year to check on the amount of federal money spent and the methods of its use. This was a procedure which seemed perfectly legitimate, as it was the duty of the government to see that the funds were properly utilized, according to federal law. So far as the Missouri Station was concerned there were few cases where the use of funds was ever seriously questioned. This lasted up until the close of my administration, although it was noticeable that the federal men were becoming more critical.

In recent times, the station director is required to secure federal approval, in Washington, of each research project plan on federal funds, before it goes into effect. Moreover, a very detailed report of the results secured from each project is required, near the end of each fiscal year. At such times the various researchers and department chairmen are burdened with this obligation until it has become something like a chain about their necks. Further, the projects are now listed by numbers, rather than by titles, thus introducing a type of regimentation which, to me, is objectionable.

There has always been some overlapping or duplication among projects at the different experiment stations so that during their visits, the federal representatives have attempted to keep this to a minimum. One of the more recent federal bills, appropriating money to the

states, provides for procedures whereby a number of stations interested in a specific project can set up a cooperative plan and work together on it. This seemed like a real advance in station cooperation, but the many committee meetings, the costs, and the details of working out the plan, especially in dividing the funds between stations have often been exasperating.

I attended a meeting of the North Central directors a year ago and sat in on a discussion of the division of funds for one of these cooperative projects. I was amazed to see a man I had previously known well, as one of the best nutrition researchers in the country, take a half hour to explain and try to get approval for the division of funds for just a small part of one of these cooperative projects. It is true that this man had recently been made associate director of one of the larger midwest experiment stations and, to a large extent, this had taken him away from his own research. But to see a good man's time wasted in quibbling over the division of a small allotment of funds showed the length to which stations may go in the overall administration of federal funds for cooperative research.

As has been indicated, great changes have taken place in the administration of research since I was in the dean's chair. As has been indicated, there has been a great increase in funds allotted to agricultural experiment stations, from both federal and state sources. These have really been colossal in terms of what I knew fifteen to twenty years ago. Moreover, the number of organized projects has doubled. With these tremendous increases, the problems of administration have increased greatly.

My experience in the earlier days, in so far as the administration of research was concerned, was quite simple. I served through two world wars, in the first as acting dean and in the second as dean and director. The wars brought many problems, however, I do not think they were anything like those which confront a dean today. I have often thought that, considering the modern complexity of things and the red tape of the federal and state governments, I should not want to be an agricultural dean today. I should prefer to serve, as in the earlier days, "when we were so happy and so poor."

In connection with the national economy, I often think of the federal controls that go along with the increased federal expenditures, in terms of a recent announcement made by a prominent agricultural leader. He is quoted as saying that "a government big enough to give us everything we want is also big enough to take everything we have." While this statement was not meant to apply directly to Land Grant Colleges, I sometimes think of it in this connection.

Need for Continued Agricultural Research

The fact that the country has had burdensome surpluses of very important agricultural products, during



The new agricultural building, which is very modern in every respect, with the most complete appointments. It houses the Administrative Offices, the School of Forestry, the Departments of Agricultural Chemistry, Horticulture, and Entomology, the Agricultural Editor's offices,

the Fertilizer Inspection Center, Landscape Gardening, the Entomological Museum and a bulletin distribution room, with many classrooms, laboratories and offices.

recent years, does not mean that good fundamental research should be curtailed. It must be remembered that our population is expanding rapidly and we must have the capacity of providing food in abundance in the years ahead. As a rule, the results of fundamental research cannot be put to use through applied research, until several years, often a good many years, after these results have been secured. This means that they must be accumulating as the need for them grows. I think that a good deal of this type of agricultural research will bring to light the possibilities of developing new techniques in food production far beyond our present dreams.

While there is little immediate demand for stepped up food production, this may come before we are aware of it. The recent interest in the so-called population explosion indicates that people are becoming sharply aware of our increasing numbers. However, paradoxically, as it may seem, the rapid increase in life expectancy in recent years, due to improved medical facilities, seems to be making the increased number of aged persons, of almost as much importance, in determining population numbers, as the numbers of births. Certainly, it is important to have a large amount of fundamental research going forward to take care of the needs when they come.

Probably the most immediate demand for research information is that arising from the farmers' need for finding means of cutting his costs of unit production.

It is almost certain that constant research will be needed in order that the farmer may meet the situation

regarding the low prices of the products he has for sale and the high prices of the things he has to buy. While this may be in the nature of applied research, it is of present day importance. This and other demands, somewhat similar to it, are what farmers need, at this time, in order to deal with the economic conditions under which they are operating. However, there are certain to be continual changes that cannot be foreseen. As a consequence, there are sure to be problems for which fundamental research will be needed for the foundation approach. This must be kept constantly in mind.

According to census figures the present rate of population growth will mean a doubling of our numbers by the end of the present century. Roughly speaking this will require a doubling of our food production, by that time. Only productive research will make this possible.

Interesting Features of Agricultural Extension Work

I was on the College staff for six years before the Agricultural Extension Service came into existence. In those days such extension work as we carried on, was through the regular college resident men. We wrote hundreds of letters in answer to farmers' questions, sent our many bulletins and circulars, and went out to farmers meetings to speak.

The College had already appointed two men known as farm advisors, who were active before the Extension Service was organized under the federal Smith-Lever Act of 1914. Under this act, the plan of county agent service was soon organized, and the extension activities were in full swing. A. J. Meyer was placed in charge, and he continued to supervise this work until his death in 1930. John T. Nicholson and R. R. Thomasson then took over until 1935 when J. W. Burch was appointed as director in charge and Mr. Thomasson became assistant director.

Relation of Farm Organizations to Extension Administration

When the plan for appointing county agents was first put into effect, the County Farm Bureaus were very much interested. As a matter of fact, they were very active in getting the work started, by having their groups act as the sponsoring agencies. At this time, however, Mr. William Hirth, founder of the Missouri Farmers' Association, was attempting to get farm clubs established over the state which, in many cases, brought important controversies with the Farm Bureau groups. This was a perfectly normal attitude for Mr. Hirth to take but it should be said that the county agents were not blameless in this matter as they had early affiliated largely with the county Farm Bureaus. All of this was unfortunate for the College as well as for the Missouri Farmers Association.

Mr. Hirth was a very able and clever man. He soon started a monthly paper, the *Missouri Farmer*, which was an agricultural journal, although it served as the organ of his farm club movement that later grew into the Missouri Farmers Association. Mr. Hirth was a master in the use of English, and some of the editorials he wrote for his paper were clever and full of invectives.

After Mr. Hirth's death, the Missouri Farmers Association sponsored the extension work in some counties, but this did not reach very far. As time went on, it became evident that the policy of sponsorship of county agents by any state farm organization, was a questionable procedure and it was finally abandoned in favor of an extension organization of farmers within each county.

The Agricultural Extension Personnel

It should be understood that while the work and findings of the Experiment Station are basic to all things done through resident and extension teaching, it is the extension service that is mainly responsible for dealing with the farm families directly. As time has gone on, a county extension agent, usually with one or two assistant agents and in most counties, a home agent, has been appointed in every county, to deal directly with farmers, farm women, and farm youth. These agents are the University Agricultural representatives on the firing line.

People not familiar with extension methods have little idea of the care taken in selecting the field extension staff. Much of the work of selecting personnel, through the years, has been in the hands of R. R. Thomasson, assistant director. It should be understood that every one of this large field group is a member of the University staff, just as are those on the resident staff in Columbia. Since these field men and women deal directly with the public and since they are to a large extent on their own responsibilities in the counties they serve, they must be very carefully chosen, in order to represent the University faithfully and well. They are, therefore, chosen not only for their knowledge of the subjects they are to handle in the open country, but for their common sense, their good judgment, and their abilities to get along with people. They must also be individuals of high integrity with a real interest in the welfare of farm families.

Mr. Thomasson and his helpers have certainly done a remarkable job in screening and selecting these extension workers through the years. While I was dean I was greatly interested to note how few important mistakes were made by this field staff in dealing with people. At that time, I knew almost all of them personally, but in recent years, there have been changes with which I have not been able to keep in touch. However, I always attend the annual extension conferences in Columbia, each November. One cannot be in touch with this group of extension workers without appreciating their very fine qualities. It is a group of individuals of whom the whole University community can be proud. There are few finer groups anywhere. Moreover, the esprit de corps among them has always been high. It is no wonder, therefore, that they have won the respect and admiration of the people.

Resident Staff of Extension Workers

Dean Mumford, who guided the extension service in an administrative capacity from its inauguration in 1914 until his retirement in 1938, was a wise administrator. One of the principles he laid down was that the extension specialists, in the various subject matter fields, should have offices in the departments with which they were affiliated. The purpose of this was to keep them closely in touch with the new subject matter as it was developed through the experiment station workers. This was certainly a wise provision. There are cases in other states, where the resident men and the subject matter extension specialists are housed separately usually with unfortunate results. In a few states the entire extension staff had been so completely separated from the resident staff that they scarcely speak the same language. In these states too, it has sometimes happened that the director of extension has gone directly to the legislature for funds, without approval of the dean and director. In

such cases, the popularity of extension workers among farmers has sometimes made it possible to secure farmer support for extension appropriations directly, thus securing greater appropriations than the dean and director had approved. This is exceedingly poor policy.

Administration of Agricultural Extension

Mr. Burch had been Acting Director in Charge of Extension during Dean Mumford's administration. However, on the retiring Dean's advice, I recommended to the Board that Mr. Burch be made Director, and this was done. I have been proud of the work of the Extension Service since he assumed this office, and I have honestly felt, that it has been one of the very best Extension Services among the states.

Director Burch is a man who knows Missouri agriculture thoroughly. He knows Missouri farm families and he has been very wise, as well as skillful, in directing the Extension Service. He was raised on a Linn County stock farm where he secured all the experience to which farm boys are exposed. He was endowed with great intelligence and a native judgment which have fitted him admirably for the position he has held for almost a quarter of a century. Mrs. Burch was born on a very prominent North Missouri livestock farm, the Maddox Farm, and she knows practical agriculture almost as well as her husband.

Mr. Burch is a graduate of the Missouri College of Agriculture, and he was an extension specialist in animal husbandry until he was placed in charge of extension. He was a captain during the first World War, and during the second, he guided the extension service in the great assistance it gave to food production.

Throughout most of Mr. Burch's service as Director of Extension, he has owned a farm west of Columbia, on Highway 40, near Rocheport. During the years he has been directing the work in extension, he has managed this farm with Mrs. Burch's assistance. The Burches have no children, and Mrs. Burch has "ridden the ranch", as it were, a task which she has seemed to enjoy. The farm has been expertly managed while, at the same time, the extension service has been soundly administered. Today, the staff numbers approximately 500 individuals, exclusive of clerical help. During this entire period, Mr. Burch has spent full time with the problems of extension, while his farm activities have been handled nights and mornings along with Mrs. Burch's activities during the day.

Funds for the Extension Service

It has always seemed easier for the College to secure funds for the support of the Extension Service than for the experiment station. This has been because of the popularity of this work which helps farmers in the field. While my interests in extension work have been great,

it has concerned me somewhat to see extension money supplied in considerably larger amounts than station money. After all, the extension service is dependent on the experiment station for almost all of its teachings and it takes time and money to solve the problems which must be solved before extension can proceed.

For many years, Congress has favored extension over research for Land Grant Colleges and the federal funds Missouri received for that work were larger than those for research. The same was true for state appropriations, until the last legislative session when through the efforts of Dean Longwell, the station support was greatly increased.

The popularity of extension can be illustrated by the fact that the legislature, a few years ago, passed a special bill, providing that county courts make mandatory county contributions to extension programs. That was really a remarkable development. It might be said in this connection, that at one time the legislature passed a bill providing for county experiment stations. However, the law was ill-conceived and it provided no funds. A couple of these were established on outlying experiment field money, but the plan did not prove satisfactory. On the other hand, this special appropriation for extension work in the counties, has received general approval of the people, and it has given satisfactory results.

It is, of course, true that a far-flung extension service, such as that in Missouri, really requires abundant funds to make it efficient. It has never had sufficient money to maintain a satisfactory salary scale, particularly for county agents. For years, these have been below the average for the country as a whole. Considering the wealth of the state and Missouri's standing in agriculture, this is a very poor showing. In spite of this, however, the agent turnover has not been so very great and the morale has remained high. This means that these staff members are really interested in Missouri farm people and in working with them.

Recent Changes in Extension Organization

A change recently made in extension organization and administration of all University extension work is far reaching. For many years, the Agricultural Extension Service has been a most important part of the College of Agriculture. There has also been an organization known as University extension, more recently known as Continuing Education, dealing with activities largely outside of Agriculture. The work done under this organization has consisted largely of off-campus University credit courses, taught mainly by members of the faculty of Arts and Science, some short courses, on similar subjects, given at Columbia and large numbers of correspondence courses under this extension organization. There is also a plan of collecting many films and tapes, on educational

subjects and making these available to schools and other organizations throughout the state.

As conditions are developing in agriculture, great changes are taking place. The number of people on the land is shrinking, the size of farms is increasing, and agriculture is cooperating more closely with industry. This has meant important changes in the economic and social conditions for those on farms. In other words, agriculture and business are working more closely together, as are the people on farms and those in villages and towns. The work of the county agent has, therefore, been materially modified by these changes and the work has been broadened.

As a result of these developments in rural and urban areas, the University administration has deemed it wise to combine all work in extension under the name of the University Extension Division, headed by a dean. In this new division, Director C. B. Ratchford, in agricultural extension, has been appointed Dean, although he continues to hold his present position as Director of the Agricultural Extension Service. Under this plan the Agricultural Extension Service will form a most important unit. While the county agricultural extension councils will continue to function in guiding the programs in agricultural extension work they will doubtless include some members from the urban groups. The county agents' offices are thus expected to develop as University educational centers, throughout the state, in a way they have never done before.

There is another change which may modify considerably the work of the county agents. This plan provides for placing certain individual subject matter specialists, both men and women, in districts made up of two or more counties. These individuals will office with one of the county agents in the district and they will give much more satisfactory information to farm people in the field of their specialties than the local agents are able to give. Actually, this plan is under trial in a limited way, and it will doubtless require some experience in working out the details. This development in the organization of University Extension is a sign of the changing times. It has been said, that it should make the whole state the campus of the University.

Special Features of Missouri's Extension Program

The program of the Missouri Extension Service has been unique in a good many ways, some of which have made it outstanding. All of these I have seen develop through the years and have followed with much interest.

The Field of Communications

In modern times, it is common to speak of the means used for bringing subject matter material to the people, as the field of communications. Certainly, this has reached a high degree of development as compared with the early days. I, of course, remember when the common way to reach farmers was through public addresses, bulletins, newspaper articles, and letters. These methods have continued, but other means have reached great proportions.

I can well remember when the radio first came into use in contacting the farmer. The first radio station that went on the air near the College was at Jefferson City, with frequent agricultural programs sponsored by the State Board of Agriculture, under the secretaryship of Jewell Mayes. It was a great adventure to go to Jefferson City, by train, and use this new means of broadcasting information. I remember my first talk over this station and how nervous I was. It was said, that in these talks we would be talking to thousands of people, which seemed frightening. Then, after the talk, we waited two or three days for the "fan mail" to come in. There was always such response from some of the listeners, and this was interesting, although in most cases, it was of little value. Today people rarely think of fan mail as a special follow-up after a radio or television talk, although some important letters and phone messages may come in.

The radio programs serving agriculture have had a long and useful development, and they still continue. For years the College has had staff members prepare talks for use over the radio, sometimes given by the individuals who prepared them and sometimes read by the radio broadcasters. These have continued and all the important stations in the state are provided with this material to be put out at convenient times.

It is, of course, the development of television programs which has been of greatest interest during recent years. The College puts on a live television program for farmers each week, Monday through Friday, over the University's own station. It is amazing how much time is required to prepare for a 30 minute session. It takes practically all of the time of one regular man. This seems almost unbelievable, but it is a time-consuming ordeal to secure one or more speakers for each week, prepare and rehearse the program, and then put it on. The University also puts on programs outside agriculture, but in order to keep such a station in the black many commercials and network programs must be given.

A few Universities have their own television stations, for which they provide all the programs, but in such cases the cost to the institution is large, although they are rarely on the air for the full day and evening. The manner in which the University of Missouri reaches very many people, over television, is to furnish material to the various stations over the state, where this is used

at the convenience of the operators.

Taken altogether, the College contacts with farm people through the various communication media, is far-reaching. Considering radio, television, and the press, large numbers of farm people are reached each day.

Then there are publications from the College, in the way of bulletins and circulars, which are distributed, not only from Columbia, but through the county agents' offices. There is every reason for the farmer to feel that he is given full consideration in attempts to keep him abreast of the times in all agricultural matters.

The Clover and Prosperity Campaign

One of the best and most remarkable pieces of agricultural extension work ever attempted, was that of the so-called Clover and Prosperity Campaign. This was an early one, but it received a great deal of publicity and was very effective. It really originated in the brain of Paul Schowengerdt of the soils extension staff, and was inaugurated in 1922. The man who worked with Schowengerdt in the beginning was C. E. Carter, and later R. J. Silkett was very prominent in this effort. I remember well that a few years previous to this development, I had become much interested in the work done in Illinois under the direction of Dr. C. G. Hopkins, head of the Illinois Department of Agronomy, at that time. Dr. Hopkins was a tremendous force in Illinois in those days. He was known everywhere as the man who developed the idea of a "permanent agriculture", meaning an agriculture in which the soil would be permanently maintained for future generations. One of his fundamental ideas was to supply ground limestone to the soils which needed lime. In this, he had made great progress, and I felt we should have some such development in Missouri.

Mr. Schowengerdt was county agent in Callaway County, and I had become much impressed with his possibilities. I, therefore, invited him to come to Columbia, in order to develop an extension liming project as well as other features of soil improvement. I told him that I should like for him to join our soils extension staff and "put Missouri on the map as a lime using state". He was interested, and, after consultation with the extension director, he was offered the position which he accepted.

The term "clover and prosperity" was a slogan developed by Schowengerdt. The idea was that if clover could be grown abundantly, farm prosperity would follow. His idea, therefore, was to feature the growing of clover, in which most farmers were much interested, and he, therefore, recommended the use of lime, phosphates, and other treatments to make clover grow.

The campaign was started by outfitting a small truck with demonstration material and going from county seat to county seat, holding farmers' meetings. These meet-



Original truck used for carrying exhibits to meetings of the famous Clover and Prosperity Campaign. The truck looks insignificant, but the campaign was one of the most important extension projects in which the College has engaged.

ings proved very popular and reached large numbers, sometimes more than 25,000 a year. That the program was very effective among farmers, was also shown by the fact that, for several years during the intensive activities of the campaign, one or more of the Missouri counties was winner of a national award for soil improvement. As a matter of fact, a modification of these original clover and prosperity farm meetings still persists. The program was, therefore, not only of great immediate interest to farmers, but one which has had much influence on Missouri farmers throughout the years.

The Balanced Farming Program

The Missouri Agricultural Extension Service has become well known, the country over, for its so-called "Balanced Farming Program". This program, the nature of which is somewhat difficult to define, really includes complete farm and home activities, embracing the entire family. It provides for soil conservation, and for proper systems of cropping to supply feed for the farm's animals and, usually, some extra products for sale. It also

A farm family, with the local extension agent, developing plans for balanced farming.





A rather typical 4-H Club. These clubs have a powerful influence for good among the youth of the state. The number of 4-H Club members in Missouri is now over 36,000.

plans for the use of some of the farm dividends to provide for the farm home and its facilities, along with plans for the educational, religious, and social developments of the family. In other words, everything is considered, and in such a balance as to take care of all needs.

The ideas for the development of the Balanced Farming Program were largely those of Mr. Burch, with some ideas from the leading members of his staff. It has been pushed hard, during the last 20 years, and has made great progress, so that about 30,000 Missouri farmers are now participating. This general plan has met with so much favor throughout the country that the Extension Division of the U. S. Department of Agriculture has included the essential ideas in their national program, to be recommended to the states. Many states are following the general ideas of the program under different names.

The 4-H Club Programs

Probably the most far-reaching specialized program of the Extension Service is that dealing with 4-H Clubs. Early youth clubs for rural children were started by different individuals, throughout the country, about the first of the century. The organization known as the 4-H Club movement, took place before formal extension work was inaugurated. However, the extension services of the various states were interested, and the sponsorship was taken over by the National Extension Service in the early days of organized extension work.

I became interested in boys and girls agricultural clubs in the early days. Professor A. B. Graham, Superintendent of Schools in Greene County, Ohio, started a number of such clubs in the very early 1900's while I was an Assistant Professor of Agronomy at Ohio State University. He asked me to come to Greene County and

judge the products at a show of his club's first year's work, which stimulated my early interest in the movement. Only a short time before his recent death, Graham asked me if I remembered that I gave the first prize in corn to a little Negro boy. Unfortunately, I did not remember this, but it's an interesting sidelight on early club work.

Graham continued his work with his clubs and was soon brought to Ohio State University as one of the first men in the country to carry on extension work with farmers, so that I came to know him very well. He was finally taken to the U. S. Department of Agriculture, in Washington, where, for a good many years, he was in charge of the 4-H work for the country. He died a short time ago, at an age within the early nineties.

The 4-H work in Missouri has been given much attention by the extension service, which has done an exceptionally good job with it. There are special 4-H Club agents, working with the county agents in many counties, and there are several 4-H state representatives in the 4-H offices in Columbia. The number of boys and girls now enrolled is over 36,000. This is one of the most effective, far-reaching programs in which the extension service has been engaged through the years.

Some Matters of Special Interest

In preparing a running account of observations of the work of the College of Agriculture, it is difficult to follow a chronological order of the things one has observed. It seems almost necessary to bring together a discussion of the various activities into more or less heterogeneous groups. Some of these are grouped under the above title.

War Work in the College of Agriculture

Throughout its history, the work of the Colleges of Agriculture has been largely that of attempting to increase agricultural production. Their great success in this field has been shown in the surpluses of certain products which have developed, largely through the use of the new techniques that have been adopted by farmers. During the First World War, however, these techniques had not come into wide use and, of course, farmers were really handicapped as compared with their opportunities during the Second World War. It was of tremendous importance, in the First War, to assist farmers in their efforts to increase production. The slogan "food will win the war" was widely used and the Missouri College threw its best efforts into these activities.

As it worked out, Dean Mumford was appointed by Governor Gardner, as Missouri Food Administrator, while I became acting dean. The Dean did a most re-

markable job in organizing the forces of the whole state for increased production. He depended on the College to give its best efforts to helping the farmers, who responded heroically and patriotically. The Extension Service was well under way by that time, and every effort was made through county extension agents to help farmers. The home economics extension workers threw themselves into the effort of making foods go a long way. They also developed new types of food for the table, such as substitute meats and coarse breads, in order to allow the better grades of food to go to the armies. It was most interesting to observe how all the College representatives, who were engaged in the immediate production and use of foods, performed their assigned duties. To all this, the farmers responded, using every effort to increase production, whole families often working in the fields. War gardens sprang up, both on farms and in cities, so that the efforts were really "all-out" for food production.

During the Second World War, conditions had changed greatly. By that time many new techniques had come into use by farmers and production was increased greatly. Actually, the people of the country were fed better than ever before and there was an ample supply for the armies. This increase in production continued to the end of the War, when surpluses were accumulating. In all this, the College was very active in stimulating farmers to maximum efforts.

Experiences During Two World Wars

My experiences during the two World Wars were difficult ones. As I have indicated, I was acting dean during the First World War, and I was dean and director during the Second. I expect that few men in Land Grant College circles had this double assignment. Those were times when student numbers declined and many faculty members were either drafted into the armed services or enlisted. As a result, even with a smaller number of students, it was difficult to keep the teaching and the work in the experiment station going efficiently.

In the second War, I had many conferences with the local draft board in an endeavor to retain key staff members. My effort was to convince the board that individual college men were more valuable in their work in stimulating high food production, than in the armed services. I must admit that, in some cases, I was not quite sure I was making the proper representation to the board, but in most cases, I think I was.

One difficulty in dealing with the local draft board was that the State Selective Service Board had little idea as to the functions of a College of Agriculture. At one time I asked this board for their definition of the term "agronomist", a group I was attempting to keep in food production. The definition which was sent me was as follows:

AGRONOMIST (Agronomist 0-39+54)

Makes qualitative analyses of soil samples to determine presence of acid or other injurious chemicals and recommends treatments, such as cutting and burning undergrowth, cutting overhanging and drooping tree branches so sun may reach the diseased ground; carries out experiments in cereal, cotton, forage, or other crop development and improvement; conducts research in irrigation fertilization, culture, and genetics of a particular plant, takes soil sample and places in a vial adding a chemical solution—compares resulting color with standard color to determine the soil substance.

It is almost unbelievable that such a definition should have been prepared for the Board. It is certainly an indication of much of the confusion that existed in Army regulations at that time.

I was under great pressure, as an acting dean, during and immediately following the First World War. This was a result of new developments brought about by the War, which demanded specific attention. Moreover, I was still head of the Department of Soils, so that I was actually overworked. At one time I was so exhausted that I was in bed for several days and needed a part-time nurse. When I had recovered somewhat, Mrs. Miller and I, along with two of the children and a nurse maid, went to the Ozarks for a couple of weeks, where I had complete rest. I was soon back on the job again, using greater caution from then on.

Farm Organizations

Mention has been made elsewhere, of the early relations of the College to Missouri farm organizations. The two large organizations, now operating in the state, in order of the number of members, are the Missouri Farmers Association, and the Missouri Farm Bureau Federation. More recently, there has emerged an organization, known as the National Farmers' Organization, or the N.F.O. This group, which originated in Iowa, has spread to other states. At this time, the president of the organization is a west Missouri farmer. This has resulted in a considerable increase in the number of members within the state. The broad plan of this organization is to control the marketing of farm products, particularly livestock, in an attempt to increase prices. A fourth organization, the Farmers' Union, has never flourished in Missouri, and, at present, there are practically no members. The Grange has been operating in the state for many years, but at present, the numbers are few.

The College is much interested in these farm groups, and it endeavors to work with them whenever this is feasible. Unfortunately, like the national organizations with which they are affiliated, they have different points of view as to what should be done for the farmer. As a consequence, complete cooperation is, at times, somewhat difficult. On the whole, these organizations have a wide influence among Missouri farmers, particularly through the cooperatives in farm production, farm supplies, and

through the insurance activities which they represent. Over three quarters of the farmers of the state belong to one or more of these organizations.

Seed Testing Laboratory

A development with which I had much to do, in the early days, was the installation of a seed testing laboratory in the Department of Agronomy. This was a co-operative project with the United States Department of Agriculture. The Department provided the seed analyst and the special equipment, while the College supplied space, heavy furniture, and other facilities. The purpose was to test farm and garden seeds for purity and germination. The service was to be free to farmers and seedsmen.

There was no law in Missouri providing for the testing and certification of seeds, at that time, so that unscrupulous seedsmen could dump on the Missouri market any kind of seed they wished. Later, however, a law was passed making it mandatory for companies selling seeds in Missouri to guarantee seed quality. This law provided that the testing be done through a seed testing laboratory with the State Department of Agriculture in Jefferson City. However, the legislature still provides funds for continuing the laboratory at Columbia for serving farmers, county agents and teachers of vocational agriculture. Later, it was organized to serve the Missouri Seed Improvement Association in testing the seeds put on the market and certified by that organization.

This laboratory continues to be of great service, making between 9,000 and 10,000 tests annually. I have always been interested in this project and have kept closely in touch with its activities. In recent years, the analyst, who is an assistant professor in the College, gives a course in the techniques of seed testing, mainly for county agents, teachers of vocational agriculture, and for students specializing in botany.

Experiment Station and Extension Publications

In issuing publications on agriculture, the College of Agriculture has been one of the most prolific in the country. These cover research bulletins, farmers bulletins and farmers circulars, from the experiment station, as well as extension circulars from the extension service. There are special publications, such as the annual reports of the Director of the Experiment Station and of the Director of Extension. There are also some special leaflets and folders. The research bulletins of the station are quite technical and they are not meant for farmer use, but for the technical research workers throughout the country. All the others are written in popular style for the use of farm people.

Up to February, 1960, the following numbers of important publications had been issued:

Agricultural Experiment Station Research Bulletins—
712
Station Bulletins—746

Station Circulars—360

Agricultural Extension Circulars—709

4-H Club Circulars—160

Extension Leaflets—54

This makes a total of 2,681 bulletins and circulars in the regular series, aside from the small leaflets. There are a few reports on regional experiment station projects, worked out in cooperation with other stations, which are not included in the above summary.

The series of station circulars was discontinued a few years ago, and I have always thought this was a mistake. The reason for the discontinuance was that the Extension circulars were popular and written particularly for farm people, just as were the station circulars, so the two lists seemed to be much the same. However, as it has worked out, the men on the resident staff feel more free to write for the station than for the extension service. Moreover, the extension service has certain types of presentation with which the resident men are not familiar. The result has been a sharp decrease in the number of popular circulars written by resident men which have always been very effective. This has been a distinct loss.

There is one other thing which has been done in connection with the publications of the College which I have always questioned. That has been the enlargement of all publications for farmers, from the former standard size used by most experiment stations, 6 x 9 inches, to the size of 8½ x 11 inches. This interferes with library filing in the Land Grant Colleges throughout the country. I think, however, that for our own farmers' use, this size is quite desirable.

The Farm News Service

A medium for reaching large numbers of farmers, which has been in use for many years, needs special mention. This is the Farm News Service, issued weekly from the office of the Agricultural Editor. It is a sizable sheet, printed on one side, and it covers a great variety of short stories regarding new developments around the College. The short articles are submitted by various men, of the resident and extension staffs, written in popular style for the general public to read. These sheets are sent out weekly to the metropolitan and county papers of the state, so they can use the articles, or extracts from them, in their regular editions and very wide use of this material is made. Farmers give much attention to the material they read in the local papers. This is one of the very important means of reaching them with up-to-date agricultural information.

The Announcer

During the time I was dean we conceived the idea of publishing a monthly, four-page Announcer, as it was named. This publication was to give short reviews of the new publications of the College of Agriculture, as they came out and also to carry the important announcements

regarding agricultural meetings, of all kinds, in the month ahead. In order to make up a mailing list of those who would be interested in receiving this, we circularized all the farmers in the state regarding it. We sent a postcard telling of the proposed *Announcer* with a return card attached. Through the cooperation of the Columbia post office, arrangements were made for placing one of these in every farmer's mailbox in the state, which at that time numbered about 230,000.

The cards returned were just about 25,000 or a little under 11 per cent of the total. It is the experience of most agencies, sending out questionnaires, that the percentage returned is low. However, I was disappointed at this showing. Still, this is a large number of farmers receiving the *Announcer* monthly.

A Curtailment in University Funds

I well remember some dealings I had with Walter Williams when he was president of the University in the early thirties. This was at the time when the depression influenced every agency in the state, including the University, and, at that time, the Governor held up a large share of the appropriations. Of course, there was nothing for President Williams to do but notify all deans regarding the curtailment which he was obliged to make in their allotments. I was acting dean, at that particular time when Dean Mumford was in Europe, along with other state food administrators, on a special mission. Therefore, it became my unpleasant duty to distribute the budget curtailments among the departments of the College. This meant cuts in salaries and the release of a considerable number of men. It was an exceedingly difficult undertaking for a man who was only an acting dean. No doubt there were criticisms, among faculty men, with the way I handled individual cases, but, on the whole, they were exceedingly cooperative under these desperate circumstances, and few complaints reached me. This was my most important dealing with Walter Williams, one which I shall never forget. However, I felt his hands were tied by the governor's action, and he did the only thing that could be done under the circumstances. When Dean Mumford returned from Europe, I think he was more perturbed about this situation than I had been. Of course, he was the one who had really been responsible for the recent developments of the College, and after he had built it up to a high degree of efficiency, this cut in funds was a distinct setback to some of his most important plans.

Awards for Distinguished Service to Agriculture

Soon after the College became well recognized by the farm people of the state, it decided on a plan for giving special recognition to the state's most outstanding farmers. This plan was placed in the hands of a faculty committee which selected two or three men each year

who were recommended to the faculty to be honored at the time of the Farmers' Week Banquet.

The men who were honored under this plan were: C. D. Bellows, a Shorthorn breeder of Maryville; Edward L. Beal, a large apple grower of Republic; Frederick Conant, a very well-known and public spirited apple grower from near St. Joseph; N. H. Gentry, Missouri's famous Berkshire hog breeder of Sedalia; Sherman Houston, a large cattle breeder and public spirited farmer of Malta Bend; Sam Jordan, originally a farmer at Stanberry where he became greatly interested in corn improvement and who later became a famous lecturer for the State Board of Agriculture, and L. M. Monsees, the world's best known jack breeder, of Smithton.

After these eight men were honored this committee, in charge of selections, made no further recommendations, although it was continued for a good many years. These eight men were considered outstanding in the state and it seemed the committee did not care to recommend others, who were not so widely known. I have always been impressed by the Wisconsin plan in which men are sought out who have really accomplished a great deal by their own efforts, although many are not very widely known. Such men may deserve recognition as much as, or even more, than the men who have prestige which brings them before the public. I hope Missouri will revive this plan, following one similar to that used in Wisconsin.

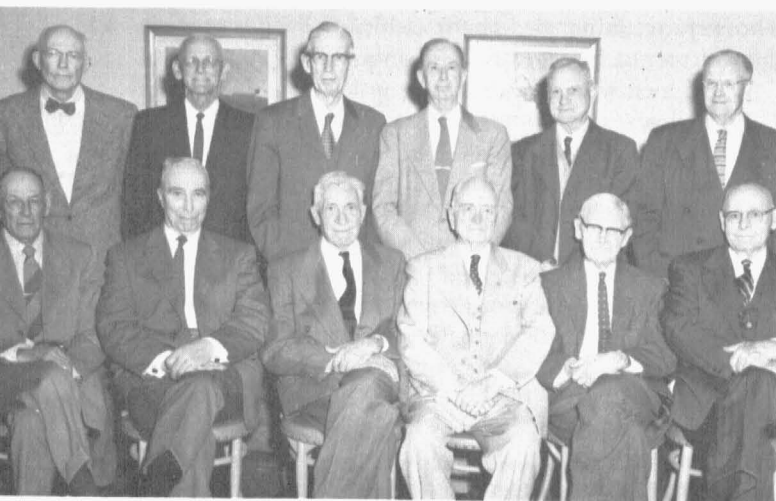
An Outstanding Graduating Class

It's been interesting to me, through the years, to observe the variations in the nature of different graduating classes in agriculture. Of course, most classes are similar in the make-up of men, but occasionally there is an outstanding one which seems to be fortuitous in nature. In other words, a much larger number of good men appear than would be anticipated. A class of this kind was that of 1908. Those were days when the enrollment in the College of Agriculture was small, and the total number in the senior class in Agriculture of that year was only twenty-one. Of these, the eight men named below were all associated with Land Grant Colleges in later life. This is a good criterion of success. Naming them in no particular order, they were as follows:

D. H. Doane, the first head of a Department of Farm Management in the country and this was organized at the University of Missouri. Later, he headed the Doane Agricultural Service, one of the largest companies serving agriculture throughout the Midwest and South.

Ollie E. Reed, head of Dairy Departments at Kansas State College, Purdue, and Michigan State College, and, later, Chief of the Division of Dairy Husbandry of the U. S. Department of Agriculture in Washington, for many years.

Henry P. Rusk, for several years professor of Animal Husbandry at the University of Illinois and later, Dean



Twelve emeritus professors of the College of Agriculture. They meet together once each month for a period of good fellowship. Lower row, left to right—Weaver, Krusekopf, Kempster, Talbert, Miller, Hase-man. Upper row, left to right—Hogan (recently deceased), Durant, Jeffrey, Martin, Cowan, Johnson.

and Director of the Illinois College of Agriculture until he reached the age for University retirement.

M. M. McCool, head of the Department of Soils at the Michigan State College and later with the Boyce Thompson Institute for Botanical Research at Yonkers, New York.

Claude B. Hutchison, who was the first head of the Department of Field Crops in Missouri, then Professor of Plant Breeding at Cornell University, later Dean and Director of the College of Agriculture at Berkeley, California, and, finally, one of the vice presidents at the University of California.

Lewis M. Knudson, Professor of Plant Physiology at Cornell University, and for many years thereafter, chairman of that Department. He became world-famous for his research on tropical plants, particularly orchids.

H. H. Krusekopf, connected with, and later, in charge of, the Soil Survey at the University of Missouri and Professor of Soils with a continuity of service as head of the soil survey until his retirement in 1958. Professor Krusekopf knows more about field soils in Missouri than any other man has ever known.

Charles H. Taylor, served as county agent for several years on the staff of the College of Agriculture of the University of Nebraska, later serving in somewhat similar agricultural advisory work in the same state. He was the man who became famous for painting the word *farmers* up and down the University power house smoke-stack while a student at the University. This feat, which was a most daring one, brought him great fame among agricultural students and alumni.

M. E. Sherwin, became a member of the staff of the North Carolina College of Agriculture soon after grad-

uation and later assumed an important position in Soil Science in that institution.

These 8 men, representing almost half of the class, served with distinction in Agricultural College work. There were others who distinguished themselves in different fields so that the class as a whole made excellent use of its opportunities. In College days they were very active in campus affairs. They were instrumental in bringing to the campus the honor society of Agriculture, Alpha Zeta, and they made up the major number of charter members of that organization on the Missouri campus. They were also active in connection with such student activities as the Farmers Fair, Barn Warmin' and the Agricultural Club. I knew all of them personally, and they were certainly fine men.

Early Work in Farm Management in the College

Mr. D. Howard Doane, a graduate of the class of 1908, came on the college staff soon after graduation, to take up work in what had been designated as farm management. This was about the earliest work of this character organized among Land Grant Colleges, and Mr. Doane was known as the first professor of farm management in the country. He was a most resourceful individual with many original ideas. He began by organizing cooperative work with a number of good farmers, using their farms as illustrative features in his plan of action.

I remember very well that the instructional courses which Professor Doane organized, in his teaching of farm management, made use of a good deal of the material given in the early courses in Agronomy, for which I was responsible. I, therefore, became quite a little concerned about this situation. Of course, he had to use such subject matter not only from agronomy, but from other fields as well, particularly animal husbandry and dairy husbandry. I remember that a conference was held in the Dean's office to determine just how much overlapping there was in these courses. It soon developed that farm management necessarily drew from the work of other departments, weaving this material into managerial systems, which became known as farm management, a subject which is now of great importance to Land Grant College programs.

Developments in Agricultural Economics

Aside from the stupendous development in farm mechanization, during the last half century, no field in agriculture has been subject to so much influence on farmers as that of economics. Beginning in the first decade of this century, and as indicated above, the Missouri College of Agriculture pioneered in farm management instruction and investigations. Since that time it has kept well abreast of the leading agricultural colleges of the country in studies of economic developments.

The four fields of endeavor, in which the Department of Agricultural Economics has engaged, include

(a) land economics, (b) accounting and statistics, (c) farm management, and (d) marketing and prices. Much investigation has been carried on in these fields, including studies in taxation, price structure, land economics and use, land values and appraisals, farm credit and farm cooperatives, along with more recent studies in getting established in farming and in the field of marketing. These studies have resulted in the publication of many bulletins and circulars for the use of farmers.

Close contacts with recent economic changes in the field of marketing have occupied the attention of members of the staff. To cover this field, a number of marketing specialists have been appointed, mainly in extension, dealing with the marketing of meat animals, dressed meats, dairy foods, poultry products, grains, cotton, fruits and vegetables. Few fields have changed as greatly as that of the marketing of agricultural products.

The future of Missouri agriculture revolves around the economic situation as it develops from year to year. It is on economic changes that the future welfare of farm people depends.

Some Interesting Things in Entomology

Insects are among the most remarkable things in the world. In the early days of the College, Professor C. K. Riley was made state entomologist by the State Board of Agriculture and did some very interesting work. He published many papers and articles, particularly on injurious insects, and, in addition, taught entomology in the College. One of his most interesting projects was fighting grasshoppers, which were particularly abundant during dry seasons in those times. One thing I remember particularly was the statement he made regarding grasshoppers as food. He said he found them quite satisfactory as food, when properly prepared. One way he recommended was to fry them slowly, in their own oil, with the addition of a little salt "in which case they are in no way unpleasant eating and they have a nutty flavor."

There were many methods developed for fighting grasshoppers, chinch bugs, and army worms, in those days, which were only partially effective. However, as time has gone on, a great array of new organic compounds has been developed for sprays which are very effective. Only a specialist can keep up with all of these new compounds and the poor farmer becomes bewildered. He simply has to follow the directions of the entomologist as best he can. The names of these new compounds are long and difficult to pronounce, so the entomologist simply uses first letters, syllables, or other abbreviations of the technical names in referring to them. These letters became well known rather easily, such as the DDT, which every farmer knows. The real name of this is *Dichlorodiphenyltrichloroethane*. It is easy to see why abbreviations must be used.

I remember that, years ago, old Doctor Howard, who was head of the Division of Entomology in the De-

partment of Agriculture, used to say that "the insects may get us yet". That was before the great development of the new insecticides, and it did seem that this might sometime actually happen. Insects still do tremendous damage in a state like Missouri, but great gains have been made in fighting them, so it now seems that man will ultimately triumph over them.

It was while I was dean that the Department of Entomology received, by gift, a couple of very fine insect collections, and more have been received since. With the completion of the new agricultural building on the East Campus, space has been provided for properly storing and exhibiting these fine collections.

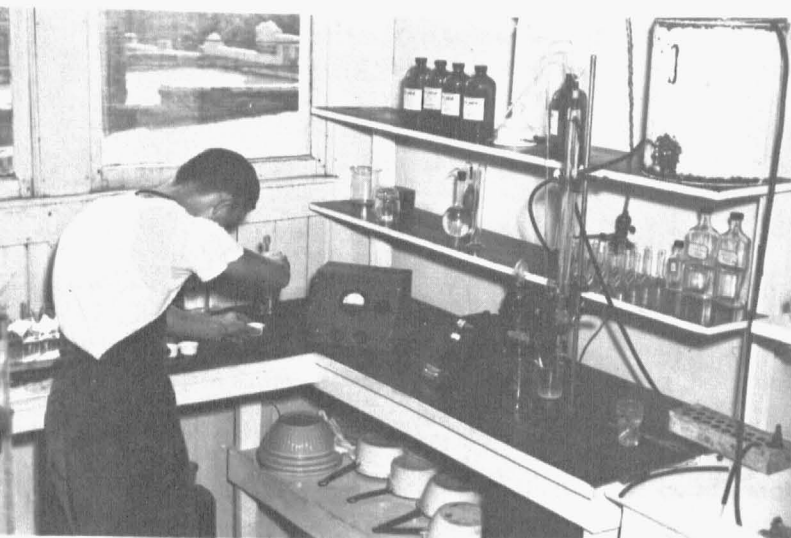
Integration of Students

One of the things that has interested me around the College of Agriculture and the University as a whole, is the manner in which the integration of Negro and white students has taken place. I remember talking to President Middlebush at the time of the early efforts to bring about integration and soon after the Federal Supreme Court had declared we must admit Negroes. He was really worried that we might go too fast and actually bring about a riot in the student body. However, when the mass of G.I. boys came into the University, their experience, in other countries, seemed to have given them a new vision regarding this whole situation. It is my understanding that it was largely through the G.I. influence that open discussions of this whole matter were held among student groups, resulting in the student vote, which strongly favored Negro admission. The faculty also voted in favor of their admission, so that it came before the University Administration and Board of Curators where it was approved. Actually, it had been the legislature which had shown the strongest objection to integration, but when the majority of students and faculty had approved, the legislators finally agreed.

It has been interesting to observe how this whole situation affected the student body. Actually, when the first Negro students came on the campus there was not a ripple on the surface and they moved among the white students with complete freedom. It is, of course, true that on the walks of the campus and in the cafeteria, the Negro students usually walk or eat together. This, however, is largely because they feel better in associating in this way, although one sometimes sees two or more individuals of the two groups together.

Soil Testing Service

One of the remarkable developments affecting Missouri agriculture, in recent years, has been the use of soil testing laboratories for determining fertilizer needs. This is a cooperative project between the resident and the extension men in soils. The methods of testing have been worked out by the resident men and the laboratories in the counties are under the control of the extension men.



One of the soil testing laboratories which are now located in almost every county of the state.

Approximately 100 laboratories are in operation each under the direction of a county extension agent.

The number of farmers using these laboratories in 1960 was 44,400 which is about 26 per cent of the farmers of the state. The tests indicate the kinds of fertilizer the farmers should use on their different fields. This is having an important influence on the amount and kinds of fertilizer used throughout the state.

An Early Broadcast by the College of Agriculture

In 1925, the Land Grant College Association organized a plan through which most of the institutions would give hourlong broadcasts over NBC. The idea was to inform the public as to the work carried on throughout the country by these institutions. The individual colleges were assigned special dates for these broadcasts, with each institution preparing its own program regarding its work. This was in the early days of radio broadcasting so that most institutions took this seriously, at least the Missouri College of Agriculture put on a program which had been carefully prepared.

We chose as our subject the general field of *conservation*. There were talks by President Middlebush and members of the agricultural faculty. I remember that I made one on soil conservation, at that, but I now have no idea what I said. In addition to the regular talks that were given, the University band and glee club participated. It really was a noteworthy event, in those early days of broadcasting, and while I didn't keep in touch, I am sure a lot of "fan mail" must have come in, which was quite common in earlier times.

We arranged with a company to make plate-recordings of the whole program and these are now filed in one of the College vaults. I have been thinking that since

this event is now becoming historically important, after 35 years, it would be a good idea to play these old records at some gathering of college people who would be interested.

It is interesting to know that a half hour before the broadcast was to begin, a controversy developed between the NBC machine operators and we did not know until about five minutes before the time for the opening, whether we would go on the air or not. With everyone gathered and ready, it would have been disgusting to have had the broadcast called off.

The Longwell Administration

In the preparation of this material, attention has been given mainly to those things which impressed me while I was a member of the College staff, rather than to things which have transpired since my retirement in 1945. I must, however, call attention to some of the happenings in the last fifteen years, during Dean Longwell's administration. These have been very eventful times.

Actually, so many changes have come about in the field of agriculture, during the recent years, that it has been difficult for a retired man to keep in touch with all that has been going on. There have probably been no more difficult times for a man to act in an administrative position, in a College of Agriculture than during these years.

It has been during this important period that great adjustments have been required in agricultural college teaching, research and extension. The College has also received much larger sums of money than ever before, so that the staff, the lands and the general facilities have been greatly expanded.

Under Dean Longwell's leadership many developments have taken place, particularly through the assistance of advisory committees of alumni and others. New objectives have been set for the College, and attempts are being made to carry these out. Probably no dean of the College has ever been called upon to meet greater problems and challenges than those which have developed under the rapidly changing agriculture. Yet Dean Longwell has met them squarely and well. He is, of course, retiring in the midst of these important college developments, yet his successor, Dean Kiehl, has had paths opened for him in a way which he must certainly appreciate.

Relations with Missouri Administrative Officers

It was, of course, natural for one connected with the College of Agriculture for over 50 years to have made the acquaintance of a considerable number of administrative officers in the state government and in the University. I think the most important of these, from my standpoint, might be listed and brief mention made of some of my relations with them.

Acquaintance with Several Governors

The two governors with whom I was most closely associated were Donnell and Donnelly. Their names were similar, but their personalities were almost as widely separated as the poles. Donnell was a Republican, a strong friend of the University and a very friendly man. Donnelly was a Democrat, quiet and reserved, with whom it was difficult to become well acquainted. Both men were interested in the College of Agriculture, however, and we received fair treatment at their hands.

Donnell was a very conscientious and a deeply religious man who was also a "stickler" for having all things handled according to the letter of the law. I remember one instance when the Director of the Mountain Grove Poultry Experiment Station had some affidavits brought against him declaring that he had been making use of some of the station equipment on his own farm. When these reached the governor, he called a meeting of the State Poultry Board, of which I was an ex-officio member. We sat down in the governor's office in the morning where he went over each affidavit with us, sentence by sentence, and we met again after lunch for a continuation of the hearing. The Board finally exonerated the director, but this took almost a day, when in my judgment, the whole thing could have been handled in an hour. However, Donnell was a fine man and a good governor.

Donnelly was a friendly man in his quiet way, but he handled his conferences in a business-like manner. I remember one conference, to which I was invited, when the matter under consideration was the building of large dams for reservoirs in Missouri, under the direction of the Army engineers. The occasion involved a discussion of the procedures of the Army engineers with the chief engineer, Colonel Pick. The governor was very much opposed to the program on which Colonel Pick had embarked, as were most of the state agencies which had been asked to send representatives to the hearing. The objection the Governor and most of the rest of us had to the big dam development, was the federal idea of holding back the flood waters, in Missouri, to protect the lower Mississippi flood lands. As we saw it, Missouri would have a lot of good bottom land flooded and taken out of agriculture permanently, in order to protect the farmers along the lower Mississippi. In this we did not believe.

The governor was the leading spokesman at this conference and he held Colonel Pick all morning and much of the afternoon, or until we reached an agreement with him, not to proceed with the building of dams without the state's approval. This agreement continued for several years, and, in the meantime state approval was given for a couple more dams. By that time it became evident that the people in the regions of the reservoirs, particularly the town people, were rather en-

thusiastic about the money brought in by tourists visiting these recreation sites. The farmers in the flooded areas were not so averse to the flooding as we had expected, since the government usually paid them a good deal more for their lands than they could get for them on the open market, without a reservoir.

The result of all this change of sentiment has been that the government is going ahead in building dams with only lukewarm approval by the state. This is tending to bring in much more money to the people in the Ozarks Region, in particular, than would come in through agriculture alone. This was a case where neither the governor, nor the rest of us, saw far enough ahead. However, I certainly admired the fighting spirit of Governor Donnelly.

I knew Governor Stark pretty well as he was an orchardist and nurseryman and we knew him because of his work in those fields. I always liked him very much.

I had one experience with Governor Hadley, back in the 1920's. The office phone rang one day and it was Governor Hadley calling. He said that they were laying out a new golf course, outside of Jefferson City, and they wanted help in getting it seeded down. He asked if I would come over, have lunch with him at the Mansion, and then go out and look over the proposed course. Naturally, I had no excuse, although I knew it would be risky to make recommendations for the establishment of a lawn over a large area, mainly in stalk fields and weeds. However, I went over, had lunch with the governor, looked into the situation and made recommendations. As it happened, the spring and summer weather turned out to be very favorable for grass that year, and a good sod was secured. If the weather had turned out to be unfavorable, I do not know exactly what would have happened to my seeming popularity with the governor.

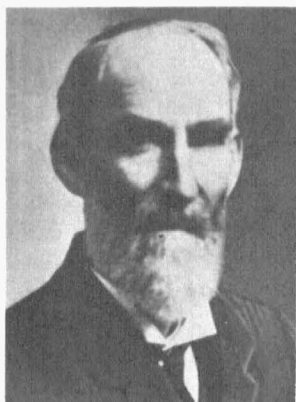
Service Under Eight University Presidents

It seems almost unbelievable that, during my association with the University, I served under eight different presidents, or acting presidents, and knew each one of them personally. These men were Presidents Jesse, Hill, Jones, Loeb, Brooks, Williams, Middlebush, and Ellis.

A great deal could, of course, be said about the administrations of each of these men, but I must confine myself to very brief statements regarding each, particularly as I knew them and their work.

R. H. Jesse

I have mentioned President Jesse elsewhere, as the man who, in the early days, really put the University on



Colonel Geo. W. Waters father of Dean H. J. Waters. Colonel Waters was an able farmer of Ralls County, educated in one of the early academies. He frequently made talks to farmers, such as those of the farmers institutes of the State Board of Agriculture.

Dr. Richard H. Jesse, President of the University, 1891-1908. It has sometimes been said that President Jesse made the University. He certainly had a great influence on the development of the College of Agriculture.

its feet. He came when it was a struggling institution with little supporting funds, with rather low standards, and with considerable political interference with its activities. President Jesse came from the University of Virginia where he had evidently received good training and where he had been inspired with high ideals. He immediately began the search for young faculty men of good training. He brought in many of them and raised the standards of the institution very greatly. It was often said that those he brought in were excellent young fellows who came mainly for experience and that they worked furiously while they were attempting to get away to a larger institution. While it was true that some did not stay long, many remained to put the institution on a really high plane. My acquaintance with President Jesse was most enjoyable.

A. Ross Hill

After President Jesse's health failed and he was compelled to retire, Dr. A. Ross Hill was selected for the presidency. President Hill came to the University from Cornell University where he had been Professor of Psychology. He was a brilliant man with great energy, who picked up the administrative developments at the point to which President Jesse had brought them. He was very forward-looking and expected much of faculty members. While he moved so rapidly that he offended a good many faculty men, he accomplished a great deal during his 15 years of tenure.

President Hill was very much interested in the development of Junior Colleges throughout the state, and did a great deal to stimulate that movement. He was not very effective before legislative committees, however. I always thought this was due to the fact that he was so

keen and so fast in dealing with these men, that they were really afraid of him and tended to distrust him. As years went by, a considerable mass of opinion developed against him, in the faculty, so that in 1921 he resigned and went to Greece to assist that country in post war relief. However, Dr. Hill was a remarkable president and built up the University to a much higher plane during his incumbency. I knew him quite well and always had a high regard for his ability and his accomplishments.

J. C. Jones

The third president I knew well, was Dr. J. C. Jones, who had formerly been Dean of the College of Arts and Science, where he had served many years. His health was not good and he really did not want to serve as president, but the exigencies of the situation, at the time, induced him to assume the title, with the understanding that it would not be for a very long period.

President Jones was a wonderfully fine man, quiet-mannered and kindly, with few of the driving characteristics which had been common in President Hill. I remember very well how he behaved before legislative committees. He was absolutely frank, so that the legislators had complete confidence in what he told them. However, with this attitude, he was slow to ask for very large appropriations. At this time, I was on a faculty advisory committee dealing with the legislative budget. This committee thought President Jones was too conservative in the budget he had prepared. It took a great deal of good-natured discussion before he was convinced that he should request more money. However, when he was convinced, he took the request before the House and Senate committees on appropriations and they approved everything he requested. I think this was the first time, and I believe the last time, this has ever happened. Usually the legislature pares the University requests. In recent years, however, the legislature has been more kindly toward President Ellis. He is a man who makes a good and very frank statement, before the appropriation committees and he has been doing very well in securing most of the funds requested.

Isador Loeb

President Jones retired, at his own request, in 1923, and Isador Loeb became Acting President for a few months. Dr. Loeb was a man with a very keen mind and great vigor. He served as Dean of the University Faculty, from 1910 to 1916, a position long since abolished, but through it Dr. Loeb exerted a great deal of power. For many years, he ruled over the entrance qualifications of incoming freshmen and over the scholastic standings of other students too. At that time, he was the most feared man among the students and one of the most respected among faculty members. I remember him as almost a czar on the campus. Neither of us was married at that time,

and, as it happened, we ate at one of the two famous faculty dining clubs which then existed, so I came to know him very well.

In 1917 Dr. Loeb was made Dean of the School of Commerce, as it was called in the early days, later the School of Business and Public Administration. He was certainly a colorful figure around the campus for many years. Everyone knew him, faculty and students alike. As a friend, he was most affable and cordial, but as a dean, or acting president, he was a man with whom one should reckon. In 1925 he left the University of Missouri to accept the Deanship of the School of Business and Public Administration at Washington University.

Stratton D. Brooks

The fifth president with whom I was acquainted, was Stratton D. Brooks, who served from 1923 to 1930. Dr. Brooks had really been a public school man in his early experience. He had been the superintendent of Schools in Boston and in Cleveland, after which he served as President of the University of Oklahoma for a few years. He came to the University following the long tenure of A. Ross Hill and the very short tenures of Dr. Jones and Dr. Loeb, during which time the University had gained greatly in stature, buildings, and faculty. However, his administration was a colorless one. Personally, President Brooks was a friendly, democratic and companionable man. He befriended me a couple of times, which I shall not forget. On the other hand, he did some things I did not like. I was riding with him, coming down from Centralia on the old Wabash train, just after he had finished clearing the budget for the next biennium, and he told me he had eliminated the appropriation for the soil survey. This was one of the projects in which I, as a soils man, was particularly interested. Naturally, this was a blow to me and I felt bitterly about it, but I was in no position to argue the case with him, after he had already acted. I, therefore, look back on the Brooks Administration with mixed feelings. His popularity had waned materially, after seven years and in 1930, he tendered his resignation to accept a position as an executive in the DeMolay organization in Kansas City.

There was one thing that happened during the Brooks administration which caused a good deal of comment throughout the state. This had to do with the renovation of the President's house on the campus, which was badly in need of repair. Mrs. Brooks refused to live in it, so the Board contracted for its renovation. This was in the days when many contracts were let for cost, plus 10 per cent, which plan was followed in this case. The contractor found when he got into it, that the repair was much more fundamental than had been expected. The result was that by the time the work was finished the cost had become exorbitant. This reflected unfavorably on the president and brought a great deal of criticism to the University.

Walter Williams

The sixth of these presidents, Dean Walter Williams, is one to whom I have already referred. He had been very active in University affairs, first as a member of the Board of Curators and later as founder of the School of Journalism. He was Dean of Journalism at the time of President Brooks administration and he was so popular around the campus and the state as a whole, that the Board turned to him, rather naturally, to become president following Brooks. He was a man with a wonderful memory and was largely self-educated, as he had never attended college. He was a newspaper editor when he was first appointed to the Board of Curators. He rose to the Deanship of the School of Journalism and finally to the presidency of the University. Few men in the history of the country have had such success, without a college degree.

President Williams was a very religious man and for many years taught an adult class, on Sunday mornings, at the local Presbyterian Church. Former students throughout the state refer back to the Williams Sunday morning class, which they had attended during their University days. Actually, Williams had a wonderful command of the English language and could say things in a beautiful way. In spite of a falsetto voice in his younger days, he was in great demand as a speaker. His health began to fail soon after he was made President so that he was never as effective as he would have otherwise been. However, he carried the office with dignity, farsightedness, and efficiency, for the first years of the presidency, or until his health failed during the last year. He certainly made a great record, as a friend of the University in his younger days, as an efficient board member, and later as the founder of the Missouri School of Journalism. To this was added his five years as president, in which he gave the best service his health would permit. There is probably no man who was ever connected with the University, up to his time, who will be so well remembered by so many people. I enjoyed his friendship very much.

Frederick A. Middlebush

The man with the longest tenure, as president of the University, was Frederick A. Middlebush, who served for 18 years. Dr. Middlebush had been a member of the faculty of the School of Commerce and Dean of the School of Business and Public Administration, as it was later known. When President Williams' health failed, he was made Acting President for one year and was then elevated to the position of president. He was a man of high educational ideals, of far-sightedness, and of vigor. He gave much to the University during his incumbency as president, over this long period. Under his Administration the faculty was greatly enlarged and salaries were increased. Seven new buildings were dedicated, during his administration, although he always insisted that the

faculty was more important than buildings. Fortunately, the funds were sufficient to consider the faculty too, and there was a large increase in the number of well-trained faculty men during this period. Moreover, President Middlebush worked very successfully with the alumni and the people of Missouri, as a whole, so that it was an era of important developments.

Dr. Middlebush was president during the period of my deanship, and I came to know him well. He was greatly interested in agriculture and was of much help to the College. That his interest in agriculture was real, is shown by the fact that several years before the close of his administration, he bought a good farm of about 400 acres on Highway 63 south of Columbia, not far from Deer Park. There was a tenant house on it which he and Mrs. Middlebush had renovated and, this was where they spent many of the week-ends during the latter part of his administration. After retirement they built a comfortable home on the farm where they now live. He grows corn and other feed crops and feeds cattle. During the latter part of his tenure as President, he developed a condition which caused him to slow down in his activities, and he decided to retire, the retirement taking place in September, 1953.

The Middlebush administration, both because of its length and efficiency, will be remembered as a most important period in the history of the University. Since formal retirement, he has been retained, on part-time service, as Director of the University Development fund.

Elmer Ellis

The current President of the University, Dr. Elmer Ellis, is in his seventh year, and his administration is meeting with remarkable success. He was formerly a Professor of History in the University and Dean of the College of Arts and Science, before assuming his present position. His administration speaks for itself. He came in at the time the people were considering a bond issue to take care of the building needs of the important divisions of the state government, including the University. He was made chairman of the committee that organized this campaign and it proved successful. The result has been that the state has had 60 millions to spend for this building project. The University received a goodly portion of this sum and a building program is in progress which is well toward the top of such programs among the universities of the Midwest. The legislature has also responded very well to President Ellis' requests for funds, to take care of salaries and the operating expenses of the institution. This has been exceedingly helpful. A retirement plan for faculty members has been adopted and real progress is under way in the whole educational program of the institution. It is certainly safe to say that, under President Ellis' direction, a great development of the University is in prospect.

Some Personal Experiences

I should like to comment briefly on some of my more personal relations to the College activities during the last half century. These have to do with Sabbatical leaves as well as experiences since retirement. They have all been very interesting to me.

Sabbatical Leaves

Most large universities have plans for allowing leaves of absence, for faculty members, primarily for self-improvement. These are usually known as *sabbatical leaves*, that is, men of professional rank are allowed leaves, every seven years, providing they can show a plan of study or research, which will result in their professional improvement. During such leaves the University provides the individual with part salary, usually one-half.

If the plans for sabbatical leaves are properly administered, the University profits substantially in the improvement of the services of the individual faculty members. Naturally, the individual profits likewise. The one great difficulty with the plan is that faculty personnel with families, have normal living expenses such that they can scarcely live on half salary, especially if this means going to some foreign country to study, as many of them wish to do. As a result, there are few who take these leaves regularly—some never take them. However, the best men avail themselves of the opportunity whenever they can.

In recent times, with the development of well financed foundations for the support of education and research, the picture has changed materially, and most good men are able to secure one of the foundation grants, which often pays more than half the University salary. Often, the foundation allotment is sufficient that the individual may need no money at all from the University. This foundation support has greatly increased the number of University men taking leaves for various periods of time, from a summer, through one semester to a year.

My First Sabbatical Leave

Dean Waters stimulated my early interest in sabbatical leaves. He had been on such a leave in Germany and was greatly pleased with the experience. He, therefore, encouraged me to take advantage of the opportunity during my seventh year and practically insisted that I go. That was at the time when all American scientists looked to those in Germany as the leading scientists of the world. I was unmarried and could readily afford a year abroad, so through Dean Waters' assistance, I secured the leave and went to Germany during the 1910-1911 school year. After securing the advice of several individuals, I decided to go to the University of Gottingen, located just south of the city of Hanover, in north Ger-

many. This was one of the most popular universities for Americans at that time, and I found the conditions very congenial.

I left Columbia after the University closed in June and arrived in Gottingen in the middle of the second semester, according to their schedule for the academic year. With the assistance of some Americans, already on the ground, I registered for several courses in chemistry, bacteriology, and general agriculture. Unfortunately, I had taken French, but no German, as a student, so I knew very little of the German language, except some knowledge I had obtained through tutoring before leaving Columbia. I, at once, began to attend lectures in the courses for which I had enrolled and I was amazed how rapidly I picked up an understanding of the language. This was partly because the vocabulary in these scientific courses was largely limited to the technical matter in question. By the end of a month, I was able to understand quite well what the Professor was saying. I secured a simply-written book on agricultural chemistry which, by careful reading, with a German-English dictionary, helped amazingly.

I was fortunate in securing a place to live with a family of moderate means, which had been recommended to me by a University of Missouri faculty man who had lived with them a year earlier. I soon found that women are more patient in helping one learn to speak a language than are men. There was a daughter in this family who had spent some time in England and knew English fairly well, so she could always help out when I became completely confused.

I can only mention a few of the interesting experiences of the year. At the close of this second semester at the University there was about a two months' vacation which I spent mostly in France, but also with short periods in some other countries. In Paris, I secured permission to sit in on certain courses at the *Institute Agronomique*, the principal French School of Agriculture. Meantime, I hired a tutor and gave most of my attention, outside the lectures, to learning the spoken French. I soon found that the two years of French in my undergraduate courses helped very little in speaking the language. Actually, it has always seemed to me that written French and spoken French are two different languages. The linkage of words, the silent letters and the nasal twang of spoken French make it sound quite unlike one would expect from reading the printed page.

After a month at the Institute, which, by the way, is in the Latin Quarter of Paris, I started out to visit French experiment stations, agricultural schools, and farmers. This I found a very tiring experience. In most European countries, the men at the experiment stations and educational institutions can speak English, German, and French. Outside of France and Belgium, I had little trouble getting them to speak English or German. In

these two French speaking countries, however, I was dependent largely on my poor French. This proved to be such a strain that, at the end of about a month, I was so nervously exhausted my digestion failed, and I took a train back to Gottingen, where I went to the student clinic for a week.

My principal research accomplishment, at Gottingen, was the determination of the influence of lime on the numbers of bacteria, fungi, and moulds in a lime-treated soil, as compared with the number in the same soil, untreated. The report of this study was later published in one of the German Scientific periodicals—the *Zeitschrift für Garungsphysiologie*.

On the whole, this year in Europe, mostly in Germany, gave me an insight into the agricultural research going on in several European countries, as well as the agricultural practices of the farmers. The year was very educational in every way, and I came back to Missouri much better able to handle the problems in soils and crops in our own country.

A Second Sabbatical Leave

I was married soon after the first Sabbatical leave, and, with a young family, it proved almost impossible to get away on a second leave until 1925, when I decided on a leave for a summer and the fall semester, in order to study the agriculture in the Cornbelt states. By that time, the various experiment stations were working on many problems dealing with increased production, and I wanted to see how the farmers were making use of the teachings. I, therefore, decided to drive the Cornbelt during the summer, interviewing county agents and good farmers. The fall semester I planned to spend at the University of Wisconsin, an institution for which I had great admiration. (I may have been influential in stimulating two of my sons to go to Wisconsin in later years to take their doctorates. The third one took his at Cornell University where I had done graduate work.)

This drive over the Cornbelt with Mrs. Miller and three children was an adventure, but it worked out very well indeed. Mrs. Miller was an outdoor woman, so we took a tent and a car, which she had arranged for camping and we set out. Those were the days before motels, but there were camp grounds which were provided for travellers, near almost every town. We all enjoyed the camping, and when we were driven into a hotel by bad weather, the children remonstrated vehemently. This trip was very successful. I visited scores of county agents and good farmers, accumulating a volume of notes of much value.

The semester of study at the University of Wisconsin was rewarding. The time was too short for me to take up any research, so my time was spent in advanced classes and in the library, where I did some writing.

We left Madison by car in a foot of snow. There

was some difficulty with snowy highways, in those days, but we made it back to Columbia without serious incident, well pleased with the sabbatical eight months. In the years following, my classes heard a great deal about the best Cornbelt agriculture.

My Third Sabbatical Leave

I have indicated that the long drive over the Cornbelt with the family was an adventure, but in comparison, the third leave was a super-adventure. With a growing family I did not get to the third sabbatical leave until the school year of 1933-34. We had four children—three sons, ages 18, 14, and 8 with a daughter of 16 years.

The plan was to take our car to Europe where we would see European agriculture in the fields, in the agricultural experiment stations, and universities. Mrs. Miller was the planner for the tour and such sight-seeing as interested us. We also planned to spend the fall semester at the University of Zürich in Switzerland. However, after we were in Switzerland we decided to go to the University of Munich in Germany.

Mrs. Miller was well trained, having received two degrees from the University of Nebraska, the second in the field of botany. She had spent two years reading and planning for this year abroad, so that the plans were indeed well worked out. I, of course, helped in planning the agricultural studies in the field and agricultural institutions we would visit.

The final plan provided for three months' driving in late summer and early fall when the weather was good, then the winter semester at a university, after which we planned to drive another three months when spring opened.

Such ambitious plans really seemed almost beyond accomplishment, but we started out. The American Automobile Association looked after our car from Columbia to Hamburg, Germany, where we disembarked. When we walked down the gangplank and got through the customs, we found the car standing outside all ready to go.

We followed the plan we had made, and it worked out well. We had no car trouble anywhere in Europe, even when we had to drive a right-hand car on the left side of the road, as in Sweden and the British Isles. We saw farm people as they lived on the land and in small villages. We stayed at good inns and small recommended hotels. We ate what the common people ate. We spent very little time in cities, excepting in Munich, where we spent the first semester of the school year 1933-34. We did, however, run through cities stopping to see important art galleries and other places of special interest. All those plans Mrs. Miller had worked out far in advance.

During the semester's stay in Munich, Mrs. Miller and I had "hearer cards" in the University. Her German was really better than mine. The oldest son was enrolled as a regular student in the University, the daughter in an art school, the second son in a "Mittelschule" largely as a visitor. The youngest son was not in school but spent his time reading English books. Altogether, this was a very profitable semester.

On the trip we took copious notes and hundreds of photographs. On our return, Mrs. Miller spent two years, in her spare time, writing a complete description of the experiences during the entire year. It was a most interesting story which she should have had published at the time, but she did not wish to do so. However, copies are in the hands of each of the four children and one was for Mrs. Miller and me.

In the six months' driving, we were as far north as Trondheim, Norway, where it never got completely dark at the time we were there. I took a picture of a cathedral one night at 10 o'clock. We got as far south as the Pontine marshes south of Rome. I visited most of the important experiment stations in the western European countries. I saw much of the way the farms were handled in the regions visited. It was a most valuable and exceedingly enjoyable trip. We saw European people as they really were and farmers as they actually farmed. My knowledge was greatly expanded as to the work going on in the scientific laboratories, particularly those working in the field of soils, in which I was especially interested.

Today, such trips are usually made in European cars that are either rented or purchased. In the latter case, they are usually sold at the end of the period of driving, although some are brought to this country. In the earlier days, most people who wished to drive, took their cars with them.

It was really an amazing performance for a family of six. The success of the whole venture can be largely attributed to Mrs. Miller. Without her planning and enthusiasm for the trip, it would never have been made.

Experiences of a Man on Limited University Service

At the time of the retirement of Dr. J. W. Conaway, in Veterinary Science, in 1938, he had accumulated considerable research data that had not been published. Dean Mumford proposed to the Board that, along with the retirement status, he be allowed a small limited service stipend for preparing this data for publication. I followed Dean Mumford as Dean and I recommended to the President and Board that he be placed on limited service under the same plan as that provided for Doctor Conaway. This met with approval and the same plan has been followed in the cases of other agricultural men as they have retired. They have been provided offices and they may work on the things in which they are interested. This has proved to be a very good system, espe-

cially since the University has had no permanent retirement plan until recently. With the allotments provided in the limited service plan, the men are expected to put in about one-third time. However, when a man has some particular work he wishes to do for the University, he will usually put in much more than that.

Of course, retirement means different things to different men. Some men wish to do as they please, in attempting to enjoy life. If they have sufficient funds they may prefer to travel or do other things for pure recreation. On the other hand, some men, even with adequate funds, are much like a fish out of water, and their lives may become a dreadful bore. Others find something to do in their field of proficiency or an allied field. They feel they are accomplishing something for society and they are quite happy. This has been the case with most of the Missouri agricultural men who have retired. There are now over a dozen of these who have been retired with an emeritus status and are now on limited service.

The principal difficulty with the limited service plan is that as a man becomes older and more or less incapacitated for work, he may not be able to put in even the one-third time which is expected of him. He, therefore, wonders if he might possibly be dropped from the University payroll entirely. If he has not accumulated sufficient funds during his active career to provide amply for his declining years, he would then be in an unfortunate position. If he has only social security income, this will not supply the funds for him to live in the way to which he has been accustomed. When a long illness occurs, he may be forced to rely on his children or other relatives. On the whole, therefore, the system of partial service has its advantages, so long as a man is able to work, but it provides no assurance that he will be comfortable when he is no longer able to give service.

Youth Publications

I was a student at Cornell University when the New York College of Agriculture, working through Professor L. H. Bailey, of great fame in Land Grant College circles, and Dr. and Mrs. Comstock, famous nature enthusiasts at the University, were instrumental in starting a series of publications which they called the "Nature Study Leaflets." These leaflets soon assumed the size of small bulletins and covered a wide range of subjects in nature and the conservation of natural resources. They were supplied to the public schools without cost, or at moderate charges. They were beautifully written, on most interesting nature subjects, and were very popular in the schools. These have been continued, in somewhat larger size, and are still coming out. I think this movement had a pronounced effect on the young people of New York state, who grew to maturity with the ideas of conserving all natural resources. I have often wondered if the two Roosevelts from New York, who became presidents,

did not get many of their ideas regarding the conservation of natural resources from this material.

With all this in mind, I had hoped that in my retirement I might make some such contribution to the farm youth in Missouri, through popularly written agricultural publications. I had hoped that I could initiate some such project for the College while I was dean, but we were buried in war efforts for increasing production during most of this period and the time did not seem to be appropriate.

When I retired in 1945, I at first prepared for publication, some data which I had accumulated from a long-time study of organic matter and nitrogen in soils. This was followed by a more popular circular on the same subject and by another on soil conservation and improvement. I then took up a proposal, approved by the dean, that the College of Agriculture issue a series of very simply written publications for rural schools, covering various phases of Missouri agriculture.

The first of these had the title, "Let's Look at the Soil." I tried to write this on the level of the seventh or eighth grade pupils in rural schools, with an attempt to make it interesting to young people of that age. This was distributed through the county superintendents of schools to practically all of the rural schools in the state. We were able to supply them in such quantities that each two pupils in the study of agriculture would be supplied one copy between them. This publication ran through a number of editions, the total number of copies finally reaching a total of 117,000. However, about 10,000 of these were purchased by the Tennessee College of Agriculture, to be distributed among the rural schools of that state.

Other publications in the youth series had to do with such subjects as the changing conditions in Missouri agriculture, farming as an occupation, the business of farming, water and its conservation, products of Missouri farms, agriculture and the people, progress in agricultural machinery, and important features of Missouri agriculture.

The actual number of these publications which have been distributed to the schools of the state, mostly rural and small town schools, has totaled about a quarter of a million and are still going out. However, with the large number of school district consolidations taking place and the decline in the number of purely rural schools, the demand has dropped off somewhat. On the whole, I have been well satisfied with the numbers of rural children which have used these publications, and I feel that my desire to reach the young people of the state with simple agricultural publications has been pretty well realized.

Other Publications

After I had finished the preparation of the youth publications there were others I wanted to prepare. Nat-

urally, a man of my age would be interested in historical developments, so I have published two bulletins in that field. While I think I am not as much inclined to look backward as many men of my age, I certainly do it to some extent.

A Century of Missouri Agriculture

A subject that interests me a great deal is that of the history of Missouri Agriculture and I wanted to prepare a publication along that line. The idea I had in mind was to combine a summary of recorded data, through a century, with my own observations through fifty years. In spite of the fact that the library work necessary to a study of this sort was difficult and rather long, this proved to be a very interesting project. My eyes are not what they once were, so I secured the assistance of a very clever senior student who did much of this reading for me. The most difficult part of the writing was that of relating the various forms of federal legislation to Missouri conditions and the influence these have had on Missouri agriculture.

This publication, Station Bulletin 701, included a total of 90 pages of the 8 x 11 inch size, now used for all popular experiment station bulletins. I also brought together 70 photographs which I considered appropriate for a publication of this sort. I think the publication has been well received by Missouri farm people.

Soil Conservation and Improvement in Missouri

A second general publication, which I felt I should prepare, dealt with the present situation regarding soil conservation and soil improvement in Missouri. This covered a thirty-year period during which the University and certain federal agencies have been working in this field.

I wanted to prepare this to indicate, in summarized form, just how far the state had gone in soil preservation and improvement and, also, to make certain statements having to do with probable conservation developments, with modern techniques. As head of the Department of Soils, for many years, I had been looked upon as the leader in soil improvement in the state. Moreover, since the Missouri Station had made the first measurements of soil erosion under different cropping practices, the data from which had been very widely used, we were considered as one of the leaders in soil conservation activities. I wanted to clear myself, in the eyes of present-day soil conservationists, by showing where I thought the modern developments in soil management might lead. With new techniques, the ideas and the plans regarding soil conservation may be radically changed. This Station Bulletin, Number 736 is of 24 pages, with a liberal number of photographs, tables, and charts.

A Final Statement

The material which has here been brought together is that which naturally interests one who has spent a long period of years in association with the Missouri College of Agriculture. While the statements are usually commendatory, attempts have been made to evaluate developments as I have observed them. It is but natural that questions have been raised regarding the wisdom of some procedures, although some of this may be due to conservatism that comes with age. This does not mean that the many new developments in recent years are illogical or unwise. They are undoubtedly signs of the times, with which an older man has some difficulty in making adjustments. There is no doubt that agricultural changes will continue in the immediate future, probably at an accelerated rate. This means that the College must keep abreast of the times and endeavor to lead the way in modern agricultural teaching, research, and extension. I believe it will.