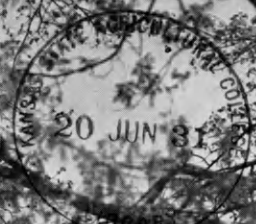


The KANSAS AGRICULTURAL STUDENT



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VOL. X, No. 4 MAY, 1931
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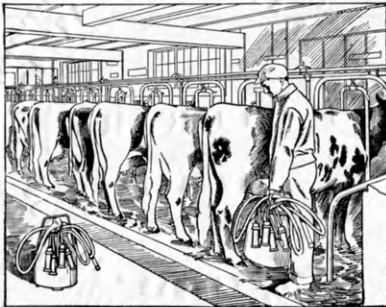
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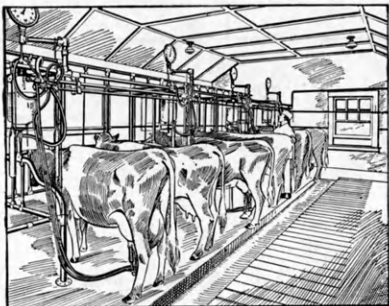


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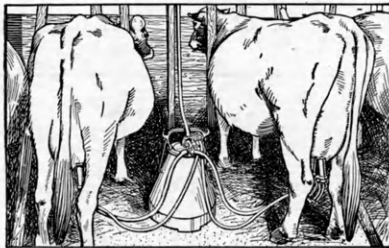
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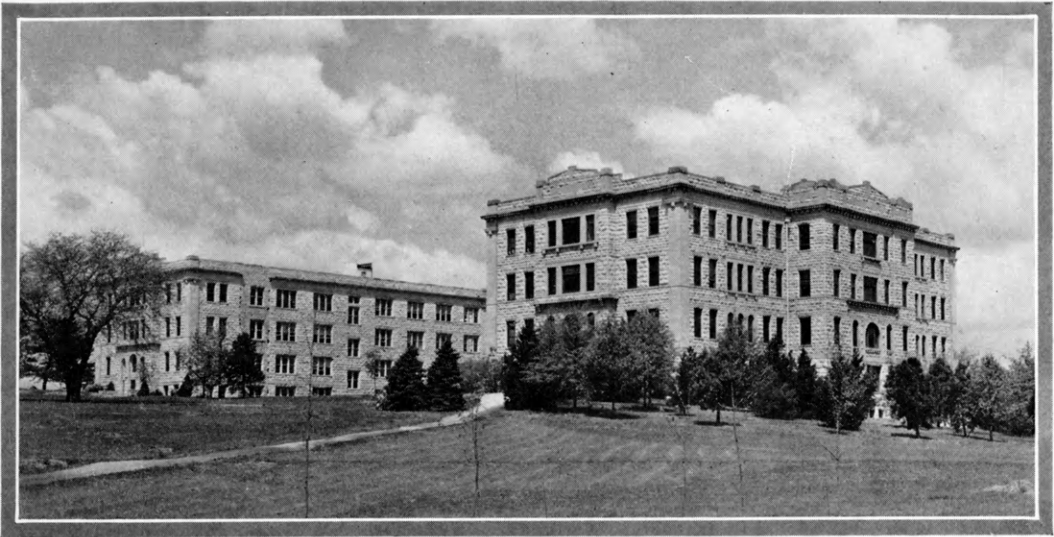
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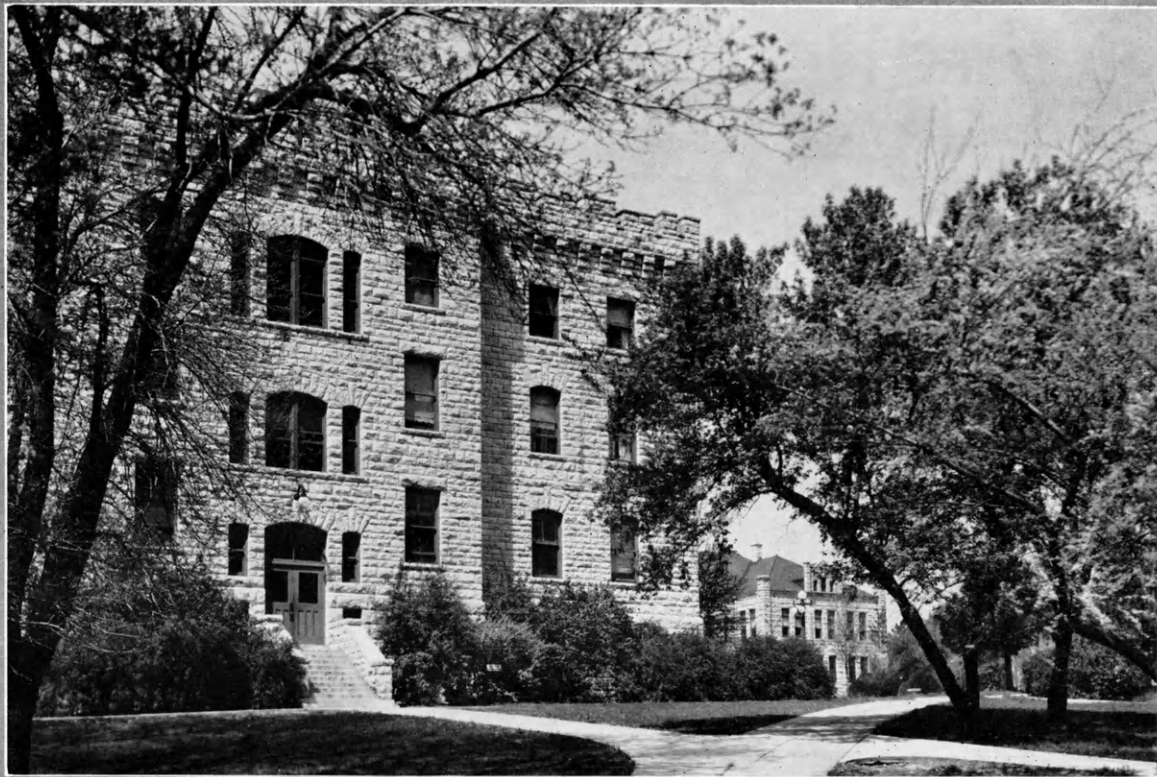
WEST AND EAST WINGS OF WATERS HALL



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A FAMILIAR SCENE ON THE SOUTH SIDE OF THE COLLEGE CAMPUS NOT FAR FROM
THE GATE SHOWN ON THE COVER PAGE

The Kansas Agricultural Student

VOL. X

Manhattan, Kansas, May, 1931

No. 4

Future Farmers of America

Merton L. Otto, '21

No more opportune time could have presented itself for the organization of the Future Farmers of America than that time following the close of the World War. During that period of unrest and upheaval in agriculture, instability and depression in prices caused even the more optimistic of young would-be farmers to look toward the city for more lucrative employment. Facing these conditions as facts, not theories, a group of young Virginia educators headed by Henry Groseclose, an instructor in the Department of Agricultural Education of the Virginia Polytechnic Institute, determined to organize the vocational agricultural students of that state into an organization that would give to the farm youth the relations with his fellowmen necessary to stimulate or motivate him to accept farming as a worthy occupation by assisting him in making and intelligently investing money; in working in cooperation with others; in taking an unselfish interest in community life; and in engaging in wholesome recreation. These principles briefly stated may be called the objectives of the Future Farmers of America as set forth in the Future Farmer Manual.

In five years the organization has grown from an idea to an organization with a membership of sixty thousand located in every state in the Union except one and in the Territory of Hawaii. A subordinate organization exists in each state.

There are four degrees of membership in the Future Farmers of America.

1. The Green Hand degree. To be eligible for this degree, a boy must be fourteen years old and regularly enrolled in a class of vocational agriculture. He must be carrying on a supervised project and must receive a majority vote of the members present at any regular meeting of the chapter.

2. Future Farmer degree. To be eligible for this degree a boy must have satisfactorily completed one year of vocational agriculture including supervised practice work. He must have \$25 in the bank or otherwise productively invested. He must be regularly enrolled in vocational agriculture and be carrying a larger supervised project than he carried when a Green Hand. He must also be able to recite from memory the Future Farmers creed, be able to lead a group discussion for 10 minutes, and to receive a majority vote of the members present at a meeting of the chapter.

3. State Farmer degree. The qualifications for election to this degree are optional with the state organization but the following are suggested: At least two years of systematic instruction in vocational agriculture with an outstanding supervised practice program in progress. He should have earned \$200, this amount to be in the bank or productively invested. He must be familiar with parliamentary procedure by having held office in his local chapter or by having passed a test in parliamentary drill. He must be able to handle a group discussion for 40 minutes and he must possess qualities of leadership shown by handling responsible positions in student and chapter activities. He must have shown marked ability in scholarship in all school subjects and must have been a member of the school judging team or some other team representing the school. Each state is allowed to elect 10 qualified candidates but where the state membership exceeds 500, not more than 2 per cent of its membership may be elected to the State Farmer degree.

4. American Farmer degree. To attain this degree a boy must have been a State Farmer and must be engaged in farming or preparing to enter farming as an occupation. He must

have demonstrated his ability to farm by having conducted an outstanding supervised practice program throughout his agricultural training. He must have \$500 in the bank or otherwise productively invested. He must show ability to work with others in some cooperative endeavor in agriculture and lastly he must have been recommended by the National Board of Trustees and receive a majority vote of the delegates present at a national congress of Future Farmers of America.

It may be seen by reading the above qualifications that promotion is based largely on efficient cooperation and achievement—two qualities very much needed in agricultural



leadership at the present time. Each local F. F. A. chapter selects certain objectives which it hopes to accomplish as a chapter during the year. The following is a hypothetical goal which might correspond to an actual goal set by a chapter: (1) Hold a chapter meeting each month. (2) Have at least one cooperative class project and hold a field day near the completion of the project. (3) Conduct two project tours during the school year. (4) Have each officer in F. F. A. learn his part perfectly. (5) Give a prize for best designed tool cabinet and placing of tools. (6) Landscape the school grounds and around the shop. (7) Have each boy start a savings account. (8) Fix broken windows and make other repairs around school building and shop. (9) Have an F. F. article in each issue of school paper. (10) Have teams entered in various state contests. (11) Have an F. F. A. display at the local fair.

The F. F. A. insignia is made of four emblems—

1. The cross section of an ear of corn signifying common agricultural interests because corn is native to America and is grown in every state.

2. The owl representing wisdom.

3. The plow representing the tilling of the soil.

4. The rising sun denoting progress.

F. F. A. in Kansas has had a steady growth and at the present time has 61 chapters with a membership of approximately one thousand. The Kansas Association has just completed its third year. During this time a total of 36 vocational agricultural boys have been raised to the State Farmer degree. The present state officers are:

President.....Leo Paulsen, Concordia
 Vice President.....Francis Grillot, Parsons
 Secretary.....Kenneth Waite, Winfield
 Treasurer.....William Wishart, Manhattan
 Adviser.....L. B. Pollom, Topeka
 Executive Adviser.....
Prof. A. P. Davidson, Manhattan

Two Kansas boys have been advanced to the American Farmer degree, the highest degree possible to obtain. These boys are Boyd Waite of Winfield and Lewis Evans of Washington.

To show the importance attached to the F. F. A. I will quote Mr. H. S. Avery, an alumnus of K. S. C. and at present traveling for the Federal Farm Board in the interests of cooperative marketing of farm products. He said, "The Federal Farm Board has abandoned the idea of educating the present generation of farmers to produce and sell cooperatively, but they hope by working through such organizations as F. F. A. to instill into the coming generation of farmers the principles of cooperation."

Kenneth W. Knechtel, '27, is operating a farm near Larned.

Warren E. Crabtree, '20, is director of vocational agriculture in Silverton, Oreg. Four teachers of vocational agriculture in Oregon were selected during the college year of 1930-'31 as master teachers of Oregon and Mr. Crabtree has the distinction of being one of them.

Vitamins and Nutrition

L. A. Wilhelm, '32

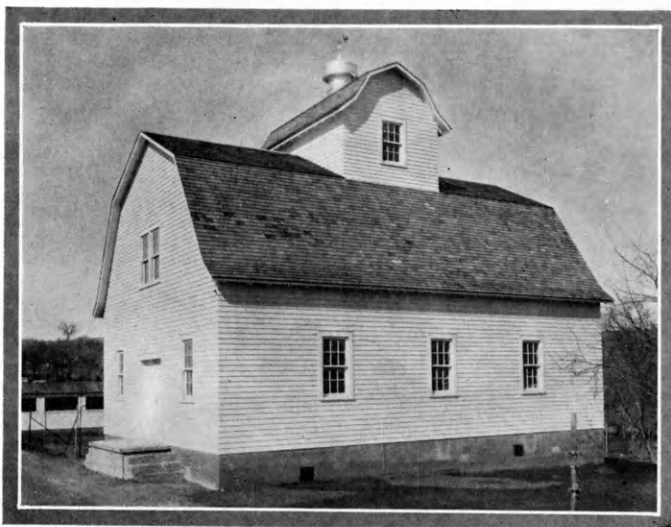
The nutrition laboratory recently completed by the Department of Poultry Husbandry on the college poultry farm stands as a monument to the great advance that has been made in poultry feeding. The building is 30 by 40 feet with two floors and a basement. It was just recently completed at a cost of \$4,000. Equipment costing \$2,400 makes it highly efficient for grinding, mixing, and storing poultry feed. A great many new conveniences make the laboratory one of the best and most up-to-date nutrition laboratories in the United States.

The Department of Agricultural Engineering drew the plans and supervised a part of the building and installation of machinery. This department is also cooperating with the Department of Poultry Husbandry in obtaining data on the electrical requirements for operating various kinds of feed grinders.

The rapid advancement in poultry feeding has been due largely to increased size and number of eggs laid per bird. In their wild state birds seldom laid 25 eggs per year. In this fact rests the answer to the question often asked by poultry keepers, "Why all this fuss about vitamins, minerals, and proteins, anyway?" In her wild state the hen did not lay 150 or 225 eggs per year, consequently she did not suffer from lack of vitamin D, or any of the other requirements of a good egg that are now causing science and the poultryman to combine forces. However, when the hen is shut up and forced for production, the lacking elements must be furnished.

The most commonly known vitamins today are A, B, C, and D. B has been subdivided to give vitamins E, F, and G. However, vitamin B is seldom lacking in poultry feeds, and apparently vitamin C can be made in the hen's body, so the real problems are vitamins

A and D. Vitamin A is sometimes called the growth vitamin. It is closely associated with the xanthophyll of green feeds and the yellow pigments of corn, carrots, and certain seeds. Corn gluten from yellow corn is one of the best sources of vitamin A, being four to six times as potent in this vitamin as yellow corn. Dehydrated alfalfa is also another excellent commercial source, being seven times as potent as fresh green alfalfa. Unless there is an abundant supply of green



POULTRY NUTRITION LABORATORY

feed or some other known source such as alfalfa meal or yellow corn, most poultry rations are very likely to be deficient in this vitamin.

The discovery of vitamin D, in 1923 known as the antirachitic vitamin, has made it possible to rear poultry in close confinement. This vitamin has a positive influence on the availability of minerals to birds. Thus the lack of it causes a calcium and phosphorus deficiency resulting in rickets, a condition which can be cured only by the use of excessive amounts of vitamin D. In Kansas very little attention need be paid this vitamin in the summer because the sun supplies ample

(Continued on page 109)

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We Invite Your Attention

The Kansas Agricultural Student is greatly indebted to those who have answered questions in our "Editorials," which follow. We believe the answers will be of great interest to our readers, especially prospective college freshmen. The reader will note that chronologically the information views a span of 40 years; that as regards point of view the slants

cover the field from the experienced and trained executive to the capable and promising young graduate of the Class of 1931; that academically the authors represent not only the Division of Agriculture of K. S. C. but our institutions of higher education. To the opinions and the points of view of these authorities we invite your attention.

QUESTIONS AND ANSWERS

EDITORIALS

Q. To what extent are K. S. C. curricula in agriculture cultural?

A. The answer depends upon how culture is defined. If culture is merely ability and inclination to engage in elegant idleness, as some shallow people seem to believe, the agricultural curricula have little cultural value. If culture is broad, intelligent, and sympathetic understanding of many things that really matter and the application of that understanding in everyday life, then the cur-

ricula in agriculture are definitely cultural.

By the second definition every subject offered in these curricula has definite cultural value. Every one of these subjects involves something that is significant in human affairs. In each agricultural curriculum, 40 to 50 per cent of the subject matter is in the field of agriculture. The remainder is in related scientific fields and in history, language, literature, and other liberalizing subjects.

The curricula in agriculture are for young

men who wish to spend their lives in any of the one hundred or more vocations in the general field of agriculture, on the farm or elsewhere, and who wish to be efficient professionally, capable socially, and happy as human beings. To realize such wishes is to be cultured in a genuine sense. The curricula in agriculture provide the training necessary for a person having the requisite native ability to achieve that end. —F. D. Farrell, President of the College.

Q. Would a young man reared on a Kansas farm be justified in enrolling in a college curriculum in agriculture if he was seriously undecided as to his life's work?

A. To the young men reared on Kansas farms:

Are you going to college? I think you should. Do you know what calling you are going to follow for your life work? If you are sure of your decision, go to the college that offers the best curriculum and has the best faculty in your chosen field of work. If you are like many young men, you have not made a definite decision. In that case, I would advise you to build on your farm experiences. Go to college and enroll in the curriculum in agriculture. Your farm experiences will motivate your theoretical work in college. You'll be building on what you already know.

John Dewey, the world's greatest educational philosopher, says culture is a knowledge of, an insight into, and an appreciation of one's environment—human and physical. If this is true, and I believe it is, the curriculum in agriculture is highly cultural as well as practical. —Edwin L. Holton, Dean of the Summer School.

Q. Name some of the advantages a graduate in agriculture will have on the farm.

A. A graduate in agriculture, like other specialists, has been trained to think. He can grasp those things that affect the welfare of his business. He is alert to the conditions which would hinder the successful operation of his farm. The damage caused by noxious weeds, insect pests, and live-stock diseases is known.

The development of leadership is always

worth while. The college graduate will find an important place in the life of an agricultural community. Social life, religious work, school activities, and cooperative farm organizations all demand the support of the man who can think and lead.

Because of his ability to have a broad view of conditions and their relation to the business of farming, the graduate in agriculture will have confidence in the future, be more efficient, and be a happier citizen in his community. —Bruce S. Wilson, '08, Farmer.

Q. Of what does the commercial field in agriculture consist?

A. There are many types of business an important function of which is to serve agriculture. This is true of the fertilizer business, the commercial feed business, the implement business, the creamery business, the hatchery business, the seed business, the packing business, rural banking, and many other types of mercantile business in rural communities.

Those engaged in such kinds of business are best able to serve their constituents when they have a thorough knowledge of agriculture from both the practical and technical standpoints. There is a demand, therefore, for young men trained in agriculture to engage in commercial work in such fields. The demand depends somewhat upon general industrial conditions. At present the demand is limited, but when business conditions are good, it is usually impossible to meet the demand with the limited number of men properly trained for such work.

—L. E. Call, Dean, Division of Agriculture.

Q. Do curricula in agriculture provide basic training for graduate work in other fields?

A. It has become apparent that graduate study leading to the higher degrees is not only desirable, but actually required, of those who are to teach in universities, colleges, junior colleges, and the better high schools. Research work, whether in institutions of higher learning, the governmental service, or in industry, is more and more demanding a personnel, everything else approximately equal, who have gone through the graduate school.

Therefore, it behooves high school seniors and college undergraduate students and their advisers to scrutinize carefully various undergraduate curricula. Only one college division in K. S. C. will be discussed here. What prospects for graduate study and useful careers in agricultural or related fields are open to students matriculating in the Division of Agriculture? Would an undergraduate in this division be limited to agriculture, even though he should later become interested in some related field?

It is true that teaching and research in the various lines of agriculture cover a broad field and promise a very attractive and useful career. No one who becomes thoroughly grounded in agricultural science and art need fear the lack of opportunities. There are tempting fields in plant and animal industries, entomology, parasitology, bacteriology, horticulture, rural sociology, agricultural education, agricultural economics, animal nutrition, soil science, and other fields. The matriculant in the general agricultural curriculum emerges as no mean scientist; he may have a splendid start in chemistry, physics, botany, zoology, and geology, not to emphasize the amplification and excellent practice in the application of these sciences which attend the more obviously practical features of his studies and observations.

In practice, it has also been found convenient and desirable for students majoring in agriculture, especially if they take advantage of the liberal elective privileges, to become eligible for graduate work in the sciences which are usually not considered as directly in the field of agriculture. For examples, two recent agricultural students majored in zoology. After receiving the master of science degree, one majoring in parasitology and the other in fish culture, they secured good assistantships in the two leading universities in their respective lines. Both have taken the doctorate this spring, and already have excellent appointments. Neither had any hitch from freshman agriculture to the highest possible academic degree. Many similar examples might be cited. —Robert K. Nabours, Chairman of Graduate Council.

Q. Is it probable that the number of high schools offering vocational agriculture will continue to increase during the next decade? Why?

A. I am positive vocational agriculture will increase in favor in Kansas during the next decade and am confident it will continue to reach more people each year. The principal reasons for this assertion are:

1. School administrators are making a careful study of the responsibility of the high school to the people who support it, and are becoming better trained in problems of guidance. The function of the high school is no longer thought of as being primarily a training ground for those who intend to enter higher institutions of learning, but instead is recognized as being that of training, in addition to the group which will go on to college, the larger group which will go into the vocations of the community. Since a large majority of the high schools in Kansas are supported by rural communities it is obvious that a large per cent of their graduates will continue to go into rural vocations, thereby necessitating greater emphasis for training in that field.

2. The vocational schools will continue to increase in popularity and number because of the fact that they are building a more complete program than that of training the day school student. Such schools offer a splendid opportunity for training of individuals who are already engaged in the vocations of the community. With a trained leader, a splendid agricultural library and school facilities available, it is only reasonable to expect the evening school program to develop throughout the state. The evening school program is another service to the farm operator and through the appreciation of this service the program will continue to expand. —A. P. Davidson, Professor of Vocational Education.

Q. What helpful vocational and educational guidance is provided for agricultural freshmen?

A. A course in Freshman Lectures is given during the first semester of the freshman year. In this course the work of the various agricultural departments is explained in

detail and some 30 different curricula, each one designed to prepare for a particular line of work, such as dairy farming, teaching vocational agriculture, or county agricultural agent work are presented with subjects suggested to be taken in each of the four years. Students are appreciative of this work and feel that it not only shows them how best to prepare themselves for their chosen line of work but that it is also a great help in making a decision as to what general line of work to pursue.

The course in Freshman Lectures also strives to aid the freshman in getting adjusted to his new surroundings and conditions by planning his daily program of study and recreation, making college requirements clear, and forewarning him as regards pitfalls.

A system of faculty advisers is also provided in which each freshman is assigned to a faculty member who acts in the capacity of a friendly alumnus or older brother. The purpose of the adviser is to help solve specific problems for the individual. Then, too, the system gives the freshman an acquaintance whom he feels more like going to for friendly counsel and advice.

In addition to the above organized system of guidance, the faculty of the Division of Agriculture, including the heads of the departments and the dean's office, are more than glad to help the freshman get adjusted and organized. They encourage and welcome the opportunity of taking an active and sincere interest in the freshman's problems.

—Bruce R. Taylor, '31.

Q. Is the atmosphere in the Division of Agriculture helpful to farm-reared freshmen?

A. A start in college is a distinct change in school experience, and usually a very awkward one for a time for all students. To the boy reared on a farm and the graduate of a small high school it is perhaps the most difficult.

It seems to me that in the Division of Agriculture such students "find" themselves rather easily, and feel at home and adjust themselves rather readily to conditions in the college community. They do so because they are in a group like themselves and studying at least a few subjects with which they are

familiar. They meet regularly to be given helpful hints regarding their campus problems and each has at least one man on the college faculty to whom he feels free to go for personal advice. The teachers in the Division of Agriculture are familiar with the problems of the farm boy in school and are equipped through experience to help him make the most of his opportunities.

Secondly, freshmen in the Division of Agriculture are not strangers to other work and other interests and activities of college students. They take subjects in other divisions, especially the Divisions of General Science and Engineering. The Division of Agriculture is always well represented in the college band and other musical organizations; in athletics, oratory, debate, and dramatics. The advantages of helpful cooperation and of a group of common interests within the division are supplemented by the diversified opportunities offered in other departments and divisions of the college.

Altogether the associations of the freshman in the Division of Agriculture, both in and out of the classroom, are helpful and stimulating. This is especially true as regards farm-reared young men from small high schools in Kansas rural communities.

—Alonzo Lambertson, '31.

Q. To what extent do agricultural curricula, by their flexibility, provide training for many objectives?

A. A college catalogue must necessarily be comprehensive and technically accurate. It must be up to date, and therefore as a rule an annual publication. To avoid excessive cost under such circumstances, the information presented must be about the driest, most matter-of-fact information possible. Yet in spite of its necessary shortcomings, a college catalogue becomes an interesting text, a real testament on higher education to the prospective college student.

The agricultural curricula of Kansas State College of Agriculture and Applied Science are flexible, distinctly, purposefully, and in a large way flexible. It is difficult, however, for the average prospective freshman to appreciate this flexibility by simply studying the catalogue. He studies the preliminary in-

formation and the outlines as given, for example, on pages 103 to 111 of the current catalogue. But to appreciate the possibilities of a curriculum composed of 40 to 50 per cent electives and one in which a number of purposeful substitutions are permissible, as stated on page 109, is not an easy assignment for a high school graduate.

To show the interested prospective student something more specific as regards the training possible for more than a score of varied agricultural objectives, a number of typical suggestive curricula have been prepared. Would you be interested in a college curriculum providing **Special Training for:** (1) Power farming. (2) County agricultural agent work. (3) Dairy Farming or commercial dairying. (4) Specialized poultry or crop production. (5) Marketing poultry products. (6) Professional or technical work in soil research, entomological research, or research in plant breeding, animal breeding, plant pathology, pasture improvement, or manufacturing dairy products. (7) Graduate work in any phase of agricultural science. (8) Live stock farming. (9) The business side of farming. (10) Gardening, greenhouse work, and floriculture. (11) Practical fruit growing. (12) Agricultural chemistry. (13) Agricultural journalism. (14) Large scale farming where the business problems are outstanding. (15) The teaching of vocational agriculture. (16) Teaching or research in any phase of agriculture in higher educational institutions. (17) A business dealing primarily with rural financing, grain or grain products, or land economics. (18) Landscape gardening.

Such curricula and a score of others differing in minor respects are possible in the flexible curricula offered in the Division of Agriculture. The curriculum for each student is developed in a purposeful way to best prepare him for his objective and is adapted to meet his needs not only vocationally but from the point of view of his own training for citizenship.

For any one or more of the suggested curricula outlines or for information regarding an individual curriculum developed and adapted to meet any particular agricultural objective, address a request to Dean, Division

of Agriculture, K. S. C., Manhattan, Kansas. Ask, too, for a college catalogue.

Our agricultural curricula are broad and flexible enough to meet any agricultural objective of importance in this section of the country. They not only provide training for many distinct agricultural objectives, but provide for adaptation in minor ways to meet individual needs, both vocationally and avocationally.

Q. Does it make much difference what curriculum one takes in college if he plans to return to the farm?

A. It does. Agriculture has become a highly specialized business. It is doubly so now that the margin of profit has narrowed so perceptibly and will remain narrow, in all probability, for some time to come.

An education to fit one for a successful farmer should have a broad foundation of general knowledge of world affairs and business. It should be followed by subjects that will give a still better and more accurate knowledge of general farm problems and, finally, a definite and specific knowledge and training in the particular line of farming which one has chosen for his life work. —Ralph Snyder, '90, President, Kansas State Farm Bureau.

Q. What per cent of college graduates completing agricultural curricula in K. S. C. return to the farm?

A. The number varies from 20 to 40 per cent. It is unusual for it to be as low as 20 per cent, being more commonly from 30 to 40 per cent. In periods when demand for agricultural workers is strong, some who would otherwise return to the farm accept attractive offers in related commercial, professional, or technical fields.

Of the classes of 1914 and 1919 approximately 30 per cent returned to the farm; of the class of 1926 only 20 per cent; and of the classes of 1929 and 1930 almost 40 per cent. The first section of the class of 1931 was graduated May 28. The degree, bachelor of science in agriculture, was granted to 56 young men. Of these 17, or 30 per cent, returned to the farm. —Hugh Durham, Assistant Dean, Division of Agriculture.

State High School Vocational Agriculture Judging Contest

Oscar E. Reece, '31

On April 27 and 28, 1931, the eleventh annual State High School Vocational Agricultural Judging Contest was held. Due to adverse weather conditions and bad roads several teams entered were unable to report. There were 74 teams present, 46 of which participated in all four divisions of the contest. The number of contestants present totaled 225 due to the fact that one school entered two individuals and another school entered only one. Last year 79 teams competed in the contest and the total number of contestants was 239 as one school entered but two contestants.

The contest as usual was divided into four sections. Section I, Dairy Judging, consisted of placing four classes of dairy cows and giving oral reasons on two of them. Section II, Animal Husbandry Judging, consisted of placing two classes each of horses, beef cattle, swine, and sheep, and giving oral reasons on one class of each kind of animals. Section III, Crops Judging, consisted of the identification of grain and forage crops, weeds, weed seeds, and plant diseases; commercial grading of wheat, grain sorghums, shelled corn, and alfalfa; and judging the seed and market value of alfalfa seed, ear corn, and wheat. Section IV, Poultry Judging, consisted of placing four classes of hens for past production and a written examination on the American Standard of Pfection.

In Sections I and II, 50 points were allowed for reasons and 50 points for placings, making a total possible individual score of 300 points in Section I and 600 in Section

II. In Section III there were eight classes, each given an allowance of 100 points, making a total of 800 points. In Section IV, 75 points were allowed for each class and 100 points for the examination, making a total of 400 points. This would make a total of 2,100 points for each individual in the en-



WINNERS IN THE STATE HIGH SCHOOL CONTEST IN THE JUDGING OF FARM PRODUCTS

Above: A. G. Jensen, coach, and Herbert Berk, high individual in the entire contest. (Concordia High School.)

Below: The winning team and their coach; also high team in poultry judging. Left to right—C. O. Banta, coach; Karl Shoemaker, Everette Miller, Emory Morgan. (Ottawa High School.)

tire contest and a possible team total of 6,300 points.

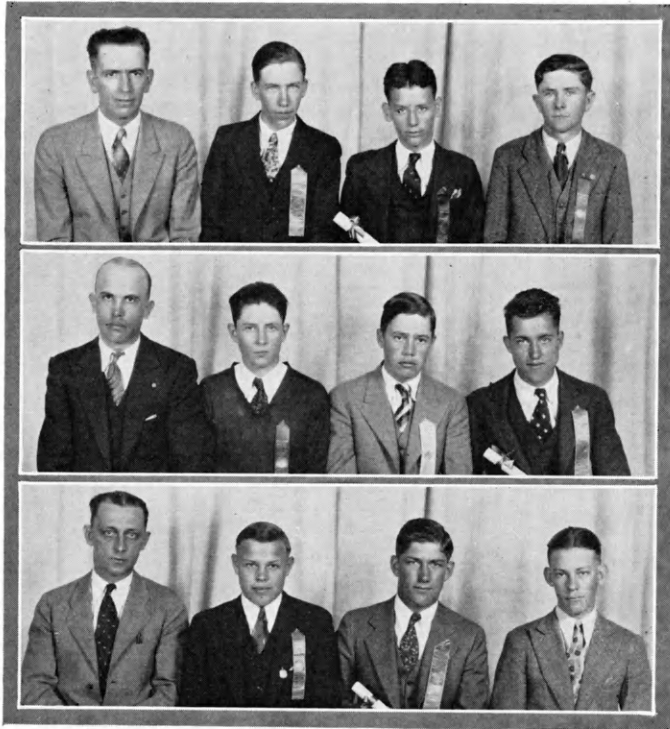
The President's prize—a parchment certificate—awarded the team making the highest score in the entire contest was won by Ottawa High School, competing against 45 teams throughout the entire contest. The Dean's prize—a parchment certificate—

awarded the individual making the highest score in the entire contest was won by Herbert Berk of Concordia High School, competing against 139 individuals throughout the entire contest. The highest scoring team and the highest scoring individuals in each division were also awarded prizes. Ribbons were

in the entire contest are given in the accompanying tables.

The team ranking highest in each section of the contest received a parchment certificate from the department sponsoring that section of the contest. These certificates were won by the following teams: The Dairy Department prize was won by Norton Community High School, competing against 66 teams; the Animal Husbandry Department prize was won by Clay County Community High School, competing against 71 teams; the Agronomy Department prize was won by Wamego High School, competing against 51 teams; and the Poultry Department prize was won by Ottawa High School, competing against 61 teams. The teams ranking first to fifth in each section with their scores are given on the opposite page.

The college departmental clubs gave medals to the highest scoring individuals in each section of the contest. The Dairy Club medal was won by Elmer Sparks of Hill City Rural High School, competing against 202 individual contestants in Section I. The Block and Bridle Club medal was won by Kenneth Waite of Winfield High School, competing against 217 contestants in Section II. The Klod and Kernel medal was won by Joe Weybrew of Wamego High School, competing against 157 contestants in Section III. The Poultry Club medal was won by Eugene Jones of Ford Rural High



TOP PANEL: HIGH TEAM IN JUDGING DAIRY CATTLE. MIDDLE PANEL: HIGH TEAM IN JUDGING HORSES, BEEF CATTLE, SWINE, AND SHEEP. BOTTOM PANEL: HIGH TEAM IN CROPS JUDGING

Top (left to right): Raymond G. Frye, coach; Irvin Horn- ing; Au Relle Corder; Glen Hazlett. (Norton Community High School.)

Middle: Edwin Hedstrom, coach; Kenneth Bork; Enno Wi- berg; Everett Hundley. (Clay County Community High School.)

Bottom: H. A. Myers, coach; Joe Weybrew; Lloyd Edwards; Lloyd Raine. (Wamego High School.)

awarded the first five teams and the first five individuals in both the entire contest and each section of the contest. Therefore, each team and each individual showing outstanding ability in the entire contest or in any section of it received proper recognition. Team and individual scores up to tenth place

School, competing against 188 contestants in Section IV. The individuals ranking first to fifth in each section of the contest with their scores are given on the opposite page.

Giving oral reasons was a new feature of the live stock sections of the contest this year. It will be included again next year.

HIGH SCHOOL JUDGING CONTEST

109

HIGH TEAMS IN THE ENTIRE CONTEST

High School	Score					Coach
	I	II	III	IV	Total	
Ottawa H. S.	711	1,085	1,704	974	4,474	C. O. Banta
Hill City R. H. S.	742	1,218	1,671	831	4,462	S. S. Bergsma
Concordia H. S.	718	1,141	1,639	845	4,343	A. G. Jensen
Carbondale R. H. S.	696	1,233	1,534	870	4,333	E. I. Chilcott
Fairview R. H. S.	664	1,138	1,592	860	4,254	R. E. Regnier
Trousdale R. H. S.	637	977	1,707	928	4,249	J. R. Wood
Manhattan H. S.	693	1,151	1,629	770	4,243	H. W. Schmitz
Wamego H. S.	641	1,049	1,724	826	4,240	H. A. Myers
Lebanon H. S.	669	1,181	1,504	847	4,201	F. A. Blauer
Decatur Co. Com. H. S.	591	1,116	1,657	774	4,138	S. H. Howard

HIGH INDIVIDUALS IN THE ENTIRE CONTEST

Contestant	Score				Total	High School	Coach
	I	II	III	IV			
Herbert Berk	237	454	575	319	1,585	Concordia H. S.	A. G. Jensen
Clarence Bell	240	401	607	309	1,557	McDonald R. H. S.	C. K. Fisher
Vincent Widan	242	416	551	328	1,537	Carbondale R. H. S.	E. I. Chilcott
Teddy Scott	270	435	483	327	1,515	Chase Co. Com. H. S.	A. W. Miller
Russell Gripp	238	424	562	291	1,515	Hill City R. H. S.	S. S. Bergsma
Karl Shoemaker	255	355	574	326	1,510	Ottawa H. S.	C. O. Banta
Joe Weybrew	206	383	624	293	1,506	Wamego H. S.	H. A. Myers
Everette Miller	231	378	577	317	1,503	Ottawa H. S.	C. O. Banta
James Booth	253	369	542	326	1,490	Fairview R. H. S.	R. E. Regnier
Elmer Sparks	286	402	519	283	1,490	Hill City R. H. S.	S. S. Bergsma

HIGH TEAMS IN EACH SECTION OF THE CONTEST

High School	Sec. Score	Coach
Norton Com. H. S.	I 776	Raymond G. Frye
Hill City R. H. S.	I 742	S. S. Bergsma
Clay Co. Com. H. S.	I 739	Edwin Hedstrom
Abilene H. S.	I 730	F. D. Allison
Concordia H. S.	I 718	A. G. Jensen
Clay Co. Com. H. S.	II 1,261	Edwin Hedstrom
Harveyville R. H. S.	II 1,249	H. R. Bradley
Winfield H. S.	II 1,234	Ira L. Plank
Carbondale R. H. S.	II 1,233	E. I. Chilcott
Sherman Co. Com. H. S.	II 1,228	Paul Axtell
Wamego H. S.	III 1,724	H. A. Myers
Trousdale R. H. S.	III 1,707	J. R. Wood
Ottawa H. S.	III 1,704	C. O. Banta
Hill City R. H. S.	III 1,671	S. S. Bergsma
Decatur Co. Com. H. S.	III 1,657	S. H. Howard
Ottawa H. S.	IV 974	C. O. Banta
Labette Co. Com. H. S.	IV 970	O. L. Norton
Trousdale R. H. S.	IV 928	J. R. Wood
Coldwater H. S.	IV 895	L. A. Sutherland
Pleasanton R. H. S.	IV 892	W. W. Humphrey

HIGH INDIVIDUALS IN EACH SECTION OF THE CONTEST

Contestant	Sec. Score	High School
Elmer Sparks	I 286	Hill City R. H. S.
Au Relle Corder	I 281	Norton Com. H. S.
Wayne Connery	I 273	Kingman H. S.
Glen Hazlett	I 271	Norton Com. H. S.
Alvin Riekeman	I 271	Abilene H. S.
Kenneth Waite	II 477	Winfield H. S.
Waldo Cox	II 473	Mound City H. S.
Francis Ecklund	II 470	Harveyville R. H. S.
Kenneth Bork	II 455	Clay Co. Com. H. S.
Herbert Berk	II 454	Concordia H. S.
Joe Weybrew	III 624	Wamego H. S.
Carl Byer	III 618	Fairview R. H. S.
Dale Gifford	III 614	Trousdale R. H. S.
Clarence Bell	III 607	McDonald R. H. S.
Leon Wenger	III 592	Powhattan R. H. S.
Eugene Jones	IV 334	Ford R. H. S.
Floren Palmer	IV 334	Labette Co. Com. H. S.
Loy Gregory	IV 333	Trousdale R. H. S.
Emory Morgan	IV 331	Ottawa H. S.
Vincent Widan	IV 328	Carbondale R. H. S.

VITAMINS AND NUTRITION

(Continued from page 101)

amounts of it, but during the winter when the birds are kept indoors it should be supplied. The most common method of furnishing this vitamin has been by adding 1 per cent of a good cod-liver oil to the ration. This may be secured in amounts at about \$1.25 per gallon and mixed at home, or it may be purchased in commercial feeds.

Early misconceptions regarding vitamins are gradually disappearing as are likewise the exaggerated claims for vitamin D that made it appear in the light of a panacea for all the past, present, and future troubles of the poultryman. Both vitamins A and D are contained in most grades of cod-liver oil. The Department of Poultry Husbandry recommends the feeding of alfalfa meal and yellow corn as the vitamin A supplement as it supplies this particular vitamin much cheaper. The Kansas poultryman need not worry about this question of "Vitamins and Nutrition" if yellow corn and alfalfa leaf meal are fed to supply vitamin A and provided the open-front type of laying house is used to allow ample sunshine to penetrate the interior to meet the vitamin D requirement.

Young stock reared in confinement should be fed cod-liver oil. Possibly the addition of cod-liver oil to the laying ration during the winter months is of some benefit.

COLLEGE NOTES

SCHOLARSHIP HONORS

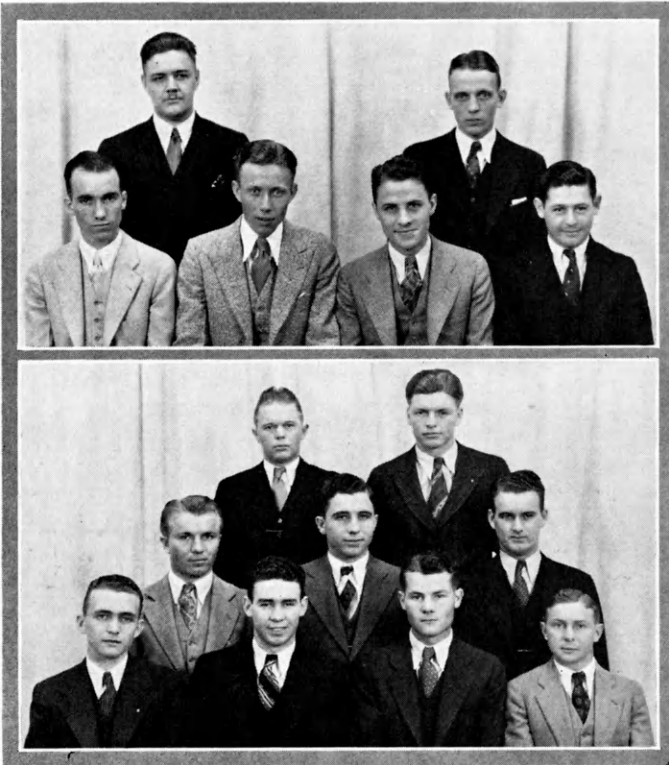
The chief honorary societies to which undergraduate students in the Division of Agriculture are eligible to election are Phi Kappa Phi, Gamma Sigma Delta, and Alpha Zeta.

class. The other two are strictly agricultural societies.

To be eligible to Gamma Sigma Delta a senior's scholarship must place him in the upper 25 per cent of the class, though not to exceed 15 per cent of the class are elected to membership. The accompanying picture shows the members of the Class of 1931 elected to membership in Phi Kappa Phi. These six outstanding students were also elected to membership in Gamma Sigma Delta. Besides these, Gamma Sigma Delta elected the following five members of the Class of 1931 to membership: John S. Boyer.....Eldorado Alonzo Lambertson.....Fairview Wilmer A. Meyle.....Holton Fay A. Mueller.....Sawyer Alva M. Schlehuber.....Durham

Alpha Zeta is a student honorary agricultural society. Agricultural students who have completed three semesters' work and whose scholarship places them in the upper 40 per cent of their class meet the scholarship requirements and are elected to membership if in the judgment of the society they meet other requirements. These other requirements are primarily character and leadership. First of all the candidate must give promise of capable leadership in agricultural lines.

Membership in Alpha Zeta is probably the most coveted honor in the Division of Agriculture. The accompanying picture presents those students who were elected to membership during the



AGS HONORED BY ELECTION TO ALPHA ZETA, 1930-'31

Top panel (left to right): Stephen Vesecky, Leroy A. Wilhelm, Lot F. Taylor, Glenn S. Fox, Robert M. Hodgson, Paul W. Griffith.

Bottom panel: Top row—Carl E. Elling, Tom D. Dicken. Middle row—Earl H. Regnier, Oliver W. Shoup, Earl H. Johnson. Bottom row—Claude L. King, James K. Kimball, Luther A. Jacobson, Boyd R. Cathcart.

Phi Kappa Phi selects members from the seniors of the institution whose scholarship places them in the upper 10 per cent of the

college year, 1930-'31. Those in the bottom panel were elected the first semester and those in the top panel were elected the second semester.

A BIG AND SUCCESSFUL FEEDERS' DAY

The annual feeders' program was presented Saturday, May 23. This event usually draws visitors from all over Kansas and many from neighboring states and this year's attendance was well up to that of former years. In the audience were breeders, feeders, commission men, packers, butchers, and men representing almost every phase of the live-stock industry.

The purpose of this day is to give men in the live-stock industry a chance to get together and talk over their mutual problems, to present the results of practical feeding experiments, and to get the viewpoint of men prominent in live-stock work.

Lunch was served by the members of the Block and Bridle club under the direction of Prof. D. L. Mackintosh. Serving looked like an endless task in the beginning but was all over in a few minutes, thanks to the hard work and excellent organization of the serving force.

The early part of the day was devoted to an inspection of the animal husbandry barns and experimental feeding lots. Here the visitors had an opportunity to look over some of the college live stock and to see the cattle in the experiment to be discussed during the speaking program. These cattle attracted much attention and the call to the pavilion for the program was sounded several times before everyone was finally started in that direction. Dean Call presided at the pavilion. After a brief welcome by President Farrell, Doctor Kitselman of the Division of Veterinary Medicine discussed the problem of contagious abortion. He was followed by Mr.

D. M. Hildebrand of Seward, Nebr., who outlined the present live-stock situation as seen by the National Live Stock and Meat Board. Dr. C. W. McCampbell, head of the Department of Animal Husbandry, reported on an experiment dealing with silage as the roughage in cattle fattening. This report indicates that ground limestone added to silage makes a very satisfactory roughage.

In the afternoon Bruce Morgan gave a few pointers on creep feeding calves. Mr. Matthews, a stockman and lawyer from Kansas



AGS OF CLASS OF 1931 IN PHI KAPPA PHI

Top row: Eruce R. Taylor, George D. Oberle, Fulton G. Ackerman.

Bottom row: Arnold E. Chase, Andre Audant, John L. Wilson.

City, talked on the future outlook for cattlemen. He especially emphasized the value of beef in the diet and urged an increase in its use. Doctor McCampbell then reported the results of an experiment on using bluestem grass in fattening yearlings. The results seem to indicate that the three-phase system can be employed profitably with this kind of cattle. The question box concluded a successful Feeders' Day. —J. M., M. S., '31.

DAIRY CATTLE JUDGING CONTEST

Premier honors in the students' dairy cattle judging contest were won by F. D. McCammon, Norton, and Wayne W. Jacobs, Harper. McCammon won the senior division, in which 36 students with more than six weeks of instruction in college dairy judging competed, with a score of 1,118 out of a possible 1,200 points. Jacobs topped the 53 contestants in the junior division with a score of 1,048 out of a possible 1,200. Each winner was presented with a gold watch in recognition of his achievement.

The contest is sponsored annually by the K. S. C. Dairy Club. Eight classes, a class of cows and a class of heifers of each of the four major dairy breeds, were judged and reasons were taken on the cow classes. The senior division gave oral reasons while the juniors wrote reasons. This year's contest had a 25 per cent increase in number of contestants over last year. Students in charge of the contest consisted of those who had previously represented the college in intercollegiate dairy cattle judging contests: H. B. Harper, Manhattan; K. V. Engle, Abilene; L. A. Peck, Soldier; R. A. Dodge, Manhattan; and J. L. Wilson, Geneva.

The other high scoring individuals in the contest in order were:

SENIOR DIVISION	Score
A. C. Thomson, McCune.....	1,107
F. W. Castello, McCune.....	1,089
W. M. Myers, Bancroft.....	1,070
D. D. Alsup, Pittsburg.....	1,053
C. A. Reynolds, Wilder.....	1,034
E. C. Coulter, Willis.....	1,033
L. C. Blackburn, Norman, Nebr.	1,022
J. I. Miller, Prescott.....	1,010
R. J. Cohorst, Marysville.....	1,009

JUNIOR DIVISION

O. F. Denton, Denton.....	1,030
P. H. Hostetler, Harper.....	1,020
F. H. Fulker, Culver.....	981
C. G. Page, Norton.....	973
L. R. Chilson, Oberlin.....	970
G. A. Booth, Fairview.....	966
W. H. Pine, Lawrence.....	958
V. E. Burnet, Manchester.....	958
J. W. Mather, Grinnell.....	950
Penn Thompson, Williamstown.....	950

In the senior division F. D. McCammon made the highest score on Jerseys with 298 out of a possible 300, followed by Myers with 293. On Guernseys, E. C. Coulter was first with 292 and A. C. Thomson second with 287. F. W. Castello and F. D. McCammon tied for

first on Ayrshires with 280, while on Holsteins, F. W. Castello and L. C. Blackburn tied for highest honors with 280. In the junior division H. W. Coberly was first on Jerseys with a score of 278, and G. A. Booth was first on Guernseys with 281. Hostetler and W. R. Smith tied for first on Holsteins with 265; and W. W. Jacobs, O. F. Denton, and D. F. Engle tied for first on Ayrshires, each scoring 275 points.

In addition to the gold watches for first places, silver and bronze medals were awarded to the second and third place individuals in each division. Belts and breed prizes were given to the high men on each breed. A. C. Thomson won a prize for being high man on oral reasons.

All awards were presented at the Dairy Club banquet held in honor of the seniors graduating in dairy husbandry. Both the members of the faculty of the Department of Dairy Husbandry and the members of the Dairy Club report the contest as one of the most successful ever held, and the results indicate an abundance of material for future dairy cattle judging teams. —J. L. W., '31.

BLOCK AND BRIDLE CONTEST

Lawrence D. Morgan won first place in the senior division and Clifford L. Harding placed first in the junior division of the 28th annual Block and Bridle Judging Contest held at the college Saturday, May 2, 1931. The prizes were awarded the following Monday night at a recognition banquet.

Two classes each of sheep, swine, beef cattle, and horses were judged, oral reasons being given in the senior division and written reasons in the junior division.

Morgan received a watch and Harding a silver loving cup. Those placing second and third in each division received medals. In the senior division there were 33 contestants and in the junior division, 76.

The high man in each of the four classes of live stock in the contest were awarded fountain pens. The winners were: cattle, G. Arden Booth; swine, Frank Zitnik; sheep, Ralph O. Snelling; horses, F. Dean McCammon.

The ten high men in each section of the

contest and their scores were as follows:

SENIOR DIVISION

Contestant	Score
Lawrence D. Morgan.....	545
John I. Miller.....	535
W. Loy McMullen.....	523
Clark C. Milligan.....	518
G. Arden Booth.....	516
Taylor L. Jones.....	509
Frank Zitnik.....	509
Ralph O. Snelling.....	508
Lester A. Eastwood.....	500
F. Dean McCammon.....	499

JUNIOR DIVISION

Contestant	Score
Clifford L. Harding.....	525
Harold E. Grogger.....	515
Harold L. Kugler.....	512
Vernon E. Burnet.....	498
Charles D. McNeal.....	495
Paul W. Griffith.....	494
Walter Zeckser.....	493
Orville F. Denton.....	491
Dale H. Edelblute.....	486
Lee T. Morgan.....	485

STUDENTS' CROPS JUDGING CONTEST

Professor Zahnley will have an abundance of material for his grain judging teams the next few years if the interest shown and the high scores made in the thirteenth annual Students' Crops Judging Contest, May 9, 1931, may be taken as an indication.

The number of entrants in the contest was 73, of whom 16 were freshmen. Wilfred H. Pine of Lawrence, a freshman in agriculture, won the Kansas City Board of Trade scholarship of \$50, with a score of 664 out of a possible 960. Mr. Pine's closest competitors were F. Harold Fulker of Culver, and G. Arden Booth of Fairview, who placed second and third, respectively. Mr. Fulker received \$5 and a year's subscription to the Daily Drivers Telegram; Mr. Booth, \$3 and a subscription.

In the junior division Raymond J. Cohorst of Marysville took first place with a score of 742. Lester R. Chilson of Oberlin was second, and Russel A. Lindley of Hill City, third. Mr. Cohorst received a silver loving cup and \$4 in cash, while Mr. Chilson received a bushel of hybrid seed corn. Mr. Lindley got a prize of \$8.50 and a year's subscription to Successful Farming magazine.

In the senior division Will M. Myers of Bancroft was high scoring man with 796 points to his credit. This is the third consecutive year Bill has been high man of his division, having won regularly in each of

the three divisions. Mr. Myers received a silver loving cup and \$4 in cash, while George D. Oberle of Carbondale who placed second received a bushel of alfalfa seed and a year's subscription to the Daily Drivers Telegram. Frank R. Freeman of Kirwin was third in the senior division, receiving \$8.50 and a year's subscription to Successful Farming.

The contest consisted of identification of crop varieties and weed seeds, the commercial grading of corn, wheat, oats, and grain sorghums, and the judging of small grains and legumes.

The three high men of the Freshman, Junior, and Senior divisions in identification were Harry W. Coberly of Gove, Lester R. Chilson of Oberlin, and Will M. Myers of Bancroft, respectively. In judging, G. Arden Booth of Fairview was the high freshman, Russel A. Lindley of Hill City, high junior, and George D. Oberle of Carbondale was high senior. The high men in grading were Lee H. Albin of Norcatur, freshman, Raymond J. Cohorst of Marysville, junior, and Jay R. Bentley of Ford, senior.

Following are the names and scores of the winners.

Name	Rank	Score
SENIOR DIVISION		
Will M. Myers.....	1	796
George D. Oberle.....	2	779
Frank R. Freeman.....	3	742
JUNIOR DIVISION		
Raymond J. Cohorst.....	1	742
Lester R. Chilson.....	2	705
Russel A. Lindley.....	3	680
FRESHMAN DIVISION		
Wilfred H. Pine.....	1	664
F. Harold Fulker.....	2	621
G. Arden Booth.....	3	619

IDENTIFICATION

Freshman.....Harry W. Coberly.....	287
Junior.....Lester R. Chilson.....	321
Senior.....Will M. Myers.....	328

JUDGING

Freshman.....G. Arden Booth.....	266
Junior.....Russel A. Lindley.....	261
Senior.....George D. Oberle.....	290

GRADING

Freshman.....Lee H. Albin.....	180
Junior.....Raymond J. Cohorst.....	203
Senior.....Jay R. Bentley.....	237

—L. M. S., '32.

Russel C. Hoffman, '24, is in the retail hardware and implement business at Hadam.

LANDSCAPE GARDENING STUDENTS' ANNUAL INSPECTION TOUR

For the past few years it has been the custom of the Department of Horticulture to sponsor a field tour for students who major in landscape gardening and landscape architecture. These tours are for the purpose of familiarizing students with problems which they will later meet in the landscape field, such as park and cemetery design, golf course layouts, plans for developing city and urban estates, and various other improvements of primary civic importance. These tours have been a great benefit to those taking them.

In order to encourage students to take advantage of as many tours as possible it was planned this year to take a different tour each year for a series of years. A student should thus be able to go on at least three different tours during his college career. The department is especially anxious for underclassmen to go on these tours as it aids them in advanced landscape courses. St. Louis, Mo., seemed to be the logical place for this year's tour and Prof. L. R. Quinlan, in charge of landscape gardening, made complete arrangements for a busy four-day schedule.

Early Thursday morning, April 30, three cars loaded with the 13 fellows who had signed up for the trip started for St. Louis. The first stop was at Gage Park, Topeka, where the party was met by Mr. Thomas Doran and the park superintendent, Mr. Rogers.

The visit to the Missouri Botanical Garden Friday morning, May 1, was inspiring as well as helpful. The outstanding floral display, the tulips, was at its best. Hundreds of varieties of Darwin, Cottage, and Breeders tulips bordered the main axis of the garden in immense panels and were spectacular in their wide range of color. The central attraction of the afternoon was Forest Park, beyond doubt the best designed and most complete park in St. Louis. Much of the afternoon was spent there although Tower Grove Park, Washington University Campus, O'Fallon Park, and the Water Works were visited.

The first stop on Saturday was made at the Wilbur Nursery Company, Clayton, Mo. There the party studied the tulips and material

grown for rock plantings. The next stop at the August Brooker Estate, Clayton, Mo., proved most interesting. Next a stop at the home of August A. Busch of St. Louis proved well worth while. On this estate is the old home of General Grant and many relics of Civil War days. The last stop on Saturday was in Webster Groves, Mo., at the estate of F. C. Thompson. Mr. Thompson personally conducted the party around his grounds and told how he had planned them years before they were completed. He has been very successful in developing a wild garden with pools and rills. Age has given it character which so many gardens of this type lack.

Sunday on the way to Manhattan a stop off at Gray Summit, extension of the Missouri Botanical Garden, was indeed worth while. It is noted for its orchids, a magnificent collection of which is housed in eight modern glass houses especially equipped for orchid culture. Gray Summit Extension has more varieties of orchids than any other single collection in the world. The tract here of 1,600 acres is expected to be, when finished, the most extensive and complete arboretum in the country. It will surpass the famous Arnold arboretum if present plans are carried out fully. Some time was spent in and around the grounds of the Missouri State Capitol in Jefferson City.

Those on the inspection tour were: Prof. L. R. Quinlan, Miles W. George, Harland B. Stephenson, seniors; Charles E. Powell, Earl H. Regnier, Howard C. Edinborough, and Andrew C. Elson, sophomores; William F. Flynn of Abilene; Herbert Schrepel and Belford Jones of Oklahoma City; and A. J. Howard, graduate assistant in landscape gardening.

—A. J. H., M. S., '32.

OBSERVATIONS ON THE ANNUAL MEETING OF THE KANSAS ASSOCIATION OF FUTURE FARMERS OF AMERICA

The annual meeting of the Kansas Association of Future Farmers of America was held in Waters Hall April 28, 1931, following the two-day high school judging contest. The purpose of these annual state meetings is to bind the organization together more closely,

(Continued on page 123)

Farming in Southwestern Kansas

J. Edward Taylor, '30

In 1925, 11 per cent of the acreage of the six southwestern Kansas counties—Haskell, Grant, Stanton, Morton, Stevens, and Seward—was in wheat. In 1930, 28 per cent of this acreage was in wheat. In 1925, 29 per cent of the total of this area was in cultivation, while in 1930, 55 per cent was in cultivation.

The tractor has made possible this vast increase in cultivated land. The broad level fields are ideal for the tractor, the combine-harvester, and other types of power machinery.

Previous to the time of this rapid increase in the acreage of cultivated land, the major part of the cropped land was the sandy land adapted to the growing of corn, broomcorn, and grain and forage sorghums. The fields were small and horses or mules were used for power. These conditions limited production, especially in years when the crop yields were low. The introduction of the tractor has increased the size of the farms, the cultivated acreage of each farm, and the production of each farmer. Most of this increase in the cultivated acreage is land that is level and of the loam type. This land is not particularly well adapted to corn but is exceptionally well adapted to the production of wheat and sorghums.

In this area there are seasons when the rainfall is limited and during such seasons the yields of crops are correspondingly low. However, farmers have adopted the practice of summer fallowing a part of their acreage each year. Since summer fallowing has been practiced the yield of wheat on fallow has been twice that of continuous cropping, thus maintaining the same production but decreasing the cost of producing each bushel of wheat. Summer fallowing a part of the wheat acreage each year also practically eliminates complete crop failures.

The introduction of better adapted varieties of wheat, corn, and sorghum, all the results of scientific investigation, have aided materially in increasing the possibilities of a crop in a territory in the very heart of what was once called the Great American Desert. A type of sorghum that can be harvested by

a combine is the need of this area. Such a crop will permit both wheat and sorghum to be harvested by the same machinery.

The breaking of the sod has not greatly decreased the number of cattle kept in this territory. However, it has changed materially the method of live-stock management. Today the vast acreage of wheat supplies fall and winter pasture which is supplemented by Sudan grass grown on the cultivated land. The increase in the acreage of corn, sorghum, and wheat provides an abundance of grain that can be fed to live stock. A few years ago the cattle were raised on the plains until matured, then as feeders shipped to the corn belt to be fattened. Today most of them are fattened for market on home-grown feeds.

Because of the exceptionally low price of wheat during recent months, farmers throughout the wheat belt fed wheat to live stock with excellent results. Wheat is a desirable feed for swine, poultry, and dairy cattle. Where beef cattle are raised it is equally desirable, especially when combined with corn or grain sorghums.

This spring farmers who do not have native buffalo grass for pasture are going to pasture a part of their wheat until early summer. They will then turn the cattle on Sudan grass until fall when they will again be moved to the wheat fields for the fall, winter, and early spring. It is expected that during favorable seasons it will be possible to pasture cattle on these two crops the greater part of the year and thus secure more pasture per acre than is possible with buffalo grass alone.

Should a person who had traveled through this territory a few years ago visit the same area today it would be almost impossible for him to believe that such great changes could have taken place in such a short period of time. Instead of a few scattered dug-outs with a small field near the house and broad acres of dry, hot prairies surrounding all, he would find many modern homes with large machine sheds and barns. All the level land is in cultivation. The wheat fields might be either a dense growing green or a ripened

(Continued on page 124)

Dairy Farming in Northeastern Kansas

Russell Jouno, M. S., '31

A survey of two localities in northeastern Kansas has brought forth some interesting facts relative to the dairy farm conditions found in this area. The survey was performed under the auspices of the Department of Dairy Husbandry of the Kansas State College. It covered the territories connected with two well known cooperatives in that part of Kansas: The Washington County Cooperative Creamery Company of Linn, Kan., and the Nemaha County Cooperative Creamery at Sabetha.

The desired information was obtained by sending questionnaires to each patron of the two cooperatives. Considering the per cent of questionnaires returned as representative of the areas in which the cooperatives are established; and, in turn, considering the cooperatives and their wide-spread area as representative of the total northeastern Kansas area, it is reasonable to conclude that the information obtained is representative of the dairy farms in this portion of the state.

The average size of dairy farms in this locality is approximately 203.5 acres. A large portion of the farm area is rented. Yet, the land operated by owners exceeds the rented area by 8 per cent.

Three hay and pasture crops vital to the existence of dairy farmers in this section are alfalfa, sweet clover, and native grass. The statistics collected show that the acreage in native grass leads with a total of 16.2 per cent of the total land area. Sweet clover follows with 7.32 per cent of the total acreage, closely followed by alfalfa with 6.31 per cent. There was no definite information obtained relative to the acreage of crops used for pasture and for hay. It was understood that the greater per cent of the alfalfa was used for hay, with the other two crops taking their place in the dairy farm routine primarily as pasture crops.

In this region there exists a heterogeneous array of types and breeds of dairy cows, and animals used for dairy purposes. Besides the actual milk cows on the farms, many dual-purpose and beef type animals are present. Somewhat more than half of the cows milked,

however, are dairy cows, both grade and pure-bred animals being included.

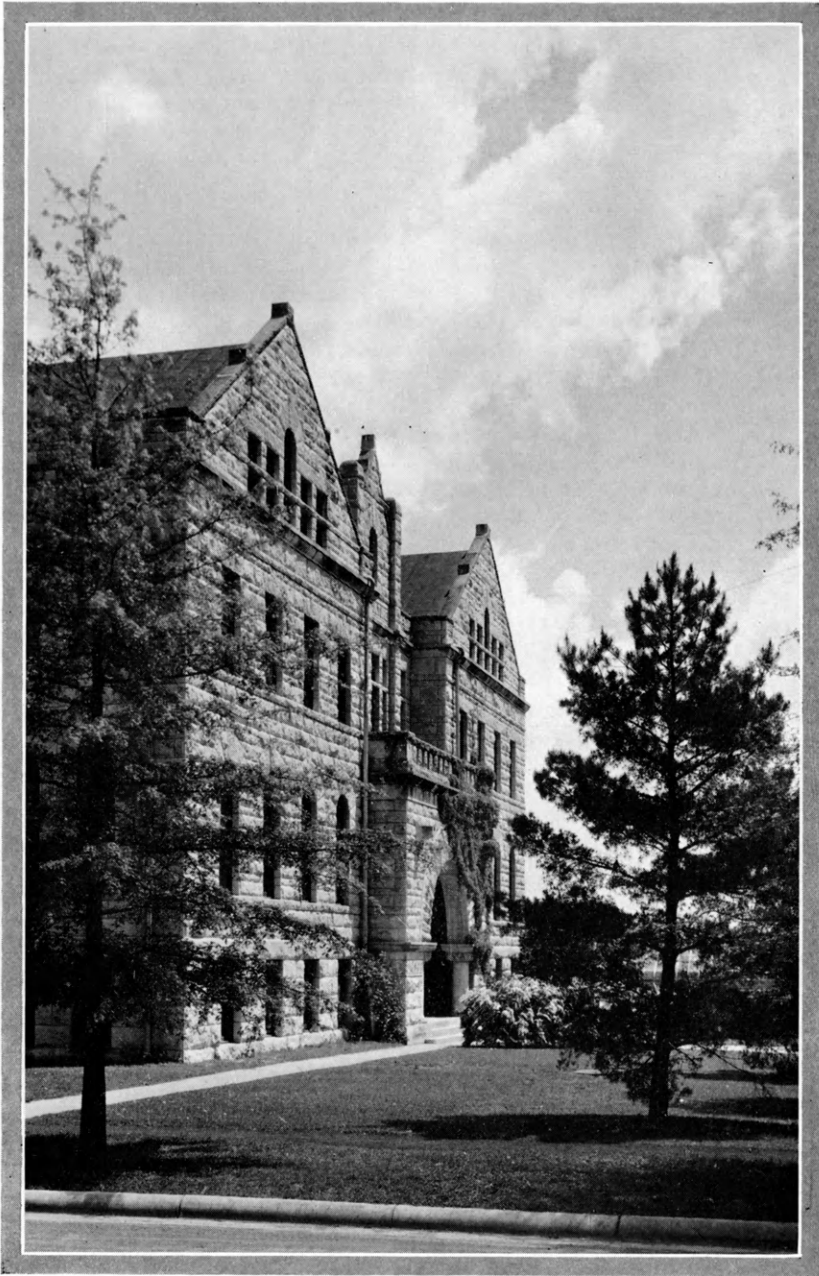
Of the dairy cows approximately 73.7 per cent are pure bred. Nearly 50 per cent of the dairy bulls owned are pure bred animals, a conclusive factor showing the interest of the dairy farmer in herd improvement, as well as his interest in dairying as a whole. Of the dairy breeds, the Holstein breed has 21.6 per cent of the total number of cows used for milking purposes. The Jersey follows with 9.3 per cent. The Guernsey breed has approximately 1.1 per cent.

The types of separators existing on these farms are numerous. There are 10 different types and makes of separators based on the name of the manufacturer. Those makes occurring more numerous than the others are the McCormick-Deering, the De Laval, and the Melotte in the order of their frequency. A striking fact is the age of some of the machines found in the territory. Many of these ages range from 10 to 24 years. These separators receive the usual care in washing and rinsing. In most instances hot or boiling water and washing powder are regularly used. A few use steam for this purpose. The dominant frequency of washing, however, is only once a day instead of twice as advised.

The cream was cooled immediately after separation in 74.82 per cent of the cases and 90.95 per cent of the fresh cream was cooled before adding it to cream already cooled. The cream is kept in various places until time for collection or delivery. Houses, cellars, and caves are the predominating places where it is held. Cooling tanks, which are advised as a great aid to the production of quality cream, are not so numerous. They were found on only about 16 per cent of the farms.

A very interesting fact brought out by this survey is the extent of the influence of the corporations over the dairy farmers in their districts. From observations made, it was found that the farmers located close to the creameries have a much keener interest in the affairs of the cooperative. They are more willing to foster ideas and suggestions that

(Continued on page 122)



DICKENS HALL IN THE SPRINGTIME

Lawn Grasses and the Care of Lawns

L. A. Jacobson, '32

Establishing and maintaining a good lawn in the major portion of Kansas is a difficult problem. Although Kansas was originally covered with native grasses, these are not well suited for lawns except in the western part of the state. There, buffalo grass is the native species and is the best lawn grass for that region. The native grasses start growth late in the spring and the leaves are killed by the first frost in the fall. Therefore they do not remain green for more than about five months of the summer. The tame grasses are not adapted to the western part of the state because of low moisture combined with low humidity. However, in the face of these difficulties, fine lawns of desirable grass can be established without undue cost of labor, especially in the eastern part of Kansas where conditions are much more favorable.

The first essential in establishing a lawn is the choice of the kind of grass to use. There are not very many grasses adapted for lawns. Kentucky blue grass is the universal lawn grass, having more advantages than other grasses for this purpose. It thrives far better under neglect or adverse conditions than does creeping bent and, therefore, is much better for the average lawn in Kansas. Kentucky blue grass forms the basis for most lawn mixtures. Grasses that may be used in mixtures with Kentucky blue grass are creeping bent, German mixed bent, rye grass, and red top grass. White clover is often used with blue grass and makes a good combination for the ordinary lawn.

Rye grass starts quickly but is short lived. It produces its maximum growth during the first year or two after seeding and then rapidly disappears as the blue grass becomes established. It serves the purpose in lawn mixtures of making a good soil cover and keeping down weeds while the blue grass is getting started. Red top is a sod-forming grass like blue grass but is somewhat deeper-rooted and thrives better on poor or sour soil. When kept mowed it produces a good turf and is often more persistent on certain areas than blue grass but under favorable conditions for the latter, the red top will gradually give way

to the blue grass. White clover is a low-growing clover with prostrate stems which creep along the ground and take root. Like other legumes it takes nitrogen from the air and is beneficial to the soil. White clover and blue grass seem naturally adapted to growing together.

The United States Golf Association during the past five years has been cooperating with the Kansas Agricultural Experiment Station in maintaining experimental plats of turf-forming grasses including the bent grasses and certain other species suitable for lawns. Bent grasses have received much attention for the production of so-called weedless turfs. They have become universally used for golf greens as they produce almost perfect carpets of grass. It is but natural that these smooth, closely clipped, well-cared-for carpets of grass on golf greens should influence many people in their selection of the kind of grass to use on lawns.

Creeping bent grasses make beautiful lawns if they are properly cared for. But creeping bent has some decided disadvantages as a lawn species. Most of the better strains of bent grass are propagated by pieces of stems or stolons taken from a lawn and transplanted to the new seedbed. Aside from the initial cost of the stolons, which is much higher than the cost of the seeds of other turf grasses, creeping bent requires considerable more care in cutting, fertilizing, and disease control than does Kentucky blue grass. A special type of lawn mower must be used for cutting bent grass close to the ground to make it present a neat, smooth appearance. More care must be exercised in watering, especially in hot, dry weather during July and August, due to its shallow root system. Bent grass is also very susceptible to certain fungous diseases which may spread through a lawn almost over night and ruin a hitherto excellent lawn. There are numerous strains of creeping bent, most of which are ill adapted to average lawn conditions. Among the best strains Metropolitan and Washington have proved the most satisfactory for putting greens and lawns.

A good soil is as necessary for a good lawn as it is for a good crop of wheat or milo. Too often a good house is erected and the basement diggings scraped to the front along with the trash serve as the foundation for the lawn. Basement diggings are generally from a poor subsoil which is not suited to support a good grass sod. If good surface soil is not obtained it is necessary to build up a soil with manure or fertilizer. Some of the lighter soils do not hold moisture well and it is necessary not only to add well-rotted manure, but to have it thoroughly worked into the soil before a good water-holding soil can be obtained.

It is essential to start preparation of the seedbed at least two or three months before seeding to get the soil in proper condition. For spring seeding the lawn should be spaded up before winter so that it can be worked down in time for early sowing. Successful seedings have been obtained in both fall and spring. Fall-planted grass has a better start in the coming spring and will make a much more satisfactory sod the first season. In working down the seedbed for a good sod, the desired grade should be established and the surface made firm with a packer.

In seeding the lawn it is best to use only the best tested seed obtainable. Low-priced seed is almost certain to be impure. About two pounds should be sown per one thousand square feet. The best results in seeding are obtained by broadcasting first lengthwise with half the seed and then sowing the remainder crosswise. Rake the seed in well, then roll the finely pulverized soil until it is firm.

Perhaps the one consideration in lawn maintenance to demand most attention is that of proper watering. Water should not be applied more than once or twice a week after the lawn is established. Light sprinklings often do more harm than good. A complete soaking to a depth of five to ten inches or even more has been found more satisfactory than light applications daily. The tendency of light waterings is to cause much loss through evaporation, to bring the roots of shrubs and trees which may be planted near the lawn or in it closer to the surface, and to encourage the grass to root shallow. In periods of

drouth shallow-rooted grass and shrubs will suffer much more for moisture than they would if deeper rooted.

A good lawn may deteriorate from lack of care. An application of fertilizer may be given each year, preferably in the spring. Commercial fertilizers containing nitrogen and phosphorus give good results. A few pounds of these fertilizers applied to each one thousand square feet ordinarily will improve the soil. Soil conditions and requirements vary with the locality so that no standard rate of application or formula will prove satisfactory in all cases. As nitrogen is lost faster than other fertilizer elements, soils are more likely to be lacking in this element. Therefore, it is well to use a light application of a nitrogenous fertilizer such as ammonium sulphate at the rate of one-fourth to one-half pound per hundred square feet.

The most satisfactory method of applying fertilizer is to dissolve the material in water and apply with an ordinary hand sprinkler, provided it can be followed immediately by washing down with a sprinkler. The dry crystals may also be broadcast on the lawn if done when the grass is dry but it is difficult to get such a small amount applied evenly. Uniform application is essential so that the grass will grow evenly and not present a streaked appearance.

Great care must be taken in applying commercial fertilizer to prevent burning. This is especially true of ammonium sulphate. Serious injury may result if the crystals are allowed to remain on the blades of grass. The fertilizer should be washed off the grass immediately after application by sprinkling with water. If the grass is dry and the dry fertilizer crystals are broadcast in the middle of the day, there is little danger of burning.

It is best to remove the clippings when mowing as they accumulate on the surface and cause an excess of slowly decaying organic matter. The grass should not be cut too close. Experiments on height of cutting show that grass clipped close is less vigorous and more weeds gain foothold than when cut high. Rolling the grass in the spring after the frost is out of the ground is helpful. Frosts have a tendency to "heave" the plants

(Continued on page 123)

Some Problems in Creep Feeding¹

Bruce R. Taylor, '31

The purpose of this article is not to treat fully the subject of creep feeding calves, but merely to discuss a few important questions that confront the cow herd owner who is considering this method of beef herd management.

1. What kind of calves are suitable? Good breeding is absolutely essential to success in creep feeding. Only early-maturing, thick-fleshed, blocky calves, produced by mating pure-bred bulls of the beef breeds and beef type cows will attain desirable market finish at less than one year of age. Poor-type calves will not command the price that makes creep feeding profitable in the case of well-bred quality calves. The common practice is to feed both the steers and heifers, as the market does not discriminate against the heifer carcasses at this age.

2. When should the calves be dropped? Early calving is a most essential feature. It allows the calves to be taught to eat grain before they go to pasture, then when they do go they will be looking for their grain. It is sometimes very difficult to teach calves dropped on pasture to eat from the creep, as they don't know what grain is. Furthermore, early calves will develop considerably more weight and finish at but little more cost than late calves. From the standpoint of the cow turning off the most beef with the cheapest cost of production the January, February, and March calves are proving very satisfactory. Cows calving before the first of the year require more feed and shelter to care for the calves until grass. However, some farmers prefer to drop their calves at this time. These late fall or early winter calves will do very well if creep fed through the winter and until weaned the next summer. Early fall calves may be creep fed all winter and finished in the dry lot without turning on grass, or turned on grass only until the cows dry up the next summer, at which time they should be put in the dry lot for a short finishing

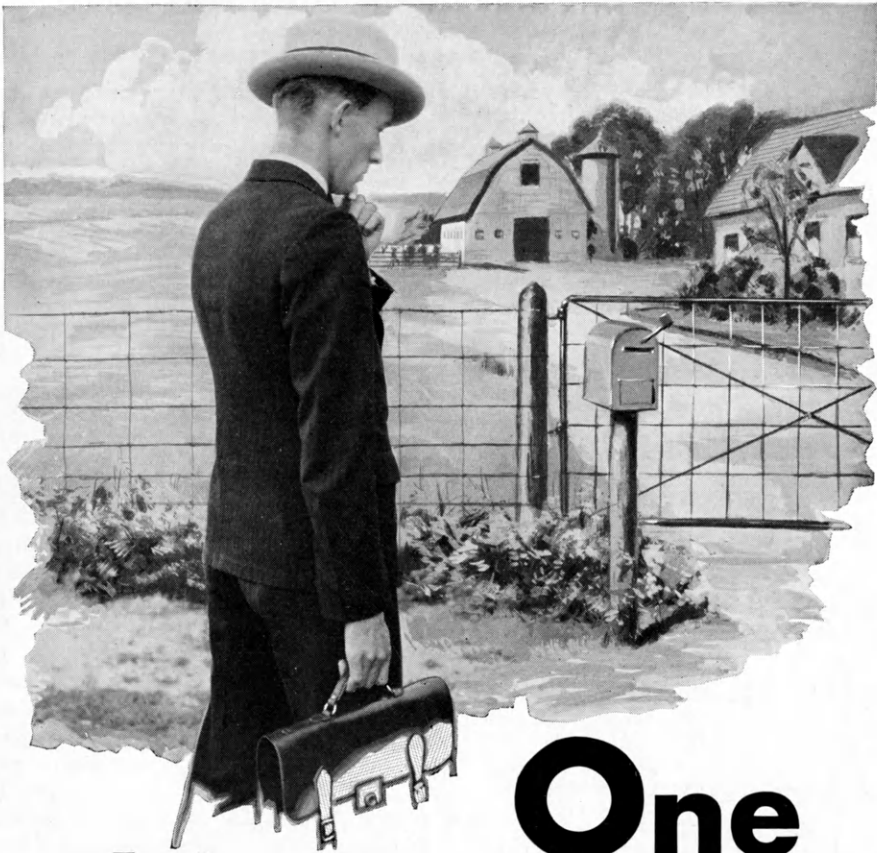
period. In the Kansas creep-feeding demonstrations these fall calves have proved more satisfactory than late spring calves, which are the least satisfactory of all.

3. What pastures are suitable? The pasture may be either native or tame grass, and should be located near enough to the farmstead to permit inspection of the calves and creep feeder at least every other day. In general the smaller the unit and the more luxuriant the growth of grass the more ideal for creep feeding. To be the most desirable the cows should water at a central place in order that the feeder may be placed where the cows loaf. In some pastures cows do not loaf at the watering place but near a shady spot or on a hill. Placing salt where they loaf will induce them to spend more time there. In large pastures or where there is no central loafing place it may be necessary to use several feeders, distributing them where they will be most accessible to the calves. A pasture of 160 acres or less may be considered a suitable size for one feeder; anything materially larger than this will often require an additional feeder or two, depending on how centrally the watering place is located.

4. What does the creep include? The creep is simply a self-feeder surrounded by a fence which permits the calves to enter but withholds the cows. The fence is built about ten feet back from the feeder on all sides, and is made with openings at the corners 16 to 18 inches wide to permit the calves to enter. The fence can be made of either woven wire or boards and the openings can be made by setting several posts at the corners and bracing them across the top. The self-feeder need not be elaborate but should have a tight roof with wide eaves so as to keep the feed dry. Wet or sour feed must not be allowed to accumulate or it will scour the calves and throw them off feed. The usual capacity of feeders used is from 50 to 75 bushels.

5. What grain is suitable? Shelled corn, oats, or coarsely-ground barley, feterita, milo, kafir, or wheat may be used. Shelled corn stands the weather best and is the most desirable from the fattening standpoint. Oats

1. The author is indebted to Dr. C. W. McCampbell, of the Department of Animal Husbandry, and J. J. Moxley, Extension Specialist in animal husbandry, for the information contained in this article.



One thing to remember

AS a technically trained man, who knows both the theory and practice of good farming and the essentials of good machine construction, you can fully appreciate why farmers should use the most efficient machinery available.

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may be used with corn for the first half of the feeding period if they are cheap and easily available, otherwise none need be fed. Wheat, if fed, should be ground coarsely and mixed with corn chop at the rate of 1 part (or more) of corn to 1 part (or less) of wheat. Too much wheat in the ration will make it unpalatable.

Cows that calve early will drop off materially in milk flow in late summer. Because of this fact and the coarser, less nutritious condition of the grass at this time of the year, it is often advisable to add cottonseed meal or cake at the rate of 1 part of cake to 10 or 12 parts of corn at this time. Pea-size cottonseed cake mixes best with shelled corn.

6. How long should calves be fed after weaning? Early calves properly creep fed are fat enough and heavy enough to command good prices from the packers at weaning time. It is, however, usually advisable to full feed for 30 to 90 days in the dry lot after weaning. A popular weight for creep feds

is about 700 pounds and January calves should reach that weight with 30 days dry lot feeding after weaning. This would put them on the November first market. Later calves will necessarily have to be fed longer to reach that weight. Cattle of this age can be held economically on full feed to wait for a more favorable market, longer than in the case of older animals.

7. What will it cost to creep feed? The cost of keeping a cow for a year will range from \$25 to \$40, depending on the section of the state. The average cost in central Kansas according to the Kansas beef herd demonstration project is \$34.39. The cost of feeding the calf to a weight of 700 pounds will be the cost of approximately 20 bushels of corn. The actual cost of the grain the calf eats will be the major difference between the cost of creep feeding and not creep feeding. The only other difference is that in the case of creep feeding the early calves demand somewhat more equipment for shelter and the cow demands better feed. There is also a small cost connected with building the self-feeder and creep. However, where the calves have been properly handled and attention paid to details and management this method has so far much more than repaid this additional expense.

It is hoped that a feeder who will apply these questions to his own situation will be better able to answer the question, "Should I creep feed?"

DAIRY FARMING

(Continued from page 116)

the organization develops. This is in evidence by the special care the cream receives on these farms and the interest of the owners or managers in dairy herd improvement work. Those farms located farther away from the cooperative lack the feeling of friendliness and security attained by the farmers closer to the organization. A similar correlation exists with respect to the length of time a patron has been affiliated with the organization. The more years spent in connection with the organization the greater is the feeling of security obtained.

LAWN GRASSES

(Continued from page 119)

out of the soil and leave the roots loose in the soil.

A thick stand of grass is the best insurance against weeds. Crab grass is the worst weed of lawns. By thoroughly preparing the seedbed and sowing in the late summer a good start can be obtained toward keeping this weed out of the lawn. Then by fertilizing and reseeding, the old sod should have such a dense and vigorous growth that crab grass and other weeds will have little opportunity to work in.

ANNUAL MEETING OF F. F. A.

(Continued from page 114)

serve as a medium for the exchange of ideas, and furnish additional incentive for achievement by local chapters.

The meeting was called to order by the president, Lewis Evans. The F. F. A. opening ritual was used in which roll call of the officers is answered by an explanation of the meaning of the four symbols of the organization: The owl, symbolic of wisdom and knowledge, was at the adviser's chair; the plow, the symbol of labor and tillage of the soil; the rising sun, emblem of progress and the new day dawning when all farmers will be the product of vocational agricultural schools; and the ear of corn, indicative of the national scope of the organization, were explained in their turn. Roll call of the chapters followed. Each chapter present having a State Farmer in its membership then gave an oral report, limited to two minutes, on the work undertaken and completed by it during the year. These reports were necessarily brief and condensed, but showed that the organization is accomplishing much wherever it has been established. Chapters not having a State Farmer handed in written reports. Officers were elected for the coming year.

The meeting was carried on with every observance of parliamentary rules of order and showed that aside from the actual gain in the things set forth in the Future Farmer creed, the members of this organization are obtaining valuable training in observance of parliamentary procedure. —W. L. M., '32

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A New Wheat for Southeastern Kansas

W. M. Myers, '32

The Kansas Crop Improvement Association at its annual meeting, February 5, 1931, at Manhattan voted to certify Kawvale, a new wheat recently released by the Kansas Agricultural Experiment Station.

Kawvale is a pedigree selection of Indiana Swamp made by Dr. John H. Parker, cereal breeder at the station in cooperation with the Bureau of Plant Industry of the United States Department of Agriculture.

Last fall all the available seed was turned over to a farmer at Columbus, Kan., who will increase it and offer it for distribution to farmers in southeastern Kansas next summer, under the direction of the Kansas Agricultural Experiment Station.

Kawvale is adapted to the soft wheat area of southeastern Kansas. It is not a true soft wheat but baking tests made in the baking laboratory of the Kansas Agricultural Experiment Station and in several commercial laboratories show that it will make a good loaf of bread. Members of the mill and grain trade in Kansas City believe that Kawvale will find a ready market as a soft to semi-hard wheat.

In talking before the Crop Improvement Association, Prof. R. I. Throckmorton, head of the Department of Agronomy, gave four chief reasons for the release of this wheat. These reasons were: (1) Its high yielding capacity; (2) its resistance to leaf rust; (3) its resistance to Hessian fly; and (4) its winter hardiness.

Both at Manhattan and on the southeastern Kansas Experiment Fields, when compared in tests with standard varieties of soft wheat, Kawvale made higher yields than the well known varieties, Fulcaster and Currell.

In Hessian fly counts made from 1922 to 1929, Kawvale showed an average infestation of 1.9 per cent, while Fulcaster, the next lowest, had an average of 14.6 per cent. The fly used in these tests was from the hard wheat belt of central Kansas.

C. O. Johnston, plant pathologist of the United States Department of Agriculture stationed at Manhattan, has made an extensive study of the resistance of Kawvale to leaf

rust. He has found that it is much more rust resistant than the other soft wheat varieties.

The unusually severe winter of 1929-'30 in southeastern Kansas gave clear proof of the winter hardiness of Kawvale. When old standard varieties had been severely injured or wiped out by the severe winter, Kawvale stood out as the bright spot in the wheat tests in southeastern Kansas. Harvest Queen showed about the same survival as Kawvale. Fulcaster showed much more winter killing and Currell was almost completely killed out.

FARMING IN SOUTHWESTERN KANSAS

(Continued from page 115)

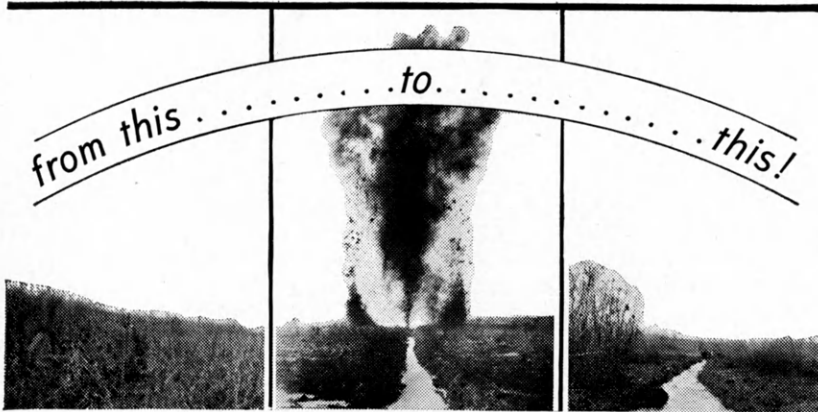
golden color. The corn and sorghum fields would be large with long straight rows. In the fields would be one or more tractors either caring for the growing crop or preparing the land for a crop. In feedlots one would see large numbers of cattle and hogs being fattened on a part of the millions of bushels of grain produced each year. There would be large flocks of poultry around the farmstead. These sights are the same as one might expect to see in an older agricultural community. The only thing that might remind one of earlier days in southwestern Kansas would be a cowboy herding several hundred head of cattle on the wheat fields during the fall and winter. This sight would be similar to one a few years ago when cattle were herded on the buffalo grass.

It is uncertain just what other changes are in store for this territory. It is possible that the changes of the near future will be less rapid than those of the past few years. They will, however, deal with the development of more stable agricultural practices.

Tudor J. Charles, '29, has entered the farming field with his father at Republic, Kan. Mr. Charles majored in agricultural journalism and for almost two years was in the employ of the National Association of Farm Equipment Manufacturers. When a senior in college Mr. Charles was the recipient of the Capper award in journalism.

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EXPLOSIVES

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New Holstein Herd Sire

R. A. Johnson, '33

In following the breeding program which has built the present level of high production in its dairy herd, the Kansas Agricultural Experiment Station added another proved dairy sire in the recent purchase of Dean Ormsby Mercedes, 351965, pure-bred Holstein bull, from the North Dakota Agricultural College. In addition to being a proved sire of production, this ten-year-old bull is an excellent type individual, large framed, deep bodied, weighing some 2,300 pounds, and at the same time showing excellent quality for a bull of his size and age.

In the North Dakota herd, the daughters of Dean Ormsby Mercedes showed a marked increase in production over their dams. Although mated to cows averaging over 400 pounds of butter fat, this sire increased the butter fat production 16.3 per cent in his offspring. It is indeed seldom that a bull is found showing so great an increase on a herd maintaining this high a scale of production. A study of 13 daughter-dam comparisons reveals the following facts: The dams on the average produced 415 pounds of butter fat at varying ages, which when computed to the mature equivalent basis by the McDowell system, was equal to 497 pounds as mature cows. The records of the daughters, also computed to a mature basis, average 578 pounds of butter fat. This comparison shows an increase of 81 pounds of butter fat per cow for the daughters of Dean. Such a great increase is indeed remarkable, especially considering the fact that he was mated to cows which already produce more than three times as much butter fat as the average cow in Kansas.

The progeny of Dean in addition to being remarkably good producers have also proved to be of excellent showing type, as shown by their winnings at the North Dakota State Fair. In 1929 the second-prize three-year-old was a daughter of his with a production record of 546 pounds of butter fat with her first calf. Dean also sired the first-prize calf herd at the same fair in 1930.

The use of Dean on the college Holstein herd is following the policy which has proved

to be the most successful in the past. A proved sire is always used when it is possible to secure one of the right kind. Previous experience in the herd has shown that proved sires are a necessity to keep up progress in the right direction, particularly in a good herd. Dean is expected to carry on the standards of type and production now maintained in the college dairy herd.

Dean's own progeny record is not the only excellent one in his pedigree, for he is well backed by producing ancestors on both sides. He was sired by Sir Pieterje Ormsby Mercedes 37th, the world champion production sire, and the only bull of any breed to have five daughters with a record of over 1,000 pounds of butter fat. One of his daughters is Daisy Aggie Ormsby 3rd, the United States butter fat champion with a record of 1,286 pounds. This bull has 22 daughters with 29 records above 800 pounds of butter fat, more than any other Holstein sire, and 50 of his 81 A. R. daughters average over 800 pounds of butter fat. Thirteen of his sons from 11 different dams have 19 daughters with records of over 800 pounds of butter fat.

Bess Ormsy Fytje 2nd, the dam of Dean Ormsby Mercedes produced 16,541 pounds of milk and 560 pounds of butter fat as a two-year-old. This record is equivalent to 800 pounds butter fat at maturity. She was sired by King Korndyke Colantha Ormsby, a bull having 20 A. R. O. daughters, and her nine nearest dams average over 800 pounds of butter fat.

It was only through an accident that the Department of Dairy Husbandry of the Agricultural Experiment Station was able to secure the services of Dean Ormsby Mercedes. Several years ago he sustained a severe injury to his back as the result of an encounter with another bull. The injury caused him to become inactive during the severe cold of the North Dakota winter season, and although the college there valued his services highly, they were unable to use him. The Department of Dairy Husbandry here purchased him and brought him to this climate where he has proved to be an active breeder.



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The Study of Bacterial Wilt of Alfalfa

J. G. Bell, '32

Bacterial wilt is by far the most important disease of alfalfa in Kansas and undoubtedly has been an important factor in the 50 per cent reduction in the acreage of this legume during the last 15 years. As pointed out by plant pathologists in various parts of the United States there is no known method of control that can be depended upon in all cases. Hence any information leading to reduction of losses from this disease is welcome.

There are several projects under way at the Agronomy Farm of the Agricultural Experiment Station that deal primarily with bacterial wilt and its environmental relations. The relation of winter injury to wilt infestation will be studied in a project started last fall. Plats of a given size are laid off in a field of Kansas Common alfalfa seeded in 1929. One series of plats is protected throughout the winter by a straw mulch, another series is exposed by removing about two inches of dirt from around the crowns of the plants to insure winter injury. The plats in a third series will receive no treatment, thereby serving as checks. Next spring some of the plats in each series will be flooded with water that has been mudded with soil definitely known to be infested with the disease. This is to insure inoculation of the plants with the organism (*Aphanobacter insidiosum* L. McC.) causing bacterial wilt of alfalfa. Observations as to the extent of winter injury will be made from time to time, the number of dead plants will be recorded as they appear in the different plats, and at the conclusion of the test the numbers of diseased plants along with the numbers of living plants will be recorded.

As bacterial wilt is caused by a strictly soil parasite it is desirable to find out how long the organism will remain alive in the soil. A crop sequence and cultivation project to determine this factor was started early last fall. Plats of convenient size were laid out on an upland field that was badly infested with wilt before being plowed up in 1929. Two adjoining plats are seeded each year. One-half of the remaining plats in the experiment area will be cropped under a general rota-

tion. The other half of the area will be fallowed until the time arrives for seeding to alfalfa. The plats will be cut rather frequently and otherwise handled in a way to encourage bacterial wilt. All practical precautions will be taken to prevent infection from any other source than the soil in which the alfalfa is growing.

A project of special interest has been under way for several years. It consists of selecting and breeding alfalfa for wilt resistance. Nearly six hundred individually spaced plants of Provence and about four hundred plants of Kansas Common alfalfa were obtained from variety test plats that went out with wilt.

These plants were transplanted to ground previously in alfalfa that was killed out by wilt. The primary object is to obtain strains of alfalfa that show resistance to wilt while, in other respects, as good as our common alfalfas.

Some of the factors to be considered in selection of plants are: (1) The type of plant, its habits of growth; (2) its resistance to cold; (3) its resistance to late spring frosts; and (4) its resistance to diseases and insect injuries. Resistance to bacterial wilt being the primary objective, seedlings from these plants will be inoculated with the wilt organism to determine their resistance. Row plantings are to be made from the more promising strains both at this station and at the Garden City branch station for the purpose of seed production.

Merrill W. Watt, '25, is civil service examiner, Washington, D. C.

E. W. Frey, '28, is with the Payden Thompson Dairy Company, Dodge City.

E. M. Knepp, '26, M. S., Purdue, '30, is teaching vocational agriculture at Frankfort.

Walter R. Horlacher, '20, M. S. '21, is professor of genetics in Texas A. & M. College, College Station, Tex. Mr. Horlacher was a member of the senior live stock judging team in 1919-'20.