

The KANSAS AGRICULTURAL STUDENT



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MANHATTAN, KANSAS

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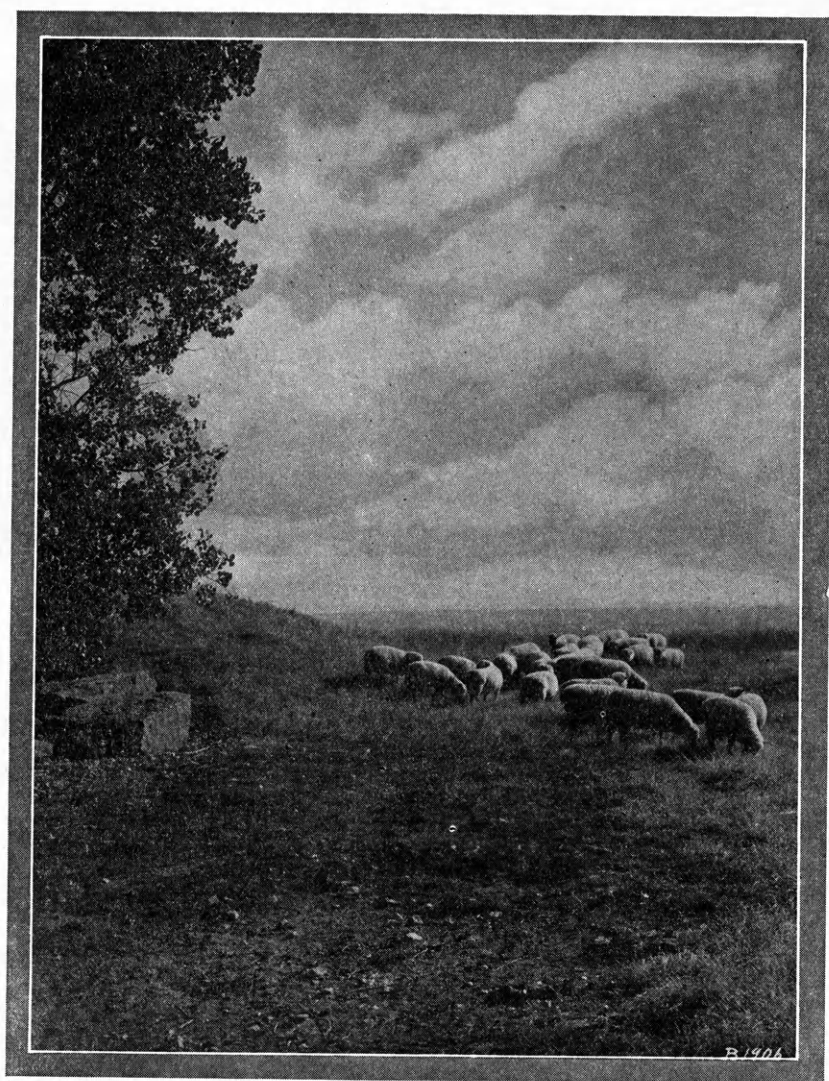


A TYPICAL KAW RIVER SCENE

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A SCENE ON THE K. S. A. C. LIVE STOCK
FARM

The Kansas Agricultural Student

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No. 2

Cottonseed Meal for Hogs

H. H. Brown, '28

The use of cottonseed meal as a hog feed was thought to be impossible 15 or 20 years ago. Of late years, however, some practical hog feeders, as well as a few agricultural experiment stations, have fed it with success experiencing no ill results. In other trials cottonseed meal has been found injurious to hogs and death has resulted from feeding it.

It would seem then that cottonseed meal is not so dangerous as formerly believed. However, there is no doubt that it contains a substance that is injurious to animals if fed in larger amounts for a long period of time.

This toxic substance is called "gossypol." The amount present in cottonseed seems to vary. That which is grown in regions of abundant rainfall contains more than that grown in dry areas. Furthermore the higher the temperature to which cottonseed is subjected in making meal and the longer heated, the less dangerous it is.

Certain companies have developed methods of processing their meal for the purpose of destroying the poisonous material. Some such meal was fed at the Kansas Agricultural Experiment Station but, as will be shown later, no ill effects were obtained from feeding any cottonseed meal so no statement as to the value of treated meal can be made from the results of this work.

During the summer of 1926, the Kansas station fed one lot of spring pigs corn, cottonseed meal, and alfalfa hay for 120 days. The pigs remained in good health and no injurious effects could be noted. However, the cottonseed meal did not prove as profitable as tankage in producing gains. On the other hand at other stations cottonseed meal has been used satisfactorily in a hog ration by using a mixture of half meal and half tankage.

Since some feeders had been successful in

feeding cottonseed meal both as the only protein supplement and in mixtures, and since the Kansas station secured no ill effects from feeding the meal, an experiment was planned for the purpose of working out a feasible ration in which cottonseed meal made the principal protein supplement, it being evident from a comparison of prices that if cottonseed meal could be so used as to produce gains equal to that made by tankage the cost of production would be reduced.

During the winter of 1926-27 the following experiment was carried on under the direction of Prof. C. E. Aubel of the Department of Animal Husbandry. Five lots of pigs were fed. The first lot was given the standard hog ration of corn, tankage, and alfalfa hay as used on many Kansas farms. The second lot was fed corn, tankage, and cottonseed meal. The other three lots were planned to test the value of feeding some mineral in addition to cottonseed meal. Each of these last three lots was fed the same as the second lot except that one lot was given two ounces of bone meal per head per day; one, two ounces of finely ground limestone; and one the same quantity of a mixture of equal parts of bone meal and finely ground limestone.

Salt was self fed in all lots. The tankage was fed at the rate of one-third pound per head per day and the cottonseed meal at the rate of one-half pound per head per day.

The results of the experiment indicated that cottonseed meal alone is not so good a protein supplement as tankage either from the standpoint of rapidity or economy of gains. The pigs fed tankage gained 1.59 pounds per day at a cost of \$6.30 per hundred, while those fed cottonseed meal gained only 1.25 pounds per day at a cost of \$6.59 per hundred.

On the other hand the lot fed bone meal

in addition to cottonseed meal gained 1.51 pounds per day at a cost of \$6.17 per hundred, this being the cheapest gain of all five lots. The lot fed limestone made the poorest showing making a gain of 1.27 pounds per head per day at a cost of \$6.67 per hundred pounds. The lot fed both bone meal and limestone made gains intermediate between the lot fed bone meal and the lot fed limestone, or 1.36 pounds per day at a cost of \$6.20 per hundred.

This shows that limestone was unsatisfactory as a mineral supplement with cottonseed meal, but that a small amount of bone meal increased gains and decreased costs and that two ounces of bone meal per head per day fed with cottonseed meal as described above was as valuable as tankage.

It was decided to check results by running a second experiment using alfalfa pasture in place of alfalfa hay. This was done during the summer of 1927, the same feeds being used in the same way as before except that alfalfa pasture was used instead of alfalfa hay.

The final data on this work are not available but a preliminary report was given October 21 at the Annual Hog Raisers' meeting. At that time the tankage fed pigs had made an average gain of 1.36 pounds per day at a cost of \$6.51 per hundred pounds, while those fed cottonseed meal had gained 1.16 pounds at a cost of \$6.19 per hundred pounds. This indicated that while cottonseed does not produce so large gains as tankage it does produce cheaper gains when fed with alfalfa pasture.

The lot fed two ounces of bone meal per head per day in addition to cottonseed meal again made greater gains than the lot fed cottonseed meal alone. However, the cost of gain also increased to \$6.72 per hundred pounds. Again the lot getting ground limestone in addition to cottonseed meal made the most unsatisfactory gains of any lot and the lot fed the mixture of equal parts of bone meal and ground limestone made the second best gains or 1.33 pounds per pig per day at a cost of only \$5.92 per hundred, whereas the cost of gains in the tankage-fed lot was \$6.51 per hundred. It would seem then that the addition of a mixture of bone meal and ground limestone fed with cottonseed meal

may increase both the rate and economy of gain when fed to hogs on alfalfa pasture.

Therefore since no ill effects were noted from the feeding of cottonseed meal to hogs at the Kansas Agricultural Experiment Station and since other agricultural experiment stations and feeders have fed cottonseed meal with success, it is safe to conclude that cottonseed meal is not so poisonous as was formerly believed. However, since injurious results have followed the feeding of cottonseed meal in certain sections the Kansas station is not ready to recommend cottonseed meal as a hog ration until further study has been made of its possible toxic properties.

'Tater farming has attracted Elmer "Punk" Bates, '23, and he is now growing them in the best potato-growing region in the world; namely, the Kaw valley near Perry, Kan.

W. F. Crotchett, '24, dairy farmer, Louisburg, Kan., attended the American Royal Live Stock Show this fall. He was particularly interested in his favorites, Jersey cattle.

Fred Eshbaugh, '26, is attending Purdue University, West Lafayette, Ind., working for his master's degree. Fred secured a fellowship while still in K. S. A. C. While here on the Hill he was recognized as "the little short bundle of pep and enthusiasm that worked for the Department of Horticulture."

Raymond Stover, '24, former member of a K. S. A. C. dairy judging team, has taken over the work of county agricultural agent in Lincoln county, taking the place of Walter J. Daly, '25. Mr. Daly, member of the dairy judging team in '24 and manager of the Ag Fair in '25, has been transferred to Lynn county.

Lionel "Pete" Holm, '26, was down to see the Homecoming game this fall. He is becoming a leading farmer in his home community out at Denmark, Kan. Several of the outstanding graduates of the past few years have returned to the farm and are making good. Wayne Rogler, '26, is another one who has returned to his home farm in Chase county to follow the steer-feeding game in the Flint hills.

Sodium Chlorate as a Herbicide in the Eradication of Field Bindweed¹

H. P. Blasdel, '29

Field bindweed (*Convolvulus Arvensis*) is regarded as the most noxious weed in several of the western states. It is widely distributed in Kansas. Probably every one of the 105 counties has some infested area. It is worst in the hard winter wheat belt which comprises the central and western part of the state. In this section some farms are so completely over-run that they are practically worthless in their present condition and would not sell for over half price if put on the market. In some instances loan companies refuse to carry mortgages on farms known to be infested with bindweed.

In consideration of the seriousness of the weed and in view of the fact that methods now in use in Kansas are not wholly satisfactory further experimental work was regarded desirable. The use of chemicals as herbicidal agents, while not new, was considered a possible solution of the problem of eradication.

The selection of chemicals for the experiments on the eradication of bindweed was based on effectiveness, cost, availability, ease of handling, and known merit. Sodium chlorate, zinc chloride, sodium arsenite, and copper sulphate were used.

The experiment was started in August, 1925. The field used for the experiment was covered by a uniform and thick stand of bindweed which had been growing for several years. In this field plots to a total of 26 were laid out separated by two-foot alleys. These plots, with the exception of the control plots, were treated with the chemicals previously named and at certain intervals the stand of bindweed was ascertained by means of counting the plants that still were alive and growing. This number was compared to the original number which were growing at the beginning of the experiment.

As a result of the treatments it was found that no plot had a decrease in number of bindweed plants with the exception of the two plots which were treated with sodium chlorate. Zinc chloride and sodium arsenite seemed to be very effective at first but new growth appeared soon after each treatment and the roots appeared to be uninjured.

The copper sulfate had little effect in killing back top growth except the fourth application which killed almost all top growth temporarily. This may have been due to the time of treatment at a more critical period in the life of the weed.

The two plots treated with sodium chlorate were the only ones to show a decrease in the number of weeds, notwithstanding the fact that these plots were treated three times while the other plots received four treatments. Sodium chlorate differed materially in its reaction from the other herbicides used. This material is slow to act. Comparatively little effect is noticed the first few days after it is applied. Gradually the leaves begin to curl and die, and each succeeding day shows more and more dead and dying plants. These plants become pale green or yellow, the older leaves dying first, the reaction progressing toward the tip of the vine.

At the time the second count was made, September 2 (the first count was made August 19), there were fewer live plants than there were a week before. It was also noticed that the remaining live growth was yellow and sickly in appearance. Following the second application (September 2) the plants continued to die and all remaining live plants appeared to be in an unhealthy condition, the leaves yellow, and the vines slender and assuming an upright position instead of the normal vigorous and prostrate growth.

At the time of the third count and treatment, September 16, there was considerable doubt as to the necessity and advisability of treating these plants on account of their weakened condition, and the fact that each day there were more dead plants than on the

1. Excerpts from "Experiments with Sodium Chlorate and Other Chemicals as Herbicides for Field Bindweed," by W. L. Latshaw, associate professor of chemistry, and J. W. Zahmley, associate professor of farm crops, published in the *Journal of Agricultural Research*, October 15, 1927, pages 757 to 767.

preceding day. In spite of doubt as to the necessity of the third application of the spray these plots were treated at the same time as the others on September 16. On September 19 roots of bindweed plants on the various plots were examined. Roots from the plots treated with sodium chlorate when cross-sectioned showed a dark ring around the woody portion which was not observed in those from other plots. There was also a noticeable absence of new shoots on the roots.

When the time came for the fourth application on all plots (September 29) a count from the two plots treated with sodium chlorate (one with a 12.5 per cent solution, the other with a 25 per cent solution) showed an average for the two plots of $11\frac{1}{2}$ per cent of the original stand with the live plants in an unhealthy condition. It was, therefore, considered unnecessary to treat these sodium chlorate plots a fourth time. Several of the more vigorous shoots of new growth on these plots were marked on September 28 for identification and future observation.

On September 30, the plants marked for observation were found to be making no growth but were turning yellow and becoming more sickly in appearance. On October 5, approximately three weeks after the last treatment there was no increase in growth although new plants kept reappearing only to fade away in the course of four or five days. The plants marked on September 28 were either dead or dying. Twenty or more plants marked for observation all reacted in the same way, that is, growth appeared normally for the first day or two, only to fade gradually and die in the course of four to seven days, this growth rarely exceeding more than 4 or 5 inches.

On October 10, there was a very heavy white frost with a minimum temperature of 25°F . Observations were made as soon as the frost had disappeared and again three days later. The condition of bindweed on areas surrounding the experimental plots revealed little, if any damage from the freeze. This was also true of all experimental plots except those treated with sodium chlorate. Plants on the chlorate plots had been severely injured, most of them being frozen to the ground. This showed that the uninjured

bindweed is not sensitive to frost as is commonly believed.

A root study showed that the main difference between the treated and untreated plants was the starch content of the root. In the case of the untreated plots the cells of the roots were filled with starch and the cell walls intact. On the other hand roots from the sodium chlorate treated plots were characterized by an absence of starch granules and in many cases showed unmistakable signs of disintegration.

Just why sodium chlorate affects the plants as indicated is not known. Observations indicate that it interferes with photosynthesis and compels the plant to draw upon the food reserve in the roots until the supply is exhausted and death occurs.

Due to a severe drouth in 1926 the treatments did not seem quite as effective. The drouth retarded growth and hence afforded less opportunity for exhaustion of the root reserves which as previously explained seems to be a significant factor in control with sodium chlorate. However, in a broad way the results agree with those of the preceding year and afford additional proof of the effectiveness of sodium chlorate.

From the experiment it appears that little or nothing is gained by applying sodium chlorate before the plants are approximately in the bloom stage. It was also found that when the first application was not made until after July 1 the treatment was much less effective than when treatment began in the bloom stage, and from a practical standpoint applications should not be delayed sufficiently to allow a seed crop to mature.

A practical demonstration of the effectiveness of sodium chlorate in eradicating bindweed was made by the Department of Horticulture in 1926. A roadway 100 rods long through an orchard bordered by a heavy growth of bindweed was treated three times beginning at the period of full bloom. The weeds were completely eradicated.

Since sodium chlorate had been used so successfully in the eradication of bindweed, experiments were started with sodium hypochlorite which is cheaper. At the same time a chemical spray already on the market as

(Continued on page 62)

Marketing Eggs On the Graded Basis

L. J. Simmons, '28

Motor vehicles, good roads, and refrigerator cars have helped very materially in the rapid development of the egg business. The first two have made it possible for eggs to be taken to the local produce man several times each week. By use of the motor truck the packer gathers these eggs from country stores and small produce men and places them in cooling rooms in his plant. After grading and repacking them, and sometimes after holding them for a short time, they are shipped to distant eastern markets in refrigerator cars. Thus these eggs usually reach the consumer in good condition.

The marketing of eggs on a graded basis is a comparatively recent development. As a matter of fact, in most sections at least, the old "rots out" system is still in use. For a number of years producers have been urged to produce eggs of better quality. As a general thing, however, those who did try this suggestion received no more money for the extra labor and expense than their neighbors who were careless and indifferent.

Today poultry packers and others who are foresighted enough to see the "handwriting on the wall" in egg marketing, realize a trend toward an improved method of buying eggs on a graded basis. They appreciate the advantage to the farmer, the packer, and the consumer. During the past year eggs were low in price due to an oversupply. According to Mr. G. D. McClaskey of the Seymour Packing Company in a recent issue of the Kansas Farmer and Mail and Breeze, "From a careful analysis of the present situation and looking to the future of the egg business, both from the standpoint of the producer and the market end, it appears that the best way to increase the consumption of eggs is to supply eggs so good that people will want to eat more of them." The graded method enables the packer to select eggs of excellent quality for the eastern market. Eggs of poor quality may be "broken out" or otherwise disposed of.

On the graded basis the eggs are candled in a similar manner to the older method, but are separated into three grades. Number ones demand the highest price. They consist of

eggs weighing from 22 to 27 ounces per dozen, clean, fresh, full, and free from cracks. For number twos the middle price is paid. These are eggs weighing more than 22 ounces per dozen, slightly soiled, shrunken or slightly heated, and showing more age than number ones. Number threes include all small or dirty eggs; also eggs inferior in quality because of age or unfavorable holding conditions.

Obviously the farmer is always interested in selling where he receives the highest price. If he sells on the graded basis, lots of eggs which are more than about 50 per cent number ones and twos will profit in proportion to the quality and quantity of his product.

As an illustration, using the case of 30 dozen as a unit, with local current prices paid last summer, the following examples may be cited:

EXAMPLE I—New Graded Basis

15 dozen (50 per cent) No. 1's @ 23c	
per dozen	\$3.45
15 dozen (50 per cent) No. 3's @ 15c	
per dozen	2.25
Total	\$5.70

EXAMPLE II—Old "Rots Out" System

30 dozen @ 19c per dozen	\$5.70
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EXAMPLE III—New Graded Basis

15 dozen (50 per cent) No. 1's @ 23c	
per dozen	\$3.45
10½ dozen (35 per cent) No. 2's @ 18c	
per dozen	1.89
4½ dozen (15 per cent) No. 3's @ 15c	
per dozen	.68
Total	\$6.02

Gain in Example III over each of the others	\$0.32
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Obviously the price paid for quality eggs is more. Yet the costs to produce such eggs are more because better or perhaps more feed, equipment, and labor must be used. Whether this extra effort and expense will pay or not is always an individual problem which each farmer must work out for himself. In solving this problem he should not lose sight of the fact that better methods usually will also increase the quantity of his product which will tend to compensate him for the additional expense. By using better houses, more adequate diets, and more mod-

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Goat Grass—A Weed Pest of Central Kansas Wheat Fields

Lyle Mayfield, '28

Goat grass, an interesting new plant, is now known to be present in fields where wheat is grown continuously in several of the more important wheat-producing counties of central Kansas. This plant, known under the Latin name of *Aegilops cylindrica*, was first brought to the attention of botanists and crops specialists at the Kansas Agricultural Experiment Station in 1918. Plants and seeds have been collected in, or received from, a number of Kansas counties each year since then. The plant is also known to occur in north central Oklahoma where one farmer had a 35-acre wheat field which contained more goat grass than wheat.

Field studies of this new weed pest have been made by Mr. C. O. Johnston, leaf rust specialist of the Bureau of Plant Industry of the United States Department of Agriculture, cooperating with the Department of Botany and Plant Pathology of the college, and by Prof. John H. Parker of the Department of Agronomy (1). Mr. Johnston as a plant pathologist and Professor Parker as a plant breeder are interested in this new plant for several reasons. It is known to serve as a host for wheat rust. Natural crosses of wheat and goat grass are known to occur. It may prove to be a serious weed pest in the central Kansas wheat belt. It has a serious dwarfing effect on wheat as shown in the accompanying illustration.

The exact time or method of introduction of goat grass to Kansas is unknown, though it seems likely that seeds of this plant were introduced with seed of Russian wheats either in 1873, when the Mennonite settlers brought the first Turkey wheat to Kansas; in 1900, when Kharkov wheat was introduced by the United States Department of Agriculture; or possibly about 1910, when the Newton Mill and Elevator Company introduced a bulk shipment of Turkey wheat, from which Mr. Earl G. Clark of Sedgwick later selected his now famous Blackhull wheat. If goat grass was

brought to Kansas with one of the earlier introductions of Russian wheat, it seems strange that it escaped the attention of farmers as well as of amateur and professional botanists for so long a time.

Only in recent years have American investigators made detailed studies of goat grass, although it has been known to European botanists for many years. Mr. Johnston and Professor Parker were not able to find any record of the occurrence of *Aegilops cylindrica*, the species which occurs in Kansas wheat fields, in standard taxonomic works, such as Britton and Brown's "Flora of the Northern United States and Canada" and Gray's "Manual of Botany." Records show that this species was present in the grass gardens established by the late Dr. C. V. Piper of the Washington Agricultural Experiment Station in the Nineties and that a few plants may have escaped from his botanical garden to the adjacent country in the vicinity of Pullman, Wash.

Dr. C. E. Leighty of the Bureau of Plant Industry of the United States Department of Agriculture has made a number of crosses between goat grass and wheat, and has recently combined wheat, rye, and goat grass in one cross. Dr. E. F. Gaines of the Washington Agricultural Experiment Station and Dr. Karl Sax of the Maine station and Dr. Ernest Dorsey of Cornell University have made some interesting genetic and cytologic studies of goat grass and wheat crosses. There are several very distinct species of *Aegilops*, but only one, *Aegilops cylindrica*, is known to occur in Kansas wheat fields.

Several years ago while making studies of goat grass in northern Oklahoma and central Kansas, Mr. Johnston and Professor Parker found some tall vigorous plants which they first thought represented a second species of *Aegilops*. They later discovered that these tall vigorous plants were first generation crosses between goat grass and wheat which had occurred in nature. Heads of goat grass and one of these first generation crosses

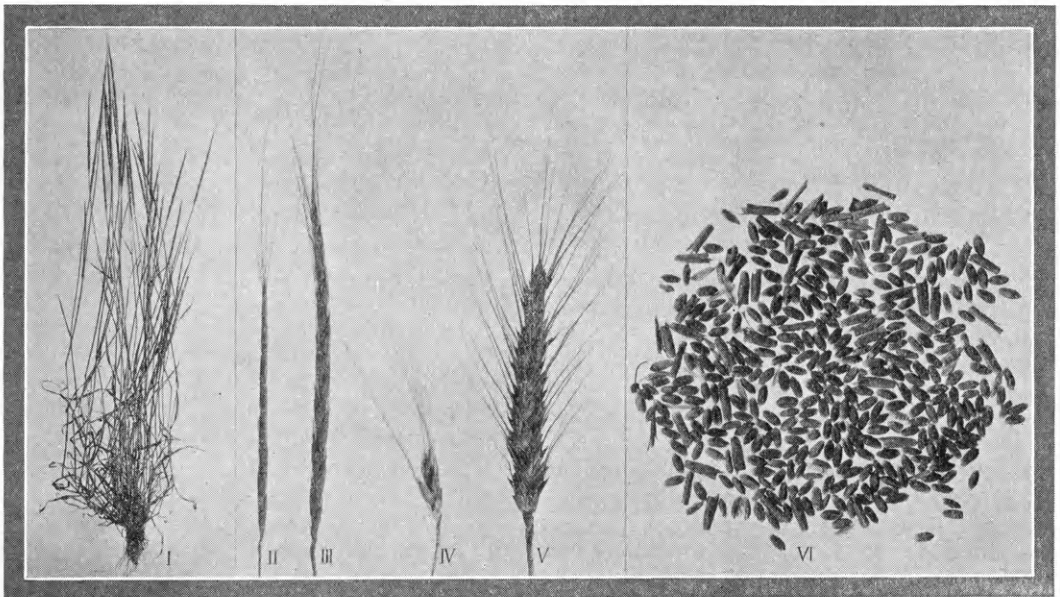
1. The author is indebted to Mr. Johnston and Professor Parker for the information contained in this article and for the photographs.

are shown in the accompanying illustration as is also a typical plant of goat grass.

Goat grass occurs in spots or patches in central Kansas wheat fields, varying in size from a few square yards to areas occupying several square rods or even several acres. It also occurs in patches along fences and at edges of wheat fields. So far as known, goat grass does not occur, or at least is not troublesome, where wheat is grown in rotation with other crops, but is found only in fields where wheat is grown continuously. Under these conditions goat grass has already

grain dealers containing segments of the heads of goat grass for identification. A typical sample of wheat containing these segments of the heads of goat grass is shown in the illustration. This sample was photographed just as it came from the separator and shows a high proportion of goat grass seed. Many state grain inspection and federal grain supervision officers are not familiar with this new plant and often send samples to Manhattan for identification.

Goat grass can certainly be controlled by practicing some form of crop rotation, even



SPECIMENS OF GOAT GRASS, WHEAT, MIXTURES, AND CROSSES

(I) Plant of goat grass, *Aegilops Cylindrica*. (II) Head of goat grass. (III) Head of first generation cross between goat grass and wheat. Such natural crosses often occur in Kansas wheat fields but are usually sterile. (IV) Stunted wheat head from field badly infested with goat grass. (V) Normal wheat head. (VI) Sample of wheat direct from separator, mixed with segments of goat grass containing seeds.

become a serious weed pest and seems to be spreading over wider and wider areas in central Kansas each year. The plants of goat grass often show a vivid purple coloring just before harvest, making it easy to detect patches of this grass in wheat fields from a distance.

Each season the botanical and crops specialists of the Kansas Agricultural Experiment Station receive samples of wheat from farmers, threshermen, elevator operators, and

a simple one such as the alternation of wheat and a rowed crop, such as corn, or one of the sorghums. Goat grass will not persist under clean cultivation. Seeding of badly infested wheat fields to alfalfa would also destroy the goat grass. Use of clean seed wheat in fields infested with goat grass will not control this weed pest as the goat grass ripens and scatters some of its seeds before harvest, thus infesting the next crop, even though

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HIGH SCHOOL SENIORS TODAY—COLLEGE FRESHMEN TOMORROW

Between now and commencement three or four thousand seniors in Kansas high schools will often be thinking of college work for the near future. Available institutions will be compared and college catalogs and the different curricula will present information of interest.

Of course several hundreds of these seniors are already looking to the Kansas State Agricultural College at Manhattan. Monday, September 10, 1928, will find them here and ready to go. To others who have not fully decided let us say that the advantages in many fields that K. S. A. C. presents to college students are unsurpassed. Our instructors have high ideals of helpfulness. An atmosphere of clean living, genuine democracy, respect for work, and a fair evaluation of each individual on his own merits pervades the student body. If we have curricula in which you are interested you will enjoy college work here and always be proud you cast your lot with us.

What curricula in K. S. A. C. are you going to choose? If you are interested in agriculture, engineering, journalism, music, physical education, general science, home economics, or veterinary medicine you should not fail to investigate the opportunities and advan-

tages we have to offer. If you are a young man and interested in the best all-round college training you can secure in four years for hundreds of business enterprises in Kansas—agricultural or closely related thereto—you should consider well two agricultural curricula offered in K. S. A. C.; namely, the **Curriculum in Agriculture**, and the **Curriculum in Agricultural Administration**.

It is our desire at this time to present just a brief bit of information regarding these curricula and to discuss them in greater detail in the next issue of this magazine.

High school physics has been a fixed entrance requirement at K. S. A. C. for many years. This requirement, however, has been dropped for the class of 1932 and succeeding classes. Hereafter one unit of science, but not necessarily physics, must be included in the regular 15 high school units required for admission. However, high school students planning to study agriculture in college are urged to include one unit of physics in their entrance requirements, if possible.

The curriculum in agriculture and the curriculum in agricultural administration require 124 semester credits for graduation in addition to two years training in military science. The freshman and sophomore years require 30 credits each and the junior and senior years, 32 credits each. In the curric-

ulum in agriculture there are 45 semester credits of electives and in the curriculum in agricultural administration, 60. These electives provide for the adaptation of the curricula to meet scores and even hundreds of different individual needs and objectives. The entire curricula are liberally administered. If by making substitutions for a limited number of required courses a better preparation may be provided for a student's specific objective, the changes are regularly authorized.

These two curricula in agriculture have a common freshman year. During this year, especially by means of freshman lectures and through freshman advisers, the student is given every possible assistance in understanding the adaptability and possibilities of the curricula. He is not required to make important decisions regarding his curriculum, major subjects, or other electives until he has had ample opportunity to be ready to make them intelligently and on the basis not only of the advice of others but of his own information and experience.

These two agricultural curricula provide in the first place an unexcelled all-round college training. They also may provide basic training for any phase of the agricultural industry of economic importance in this section of the country, including business enterprises associated with or closely related to agricultural pursuits.

The curriculum in agriculture is somewhat stronger on the side of the basic sciences; it provides for more specialization in scientific phases of agricultural production; and, as a rule, it provides a more adequate preparation for general or diversified farming. The curriculum in agricultural administration requires a somewhat more thorough training in the principles of business and the economic phases of production and marketing. It covers in a special way the fields of rural banking, grain industries, agricultural journalism, agricultural engineering, and agricultural education. It also provides training for certain types of farming—types which because of size or character involve the element of business risk to a large degree. In short, agricultural administration deals primarily with the business administration of agricultural enterprises.

A study of these two agricultural curricula,

however, shows one that they have very much in common. A student needs to study them and compare them carefully and know himself and his objective in order to decide which one will best meet his needs.

These curricula are offered in an institution that is unexcelled in this section of the country. They should appeal to hundreds of Kansas high school students, especially those outside of our few industrial centers. Both curricula are genuinely cultural and broadly vocational.

GRADUATE ASSISTANTSHIPS

Graduate assistantships, sometimes known as fellowships or scholarships, are available in a great many colleges and universities over the country. They are open only to high-class students—those whose scholarship is distinctly acceptable and whose personality and undergraduate record give promise of achievement in some field of higher education or research.

These positions pay from \$300 to \$600 per year and usually permit the graduate student to complete the work for his master's degree within a 12-month period.

Many students in selecting their major department and completing the outline of their undergraduate curriculum will do well to consider the possibilities of graduate work. Don't be short-sighted. Take a longer view. There is room up higher for the capable, well prepared, and those who are willing to make a larger educational investment than that required for the bachelor's degree.

Graduate assistantships are worth far more to the holders than the price mark indicates. The work required of the assistant in class room or research laboratory is in itself highly educational. He becomes thoroughly acquainted, gets a close-up view of the practical as well as the theoretical side of his job; gets a contact with contemporary workers, those who are leaders in his chosen field; and gets a broader vision of the possibilities of the field, a greater confidence in himself, and finally a determination and inspiration that will carry him into positions of leadership. Ask the head of the department in which you are majoring, or thinking of majoring, regarding the possibility of securing a graduate assistantship as an aid in graduate study.

INTERCOLLEGIATE JUDGING CONTESTS

With the exception of the junior livestock judging contest to be held the latter part of January at Denver, all the intercollegiate judging contests are over for this year. K. S. A. C. has been represented on eight different judging teams by young people of the highest type—the best produced in the country. These teams have competed in thirteen contests against teams representing the best schools in the United States. Their record speaks for itself. We are pleased to present it briefly in this issue and to reproduce photographs of the teams.

In these contests Aggie teams have won three firsts, two seconds, three thirds, one fourth, two fifths, one sixth, and one eighth place. The team that placed sixth was competing with 32 colleges.

While some very good records have been made by individuals from Kansas in these contests, it should not be inferred that individual attainment is the goal of the contests. On the other hand it is the work of the team representing Kansas State Agricultural College in which everyone should be interested. Individuals do not enter the contests as individuals seeking personal glory but as a team that is representing K. S. A. C. and the state of Kansas. Individual ranking is of only secondary importance.

The Student wishes to take this opportunity to congratulate those who have worked so diligently in preparation for these contests. It is indeed an honor to make one or more of the teams and have the privilege of wearing one of the K medals that are awarded to those who participate in intercollegiate judging. This year twenty of these medals will be awarded.

This year for the first time a meats judging team composed of girls taking home economics represented the Kansas State Agricultural College at a contest held in connection with the American Royal Live Stock Show at Kansas City where the team placed first. This is indeed a good start and it is hoped that a girls meats team can be sent each year hereafter.

Underclassmen should be ambitious to make at least one intercollegiate judging team during their undergraduate days. The experi-

ence is an invaluable part of a college training.

A CORRECTION

In the editorial "Scholarship," page 14 of the October issue of this magazine, a list of the winners of the freshman Alpha Zeta medal was given. This list was incomplete. The complete list of the winners of this gold medal since this prize has been offered by the fraternity is as follows:

Marvel L. Baker	1921-22
A. G. Jensen	1922-23
H. H. Brown	1923-24
H. E. Myers	1924-25
R. C. Hay	1925-26
A. P. Grimes	1926-27

I like to have a man's knowledge comprehend more than one class of topics, one row of shelves. I like a man who likes to see a fine barn as well as a good tragedy.—Ralph Waldo Emerson.

Clarence F. Bayles, '27, has taken charge of the farm work on his old home farm near Garrison, Kan. Mr. Bayles majored in horticulture and was on the apple-judging team.

L. J. Schmutz, '25, is teaching vocational agriculture in Wakefield Rural High School. Wakefield is usually heard from each year in the stock-judging contest here in the spring, so "Smootzy" has quite a record to uphold out there.

Another dairyman partnership of old Aggies has been formed in which Joel Wallace, '26, and George Williams, '15, are taking over a large dairy farm near Little Rock, Ark. On December 1 they started to deliver milk to their patrons in Little Rock.

Ray L. "Oley" Remsburg is out of college this semester, but it trying his best to get over a sick spell in time to get back for next semester. Oley was making good as fieldman for the Blue Valley Creamery Company when a serious illness overtook him a few weeks ago. His classmates wish him a speedy recovery. He is assistant manager of the 1928 Ag Fair.

COLLEGE NOTES

TWO AGS IN PHI KAPPA PHI

The K. S. A. C. chapter of Phi Kappa Phi, the national honorary scholarship society, held election October 28, 1927, and elected to membership approximately the 5 per cent of the class of 1928 highest in scholarship. The two Ags selected are all-round men, first in scholarship, and first in activities most worth while in college. They are:

F. L. Timmons, Geneseo.
H. E. Myers, Bancroft.

FIRST ANNUAL BARN WARMER

An evening crowded full of wholesome fun tells the story of the first annual "barn warmer" held by the Ags Friday evening, October 21, 1927. The Gym was elaborately decorated to represent a barn loft and the Ags and their fair partners in blue overalls and aprons in a spirit of equality, kindness, and friendliness thoroughly enjoyed an evening typical of the true neighborliness of rural folk as represented in their barn warmings and fall festivals.

To gain entrance each sturdy Ag assisted his fair companion up the rope ladder to the barn loft. Barrels of apples and cider were conveniently located along the fence and among the hay bales. Ample entertainment of games, music, and stunts was provided in the Girls' Gym for those who did not care to dance and the June Layton's Rhythm Rustlers and their equipment filled a hay rack at the side of the big Gym ready to furnish all that could be desired in the way of dance music.

As soon as most of the guests had arrived, manipulations of the manager, Francis W. ImMasche, announced the biggest event of the evening. Seven popular co-eds had been nominated for the honor of being harvest queen at the big barn warmer. By vote of the ticket holders, Miss Grace Madison of Everest, Kan., sophomore in general science, member of the Alpha Xi Delta sorority, was

chosen for the honor; she emerged from the shocks of corn, was crowned by Dean Call, and in a most pleasing and becoming way accompanied the Dean on the grand march.

After the dance partners were seen home the Ags returned to clean up the Gym. By morning no traces of the dance were to be seen. Such cooperation and spirit as were



MISS GRACE MADISON—HARVEST QUEEN OF THE 1927 "BARN WARMER"

shown in making this barnwarming a success shows what the students of the Division of Agriculture can accomplish by working together. The first annual barn warmer made all who participated eager to repeat the big old fashioned fall festival next year.

GIRLS' MEATS-JUDGING TEAM PLACES FIRST

To be winners of an intercollegiate meats judging contest was the thrilling experience which came to the K. S. A. C. girls' meats-judging team at the American Royal Live Stock Show, Kansas City, Mo., Monday, November 14, 1927. The Aggie team consisted of the following girls: Catharine Lorimer, Velma Criner, Dorothy Stewart, and Ora Hatton (alternate). The girls were coached by Prof. D. L. Mackintosh of the Department of Animal Husbandry and to him they give a large share of the credit for their success in the contest. However, it is interesting to note that in comparing the winning team with the other teams, the girls on the other teams were arts, foods, and clothing students, while everyone on the Aggie team was an institutional economics student.

The contest was divided into two parts—the identification of retail cuts of meat and the judging of wholesale cuts of meat. The identification of retail cuts was held at the exposition grounds where the meat to be identified, 25 regular retail cuts of beef, veal, lamb, mutton, and pork, was displayed in a glass case. Each cut was identified by the muscle or bone structure, fat, and the characteristic color of the animal from which it was taken. In this identification an Aggie girl placed first, one third, and the other, sixth.

The other part of the contest, the judging of wholesale cuts, was held in the coolers at the Cudahy Packing Company. The cuts to be judged were arranged on tables in five different classes—four identical cuts in each class from different grades of carcasses, these being classes chosen from wholesale cuts of beef, veal, pork, lamb, and mutton. The classes selected for judging were pork loins, hams, beef chucks, beef loins, and lamb saddles. The cuts were placed according to their merits as determined by: (1) quality—considering texture, color, bone, marbling, and thickness of muscling; (2) finish—considering thickness, uniformity, color, and firmness; and (3) conformation—considering the fullness and plumpness throughout, the evenness and smoothness of the cut. Each contestant not only placed each of the five classes

but presented written reasons for her placings.

There were three contesting teams of three girls each, Nebraska, Kansas, and Oklahoma being represented. In individual ranking Dorothy Stewart placed first, Catharine Lorimer, second, and Velma Criner, sixth. Achsa Johnson, assistant in cafeteria, accompanied the team as chaperon.

K. S. A. C. BOYS' MEATS-JUDGING TEAM MAKES A CREDITABLE RECORD

The Kansas Aggies this year for the first time were represented by a meats-judging team which competed at the American Royal Live Stock Show, Kansas City, and the International Live Stock Exposition, Chicago. The members of the team were: H. H. Brown, Edmond; H. L. Murphey, Protection; V. E. McAdams, Clyde; and E. A. Stephenson, Alton. Each team consisted of three members, V. E. McAdams being alternate at Kansas City and E. A. Stephenson at Chicago.

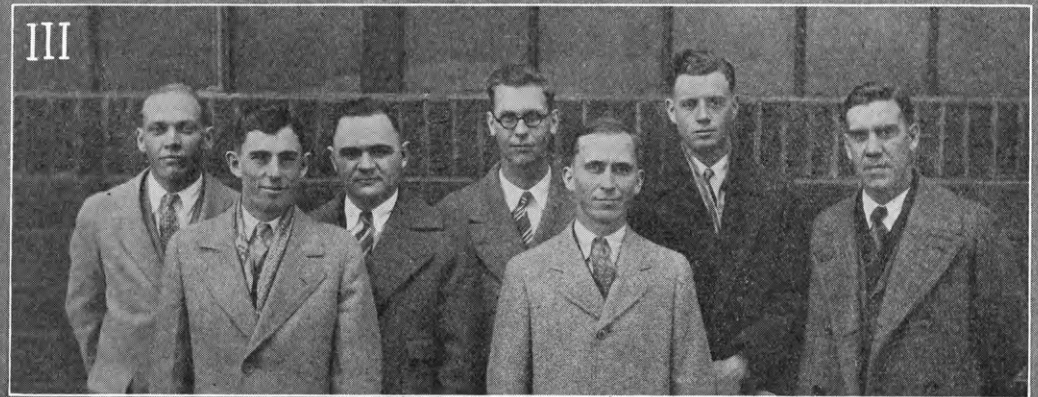
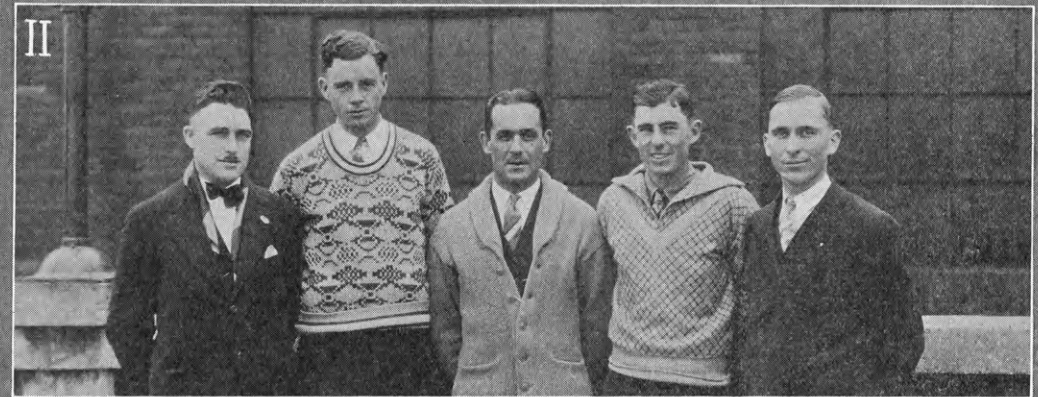
The Kansas City contest was won by Illinois with Kansas ranking fourth and Missouri and Iowa ranking second and third, respectively. Eight teams competed. H. H. Brown was high man on the judging of pork and third high man in the entire contest. The three teams placing above Kansas had had special training in this work which was impossible for the Aggies.

The Chicago contest was considerably larger than the Kansas City contest with 12 teams competing for honors. Kansas came in third in the entire contest and ranked first in the judging of pork. Iowa placed first in this contest and South Dakota, second. V. E. McAdams was high-point man of the entire contest and high man in the judging of beef.

The introduction of a meats-judging contest is a new phase of judging as it is just being realized that such judging contests are important factors in meat production. The public is beginning to appreciate the value of high-quality meat.

THE 1927 LIVE STOCK JUDGING TEAM A WINNER

The senior live stock judging team made an excellent record this year, with one first place and two third places to their credit.



MEATS AND LIVE STOCK JUDGING TEAMS

(I) Girls' meats judging team. From left to right: Prof. D. L. Mackintosh (coach), Dorothy Stewart, Catharine Lorimer, Velma Criner, Ora Hatton, Achsa Johnson (chaperon). (II) Boys' meats judging team. From left to right: Prof. D. L. Mackintosh (coach), H. L. Murphey, H. H. Brown, E. A. Stephenson, V. E. McAdams, (III) Live stock judging team. From left to right: R. N. Lindburg, E. A. Stephenson, Howard V. Vernon, F. Dale Wilson, V. E. McAdams, H. L. Murphey, Prof. F. W. Bell (coach).

Professor Bell, who coached the team, is very well satisfied. The men on the team are all senior students majoring in animal husbandry, with the exception of F. Dale Wilson, who is majoring in dairy husbandry. The team was composed of F. Dale Wilson, Jennings; H. L. Murphey, Protection; E. A. Stephenson, Alton; V. E. McAdams, Clyde; Howard Vernon, Oberlin; and R. N. Lindburg, Osage City.

The team competed in three contests. In the Wichita contest they placed third with only a 23-point margin between them and the Texas Aggies who won. Eight teams competed. The Kansas team was first in the judging of horses and cattle. H. L. Murphey was second high individual in the entire contest with only a three point margin between him and the top man. E. A. Stephenson placed eighth and Howard Vernon, ninth. V. E. McAdams and R. N. Lindburg were the other members of the Wichita team.

In the American Royal contest at Kansas City the team placed first, winning the large silver loving cup for the third time in six years. Kansas won it in 1922, 1924, and 1927. However, to win this cup as a permanent trophy a team must win it twice in succession. The Aggie team won with a 26-point lead over Texas, their closest competitor. Fourteen teams were entered and the competition was keener than it was at Wichita. H. L. Murphey tied for third place honors as an individual and the rest of the team followed so close that there was only 50 points difference in any of their total scores.

In the Chicago contest Kansas placed third among 21 contesting teams with only 54 points difference between them and the Iowa team that won the contest. The teams making the three highest scores were:

Iowa State College	4,506
Ohio State University	4,462
K. S. A. C.	4,452

Dale Wilson was fifth high individual and third on cattle, and V. E. McAdams tied for third place in judging Durocs.

The team on its trip from Wichita to Chicago visited many places of special interest to live stock men. They visited the Longview stock farm where some very good Durocs are bred; the Baker Shorthorn farms; the Sni-A-Bar farms at Grain Valley, Mo., where ex-

tensive work is being done in the breeding and feeding of Shorthorns; and the Columbia Stock Farms where some of our finest Poland Chinas are produced. On their way to Chicago the team visited the Iowa State College at Ames and worked over their live stock. From there they went to Greeley, Iowa, where the Holbert Horse Importing Company allowed them to look over some of the very best Belgian stallions in America. From there the team went to the University of Illinois where they stayed for three days. Besides seeing the college live stock they visited the Allerton Stock Farm. This farm includes about 1,600 acres and a big share of it is devoted to Poland China production. Here they got a good chance to see good hogs under actual production conditions.

Although the team did not make a starting record their placings have been consistently good. They are especially grateful to their coach, Prof. F. W. Bell, for his patience, optimism, perserverance, and efficient work. They are proud of the fact that they did not place below third, for Professor Bell has never coached an intercollegiate judging team that placed below fifth. On the basis of total scores in both the American Royal and International contests for the 12 teams participating in both contests, Kansas leads by 21 points.

AGGIE CROPS JUDGING TEAM PLACES SECOND

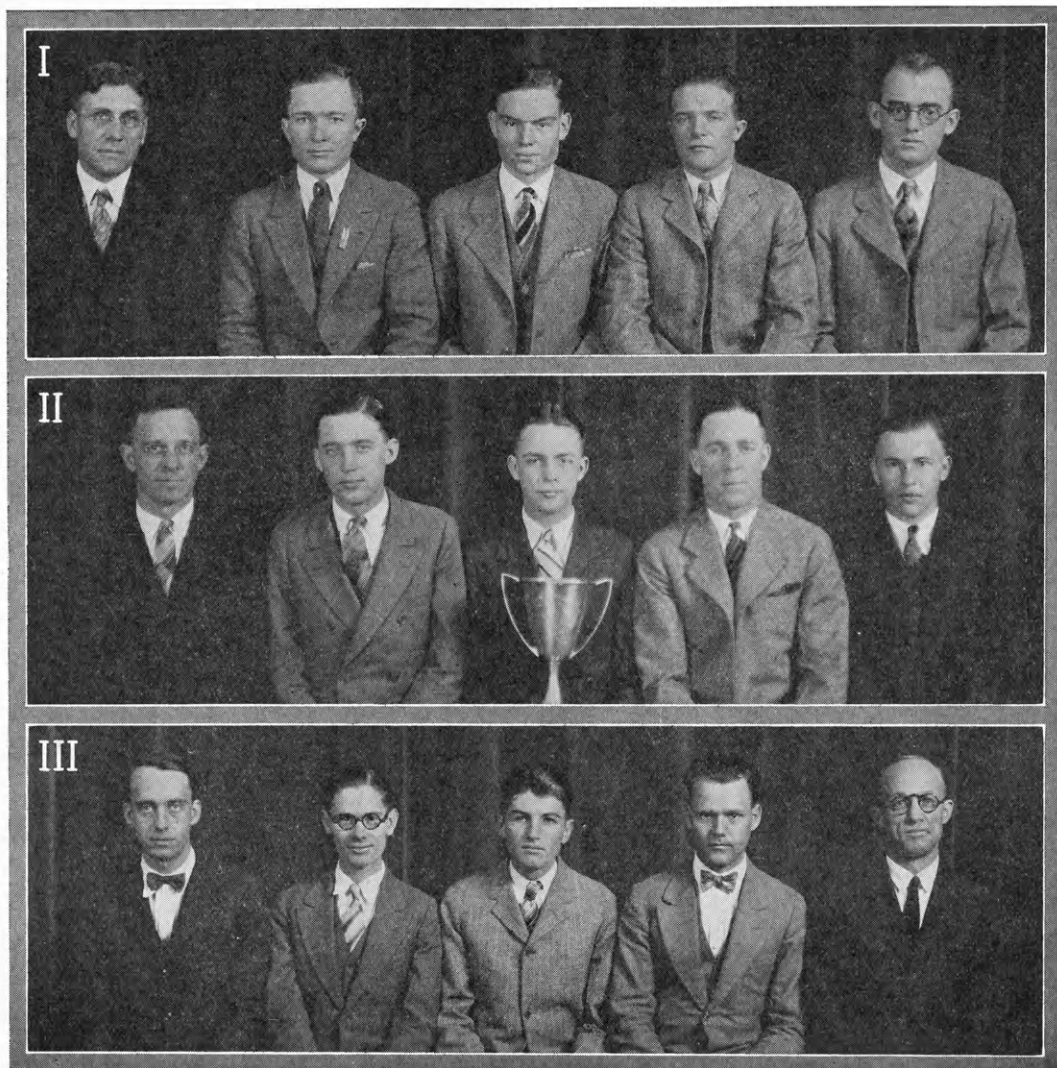
In competition with eleven teams the Kansas crops judging team placed second in the intercollegiate hay and grain judging contest held in Chicago, Saturday, November 26, 1927, in connection with the International Hay and Grain Show. The Kansas score was 4,241.7 out of a possible 5,000. North Carolina placed first with a score of 4,323.7, and Iowa placed third with 4,187 points.

The contest consisted of (1) commercial grading of grain, hay and cotton; and the stapling of American Upland cotton; (2) comparative placing of grain samples, legume seeds, and grass seeds; and (3) identification of 72 samples of field crops, weeds, and plant diseases. In identification the name of the crop, the variety, the scientific name, and the regional adaptation were required. The Kan-

sas team was second in comparative placing, second in identification, and third in commercial grading.

The team was coached by Prof. J. W. Zahnley and was composed of Harold E. Myers, Bancroft; L. F. Ungeheuer, Centerville; L. E. Melia, Ford; and F. L. Timmons (alternate), Geneseo. H. E. Myers was high in-

dividual in the entire contest, first in commercial grading, fourth in comparative judging, and tied for third in identification. He also made a perfect score in determining the lint length of American Upland cotton. Melia was third high individual of the contest, tied for second in comparative placing, and ranked eighth in identification.



CROPS, APPLE, AND POULTRY JUDGING TEAMS

(I) Crops judging team. From left to right: Prof. J. W. Zahnley (coach), F. L. Timmons, H. E. Myers, L. E. Melia, L. F. Ungeheuer. (II) Apple judging team. From left to right: Prof. W. F. Pickett (coach), George B. Wagner, Kay H. Beach, F. H. Hagenbuch, A. H. Ottaway. (III) Poultry judging team. From left to right: Prof. H. H. Steup (coach), L. J. Simmons, R. F. Brannan, J. R. Wells, A. W. Miller.

The scores made this year were lower than those of last year and the teams were not grouped so close together. This was probably due to the new system of grading used this year with the object of making a wider variation in the scores of the teams to prevent ties. Competition was probably as strong or stronger this year than in any previous year.

KANSAS APPLE-JUDGING TEAM WINS AND LOSES

The Kansas apple-judging team competed in two contests this year. The first was held in Convention Hall, Kansas City, Mo., November 29, 1927, under the auspices of the Central States Horticultural Exposition. Two teams competed—Kansas and Missouri—and the Kansas team placed first. The teams made scores as follows: Kansas, 10,882; Missouri, 9,440.

The second contest was held at Louisville, Ky., December 7, 1927, under the auspices of the American Pomological Society. Five teams competed and the Aggie team placed fifth. The Ohio team won. One man on the Ohio team made a perfect score—a distinctly unusual record.

The K. S. A. C. team consisted of the following men: K. H. Beach, Edwardsville; A. H. Ottaway, Oswego; F. H. Hagenbuch, Troy; and G. B. Wagner (alternate), Eskridge.

In both the Kansas City and Louisville contests K. H. Beach made a perfect score on identification. He was also high individual in the Kansas City contest in which A. H. Ottaway was the second high man.

The Kansas City contests are held every odd-numbered year. The winning team gets possession of a cup offered by the Kansas State Horticultural Society. Three winnings of the cup means permanent possession. Kansas won the cup in 1923 and again in 1927. The next leg will win the cup and the boys in the Department of Horticulture are already looking toward the contest in 1929.

POULTRY JUDGES PLACE EIGHTH IN CHICAGO

The Kansas State Agricultural College poultry judging team placed first in examination, eighth in exhibition judging, and ninth

place in production judging, which gave them eighth place in the Mid-West intercollegiate poultry-judging contest held in Chicago, December 3, 1927, at the Coliseum Poultry Show.

The team was composed of A. W. Miller, Great Bend; L. J. Simmons, Manhattan; J. R. Wells, Soldier; and R. F. Brannan (alternate), Meade. A. W. Miller tied for first in the examination and was seventh high individual in the entire contest. Prof. H. H. Steup, coach, accompanied the team on the trip.

Teams representing ten states were in the contest. They placed in the following order: Illinois, Arizona, Indiana, Texas, Iowa, Oklahoma, Missouri, Kansas, Ohio, North Dakota.

ALPHA ZETA INITIATES

The Kansas chapter of the student honorary agricultural fraternity, Alpha Zeta, holds one election of members each semester. To be considered for membership a student must have completed three semesters of college work with an average scholarship high enough to place him in the upper two-fifths of his class. This means that a student must have a point average of not less than 1.5 to be on the eligibility list. However, in addition to scholarship a man must be prominent in at least one student activity and thus give promise of leadership among his fellows. Election to membership in Alpha Zeta is a coveted honor.

At the regular election this semester the following students of the division were elected to membership in Alpha Zeta:

Name	Home Address
Hobart P. Blasdel	Sylvia
Clifford C. Eustace	Wakefield
Samuel G. Kelly	Seymour, Mo.
R. N. Lindburg	Osage City
Verl E. McAdams	Clyde
Arnold A. Mast	Abilene
F. Leonard Timmons	Geneseo
Temple F. Winburn	De Kalb, Mo.

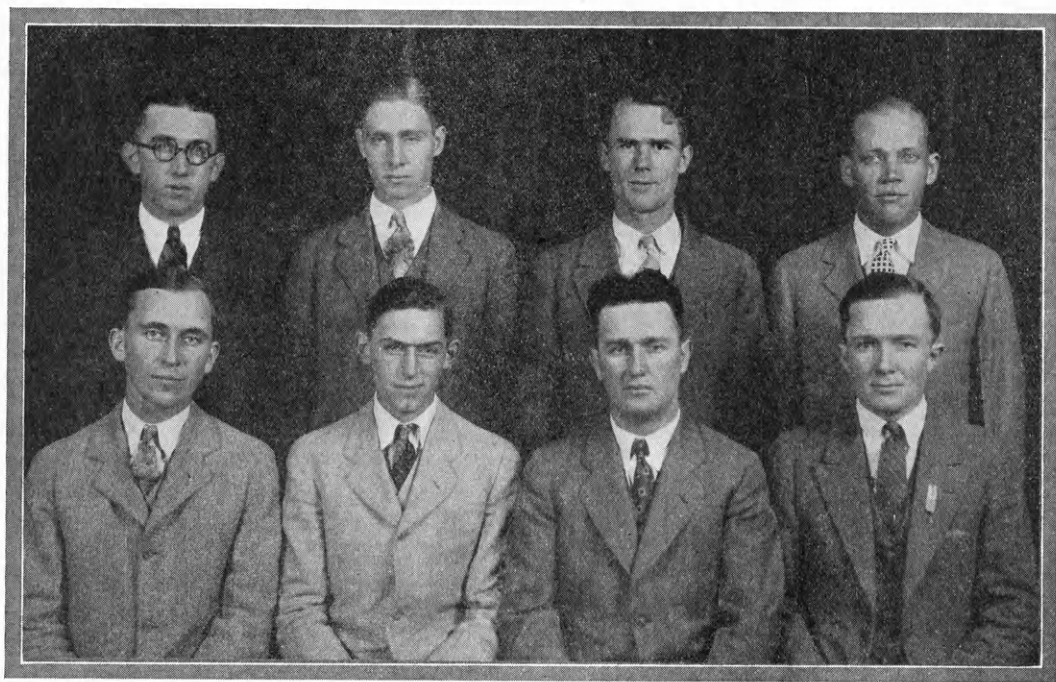
The initiation banquet given in their honor was held at the college cafeteria Friday evening, November 4, 1927, the thirtieth anniversary of the founding of the fraternity.

THE AMERICAN ROYAL

"The greatest yet" expresses in a way the American Royal Live Stock Show of 1927. Truly it was the greatest Royal ever held as regards both size and quality. Some divisions of the show had increased considerably in size over previous years. Quantity was not the only great thing about the show, however, as quality and quantity were hand in hand.

The program consists largely of judging from the various divisions in the forenoon, a matinee in the afternoon, and the horse show at night. This gave a varied program which was both educational and entertaining. As usual there were some new features on the matinee and evening programs.

The most valuable thing to those vitally interested in live stock probably would be a clearer conception of present-day types in



ALPHA ZETA INITIATES, FIRST SEMESTER, 1927-28

Front row, left to right: V. E. McAdams, Clifford C. Eustace, Hobart P. Blasdel, F. Leonard Timmons; back row: Temple F. Winburn, Arnold A. Mast, Samuel G. Kelly, R. N. Lindburg.

The cream of various flocks, herds, and stables was gathered there from all parts of the United States in keen rivalry for the coveted honors. The American Royal stands second only to the International Live Stock Show and is surpassed by it only in some respects. The American Royal brings together one of the few really great collections of blooded live stock of the year. The dairy show is comparatively young but it is growing rapidly. The dog show and the cat show interest many. The educational exhibits this year were very good and the machinery exhibits were interesting and educational.

the various breeds and classes of live stock. Great opportunities were offered for students of the live stock industry to add to their knowledge.

Several Aggies spent the entire week at the Royal; many more were there for two or more days. Approximately 75 others made the trip on Kansas day, November 15, also known as Aggie day.

—D. A. S., '29

Dudley B. Moses, M. S., '24, is a lecturer in field husbandry, School of Agriculture, Potchefstroom, Union of South Africa.

SECOND ANNUAL AGGIE DAIRY SHOW

The second annual dairy showing and fitting contest for college students will be held during Farm and Home week, February 7-10, 1928. Last year's contest brought out so many good Aggie showmen that the Dairy Club has decided to hold the show every year during Farm and Home Week.

Last year 53 men competed for a large offering of cash and medal prizes. The goal set for this year's contest is one hundred contestants and the Dairy Club desires the help of all the students of the division to make the event a big success. The plan this year is to have a series of lectures on "showing and fitting" prior to the contest. The animals of the college dairy herd which are to be used, are all in excellent condition and the number to select from is larger than last year. This will assure everyone who enters a desirable animal with which to work.

—T. W. K., '29

NEW BULLETINS

Three bulletins recently issued by the Agricultural Experiment Station of Kansas will be of interest to many farmers and teachers of agriculture. * They are:

No.	Title
242	Alfalfa Production in Kansas.
243	Equipment for Swine Production.
244	The Effects of Shortage of Farm Storage Space and Inability to get Local Bank Credit on the Movement of Kansas Wheat to Market.

Bulletin 242 is a 42-page publication discussing the alfalfa situation in Kansas, best methods of growing the crop and of handling alfalfa for hay and seed. Diseases and insect enemies of alfalfa are also discussed. Twelve figures are used in illustrating the publication.

Bulletin 243, as the title suggests, deals with houses and general equipment for the feeding and management of hogs. It is a 46-page publication using 33 illustrations, some of which present in a somewhat abbreviated form plans for certain types of houses and various articles of equipment. A list of plans and specifications available for purchase at a nominal price is given in the appendix of the bulletin.

Bulletin 244 is a 29-page publication which, as the title suggests, discusses the marketing of Kansas wheat as affected by two factors; namely, the shortage of farm storage space and the inability of wheat owners to get local bank credit. The important points in the publication are emphasized by being presented graphically.

Requests for these publications should be addressed to:

Agricultural Experiment Station,
Manhattan, Kansas

STUDENT POULTRY-JUDGING CONTEST

On Friday and Saturday, October 28 and 29, 1927, the Department of Poultry Husbandry conducted the third annual student poultry-judging contest. This contest consisted of placing six classes of four hens each (on the basis of production) and a true and false examination which covered Circular 93 of the Agricultural Experiment Station.

A total of 66 students entered the contest. The total possible score was 700, of which 600 was on placing the six classes and 100 on the examination. The awards and placings of the winners were as follows:

Contestant	Score	Prize
R. N. Lindburg	656	\$12.50
Raymond W. O'Hara	656	12.50
L. J. Simmons	648	5.00
F. L. Timmons	637	2.50
Roy Trompeter	637	2.50
R. W. Mohri	635	1.00
L. E. Melia	626	1.00
W. D. Lyon	626	1.00
D. N. Taylor	625	1.00
John D. DeForest	618	1.00
P. B. McMullen	617	1.00
George Cunningham	615	1.00
C. L. Harding	614	1.00
H. E. Myers	611	1.00
Fredrick H. Schultis	611	1.00
D. E. Bellairs	607	1.00
N. B. Moore, Jr.	607	1.00
Tom Dicken	600	1.00
A. W. Miller	597	1.00
R. F. Brannan	597	1.00

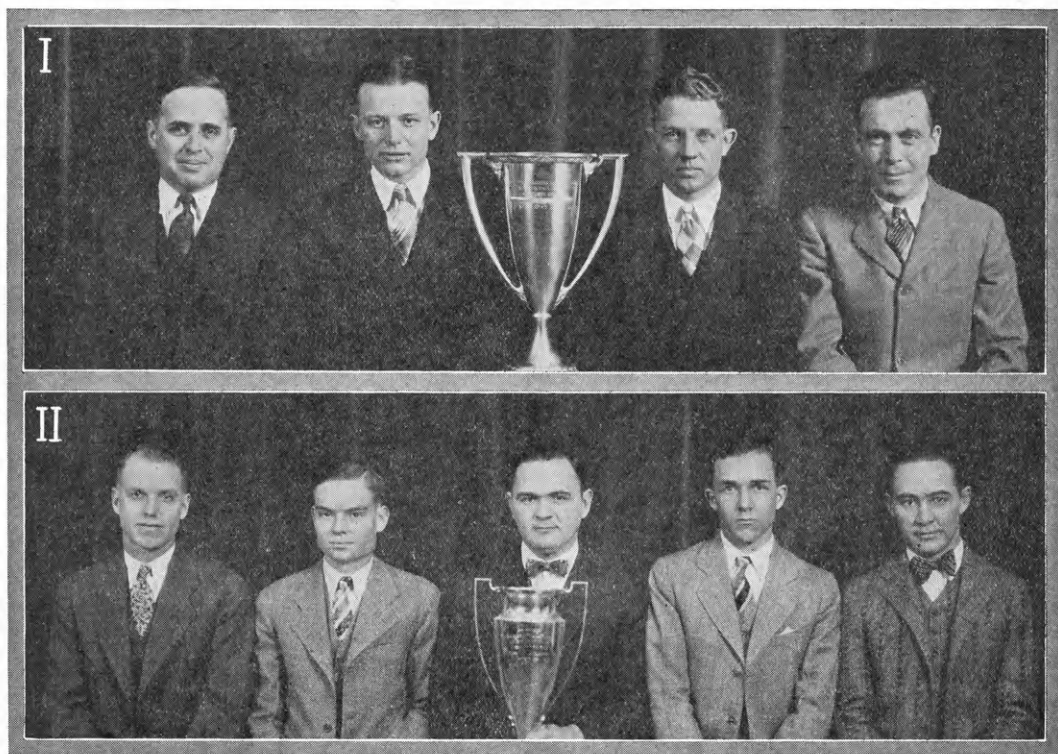
\$50.00

ANNUAL HOG RAISERS' MEETING

The annual hog raisers' meeting was held at the college, Friday, October 21, 1927, with about three hundred visitors. Presenting the results of feeding tests conducted by the Agricultural Experiment Station during the past year was the chief feature of the program. These results are discussed elsewhere in this issue under the heading, "Cottonseed Meal for Hogs."

The Agricultural Economics Club was responsible for the program. Prof. Harold Howe of the Department of Agricultural Economics told of his recent trip to Europe giving his impressions and experiences while abroad.

Professor Howe emphasized the fact that first impressions were all that one could get on such a hurried trip as he made. He brought out the fact that there is not nearly

**DAIRY JUDGING TEAMS**

(I) Dairy products judging team. From left to right: Prof W. H. Martin (coach), E. W. Frey, C. O. Jacobson, E. F. Hubbard. (II) Dairy cattle judging team. From left to right: Prof. H. W. Cave (coach), H. E. Myers, Howard V. Vernon, T. W. Kirton, C. W. Clair.

PROFESSORS HOWE AND BURR ADDRESS AGRICULTURAL SEMINARS

The monthly Agricultural Seminar this year is being sponsored by the Agricultural Association and the programs, as a rule, are being provided by the various agricultural clubs of the division. For each meeting a little entertainment—stunts, music etc.—is to be associated with a short address.

The first meeting was held November 10.

so much feeling against Americans in Europe as some people would have us believe. He seemed to have been favorably impressed with the courtesty, intelligence, and good will of European countries, especially those whose people Americans like to call "Wops." He called attention to the fact that one who goes to a foreign land should do so with an open mind in order that the impressions he receives may not be warped by personal prejudice.

The Dairy Club was responsible for the seminar program December 8. An interesting dairy judging stunt was staged the first part of the hour. Some of the dairy boys were disappointed because "Pat" of A. H. Club fame carried off the honors. The splendid short address of Prof. Walter Burr of the Department of Economics and Sociology was thoroughly enjoyed. Among other things he said:

"A graduate of an agricultural college, going out into life as a professional leader of organized activities, is supposed to have had thorough training in soils, crops, and livestock. It is unthinkable that we should use in such service one who would have to guess

in these matters, or learn by practicing after he was in a responsible position.

"But the professional leader in organized rural life must deal first with human beings in organized relationship before he can bring his training to bear on soils, crops, and livestock. These are, in their modern improved form, part of the human social set-up. Yet there have been cases in which such leaders have had absolutely no training in dealing with human beings in social relationship. In this field they were guessing and practicing on the people after they were on the job.

"The chief source of necessary training to deal successfully with people is found in the social sciences in the college curriculum."

Superior Dairy Cows Through Cooperative Bull Associations

L. M. Clausen, '28

The scrub bull is rapidly becoming a thing of the past through the work of cooperative bull associations in the improvement of dairy herds. The ultimate goal of bull association work is better cows. However, this can come about only through the use of better sires.

In the United States the first Cooperative Bull Association was organized in Michigan in 1908. Since then the increase in the number of associations has been mounting steadily. In 1910, there were nine associations, eight in Michigan and one in Minnesota; in 1920, 133 associations in 30 states; and on January 1, 1927, 248 with a membership of 6,507. These associations owned 1,117 bulls, 8,749 pure-bred cows, and 30,115 cows that were not pure bred, a total of 41,174 cows, 2,310 whose breeding was not reported. The growth and development give some indication of what dairymen think this method is worth.

Few dairymen are so situated financially that they can afford the services of a first-class pure-bred bull for a small to medium-sized herd of cows. The small dairyman is the very one who needs this opportunity. He can least afford the losses from careless and poor breeding. To improve this condition the

first step would be to eliminate all scrubs and bulls that do not have records back of them to show their potential ability, replace them with proved sires or those that have good records back to the third generation. Second, to prove all the pure-bred bulls by the records of their daughters and discard all whose daughters are unsatisfactory.

By the use of a pure-bred bull the first cross offspring will inherit 50 per cent of the characteristics of the sire; the second cross, 75 per cent; and the fourth generation will inherit 93 per cent of the characteristics of the pure-bred animal.

The Iowa Agricultural Experiment Station has improved some scrub cattle from Arkansas by using pure-bred Holstein, Ayrshire, and Jersey bulls. The summary of the work gives:

	Milk	Fat	Per cent Increase	
			Milk	Fat
Average of original cows	3,660 lbs.	171 lbs.
Daughters	5,998 lbs.	261 lbs.	64	52
Grand-daughters	8,401 lbs.	358 lbs.	130	109

It is possible to secure similar results in a bull association.

Sires vary in their ability to transmit pro-

(Continued on page 64)

FARM NOTES

A HOPPERDOZER SAVES AN ALFALFA CROP FOR MR. SAYRE OF RILEY COUNTY

Three years ago when grasshoppers were so numerous in Kansas, especially on the farms of Riley county, a very successful method of combating them was used by Mr. W. J. Sayre on his farm northwest of Manhattan.

Mr. Sayre used a hopperdozer or trap consisting of a trough 12 feet long, 8 inches wide, and 10 inches deep, mounted on 6-foot runners and filled with water and kerosene. The trough was divided by partitions into several compartments to keep the liquid from splashing too much or from running to one end and overflowing on uneven ground. On the back of the trough was mounted a shield or guard 3 feet high consisting of oilcloth with the smooth side turned forward so the grasshoppers would not cling to it but fall into the liquid and be killed.

This hopperdozer was pulled back and forth across the field on two different afternoons. As the grasshoppers jumped up they were knocked into it by the oilcloth. On a 10-acre field 10 bushels of half-grown grasshoppers were caught and killed. The expense was light since the liquid used was composed mostly of water. Thus by means of a few hours of labor and a small outlay a good crop of alfalfa hay was saved.

—P. G. S., '29

STATE CLUB LEADER GIVES A SUGGESTION AS TO THE VALUE OF 4-H CLUB WORK TO THE AGRICULTURE OF TOMORROW

A boy joins a baby beef club and spends many days learning to feed and groom properly a beef steer. In doing this he attends the regular meetings of his club, associates with the other members engaged in this work or work of similar nature, goes on club tours, attends county-wide meetings of his club, including a county club camp, attends the state gatherings—activities planned to give him a balanced program which will appeal to him

and give him some knowledge in beef feeding and inspiration for the practical and worthwhile things in life. He enters his steer in local and county shows and possibly state and interstate shows and captures high honors, and finally he sends this fine steer to market or leads him under the auction block and sells him for a price which pays for all of the feed and labor and in addition nets a neat profit. Such is the average experience, not only of the one thousand baby beef club members in Kansas, but also of the more than 10,000 club members all over the state who are making similar achievements in various lines of club work and each such achievement opens up possibilities for greater advancement and broader vision in life.

Thus, it can be understood that club work in its largest sense is educational, a special and important type of education that is functioning efficiently in administering to the particular needs of rural boys and girls and to agriculture in general. It is to this end that boys' and girls' 4-H club work has been organized throughout the United States. Club work constitutes a part of the National Agricultural Extension System by means of which instruction in agriculture and home economics is given to rural boys and girls through the cooperative effort of the United States Department of Agriculture, the state agricultural colleges, the county farm bureaus, and possibly other agencies. Instruction is given by means of farm, home, and community demonstrations, and through club activities carried on with the young people themselves for the purpose (1) of helping rural boys and girls improve rural farm and home practices and the social life of their own community; (2) of showing them the possibilities of rural life; (3) of aiding those who so desire to become efficient farmers and homemakers; and (4) of teaching rural boys and girls how to make of themselves

public spirited, useful citizens and leaders in rural affairs.

The attention of entire communities, counties, the state, and in some cases the whole nation has been directed to the achievements of these boys and girls, all of which have resulted in a study and adoption of the better agricultural practices used and advocated by them. Thus, 4-H club work becomes a movement designed to aid in the establishment of better practices in agriculture and homemaking, through the agency of rural young people in such a way that the young people themselves may be kept in touch with the best in rural life and may develop leadership and citizenship.

Boys and girls with 4-H experience receive a larger vision of agriculture and rural life—its dignities and its opportunities—which stays with them to their profit all the rest of their days. Thus taught they begin their farm and home career with a knowledge of and experience in cooperation and group action, one of the most vital needs of farmers. They know how to take part in demonstrations, and how to take part in exhibits, and they realize that in order to be really successful they must have thorough training as indicated by all of the four H's—Head, Heart, Hands, and Health. Thus, great numbers of them have become encouraged to secure higher education and it is certain that as a consequence of their 4-H experience, life has a bigger meaning for them and agriculture and the country is enriched by their larger vision and greater usefulness.

—M. H. Coe,
State Club Leader

SWEET CLOVER PROVES TO BE THE KEY TO SOIL FERTILITY FOR A MASTER FARMER IN REPUBLIC COUNTY

Sweet clover rescued from uselessness a 40-acre patch of river-swept land, farmed by Mr. Tudor J. Charles of Republic county, who is one of the Master Farmers of Kansas recently named by the **Kansas Farmer**. Last summer the 40 acres yielded \$1,200 worth of watermelons, cantaloupes, and sweet potatoes. This crop was grown following sweet clover and corn. Before sweet clover was grown on it the piece of land had been useless and a continuous source of disappointment.

In the spring of 1921, Mr. Charles planted 15 acres to sweet clover. The crop withstood the winds of early spring surprisingly well and by June there was a good growth of clover over the field. He was so pleased with the results that the following spring he planted 20 acres of sweet clover in an adjoining field. The crop he had planted the year before furnished early pasture in the spring and by the time it was tough and woody the new crop was ready for pasturing. The two fields furnished continuous feed for his cows throughout the spring and summer.

Mr. Charles pastured the clover until the fall of 1925, when he plowed the entire field and the following spring planted the patch to corn. The corn crop of 1926 was a poor one, but while adjoining fields yielded 10 to 20 bushels per acre, Mr. Charles husked 39 bushels from each acre from these fields on which sweet clover had been grown so recently.

During the past summer, as stated above, the old clover patch had been in watermelons, cantaloupes, and sweet potatoes, from the sale of which \$1,200 has been realized. Mr. Charles says that he has never grown such fine melons and sweet potatoes. Furthermore he is not now at all worried as to the usefulness of his sand-swept acres.

—T. J. C., Jr., '29

THREE HIGH SCHOOL DEPARTMENTS OF VOCATIONAL AGRICULTURE STAGE A TRI- COUNTY CORN-HUSKING CONTEST

For a little diversion from the daily order of work the departments of vocational agriculture in three rural high schools, one in each of three northeastern Kansas counties, tried a new stunt—new for high schools—in the form of a corn-husking contest. The schools represented in the contest were:

Rural High School	County	Teacher of Vocational Agriculture
Goff	Nemaha	C. C. Holmes
Havensville	Pottawatomie	Ezra P. Mauk
Fairview	Brown	R. E. Regnier

The teams from each school had been selected by a preliminary try-out and consisted of two huskers. The contestants raced down the corn rows for 30 minutes while classmates and groups of interested men urged their favorites to hurry.

After weighing and deducting for gleanings and husks it was found that the Goff

team ranked first; Fairview, second; and Havensville, third. Kenneth Clarkson, of Goff, proved to be high man with 334.5 pounds of corn; Leslie Irwin, of Fairview, was a close second with 331.6 pounds; and Eugene Tolin, of Havensville, came in third with 299.5 pounds. So much enthusiasm was displayed at the contest that another will probably be held next year.

This is the first inter-high-school corn-husking contest on record. It was held at Goff, Thursday, December 1, 1927. Rules and regulations covering state and national corn-husking contests were used.

**MR. JOHN LEWIS, A WHEAT BELT FARMER,
HAS MADE A NAME FOR HIMSELF AS
A HEREFORD BREEDER**

Mr. John Lewis of Larned came to Pawnee county 15 years ago with 12 head of good purebred Polled Herefords, and basing his farming system on them has acquired 1,200 acres of fertile land in the valley of Pawnee creek and built up a herd of cattle which is conceded to be one of the best. Incidentally he and Mrs. Lewis enjoy one of the most modern farm homes in the state, for while Mr. Lewis is irrigating, grinding feed, and filling silos with electricity, Mrs. Lewis is washing, ironing, cooking, and doing all the rest of the things about the home of which modern electrical equipment is capable. Theirs is one of the eight farms included in the study of the use of electricity on the farm which is being conducted in Pawnee county by the National Committee on Rural Electrification.

Pawnee county is in the midst of the Wheat Belt and when Mr. Lewis started his livestock venture it was an innovation in farming practices in that section. Although his big farm is especially suited to the growing of wheat he does not raise a bushel.

The success of his livestock business is measured by the size it has attained. During the 15 years since Mr. Lewis came to Pawnee county his foundation herd of 12 head has grown to a herd of 300. Some of these years were good ones for the pure bred breeder but some were equally as adverse. The pure bred boom, brought on by war conditions, found Mr. Lewis with his barns full of good cattle and, what was better, the good judgment to sell from them at fabulous prices. During

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these years records show that he sold hundreds of Herefords and bought only three.

The inevitable crash in 1920 found him with a herd depleted in numbers, but with the extensive land holdings he was able to accumulate by the sale of the Herefords. During the recent era of depressed cattle prices it was hard to buy from Mr. Lewis—he was building his herd for the opposite side of the price cycle which has already made itself evident.

—A. C. H., '26

**HENRY ROGLER APPLIES THE PRINCIPLES
OF THE GOLDEN RULE IN DEALING
WITH HIS HIRED MEN**

Henry W. Rogler, '98, well known cattleman of Matfield Green and one of the twelve Master Farmers of Kansas, uses a system of handling his farm help which has stood the test of time and he is satisfied. One tenant house has been occupied by the same renter for 35 years. The three regular hired men have families and live in separate houses at least half a mile from each other. Two of these men have worked nine years for Mr. Rogler and the other has worked four.

The work on the farm is well organized and usually each man knows what he will be doing the next day. As far as possible each man is permitted to do what he likes or is best fitted to do, so that one does most of the work with the tractors and engines, another the cattle feeding, while a third excels in getting good stands of crops in the spring.

The "Boss," as Mr. Rogler is called by his men, is not a "driver." If there is more work than three men can do a fourth is hired to help. In August, after the long, hot days of harvest each man has one week vacation on full pay. The families of the men are not forgotten for each has an acre of ground for garden, a cow to milk, and one hundred chickens with feed provided. When the fruit gets ripe each family gets its share of the trees. The tenant houses of course are not elaborate but are kept in good repair and with neat surroundings.

Such is the picture of the farm labor situation at "Pioneer Bluffs," the home of the Rogler family and their hired help, and the secret of Mr. Rogler's success may be summed

up in his own words, "The way to a man's hands is through his heart."

—L. M., '28

**MR. FREY, ONE OF THE MASTER FARMERS
OF KANSAS, BELIEVES IN EDUCATION AND
SPENDS HIS MONEY JUDICIOUSLY**

To make a farm successful, Mr. J. C. Frey, one of the recently chosen Master Farmers of Kansas says that more depends on how the farmer spends his money than on how much he makes.

A visit with Mr. Frey at his farm makes one feel that such is the case. Mr. Frey takes it upon himself to keep the machinery and buildings in good repair and the stock and implements well housed. His wheat binder, bought in 1919, still retains a good coat of paint where wear has not removed it and here oil is used sparingly to prevent rust. A hay baler, corn binder, and wheat drills purchased in 1917, '18, and '19, respectively, show equally good care.

"Money saved by such practices goes a long way toward buying labor-saving equipment, conveniences for the home, and providing funds for education, which were major factors considered in picking the Master Farmers this year," said Mr. Frey.

A crop rotation of corn and kafir, oats, wheat, and alfalfa is a farm practice which lends much to the maintenance of soil fertility and to the control of insects and plant diseases on the Frey farm. Sweet clover, sudan grass, and rye are grown for pasture.

By use of a farm account book, the actual status of each farm enterprise is determined at frequent intervals and if it is not paying a profit and cannot be made to produce one the operation of such an enterprise is stopped.

Dairying, poultry, hogs, and alfalfa are the major enterprises of the farm. Wheat is grown for a cash crop; oats, corn, and kafir for feed.

Mr. Frey is a booster for education. Two of his children have been graduated from K. S. A. C. Two others will be graduated with the class of 1928. Farm magazines and information received from agricultural research and extension workers are the best sources of education for the farmer after he is situated on a farm, according to Mr. Frey.

—L. R. F., '28



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If you are on an electric line or hope to be soon, ask your electric power company for a copy of the G-E Farm Book which explains many uses for electricity on the farm.

GENERAL ELECTRIC

Relation Between Spring Corn Prices and July Prices

Harold Hollister, '27

The November official preliminary estimate of the 1927 corn crop is 2,753,000,000 bushels for the United States. This is an increase of more than 100,000,000 bushels over the 1926 corn crop and less than 100,000,000 bushels over the five-year average. It is estimated that about 75 per cent of this year's crop will be of merchantable quality.

With these facts in mind, what can be expected of the trend in corn prices after the marketing of this year's crop is fairly under way? A study of the top prices of No. 2 mixed corn by months at Kansas City for the past 35 years shows that when the corn crop is around 100,000,000 bushels over or under the seven-year moving average, the trend of prices is generally strongly upward after the first of the year until late in the spring. It is a matter of common observation, whether the corn crop is large or small, that there is a seasonal rise in price during late winter or in the spring. Sometimes this seasonal rise is sufficient to make it profitable to hold corn until spring before selling although sometimes the spring rise is too small to make holding profitable, especially as allowance for shrinkage must be made.

The advisability of always holding corn until midsummer in the hope of further gain is doubtful. Prices for corn often turn down in June or July. Occasionally there is a downward trend all spring. In an effort to trace the course of spring prices of corn in the past and their possible effect upon July prices the monthly top prices of No. 2 mixed corn at Kansas City for the past 35 years have been taken. This study reveals that January is the low month 15 times; February, 6 times; March, 6 times; April, 3 times; and June, 5 times. Three of the low June prices occurred in the Nineties following an early spring price rise. The top spring price in this six-month period came five times in January, twice in February, twice in April, 12 times in May, and 14 times in June. Thus it would appear that if corn is held in the

hope of gain it must be held later than March and often until May or June.

The years included in this study have been divided into three groups: Years of small spring price rise; years of large spring price rise; and years when the high spring price of corn came early in the season.

YEARS OF SMALL SPRING PRICE RISE

Eleven years of the 35 studied are included in the group where the spring price rise is small or less than 25 per cent from the low price to the high price. Three of the years when the June price was the low price are placed in this group but for the purpose of this study the early low spring price is used in figuring the price rise since the high price occurred in April or May in these three years. The high price of corn occurred in June four times out of the eleven years in this group and July price continued upward in each case. In two years out of eleven, price declines which started previous to June met bull influences in July strong enough to carry the July price above the previous high spring price. In five out of eleven years when price declines set in before June the July top price was lower than the previous high spring price.

YEARS OF LARGE SPRING PRICE RISE

The 17 years when the spring price advanced more than 25 per cent have been placed in this group. In ten of these 17 years the high spring price previous to July occurred in June and in eight of the 10, the July top price was either more than the spring high price or even with it. The July top price was above the spring high price only once when price declines started before June in this group of years. In the other six years when prices started down in June or earlier they continued downward through July. In two years a June spring top failed to be followed by a July rise. One of these (1920) was a year of generally declining commodity prices in midsummer. The other

(Continued on page 64)

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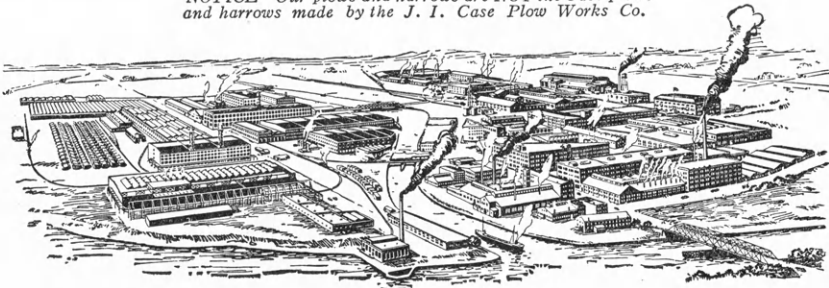
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SODIUM CHLORATE, A HERBICIDE

(Continued from page 38)

a bindweed eradicator and known as K. M. G. was tried. From experiments with these two it was found that while sodium hypochlorite was effective in a similar way it did not give nearly as satisfactory results as sodium chlorate. The K. M. G. weed killer had no appreciable effect in reducing the number of bindweed plants.

Since it was found that sodium chlorate was effective in eradicating the bindweed it seemed desirable to determine whether it and other herbicides had any detrimental effects on the soil. To find this samples were taken from eleven plots to a depth of seven inches in May, 1926, and the nitrifying power of the soil determined. It was noted from the results that the soil from all plots contained nitrates when sampled. When these samples were incubated additional nitrates were formed showing bacterial action had not been seriously interfered with by the various treatments.

Further evidence that sodium chlorate was not injurious to the soil was shown by the fact that the plots on which the bindweed had been killed by sodium chlorate were sown to wheat in September, 1926. This crop made a normal growth throughout the fall and came through the winter in excellent condition. So far as could be observed the sodium chlorate had no deleterious effect upon the growth of wheat.

In conclusion it may be stated that of the different chemical spray materials used as eradicators of bindweed the results indicate that sodium chlorate is unusually promising. The optimum time for the application of the first spray is probably about the time the plants are in full bloom.

MARKETING EGGS ON THE GRADED BASIS

(Continued from page 39)

ern management the mortality will be lowered and the quantity of the produce increased. The farmer who attempts such an improvement is generally not only well paid by the additional money received, but also by the personal satisfaction of succeeding. He often

sets a good example for his neighbors and his experience helps them.

Selling egg. on the graded basis is undoubtedly the most advanced step in methods of buying eggs. The greatest difficulty with the method is that it is not in use over an extensive area. Large sections of the country do not have the opportunity of selling by this method if they wish. The remedy seems to be the spreading of the new graded system all over the country where eggs are marketed. This appears like a long, rough road to travel. Happily though, the American farmer and produce man each show very noticeable earmarks of being ready to pull together.

GOAT GRASS

(Continued from page 41)

wheat free from goat grass seed is planted.

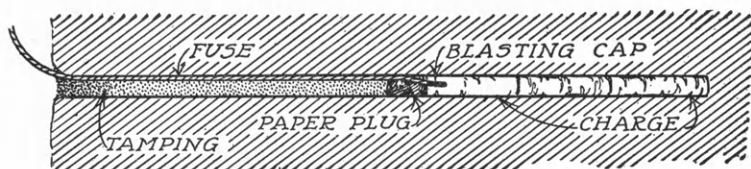
Mr. Johnston and Professor Parker are continuing their studies of goat grass in relation to wheat and would like to have former students, farmers, grain men, county agricultural agents, and teachers of agriculture in the high schools of Kansas send in specimens of plants or seeds which come under their observation, with records of their occurrence.

C. R. Enlow, '20, M. S., '27, has accepted a position in the Office of Forage Crops, United States Department of Agriculture, and is now located on the Government station at Gainesville, Fla.

Emory N. Watkins, '25, spent a few days in K. S. A. C. recently. He is a salesman for the Grain Belt Mills Company, South St. Joseph, Mo. He spends most of his time selling his company's well known "Gee-Bee" feeds.

L. C. Aicher, '10, has been in experiment station work at several places since graduation and since 1921 has been in charge of the Fort Hays Agricultural Experiment Station, Hays, Kan. Mr. Aicher has built up the reputation of maintaining one of the neatest, most efficiently handled stations in the country out at Hays. Every visitor there is certainly impressed with the spick and span appearance of his farms at all times.

LOADING AND FIRING



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SUPERIOR COWS

(Continued from page 54)

duction. Whenever possible an animal should be used that has demonstrated his ability. A bull prepotent for high production will usually give outstanding results on inferior stock, but when mated with cows that are good producers, it is exceedingly difficult to show an increase. Unfortunately, the stage of breeding work has not been reached where young bulls may be selected and still be certain they will sire daughters of high production. The records of the first five or six daughters will give a fairly good account of a bull's value for future service. However, the difference between the production of the dam and daughter vary widely and this must also be taken into consideration.

Many local banks have financed the purchase of bulls for this kind of work because it is a sound investment. Railroad companies give reduced rates for the shipment of purebred cattle since they, too, are interested in the improvement of live stock.

A typical bull association consists of five blocks, each containing one or more herds. At least one bull is assigned to each block. In order to prevent inbreeding each animal is advanced to the next block at the end of every two years. Only one breed is used in each association. If a good bull is found he may be kept for a number of years. At the end of ten years each animal has made the circuit.

In Riley county (Kan.) an attempt is being made to form an association in which each dairyman buys a bull, the same method is used in the transfer as where the association owns the bulls. The cow-testing association in the county is responsible for this move.

The advantages of a bull association may be listed as follows:

1. Better and fewer bulls.
2. Low cost of cooperation.
3. Quick returns on investment.
4. Line breeding is possible.
5. It eliminates the scrub.
6. Community breeding is encouraged.

More bull associations are needed in Kansas for Kansas needs not more milk cows, but cows that are better producers.

SPRING CORN PRICES AND JULY PRICES

(Continued from page 60)

(1903) was a year of exceptionally high spring prices for corn.

YEARS OF EARLY HIGH SPRING PRICES

In seven years out of 35 the spring high price (January to June) came early in the season (five times in January and twice in February). Prices for corn declined from this early high point to a low point early in the spring which was in turn followed by a later spring rise. The year 1918 (a war year) while classed in this group because the high spring price came in January, is an exception in that prices steadily declined after February until July when there was some recovery. The second high price in the spring did not reach the level of the early high price in any year. July prices in this group went above the second spring high price in six years and in one year (1926) July prices were higher than the early high price. The exceptional year (1918) was characterized by the July price going over June but failing to equal the early high point. June price was the low spring price twice in this group of years.

SUMMARY

These data indicate that there is ordinarily a considerable tendency for corn prices to rise during the spring or late winter. If a relatively high price is reached early in the year there is apparently little chance for corn prices to go above this price before July and then the chance is small. There is, however, a good chance for July to go above June prices in such years.

The trend of prices in years of small spring price advances seems to show that a break earlier than June leaves little likelihood for a July recovery while strong prices in June seem to point rather definitely to higher July prices.

The trend of corn prices in years of large spring price advances appears to indicate much the same thing with respect to July prices for corn that is indicated by the price trend when there is a small spring advance. If influences tending to break prices make themselves felt in June or before then there is little chance for July prices to exceed the spring high price.

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50,000 PEOPLE SAW DE LAVAL SEPARATORS GET MONEY FROM SKIM-MILK

DURING the past year De Laval Agents in 17 states held hundreds of educational dairy meetings which were attended by more than 50,000 farmers and dairymen. One feature of these meetings was the "Skimming the Skim-Milk Demonstration" to show how much butter-fat the ordinary separator is losing.

Skim-milk from some separator in use in each community was obtained and run through a new De Laval under the complete observation of all in attendance. The cream recovered in this manner was then immediately sent to the local creamery or cream station, was weighed and tested, and a check received for it.

\$78.00 Per Year Average Loss

In hundreds of such public tests the De Laval Separator never failed to recover butter-fat from the skim-milk. The amounts recovered varied in value from a few cents to over a dollar. The average results show that the separators from which De

Lavals skimmed the skim-milk were losing butter-fat at the rate of \$78.00 a year.

Many people were amazed at the separating losses revealed by these tests and asked for individual tests to be made in the same manner on their own separators at their homes. Any separator user can have such a test made and De Laval Agents will loan a new De Laval for such trial.

Trade in Your Old Separator on a New De Laval

The new De Lavals not only skim cleaner but also have other improvements and refinements. They are the best cream separators ever made and are the crowning achievement in nearly 50 years of separator manufacture and leadership.

With these new features and cleaner skimming you can't afford not to have a new De Laval—especially when you can get a liberal trade allowance on your old machine regardless of age or make. New De Lavals are also sold on easy terms or installments so that you can use them while they are paying for themselves.

See your De Laval Agent or write nearest office for full information.

THE DE LAVAL SEPARATOR CO.

New York
165 Broadway

Chicago
600 Jackson Blvd.

San Francisco
61 Beale Street