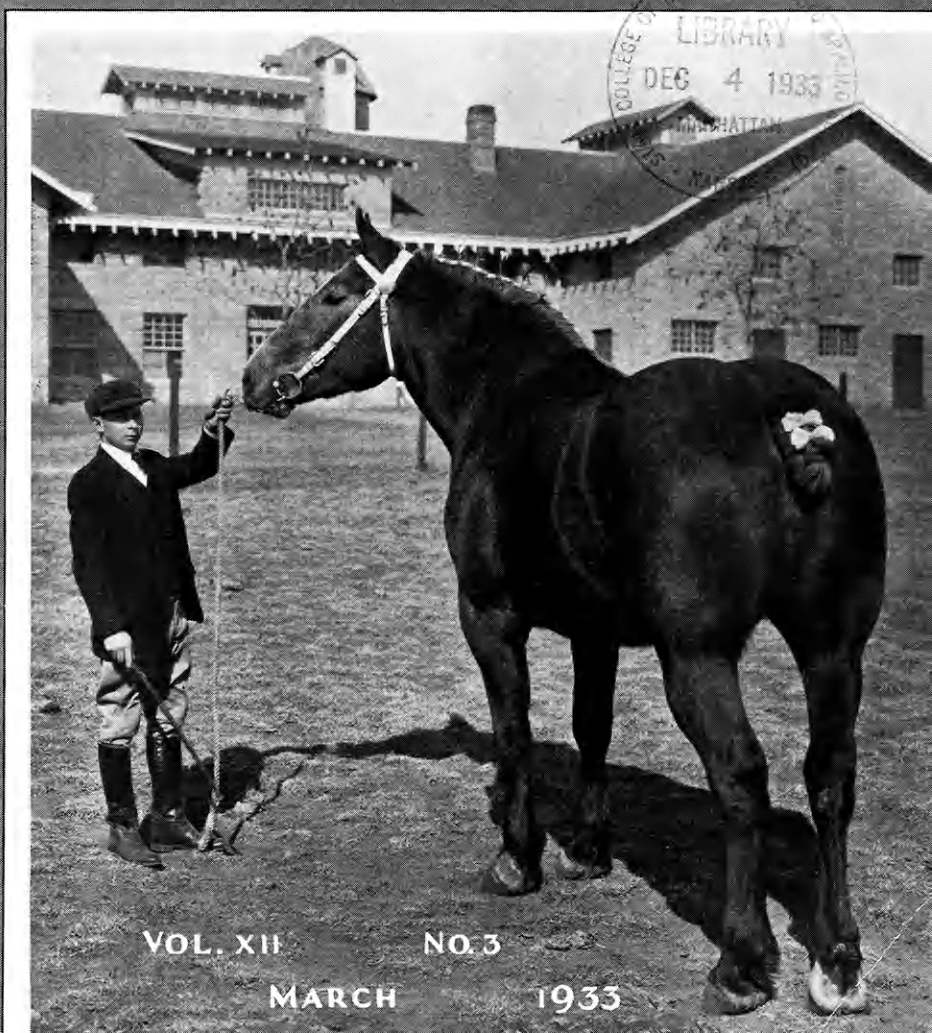


# THE KANSAS AGRICULTURAL STUDENT

MANHATTAN, KANSAS



VOL. XII

NO. 3

MARCH

1933

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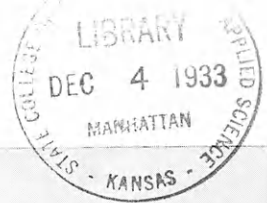
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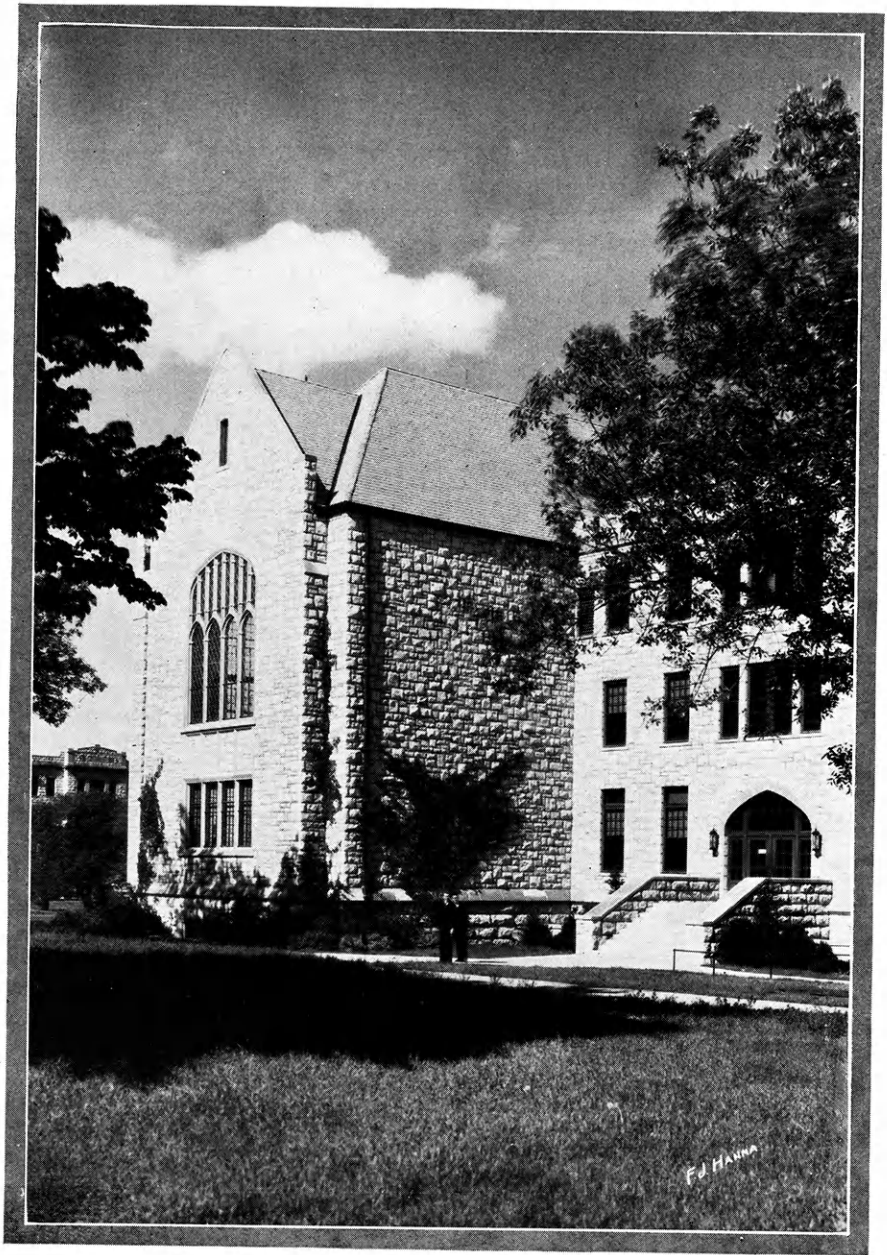
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A FAMILIAR VIEW OF THE COLLEGE LIBRARY



# The Kansas Agricultural Student

VOL. XII

Manhattan, Kansas, March, 1933

No. 3

## Barley Production in Kansas<sup>1</sup>

Alvin E. Lowe, '33

The number of inquiries regarding barley production and quality recently received by the Agricultural Experiment Station, as well as by the branch stations at Hays and Colby, indicates that interest in barley production among farmers in western Kansas is increasing. The purpose of this brief discussion is to present information which may be of value to producers of barley and to agricultural students.

Kansas is at present producing a large amount of barley most of which is used for feed in the locality where grown. Kansas ranked eighth in barley production during the ten-year period, 1923 to 1932. The eight leading states and their average annual production in round numbers for this period are as follows: Minnesota, 42 million bushels; North Dakota, 36; California, 29; South Dakota, 29; Wisconsin, 20; Nebraska, 12; Illinois, 11; and Kansas, 10. The average yield per acre of barley in Kansas, 17.1 bushels, is lower than in any other of the nine leading states in barley production. This low yield is due to unfavorable climatic conditions. The crop is limited to central and western Kansas because of the serious damage to barley by chinch bugs in eastern Kansas. Barley is an important crop in northwestern Kansas where the production is heaviest.

The annual production of barley in Kansas fluctuates widely. In 1923 the crop was over twenty million bushels; in 1926 production dropped below four million bushels. The wide fluctuation in acreage of barley planted in Kansas

is due to the use of barley as a "catch crop" when there is heavy abandonment of winter wheat, and to seasonal conditions.

The barleys grown in Kansas are of two types. Farmers call one type "hog" or "feed" barley. This type has long, stiff, barbed beards, pieces of which often remain attached to the kernel, even after threshing. The barbs point toward the tip of the beard and because of their sharpness often cause trouble in live-stock feeding by working into the mucous membrane of the animal's mouth. The kernel of the feed type barley is long and slender and is covered with a rather heavy coarse husk.

The feed class of barley, as grown in Kansas, is principally of the Stavropol variety, often called "Kansas Common Six-row." Nearly 3,000 selections and varieties of barley have been tested at the Hays and Colby branch agricultural experiment stations during the past 10 years and of this number very few have excelled or even equalled the Stavropol variety in yield.

Trebi, a rather stiff-awned, late-maturing barley with bluish kernels, has been distributed in northwestern Kansas in recent years. It is classed as a feed barley. In the extreme northwestern counties Trebi yields well, but in the central and southwestern parts of the state, it may not mature early enough to escape the high temperatures of late June.

The second type of barley is known as "malt." This type is characterized by the ease with which the beards break from the grain at threshing time. The short, plump kernels of this type

1. The writer is indebted to Dr. John H. Parker and Mr. A. F. Swanson for the material used in this article.



# Development of Official Testing

F. B. Wolberg  
In Charge of Official Tests

With the advent of the Babcock butter-fat test in 1890 the dairy industry received a new impetus for more rapid progress. This is particularly true of official testing which has done more for the development of the dairy breeds than any other single factor. Records were made on cows before that date but were always reported on the basis of butter, which was not entirely satisfactory. The butter records were not truly authentic because of the great variation in composition of the product. Furthermore there was no way of checking the records other than accepting the sworn statement of the owner.

The Babcock test provided a means of putting all records on the same basis, thus making for more comparable and accurate records. Two years after the discovery of the Babcock test the breed associations adopted the test. They supervised the records made by the many dairymen who were testing. The task of checking, however, soon became too large to handle in one office, so help was summoned. In 1894 the breed associations asked the agricultural experiment stations of the various states to supervise the tests conducted in their respective states. This plan is still in practice and has been an immense stimulant to better breeding, feeding, and management methods.

The general term "official testing" might be divided into two parts; namely, official and semi-official testing. Under official testing might be listed the seven-day test, the 14-day test, and the 30-day test. They were considered official because they required a representative from the agricultural experiment station to supervise each milking through the entire test. All those forms have passed out of the picture and given way to semi-official testing. Under semi-official testing are included a yearly test and a ten-month test. In

each of these tests the station representative supervises the test one day each month. These later tests fulfilled a very important role by finding the maximum yearly production or maximum lactation production of the cow. It also provided a better basis of selecting herd sires. Even with the tremendous aid of semi-official testing the various breed associations realized that the average production of the breed had not increased so much as was hoped.

To make it possible to increase the average production of the breed a new form of testing was adopted known as the Herd Improvement Registry test. It is a very economical test designed for the practical dairymen. In order to use this new method every pure-bred cow in the herd must be included; this makes it a question of economy of production. Two other features are the proving of sires and the exceptionally low entry fee. The Ayrshire Breed Association originated the Herd Improvement Registry test in 1925. The American Jersey Cattle Club and Holstein-Friesian Association adopted it in 1928. The American Guernsey Cattle Club adopted it in 1930, while the Brown Swiss Association has adopted the test within the past year.

## OFFICIAL TESTING IN KANSAS

Testing, unlike most other enterprises, does not fluctuate much with changing economic conditions. A survey of testing in Kansas for 1932 shows a slight decrease in semi-official testing, which was more than counterbalanced by the increase in Herd Improvement Registry testing. This shift will substantiate the practical aspects of the latter test. At present there are three Guernsey herds on the Herd Improvement Registry test; there are five Jersey herds on the same test and only

(Continued on page 89)

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## STUDENT FAITH, COURAGE, FORESIGHT

Reorganization and readjustment are on the minds of all from President Roosevelt to the rank and file. We no longer deny the necessity for broad and thorough readjustments. This conception of the situation should promote fundamental reorganization and the beginning of a new era.

The college student and the high school senior are faced with an unprecedented situation. The money value of a college diploma has practically disappeared. Students must have faith and courage that there will be a reasonable readjustment within the next few years. Nevertheless, it is probable that a college education for the present generation must stand on its own merits.

This change will be hard on certain groups of college students, but it will encourage others. Those with a purpose, determined to get the most out of college, not in financial returns primarily but in training in integrity, unselfish service, and useful leadership—all that good citizenship means—will

meet the situation with faith, courage, and foresight and will prove that a college education pays in making a life.

## WEATHER STUNS BUT AGS BOOST FARM AND HOME WEEK

An almost unprecedented cold wave arrived the opening day of Farm and Home Week this year and subzero temperatures marked the entire period. Tuesday, February 7, the opening day, had a minimum temperature of  $-10^{\circ}$  F. This was followed by  $-19^{\circ}$  on Wednesday and  $-8^{\circ}$  on Thursday. Such a cold snap, in the midst of a mild and open winter, naturally played havoc with attendance. That a few score of visitors came from long distances and a few hundred registered is remarkable.

The Dairy Fitting and Showing Contest and the Little American Royal are annual contributions of the Ags to the Farm and Home Week Program. Unprecedented cold this year brought its difficulties. These shows, however, were a big success and the finals were appreciated Thursday evening by a good-sized audience.



# *Why Did They Do It?*

*F. D. Farrell, President, Kansas State College*

**M**OST of the ten-year period ending with 1931 was a time of economic prosperity in the cities and towns and of comparative economic depression in the country. Yet during the decade more than 15,000,000 people in the United States left cities and towns and went to farms.

The number of people making this change averaged 1,524,000 a year. This is an average of 174 people—a large train load—every hour, twenty-four hours a day, 365 days a year, for ten years. In the single year, 1927, when urban prosperity was at its height, the number of people going to farms was 1,705,000, an average of about 200 people an hour.

Why did they do it? Why did these millions of people leave prosperous cities and towns and go to comparatively unprosperous rural districts? It is not likely that they did it primarily for the purpose of making money. It is virtually certain that most of them were actuated by motives that were not essentially commercial; that social considerations—human motives—impelled them to make the change. These motives doubtless included one or more of the following:

**Economic Security.**—Farm people who would rather be safe and comfortable than “rich” take few and small financial risks. They produce a large proportion of the things they consume and place small dependence in cash income. This makes for economic security.

**Physical Health.**—Farm life that is dominated by a desire to live simply is a temperate life, a life of moderation, a life of regular habits of work and recreation, a healthful life.

**Leisure.**—While farm life is laborious, it need not be hurried and hectic as much city life is. It provides ample opportunity for study and reflection and for the enjoyment of the beautiful and interesting aspects of nature.

**Spiritual Satisfaction.**—While farming should be sufficiently scientific and businesslike to provide a moderate financial income, it is more an art than either a science or a business. It provides opportunity for the expression of the individual's creative instincts—in field and orchard, with plants and animals, with flowers and trees and grass and shrubs. Free expression of these instincts makes for spiritual satisfaction.

**Stability.**—Cities and city industries are notoriously unstable. They subject their devotees to a whirligig of rapid change. This runs counter to the normal human being's deep desire for stability and permanence. Farm life and farm activity, when dominated chiefly by social rather than economic motives, minister to this desire.

There are excellent reasons for believing that motives like those suggested are chiefly responsible for the seeming paradox of millions of people leaving prosperous cities to go to less prosperous rural districts. People making this change doubtless are actuated by desires that can be satisfied more certainly in the countryside than elsewhere. The countryside provides certain deep and enduring satisfactions that cannot be bought with money.

# The New Dairy Barn

H. W. Cave

Professor of Dairy Husbandry

At last it appears that the efforts of the Department of Dairy Husbandry at Kansas State College are to be rewarded with a new dairy barn. For several years the old barn has been in poor condition, overcrowded, and unsuitable for handling the large herd. At the present time parts of the herd are being housed in no less than eight different buildings on or about the campus. Money to build a new barn was appropriated by the 1931 legislature and construction is now actually in progress. Although the original appropriation was reduced 25 per cent, as were all college appropriations, it will still be possible to build quite a satisfactory barn with the funds available. The new barn is located off the campus about one-fourth mile northwest of the site of the present dairy barn and on the east side of the road leading to the agronomy farm. This location will allow adequate drainage away from the barn in every direction.

Native limestone similar to that used in the other Kansas State College buildings is being used on the exterior and the barn will be fireproof except for the wooden roof. The original plans called for a building in the form of an H but it was necessary to reduce the size, so a part of each end wing was taken off leaving the barn in the form of a U. In the middle of the center section on the front or east side of the barn is the milk house attached to the barn by a corridor. Directly opposite the milk house in the rear is the feed storage room to which is to be attached a group of four silos. Stalls for 70 cows will be provided in the center or milking-herd section of the barn, while in the north wing there will be additional room in the form of eight box stalls. In this wing also will be six experimental stalls, three of which will

be suitable for digestion or metabolism trials.

In the south wing, quarters for 44 calves will be available. Here also will be the feed room for this wing and a treatment room for sick animals and those requiring minor surgical treatment.

A feed grinder, a feed mixer, and a feed elevator will be installed in the feed storage room. After the feed mixes have been prepared they will be stored in a series of bins on the second floor from which they may be drawn into the feed carts on the first floor through metal chutes. Room for the storage of sacked feed will also be available on the second floor of the feed storage room. The four concrete stave silos each 16 by 40 feet will furnish storage capacity for about 600 tons of silage.

The entire barn will be of two-story construction and the mow will have a concrete slab floor. This will provide adequate storage space for a year's supply of hay and bedding for the herd. Hay will be brought from the mow to the first floor through a dust-tight hay chute at each end of the center section.

Except for a small transformer room under the feed storage the only basement room provided will be under the milk house. Here will be installed the refrigeration plant for cooling the milk and the milk storage room, the milking machine pump and motor, a hot water heater, and the boiler for furnishing heat to the two floors above and steam for use in the milk and wash rooms. A weigh room, refrigerator room, milk room, wash room, and an office will comprise the first floor of the milk house. On the second floor will be two bedrooms, a bath, and a locker room.

To facilitate cleaning, the inside walls throughout the barn and the first floor of the milk house will be of vitrified glazed tile.

# College Notes

## ANNUAL ALPHA ZETA SMOKER

The Kansas Chapter of the Fraternity of Alpha Zeta, national honorary agricultural fraternity, held its annual get-acquainted smoker in the local community house Tuesday evening, March 7. Approximately one hundred members and guests attended. The purposes of the smoker were to acquaint members of Alpha Zeta with those agricultural students who are scholastically eligible to membership in the organization and to acquaint these students of high scholastic standing with the requirements and ideals of the fraternity.

L. A. Wilhelm, '32, graduate student from Arkansas City, was master of ceremonies. Talks were made by Prof. J. B. Fitch, head of the Department of Dairy Husbandry; Prof. R. M. Green of the Department of Agricultural Economics; Prof. R. F. Cox of the Department of Animal Husbandry; and Prof. R. I. Throckmorton, head of the Department of Agronomy.

Special music was furnished by the Collegiate 4-H Club quartet, composed of Dudley Flint, Girard; Norris W. Nelson, McPherson; Orval E. Ruth, Cherokee; and Dale H. Edelblute, Keats; and by David S. Crippen, Council Grove, who played a piano selection. Refreshments were served.

Glenn S. Fox, Rozel, is chancellor of the Kansas Chapter of the Fraternity of Alpha Zeta this year.

## TENTH ANNUAL LITTLE AMERICAN ROYAL

The tenth annual Little American Royal was held Thursday evening, February 9, in the judging pavilion as a climax to the Live-stock Day program of Farm and Home Week. Despite unfavorable weather resulting in an unusually small number of Farm and Home visitors, this year's show was

well attended and was in every way highly successful.

As in former years, the animal husbandry portion of the show was divided into four sections—horses, beef cattle, swine, and sheep—the winners of the four sections competing with each other for grand championship. Places were awarded on the basis of the improvement in the condition of the animal while under the care of the contestant and on the showmanship displayed by the contestant in the ring.

Boyd R. Cathcart of Winchester, showing a Percheron mare, won the grand championship of the contest. (See cover page.) Miss Virginia Wagner of Richmond, a sister of Raymond B. Wagner, won first place in the beef-cattle division of the contest.

Top placings in the four sections of the contest were as follows:

### Horses

First.....Boyd R. Cathcart, Winchester  
Second, Laurence R. Daniels, St. Francis  
Third.....Wilfred H. Pine, Lawrence  
Fourth.....Lloyd J. Sconce, Halstead  
Fifth.....Henry M. Brown, Fall River

### Sheep

First.....J. Edwin McColm, Emporia  
Second.....Frank G. Parsons, Winfield  
Third....E. P. Anderson, Waynesville, Mo.  
Fourth.....Donald K. McKenzie, Solomon  
Fifth.....Robert R. Teagarden, La Cygne

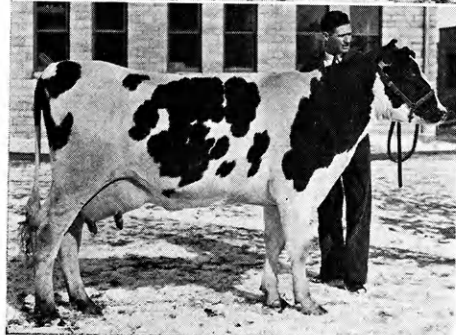
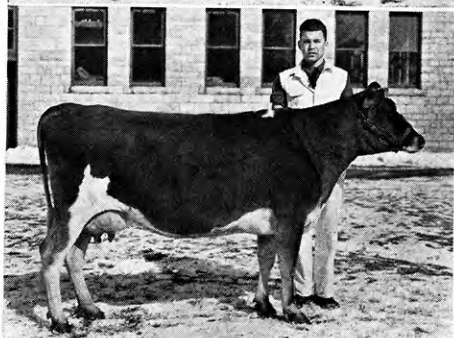
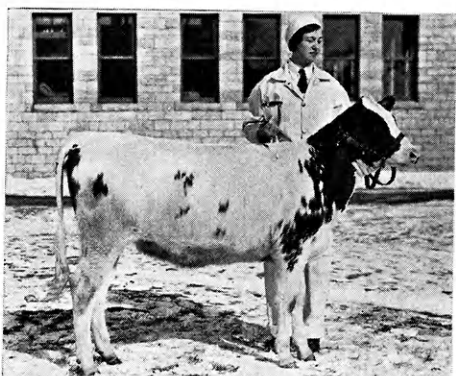
### Hogs

First.....Raymond B. Wagner, Richmond  
Second, George A. Rogler, Matfield Green  
Third.....Charles E. Murphey, Leoti  
Fourth.....J. Howard Watson, Merriam

### Cattle

First.....Virginia Wagner, Richmond  
Second.....Albert A. Thornbrough, Lakin  
Third.....Lebert R. Shultz, Eureka  
Fourth.....Harold A. Daily, Waverly  
Fifth.....Robert W. Lukens, Beloit

A silver trophy cup donated by the American Royal Live Stock Show and the Kansas City Stockyards Company



WINNERS OF DAIRY BREED CHAMPIONSHIPS

was awarded the grand champion. Silver medals donated by the college extension division were awarded first place winners of each class. Dean L. E. Call of the Division of Agriculture presented the awards.

A. M. Paterson, assistant secretary of the Kansas City American Royal Live Stock Show, was judge of the contest. Assistant judges were Dr. C. W. McCampbell, for horses; Tom Dean, college shepherd, for sheep; W. W. Bales, college hog herdsman, for hogs; and Carl Channon, college cattle herdsman, for cattle.

Preceding the contest, President F. D. Farrell of the college presented the animal husbandry judging teams which represented Kansas State College in intercollegiate competition last fall.

John I. Miller of Prescott was manager and master of ceremonies. The following committee heads worked under Mr. Miller: Earl C. Coulter, Willis, entries; Laurence R. Daniels, St. Francis, entertainment; Gaylord R. Munson, Junction City, decorations; Boyd R. Cathcart, Winchester, publicity; and Charles E. Murphey, Leoti, eats. In the contest Harold A. Daily was in charge of cattle; Robert W. Lukens, in charge of horses; Raymond B. Wagner, in charge of hogs; and John I. Miller, in charge of sheep.

#### WINNERS OF DAIRY BREED CHAMPIONSHIPS

The top picture of the panel in the adjacent column shows Miss Margaret Glass and the junior Ayrshire heifer, Elmbarr Bess. Miss Glass won the grand championship of the dairy fitting and showing contest.

The second showman from the top is Mr. Laurence G. Harmon and the senior Jersey which he showed. The third showman is Mr. J. Willett Taylor and his junior Guernsey. At the bottom of the panel is Mr. Pius H. Hostetler and the senior Holstein he fitted and showed. Mr. Hostetler was named as reserve grand champion.

#### DAIRY FITTING AND SHOWING CONTEST

The seventh annual Aggie dairy fitting and showing contest was held February 8 and 9, 1933, in connection with



the annual Farm and Home Week program.

Eight classes were open for competition—a junior class and a senior class for each breed. The contestant placing first in the senior class for a breed showed against the contestant placing first in the junior class in the same breed and from the two one was selected as the breed champion. This portion of the showing took place Wednesday afternoon. The breed championships were won by the following contestants:

Ayrshire.....Margaret Glass, Manhattan  
Holstein.....Pius H. Hostetler, Harper  
Jersey, Laurence G. Harmon, Hutchinson  
Guernsey.....J. Willett Taylor, Lawrence

The winners of the breed championships and the animal fitted and shown by each are shown in the accompanying illustration. On Thursday evening at the Little American Royal after the animal husbandry fitting and showing contest, the dairy breed champions showed for grand and reserve grand championships. The grand championship was won by Miss Margaret Glass, student in home economics. Miss Glass is the first co-ed to win a fitting and showing contest at the Little American Royal. She fitted and exhibited a junior Ayrshire heifer, Elmbar Bess. Pius H. Hostetler, a junior in the Division of Agriculture, was named as reserve grand champion. He showed a senior Holstein cow.

Mr. Robert Romig of Shungavalle Holstein Farms, Topeka, and Mr. C. O. Bigford, the college dairy herdsman, acted as judges for the contest. The awards were as follows: To the grand champion, a silver trophy cup; to the reserve grand champion, a bull staff; to each breed champion, a medal awarded by the breed association; and to those placing first, second, and third in the eight classes in the preliminary contest, appropriate ribbons. Several subscriptions to breed magazines were also given the various winners.

The entire show was not so large this year as usual due to adverse weather conditions. Several entrants were prevented from showing because of various handicaps due largely to severe cold. In other respects, however, the contest was fully up to standard.

—F. W. C., '33.

#### ALPHA ZETA ELECTIONS, 1932-'33

The Fraternity of Alpha Zeta, the honorary undergraduate agricultural fraternity in Kansas State College, recognizes each year in a limited number of students in the upper two-fifths of their classes scholastically, those qualities of leadership, character, and personality upon which the fraternity bases its membership qualifications. This year fourteen students were elected to membership—eight the first semester and six the second. The new members are as follows:

##### FIRST SEMESTER

###### Seniors:

Orville F. Denton.....Denton  
Arthur C. Thomson.....McCune

###### Juniors:

Wilfred H. Pine.....Lawrence  
Pius H. Hostetler.....Harper  
Wayne W. Jacobs.....Harper  
Charles E. Fisher.....Cuba  
Harry W. Coberly.....Gove  
Nevlyn R. Nelson.....Belle Plaine

##### SECOND SEMESTER

###### Seniors:

Erwin Abmeyer.....Grantville  
Harold L. Kugler.....Abilene

###### Sophomores:

Walter M. Lewis.....Larned  
Frank G. Parsons.....Winfield  
Eugene E. Sundgren.....Falun  
Albert A. Thornbrough.....Lakin

No student is eligible to membership who has not completed at least three semesters of college work.

In Agricultural Seminar on Thursday, March 9, pledge ribbons were placed on the six recently elected to membership. The students of the division heartily recognized their achievement by a generous applause of congratulations.—G. S. F., '33.

# Farm and Home Management Associations in Kansas

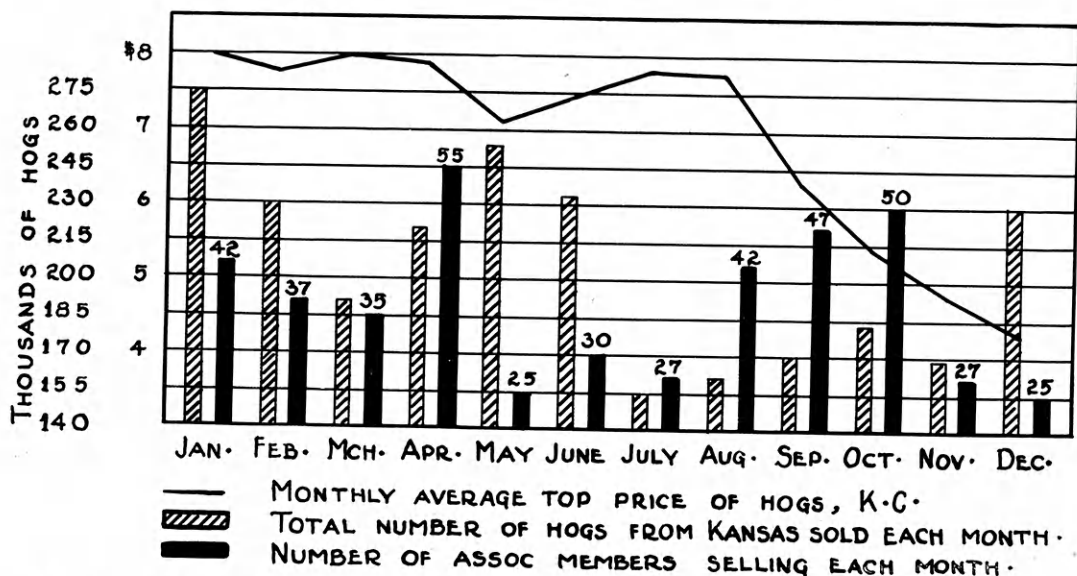
Orville F. Denton, '33

One of the most recent successful examples of group action among Kansas farmers to improve their farm and home business was the organizing of two farm bureau farm and home management associations. These two Kansas associations, having approximately 140 members each, are the only organizations of their kind in the United States. They are composed of farmers and their wives who study the business management of the farm and home and keep farm and home account records. The records were started January 1, 1931, and a complete record for 1931 is available. The keeping of both the farm and the home account records, permits the study and consideration of the farm and the home as a unit and also shows their relation to the entire farm-family business.

Problems of management and operation of these associations are handled

by an executive committee consisting of one representative chosen for three years from each county included in the association and having eight or more members, and one representative appointed for three years from the Kansas Bankers' Association from the entire area involved. A farm management specialist of the K. S. C. extension service devotes his full time to the leadership of the farm management service. Likewise, a home management specialist of the college extension service supervises the home management service. Summarization and analysis of the farm and home records are supervised by the farm and home specialists.

Each association employs a field man to give his full time to the work of the association—visiting farms, assisting in taking inventories and keeping records, and helping in checking results.



A comparison of the sales of hogs by members of the northern farm and home management association with the total Kansas sales of hogs in relation to the monthly average top price in Kansas City by months for 1931.

He also gives advice and recommendations regarding the organization and management of each farm. In the northern association 625 of the 685 recommendations made by the field man during the year, 1931, were adopted. This shows the close cooperation of the members with the field service and their confidence in it.

At the end of each year the farm and home records are summarized and an analysis made. This work is done by the Department of Agricultural Economics and the Division of College Extension of K. S. C. The summarized accounts enable the farmer and his wife to compare their work with others in the county, to see just where adjustments can be made which will either increase their income or reduce some expense. When a summary is completed the various items that go to make up income and expense are listed, making detailed comparison possible.

Every farmer is required to keep a record, but since it is optional with the women less than two-thirds, or 174, of the housewives kept records during the year, 1931. The condition of the farm business can be clearly and accurately pictured only when dependable records are available. By a thorough study of expense records each family attempts to determine how future management and spending might be improved. The cooperation of husband and wife in the keeping of farm and home records brings about a greater interest of the man in home management and expenses and a keener interest and appreciation on the part of the wife in the farm business.

Another service of the association which the members have made use of to good advantage is the weekly market outlook information. This information is furnished by the Department of Agricultural Economics of the Kansas State College to the field man and sent by him to members of the association.

As an illustration of the value of this service the accompanying graphs and

explanation show the results obtained by members of the northern association by using the outlook information in marketing their hogs during the year, 1931. Starting in January, both columns show a decrease in the number of hogs marketed by the state as a whole and the number of members selling during the first three months of the year. In April, 55 of the association members marketed their hogs, heeding the warning in the market outlook forecasting the May decline in hog prices. The peak of the Kansas sales came in May with the average price decline from \$7.85 in April to about \$7.10 in May. However, only 27 of the association members marketed hogs on the low price in May. Following the graphs on through the year, it will be noted that the association members heeded the warnings sent out in July and August of an early fall decline in hog prices, and pushed their spring pigs so as to market them as early as possible. The number of association members selling ran high during August, September, and October. Hogs were sold during these three months at prices ranging from \$7.75 in August to \$5.40 in October. Only a few of the association members sent hogs to market during the low prices of November and December. In contrast, the peak of the sales for the state came in December, the month of lowest prices for the year.

A study of the foregoing marketing order of the association members in relation to the monthly average price, gives conclusive evidence that association members receive a higher average price for their hogs, through better management and marketing, than the average price for the state as a whole.

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H. M. Beachell, M. S. '33, spent a few weeks the last of February and the forepart of March in K. S. C. completing his thesis. He has charge of rice breeding investigations for the United States Department of Agriculture at the Beaumont, Tex., substation.

# Testing Winter Wheat

Kenneth S. Davis, '34

For the past 21 years the continuous testing of varieties and strains of winter wheat has been one of the major projects of the Kansas Agricultural Experiment Station. The tests have been conducted, not only at the main station at Manhattan, but at the four branch stations at Hays, Colby, Garden City, and Tribune; on experiment fields at Moran, Columbus, and Parsons; and in numerous cooperative experiments with farmers. Last February, the data obtained in the first 20 years of these tests and the conclusions drawn from these data were published in Technical Bulletin 30, "Twenty Years of Testing Varieties and Strains of Winter Wheat at the Kansas Agricultural Experiment Station," written by Prof. S. C. Salmon (1) and Prof. H. H. Laude.

The authors of this bulletin are clearly as interested in constructing a sound theoretical basis for a wheat-improvement program for the future as they are in the data obtained concerning the tests themselves. Their conclusions indicate the inefficiency of any crop-improvement program which is based solely on selection for high-yielding capacity without reference to the factors which affect high yields. The authors believe that what is needed is a change from the empirical method characteristic of new sciences to the more efficient inductive method characteristic of older sciences—from the hit-or-miss method which may finally show the experimentalist how a thing is done, to a method based on a knowledge of cause and effect which will show why a thing is done.

The work with wheat at the Kansas station for the 20 years summarized in this bulletin has consisted very largely of the selection and testing of pure

lines of adapted varieties. In the last few years it has become increasingly evident that this method "is not broad enough nor inclusive enough to meet the needs of the situation" and considerable work has been done with the making and testing of crosses of pure lines.

Extensive experiments have been made to determine the comparative yields of hard and soft winter wheats in Kansas, and the data obtained, while not entirely satisfactory, would seem to bear out the generally-prevailing belief that, in all but the eastern part of the state, hard wheat is more productive than soft wheat. Since Fulcaster is generally known to be the highest-yielding variety of the soft wheats, it has been used most extensively in the experiments and has been compared with the three leading varieties of hard wheat—Turkey, Blackhull, and Kanred.

At each of the branch stations, all of which are located in the western part of the state, Kanred leads over Fulcaster by a significant margin, the average difference for the four stations being 6.2 bushels in favor of Kanred. At the main station at Manhattan, the average yield of Fulcaster for the 16-year period ending with 1930 was 30.5 bushels, as compared with 31.1 for Kanred and 29.3 for Turkey, a difference of 0.6 bushel in favor of Kanred over Fulcaster and of 1.2 bushels in favor of Fulcaster over Turkey. On the experiment fields of southeastern Kansas, hard wheats, contrary to what would be expected, have averaged about the same as soft wheats in yield. The averages of all the cooperative tests with farmers show very little difference between the yields of Kanred and Fulcaster in the state as a whole, Kanred leading by only 0.6 bushel. But these cooperative tests show marked differences in yield in different sections of

1. Before his appointment in 1931 to the position of principal agronomist, in charge of wheat investigations, Division of Cereal Crops and Diseases, United States Department of Agriculture, Professor Salmon was in charge of the wheat-testing project which is now under the management of Professor Laude.





**WHITE EMBDEN GEESE**

This picture was taken on the poultry experimental farm at Erding (near Munich), Germany, in August, 1930. This experimental farm in Bavaria was one of the places visited by delegates to the Fourth World's Poultry Congress which met in London. This illustration is typical of many of the farm-yard scenes witnessed by Americans on this post-congress tour. (Courtesy, Prof. T. B. Charles, New Hampshire College of Agriculture.)



**A FIELD OF KAFIR ON THE AGRONOMY FARM, OCTOBER, 1932**

This kaffir was planted May 16, 1932, with a surface planter with furrow-opener attachment. It yielded 73.9 bushels per acre. A planting scene taken on this field was shown on the cover of this magazine for May, 1932.

the state. Thus, in eastern and south central Kansas, Fulcaster has equalled or exceeded Kanred in yield, while in the northern and western portions of the state, Kanred has clearly outyielded Fulcaster.

Soft wheats, though less winter hardy than hard wheats, have stiffer straw and are thus less likely to lodge in heavy rains. These characteristics, combined with resistance to Hessian fly, Septoria, and leaf rust, would seem to render soft wheats peculiarly adapted to southeastern Kansas, a section having heavier rainfall and milder winters than any other section of the state. The fact that the average yield of hard wheats has compared so favorably with that of soft wheats in this area, is largely attributed by the authors to unusually severe winter injury and killing in 1928 and 1930. The fact that yields of soft wheats have compared so favorably with those of hard wheats in the central and eastern portions of the state is attributed to a series of unusually mild winters occurring in the last 12 years, since all existing data show that hard wheats, being more winter hardy than soft wheats, are much better adapted to central Kansas.

There would seem to be a possibility of developing, by means of crosses, a new variety of wheat combining the favorable characteristics of hard and soft wheats. To quote the authors: "If the lack of adaptability of soft wheats to the Great Plains area can be demonstrated to be due to lack of ability to survive drouth, or drouth and heat and winterkilling, the way would be paved for transferring some of the valuable characteristics of soft wheat to hard wheats. . . . The data presented are not sufficient to be more than suggestive along this line. They do, however, illustrate in a rather precise way the need of knowing something more than is usually known regarding the reasons for differences in yields observed in variety tests."

The data obtained concerning the comparative yields of Turkey, Blackhull, and Kanred, the three principal varieties of hard wheat, show no special adaptation of any of the varieties to any portion of the state. Kanred has produced better average yields than Turkey at Manhattan, at each of the four branch stations, and in 760 co-operative experiments with farmers in various parts of the state. The gain in yield for Kanred at the stations ranges from 2.3 bushels per acre at Tribune to 4.4 bushels at Colby.

These data, since they are obtained from such very extensive experiments, would seem to be conclusive evidence that Blackhull is more productive than Kanred and that Kanred is more productive than Turkey under average conditions in Kansas. Although the evidence is conclusive for the last 20 years, the authors are not convinced that it will hold true for the next 20 years. They cite other evidence to show that a 20-year period is probably not long enough to entirely neutralize the effects of seasonal variation on such tests as these. In summing up these tests they state that "in spite of 20 years of continuous work in one case and 16 years of work in another, uncertainty still exists as to the future relative yields of Kanred and Blackhull as compared with Turkey wheat."

It would thus appear that an efficient scientific winter wheat improvement program for the future must depend more than heretofore on definite experimentally determined relations between specific varietal characteristics and the final objective, whether that be a better yield or quality or more economical production. In this way the empirical method of infant sciences will be replaced by the inductive method of mature sciences.

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Earl F. Burk, '22, is assistant professor of horticulture in Oklahoma A. & M. College, Stillwater. His work is largely vegetable gardening.

# A New Milo Disease in the Southwest<sup>1</sup>

Alvin Morgan, '34

A new milo disease has been discovered which, if not checked, may greatly retard the growing of certain sorghums in the Southwest. It is a disease of recent origin, being practically unknown eight years ago. During the last five years special attention has been given to this disease. It has spread each year in localities where it has been observed. It has also been reported from over a large area, extending from Hays, Kan., to Big Springs, Tex. Whether the disease is caused by soil organisms, soil conditions, or a possible combination of these is not known.

Plants affected in the field appear to be firing when 10 to 18 inches tall. "Burnt spots" in a large field are usually areas of infection. The injury apparently begins in the roots and appears as a distinct reddish coloring upon splitting the crown, roots, and stalk. The lower leaves of the infected plant usually, but not always, have a distinct orange coloring. A dwarf, prostrate growth is generally observed when a plant becomes infected. Varieties such as Dwarf Yellow milo, Wheatland, and Sooner are very susceptible and usually are killed by midsummer. Other varieties not quite so susceptible may produce small heads which are usually poor in quality. In some instances the disease appears to enter the plant late in the growing season and a good normal head is produced. Only by examination of the roots of such an infected plant will it show any sign of the disease. Such plants reach maturity either through resisting or avoiding the disease. Many plants attacked early in the growing season will produce a large number of suckers. As these suckers are killed new ones are produced, but eventually the whole plant is killed.

Suckering plants assume a prostrate form and never grow very high.

The disease is peculiar in that it confines its attacks largely to milos or milo crosses. The most susceptible commercial varieties are Dwarf Yellow, Sooner, Day, Wheatland, Custer, and Beaver. The kafirs and forage sorghos have to date been immune from the disease.

The disease is being observed from three angles: Pathology, soil analyses, and cultural practices. Dr. Charles Elliott of the Bureau of Plant Industry at Washington, D. C., and the Department of Botany and Plant Pathology at Kansas State College are cooperating in a study of the disease from a pathological standpoint. At present no specific organism has been isolated that is definitely associated with the disease. The Department of Agronomy is studying soil reactions from infected plots. Cultural practices are being carried on at the Garden City Branch Agricultural Experiment Station and at the United States field station at Dalhart, Tex.

Rotation of crops appears to have little effect in controlling the disease. At Garden City infected plots that were fallowed for four years and replanted to milo showed the disease badly. A three-year rotation of milo, fallow, and wheat gave no positive results of control. In 1931, at Garden City, soil sterilization with formaldehyde showed some positive results. The treatment was not continued in 1932, but acetic acid was used on different plots and no positive results were obtained. Further soil sterilization treatments must be made before any definite conclusions can be drawn.

The date of planting appears to have no effect in controlling the disease, as plantings of different dates were affected the same in 1931. The addition of fertilizers as potassium, phosphorus, and nitrogen did not change the abundance of infection in 1931.

1. The author desires to acknowledge the assistance of Mr. F. A. Wagner of the Garden City Agricultural Experiment Station and Prof. L. E. Melchers of K. S. C. in the preparation of this article.

In 1930 Mr. F. A. Wagner of the Garden City station selected heads from two Dwarf Yellow milo plants in a diseased plot, which had headed and appeared healthy. Seed from these heads was planted in 1931 and 1932 at Garden City. In 1932 part of the strains selected were 100 per cent immune, others had a few plants that showed the disease present in the roots but with no apparent injury to the plants. In 1932 a duplication of these tests made at Dalhart, Tex., gave the same results. Whether these strains will continue to be immune is unknown. Search is being made for immune types in some of the other milos, but as yet resistant types of Dwarf Yellow milo and a Wheatland are the only ones that have shown much promise. At the present time resistant strains seem to be the most promising means of control.

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## Planning the Farm Home Grounds

There is a feeling of happiness and contentment about a well-planted home. It is a joy indeed to look upon a home nestled among trees and shrubs. There is much more enjoyment and satisfaction, however, in living among such surroundings.

Contrary to popular belief, no large outlay of cash is necessary for planting and maintenance. The farm home grounds can be so planned that the landscaping will require but a small first cost and a reasonable amount of care thereafter.

It is not advisable to try to keep a large lawn closely clipped. Only a small area near the house need be mowed with the lawn mower. The remainder may be mowed with the mowing machine. Many weeds will be driven from the lawn if the grass is thick and not cut lower than two inches.

Native trees and shrubs are easier to obtain, cost less, and do not require the care that other trees and shrubs

do. They are always appropriate and never seem out of place because they harmonize with other foliage masses near the home. Trees should be located in groups on each side of the house, leaving the center of the lawn open, thus giving a view of the house from the road. There should also be a few trees placed so as to protect the house from the hot afternoon sun.

Clipped hedges have no place on the farm home grounds. Informal groups of native shrubs are more in keeping with the surroundings, are more effective, and require practically no care after established. Shrubs should be placed in informal groups near the edges of the lawn, thus screening out objectionable views and making it easier to care for the lawn by enclosing it as one unit.

Windbreaks should be considered in many farm home plantings. They protect the house from strong winds, furnish a nearby supply of wood, and cause snow to be deposited, thus increasing the moisture in the soil. They also make a very effective background for the home.—H. W. W. '34.

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## Brooding Chicks in Colony Brooder Houses

Artificial incubation of hen eggs was used by the Chinese and Egyptians over one thousand years before Christ, but the advent of artificial brooding on a large scale is comparatively recent. The modern hen is valued as an egg machine and is discredited if she goes "broody."

Probably the first method of supplying heat for extensive brooding operations was by means of coal stoves. From the old-type coal stove with no method of regulation and that required constant attention, has evolved the modern type of coal-burning brooder stove which has a thermostatic control on the draft and an air-tight bowl. With this modern coal stove one can be



assured of fairly uniform temperatures for a period of several hours. Where a good grade of semi-anthracite coal is cheap and oil is high it is probably an advantage to use a coal brooder stove.

Oil-burning brooder stoves have been in use for several years and have given satisfactory service. The first oil-burning stoves were of the wick type and burned only kerosene, but the most satisfactory and dependable type is the air-blast burner. In this type of burner the oil runs into an iron cup which overflows into an iron ring where it burns. Air is drawn past the flame by the suction created by a high stove pipe, thus the name "air-blast." Cheap fuel oil or distillate can be burned in a stove of this type. Thermostatic control regulates very accurately the flow of oil and will give a room temperature that is probably as uniform as any type of heating unit.

The Department of Poultry Husbandry made a poultry survey of Kansas in 1926. In their report no mention was made of electric brooders. Since that time many chicks have been raised by means of electric brooders. Electricity has become more dependable; its use has expanded greatly; and electric brooders have been constructed that are economical to operate. The well constructed electric brooder requires very little attention. It throws most of its heat directly under the hower and does not warm the house so much as either a coal- or an oil-heating unit.

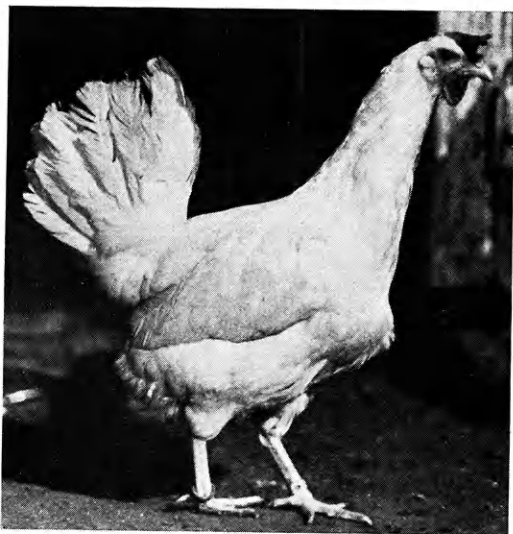
The Departments of Agricultural Engineering and Poultry Husbandry are now carrying on an experiment for the purpose of comparing the cost of operation, the amount of labor involved, and the comparative rate of growth and feathering of chicks brooded with coal, oil, and electric brooders. Two hundred and fifty chicks were placed in each of four uninsulated, 10- by 12-foot brooder houses, February 21. Two of the houses have electric brooders and for purposes of comparison one house

is heated by a coal burner and another by an oil burner. Accurate records concerning humidity and continuous temperature are being kept. The results should provide some further valuable information on electric brooders.

—R. T. H., '33.

## A 355-Egg S. C. White Leghorn Hen

A S. C. White Leghorn hen owned by the Coombs Poultry Farm, Sedgwick, Kan., completed her year on Oc-



THIS HEN LAID 355 EGGS IN 366 DAYS

tober 26 with an egg record of 355 eggs in 366 days. The record was made on this breeder's farm under Kansas Record of Performance supervision. This hen shows good body size for the breed she represents, weighing  $4\frac{1}{2}$  pounds and the average size of her eggs was 25 ounces to the dozen. She laid an egg each day, except one, from February 15 to September 11.

Excellent breeding for egg production is back of this hen. In her pedigree there is no hen with less than 240 eggs per year for five generations. Her

dam produced 333 eggs in the Murphysboro, Ill., egg-laying contest of 1929. Her sire's dam laid 311 eggs under Kansas Record of Performance supervision.

The Coombs Poultry Farm has been trapnesting and pedigreeing for a number of years. Its flock of S. C. White Leghorns are now completing their fourth record year under Record of Performance supervision.

The following table gives a summary of this record work.

Year	Number of birds entered	Number of birds approved	Num. lay- ing over 250 eggs	Num. lay- ing over 300 eggs
1928-'29	1,400	416	116	4
1929-'30	1,475	403	97	5
1930-'31	1,350	294	87	7
1931-'32	Records not complete.			
	4,225	1,113	300	16

This table shows that 26.3 per cent of the birds entered under Record of Performance supervision have been approved. An Approved Record of Performance female is one that has produced 200 or more eggs averaging 24 ounces or more per dozen in 365 days. No female is eligible for an R. O. P. certificate which during or at the end of the year has developed any standard disqualifications or whose eggs have not been reasonably uniform in size, shape, and color, of good shell texture, and in the case of white egg varieties, free from tint.

Coombs' Leghorns have made a very creditable showing in many leading egg-laying contests over the United States. The manager of one of the leading egg-laying contests recently stated that he considered the Coombs Poultry Farm one of the most consistent breeders in the country and that Coombs' hens look just alike from year to year, big, vigorous Leghorns that lay large eggs. —M. A. Seaton, Extension Specialist in Poultry Husbandry.

## Bait Traps for Codling Moth

The frequency with which we see "wormy apples" indicates that the codling moth is still doing a lot of damage

in spite of many attempts to control the pest. In many fruit districts the codling moth has increased to such great numbers that spraying has ceased to give satisfactory control. In these districts many supplementary measures are being tried in an effort to reduce the codling moth population. Trapping the adult moths is one of these measures which has proved of value not only in reducing the number of moths but also in assisting in determining the proper time to apply sprays.

That insects are attracted to various fermenting materials has been known for a long time. Codling moth bait traps based on this fact consist of low cans three-fourths full of fermenting dilute molasses. One-pound coffee cans were used by the writer in the Agricultural Experiment Station orchard in 1932. The fermenting material consisted of the following mixture:

Molasses.....	1 part
Water.....	10 parts
Oil of rose geranium....	Several drops

Since the codling moth flies in the evening or at night an attempt was made to study the effect of color on the attractiveness of the bait traps. Four cans were painted white, four, black, and four with luminous paint.

The traps were suspended in apple trees by means of strings which were run through crotches and the loose ends fastened where they were convenient for lowering the traps for examination or for replenishing the liquid. The traps were examined daily and the fermenting liquid renewed twice a week. Mr. Y. S. Kim did the field work and collected the data.

A large number of moths were captured during the summer. The first moth was taken on May 20 and this indicated that the first cover spray should be applied at once. Moths continued to emerge throughout the first part of June. The second brood started emerging on July 9 and the apples were again sprayed.

The moths seemed to prefer to eat

out of light-colored traps. Of the total captured, 41.4 per cent were taken in the white traps, 36.3 per cent were taken in the luminous traps, and only 22.3 per cent in the black cans.

Bait traps will not control the codling moth but in badly-infested orchards thousands of adult moths can be captured. The traps are also valuable to show the beginning and end of the moth season, and the beginning of each brood. This information should aid materially in timing spray applications. White or light-colored traps seem to be more efficient in attracting codling moths than are black or dark traps. —George A. Filinger, Assistant Professor of Pomology.

## Acid Corrosive Sublimate Potato Seed Treatment

The results secured by the use of the new acid corrosive sublimate method of treating seed potatoes have been just as satisfactory as the 90-minute corrosive sublimate method and better than the hot formaldehyde method, which are now commonly used. Dr. O. H. Elmer of the Department of Botany and Plant Pathology secured the following results from experiments on Kaw valley fields in 1931 and 1932:

AVERAGE YIELD IN BUSHELS PER ACRE			
	Check	Corrosive sublimate	Acid corrosive sublimate
1931.....	140.5	166.3	157.9
1932.....	132.8	145.0	146.2

On the A. W. Travis farm near Manhattan the five-year average yield for hot formaldehyde treatment was 746 pounds per acre per year more than for untreated potatoes, while the corrosive sublimate treatment gave a return of 1,213 pounds per acre per year more than untreated seed. Thus the corrosive sublimate treatment yielded 467 pounds per acre more than the hot formaldehyde treatment. In 1931-'32 the acid corrosive sublimate treatment

yielded about the same as the corrosive sublimate treatment.

Advantages of acid corrosive sublimate treatment over older methods are:

1. Less time and labor are required than in the 90-minute corrosive sublimate method. There is little difference in cost compared to treatment with hot formaldehyde.
2. The acid corrosive sublimate treatment requires neither heating equipment nor temperature control.
3. There is a greater range in the time of treatment than for the hot formaldehyde treatment. The potatoes may be soaked in the solution 30 minutes without injury. A "10-minute soak" is recommended for general use.
4. The acid corrosive sublimate treatment controls the *Rhizoctonia* disease better and resultant yields are higher than when hot formaldehyde is used.

Full instructions for treating and caring for seed potatoes by the new acid corrosive sublimate method may be secured promptly on request.

—J. R. L., '34.

O. R. Caldwell, '28, is farming on Route 9, Emporia.

J. F. True, '29, is farming on Route 2, Perry, Kan.

Leonard A. Rees, '32, is farming near Abilene, Kan.

Clarence E. Nutter, '30, is working in a bank at Falls City, Nebr.

John L. Wilson, '31, is doing graduate work at Iowa State College, Ames.

Lot F. Taylor, '31, is managing a ranch near Ashland, Kan. He is feeding cattle this winter.

Howard V. (Fat) Vernon, '28, is handling dairy herd improvement association work in Smith and Jewell counties.

J. C. Wingfield, '23, is superintendent of the field station of the United States Department of Agriculture at Matanuska, Alaska.

# The Pure Milk Producers Association, Inc., of Greater Kansas City

J. Willett Taylor, '35

The Pure Milk Producers Association, Inc., of Greater Kansas City was organized November 25, 1929, to serve as a bargaining association between producers and distributors, to see that fair methods are used in paying for milk, to stabilize the market by giving producers an outlet for all their milk and by insuring the distributors of a sufficient supply of milk, to eliminate unnecessary hauling, and to cooperate with the health authorities by promoting sanitation among the producers.

The organization is the outgrowth of a number of smaller organizations which found that they could make little progress in fixing satisfactory prices without cooperation of the producers of the entire market. One attempt to organize the producers was made in 1926, but because of general high prices for their products there was not sufficient interest in the association to give it strength.

The sudden drop in milk prices paid to the producers in 1929 brought about the organization of the Pure Milk Producers Association in November. When organized the producers made a successful strike for higher prices. Early in 1930 the association in cooperation with the distributors staged an educational campaign which helped to increase the consumption of pasteurized milk. This was done by advertising the increased safety of pasteurized products.

The territory was divided into 15 districts, each having a local association and electing one member to serve on the board of directors. The association has been careful in selecting officers and directors who are conservative, leaders in their respective communities, and familiar with marketing conditions.

Mr. W. C. Morehead of Pleasant Hill, Mo., served as secretary from 1928 un-

til 1932, and has been a valuable aid to the association in getting it on a properly organized basis. Mr. D. N. Geyer, secretary-manager of the Pure Milk Association of Chicago, was present at the annual meeting in January, 1931, and offered many good suggestions on the requirements of a strong association and a well organized market. Dr. W. E. Grimes of Kansas State College has aided the association in its organization and policies.

In December, 1930, the association adopted the base and surplus plan by which the distributors were to pay for the milk. The plan was recommended by Dr. Clyde L. King, director of revenue for the state of Pennsylvania, who is a widely recognized arbitrator of milk price disputes. Under the plan each producer establishes a basic volume of milk in the months of October, November, and December. His monthly average for these three months is his basic volume and he must keep as nearly as possible to this volume throughout the year. Fluid milk which is bottled is called Class I, and the price is agreed on in conference between the producers and the distributors. Class II represents the milk separated and used for fluid cream and the price of this class is determined in the same manner as Class I. Class III represents the remainder of the basic volume of the producer and is used for manufactured products. The price of this class is determined by taking four times the price of 92 score butter on the Chicago market for the price per 100 pounds. All the classes are based on 4 per cent milk with a 4-cent differential for each one-tenth of 1 per cent over or under 4 per cent butter fat. This is not the price arrangement throughout the entire market. In the Kansas City, Kan., market, a flat price per pound of butter fat is paid for all



base milk, which has been 35 cents per pound the last few months. The Lawrence, Kan., market also has a flat price per pound butter fat, which is usually 5 cents less per pound than the Kansas City, Kan., price.

The distributors pay the producer directly instead of the money's being handled by the association. A brokerage of 3 cents per 100 pounds of butter fat is deducted by the distributor and paid to the association for all milk sold by classes. The brokerage is used to take care of the expenses of the association which employs a manager, check weigher, check tester, and maintains an office.

In the Kansas City territory for the past several years, there has been a large surplus of milk and the base and surplus plan was recommended as an attempt to minimize this surplus. There would be no valid reason for the producers to increase their base if they could get no more than butter-fat prices, therefore, the plan induces producers to maintain the same base year after year. This makes for a stabilized market. The association now controls more than 70 per cent of the milk sold to distributors in the Kansas City market.

The association publishes a monthly paper known as, "The Kansas City Co-operative Dairyman." The paper reports to the members of the association the important news of the association, the monthly price schedule, suggestions for producing a higher quality of milk, and news of other associations. The paper is an important factor in encouraging higher sanitary standards.

The association is becoming stronger in its marketing powers and its ever increasing membership expresses a feeling of confidence that an organized market can better protect the producer.

#### DEVELOPMENT OF OFFICIAL TESTING

(Continued from page 71)

one Jersey herd on Register of Merit. The Holstein breed has six herds on

semi-official test and eight on the Herd Improvement Registry test.

Kansas breeders have been doing a splendid piece of work. Among those to receive national distinction are H. A. Dressler of Lebo, and Ira Romig and Sons of Topeka. In 1928 Mr. Dressler's Holstein herd of 12.3 cows produced an average of 17,883 pounds of milk and 658 pounds of butter fat on the Herd Improvement Registry test. That was a United States record at the time it was made. In addition to this achievement Mr. Dressler has had two herd sires which ranked first and second, respectively, in the United States in average production of their daughters over all other sires that had daughters in the Herd Improvement Registry test. That is a very enviable record and extremely difficult to duplicate. During recent years Mr. Romig and Sons have been making a good name for Kansas Holsteins by combining good type and good production. They have completed some good records and have also been consistent winners at the large fairs. Other Holstein breeders who have been doing outstanding work with semi-official tests are Grover Meyer of Basehor, and Topeka State Hospital. The two outstanding Jersey breeders are D. L. Wheelock of Clay Center and Windmoor Farms at Edna.

The most gratifying feature of all Kansas records is the fact that everyone was made by a practical dairyman and not by a large commercial breeder.

#### BARLEY PRODUCTION IN KANSAS

(Continued from page 70)

malt type barley estimated at 50 to 70 million bushels. This is only a small part of the present annual barley crop in the United States.

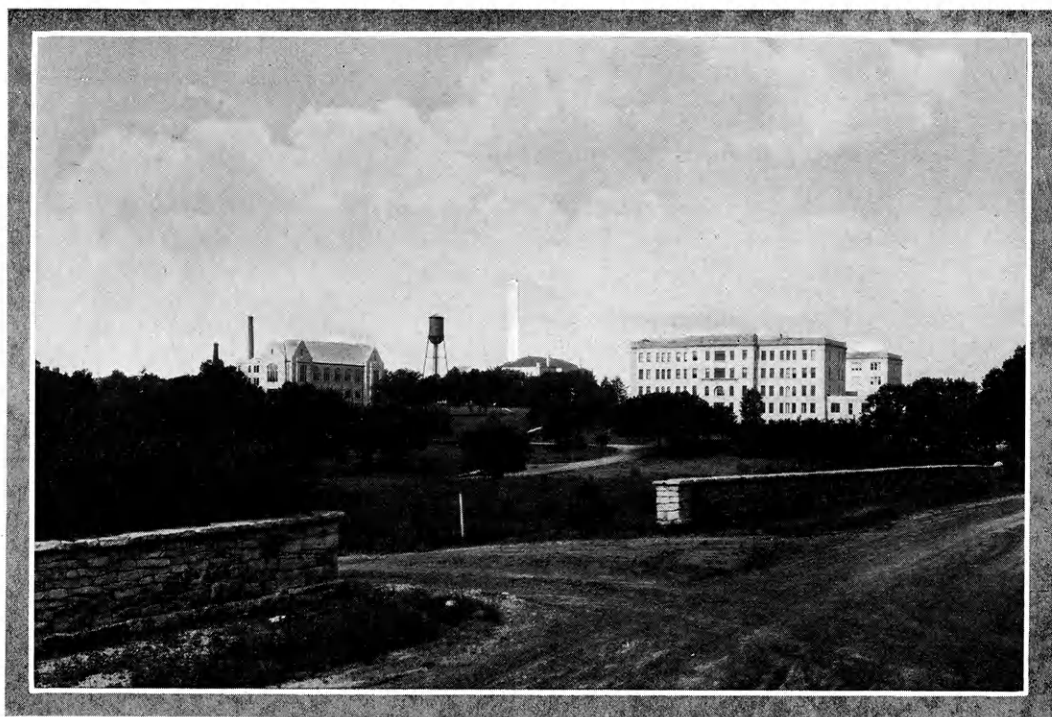
Many Kansas farmers, however, are considering the production of malt type barley as a possible source of cash income. The barley produced in Kansas at present is of rather poor quality, as

only 8.3 per cent of the barley received at Kansas City during the years 1927 to 1932 graded better than No. 3 feed. This is due largely to low test weight. More careful production methods than those now used are necessary to meet the requirements of good malting barley. Even with better methods, Kansas barley is likely to be of low test weight in dry years.

To be of the best malting quality, barley must be fully matured. The grain of the tiller heads, as well as the main heads, should be thoroughly ripe when harvested. To secure uniformly ripe kernels, harvest must be delayed until the straw, as well as the heads, has changed to a golden color. This delay involves considerable risk from lodging and weathering. Badly weathered or stained kernels are objectionable in malt barley. In threshing barley of the malt types, the machine must be carefully adjusted to prevent breaking

or splitting the husks at the tip end of the kernel. Skinned kernels and those with beards broken off too close in threshing are a source of trouble in malting.

It seems unlikely that Kansas farmers can hope to compete with barley growers of Illinois, Iowa, eastern South Dakota, North Dakota, and southern Minnesota and Wisconsin in shipping barley to Minneapolis, Chicago, and Milwaukee, because of the high freight rates from western Kansas to these terminals. Should a market for malting types of barley develop at St. Joseph and Kansas City, barley growers in western Kansas should be able to ship to these markets to advantage. Kansas barley of malting grade may be profitably shipped to St. Louis if premiums paid there are high enough to compensate for the higher freight charges.



THE NORTH CAMPUS FROM THE NORTHEAST

# Temporary Pasture Crops for Kansas

John I. Miller, '33

One of the important problems facing the more efficient producers of live stock is providing high-quality grazing over a period of time. Kansas is favored by having excellent native pasture. But temporary pasture crops are needed to fill in periods when a sufficient native pasture is not available. These temporary pastures provide a longer period of grazing, cut down the cost of the feed bill, and relieve the permanent pastures. It has been estimated that the cost of pasture feed runs from one-eighth to one-tenth the cost of a like feed from harvested crops.

In choosing a crop that can be used as a temporary pasture, several qualifications must be kept in mind. One should understand thoroughly the advantages and disadvantages of temporary pasture crops in general. As given by R. S. Snapp, they are as follows:

## ADVANTAGES

1. More feed furnished per acre.
2. A large percentage of the crops used are legumes.
3. Withstand heat and drought of summer better.
4. Can be included in the regular farm rotation.
5. Surplus forages can be used for hay.

## DISADVANTAGES

1. Require annual outlay for seed, preparation of seed bed, etc.
2. Stand of the temporary crop is often uncertain and sometimes a total failure.
3. Poor turf is formed and fields are often trampled badly in wet weather.
4. Adequate shade and water are provided with difficulty.
5. Some temporary pasture crops are likely to cause bloat.

One should therefore endeavor to choose a crop that is adapted to his climate and needs and also has as many of the advantages of temporary pasture crops as possible and as few of the disadvantages. Several of the commonly used crops for this purpose are adapted to Kansas conditions although care should be used in selecting a crop for

western Kansas and also those sections where acid soil is prevalent.

Some of these crops can be sown in the fall or early spring and will furnish early pasture. One of the commonly used crops for this purpose is winter rye. This crop provides an abundance of good pasture in late fall or early in the spring before other pastures are available. When other pastures can be used, the rye can be plowed under and the land used for another crop. Another good feature of growing winter rye for pasture is the fact that it can be sown at a time when a farmer usually has land idle. As one is out only the expense of seed and time in preparing the seed bed, rye is usually a very economical pasture crop. This crop could hardly be used in the western two-thirds of the state because of danger of mixing with wheat, but in the eastern third it provides an abundance of good pasture suitable for all kinds of live stock.

Oats is used to a limited extent especially as pasture for poultry and hogs. It is planted as early as possible, often in the fall in many regions, and pastured in the early spring. This provides late fall pasture often and then good pasture in the spring if it lives over the winter. Oats planted early in the spring in Kansas usually will not furnish much pasture in the time that good pasture is needed. Barley is used to a somewhat greater extent than oats and under practically the same conditions.

Sweet clover is one of the temporary pasture crops most extensively used in this region. It is of special value as it is a legume, will furnish early and fairly late pasture, rarely causes bloat, and will stand heavy grazing. It will grow on rather poor soil but is very partial to sweet soil. Sweet clover is sown with or without a nurse crop. Oats is the usual nurse crop but it is sometimes seeded on wheat land in the spring. If

planted primarily for pasture it is perhaps better planted alone.

Sweet clover has the advantage over many tame pastures as it is sometimes possible to graze it lightly the first fall and then heavily the next season. Too close grazing the first fall might cause much damage, however, as the food produced by the leaves is used in producing strong root growth, therefore, grazing would be likely to cause a lower yield of pasture the following season

ricultural Experiment Station on second-season sweet clover, 3.8 acres pastured 4 cows for 5 months.

Sudan grass is the hot weather pasture crop that is well known to the live stock man. This is the crop that many farmers depend upon for pasture from July to frost. It is well that it is adapted to the entire state. Sudan grass can withstand a warm summer with low humidity, which makes it an ideal summer pasture. It is sensitive to



or at least delay the next season's growth or cause winter killing.

The second season's growth the next spring is early. The exact time of beginning to pasture varies with the season and locality, but it should be pastured soon after the plants start growing. One may pasture as many as two head of live stock per acre or more if needed to keep down rank growth. This crop will provide a great amount of cheap leguminous pasture in the eastern part of Kansas. It has been stated that "it will carry more stock per acre than any other tame or wild crop grown in Kansas." In an experiment which was conducted at the Kansas Ag-

frost, however, and pasture is limited by that date.

Sudan grass pasture is very productive. Stock can be turned in about one month after seeding. It is often desirable to have the field divided into two parts to be grazed alternately. If the grass makes too much growth it should be mowed and the extra feed taken off for hay. Better results are obtained if sufficient stock is used to vary the number of stock on a given area according to the growth of the grass. It is possible by this system to plant a larger area than is necessary and to cut off the extra amount for hay. Then if there is a poor season, ample feed for



the stock will be had. At Dodge City during a normal season, Sudan grass carried one cow for each  $1\frac{1}{2}$  acres for a period of six months. Thus, one can see that Sudan grass is very productive and comes at a time when it is most needed. This would decrease the amount of fall soiling crop that would be needed. The pasture is good for all classes of live stock.

The poison factor in Sudan pasture should be mentioned. Although care should be taken, losses from prussic acid poisoning have resulted only in a few cases and then only after drought or frost had affected the plant.

Wheat is commonly used for a temporary pasture crop in regions where considerable wheat is grown. It comes at the time of the year when green succulent feed is in demand. It makes excellent grazing for all classes of live stock when some dry roughage is also provided. Experiments have shown that pasturing does not benefit the wheat and usually reduces the yields. The yield is greatly reduced if it is pastured too soon, too closely, too late in the spring, or when the ground is wet. Under western Kansas conditions, however, much wheat pasturing is done.

Soybeans, rape, and cowpeas are used to some extent as temporary pasture crops. Soybeans are often used as a supplementary crop with corn. This combination provides good pasture in late fall for sheep and hogs. Rape is a cool weather crop used in June and then in late fall. Sheep, hogs, and calves make good use of rape and the pasture is utilized to good advantage. These crops are well adapted for use in rotations or in combinations and could be used to a greater extent.

Although the use of any of the crops mentioned would add to the length of the grazing season, a combination of several might be of the most value. For most farmers, a field that is planted to rye in October, pastured in the fall and spring, and then plowed up and planted to Sudan grass in summer would add

considerable to the amount of pasture available. For summer pasture one could use either second-season sweet clover or Sudan with good results. Numerous combinations of crops could easily be worked out by the stockman that would suit his needs and conditions. The use of these crops will greatly lessen the amount of silage or soiling crops used and prove to be an effective means of keeping live stock production costs under the market price.

C. A. Hollingsworth, '31, has recently been employed as manager of a farm belonging to Paul Uhlmann located  $4\frac{1}{2}$  miles southwest of Overland Park.

W. H. Atzenweiler, '26, and R. D. Nichols, '20, are employed in farm management work by the Bartlett Mortgage Co., St. Joseph, Mo.

H. R. Sumner, '16, executive secretary of the Northwest Crop Improvement Association, Minneapolis, Minn., has recently issued a directory of spring wheat varieties. The directory not only lists the varieties but gives recommendations as to adaptation and suitability of each variety for planting in spring wheat territory.

C. G. Page, who will receive his degree this spring, has been employed by the Burlington Live Stock Commission Company of Kansas City and will report for work immediately after commencement. Gross was a member of the poultry judging team in the fall of 1931, of the junior live stock judging team in January, 1932, and of the dairy cattle and senior live stock judging teams last fall.

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S. Roger Stewart, '30, is farming near Vermillion.

H. E. Hoch, '31, M. S., University of Illinois, '32, is farming near Alta Vista.

John G. Bell, '32, is assistant county agricultural agent of Cowley county, Winfield.

R. B. Mather, '30, has been employed as manager of the Lehman orchard near Blair.

E. C. Scott, '24, has charge of the ice cream department in the Swift and Company plant, Chicago.

H. L. Sumners, '25, is manager of the Newark plant of the Reid Ice Cream Corporation, 316 Mt. Pleasant Ave., Newark, N. J.

B. F. Houlton, '24, is ice cream maker for the Fritzel Dairy, Lawrence.

L. D. Morgan, '32, is county agricultural agent in Sherman county, Goodland.

Tom D. Dicken, '32, has recently been appointed county agricultural agent of Pawnee county, Larned.

E. E. Giles, f. s., 1914-'15, is president of the Pawnee County Farm Bureau. He attended and made an address at the recent state conference of county agricultural agents.

R. F. Brannan, '30, is manager of a branch poultry produce house of the Perry Packing Co., in Leonardville. Mr. Brannan did his major work in poultry husbandry.



A PORTION OF THE AGGIE FORMAL GARDEN

## The First Line of Defense

During boom times purchases were made with income plus credit. Credit, however, always ripens into debt. Some debts are paid during boom times but new credit is issued faster.

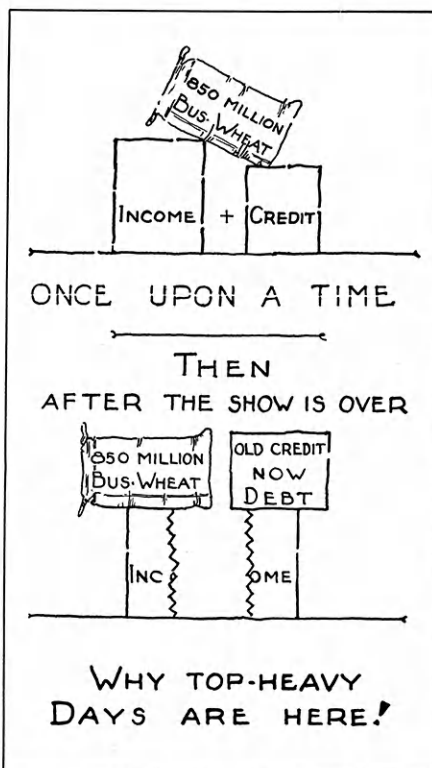
After the hectic war period and subsequent period of feverish speculation is over, the tables are turned. Less new credit is extended and more and more old promises mature. Many must stop purchasing with income plus credit. They must not only reduce purchasing to income, but they must split the income. They now spend part of income in payment of old promises. Only what is left can now go to buy goods and services. If there are just as many goods and services as before and only part of income left to be divided among them, then each must sell for less.

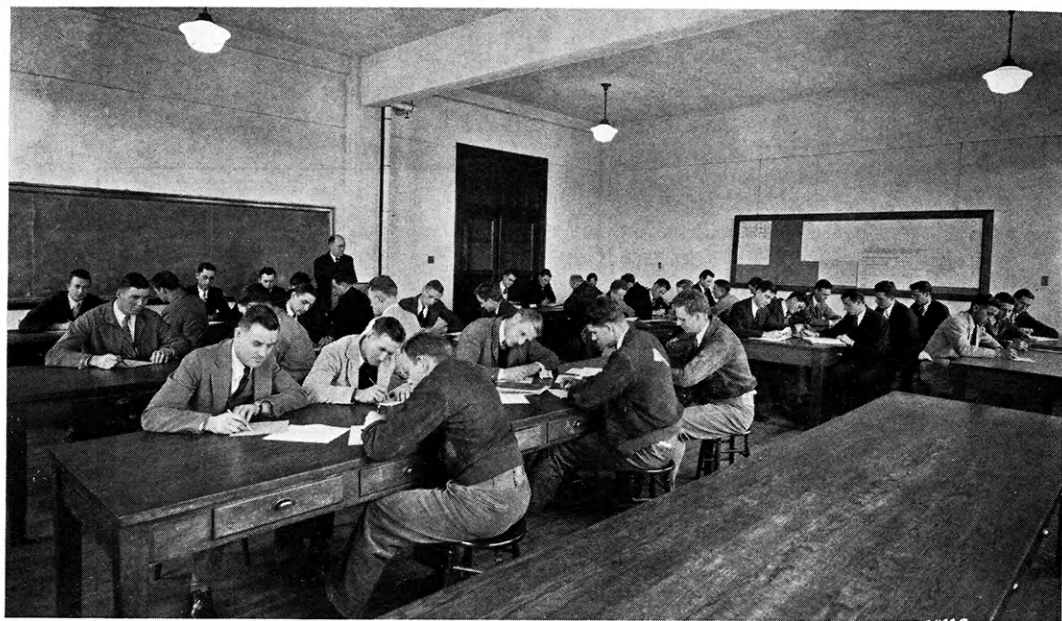
Somebody's income is going to be smaller than it was. The first remedy for the individual that can be quickly applied without waiting on anybody's "program," is to cut his own expenses by spending less for goods and services. This cuts the income of someone else. He must counter by cutting his expenses which in turn reduces someone else's income. We are thus headed toward lower prices with a downhill pull.

Expense cutting accompanied by income cutting and lower prices, means that debts and other fixed charges grow relatively larger and larger. For agriculture and most other highly competitive businesses a debt burden more than  $1\frac{1}{2}$  to 2 times the average annual gross income from the business over a period of years, saddles the business with an almost impossible load. Total indebtedness in the United States is between 150 to 200 billion dollars. This is 4 to 5 times the national income for 1932. Such a ratio of debt to income makes an intolerable interest load. Lowering of interest rates, writing down of debts, or increasing incomes are inevitable consequences. Increased incomes mean more spending by some to make the incomes of others higher.

Expense cutting from boom-day levels is a good thing. There is, however, such a thing as getting too much of a good thing. The gouty effects of too much of a good thing are counteracted by running into things not quite so good. But that is the next story.

—R. M. Green, Professor of Agricultural Economics.





## Train for Success in the Biggest Business—Agriculture

Kansas needs more leaders with college training in agriculture who understand farm conditions to help:

- 1. Formulate our laws.**
- 2. Solve our tax problems.**
- 3. Solve our transportation problems.**
- 4. Solve our farm production problems.**
- 5. Solve our farm marketing problems.**

Although an important aim of a college curriculum in agriculture is to educate young men for the business of farming, the fact that modern agriculture is much broader than farming must not be overlooked. Modern agriculture embraces a number of vocations and professions organized on a scale more vast than the world has ever seen before.

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