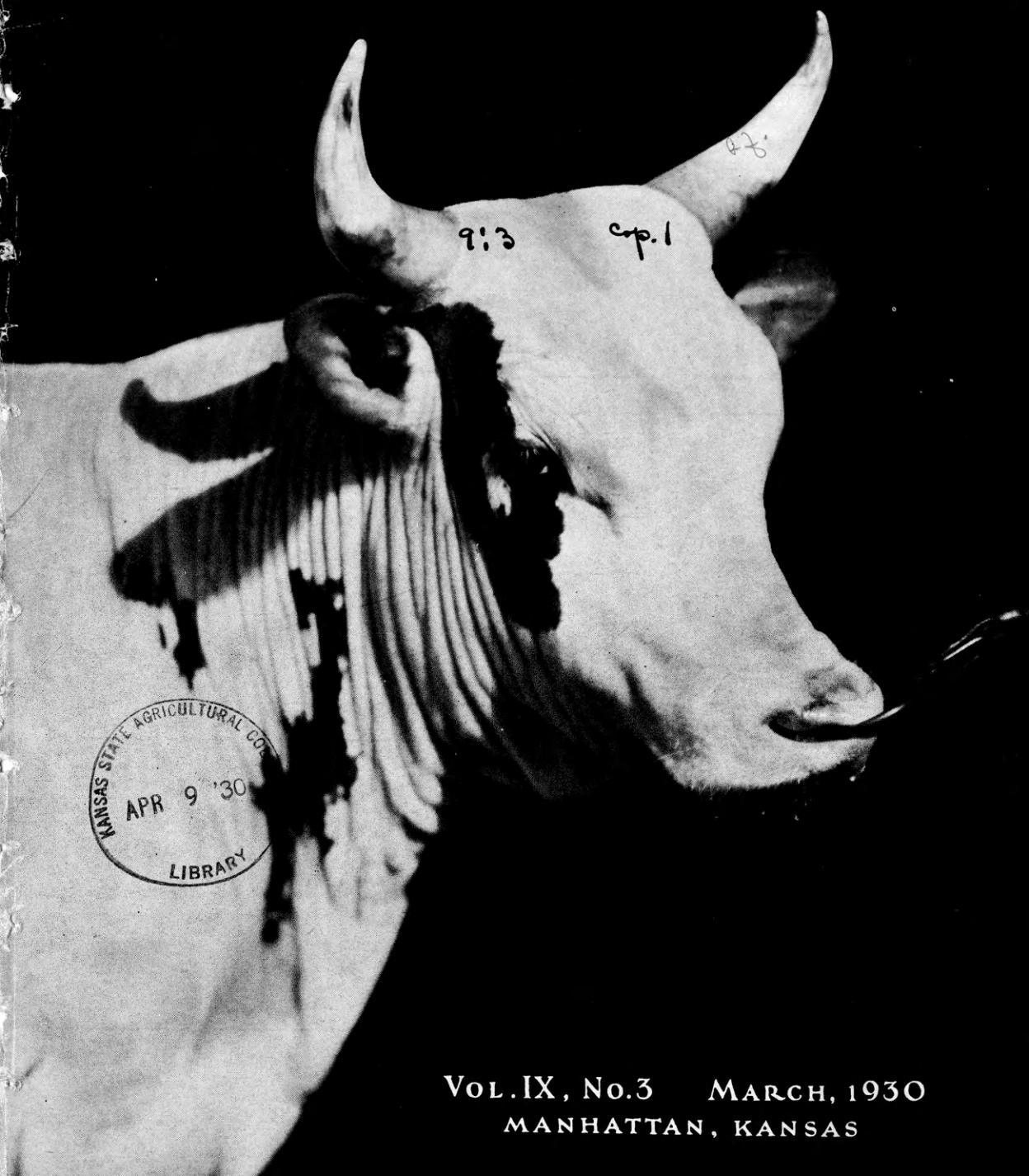


# The KANSAS AGRICULTURAL STUDENT



VOL. IX, No. 3 MARCH, 1930  
MANHATTAN, KANSAS

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A FAMILIAR CAMPUS VIEW

# The Kansas Agricultural Student

VOL. IX

Manhattan, Kansas, March, 1930

No. 3

## McKelvie Discusses the Agricultural Marketing Act<sup>1</sup>

Samuel R. McKelvie, grain member of the Federal Farm Board, in speaking before a large audience at the third annual Cooperative Marketing School held recently at K. S. A. C., stressed the fact that farmers want economic equality but are not seeking special favors or privileges through the Federal Farm Board. "There are," said Mr. McKelvie, "more than thirty million people living on the farms of the United States. These thirty million people are just as vital to the bone and sinew of our country as any other class. Those who have studied this situation know that they have not, at least during the last decade, shared equally in our national prosperity. As the result of that you, regardless of what your business may be, have suffered and will continue to suffer until agriculture is placed upon a basis of equality with other industries and with labor in the other industries.

"It is not the purpose of the Federal Farm Board to deliberately injure anyone. Our job is to benefit someone, and that someone is the American farmer in the terms of thirty million living human people, the same as you and I.

"After almost a decade of demand from the agricultural regions that something be done for this industry and after an agreement has been reached upon what shall be done, there is no longer reason for delay. This law, brought forth by the congress of the United States and signed by the president of the United States, shall be enforced and given a fair trial without fear or favor, to see whether it will operate successfully. And we believe it will so operate."

The Farm Board is not merely following

the whims of certain individuals in laying out a program and working out a policy. "The policies have been rather clearly set forth in the Agricultural Marketing Act which act created the Federal Farm Board," said Mr. McKelvie.

"It says," he continued, "that the Farm Board shall help to, (1) eliminate speculation, (2) prevent inefficient and wasteful methods of distribution, (3) encourage the organization of producers into effective associations or corporations under their own control for greater unity of effort in marketing, and (4) aid in preventing and controlling surpluses." On this fourth point you will notice the word "prevent" is placed before the word "control." The best way to take care of the surpluses is to prevent them before they come into being.

"The Farm Board must have the cooperation of the farmers in order to carry out this important part of the program."

In elaborating on these cardinal points the speaker, in a most forceful and pleasing manner, said, "Certainly, no one will argue that speculation does not exist and I thoroughly believe that speculation is very harmful to the American farmer. I believe that much of it hurts instead of helps in the stable marketing of agricultural products, and, not in a few cases, deprives the farmer of profits to which he is rightfully entitled.

"At this point, I want to read my statement:

"The Agricultural Marketing Act says that speculation in marketing agricultural commodities and their food products shall be minimized. This is not a request. It is a command."

On the second point, namely, the elimination of efficiency, Mr. McKelvie saw much room for improvement over the present con-

1. We are indebted to Prof. W. P. Mortenson of the Department of Agricultural Economics for this report of Mr. McKelvie's address.—Ed.

dition. "It is reported from rather authentic sources that the American farmer is four times as efficient as any other agricultural producer. But it is also authentically reported that the American farmer is only half as efficient in marketing as industries in other lines. What is the result? I will give you a parallel that I think is easily understood.

"Let us imagine two men engaged in manufacture who are dependent for their existence upon the exchange of their commodities. One of these men is twice as efficient as the other. You can guess which is going to survive in that exchange of commodities. Why, the efficient man, to be sure. Therefore, if our marketing system is only half as efficient as the marketing system for other commodities, the farmer suffers.

When the third point was discussed the fact was emphasized that the Agricultural Marketing Act has definitely laid down the policies for the Farm Board.

"The question of organized commodity marketing is not a matter of choice with us, and frankly, I would not change it if I could. The Agricultural Marketing Act, Section 5, says, 'the Board is directed and authorized, (1) to promote education in the principles and practices of cooperative marketing of agricultural commodities and food products thereof, (2) to encourage the organization, improvements in methods, and development of effective cooperative associations.' From the first page to the last of this Marketing Act you will find that word cooperative repeatedly used. It is the very heart and soul of this act and contemplates the development of a farmer-owned, farmer-controlled, cooperative marketing system.

"There are those who say it can't be done. There were times when I thought it couldn't be done. Even today I am not leaving the impression with farmers that this is any tea party or knitting society. This is a job that is worthy, if you please, of the time and effort it takes by those who are charged with seeing that it goes across.

"We have in this country over 12,000 farmers' cooperative societies, with over 2,000,000 members, handling every year agricultural products of the value of two and a half billion dollars. They are the vanguard,

if you please. They represent the determination of purpose of the American farmer to own and control his own marketing system. Where are they? Back in the country principally, at the local marketing points. Locally they market the commodity cooperatively, but when it leaves the local station and passes to the terminal market, it goes to someone else who is not cooperative either in spirit or results. It is in that terminal market that the greatest influence is exercised upon economical marketing and control of prices within the range of the natural law. At the very point where it is vital the farmer should exercise his initiative and his prerogative as a marketer he yields it to someone else. The Federal Farm Board feels that it is well nigh useless to assist farmers in organizing cooperatively unless cooperative terminal sales agencies are included in the plan."

The fourth and final point of Mr. McKelvie's address was on the prevention and control of surpluses. "The Farm Board recognizes that the way to handle a surplus is to avoid it, if it is possible. Farmers have not been ignorant of the necessity for doing that. They have used the best information available in respect to their planting. See the statistics for 25 or 30 years with reference to wheat and cotton, and you will find that the acreage each year, aside from the abnormal war years, has been determined almost entirely by the price of the commodity the year before. It is the principal thing they have had to go by. The Federal Farm Board will place before farmers information regarding probable production and consumption of the various commodities and we believe they gradually will adjust their production and their planting to those exact facts."

---

Dr. L. P. Wehrle, '14, Ph. D., Cornell Univ., '23, is assistant entomologist in the Arizona Agricultural Experiment Station, Tucson.

---

Earl T. Means, '22, editor-in-chief of Volume I of The Kansas Agricultural Student, 1921-'22, is farming near Everest, Kan. His farm is the Purple K farm and his major interest is the production of purebred hogs.

# Power Losses in Tractors from Motor to Drawbar

H. J. Barre, A. E., '30



In the design of modern tractors, considerable attention has been given to the loss of power between the crankshaft and the drawbar. It goes without saying that much improvement has been made, when one stops to compare the old open-gearied tractor with the dust-proof housings enclosing all wearing surfaces of the present-day tractors. The ratings of the tractors in the last half decade have changed from 10-20, 15-30, 20-40, etc., to 15-27, 26-40, 15-25, 30-45, etc. This shows that the ratio of the drawbar H. P. to that of the belt H. P. has changed from 1 to 2 to a ratio larger than that, varying from 1 to 1.5, to 1 to 1.8. Transmissions operating with less friction and lugs for traction wheels have been improved to give more available H. P. at the drawbar.

Transmission losses, which are mainly due to bearing friction and friction among the gear teeth, are not so excessive as one might suppose. Such losses have been studied in the Department of Agricultural Engineering by Prof. Roy Bainer and later by two senior students, S. S. Bergsma and R. G. Frye. The greatest loss is in the traction wheels, which may consist of slippage, sinking into the ground, and a prying effect of the lugs under heavy draft conditions.

Because of the various speed requirements of modern tractors and the necessary reduction of the speed of the motor by means of gears, it is necessary to have quite an elaborate gear system. Some tractors have eliminated part of these factors to a certain extent by employing a longer-stroke motor which is slower running and has fewer gears because the crankshaft is parallel to the axis of the drive wheels. A roller chain is used for the final drive. Other tractors, with crankshaft at right angles to the axis of the drive wheels, employ a pair of bevel gears to permit the power to be transmitted at right angles to the crankshaft of the motor. The bevel gears produce an end thrust which may account for some loss of power. The tendency has been to speed up the motors of

tractors, which in turn gives a greater H. P., but makes it necessary for a speed reduction, which is not desirable from the standpoint of transmission efficiency. The Diesel motor because of its slow R. P. M. should be well qualified to overcome that particular handicap.

As pointed out before, the greatest loss is in the traction wheels when under a heavy drawbar pull. Under such conditions the wheels are likely to slip a great deal, which means a loss of power that is available. In the Nebraska tests the per cent slip varied from about 5 to 15 per cent near full load for various tractors tested. In one of the tractors the slip was as high as 30 per cent. Slippage is dependent upon many factors, of which the condition of the soil is an important one. It naturally follows that in order to reduce slippage why not put on larger lugs? In one instance the advantage of the larger lug may not be gained because the lug may not penetrate its full length, and in the other the effect of considerable prying action of the lug is introduced. The effect of the latter would be evidenced by a considerable spading up of the ground, which goes to show that it requires a considerable amount of power. Again many studies have been made regarding the various designs of lugs for various soils and the shape of the lug to give traction with minimum slippage and without "spading." It is interesting to note from the Nebraska tests that the slippage of a caterpillar type tractor varied from 4.4 to 13 per cent at or near full load, a tractor having, presumably, perfect traction.

Power losses may also be caused by the manner of making the hitch. If the hitch is too high, the tractor will normally tend to lift up in front and cause an excessive weight on its rear wheels. A tractor operating under such a condition will be working "up hill." The reverse, when the hitch is too low, is to lift up the rear wheels or traction wheels, which would permit easier slippage, due to lack of penetration of the lugs.

# Kansas Land Values<sup>1</sup>

V. E. Frye, '31

In the valuation of land the principles involved are those used in setting the price of any other commodity, namely, demand and supply. Forecasting of land values for long periods of time must concern itself with those factors which increase or decrease the supply of or the demand for land. From the standpoint of demand the desirability of land as a means of earning an income is the basis to be used. All the factors which affect either the size of the money income or its "enjoyment-desirability" affects the value of the land. Land income is not constant, but changing; it is affected by the economic forces of custom, competition, monopoly, and public authority. The amount of income received from agricultural land depends directly upon the price of farm products, being greatest when prices are high. Whether these prices are high or low will depend upon the size of the population. The diet, wealth, and purchasing habits of the people will also be an influence.

Other factors which influence the purchase or sale of real estate are anticipated future income, amenities attached to a specific piece of land, and the taxes levied upon the land. While no one knows what the future income from a farm will be, he usually has some idea and will be guided by this opinion when placing a value upon it. When people see a bright future there is likely to be an upward movement in land prices. On the other hand, if the outlook is dark, lower prices appear. The term "amenities" means beautiful scenery, a pleasant neighborhood, congenial neighbors, and all other inducements which add to the comforts of living. In the case of agricultural land they may mean a church or nearby school, or some personal attachment to a particular piece of land. In many instances land has been purchased because of the amenities without regard to its possibilities in yielding income. Where the taxes on land are high the desire for ownership becomes less. This has been the case in Kansas

and taxes must be shifted to other forms of wealth if land values are expected to increase materially.

When considering the supply of land it must be borne in mind that the geographical land area is fixed and that only a small portion of it is productive. This small area is called the economic land area and differs from the geographical in that it can be increased through irrigation, drainage, or by the introduction of some new crop which utilizes what would otherwise be waste land. So any change in the use of land will directly affect its supply.

The trend of land prices shows a steady rise from 1850 to 1890. Between the years 1890 and 1900 there was a slight decline due to monetary disturbances, but from then on until 1920 the price advanced rapidly. Several reasons may be stated for this remarkable advance:

1. The increase in the purchasing power of farm products.
2. Most of the good land was taken up by 1900 and people began to realize that the supply was limited.
3. Increase in the supply of gold and the use of credit.
4. Improvement in the methods of production.

## 5. Effect of the World war.

Since 1920 there has been a sharp decline in Kansas land values, although the decline has not been so great as that of some adjoining states. In 1920, land in Kansas was 51 per cent higher in price than in the years 1912 to 1914 as compared with the United States average, which was 70 per cent higher. In 1929 Kansas land was 13 per cent higher as compared with 16 per cent for the United States. Values in a particular section of Kansas may not always follow those of the state as a whole. Farming sections in the eastern part of the state including the general farming belt, corn belt, and the blue-stem belt have shown a decrease or only a slight increase in the past four years. The average of farm land values in the wheat belt since 1925 includes the southern part only

1. Circular 156 of the Agricultural Experiment Station, "Farm Land Values in Kansas," by Prof. Harold Howe of the Department of Agricultural Economics, is the source of many of the facts presented in this article.

(Continued on page 74)



# Making the Most of Kansas Pastures<sup>1</sup>

Jay R. Bentley, '32

Kansas has approximately twenty-three million acres of pasture land. This vast acreage if placed in a solid tract would occupy an area about the same size as the state of Indiana. The actual value of this land is around four hundred million dollars and it produces enough forage annually to feed about four and one-half million head of live stock, for at least six months of every year. This great resource, unlike many natural sources of wealth, will not be exhausted if handled properly. And regardless of conditions it can be depended on to produce a large income every year.

But will these pastures continue to produce in the future as they have in the past, if no regard is taken as to the proper way to manage them? At the present time most of this area appears to be in first-class condition. But on close examination it can be seen that in many pastures some of the desirable grasses are being replaced by weeds. Many of the better pastures of the bluestem region have decreased one-fourth in productivity during the last 25 years, according to an analysis of statistical data.

The principal causes for the decreased yields of the pasture lands are too heavy grazing and turning stock on them too early in the spring. Too close grazing will kill the grasses the same as too frequent cutting will kill alfalfa or any other perennial tame plant, as these plants have practically the same growing requirements. If grasses are grazed too closely they will be killed and their place taken by worthless plants. Experiments conducted at the Agricultural Experiment Station show that a vigorous stand of bluestem grasses can be nearly killed by clipping every two weeks during the growing season for two years. This treatment is comparable to very close grazing.

In order to maintain a vigorous growth, the grasses should be allowed to make enough leaf growth in the spring to manufacture some plant food before being grazed. All

perennial plants depend on the stored food in their roots for starting growth in the spring. If the new leaf blades are cropped as soon as they appear the plant is unable to supply its growing needs and its strength is gradually sapped. Early spring grazing has other disadvantages. At this time the soil is frequently wet and wherever the stock step it is packed and the vegetation is killed or stunted in these spots. Also stock do considerable slipping on hills and wet soil, which cuts out appreciable quantities of grass.

It has been found by numerous experiments that it is not feasible to reseed native pastures with tame forage species where the land is of such physical character that the soils cannot be given some soil treatment, which is true of practically all the native pastures in the eastern half of Kansas. The production of tame forage species is largely limited to the eastern one-third of the state where the annual precipitation exceeds 30 inches. Pasture improvement will therefore have to be made largely through proper stocking and the use of such grazing methods as will restore and maintain the vigor of the forage plants. Deferred and rotation grazing is one of the methods by which this can be accomplished.

Deferred and rotation grazing is a method whereby grazing is rotated in at least two pastures, one pasture being protected during the first part of the season while the other pasture is grazed. At the end of one year, and in some instances two years, the grazing arrangement of the pastures is reversed, and the pasture previously grazed during the first part of the season is protected until the middle of the season, while the protected pasture is grazed during the time that this pasture is protected. This makes it possible for the vegetation to complete or partially complete its growth about half of the time, which stimulates its vigor, thus adding greatly to the amount of forage produced.

The length of time each pasture should be protected will be governed by the time required for the plants to store enough food

(Continued on page 95)

1. The data presented in this article were supplied by Prof. A. E. Aldous, in charge of investigations in pasture improvement in the Agricultural Experiment Station.

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## WHY ENTER STUDENT JUDGING CONTESTS?

Announcement has already been made of the annual spring student judging contests. These contests conducted by students and for the students' benefit are receiving much thought from over two hundred Ags at this time. It is a common subject of discussion among groups of Ags. It is not at all uncommon to step into the seed laboratories and see several students reviewing samples of seed; or to watch and hear the students in the live stock judging classes discuss the probable placing of a class of animals, with their minds planning the way for them to win a prize in the live stock contest. Dairy-minded students are thinking of the correlation between milk production and dairy type.

Soon these contests will all be over. Of what value have they been? Are they worth the student's time?

We believe such contests have several important values. First, they give the students in all classes equal opportunity to compete and prove to their own satisfaction and to others their ability as a judge of good agricultural products. Quality products in agriculture are at a premium at all times. Farmers in the future will profit most by producing

less in quantity but more in quality. The college-trained man has an opportunity to test his ability as a judge of quality in these contests.

In the second place, to win a prize in one of these contests gives the winner confidence in himself. He has proved that he is able to put in practice the things he has learned in the class room. He has confidence that in the larger fields of endeavor, after graduation, he will be able to recognize good products and know why they are good and why others are inferior.

Third, in these contests students are made acquainted with the procedure commonly used in the intercollegiate contests. Acquaintance with this procedure is a valuable asset to a student representing the college on an intercollegiate judging team.

It is impossible to enumerate all the values of such contests, and yet there are some students who do not appreciate these values. It is common to hear an upperclassman say that he learned more in the judging contests than he did in several class periods along the same line of work.

We might well praise the man who enters all of the contests for which he is eligible. He has taken advantage of all possible op-

portunities, and whether he has won prizes or not has kept himself in touch with the various phases of agricultural judging and is sure to have made improvement in no small way.

The Kansas Agricultural Student believes that it is the privilege of every student to enter these contests and that students who do not enter are missing a piece of valuable training.

position and the Eastern States Exposition. Hornella of Elmwood, the dam of "Elmbar," is a very large beautiful cow which has been grand champion at several prominent state fairs. She has a herd test record of 11,719 pounds of milk and 456 pounds of fat at 12 years, a remarkable record for a cow of this advanced age.

With such desirable type shown in his ancestors it is little wonder that this young



EDITORIAL STAFF, 1929-'30

From left to right: Front row—Prof. Hugh Durham, Harvey E. Hoch, George D. Oberle, Richard W. Stumbo, Merrill M. Taylor. Middle row—Louis P. Reitz, Eugene M. Leary, Alonzo Lamberton, Fredrick H. Schultis. Back row—J. Edward Taylor, C. Porter McKinnie, Edgar A. Templeton, Carl Williams, Howard L. Fry.

#### OUR COVER PAGE

Strathglass Elmbar 38544, whose attractive head is shown on our cover page, is the young Ayrshire bull recently purchased for use in the K. S. A. C. Ayrshire herd. He was selected from the herd at Strathglass Farm, Port Chester, N. Y., a farm famous for the importation of fine Scotch Ayrshires. Large size was a characteristic of his ancestors and at 18 months of age he weighed about 1,100 pounds. He was sired by Strathglass Bardoch, one of the best young sires at "Strathglass" whose dam was Barr Flapper, grand champion cow at the Sesqui-Centennial Ex-

bull is such an outstanding individual.

A proved bull with high-producing daughters was desired to carry on the high standard of the K. S. A. C. Ayrshire herd set by such bulls as Melrose Good Gift and Bell's Melrose, but since no satisfactory proved bull was available at a fair price, this choice young bull was chosen.

Strathglass Elmbar was drawn by John Bell for 14 days of training prior to the Dairy Fitting and Showing Contest. Mr. Bell and his fitted and trained young animal are shown with the other breed champions on page 79.

**SPECIALIZING CAUTIOUSLY**

H. P. Blasdel, '29, former editor-in-chief of the Ag Student, writes that he is endeavoring to introduce a few lines of specialization gradually on the home farm, striving to make the farm business both safer and more profitable.

Hobart bought a pure-bred Ayrshire bull from the college last October. Within a few years he hopes to build up a small high-grade Ayrshire herd. He has a good flock of standard-bred Rhode Island Reds which he expects to provide both satisfaction and a good financial return.

On the crop side, the Blasdel orchard has been pruned and further attention and care it is hoped will make it both more attractive and more productive over a period of years. Attention will also be paid to the production of pure seed, especially of wheat and corn.

It seems to be the idea of the former editor that quality pays in more ways than one and it is his purpose to strive for it in a practical way. We believe increasing success will mark such procedure in farming.

**TENTH ANNUAL AG FAIR**

The tenth annual Ag Fair will be held Saturday, May 3, 1930, on the north campus. Since the Ag Fair became an annual event it has continued to grow until it is "The Biggest Student Stunt in Kansas."

The primary purpose of the Ag Fair is to draw the students of the division closer together. It gives everyone in the division a chance to know each other and shows them what can be accomplished when a group works for a common cause. It is the one time during the year when the spirit of rivalry, for individual gain, does not exist. All forget their grievances and work for the good of the division.

It is the intent of the Ag Fair Board to continue the policy of enlarging the educational exhibits and the live stock show as well as providing an afternoon and evening of wholesome entertainment. Several changes are being considered which, it is hoped, will lessen the risk of inclement weather.

Every Ag Fair in the past has been a success in some way. Last year the fair was not a financial success but it showed the loyalty

of every Ag student to his division. With the same spirit of cooperation and a reasonable break with the weather man the tenth annual Ag Fair cannot be other than a success.

To be named as a member of the Ag Fair Board is to be given a position of responsibility and large opportunity for service. The members of the board for the tenth annual Ag Fair are:

F. J. Raleigh.....	Manager
F. G. Ackerman.....	Asst. Manager
S. Roger Stewart.....	Secretary-Treasurer
Bruce R. Taylor.....	Asst. Sec'y-Treasurer

**KANSAS LAND VALUES**

(Continued from page 70)

and has been due to improved methods of farming and to the extensive use of the combined harvester-thresher and tractor. In the northern three tiers of counties, from the eastern boundary of Republic county westward, prices have been kept down partly because of successive crop failures in this area.

The future of Kansas land values is dependent upon the growth of population in this country but particularly in that portion of the United States lying within the boundaries of Kansas and the territory adjacent. It will also depend upon the sources of food and other agricultural products used by the population. It is quite probable that the population will increase at a slower rate in the future than it has in the past on account of a decrease in the birth rate and restricted immigration. Although there has been a decline in the crop area, the number of live stock on farms, and the number of persons engaged in farming during the past eight years, the total production has increased. Reports show the estimated farm production in the United States to be 14 per cent greater in the five years, 1917 to 1921, than the preceding five years, while the population increased only 9 per cent. If the products demanded by the growing population can be furnished without changing land requirements, it is not likely that the trend of farm land prices will be upward. So, for the next few years, it is probable that average land values will remain nearly stationary.

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Lionel C. Holm, '26, is farming near Vesper, Kan.

# Sugar Beet Production in the United States

A. A. Mast, '30



The sugar beet industry in the United States has but recently passed out of the experimental stage, yet it has grown until today it is one of our important industries. In those areas where the sugar beet is the principal crop, the prosperity of the people has been quite noticeably increased, due chiefly to efficient methods of handling.

Before seeding time each year, field representatives of the sugar companies solicit contracts with the farmers for a definite number of beets. The rate per ton to be paid by the company is stated in the contract. A labor contract is also supplied by the company, which the farmer and the laborer who contracts to do the hand labor sign. This provides that the farmer is to pay the laborer a definite sum per acre for the various operations. This system of keeping the expenditures for caring for the crop and the price to be paid per ton for the beets nearly constant, makes the net returns dependent on the yield. The yield is the problem of great importance to the beet grower.

The sugar beet seed in appearance is very similar to garden beet seed but is larger, being slightly larger than a garden pea. During the World war when importation was difficult, from one-third to one-half of the seed planted in the United States was home-grown. At the present time, however, most of the seed is imported from Germany and France.

The sugar beet is a biennial plant. In most of the beet-producing areas in the United States, the winters are so severe as to necessitate digging the beets in the fall, burying them in trenches deep enough to prevent freezing during the winter, and digging them out in the spring and transplanting. These beets which are replanted are called stecklings. In leading seed-producing areas climatic conditions are such that the stecklings may be overwintered in the field without digging. As is the case with other crops, home-grown seed is best adapted, consequently the United States Department of Agriculture has been conducting experimental work

in New Mexico, where the winters are mild, on the overwintering of beets in the field. Good results have been obtained, making it quite probable that the time is coming when the United States will produce its seed at home.

The seed bed is the foundation of the beet crop. A finely granulated soil, leveled to allow good irrigation and moist enough to germinate the seed and to keep the seedling growing, constitutes a good seed bed.

The date of planting varies with the region and with the season. In most regions it is



IRRIGATING SUGAR BEETS BY THE FURROW METHOD

in late March, April, or early May. Planting must not be too early, however, or the seed will rot before the soil is warm enough to allow it to germinate.

From 13 to 20 pounds of seed per acre, depending on the size and per cent germination of the seed and the climatic conditions, are planted in rows 20 or 22 inches apart. In case the ground is dry enough to require an irrigation before the seed will germinate, a ditcher attachment is attached to the plant-

(Continued on page 80)

# COLLEGE NOTES

## ANNUAL GAMMA SIGMA DELTA ELECTION

The Kansas chapter of the Honor Society of Agriculture, Gamma Sigma Delta, held its annual election March 7, 1930. Four members of the college faculty, 22 candidates for the master's degree this spring or summer, and sixteen college seniors were honored by election to membership and were initiated before the annual banquet Tuesday, March 11. Those elected are:

### Members of the Faculty

Prof. F. C. Fenton, head of Department of Agricultural Engineering.  
 Assoc. Agron. A. F. Swanson, Fort Hays Branch Agricultural Experiment Station.  
 Asst. Prof. C. H. Whitnah, Department of Chemistry.  
 Asst. Prof. E. J. Wimmer, Department of Zoology.

### Candidates for Master's Degree

NAME	Major Department
Glenn Allen Aikens.....	Bacteriology
Marion Isabell Campbell.....	Zoology
George E. Cauthen.....	Zoology
Emery Jack Coulson.....	Chemistry
Loren LeRoy Davis.....	Agronomy
Lawrence William Decker.....	Animal Husbandry
Austin Gerald Goth.....	Agronomy
Bernice Lucille Harper.....	Zoology
Ralph Edward Hodgson.....	Dairy Husbandry
Otho J. Hopper.....	Animal Husbandry
Harold Christian Larsen.....	Agricultural Econ.
Arthur William Lindquist.....	Entomology
Arthur Meyer.....	Horticulture
Robert Russell Murphy.....	Poultry Husbandry
Marjorie Prickett.....	Zoology
Ralph Schopp.....	Entomology
Dwight M. Seath.....	Dairy Husbandry
Clifford Lovejoy Smith.....	Dairy Husbandry
Glen Sanborn Smith.....	Agronomy
Coit Alfred Suneson.....	Agronomy
Nelson John Wade.....	Zoology
Temple Fay Winburn.....	Entomology

### Seniors in Division of Agriculture

John Jay Curtis  
 Raymond Glenn Frye  
 Oliver Glen Lear  
 Eugene Marshall Leary  
 Thomas Nelson Meroney  
 Raymond William O'Hara  
 Francis James Raleigh  
 Louis Powers Reitz  
 Miner Ray Salmon  
 Fredrick Henry Schultis  
 Henry Brown Walter

### Seniors in Division of Veterinary Medicine

Wesley Watson Bertz  
 Thomas Joy Leisure  
 Henry Devore Smiley

### Seniors in Department of Agricultural Engineering

Henry John Barre  
 Herbert Norman Stapleton

The constitution of Gamma Sigma Delta permits the election of not to exceed 15 per cent of the seniors in the Divisions of Agriculture and Veterinary Medicine and seniors of other divisions equally high in scholarship and whose work is closely related to agriculture. Besides being outstanding in scholarship candidates must be of worthy character and give promise of leadership in agricultural lines. Candidates for the master's degree must be exemplary in character and outstanding in scholarship while election of faculty members is for meritorious service of not less than three years duration.

Clifford C. Eustace and Walter P. Powers, seniors in the Division of Agriculture, were elected to membership in Gamma Sigma Delta in the spring of 1929.

### KANSAS AGGIES DENVER'S BEST

Winning by the largest margin of points ever scored in a college live stock judging contest at the National Western Live Stock Show January 18, 1930, the junior team from the Kansas State Agricultural College carried home the college challenge trophy.

The team was very consistent in their scoring as they had the first, second, fifth, seventh, and eighth high man. Five teams competed in the contest, their ranking and scores being as follows:

RANK	TEAM	SCORE
1st	Kansas .....	3,605
2d	Nebraska .....	3,456
3d	Wyoming .....	3,362
4th	Utah .....	3,336
5th	Colorado .....	3,319

There was a wider margin between first and second place than between second and last place. The Kansas team ranked first in the judging of fat stock, having a score of 2,021, while its nearest competitor, the Utah

Agricultural College, had a score of 1,874. In the judging of breeding stock, the Kansas team tied with the team from the University of Nebraska, both having a score of 1,584 points. The Kansas team ranked first in the judging of cattle, sheep, and horses, and second on hogs.

As usual much credit for this outstanding team goes to its coach, Prof. F. W. Bell.

In judging breeding stock, Wilson was third and Brookover fourth. Bruce R. Taylor tied with Munn of Nebraska for first place in judging beef cattle. Will M. Myers was fourth. In hog judging Brookover was high man and Wilson was fifth. Will M. Myers was second in judging of horses and Taylor and Wilson tied for fourth.

The contestants placed ten classes of live



JUNIOR LIVE STOCK JUDGING TEAM, JANUARY, 1930

This team made an outstanding record in the Denver contest. Not often does a team make such a sweep against worthy competitors. From left to right those in the picture are: Standing—John L. Wilson, Prof. F. W. Bell (coach), George S. Brookover. Seated—Bruce R. Taylor, Will M. Myers, Ebur S. Schultz, Carl Williams.

The high man in the contest was George S. Brookover, Eureka, with 744 points. John L. Wilson, Geneva, placed second with 736 points. Other members of the Kansas team were: Bruce R. Taylor, Alma; Ebur S. Schultz, Miller; Will M. Myers, Bancroft; and Carl Williams (alternate), Dodge City.

The trophy awarded to the student making the best individual record as a judge of fat stock was won by George S. Brookover. John L. Wilson ranked third in judging fat stock.

stock and gave oral reasons on six. Total number of points possible for each contestant to score was 800. —F. H. S., '30.

#### ANNUAL SHOP CONTEST

The fifth Annual Shop Contest will be held Monday and Tuesday, April 28 and 29, 1930. If plans and prizes indicate results, the contest will certainly be the largest high school shop contest ever held at K. S. A. C. There will be more sections of the contest than ever

and an unusual list of valuable prizes. These include two fine hand saws; one jack plane; two back saws; one mahogany finished level; one aluminum level; one ratchet brace; one take-down square, the best of its kind; one automatic screw driver; and one compass saw. Other prizes are to be announced at the time of the contest. The school winning the most points will receive a hand-lettered parchment certificate.

Contests will be given in welding; roof framing; concrete work; identification of standard farm machine parts, tools, hardware, etc.; and valve timing and trouble shooting. An objective test to show the contestants' knowledge of repairing, adjusting, and operating farm machinery and equipment will also be given.

The Department of Agricultural Engineering is cooperating with the Department of Shop Practice in making this a contest which will mean something to those who enter. It is the opinion of those in charge that the contest should do much to stimulate shop work in departments of vocational agriculture throughout the state.

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#### STATE VOCATIONAL AGRICULTURE JUDGING CONTEST

The tenth annual State High School Vocational Agriculture Judging Contest will be held at the college Monday and Tuesday, April 28 and 29, 1930. Practically all of the departments of vocational agriculture in Kansas high schools will likely send teams. Entries from other high schools will be welcomed and as in the past, undoubtedly a few schools, especially those contemplating organizing departments of vocational agriculture within the next few years, will be represented.

One team of three members from each school is allowed. The same entrants must go through the entire contest, placing classes of (1) beef cattle, horses, hogs, and sheep; (2) dairy cattle; (3) grain; and (4) poultry. However, high schools that do not find it possible to send a team to compete may enter one or two individuals who will have equal chances with others in winning individual prizes.

Prizes will be awarded to the team making

the highest general average in the entire contest, to the team making the highest general average in each of the four sections of the contest, to the individual making the highest general average on all classes in the contest, and to the individual making the highest general average in each of the four sections of the contest. Ribbons will also be awarded not only to the first five high teams and the first five individuals in the entire contest but also to the first five teams and the first five individuals in each of the four sections of the contest.

There is no question but what the competition will be keen and that the event will be a star event in the year's school record of practically all of the high school boys entered.

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#### JOHN BELL WINS DAIRY FITTING AND SHOWING CONTEST

At the fourth Annual Aggie Dairy Fitting and Showing Contest held February 5 and 6, 1930, John G. Bell of Atchison was declared the grand champion showman over the other 31 students who entered the contest. The preliminary contest was held February 5, when the champion showman of each of the four dairy breeds was selected. These champions and the animals they fitted and presented are shown in the accompanying illustration. The following night at the Little American Royal Live Stock Show these four champion showmen competed for the grand and the reserve championship.

Bell drew as his entry in the contest, Strathglass Elmbar 38544, the Ayrshire junior herd sire of the college dairy herd. Beginning 14 days previous with the young bull, which was unruly, rough in appearance, and without training, Bell led him into the ring on the last night showing an almost perfect job of fitting and was successful in outshowing the other three contestants.

Walter P. Powers of Netawaka was awarded reserve championship on his entry, Manora's Tessie, a Jersey heifer. Powers, who was also at the same disadvantage in drawing a young animal, had done a creditable job of fitting, and because he was capable of showing his animal to her best advantage, was awarded the reserve championship over the two remaining showmen:

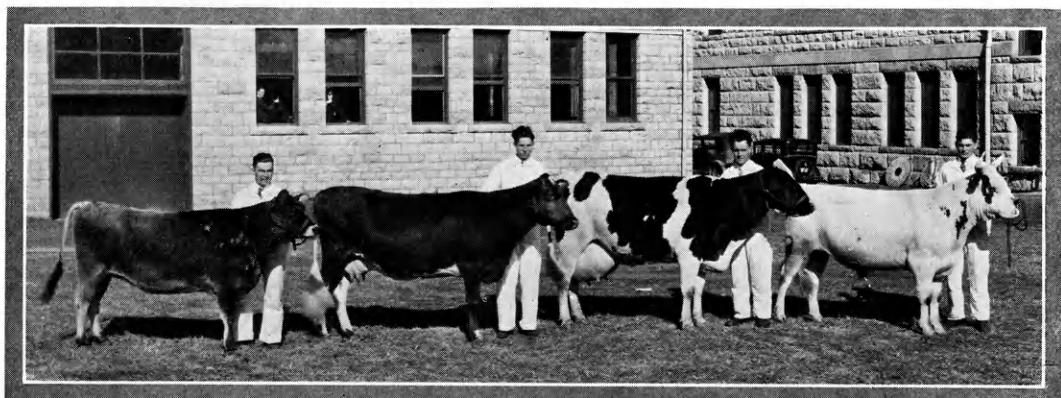
Harold B. Harper of Fort Scott, champion Guernsey showman, and William H. Juzi of Florence, champion Holstein showman. The grand champion was awarded a silver loving cup and the reserve champion a kodak valued at \$15.

Most of the contestants entering the contest made a wonderful improvement in the condition of their animals and received worthwhile experience in fitting and showing. In addition several smaller prizes were awarded to the lower placings.

25, 1930. The premiums offered will be somewhat larger than last year, especially in the out-of-state chick class.

Students majoring in poultry husbandry will have charge of the show. Those in charge are: E. M. Leary, Lawrence, superintendent; R. F. Brannan, Meade, entry manager; Dale E. Halbert, Abilene, secretary-treasurer; and T. G. Harris, Manhattan, publicity manager. Prof. H. M. Scott is the faculty adviser.

As in former shows, there will be an egg exhibition class for each of the four college



BREED CHAMPIONS IN THE DAIRY FITTING AND SHOWING CONTEST, 1930

From left to right: Walter P. Powers and the reserve champion Jersey heifer he showed; Harold B. Harper and his champion Guernsey; William H. Juzi, a Farmers' Short Course student, and his champion Holstein; and John G. Bell and his grand champion young Ayrshire bull, Strathglass Elmbar.

The Aggie Dairy Fitting and Showing Contest had its origin four years ago as an activity sponsored by the Dairy Club for the purpose of giving students interested in dairy-ing an elementary training in fitting and showing of dairy animals. Each entrant is allowed 14 days in which to work on his animal and is judged 50 per cent on the improvement made in the general appearance of the animal and 50 per cent on his ability to show his entry. The contest this year was managed by John L. Wilson of Iola, a junior in the Division of Agriculture.

—R. W. S., '31.

classes, freshmen, sophomores, juniors, and seniors. Trophies will be awarded in each class. It is expected that, as usual, these classes will show keen competition.

#### THE LITTLE AMERICAN ROYAL

The seventh annual Little American Royal, under the auspices of the Block and Bridle Club, was held on Thursday, February 6, 1930, in the judging pavilion. Many more people than the pavilion could accommodate gathered to witness the competition among the 50 students who fitted animals for the show.

Mr. O. B. Peterson, a representative of the Daily Drovers Telegram, acted as judge. He was assisted by the college herdsmen on their respective classes of live stock.

The American Royal Grand Championship

#### BABY CHICK AND EGG SHOW

The fifth Annual Baby Chick and Egg Show will be held in the rooms of the Department of Poultry Husbandry, April 22 to

trophy was won by Earl Coulter of Willis, a freshman in the Division of Agriculture, showing the first prize winner in the horse class. This beautiful trophy, presented by the American Royal Live Stock Show, was a new feature of the contest, and added much enthusiasm to the competition.

The winners in the respective divisions were as follows:

#### Horses

1. Earl C. Coulter, Willis
2. Lewis S. Perkins, Argonia
3. Herbert W. Clutter, Larned

#### Cattle

1. Ralph O. Snelling, West Point, Ind.
2. Bruce R. Taylor, Alma
3. Robert M. Hodgson, Little River

#### Hogs

1. Dave A. Carlson, Manhattan
2. George M. Fletcher, Pawnee City, Neb.
3. Francis W. Castello, McCune

#### Sheep

1. William G. Nicholson, Neal
2. D. Frank Stouffer, Glen Elder
3. Bruce R. Taylor, Alma

Medals were contributed for the first prize winners by alumni of the college. Mr. R. L. Scholz, '26, Frankfort, was the donor of the sheep medal; Mr. Earl T. Means, '22, Everest, the one for hogs; Mr. Merton L. Otto, '21, Riley, the cattle medal; and Dr. C. W. McCampbell, '18, K. S. A. C., the medal for horses. To those who so generously contributed the prizes is due much of the success of the show.

Among other features of the program was the presentation of the live stock judging teams by President F. D. Farrell. Prof. Louis C. Williams, representing the Division of College Extension, presented prizes to the winners in the Kansas Beef Production Contest, the Kansas Pork Production Contest, the Farmers' Judging Contest, and the Farmers' Short Course Judging Contest.

Perhaps the cats were the most popular entries in the contest. Especial skill was necessary on the part of the judge to place them according to their respective feline merits, but it was generally conceded that Dick Stumbo placed first, with John Wilson, Jack Hoss, and Jim Yeager tying for second.

As few of the contestants had had an opportunity to eat supper, the bounteous feed provided by the nutrition committee assisted by girls from the Division of Home Econom-

ics was most enjoyable to them. Immediately after the program, contestants, judges, donors of prizes, and faculty members of the Department of Animal Husbandry hurried to the meats laboratory for the meal. It is planned to make this get-acquainted good-fellowship banquet an annual affair. With such a treat as the final feature of the evening, the prospects for a splendid Little American Royal next year should be promising.

—R. W. O., '30.

## SUGAR BEET PRODUCTION

(Continued from page 75)

er in such a way as to make a furrow between the rows for irrigation. (See accompanying illustration.) Shallow planting is necessary to allow the seed to come up sufficiently well to make a good stand.

Cultivation is begun soon after planting, regardless of whether or not the beets are up. Such early cultivation is for the purpose of keeping ahead of the weeds, and must not be deeper than three or four inches.

The beet seed contains from one to several germs so several plants may arise from only one seed. Many attempts have been made to develop seed having but one germ, but none have been successful. Because of this variability, it is advisable to plant more seed than necessary so as to have enough beets covering the land to have a perfect stand after they are thinned. About the time the fourth leaf appears on the young plant they are ready to be thinned.

Blocking is the first operation in the thinning process. It consists of cutting out a portion of the beets in the row, with a hoe, leaving little bunches about two inches wide at the desired intervals. In most cases a plant every 12 inches gives the best results, considering both the yield and sugar content.

After blocking, the little bunches left must be thinned until there is only one plant remaining. This also is done by hand. The careful selection of the strongest plant in the bunch and leaving it, aids the yield materially.

Cultivation must be continued immediately after thinning to keep down weeds and maintain a good soil condition. Some recommend

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# FARM NOTES

## VIRGIL P. RUSH KANSAS CHAMPION IN CORN PRODUCTION

Virgil P. Rush of Severance, Doniphan county, Kansas, was recognized Farm and Home Week as the state corn production champion for 1929. In winning this recognition he repeated his performance of 1926, the first year of the present series of Kansas corn contests.

For many years Mr. Rush has been a prize winner in corn production. He is the only corn producer in Kansas to be in the 100-bushel corn club every year since that organization was formed. His name is thus on the club rolls for four years in succession—1926, 1927, 1928, and 1929.

The scores for the 1928 state championship showed Mr. Rush third. His yield that year was 109.29 bushels per acre but the quality of his corn kept him from winning the contest.

Like his strongest competitors for corn production championship honors, Mr. Rush recognizes that high yield must be associated, first of all, with soil fertility. Legumes are faithfully included in his rotations. His seed, of excellent variety, is field picked, well cared for, and ear tested. Of the production of the corn on his 1929 five-acre contest plat he says:

"The ground is upland that has been farmed continually since 1860. I use the rotation corn, corn, oats, wheat, red clover. If it is too dry in the spring to sow red clover the first season the land is in wheat I crop it again to wheat the following year.

"Last year's corn was on red clover ground. I plowed under a green crop of red clover the first of May, eight inches deep; harrowed it twice; planted it the tenth of May with a furrow opener. When the young corn was in the third leaf I harrowed it. I cultivated it only twice after that. The soil was clean and mellow.

"In planting I used the best ear-tested seed I had. It had been field picked and dried before freezing weather. The sample shown in Manhattan was the same corn with which I had won the Doniphan county corn contest.



VIRGIL P. RUSH

"I gave this field no better attention than the rest of my crop. It was injured slightly by the dry weather in August."

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### KANSAS CORN CONTESTS Championship to Cloud County

Among results announced during Farm and Home Week was the 1929 county corn championship. Cloud county won and received an award of \$300.

Each county competing for this award

## THE KANSAS AGRICULTURAL STUDENT

must have at least 10 entrants in a five-acre Corn Improvement Contest. Cloud had 28 entrants and its contest was marked by excellent financial support, good management, and enthusiasm all along the line. Franklin county placed second and Brown, third.

This is the first year a county award has gone so far west in the Kansas corn belt. Brown county won in 1928, Allen in 1927, and Doniphan in 1926.

### **County Champions**

In each county contestants entered in the five-acre Corn Improvement Contest compete for individual honors. The county champions compete during Farm and Home Week for state championship. Twelve county champions were entered in this contest February 4 to 7, 1930. The following tabulation gives their names, counties, post offices, and the yield of their last season's contest plat:

Virgil P. Rush of Severance was named

NAME	COUNTY
Virgil P. Rush.....	Doniphan .....
Frey Brothers .....	Riley .....
H. E. Staadt.....	Franklin .....
Henry Bunc.....	Brown .....
Lawrence Hoover.....	Geary .....
Eyler Brothers.....	Allen .....
J. D. Thomas.....	Anderson .....
D. D. Hawk.....	Atchison .....
Rudolph Grittman.....	Cloud .....
W. H. Peel.....	Crawford .....
W. J. Adams.....	Leavenworth .....
David Bieri.....	Nemaha .....

state champion. Frey Brothers of Manhattan, Riley county, placed second. In fact the total scores placed the first five contestants in the order given in the above tabulation.

Two other interesting and important phases of the state Corn Improvement Contest are the Blue Ribbon Corn Show and the One Hundred Acre Corn Club.

### **State Blue Ribbon Corn Show**

Any winner of a blue ribbon in a county or community corn contest last fall could enter a 10-ear sample of his blue ribbon corn in this contest. H. C. Olsen of Hiawatha took first in the yellow corn class. His sample was then considered slightly better than the 10-ear white corn sample of Clark Works, of Humboldt, which placed first in its class. Thus Mr. Olsen was awarded sweepstakes and the silver loving cup.

The five high men in each class in the Blue Ribbon Corn Show were:

### **YELLOW CORN**

1. H. C. Olsen, Hiawatha
2. H. B. Jacobsen, Horton
3. Virgil P. Rush, Severance
4. O. J. Olsen, Horton  
(A brother of H. C. Olsen)
5. David Bieri, Bern

### **WHITE CORN**

1. Clark Works, Humboldt
2. C. W. Works, Humboldt  
(Father of Clark Works)
3. Harold Staadt, Ottawa
4. G. F. Renssenger, Garnett
5. Henry Bunc, Everest

### **One Hundred Bushel Corn Show**

Any man in the contest having a yield of 100 bushels per acre becomes a member of the 100-bushel club. The 1929 club had four members as follows:

NAME	ADDRESS	YIELD PER ACRE
Virgil P. Rush.....	Severance .....	105.13
Joe Koelliker.....	Robinson .....	106.55
Hubert Casper.....	Junction City .....	107.33
Gaylord Munson.....	Junction City .....	103.70

POSTOFFICE	YIELD PER ACRE
Severance .....	105.13 bus.
Manhattan .....	87.88 bus.
Ottawa .....	81.17 bus.
Everest .....	76.45 bus.
Junction City .....	94.73 bus.
La Harpe .....	79.66 bus.
Garnett .....	85.27 bus.
Effingham .....	76.51 bus.
Glasco .....	74.66 bus.
Cherokee .....	58.98 bus.
Leavenworth, R. 5 .....	74.96 bus.
Bern .....	55.99 bus.

In 1928, 21 contestants each produced 100 bushels or more of corn per acre. In 1927, the corn club numbered 19, while in 1926, the first year of the present series of corn contests in Kansas, but two growers reached the 100-bushel mark.

### **THE STATE CHAMPION WHEAT GROWERS CONTEST**

Tom L. Bair, of Minneola, Clark county, was announced as the champion wheat grower of Kansas for 1929 at the Annual Farm and Home Week banquet February 7, 1930. As a result Mr. Bair was awarded a silver trophy and a cash prize of \$300. Reuben Anderson of Kanorado, Sherman county, was awarded second prize, \$200, and Tom Stauth of Dodge City, Ford county, third prize, \$100.

The accompanying tabulation gives a complete list of the county wheat champions for

1929. In winning the contest Mr. Bair competed with the county champions of 29 other counties of the state. His sample of wheat was selected from a field of 60 acres which yielded an average of 42.5 bushels per acre,

with a test weight of 58.5 pounds per bushel, and a protein content of 13.65 per cent.

Mr. Bair is a firm believer in farming practices advocated by the college and much of his success in raising wheat can be attributed



A GROUP OF COUNTY WHEAT CHAMPIONS, 1929

Front row, left to right: Cunnea, Hineman, Andres, Skolout, Olson, Bair, Fiester. Middle row: Cooper, Hammond, Grubb, Wright, Zerfas, Brown, Taylor, Howard. Back row: Shier, Luft, Buller, Kingsley, Anderson, Stauth, Guggisburg, Hodgson.

COUNTY WHEAT CHAMPIONS, 1929

COUNTY	CHAMPION	POSTOFFICE	Test wt. per bushel Lbs.	Per cent protein	Yield per acre
Barton	Lawrence Brown	Great Bend	61.00		33.42
Clark	T. L. Bair	Minneola	58.50	13.65	42.50
Comanche	K. G. Ehrlich	Coldwater	61.60	12.25	44.58
Edwards	Charles Anderson	Kinsley	59.20	11.70	24.80
Ellis	H. M. Kingsley	Hays	61.00	12.06	32.00
Ellsworth	Chauncey Grubb	Ellsworth	61.50	11.35	17.65
Ford	Tom Stauth	Dodge City, R. 2	63.90	11.29	48.33
Gove	Sherman Iesembise	Quinter	58.50	12.10	34.75
Gray	Guy Josserand	Copeland	61.50	11.88	41.50
Harvey	P. C. Andres	Newton, R. 3	61.00	12.20	19.25
Haskell	C. F. Wright	Sublette	62.20	12.60	30.00
Hodgeman	E. P. Fiester	Jetmore	62.50	10.96	45.00
Kiowa	R. S. Burnette	Mullinville	63.50	12.28	32.40
Lane	H. T. Hineman	Dighton	62.20	13.08	50.70
Lincoln	Robert Guggisburg	Sylvan Grove	60.00	12.32	18.50
Meade	L. J. Cunnea	Plains	61.80	11.88	44.50
Osborne	Walter Paschal	Luray	60.00	12.32	18.50
Pratt	J. R. Cooper	Preston	61.00	12.60	20.00
Rawlins	Will Skolout	Beardsley	62.50	10.20	30.68
Reno	Herbert Buller	Buhler	61.25	11.50	25.00
Rice	E. H. Hodgson & Son	Little River	58.00	12.52	16.22
Rush	John N. Luft	Bison	61.60	11.70	36.00
Russell	A. J. Olson	Russell	62.00	13.00	26.00
Saline	George Shier	Gypsum	60.00	13.70	20.00
Sheridan	T. G. Taylor	Hoxie	58.00	12.70	36.80
Sherman	Reuben Anderson	Kanorado	58.75	12.65	35.00
Stafford	G. D. Hammond	St. John	60.00	14.28	20.54
Thomas	Earl C. Howard	Oakley	56.60	12.65	20.00
Trego	Jake Zerfas	Ogallala	58.00	14.40	21.00
Wallace	Jess Roberts	Sharon Springs	56.80	14.87	17.50

to a combination of good management, early seed bed preparation, sowing good seed which has been treated for smut, and practicing correct methods for control of Hessian fly. He has farmed in Clark county 25 years and has contributed much to the work of the county farm bureau and progressive community enterprises. (His home is shown on our contents page.—Ed.) —L. M. S., '32.

#### **PROVIDING CHEAP BUT SAFE PROTECTION FOR THE LITTLE PIGS**

A-shaped colony houses can be used to make excellent "cold weather" farrowing quarters in the following manner:

Select a convenient spot which can be devoted to this purpose for 2 months each spring and be free from hogs the other 10 months of the year. Grade the dirt up with a slip into a broad ridge running east and west so that when a row of the houses are set on it, facing south, the water will drain away both to the north and south. Line the houses up touching each other. About 2 feet to the rear, build a fence 4 to 6 feet high and run it around the side of each of the two end houses. Stuff straw down between this fence and the houses and also fill straw in between the houses until they are nearly covered with well settled straw. Nail boards across the spaces between the fronts of the houses. Pens can now be built in front of the houses the width of each house and 8 to 10 feet long.

If it is desired to floor the houses and pens against mud some 1- by 12-inch boards can be kept for this especial purpose. About \$20 worth of such lumber will floor 6 houses and 6 pens. The boards should be dried and stored in a shed as soon as the houses have been moved to their summer quarters in the pasture. —Earl Means, '22.

A number of hog raisers in northeastern Kansas follow Mr. Means' plan wholly or in part. It insures warm farrowing quarters for a minimum outlay. Such quarters are very similar to those recommended by the Nebraska Agricultural Experiment Station and known as "Blizzard Beaters." —Ed.

#### **COOPERATIVE BULL ASSOCIATIONS**

Where harmony among the members can be secured, cooperative bull associations are

proving to be a valuable factor in breeding up small herds of dairy cattle, according to J. W. Linn, extension dairyman. The chief advantage of such associations lies in the fact that they furnish better sires within the cost range of the average small breeder.

The Washington County Holstein Bull Association is one of the most successful associations in Kansas. It was organized a number of years ago and consists of four blocks, each having several members. Good bulls were bought by the association for each block and the expenses prorated on the basis of the number of cows owned by each member. At the end of every two years each bull was moved to a new block. At the present time two of the four original blocks are still operating successfully.

Another form of cooperation among dairy herd owners that is being used to quite an extent at the present time is known as a "bull ring." In this, three or four breeders each buy a bull, and then at the end of two years the bulls are traded. This gives the advantage of keeping a sire until his value is known, and also reduces the cost of replacing the bull every two years. —J. L. W., '31.

#### **PLANTING CORN AND GRAIN SORGHUMS IN WESTERN KANSAS**

The common practice in Kansas of planting corn and grain sorghums with a lister directly in a cold, wet seed bed often results in poor stands and reduced yields. An improved method has been developed at the Fort Hays Branch Agricultural Experiment Station after many years of experimentation, in which the ground is deeply blank-listed during the late fall or early winter. The alternate freezing and thawing and the accumulation of snow in the furrows have a mellowing effect on the soil. During March and April the penetrating heat of the sun warms the furrow bottoms.

Some time in April when the first weeds have germinated abundantly but before they become uncontrollable, the furrows are "thrown in" with a ridge buster or the ordinary disk weeder. This procedure must be done from two to three weeks before planting time, since the weeds that are covered by

soil require this much time to be killed by smothering.

At planting time the old furrows are "nosed out" with a lister, or preferably with the loose-ground disk planter. Regardless of the implement used, it should not be set to run so deeply as the original furrow bottom. By leaving several inches of moist, warm, mellow soil in the old furrow bottom the seed germinates rapidly and the tender plants soon grow with much vigor. With the new process the sides of the furrow walls are less abrupt and dashing rains neither cover nor wash out the young plants as is so common with the old-fashioned way of planting; neither does the furrow soil crust so readily.

A much greater advantage is gained if the "nosing out" and planting operation is done with the loose-ground disk planter. The furrow bottoms are made much wider and gentler furrow sides are obtained. Also the middles of the ridges are better covered than with the lister so that the second crop of weeds is entirely destroyed at planting time.

With the above type of seed bed preparation for rowed-crops, corn and sorghums can be planted much later for highest yields. In fact, the optimum date for planting corn and sorghums at Hays has been found to be the last week in May, whereas the common practice is to plant in late April or early May.

—A. F. Swanson, '19.

#### THE REASON FOR LOWER BUTTER PRICES

Increased per capita consumption of butter substitutes probably has received more attention in the national discussion as to the cause of the present dairy situation than any other factor. By many men who have voiced their opinion on the subject, the use of butter substitutes has been the chief problem on which they based their arguments, and the one which must be solved before the dairymen can hope for the return of a profitable outlet for their dairy products. Of course, there has been an increase in the consumption of oleomargarine; however, this

	<h1>AG FAIR</h1>	
<b>AG F A I R</b>	<p><b>"THE BIGGEST STUDENT STUNT IN KANSAS"</b></p> <p><b>North Campus</b>      <b>Saturday, May 3, 1930</b></p> <p><b>Parade, 11:30 A. M.</b></p> <p><b>Pike Open 3:00 to 12 P. M.</b></p> <p><b>Big Afternoon Performance</b></p> <p><b>Concessions — Side Shows — Eats</b></p> <p><b>Follies and Minstrel Shows in Evening</b></p> <p><b>D A N C E 8 P. M.</b></p> <p><b>Tenth Annual Performance</b>      <b>DON'T MISS IT</b></p>	<b>AG F A I R</b>
		

increase is not without some justification and it is but one of several factors that have worked hand-in-hand in producing the slump in butter fat prices.

Increased consumption of oleomargarine is justifiable from the standpoint of those who have turned to the use of such butter substitutes because they were facing a period of decreased buying power. There has been an increase in unemployment since last May, and this unemployment alone would naturally place restrictions upon the buying power of the working class. With a limited purchasing power, and relative high butter prices which prevailed through the first half of last year, many families were forced to use oleomargarine in the place of butter.

The decrease in the consumption of butter began in May, 1929, and is estimated to have caused a decline of about 1.5 per cent in the annual trade output of the product. At the same time the storage stocks, due to an increase in butter production, were the largest on record, there being on September 1, 169,000,000 pounds of butter in storage. This resulted at the close of the year in storage stocks of 82,000,000 pounds in excess of the five-year average.

The increase in production may be accounted for by either of two causes, and in a truer sense it is the result of both: First, a small increase in production on the part of the farmer and dairyman; and second, the increased per cent of total milk used in the manufacture of butter. Although on January 1, 1929, there was a decrease reported in the number of cows on the farms in the United States, at the same time better selection and improved methods of feeding and management have tended toward higher production. On the other hand, there was a decrease of 59,000,000 pounds of cheese in 1929 as compared with 1928. This resulted in more milk being turned to the production of butter. With these conditions prevailing, along with the higher butter prices and the reduced buying power of many people, forcing them to use butter substitutes, the only way to move the excess butter on storage was to reduce the price to a point that would stimulate sales.

So it is not correct to place the responsibil-

ity for lower butter prices on the consumption of butter substitutes alone; nor on the increased production on the part of the dairymen. It is both of these factors accompanied with the limited purchasing power brought on by unemployment. —R. W. S., '31.

### SEED CORN SITUATION

Kansas seed corn is in the poorest condition this year of any year since 1921. It is moldy, of poor quality, and very low in germination. In some parts of the state less than 25 per cent is suitable for planting.

Of all seed corn samples sent to the State Seed Laboratory for germination tests during the past eight years, 1922 to 1929, inclusive, the average of the germination tests was 92.5 per cent. The average test of 603 samples tested before March 1 this season (not including County Corn Improvement Contest samples) was only 76 per cent, or 16.5 per cent below the average for the previous eight years. Sixty-five per cent of the 603 samples fell below 90 per cent in germination.

The poor germination of last season's corn is undoubtedly due to delayed maturity caused by an abnormally wet May, which delayed planting; a very dry August which delayed development; and a wet fall which prevented proper maturity before frost. The corn went into winter with a high moisture content and was hit by severe November freezes which greatly reduced the germinating power.

Corn harvested early and stored in a dry place to cure has decidedly higher germination. One such sample had 90 per cent germination while late-harvested samples from the same field had only 51 per cent.

This condition will necessitate careful selection of seed corn accompanied by a germination test. It would be wise for the small corn producer to test each ear. This is inconvenient for the large corn producer but he can at least make germination tests on several representative samples of his seed.

—J. W. H., '33.

J. F. True, '29, and Miss Vera Strong, f. s., were married February 16, 1930. They are at home on a dairy farm near Perry, Kan.

**THE 1929 KANSAS BEEF CHAMPION**

The 1929 Kansas Beef Production Contest was won by Bruce Saunders, of Holton, by virtue of producing the largest daily gains, at the least cost, and finishing his calves at an earlier age than any of his 19 competitors. His calves averaged 668 pounds at the age of 8 months and 20 days, and sold on the Kansas City market November 5, 1929, for \$16.25 per hundredweight, the top price for the year to that date. The total feed cost per calf was \$17.87, leaving a return for keeping the cows of \$87.78 each.

Mr. Saunders' entry consisted of 16 Hereford calves which weighed 253 pounds at the start and 721 pounds after a feeding period of 182 days. The calves made a total average gain of 468 pounds or an average daily gain of 2.57 pounds per head on the basis of home weights, and dressed 59.9 per cent. The score by points was as follows: Average daily gain, 40 points; dressing per cent, 24.9 points; economy of gains, 20 points; and herd management, 15 points; making a total score of 99.9 per cent.

Mr. Saunders maintains a herd of high-grade Hereford cows, and mates them with registered Hereford bulls of good type. The herd is wintered on bluegrass with a small allowance of alfalfa hay. The calves come early, are taught to eat as soon as possible, and are allowed free access to shelled corn in a creep feeder throughout the summer grazing period. The calves after being taught to eat are never allowed to go hungry and Mr. Saunders accounts for the rapid gains he produced to the fact that his calves consumed approximately 12 bushels of corn per head before weaning time, which came about October 1.

—B. R. T., '31

**THE ALL-MASH RATION FOR GROWING CHICKS**

Probably no other phase of poultry production has received more attention in the last few years than the feeding of chicks. Feed requirements of the chick are better understood today than four years ago. Poultrymen agree that feed and feeding methods influence the quality of the pullet placed in the laying house each fall.

The all-mash growing ration is the most

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are used for milk bottle washing—one for hand washing and the second for machine washing.

WYANDOTTE washed bottles protect the quality and flavor of milk and cream placed in them. And too, the cost per thousand bottles washed when using WYANDOTTE is so low as to give the user a profit.

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recent development in chick feeding. Although the season of 1929 really marked its introduction to Kansas, it was met with great favor and there is every indication that it will be used even more extensively during the 1930 brooding season. The chief advantages of the all-mash over the grain and mash are, first, that labor is reduced and, second, that it is a more sanitary method of feeding.

The 1929 all-mash formula used by the Kansas Agricultural Experiment Station has been improved upon. Instead of feeding three different mash rations during the brooding season, the 1930 formula calls for but two, a starting mash fed for the first eight weeks and a finishing ration fed from the ninth week to maturity. Another change is that of the mineral mixture. The 1930 ration does not include ground oyster shell as it is believed that the bone meal and the bone in the meatscraps furnish enough calcium.

The 1930 all-mash ration for growing chicks is as follows:

	Starting Ration 1 to 8 weeks	Finishing Ration 9 to 24 weeks (a)
Yellow corn meal (coarse) ....	45 lbs.	51 lbs.
Wheat bran (coarse) .....	15 lbs.	15 lbs.
Oat meal or groats (ground) .....	15 lbs.	0 lbs.
Oats (ground) .....	0 lbs.	15 lbs.
Meatscraps .....	10 lbs.	10 lbs.
Dried buttermilk .....	5 lbs.	5 lbs.
Alfalfa leaf meal .....	5 lbs.	0 lbs.
Bone meal .....	3 lbs.	3 lbs.
Salt .....	1 lb.	1 lb.
Cod-liver oil .....	1 lb.	0 lbs.

(a) Note that a grain ration should be fed in addition to this finishing ration.

The starting ration should be fed in open hoppers as soon as the first chicks to hatch are 48 hours old. This mash should be before them at all times. Approximately three-fourths lineal inches of hopper space should be supplied each chick.

In order to lower the plane of protein intake, a grain ration consisting of 3 parts cracked corn and 1 part cracked wheat should be hopper fed late in the afternoon beginning with the ninth week and thereafter. This will help materially in preventing Leghorn pullets from coming into production before they have attained their body size.

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Bernard I. Melia, '27, is farming in Ford county, Kan. His address is Ford.

#### AN INCOME TAX FOR KANSAS

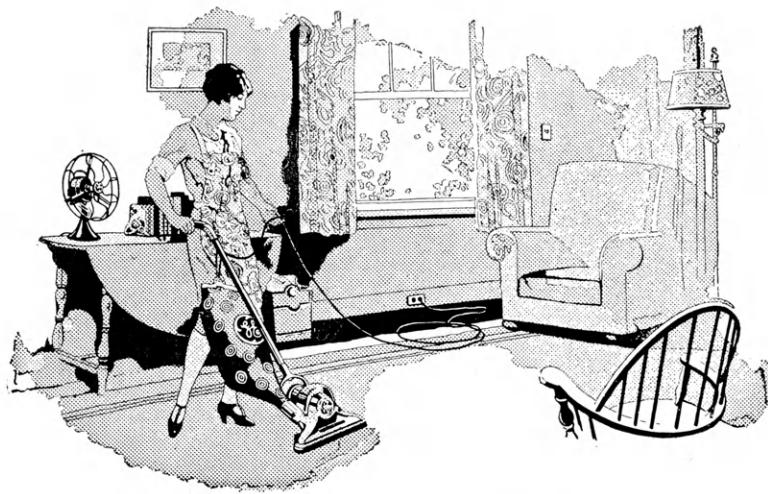
When the voters of Kansas go to the polls at the general election in November, they will have the opportunity to vote for or against an important amendment to the state constitution. The title and wording of the amendment will be as follows: "The Income Tax Amendment to the Constitution. . . . The state shall have power to levy and collect taxes on incomes from whatever source derived, which taxes may be graduated and progressive."

If a majority of the electors, voting on the amendment, vote for its adoption, the amendment becomes a part of the constitution. The adoption of the amendment would not assure Kansas of an income tax. On the other hand, the rejection of the amendment by the voters would not prevent an income tax from being passed at some later date. The vote, whether it be for or against, is merely to settle the question of constitutionality and leaves the proposition as to whether or not there will be an income tax up to the legislature. This fact is important for the voter to remember.

In the case of a favorable vote on the amendment, the legislature is not obligated to pass an income tax law. However, after the people have voted favorably, if the legislature should decide to enact such a law, that body will have the assurance that its act is within constitutional bounds. On the other hand, if the vote of the people should be to reject the amendment, the legislature would still have the right to enact an income tax law and have the constitutionality of the act tested in the supreme court afterwards.

With this amendment up for consideration and a well developed sentiment in Kansas for the passage of an income tax law, the present should be a good time for the voter to become well informed on the subject of income taxes. The recent report of the state tax code commission devotes 20 pages to a clear-cut explanation of income taxation and its special application to Kansas conditions. Among other things the leading arguments for and against the income tax are presented in the write-up. By giving 30 minutes of his time to reading this discussion of income taxes, the average man can acquire sufficient knowl-

(Continued on page 95)



## *Woman's Work..*

Woman's work is never done—certainly not if she lives on a farm! From early till late she cooks, cleans, and mends. In her "spare time" she is expected to take care of the chickens and the garden. Rarely has she even a few precious moments of leisure.

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# GENERAL ELECTRIC

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**SUGAR BEET PRODUCTION**

(Continued from page 80)

cultivation every seven to fourteen days, but the results of a number of experiments conducted with corn under similar soil and climatic conditions, indicate that such frequent cultivation is unnecessary, and probably injurious. There is, however, very little data on sugar beets to substantiate either theory.

Immediately following the first cultivation after thinning, the beets are hoed. They may also need one or more weedings during the season.

Irrigation as mentioned before is by the furrow method. The furrows are usually made by a special implement for this purpose or with a cultivator having special attachments for ditching. Frequent light irrigations are much more beneficial than infrequent heavy irrigations. Five or six irrigations under average conditions are usually required, though the seasonal rainfall affects it greatly.

Under semi-arid conditions, drainage is often necessary, especially where the soil is heavy or excessive amounts of water have been applied in irrigation. A high water table often develops under these conditions, which is detrimental to the growth of good beets. Soil alkali arises from such conditions, due to the deposition of soluble salts carried to the surface in the soil water by capillarity. Drainage is the most efficient means of reducing surface evaporation.

The maturity of the crop is indicated by the leaves changing their color from a dark glossy green to a yellowish green. It is at this period or a little later that the sugar content of the beet is at its maximum. The latter part of September is about the average time of maturity. The sugar companies govern the time harvest shall begin, thus preventing the beets being harvested before they are mature.

Harvesting consists of first loosening the beets in the soil with a beet puller and then pulling them by hand, knocking them together to remove loose dirt, and throwing several rows of beets together in neat, regularly placed piles. The beet puller in most common use consists of two wedge-shaped blades or prongs which are drawn through

the soil, one on each side of the row. They are run deep enough to loosen the beets and are inclined to raise them partly out of the ground.

Topping is done by hand and is a very important operation. The crown of the beet is low in sugar and high in salts which seriously interferes with the purification of the sugar. Consequently if too much crown is left on the beet the sugar company imposes a heavy tare and the grower loses the top which he might have kept for feed.

After topping, the beets are delivered to the beet dump or are covered over with leaves or straw to prevent evaporation. When a farmer delivers his beets to a dump, a representative from the sugar company takes a representative sample weighing approximately 30 pounds from about one-third of the loads hauled by each farmer each day. This sample is weighed, cleaned, topped, reweighed, and the per cent tare calculated. These are averaged for each farmer each day and the resulting per cent is docked from each load hauled by him that day. It is impossible for the factories to use all the beets as fast as they are delivered, so it is necessary to store them in piles. Then as they are needed by the factory, they are reloaded on wagons and hauled up the dump where they are dumped into cars.

The importance of crop rotation in sugar beet production has been given a great deal of consideration, more so than in the case of most farm crops. This has been brought about partly by noticeable increases in yield of beets, as well as of other crops, and also by damage done by insects and plant diseases, some of which are kept under control by rotation. Most important of these is the sugar beet nematode, which is an exceedingly fine, thread-like, colorless worm, so small it is difficult to see it with the naked eye. It enters the roots and feeds on the plant juices, thus killing the plants. Rotation is the only way this pest can be kept under control, hence, it has greatly increased the practice of crop rotation.

No one rotation can have a general application to all conditions but there are certain principles that are embodied in every good rotation. Every good rotation contains alfalfa

### **DYNAMITE removes farming handicaps**



# **Stumps and Boulders Must Go!**

**says today's "good farmkeeper"**

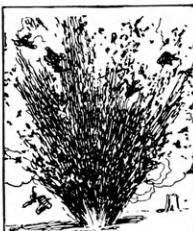
**T**HE farmer of today is taking those costly tenants . . . stumps and boulders . . . out of his fields. No longer can these farming handicaps eat up valuable land . . . hold up modern farm machinery . . . cut down production.

DYNAMITE has long since been recognized as the quickest, easiest way to get rid of stumps and boulders. It is a valuable tool progressive farmers use more and more every year. It makes for more efficient farming.

In the past few years several colleges have

introduced special courses which offer instruction in the use of explosives. Agricultural students find this instruction valuable in their work.

Detailed information about stump and boulder blasting is contained in a booklet, *Agritol for Field Clearing* . . . published by the du Pont Company. This booklet shows you methods of blasting and describes the outstanding qualities of Agritol . . . the most effective explosive for many farm uses.



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# DUPONT EXPLOSIVES

or other adapted legumes, and also provides for the use of all farm manures. As a general rule it is not wise to follow alfalfa with beets, as the alfalfa is not usually all killed out the first year and is apt to bother in the cultivation of the beet crop. Beets after potatoes make a very desirable sequence, giving much higher yields than beets after oats. Beets followed by oats, wheat, or barley used as a nurse crop for alfalfa, is a good practice.

As stated before, sugar beets are contracted for by the sugar companies at a definite figure before seeding time, consequently there is no danger of overproduction and clogging of the market. In 1929, one of the largest sugar companies in the United States contracted for their beets at \$7 per ton. The average tonnage, depending on the district and season, will be between 10 and 15 tons per acre,

though some are much higher and others lower. The hand labor expenditure as set by this same company in 1929 was \$23 per acre. This included \$9 for bunching and thinning, \$2 for hoeing, \$1 for all weeding necessary, and \$11 for pulling and topping.

As stated by one of the leading workers in the sugar beet industry, beet raising districts are able to support a much denser population than those raising only hay and grain. A denser population makes for better living conditions. Better roads and better schools are usually the consequence of beet raising. In short, beet raising districts, compared with hay and grain districts, distinguish themselves by safer and better crops; safer and better revenue; and, most important of all, more and better farmers.

## Alfalfa Diseases in Kansas

R. F. Germann, '31

During the last 10 years the acreage of alfalfa in Kansas has been greatly reduced. Much of this loss has been due to diseases, the chief of which are leaf spot diseases, root rots, winter injury, and bacterial wilt.

Leaf spots are fungous diseases, which are very common where alfalfa is grown as they may develop under a wide variety of conditions of soil and weather. Leaf spots are characterized by small brown spots about the size of a pin head which are present on both sides of the leaves. Badly infested leaves turn yellow or brown and drop off, thus reducing the yield and the feeding value of the hay.

If for any reason the plant is growing slowly, the stand is thick, or if the weather is frequently wet, only a few of the upper leaves reach full maturity before they are covered with the spots. It has been reported that in many places in Kansas the disease has caused a loss of 40 per cent of the first and second crops. In humid regions it is more destructive than in dry sections. Ordinarily the leaf spots are not severe enough to require special attention, but when the

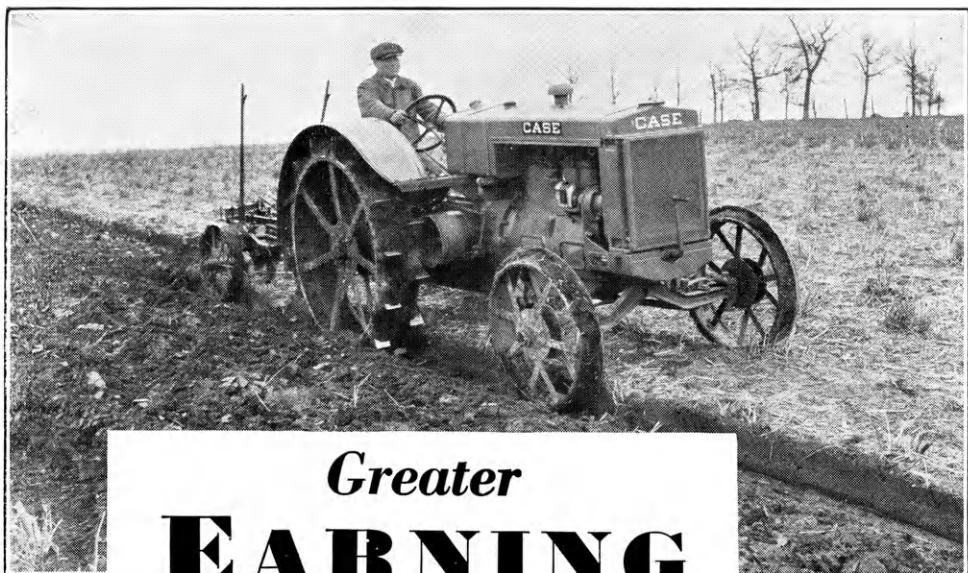
field becomes badly infested it is recommended that the crop be cut and removed.

Bacterial wilt of alfalfa is wide-spread in the United States. It is most prevalent in areas having annual rainfall exceeding 25 inches and least prevalent in irrigated regions. It does not confine its attacks to old fields but may often be found in abundance in fields two and three years old.

Bacterial wilt does not show any external lesions by which it may be recognized definitely. The most conspicuous symptom is a dwarfed habit with a tendency toward the production of an abnormally large number of short stems which become spindling and resemble "witches' broom." Dwarfed plants are usually pale in color and their leaves are smaller than those of healthy plants. Wilted leaves of older plants occurs during the growing season, resulting in a few of the upper leaves showing symptoms as if frost injury had occurred.

The wilting is probably due to the clogging of the vascular system by the bacterial organism, although other factors may be in-

(Continued on page 95)



# *Greater* EARNING CAPACITY

**T**HIS new Model "L" Case Tractor has an earning capacity so great that no student of practical farming should fail to investigate it and these new tractor advantages.

Here is a tractor that will pull three, four or five 14-inch plow bottoms, depending upon conditions. A 28-inch thresher with all attachments is no load for it. Yet the tractor weighs but slightly more than three ordinary draft horses.

Here is a tractor with ample traction, and still it is light and quick. There are three forward speeds— $2\frac{1}{2}$ ,  $3\frac{1}{4}$  and 4 miles per hour. It furnishes ideal belt power, smooth and accurately governed at all loads. Its power is so flexible that a comparatively small feed mill may be operated with practically the same fuel economy as a large thresher. This all-around usefulness and economy are exceedingly important tractor advantages.

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Complete technical information on this tractor will be gladly furnished.

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# The Kansas Wheat Protein Program

Harvey E. Hoch, '31

Early last spring Governor Clyde M. Reed and Mr. B. H. Johnson, chief inspector of the Kansas State Grain Inspection and Weighing Department, held a conference with Director L. E. Call and other members of the Agricultural Experiment Station staff. Plans were made and a program outlined for the summer's work in aiding farmers to determine the protein content of their wheat and its market value. Later six men were selected for the field work and from June 15 until August 31, 1929, Kansas carried on an extensive program in aiding farmers sell their wheat on the basis of its protein content.

These field men worked as representatives of the Grain Inspection Department. The following are the stations at which they worked: Smith Center, Garden City, Pratt, Larned, Meade, and Dighton.

These field representatives were stationed with the county agricultural agents at the places mentioned, and worked in cooperation with the county agricultural agents. The securing of samples of wheat from the farmers and inducing other farmers to bring in their own samples for protein determination was one of the major phases of the work.

Kansas has always been noted for the high protein content of her wheat in a favorable year. The representatives stationed over the state were expected to be one means of helping the farmer secure protein premiums on his high-protein wheat. It was the duty of the representative to get out among the farmers, as well as secure the samples, and explain the working of the Grain Inspection Department and the things which it was hoped would be accomplished in the short time the work was under way. In many instances the farmers were ready and willing to take hold of the work and cooperate with the county agricultural agent and the representative. However, opposition was met in some cases as might be expected with a new undertaking of this kind.

The wheat samples secured by a representative were sent to the state protein laboratory that could be reached best and quickest by mail. Kansas has three permanent protein

laboratories located at Kansas City, Mo., Wichita, and Hutchinson. Experimental laboratories were established last summer from June 10 until September 10 at Hays and Colby.

At the beginning of the harvest season when protein premiums were large, a number of farmers received as much as 8 to 14 cents premium on each bushel.

The local elevators, in many cases, could not be blamed for the differences in the prices paid for low-protein and high-protein wheat. These elevators were flooded with wheat after harvest was in full swing, and as a result could not hold various lots of wheat, testing differently in protein, separate, and consequently most of the wheat was bought by local elevators on the basis of average protein content. Farmers who had tests made in some cases received special bids on a car load of wheat that was running above the average in protein. Other farmers loaded their own cars and shipped direct, or received track bids for their wheat.

Protein premiums were higher at the beginning of harvest than later on. Before the markets became glutted and flooded with wheat there was as much as 1½ cents premium paid for each one-fourth of 1 per cent protein above 12½ per cent. As the markets became flooded with such a large quantity of good wheat the premiums became smaller.

In addition to the protein work the representatives were equipped with moisture testing equipment. The farm bureau in some cases owned the machines and in other cases the machines were loaned through the courtesy of grain companies and local mills. Many farmers took advantage of the moisture work, especially if they were binning wheat. Many times 1 per cent excessive moisture means spoiled grain if it is placed in a bin.

Much smut was reported last summer in Kansas wheat. In some localities it was almost impossible to find a wheat field that was not infected with smut. The value and importance of seed treatment for smut was stressed whenever the opportunity was pre-



sented. Circular letters were sent out by the representatives regarding smut control and seed treatment.

Dr. F. L. Duley of the Department of Agronomy supplied the representatives with questionnaires regarding the protein content of wheat as influenced by soil types, cropping systems, and yields. Correlations could thus in many cases be checked.

### **AN INCOME TAX FOR KANSAS**

(Continued from page 88)

edge of the subject to make him an intelligent voter when it comes to marking yes or no on the ballot. Copies of the tax code commission's report have been quite widely distributed and should not be difficult to obtain. However, if anyone interested has difficulty in securing a copy in his local community, he may address his request for a copy to: Secretary, State Tax Code Commission, Topeka, Kan. —Harold Howe, Assistant Professor of Agricultural Economics.

### **ALFALFA DISEASES IN KANSAS**

(Continued from page 92)

volved. The diseased root shows unmistakable discoloration, which is yellow or brown, and is most conspicuous in the outer part of the woody cylinder, or just beneath the bark. This is in marked contrast to the ivory white appearance of the same tissue in a healthy plant. Plants which go into the winter in this condition are dead or nearly dead by the next spring.

At present there is little hope for a practicable and effective method of control. Seed treatment and crop rotation will aid but little in controlling this disease. A study of varietal resistance is being made by the Kansas Agricultural Experiment Station in cooperation with the United States Department of Agriculture and there is some hope that selection of resistant or relatively resistant varieties from plants in the field may bring results.

### **KANSAS PASTURES**

(Continued from page 71)

material to keep them in vigorous condition. Protection during the early part of the season will add to the organic food reserves

even though the vegetation is closely grazed afterwards. Although the length of the period of protection necessary to keep the plant in vigorous condition is not known, the available data indicate that vegetation grazed under deferred grazing conditions has nearly as much vigor as the plants that are protected.

The utilization of the forage should not be disregarded in planning a system of deferred and rotation grazing. It has been found in recent experiments that the nutritive value of the bluestem grasses decreases as they mature. The deferred period of grazing in the protected pasture should therefore not be extended so long as to seriously reduce the palatability and nutritive content of the grass. The time for turning stock in the protected pasture should be so adjusted as to allow the dominant forage plants to restore any lost vigor and at the same time not to extend the period so long that their feeding value will be lost. While insufficient information is available to determine at what stage of growth this would be, recent results indicate that about July 1 in the average year is about the proper time. At this time the grass is palatable and it still has sufficient nutritive content to make good gains on live stock and the vigor of the pasturage appears to be maintained regardless of rather close utilization afterward.

The advantage to be gained by the use of any system of grazing can be measured largely by the increased grazing capacity and the effect of the grazing on the quantity and quality of the vegetation. The accompanying table gives the number of acres necessary to carry one head of live stock under two systems of management. Pasture I was grazed under the season-long system, the one in common use by cattlemen today. While Pastures II and IV were grazed under the deferred and rotation system.

In measuring the effect of the intensity of grazing practiced under the two systems on the quality and quantity of the vegetation, the per cent of vacant ground, weeds, and grasses found in the pastures was determined. These data were obtained by an accurate count and measurement of the different species of vegetation found on 120 quadrats, one

meter square, that were recharted each year to determine the reaction of the intensity of the grazing on the vegetation. These quadrats were distributed throughout the pastures to represent an average of all kinds and densities of vegetation, so that they would be representative of the entire vegetative cover in each pasture.

These data indicating the quality and quantity of vegetation in Pastures I and II for the years 1915 to 1921 and 1927 (eight years) show: (1) The vacant ground increased 5.33 per cent in Pasture I but decreased 1.89 per cent in Pasture II. (2) The per cent of grass increased 32.13 per cent in Pasture I and 44.99 per cent in Pasture II. (3) The per cent of weeds decreased 36.46 per cent in Pasture I and 42.2 per cent in Pasture II.

From these results it may be seen that both pastures were in poor condition at the beginning of the experiment, having considerable vacant ground as well as a high per cent of weeds, with a corresponding low per cent of grass. Each pasture shows a very marked improvement. Pasture I has a little more vacant ground than at the beginning of the experiment while Pasture II has slightly less vacant ground. In increased amounts of grass and decreased quantities of weeds Pasture II shows a marked improvement over Pasture I. These differences can also be readily recognized in making an inspection of the pastures.

The results of these experiments show that at least 70 per cent higher grazing capacity was obtained from the use of the deferred and rotation system of grazing over the season-long system, and at the same time the deferred and rotation system resulted in a very significant improvement of the pasture

over the one on which season-long grazing was practiced.

At least one-fourth of the growth of grass must be left at the close of the season under season-long grazing conditions, if the organic reserves of the plants are to be maintained. This means that the intensity of grazing must be limited to leave this amount, if native grasses are maintained. Under the deferred and rotation system of grazing a much closer utilization is possible without injury. Thus nearly twice as much feed is obtained under this system with a marked improvement in the condition of the vegetation. This system has been tried on mixed prairie and short-grass type of vegetation in North Dakota and it was found that four or five acres grazed under the deferred and rotation system would be comparable in grazing value to seven acres grazed season long. Significant increases in grazing capacity were also obtained at Ardmore, S. D., by the use of this system on typical short-grass pastures similar to the pasture lands in the western one-third of Kansas.

A deferred and rotation grazing is the only system that makes it possible to graze the vegetation more closely and thereby obtain the higher feeding value, and at the same time maintain the vigor of the grass. The practicability of applying it will depend on several factors, the two most important being the shape of the pasture, affecting the cost of building division fences, and the availability of a good water supply at all times.

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#### GRAZING CAPACITY—ACRES PER HEAD

YEAR	1915	1916	1917	1918	1919	1920	1921	1927	Av.	Number of live stock per 640 acres
Pasture I— Season-long grazing	9.17	6.29	7.35	5.52	4.48	4.52	5.72	6.66	6.21	103
Pastures II and IV— deferred and rotation grazing	2.90	4.28	3.68	5.95	4.47	2.58	2.89	2.55	3.66	175