

# THE KANSAS AGRICULTURAL STUDENT



VOL. I

MANHATTAN, KAN., MAY, 1922

NO. 3

Students'  
Headquarters  
*for*  
College Supplies  
CO-OPERATIVE  
BOOK STORE

**Men:—**

Buy your hike orders at

**The Oasis**

We have everything you  
need or will get it for you

Phone 905 714 N. Manhattan Ave.

**ASKREN'S** JEWELRY  
STORE

FOR  
COMMENCEMENT GIFTS

*Fine Jewelry, Silverwear  
Cut Glass and Novelties*

Down town store  
310 Poyntz Ave

College Store  
1220 Moro St.

**GEO. T. FIELDING'S SONS**

Office 113 North Third St.  
Manhattan, Kansas

**High Grade Seed Corn  
Wholesale Grain**

**Elevators on C. R. I. & P. Ry.**

**Ask for Quotations**

*"Run No Risk, Be Sure It's Lisk"*

**Lisk Twins Foto Shop**

1212 Moro Aggieville

**Quick Service, Lowest Prices**

*Eastman Kodaks, Films and Supplies*

***The Wareham  
Theatre***

*The home of Paramount*

*Pictures*

*Theatre Orchestra and Hope Jones*

*Organ*

*Three Shows Daily*

*3:00*

*7:30*

*9:00*

**Haircuts 35c**

**COOPER'S  
BARBER SHOP**

ANDERSON HALL

# CONTENTS

	Page
An Easy Means of Doubling Egg Production.....	67
Percy L. DePuy, '18	
The Kansas Crop Improvement Association.....	70
Harold Howe, '22	
Annual Trip of Classes in Farm Organization and Soil Survey .....	71
Cost of Operating Local Elevators.....	72
H. I. Richards, '22	
State High School Judging Contest .....	74
E. W. Winkler, '22	
The Second Annual Ag Fair .....	76
Seeds and Seed Germination .....	77
J. Wheeler Barger, '22	
Engineering Problems of the Farmer.....	78
H. W. Schmitz, '22	
Building Contracts Let .....	79
Editorial:	
Preparing for the Game .....	80
A Privilege and a Duty .....	81
The Curriculum in Agriculture .....	82
Agricultural Occupations .....	84
Pork Production .....	85
Earl Means, '22	
Summer Silage for Dairymen .....	86
Lynn Copeland, '22	
Alumni Notes .....	87
E. H. Walker, '22	
Ice Cream as a Food .....	88
Luella Sherman, '22	
The Sharples Prize Scholarship .....	89
The Fourth Annual Grain Judging Contest.....	89
Samuel Pickard, '23	
The Dairy Judging Contest .....	90
C. C. Button, '23	
The Stock Judging Contest .....	91
Charles G. Russell, '23	
The Value of the College Show Herds .....	92
J. J. Moxley, '22	
Kanota Oats .....	92
Austin T. Heywood, '24	
Sudan Grass .....	93
N. H. Anderson, '22	
Beautification of Farm Homes .....	94
J. T. Quinn, '22	
The Relation of Dairying to Kansas Agriculture .....	95
F. L. Fleming, '23	
New Members of the Honor Society of Agriculture, Gamma Sigma Delta .....	96
Agricultural Graduates in Phi Kappa Phi.....	96



An Exercise in Butter Making

Capping Cream for Pasteurization

Judging Holsteins

A Purebred Ayrshire

Melrose Canary Bell 2d, in the Ag Fair Parade

Imported Pallas—State Record Guernsey

Head of the College Purebred Guernsey Herd

A Purebred Holstein—one of the best

DAIRYING SCENES AT K. S. A. C.—Ample accommodations and equipment for larger service in this important phase of agriculture is to be provided in the west wing of Waters Hall now under contract for construction.

## An Easy Means of Doubling Egg Production

Percy L. De Puy, '18



It would pay to raise scrub chickens if there were no good ones. But there are improved varieties of chickens, and scrubs cannot successfully compete with them. In order to realize the greatest profits from his hens, the farmer must have the best stock procurable. If he does not feel that he can afford all standardbred birds, he should at least have standardbred stock. This is shown by an experiment performed a few years ago by the Department of Poultry Husbandry of the Kansas Agricultural Experiment Station. The experiment demonstrates the ease with which mongrel flocks may be graded up through the use of improved sires.<sup>1</sup>

In the fall of 1913, 40 mongrel pullets were purchased on the local market. No attempt was made at selection. The birds were taken as they came. They were just average farm mongrels. These pullets were divided into four lots of ten birds each. The lots were as nearly uniform as possible with regard to type, weight, and development. For the sake of convenience these original lots will be known as Pens I, II, III, and IV.

During the spring of 1914, Pen I was mated with a standardbred White Orpington cockerel, Pen II with a standardbred Barred Plymouth Rock cockerel, Pen III with a standardbred Single Comb White Leghorn cockerel, and Pen IV with a mongrel cockerel. The four pens were kept under as nearly uniform conditions as possible. The pullets were trapped and records kept of their production.

The following fall 10 pullets were chosen

from each pen to represent that pen the next season. As far as possible a daughter was chosen from each one of the original hens but not all of the hens had living daughters and it was sometimes necessary to make up the deficiency by selecting more than one daughter from some other bird in the same pen. These pullets were mated with standardbred males of the same variety as their sires. Thus the one-half-blood Barred Plymouth Rock pullets were mated with a Barred Plymouth Rock cockerel, the mongrel pullets with a mongrel cockerel, etc.

The original mongrels were removed to another yard to finish their laying year and complete their records. The experiment was continued according to this scheme for four years, or until the third generation of grades had completed their first laying year. Thus there were four series of hens in the experiment—those mated to Orpingtons, Plymouth Rocks, Leghorns, and mongrels, respectively. In each of the first three series, there were four groups; namely, the original mongrels, the first-generation grades or one-half bloods, the second-generation grades or three-fourths bloods, and the third generation grades or even-eighths bloods. The fourth series remained mongrels throughout the experiment.

Most of the males used were good representatives of their respective varieties. Where the production records of their ancestors were known, they were good. The cockerels were ordered by mail. No representative of the college saw them prior to their arrival in Manhattan. The breeder's honesty and judgment were relied on to furnish good birds. No attempt was made to get better males than the ordinary farmer would be likely to

<sup>1</sup>Lippincott, W. A. Improving mongrel farm flocks through selected standardbred cockerels. Kan. Agr. Expt. Sta. Bul. 223: 1-48. Figs. 28. 1920.

get under similar conditions. It was desired to work the problem out as nearly under farm conditions as possible.

The average first-year production of each group in the four series of pullets is as follows:

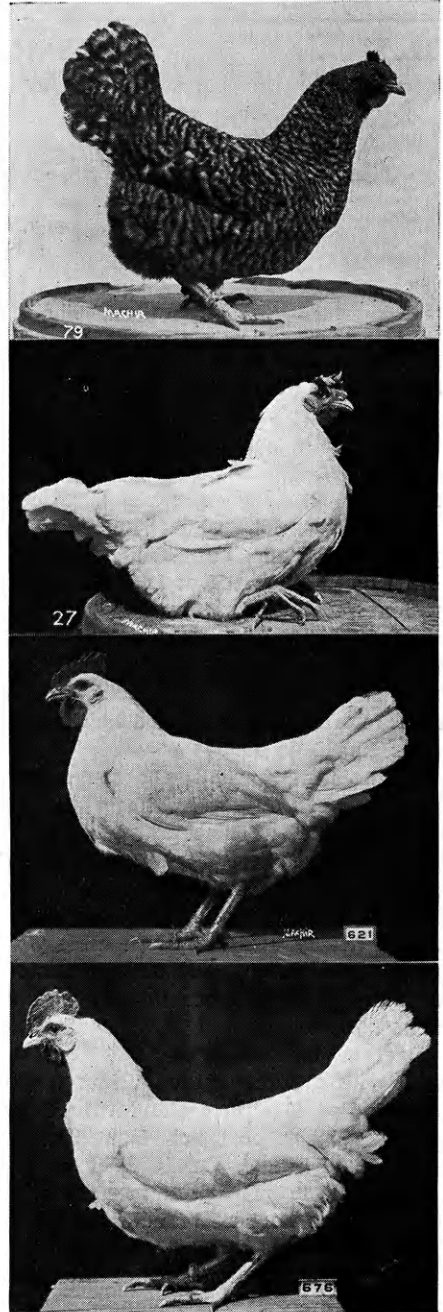
SERIES	AVERAGE NUMBER OF EGGS			
	Original 10 mongrel pullets	First generation grades	Second generation grades	Third generation grades
Orpingtons	84.8	126.8	105.8	79.6
Plymouth Rocks	98.5	132.5	149.6	155.6
Leghorns	72.3	155.9	188.6	192.6
Mongrels	95.8	104.0	145.2	129.6

These figures show the results of the experiment in a very general way. They tell only a part of the story but that happens to be the most important part. They give only averages and do not give the highest or the lowest records made. Such figures merely indicate what may be expected from the use of improved males on the ordinary farm flock. It will be seen that the Leghorns made the greatest improvement. They started lowest and went highest. The Plymouth Rocks started high and gradually pushed upward. The Orpingtons started low and ended lower after making a good increase in the first generation of grades. The mongrels pushed their records up somewhat.

There were two main factors which had the most to do with making these records what they were. The feeding and management of the birds undoubtedly had a great deal to do with their performance for the pullets received better care than they would have got on the average farm.

An equally important factor and the one in which we are chiefly interested is the heredity makeup of the fowls themselves. The mongrels had been bred for generations with no particular goal in view. Consequently, it is only chance that an occasional mongrel bears the hereditary factors necessary to make it a high potential high producer or the sire of potential high producers. In this particular experiment it seems the mongrel males happened to bear the factors for high production. On the other hand, the Plymouth Rock and Leghorn strains had been bred for high production through many generations and had that characteristic so firmly fixed in them that it dominated over the low production traits of the mongrel pullets with which they were mated and appeared in the grade offspring. In the case of the Orpingtons,

chance worked in the opposite direction from what it did in the case of the mongrels, and



FOUR GENERATIONS—Hens representing one direct line of descent in the Leghorn series. First-year records: No. 79—35 eggs; No. 27—161 eggs; No. 621—195 eggs; No. 676—260 eggs.

unusually poor specimens of the breed were chosen, as is evidenced by the records of their offspring. The ancestry of the Orpington cockerels was not as well known as the ancestry of the Plymouth Rocks and Leghorns, especially the Leghorns, which goes to show the importance of careful breeding.

Attention is also directed to the fact that where standardbred males were used, the greatest improvement was obtained with the first cross. This fact was especially marked in the cases of the Plymouth Rocks and Leghorns where the amount of improvement gradually diminished from year to year. There was the most room for improvement in the original mongrels and the amount of improvement decreased as the strain approached perfection as a limit.

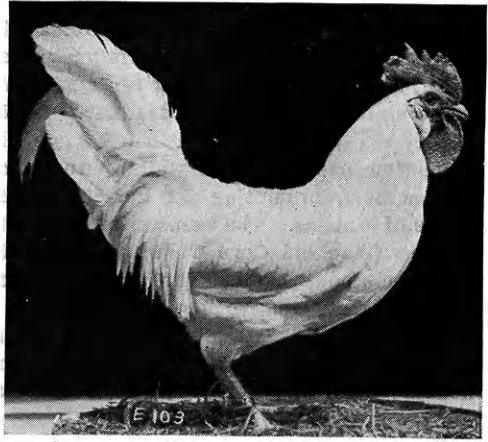
Not only did grading improve the production of the particular strain in most cases, but the grades approached the type and color of their sires more and more in each successive generation.

Pictures of an unbroken outstanding line of descent from the Leghorn series are shown in an accompanying illustration. Each hen in the picture is the daughter of the one immediately above her and the mother of the one immediately below her. One of the Leghorn males employed in the experiment is shown also in an accompanying illustration and gives a good idea of the kind of cockerels used.

This discussion is only a brief resumé of the experiment. Those wishing a fuller account may find it in bulletin 223 of the Kansas Agricultural Experiment Station previously referred to, or in the third edition of Dr. W. A. Lippincott's text on "Poultry Production," published by Lea & Febinger, Philadelphia, 1921.

The last two years have been trying years for the average Kansas farmer. In thousands of cases the eggs taken to town each week

have paid the grocery bills. How much better off the farm family would be were the egg



SINGLE COMB WHITE LEGHORN COCKEREL—This cockerel was mated with the first-generation grades of the Leghorn series and was the sire of hen No. 621.

production doubled? This experiment shows the cheapest and easiest means of accomplishing that very purpose.

There is only one fault to be found with this method of grading, and that is a bad one. Four people out of five will fall victims to it. That fault is due to the fact that the system works too well. After a few crosses of improved blood the grades lay practically as well as standardbred birds. The owner is satisfied and stops further attempts at improvement. He uses males from his own flock and soon his chickens have reverted to the category of scrubs again and it will never pay to keep scrub chickens as long as good chickens may be had at such a small expenditure of money and by persistent effort.

C. B. Roberts, '22, immediately on graduation will return home to manage a livestock farm in southwestern Missouri near Webb City.

Oliver P. Butler, '22, will engage in livestock farming at his home near Farmington after graduation, June 1.

E. T. Means, '22, will farm near Everest, Brown County, the coming year.

H. C. Sturgeon, '22, will return to the home farm near Lane, Franklin County for the coming year.

C. F. Uhlrich, '22, will engage in farming on the home farm at Wamego immediately after graduation.

J. W. Ziegler, '22, will engage in livestock farming near Northbrook, Pa., after graduation.

# Kansas Crop Improvement Association

HAROLD HOWE, '22

The Kansas Crop Improvement Association is an organization of Kansas farmers who are performing a great service for the agriculture of the state in an effective manner. During the period that it has been in existence, this association has measured well up to its object; namely, promoting the agricultural interests of Kansas. The association is an outgrowth of the old Corn Growers Association organized about 1905. The early organization was restricted to the improvement of corn varieties and it was not until 1914 that the reorganization took place which broadened the work of the association to cover all field crops.

The chief work of the Kansas Crop Improvement Association is the production, inspection, and distribution of high-quality seed of improved and adapted varieties. The inspection work is carried on only in fields that have been sown with seed of a variety recognized by the Kansas Agricultural Experiment Station as being well adapted and suitable for growing in Kansas. In addition to the general requirement that pure seed be used and the previous cropping of the ground be acceptable, specific requirements are made to certain crops and varieties.

If a field passes the requirements for certified seed of standard varieties, the farmer may send in his application to the secretary's office at least a month before the actual work of inspection is to begin. After the application has been filed and at a time when the crop is properly matured for the inspection, the applicant's farm is visited and the field examined for impurities, noxious weeds, and diseases. The inspector, who is usually a member of the Department of Agronomy, makes a report of his findings which is filed with the secretary of the association. After all inspections are completed, a seed list is compiled from the data obtained and is published. The seed that is listed in this publication is certified seed. Since the aim in reporting inspection has been to give in each case exactly what was found and to leave the matter of selection to the discretion of the buyer, certified seed may differ considerably

as to purity and quality. Although this seed list is intended to supply such information as completely as possible, it is always a good practice in purchasing seed to secure samples before buying.

The Kansas Crop Improvement Association is especially aided in its work by two Kansas State Agricultural College agencies, the Agricultural Experiment Station and the Extension Division. One of the principal functions of the Agricultural Experiment Station is to produce better varieties of crops. In the past these improved varieties were slow in reaching the farmer because the primary purpose of the station was to produce and not to distribute them. The Crop Improvement Association, acting as a distributing agency, has served to aid, and at the same time receive, great benefit from the station. The Extension Division of the college has aided the Crop Improvement Association by the valuable assistance of county agents and crop specialists in inspecting the field crops and in preparing seed lists. In addition, the college assists the association by paying the salary of the secretary and by supplying office space and clerical help.

Membership in the Kansas Crop Improvement Association is open to any farmer of known integrity who is interested in better crops and who is willing to cooperate with other members in promoting the interests of the association. Membership dues are one dollar per year. It is to the benefit of every Kansas farmer who is interested in crops to become a member of the association in order that he may keep informed through news letters on what is being done in improving crops in general, on the latest information regarding new and better varieties and sources of seed as well as new but untried varieties, and on information in regard to producing better seed and finding a market for the seed produced.

Anyone who does not believe in the advantages of crop improvement need only consider what Kansas would be today without Kanred, Turkey, and Kharkof wheats, Kanota oats, Blackhull kafir, Kansas Orange sorgo,



Sudan grass, and Pride of Saline corn. The Kansas Crop Improvement Association has done remarkable work in the distribution of these crops, particularly has it gained wide recognition in distributing Kanred wheat over the world. There is a big field for the Crop Improvement Association. Almost any person knows that only a small percent of the crops of the state are from pure seed of

improved varieties. The task of replacing the mongrel varieties now grown on the farms of Kansas with improved varieties produced by the Agricultural Experiment Stations or by individual farmers is a large one, but can be accomplished if the farmers of the state get behind the Crop Improvement Association and push.

## Annual Trip of Farm Organization and Soil Survey Classes

It is the custom for the classes in Farm Organization and Soil Survey to combine in making a trip each year over some section of the state where a great many different types of farms and of soils may be studied in as short a distance as possible. This year the trip was made through southern and eastern Kansas, during the week April 17 to 22, 1922. The party was composed of 27 students, most of them seniors, under the guidance of three members of the faculty—Professors R. I. Throckmorton, Morris Evans, and E. B. Wells.

The first region visited was in Chase County near Cottonwood Falls. Here the methods of handling the cattle shipped in from the ranges for fattening on the grass of the flint hills were observed and certain methods of drainage studied. The next day was spent around Wichita where some of the finest orchards of the Arkansas Valley are located. The commercial hog-feeding plant of Fred Carp, '18, was visited as was also the milk condensery at Mulvane, where "Pet" condensed milk is prepared. A few of the dairy farms near Mulvane were visited. The soil of this region is largely a sandy loam of the Derby and Osage series. The Derby series is named after the town of Derby, which lies between Mulvane and Wichita.

From Wichita the class went to Labette County near Oswego, and visited both the Deming and the Sherman ranches. These ranches are similar in that they both consist of low, flat, bottom lands that have to be drained in order to let the water off and dyked to keep it off. They are very near the Neosho river and are the only two farms in that area which have not been under water at least five different times this spring,

Columbus in Cherokee County was the next stop. This is in the coal, lead, and zinc mining district and is a good field for the study of soil types. One of the lead and zinc mines was visited. Several different soil ser-

ies can be found within a distance of a few miles from here, some of the more important of which are the Bates, Riverside, and Cherokee.

In Kansas City, the members of the class were the guests of the Kansas City Star. The Sni-a-bar Farm at Grain Valley, Mo., was visited. This is a project started by the late W. R. Nelson, formerly editor of the Kansas City Star, to show the value and practicability of improving a cow herd by the use of pure-bred sires.

The last day of the trip was spent in Leavenworth County, where several farms of varying types were visited. The soil of this region is of glacial and loessial origin and has a tendency to wash. Several badly washed areas were visited and control methods studied.

The value of a trip such as this cannot be figured in dollars and cents. The class acquires a more comprehensive idea of the agriculture of the various regions visited, and receives much inspiration as a result of studying the different methods of farming and the different types of farms visited. Students having thus seen agriculture from several different angles will be better able to select the type which best suits their particular inclinations and will know some of the regions adapted to this type of agriculture. It is a trip that is of value to even the most experienced.

—◇—

N. H. Anderson, '22, will teach normal training subjects, agriculture, and physics and coach athletics in the Girard High School for the coming year. He expects to be in summer school.

—◇—

C. F. Hadley, '22, will teach normal training agriculture and mathematics and coach athletics in the Goff Rural High School, Nemaha County, next year.

# Cost of Operating Local Elevators

H. I. Richards, '22

The question of whether or not the co-operative elevator is to be a permanent fixture in the marketing of Kansas wheat will ultimately be determined by its efficiency in serving producers. The farmers of Kansas must receive a higher price for their grain than they can obtain through the private elevator or else some returns in the form of dividends in order to compensate them for their efforts in forming a cooperative elevator company. During the last few years there has been a rapid increase in the number of cooperative elevators. In some places farmers have taken over the independent elevators and in oth-

er places they have built new elevators. Since these co-operative elevators have been tried for a number of years, it will be of interest to farmers and students of marketing to know the cost of the operation of cooperative elevators in comparison with independent elevators.

Prof R. M. Green of the Department of Agricultural Economics has made a thorough investigation of the cost of operation during 1920 of 78 cooperative elevators and 75 independent elevators. He obtained the following data:

AVERAGE COST OF OPERATING 78 COOPERATIVE AND 75 INDEPENDENT ELEVATORS<sup>1</sup>

	Cooperative Elevators	Independent Elevators
<b>Overhead expense:</b>		
Insurance on plant .....	\$ 66.74	\$ 55.30
Depreciation at 4 percent .....	352.00	278.98
Taxes .....	349.22	241.60
Salary of manager .....	1,594.00	1,400.00
Helper .....	595.00	542.40
Total .....	2,956.96	2,518.28
<b>Operating expense:</b>		
Helper and other labor .....	595.00	542.40
Insurance on grain .....	66.74	55.30
Telephone, telegrams, office expenses.....	214.73	144.00
Inspection and weighing .....	100.00	90.00
Interest on working capital at 8 per cent.....	628.22	621.70
Shrinkage ½ percent on 101,337 bus. at \$1.50 .....	760.00	.....
Shrinkage ½ percent on 90,821 bus. at \$1.50 .....	.....	681.15
Commission at 1½ cents per bu. on 47,249 bus. ....	708.73	.....
Commission at 1½ cents per bu. on 47,545 bus. ....	.....	713.17
Fuel, power, heat, etc. ....	217.60	192.00
Repairs .....	232.48	172.80
Total .....	3,523.50	3,212.52
Earnings on investment at 8 per cent.....	352.00	278.98
Grand total .....	\$ 6,832.46	\$ 6,009.78
	Cents	Cents
Overhead expense per bushel .....	2.9	2.8
Operating expense per bushel .....	3.5	3.6
Earnings on investment per bushel.....	.4	.3
Total margin necessary to meet costs (exclusive of freight).....	6.8	6.7
Average margin on which wheat buying was done .....	6.3	5.5
	Bus.	Bus.
Average capacity of elevator .....	15,000	14,000
Wheat consigned .....	34,020	37,375

<sup>1</sup>Eighty percent of total general expenses were charged against grain; twenty percent against coal, feed, etc.

Wheat sold direct .....	53,581	42,822
Other grain sold .....	13,229	10,170
Total grain sold .....	100,830	90,367

From these figures it will be noted that the actual cost of operation per bushel of wheat handled is practically the same for both types of elevators, being 6.7 cents per bushel for the independent, and 6.8 cents for the cooperative elevators. The difference is not significant, as the variation either way is small and might well be brought about by averaging a few more elevators in either case.

The interesting features about these figures is the fact that both independent and cooperative elevators were buying on a margin that was less than the cost of operation. This was due to the great reduction in prices that came in 1920. The cooperative elevators, however, were buying only one-half of a cent per bushel below the cost of operation, while the independent elevators were buying 1.2 cents per bushel below the cost of operation. When there was a flour mill in the same town the independent elevators were buying on a margin of 5.2 cents as compared with 5.6 cents in nonmill towns. Cooperative elevators were buying on a 5.5 cent margin in mill towns and on a 6.6 cent margin in non-mill towns. This ability of independent elevators to buy on such a small margin is due in a large measure to the fact that the owner of the independent elevator is usually the operator, and the helper is often someone in his family. During hard times such as in 1920, the manager can pay to himself and his helper a smaller salary and in this way tide the elevator over until more prosperous times.

The cooperative elevators on the other hand can only reduce interest on investment and the amounts set aside as depreciation on the plant. The salary of a good manager can not easily be cut to meet temporary hard times and adverse conditions. This fact has often enabled independent elevators to cut prices and force the cooperative elevator out of business. But when both types of elevators remain in business for a period of years, their buying margin per bushel must be above the cost of operation per bushel. What is lost during hard times and under strong competition, by buying on a margin less than cost of operation must be made up during prosperous

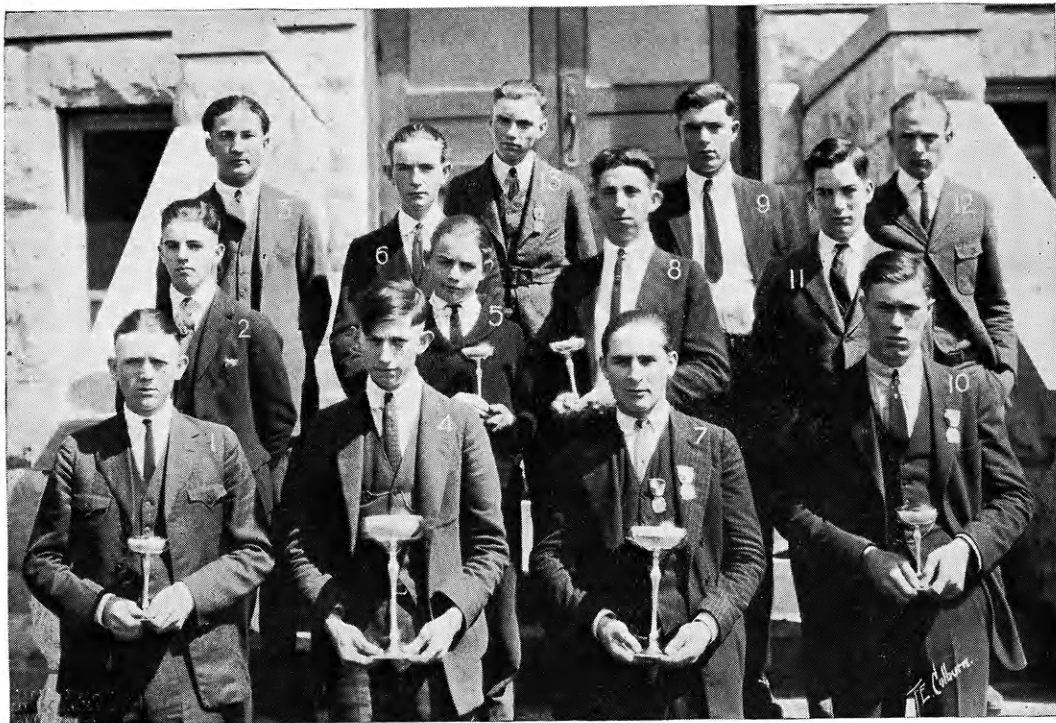
times by a buying margin above the cost of operation.

These figures tell only the actual cost of operation of a number of elevators. They do not indicate all of those factors which determine the degree of success or failure of cooperative and independent elevators.

The greatest of these factors is the ability of the manager. In addition to the 0.4 of a cent per bushel earnings on investment a good manager will make money for his company, not only by buying but also by selling to the best advantage. One 12,000-bushel cooperative elevator in Pratt County paid as high as 1 cent a bushel in patronage dividends, paying out \$6,000 in such dividends in the last seven years. The manager did this by handling a larger amount of grain than the average (from 125,000 to 150,000 bushels of grain a year) and by buying and selling to good advantage. He also managed an eight thousand-bushel elevator at the same time on which he made a profit of \$8,000 in 1920.

The importance of a good manager can scarcely be over-emphasized. Cooperative elevator companies that have insisted on employing a "dirt" farmer to manage their elevator because they could employ him for a low salary, have paid a big price for their experience. A poor manager is high at any salary and a competent manager is cheap at almost any price. The manager in Pratt County, mentioned above, received a salary of nearly \$3,000 a year, and was cheap at that price. When other cooperative elevators realize the necessity of paying good salaries and securing competent managers, the cooperative elevator movement will be much more successful.

While the managers of all cooperative elevators have not attained such a high degree of success as the one mentioned above, the fact that 78 cooperative elevators have operated as cheaply as 75 independent elevators in the trying year of 1920 indicates that the cooperative elevator is to remain one of the competitive factors in the marketing of Kansas wheat. Even when a cooperative company buys on a margin equal to the cost of operation, the farmers will receive the earnings on their own investment in the elevator.



WINNERS IN STATE HIGH SCHOOL JUDGING CONTEST—(1, 2, 3) Lewis Howard, William Roe, and Clarence Craig of Vinland High School—high team in dairy judging. (4, 5, 6) Milburne Axelton, Howard Platt, and Myron E. Russell of Manhattan High School—high team in animal husbandry judging. (7, 8, 9) Louis Garrison, Roy Brooks, and Harry Bryam of Marion High School—high team in poultry judging. (10, 11, 12) Paul Hunsinger, Bradley Judy, and William M. Rice of Lawrence High School—high team in grain judging. (13) Lincoln Walz of Hays High School—high individual in animal husbandry judging. The Manhattan High School team was also the high team of the entire contest and winner of the W. M. Jardine trophy. Louis Garrison (7) was the high individual of the entire contest and winner of the F.D. Farrell trophy. He was also high individual in both the dairy judging and the poultry judging sections of the contest. Paul Hunsinger (10) was high individual in grain judging.

## The State High School Judging Contest

E. W. Winkler, '22

In the spring of 1921, Kansas State Agricultural College conducted its first state high school judging contest. The idea was well received throughout the state and the success of the contest was even greater than its promoters anticipated. The second annual contest, held Thursday and Friday, May 4 and 5, 1922, was a repetition of the first except it was larger in every way and marked by greater preparation and more competition on the part of the contestants.

Teams from 55 high schools, representing all parts of the state, were entered. Heavy rains on the days immediately preceding the contest interfered somewhat with the attendance. Thirty-four teams, however, took part in the entire contest and eleven other teams

participated in one or more of the four sections of the contest. One additional school was represented by one student. The contest has won a place in the annual activities of the college and in the work of the high school teachers of agriculture, especially vocational agriculture, throughout the state. Any high school of the state is eligible to be represented by a team of three contestants, or any school may be represented by one or two individual contestants.

The contest was divided into four sections, one section being conducted by each of the following departments of the Division of Agriculture of the College: Animal Husbandry, Dairy Husbandry, Agronomy, and Poultry Husbandry. The judging in the animal hus-

bandry section consisted of the placing of two classes of beef cattle, horses, hogs, and sheep. One class of each kind of animals was placed as fat stock, the other as breeding stock. In the dairy section one class of each of the leading dairy breeds was placed from the point of view of economical production and breed type. In the agronomy section samples of ear corn, alfalfa seed, and head samples of black-hull kafir were placed from the point of view of show type and utility; market classes and grades of shelled corn, hard red winter wheat, soft red winter wheat, and oats were determined. In the poultry section six classes of four hens each were placed from the standpoint of egg production. In the poultry judging the contestants were graded on placing only. In each of the other sections, 75 per cent was allowed on placing and 25 per cent on written reasons.

Ten sterling silver trophies and medals were offered as prizes in the contest. These, together with their winners, are as follows: The W. M. Jardine trophy for the high team in the entire contest was won by the Manhattan High School. The F. D. Farrell trophy for the high individual of the entire contest was won by Louis Garrison of the Marion High School. The department head in each section of the contest offered a silver trophy for the winning team of his section. In the animal husbandry section the C. W. McCampbell trophy was won by the Manhattan High School. In the dairy husbandry section the J. B. Fitch trophy was won by the Vinland High School. In the agronomy section the L. E. Call trophy was won by the Lawrence High School. The Marion High School won the W. A. Lippincott trophy in the poultry section.

The college student organization in each department conducting a section of the contest gave a medal to the high individual in the section. In the animal husbandry section the Block and Bridle Club medal was won by Lincoln Walz of the Hays High School. In the dairy husbandry section the Dairy Club medal was won by Louis Garrison of Marion. In the agronomy section the Klod and Kernel Klub medal was won by Paul Hunsinger of Lawrence. In the poultry section the Poultry

Club medal was won by Louis Garrison of Marion—the outstanding man in the contest. The pictures of all these prize winners may be seen in the accompanying photograph.

Marion High School placed second in the entire contest and Winfield High School third. The second high individual of the entire contest was Milburne Axelton of Manhattan, and the third high individual contestant, Mose Whitson of the Atchison County High School, Effingham. The high-class work shown by many of the teams in the contest speaks well for their coaches. The coaches of the winners were: Manhattan—Sherman H. Howard. Vinland—R. C. Alvord. Lawrence—William R. Essick. Marion—G. J. Raleigh. Hays—C. L. Howard.

This contest presents an opportunity that should be regarded highly by all teachers of high school agriculture in Kansas. Besides the fine experience in judging and working with purebred and high-grade material, the contestants gain many other advantages. The contest provides a most satisfactory visit to the college. It may be a means of answering questions and making tentative decisions on future courses of action for many a contestant. It may even be the deciding factor in favor of a college education. Beyond doubt also it will be the means of spreading correct and valuable information regarding the work and opportunities of the Agricultural College among the citizens of the state.

These contestants in their three days' stay have the opportunity to visit every building on the college campus and get an initial acquaintance with the equipment of one of the leading institutions of higher learning along agricultural and related lines. They may see the college farm, the feedlots, and other phases of agricultural investigation about which they have read in farm papers and agricultural circulars and bulletins. In fact, no effort is spared to make the visit three great days in the training of a high school student interested in agriculture. It is worth the hard work it takes for any high school student in agriculture to win a place on his school team and thus have the privilege of helping represent his school in the state contest.

---

H. A. Myers, '22, has been employed as director of vocational agriculture in the Marysville High School for the coming year.

R. S. Mather, '22, has been employed by the Kansas State Grain Inspection Department, Kansas City, Mo., for the coming year.

# The Second Annual Ag Fair



Soon after the Agricultural Association was organized among the students of the Division of Agriculture early in the college year 1920-21, it was decided, as one means of unifying the students of the division, to hold an annual Ag Fair. The first fair was held May 3, 1921. Though in the nature of an experiment, it proved to be highly successful as was evinced by the fact that after all expenses were paid, the association had a balance of \$600 deposited in the bank to be kept as a reserve for a rainy day.

This year it began to seem as though this fund would be needed. The week previous to the fair was a very rainy week and, although preparations went forward without interruption, it appeared the morning of Tuesday, May 2, 1922, the day for the second annual Ag Fair, that the event would have to be postponed. However, the clouds finally cleared away and in spite of dampness in the air and very wet grounds, the fair was a big success.

The fair started with a parade, which left the campus at 1 o'clock and paraded the down town districts of Manhattan. The parade was a very creditable affair from both an artistic and an educational standpoint. The fair grounds were opened at 3 o'clock, at which time a concert was given in the center of the Pike by the college band.

The educational exhibits by the various agricultural departments constituted one of the main features of the fair. These exhibits, which were free, illustrated in a graphic manner the high points of the departments represented. The Department of Dairy Husbandry had, as a part of their exhibit,

a state champion cow of each of the four breeds of dairy cattle. Three of these belong to the college and the other is the property of G. H. Young who has a dairy just west of the college campus.

The Department of Agricultural Economics displayed charts showing the relative importance of the cost of the various steps in the marketing of wheat from the producer to the consumer.

The main feature of the Horticultural exhibit was a fountain around which water-plants and flowers were banked, giving a very artistic effect. A plant pathology exhibit, showing several important crop diseases and the loss caused by them, was included in this group, as was also a swarm of bees shown by the Department of Entomology.

The Department of Animal Husbandry displayed the relative quantity of desirable feeds required to produce 100 pounds of growth in each of three kinds of feeders: the steer, the pig, and the lamb. They also showed the meat cuts and by-products obtained from a steer. The display of cereal crops by the Department of Agronomy and the interesting variety of exhibits shown by the Department of Poultry Husbandry were added attractions that went to make up a very well balanced set of educational exhibits.

It is generally agreed that the second Ag Fair was bigger and better than the first. The credit for the success of the fair is given to a large extent to the efforts of C. M. Wilhoite who was the manager. He had as his assistants on the fair board, F. A. Irwin as assistant manager, and C. B. Roberts as treasurer.

# Seeds and Seed Germination

J. Wheeler Barger, '22

Seeds may be called "baby plants" in a state of repose, waiting for the opportunity to transform themselves into full-fledged plants. In their physiology, seeds present many interesting problems, since the way in which they respond to stimuli is often unusual and unexpected. The typical parts of a seed are the seed-coat, or the protective covering; the endosperm, or the stored food material; and the embryo, or the immature plant. The embryo is made up of epicotyl or plumule which develops into the stem; the hypocotyl, which develops the root system; and the cotyledons, or first leaves. Chemically, seeds are composed of carbohydrates, fats or oils, protein, and mineral salts.

Some people believe that seeds live indefinitely. A great deal of fiction has been written about the germination of seeds taken from excavations and ruins, but no authentic proof has ever been offered to substantiate these statements. The greatest length of time after which any seed has ever been known to germinate is about a hundred years. A few seeds of *Nelumbo*, a water plant, taken from a museum did germinate after they had been there a little more than a century. On the other hand, the seeds of soft maple and some other plants lose their viability in a very few days.

The longevity of seeds, like that of people, depends a great deal upon the conditions to which they are subjected. Under the best of care wheat will germinate after 18 years, and oats after 19. The seeds of practically all agricultural plants lose their vitality after 20 years. They ordinarily are worthless for planting, however, after 12 years. Sweet clover is an exception. Experiments have shown that 52 percent of sweet clover seed will germinate after 44 years. The seeds of many common weeds, such as pigweed and pepper grass, will germinate readily after 25 years, but most garden seeds lost their viability within 3 or 4 years.

The longevity of seeds of economic plants is determined to a great extent by the state of maturity and the conditions of harvest and storage. The most critical point in the life of

a seed is that of maturity. The necessity for proper climatic conditions for ripening has made certain localities of the country famous for seed production. Examples are the Santa Clair district of California for sweet peas, Long Island for cabbage, and Utah for alfalfa. The importance of proper conditions of storage is known to all seed growers. Some commercial concerns even send their seed to a different section of the country for storage.

Three essential factors for germination of seed are proper moisture, the right temperature, and adequate oxygen supply. Most seeds are indifferent to light. Some, however, notably those of *Aristolochia siphon*, will germinate only in darkness or very weak light. The seeds of tobacco and certain wild grasses, on the other hand, germinate better in the light.

The most common obstacle to the germination of viable seed is that of hard seed coats. They make it impossible for seed to get an adequate supply of moisture. The seeds of many leguminous plants have this characteristic. Several methods are used in treating seeds of tobacco and certain wild grasses, on scratching is a common method used to make seed coats permeable to water. Frequently the part of the seed coat that prevents the entrance of water is the outer layer of cells. A very slight scratch is sufficient to render the coat permeable. Special scarifying machines are on the market, and are practical for treating the seeds of alfalfa and clover.

Another method of treating hard-coated seeds is to place them in concentrated sulphuric acid for a short time, then to remove them and quickly and thoroughly wash off all acid. The acid oxidizes, but does not penetrate the coats unless left in too long. The proper time of treatment must be determined by trial. This method has not proved practicable on account of the danger of ruining the seed in the process.

All difficulty in seed germination is not due to lack of moisture supply. In some cases the coats may not be hard and may permit the entrance of water, and yet such structures as the ovary walls may shut off the oxygen. An example of such a seed is

the cocklebur. Each burr contains two seeds. One of these is located nearer the base of the burr than the other and is called the lower seed. The coats of both seeds are quite delicate and permit water to enter, but are not readily permeable to oxygen. When lying in the soil the lower seed usually germinates the first year and the upper seed the following year. The only reason that the lower seed germinates first is that it is nearer to the base end of the burr which disintegrates much more rapidly than the upper end. This enables the lower seed to obtain oxygen before the upper one.

There are many seeds which will not germinate even if they have proper oxygen, moisture, and temperature conditions. This dormancy is due to a physiological condition of the embryo itself. In the case of two native grasses, Big Bluestem and Little Bluestem, only

part of the seeds are affected in this way, while all the seeds of many plants such as hawthorn, apple, peach, and many weeds are so affected. The seeds of such economic plants should be planted in the fall so that they may be subjected to nature's method of overcoming this dormancy. A quick method, however, is to place them in an ice chest at a temperature of 5 to 10 degrees C. Within two or three months their dormancy will have been overcome and the seeds, which will begin to germinate in the cold, will germinate very quickly if removed to a higher temperature. The method commonly practiced by nurserymen consists of stratification. In the fall the seeds are placed in alternate layers with sand. They are then put in a cool place and kept moist. Most seeds will lose their dormancy after a winter of such treatment.

## Engineering Problems of the Farmer

H. W. Schmitz, '22

The American farmer of yesterday had little idea of the problems facing the farmer of today. Only 50 years ago uncleared forests and virgin prairies were still available and enlarged farming operations were matters of pioneering. Today the situation is entirely changed. Farming operations of a half century ago were simple. Little worry was caused by decreasing soil fertility, land erosion, devastation by insect pests, and disease epidemics. Labor-saving devices and machinery and modern conveniences were practically unknown.

Today there seems to be no limit to the application of modern conveniences to farm problems. There is no science but has some application to farming—the greatest of scientific industries. Work and endurance largely solved the problems of the pioneer farmer. The farmer of today, however, should be something of a scientist as well as a worker. He should know something of many sciences, since they all affect his vocation. The farmer himself must solve his own many-sided problems, and deal with each problem as it arises. New problems in farming require new methods and more knowledge of science on the part of the farmer.

Engineering is one of the most important

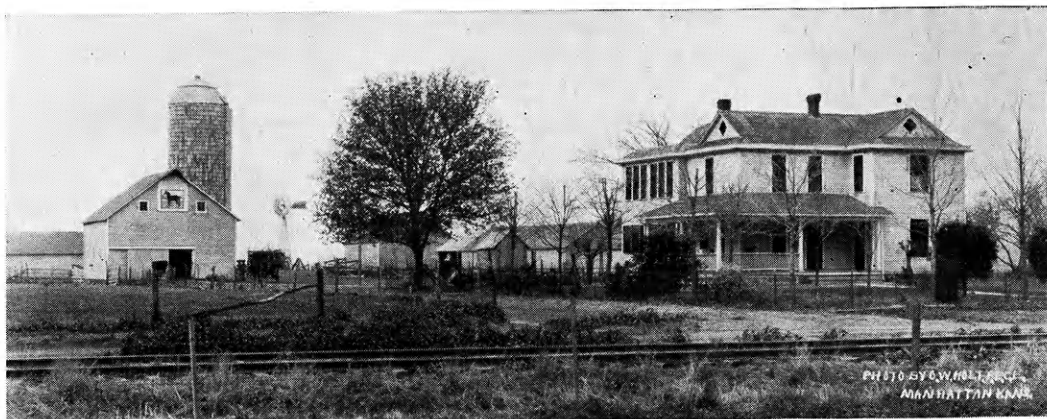
sciences affecting agriculture. A tremendous number of engineering problems present themselves to the farmer. In the case of large farms, he must know how to lay out fields for power farming. He must possess mechanical skill. What Kansas farm today does not have some kind of motor or other more or less intricate machinery? The erosion of soil on Kansas farms is great. Many thousands of acres of farming land, in Kansas alone, need draining. As farms become smaller through increase of population, or a so-called "back to the farm" movement, the problems become even more numerous. History gives instances of such occurrences. In South America in the territory of the prehistoric Incas, land was at so great a premium that the mountain sides were terraced, streams embanked, and anything done in order to increase the area of farm land. The Incas of those days had great farming difficulties to face in their struggle for existence. However, records show that they overcame the lack of land through their knowledge of agricultural engineering.

The modern farmer must inaugurate a new kind of farm building operations. He must build for permanency and for greater efficiency. Permanency requires careful



planning so as to secure the most out of his investment. He must have greater efficiency and get more pleasure out of his farm and home in order to keep the boys and girls on the farm. The prevailing ambition among many farmers, both tenants

as well as to handle the problems that are commonly thought of as distinctly agricultural. To do this he must have had some engineering training. In his college curriculum he should not have confined his work to purely agricultural courses. As many as



A CONVENIENT FARM HOME IN THE EUREKA VALLEY NEAR MANHATTAN

and land owners, is to make all the money possible out of the farm, then move to the city and live in ease. The maintenance of good farm homes is forgotten in this struggle. Often the houses are poorly planned and poorly built. Convenience and permanency in building will give a more stable rural population, improve tenancy conditions, lessen rural unrest and dissatisfaction, and promote pride in well-kept farm homes.

The college graduate in agriculture has a great field of usefulness before him. He must be well prepared to deal effectively with the engineering features of agriculture possible of the problems that are to be met

by the farmer should have been included. These include many problems in agricultural engineering.

Each student in the Division of Agriculture has an opportunity to take courses covering these engineering problems. Several worthy courses are offered in the Department of Agricultural Engineering, and juniors and seniors in agriculture should not fail to be acquainted with the opportunities these courses provide. Present-day farm problems and the improvement of rural life require some fundamental training in agricultural engineering.

## Building Contracts Let

The first contracts for the construction of the west wing of Waters Hall have been let as follows:

Marsh Construction Company, St. Louis, Structure as per specifications .....	\$190,000
Topeka Engineering Corporation Heating and Plumbing .....	13,438
Hotte Electric Company, Manhattan, wiring .....	2,740
<hr/>	
Total .....	\$206,178

A number of minor contracts on alternates to improve the building and give added protection and finish to various parts of it will be let in due time. Work on construction is to be begun at once.



Lynn Copeland, '22, has been awarded a scholarship in dairying in South Dakota Agricultural College, Brookings. He will report for work September 1, carrying graduate work along with his other duties.

# THE KANSAS AGRICULTURAL STUDENT

KANSAS STATE AGRICULTURAL COLLEGE  
MANHATTAN, KANSAS

VOL. I

MAY, 1922

NO. 3

Published quarterly by the students of the Division of Agriculture. Subscription rate, one dollar a year; single copies, twenty-five cents; advertising rates on application. Address all communications to the Kansas Agricultural Student, Manhattan.

## STAFF

EARL MEANS .....	Editor
J. W. FARMER .....	Associate Editor
E. H. WALKER .....	Alumni Editor
J. SCOTT STEWART .....	Business Manager
A. S. BARKLEY .....	Circulation Manager
SAMUEL PICKARD .....	Advertising Manager
H. L. COLLINS .....	Member of Publication Board
HUGH DURHAM .....	Advisory Editor

## PREPARING FOR THE GAME

The desire to excel, to lead, springs from a normal instinct. The boy who develops a sore knuckle playing marbles, the youth who joyfully gets bumped and bruised playing football, the man who struggles through the long hard years to build up a business or to make good in a profession—each of these in so doing indulges to some degree the instinct to excel. This instinct probably is associated with the instinct to acquire. A boy's or man's desire to excel and to lead is probably to be explained, in part at least, by his desire to secure the rewards of excellence and leadership. At any rate, the richest rewards go to those who most deserve them; to those whose excellence places them in positions of leadership. The boy who wins at marbles gets the marbles and the admiration of his playfellows. The football star, the captain of industry, the successful farmer, banker, or professional man—each gets his rewards. Most important of all, he experiences the pleasures of accomplishment, the thrill of surmounting obstacles, the joy of doing difficult things.

If the instinct to excel should disappear from the earth, it is probable that the human race would sink to the social level of animals.

The more complex civilization becomes, the greater is the demand for the expression of this instinct. As the race grows older its problems multiply (the game of life becomes more difficult) and the need for men who have a strong desire to excel and a high ability to lead increases. The world rewards leadership because it cannot do without it. Every great field of human activity must have its leaders. Otherwise it ceases to be great or even to exist. In this respect the great industries resemble an army, which is helpless without officers to direct its action. A great industry, like an army, must have its officers as well as its privates. And, like an army, an industry needs many grades of officers, of leaders. In the long run the men who are best prepared, in character and intellect, gravitate to the most important positions. The ill prepared are ruthlessly weeded out. The boy who plays marbles knows this principle. Hence he plays "for fun" until he has learned to play well, and thereafter he plays "for keeps."

It is becoming increasingly evident that to go to college is one of the best ways to prepare for the game of life. We are authoritative-

ly informed that the American boy who has never been to school has, on the average, only one chance in 150,000 of becoming an eminent leader. The same authority states that the boy who has a high school training has 87 times as good a chance as this, and that the college graduate has 700 times as good a chance. It is not to be wondered at, then, that though only one percent of Americans have been to college, this small proportion of our men have occupied more than fifty percent of the leading positions of responsibility in the United States.

"But," the young man asks, "in what field shall I prepare myself for leadership?" There is room at the top in all fields of human activity. Individual excellence is undoubtedly the greatest factor in leadership in any field. But it is important for the young man to consider the fact that the supply of available leaders is relatively greater in some lines than in others. This means that, other things equal, the opportunities open to capable leaders are greater in those fields in which the supply of leaders is shortest. There is at least

one field in which the demand for capable leaders has never been filled, and that field is agriculture. Agriculture is the biggest business in America. It represents an invested capital of 80 billion dollars, which is said to be more than all the railroads and all the manufacturing industries combined. The country is learning that a prosperous agriculture is desirable for every American. Hence the whole country is keenly interested in the development of our agricultural possibilities. To secure this development will require the services of thousands of young men with scientific agricultural training.

These are some of the essential things to be considered by high school graduates, thousands of whom are now confronted with the questions "What game shall I prepare for?" and "How shall I prepare?" A careful consideration of the above statements by these graduates and their determination to enter college next fall, may confidently be expected to bring large rewards to these young men and blessings to our country.

## A PRIVILEGE AND A DUTY

Now that vacation time has come the majority of us are going away from K. S. A. C. for the next three months, and it falls upon us to tell the ones we meet what advantages, in the way of an education, K. S. A. C. holds for them.

It is our duty to get some data on what the other divisions of the college have to offer prospective students, but more especially it is our duty, and at the same time it is our privilege, to point out the advantages the Division of Agriculture has in store for any one who is interested in an agricultural education.

We should tell prospective students of our courses and be able to explain anything that they do not understand. We should tell them of the students and the faculty. We should point with pride to the diversity and excellence of the agricultural training at K. S. A. C., to our judging teams, the Ag association, and the Ag Fair, and should not forget to mention the departmental clubs.

We should keep ourselves informed and keep up the good work wherever we go. If we find one who is seriously thinking of going to college, it is our duty to send his name

and address, along with information concerning the courses in which he is interested, to the Vice President, K. S. A. C., so that literature and other information concerning the college may be sent to him.

Above all however, let us emphasize the fact that we should not be afraid to talk about K. S. A. C. Rather, we should be proud to do so. And when we do talk, we should say something, for there is a great plenty to talk about and nothing that needs to be left unsaid. This issue of the "Agricultural Student" contains much authentic information about agricultural education and about K. S. A. C. as a center of such education. All of us should use this information as fully as possible for the benefit of prospective students, our state, our country, and our Alma Mater.



Lloyd Gawthrop, special in agriculture, has transferred his credits made during this college year to Southwestern Kansas College, Winfield where he will be graduated with their class of '22. He is to be located on a farm near Murdock after graduation.

## THE CURRICULUM IN AGRICULTURE

It is the desire of the publishers of "The Kansas Agricultural Student" to place this issue, the commencement number of the agricultural student publication of Kansas State Agricultural College, before every recent high school graduate in Kansas who is interested, or should be interested, in college work in agriculture. Therefore this number contains not only the usual student articles discussing various vital present-day farm problems, but also several articles that will be of special interest to prospective freshmen of the college year 1922-23 and members of the graduating class of 1926.

An item of large interest to the prospective college student is the curriculum—the outline giving the various courses or subjects included in the four years' work in college. Kansas State Agricultural College offers but one curriculum in agriculture. Through a

carefully arranged series of electives, however, this curriculum provides the preparation for service in scores of phases of agricultural activities. The curriculum, therefore, must be studied rather carefully by the prospective student in order to get even a meager comprehension of its possibilities.

The reader should not fail to note, in beginning this study, that this curriculum does not apply to the classes to be graduated in 1923, 1924, and 1925. The work provided in the curriculum in agriculture for these, the next three college graduating classes, will be substantially the same as regularly prescribed heretofore. It is believed, however, that the curriculum for the class of 1926 and succeeding classes presents some advance in organization and various specific requirements. This is the freshman's curriculum and the only one he is interested in directly. It is as follows:

FIRST SEMESTER		SECOND SEMESTER	
Freshman Year			
	Cr. Hrs.		Cr. Hrs.
College Rhetoric I (3-0).....	3	College Rhetoric II (3-0) .....	3
Chemistry I (3-6) .....	5	Chemistry II (3-6) .....	5
General Botany I (1-6) .....	3	General Botany II (1-6) .....	3
Judging Market Livestock (0-6) .....	2	Geology (3-0) .....	3
Elements of Dairying (2-3) .....	3	Dairy Judging (0-3) .....	1
Library Methods (1-0) .....	1	Judging Breeding Livestock (0-6).....	2
Agricultural Lectures (1-0) .....	R	Agricultural Lectures (1-0) .....	R
Military Science A-I (0-4) .....	1	Military Science A-II (0-4) .....	1
Physical Education M-I (0-2) .....	R	Physical Education M-II (0-2) .....	R
Sophomore Year			
Organic Chemistry (2-3) .....	3	Elements of Horticulture (3-3) .....	4
Agricultural Economics (3-0) .....	3	Principles of Feeding (3-0) .....	3
Anatomy and Physiology (2-3) or .....	3	General Zoology (3-6) .....	5
Plant Physiology I (3-0) .....	3	Farm Crops (3-6) .....	5
Soils (4-3) .....	5	Military Science A-IV (0-4) .....	1
Farm Poultry Production (1-3) .....	2	Physical Education M-IV (0-2).....	R
Military Science A-III (0-4) .....	1		
Physical Education M-III (0-2) .....	R		
Junior Year			
Genetics (3-0) .....	3	General Entomology (2-3) .....	3
Plant Pathology I (1-6) .....	3	Farm Organization (2-3).....	3
Agricultural Microbiology (1-6).....	3	Agricultural Journalism (1-0) .....	1
Junior Electives .....	7	Junior Electives .....	9
Senior Year			
Agricultural English (3-0).....	3	Agricultural Relationships (1-0) .....	1
Elective .....		Electives .....	
Major .....	6	Major .....	6
Minor .....	4	Minor .....	5
General .....	3	General .....	4

The attention of the prospective student is called to several points regarding the work as outlined in the curriculum.

1. A large amount of laboratory work is provided, giving such individual practice, experimentation, and tests as will promote an adequate comprehension of the problems studied. Within the parentheses following the

name of each course in the curriculum are two numerals. The first numeral indicates the number of hours of recitation each week; the second, the number of hours to be spent in laboratory each week.

2. The work of the first two years is the same for all agricultural students. Not only are many of the fundamentals of any

college training provided in these two years of work but an adequate foundation of science is laid for the subsequent work of the curriculum. It should be noted also that about one-fourth of the time in the freshman year and one-half of the time in the sophomore year are devoted to distinctly agricultural courses.

3. The names of most of the courses indicate in a general way the kind of work offered. For details the prospective student is referred to the new catalog, copies of which may be secured by writing to The Vice President, Kansas State Agricultural College, Manhattan. Note that one hour each week for the entire freshman year is devoted to "Agricultural Lectures." This course provides an invaluable weekly assembly for all freshmen in the curriculum in agriculture. The work consists primarily of vocational guidance and an endeavor to assist the student in methods of study, relationships, objectives, and requirements.

4. In the junior and senior years 44 credit hours of electives are provided. These are divided into four groups as shown in the outline. The purpose the student has in view determines his selection of a major group which consists of twelve credit hours of advanced work in one of the departments of the Division of Agriculture; namely, Agricultural Economics, Agronomy, Animal Husbandry, Dairy Husbandry, Horticulture, Poultry Husbandry, or Milling Industry. The student is not required to select his major department until his sophomore year. By that time his freshman class work and experience as a college student and especially the discussions given in the "Agricultural Lectures" have, as a rule, so developed and clarified his purposes that he has very definite and well-established ideas regarding his major department and the courses to be included in his major group of electives.

5. All groups of electives must be approved in advance of assignment by the student's Dean and the Head of his major department. The sophomore having selected his major department at once gives due consideration to these lists of elective courses that the composition of these groups, which complete the curriculum for him, may be the best possible considering his personality, capacity, and purpose.

The plan provided for the selection of electives places the initiative, to a large ex-

tent, in the hands of the student, safeguarding him, however, by such adequate general information and personal conferences as will insure the best possible selection of work.

6. There are seven departments in which the student in the curriculum in agriculture can major, and each department provides opportunity for such organizations of electives as will meet several distinct purposes. For example, a student majoring in the Department of Dairy Husbandry may select his work so as to prepare (1) to engage in any phase of commercial work in the manufacture and distribution of milk products; (2) to be an all-round dairy farmer; (3) to be a dairy farmer specializing in purebred dairy cattle; or (4) to be a teacher, extension specialist, or investigator in any phase of the dairy industry. This is simply a suggestive list for one department and it is incomplete.

7. The curriculum in agriculture should appeal primarily to young men who have been reared on the farm. Such young men will be able in their college work in agriculture to capitalize in an effective way their farm experience. All candidates for the degree in agriculture must have had at least six months farm experience before graduation.

8. It is possible for students to have included in their lists of electives the professional work required for the state teacher's certificate.

9. It is also possible, in certain cases, for students to prepare for the teaching of vocational agriculture under the Smith-Hughes act and have all the necessary courses for this preparation included in their lists of electives. As a rule, however, such students find it advisable to take one summer school beyond the requirements for graduation for the adequate completion of the Smith-Hughes requirements.

#### THE SIX-YEAR CURRICULUM IN AGRICULTURE AND VETERINARY MEDICINE

Young men desiring the best possible preparation for a veterinarian's or a stockman's career should consider the six-year curriculum in agriculture and veterinary medicine. This curriculum is so organized that the student may receive the degree, bachelor of science in agriculture, at the end of four years and the degree, doctor of veterinary medicine, at the end of two years more. An increasing number of students are each year enrolling in this curriculum.

## AGRICULTURAL OCCUPATIONS

Graduates of the Division of Agriculture of Kansas State Agricultural College are engaged in more than one hundred and fifty agricultural occupations. These include distinctly farm activities and important phases of many of the great industrial enterprises. A partial list of these occupations is given below. Information regarding opportunities and requirements in any of these agricultural occupations may be secured by writing to Dean, Division of Agriculture, K. S. A. C., Manhattan.

Accountant for agricultural enterprise  
 Advanced registry supervisor  
 Agricultural advisor for bank, railroad company, or other industrial or commercial enterprise  
 Agricultural economic agent for business concern  
 Agricultural economist  
 Agricultural finance expert  
 Agricultural implement dealer  
 Agronomist  
 Breeder of purebred livestock, poultry, dairy cattle, beef cattle, swine, horses, etc.  
 Butter or cheese maker  
 Cattle herdsman  
 Cerealist  
 City milk inspector  
 Club leader (agriculture)  
 County agricultural agent  
 Creamery manager  
 Crop reporter  
 Crop experimentalist  
 Crop extension specialist  
 Dairy farmer or farm manager  
 Dairy herdsman  
 Demonstrator for incubator and brooder manufacturer  
 Director of vocational agriculture  
 Editor of agricultural publication  
 Farm manager  
 Federal grain supervisor  
 Feedingstuffs specialist  
 Fertilizer salesman  
 Fieldman for livestock association  
 Fieldman for agricultural publication  
 Florist  
 Flour mill manager or superintendent  
 Forage crop specialist  
 Fruit grower  
 Fruit inspector  
 Fruit marketing specialist

General farmer  
 Grain elevator manager  
 Grain grader or inspector  
 Greenhouse manager  
 Horticulture experimentalist  
 Inspector of poultry products  
 Land classifier  
 Landscape architect  
 Landscape foreman or gardener  
 Livestock experimentalist  
 Livestock market or extension specialist  
 Livestock farmer or farm manager  
 Manager of agricultural cooperative association  
 Manager of fruit products factory  
 Market reporter  
 Marketing specialist  
 Milk plant manager  
 Mill control laboratory specialist  
 Miller  
 Missionary, agricultural  
 Nursery superintendent or foreman  
 Orchard superintendent or foreman  
 Pasture management expert  
 Plantbreeder  
 Pasture management expert  
 Poultry extension specialist  
 Poultry hatchery manager  
 Poultryman  
 Salesman for packing house, flour mill, feed manufacturer, or other agricultural industry  
 Seed analyst  
 Seed inspector  
 Seedsman  
 Soil experimentalist  
 Soil surveyor or technician  
 Sugar beet specialist  
 Supervisor of school gardens  
 Teacher of agricultural courses in high school or college  
 Teacher of vocational agriculture  
 Truck farmer  
 Writer for agricultural publications

—◇—  
 E. H. Coles, '22, has been appointed assistant in dry land agriculture, U. S. D. A., and will begin his work at the Garden City branch station immediately after commencement.

—◇—  
 H. W. Schmitz, '22, has been employed as director of vocational agriculture in the Chase County High School, Cottonwood Falls, for the coming year.

# Pork Production

Earl Means, '22

The swine herd at the Kansas State Agricultural College is maintained primarily for the purpose of investigation and instruction. The herd produces all the animals required for investigational work, such as determining the best methods to follow in finishing hogs for market, both in dry lot feeding and in feeding with forage crops. From the animals used in class work the students learn the essentials in the production of profitable market and breeding hogs. The various problems of swine management are studied by the classes in pork production, the first-hand information secured through work done at the hog barn supplementing the lectures and assignments of the classroom.

The student who expects to engage in swine production must first master the fundamentals of good swine management, otherwise the losses resulting from ignorance and lack of experience will quickly wipe out any possible profits from the enterprise. One fact alone shows the risks involved; namely, not more than 60 percent of the pigs farrowed in the corn belt are raised to market size. A great part of this loss occurs at farrowing time or very soon after. The students taking the course in pork production get real training from the methods followed at the hog barn in avoiding such losses. Every member of the class spends several hours both night and day caring for the little pigs on their arrival, and doing everything possible to give them a good start and carry them past the period of greatest danger. It is thus demonstrated to the student that the greater part of these losses is preventable.

The purchase of high-priced animals for the breeding herd and the show ring is usually considered a business in which only the man of means can engage. However, the college swine herd is clearly demonstrating the possibilities of securing good breeding stock without the cost ordinarily entailed.

A year ago the Poland China boar, Rainbow Lad, was secured to head the college herd. Rainbow Lad is sired by The Rainbow, one of the greatest breeding boars of recent years. A full brother of Rainbow Lad sold at

auction for \$3,800. A half brother was Grand Champion at several state and national shows last year, and is now at the head of one of the best herds of Poland Chinas in the country. Ordinarily a boar the equal of Rainbow Lad can be secured only at a high price, but Professor Bell was able to secure this boar in exchange for two pigs.

It is just as essential, however, that improvement be sought through the sows in the herd. This means of securing the right kind of a start without too much expense is being demonstrated in the college Duroc Jersey herd. In this case a noted breeder allowed the college to have two bred sows from his herd to raise the pigs on a share plan. These sows are sired by a son of Orion Cherry King, the sire of eight champions at the National Swine Show; they also carry the blood of Joe Orion II, the sire of the dams of four champions at the same show. One of these sows has a fine litter of ten pigs and the other a litter of eight. These pigs are sired by I Am Great Wonder, a boar closely related to Great Orion Sensation, Grand Champion Duroc Jersey boar at the National Swine Show in 1919 and 1921. The dam of I Am Great Wonder is sired by Pathfinder, the sire of three champions at the National Swine Show. The litters of these sows will greatly improve the college Duroc herd.

Animal Husbandry students who expect to engage in livestock production upon completing the college course, hope to start with improved breeding stock that will yield good profits either as market or as breeding animals. However, few graduates are fortunate enough to be able to invest much money in breeding stock at the start, and hence feel obliged to handle cheaper stock, hoping to improve their herd with the profits secured in marketing their surplus. One of the objects of teaching livestock production is to show the possibilities of securing a start with the right kind of breeding stock at a reasonable cost. This object may be accomplished only when methods of selection, management, and herd improvement are carried out which demonstrate means to this end.

# Summer Silage for Dairymen

Lynn Copeland, '22

The silo of today is no longer an experimental proposition, yet all the benefits of silos are not realized by the majority of Kansas dairy farmers. As a rule silos are built with the idea of supplying winter feed only; yet summer feeding of silage is considered by a few dairymen even more important than the winter supply.

A pasture experiment conducted for four years at the University of Illinois by Wilbur J. Fraser, a report of which was published in the *Country Gentleman*, June 22, 1910, showed that Bluegrass pasture produced three times as much feed during May and June as it did during July and August; and that again in autumn it produced in a few weeks nearly as much as in May and June. This condition is true to an even greater extent for Kansas pastures, which often dry up and blow away during the summer months.

This lack of succulent feed in midsummer comes at a most critical time, because then dairy cows will shrink in milk flow under the best of conditions; and if in addition, their feed is cut short, the shrinkage will be greater. The worst part is that normal production cannot be regained when grass comes on again in the fall.

The lure of the pastures, however, is too great for the average cow keeper. It is so easy for him to turn cows on the pasture and forget them except to round them up morning and night for milking and to salt them occasionally. In May and June the grass is usually tender and green and the supply is plentiful, but even during these months silage can be fed to any class of cows with profit. During the early spring the grass is watery and lacks body and nutritive value, and animals are often underfed on the assumption that they are receiving all the green feed they need.

Then in July comes the hot weather, drought, and flies, and the pastures soon become very poor. This is the time for the summer silo. With the cows in a darkened barn and plenty of succulent silage, good records can be produced and at very little cost.

Attempts have been made to supplement pasture by growing soiling crops, but soiling crops have never been popular. They are also affected by hot dry weather, and require an extra amount of labor as they must be harvested each day.

The main idea in building a silo for summer silage is not so much the most cubic feet at minimum cost, but rather keeping the diameter small enough so that the silage may be fed and kept in good condition. There are two reasons for this: First, silage spoils more quickly in warm weather than in cold; second, many times only a partial feed of silage is required to supplement the pasture, and so only a small amount is taken from the silo each day.

If there is but one silo on the farm, it should be small enough in diameter to be fed from during the summer. Where it is possible, a silo, small enough in diameter for summer feeding and filled with corn or cane, is to be desired.

Not only does the summer silo supplement poor pasture but it enables the small farmer on 40 or 80 acres to keep a good sized herd of cattle and to do so with a minimum feed cost. It also allows the dairy farmer to maintain less of his high-priced land in pasture, as was heretofore necessary if cattle were kept.

As time goes on silage will be used more and more for summer feeding. It is the cheapest source of summer feed and will mean a great saving in the feed bill and a large increase in the returns of the herd during the summer.



M. A. Smith, '22, will do graduate work in plant pathology in Cornell University, Ithaca, N. Y., during the coming year.



R. E. Kellogg, '22, has accepted a position in the Agricultural Experiment Station of the University of Montana, Bozeman. His work will be in the Montana grain inspection laboratory.



# Alumni Notes

E. H. Walker, '22

Duke D. Brown, who, majoring in Agronomy, completed the work of the curriculum in agriculture the first semester, is now county agent of Hodgeman County with headquarters at Jetmore.

\* \* \* \*

Homer J. Henney, '21, is stationed at Cottonwood Falls, where he is making a survey of the cost of beef production in the Flint Hills pasture region. Henney was an active man in the Division of Agriculture and was a member of the stock judging team in 1920-21 in all of its contests.

\* \* \* \*

H. R. Guilbert, '20, is teaching vocational agriculture at K. S. A. C. He was a member of the stock judging team in the International at Chicago and the National Western at Denver in 1919-20.

\* \* \* \*

Nevels Pearson, '21, also a member of the 1919-20 stock judging team, assistant state club leader in Kansas until March 1, is now state club leader of Michigan, with headquarters at the Michigan Agricultural College.

\* \* \* \*

A. E. Anderson, '14, is statistician for the Bureau of Markets and Crop Estimates at Lincoln, Nebr.

\* \* \* \*

C. E. Cassel, '10, is county agent in Finney County.

\* \* \* \*

F. G. Welsh, '20, a member of the 1919-20 stock judging team, is professor of agriculture in the Kansas State Normal at Emporia.

\* \* \* \*

I. N. Chapman, '16, is county agent of Leavenworth County.

\* \* \* \*

R. C. Erskine, '16, is assistant manager of the Muehlebach hotel in Kansas City, Mo.

\* \* \* \*

A. I. Gilkinson, '14, is county agent in Cheyenne County, Kan. His address is St. Francis.

\* \* \* \*

H. H. Laude, '11, took his M. S. degree at Texas A. & M. College in 1918. For

two years he was superintendent of the Texas Agricultural Experiment Station at Beaumont, conducting some important rice investigations. He is now in charge of cooperative experiments conducted by the Department of Agronomy of the Agricultural Experiment Station.

\* \* \* \*

Clell A. Newell, '21, a member of the 1920-21 stock judging team, is now county agent of Lincoln County, Kan.

\* \* \* \*

E. D. McCollum, '21, also on the stock judging team in 1920-21, is farming near Bogard, Mo. His farm is a livestock farm and he is producing purebred Angus cattle and Poland China hogs.

\* \* \* \*

H. E. Mather, '21, one of the stock judging team in 1920-21, is teaching vocational agriculture at Linwood.

\* \* \* \*

A. D. Weber, '22, recently left college to accept a position with Mr. Keith, a prominent lumberman and banker of Kansas City. Mr. Weber will manage a large Hereford and Poland China farm. He will be remembered as the member of the stock judging team who took second place among the contestants from the United States and Canada in the International at Chicago this winter.

\* \* \* \*

Frank B. Lawton, '12, is superintendent of the farm at Haskell Institute, Lawrence.

\* \* \* \*

P. E. McNall, '14, took his master's degree in the University of Wisconsin and is now a member of their faculty in the department of Agricultural Economics.

\* \* \* \*

V. F. Stuewe, '15, and R. E. Stuewe, '16, are managing a fine Holstein farm near Alma.

\* \* \* \*

O. E. Williams, '11, is in the dairy division of the U. S. Department of Agriculture at Washington, D. C., and has been abroad conducting ice cream investigations.

\* \* \* \*

L. H. Fairchild, '16, is assistant professor of dairying at Purdue University.

H. S. Baird, '11, is manager of a large plant for the California Milk Producers Association at Sacramento.

\* \* \* \*

J. B. Thompson, '05, is agronomist in charge of the Agricultural Experiment Station, St. Croix, Virgin Islands, U. S. A.

\* \* \* \*

D. E. Lewis, '10, is president of the Lewis Orchards Company at Kansas City. This is a large company, operating commercial orchards in the Missouri Valley.

\* \* \* \*

O. R. Peterson, '21, a member of the 1920-21 stock judging team is teaching vocational agriculture and directing athletics in the Frankfort High School.

\* \* \* \*

C. F. Huffman, '16, formerly instructor in the Department of Dairy Husbandry, has a fellowship in the Dairy Department of the University of Minnesota.

\* \* \* \*

Raymond Campbell, '20, is running a dairy farm near Parsons.

\* \* \* \*

D. R. Hooton, '21, is stationed at San Antonio, Texas, as scientific assistant in the Bureau of Plant Industry, U. S. D. A.

\* \* \* \*

L. E. Eberwein, '21, is teaching vocation-

al agriculture at McLouth.

\* \* \* \*

C. F. Swingle, '20, is in the Office of Foreign Seed and Plant Introduction, U. S. D. A., Washington, D. C.

\* \* \* \*

Lawrence Green, '06, is head of the Department of Horticulture in Purdue University.

\* \* \* \*

J. R. Cooper, '12, is head of the Department of Horticulture, University of Arkansas, Fayetteville.

\* \* \* \*

A. A. Glenn, '16, is horticulture extension specialist at K. S. A. C.

\* \* \* \*

L. M. Mason, '17, is a fruit grower in the Arkansas Valley near Belle Plaine.

\* \* \* \*

William L. Martin, '22, is in the fruit and truck business at Winfield.

\* \* \* \*

I. Jones, '94, is a fruit grower and lawyer in Ontario, Calif. He is also a member of the California state legislature.

\* \* \* \*

Karl S. Quisenberry, '21, and Julia Marguerite Piinter were married April 11. Their address is 48 University Drive, Morgantown, W. Va.

## Ice Cream as a Food

Luella Sherman, '22

A century ago ice cream was considered as a luxury, to be used only on special occasions. Today it has come to be a necessary daily food, and its manufacture now represents one of the important branches of the dairy industry. This change is due principally to the evolution in ice cream making.

Because of its content, it is well that the early ice cream was considered only as a luxury. Ice cream was first made from sweetened pure cream. As a food this was too concentrated, besides being very expensive. Dealers decided that the composition must be changed before ice cream could be marketed to any extent. They commenced the evolution by replacing part of the cream with milk, thus reducing the fat content and bring-

ing up the protein content. Later the sugar was reduced, eliminating an element which causes fermentation in the stomach, making the food more edible for children.

The state of Kansas until last year required a fat content of 14 per cent in all ice cream sold on the market. Just recently, however, the standard for ice cream has been changed to 10 per cent fat and 10 per cent serum solids of milk.

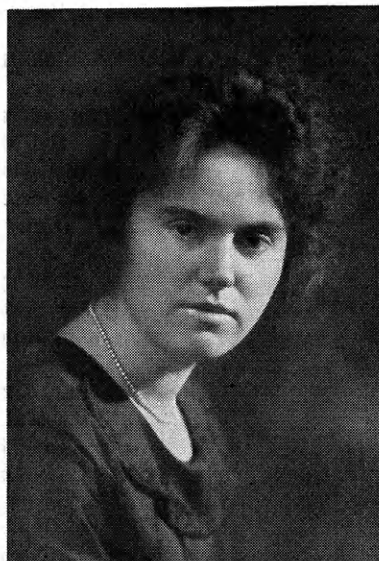
Ice cream now on the market is a well-balanced food as to fat, protein, and carbohydrates; it is easily digested and one of our most economical foods. Its use is especially urged in feeding invalids, particularly typhoid fever patients, where high calorific value is desired.

# The Sharples Prize Scholarship

For the purpose of encouraging girls in the study of the value of dairy products and the best methods of utilizing them the Sharples Prize Scholarship has been offered in Kansas State Agricultural College for the last two years. Miss Conie Foote was awarded the scholarship for the college year 1920-21, and Miss Luella Sherman for the year 1921-22.

The scholarship provides an annual stipend of \$500 in cash. No prescribed duties are assigned, but the holder is expected to follow some line of dairy work at least a year after graduation. Miss Sherman expects to encourage the use of milk and milk products as a home demonstration specialist, upon graduation.

Any girl in the Division of Home Economics or any girl majoring in dairy husbandry is eligible to hold the scholarship. Miss Sherman's grades were the highest of any student in the college last spring, and she is unusually outstanding as a leader in college activities.



MISS LUELLA SHERMAN

## The Fourth Annual Grain Judging Contest

Samuel Pickard, 23

The Fourth Annual Grain Judging Contest, held this spring on Friday, April 7, 1922, marked another milestone of progress for the Agronomy Department. The prizes offered were more numerous and larger than at any previous contest and the interest taken by the agricultural students was much keener.

There were three main divisions of the contest. The first one, called commercial grading and judging, included seven classes, as follows: (1) Judging and placing soft red winter wheat; (2) judging and placing hard red winter wheat; (3) judging and placing red oats; (4) grading hard red winter wheat; (5) grading oats; (6) grading corn; (7) identification of commercial samples.

The second division of the contest consisted of judging and placing ear samples of corn, head samples of kafir and milo, and seed samples of alfalfa.

The third division was the identification of about 75 samples of crop varieties, including all of the important varieties of grain and forage crops common to this section of the country.

Five prize ribbons were awarded in each of the three divisions of the contest and cash prizes were given for the three highest scores in each division. In the first division, which included commercial grading and judging, these were \$15, \$10, and \$8, respectively. In divisions No. 2 and No. 3, of the contest, the cash prizes were \$10, \$8, and \$5 for the first three places. In each of the three divisions other prizes, usually subscriptions to farm papers, were given to the contestants placing fourth and fifth.

As in previous contests, five prizes were given to the five men who made the highest total scores in the entire contest. Cash prizes of \$25, \$20, and \$15, were given for the three

highest scores, and subscriptions to some of the best farm papers were given to the men who placed fourth and fifth in the entire contest. A special cash prize of \$5 was given to the freshman making the highest score in the entire contest.

The following firms contributed liberally toward making up the cash which was awarded as prizes: Kansas Crop Improvement Association, Armour Fertilizer Works, Simons-Shields-Lonsdale Grain Company, Goffe and Carkener Grain Company, The Homestead, the Cochrane Packing Company, Cudahy Packing Company, Geo. Fielding and Sons, Morris and Company, The Curtiss Publishing Company, Western Seed House, D. O. Coe Seed Company, Barteldes Seed Company, and C. C. Cunningham.

The Weekly Kansas City Star, Breeders' Gazette, Kansas Homestead, Successful Farming, Wallace's Farmer, Farm and Fireside, Kansas Farmer and Mail and Breeze, and Capper's Farmer each gave two or more yearly subscriptions.

Those placing high in the entire contest were: First, R. S. Mather; second, C. W. Bower; third, Edward Watson; fourth, Boyd R. Churchill; fifth, L. D. Keller.

In commercial grading and judging the five high men were: W. R. Harder, M. E. Goff, J. E. Norton, E. R. Ausemus, and W. E. Stone.

In judging alfalfa, corn, and sorghum, R. S. Circle placed first; Frank Kerns, second; C. G. Cox, third; J. R. Kirkpatrick, fourth; and Paul Roofe, fifth.

The five highest men in identification were: J. L. Farrand; E. M. Litwiller, F. M. Alexander, W. C. Wilson, and M. T. Hargis.

B. A. Campbell placed first among the freshmen; Glen Reed, second; and Luther Circle, third.

This contest is put on each year under the auspices of the Klod and Kernel Klub, an organization composed of upper classmen and faculty members of the Agronomy Department. Its object is to stimulate interest in the crop courses and to give the students who are to become county agents, grain dealers, millers, teachers, and farmers, some practical training and experience in such judging and identification work as will confront them later. The majority of the hundred contestants scored high, indicating that they had received much thorough and practical training from their crops work.

## The Dairy Judging Contest

C. C. Button, '23

The 15th annual students' dairy judging contest was held at K. S. A. C. on Saturday, April 15, 1922. Any student enrolled in the college or School of Agriculture could enter, with the exception of members of intercollegiate dairy judging teams and those who had won first place in previous students' dairy judging contests here. The total number of entrants was 127.

The contest consisted of placing classes of each of the four leading breeds of dairy cattle; namely, Holsteins, Jerseys, Ayrshires, and Guernseys. Gold, silver, and bronze medals were given to the three highest men in the entire contest, and silver medals were given to the men who ranked highest in each of the breeds. George Young and Sons gave a cash prize of \$5 to the high man on Holsteins. The five high men in each breed each received a year's subscription to the breed journal of the particular breed in which they ranked high.

A five-dollar prize was given to the freshman who ranked highest in the entire contest.

E. R. Button of Topeka, a junior in agriculture, won the gold medal offered for high man in the entire contest. His score was 1,065 out of a possible 1,200. Frank W. Houston of Twin Falls, Idaho, a junior in agriculture, won the silver medal for second high man, with a score of 1,047. C. R. George of Manhattan, a junior in agriculture, won the bronze medal with 1,015 points. The other high men were: T. D. Cole, fourth, and C. W. Clair, fifth.

The high men in each breed were: Holstein—Frank W. Houston, C. R. Hemphill, E. R. Button, T. D. Cole, and Joe T. Cobb; Ayrshire—R. L. Welton, W. P. Wertman, E. R. Button, C. R. George, and G. E. Taylor; Guernsey—L. F. Hall, R. L. Scholz, N. N. Weberg, J. C. Wallace, and M. M. Hoover; Jersey—F. E. Charles, Edward Watson, T. B. Stinson, and

J. S. Stewart, and five men tying for fifth place, V. E. Paine, Austin Stover, Frank W. Houston, Roy E. Clegg, and E. H. Larson.

Martin Hendricks of Humboldt won the \$5 cash prize offered for the high freshman, with a score of 977.

The dairy judging contest this year was one of the most successful ever held at the institution. A great deal of interest was displayed by the entire agricultural student body. Competition was keen and in all cases the winners were men of ability as judges of

livestock. The success of the contest was largely due to the efforts of Lynn Copeland, H. C. Sturgeon, and J. M. Moore, the student committee in charge.

The three high men in the contest were all men who have done considerable work in the college dairy herd. Button, who comes from a dairy farm near Topeka, has paid his expenses for the past three years by working at the dairy barns. Houston and George have also put in much time working at the dairy barns.

## The Stock Judging Contest

Charles G. Russell, '23

The 18th annual student livestock judging contest, held April 17, 1922, and conducted by the Block and Bridle Club of the Department of Animal Husbandry, was the largest and best contest ever held.

F. W. Houston, Twin Falls, Idaho, junior in animal husbandry, won first place and was awarded a gold medal. F. H. Paulsen of Stafford, junior in animal husbandry, placed second, winning a silver medal. Thomas Cross of Belle Plaine won third, winning a bronze medal. The next seven students in order of their placings were: Deal Six, J. W. Farmer, H. J. Kapka, L. M. Knight, H. C. Sturgeon, H. W. Schmitz, and A. J. Englund. These 10 men will be given a trip to the Stockers and Feeders Convention at St. Joseph, Mo., next fall. The trip will be awarded by J. A. Barkley, manager of the St. Joseph stock yards.

In the junior division of the contest Francis Houlton of Florence, junior in animal husbandry, won first place and a gold medal. W. C. Boller of Sedgwick, School of Agriculture, won second and a silver medal. L. A. West, frsehman in agriculture, won third and a bronze medal. Edwin Hedstrom, R. L. Stover, M. D. Roberts, Ellis Babbitt, T. B. Stinson, W. K. Lau, and A. C. Magee were the next seven men placing highest in order of their ranking.

The first contest of this kind ever held at the college was put on by the Department of Animal Husbandry in 1904. In that contest everyone entered and judged the stock on the same basis. This contest was in reality a dairy judging contest including livestock judging, for there was no Department of Animal Husbandry here at that time. Only a few contestants entered and they represented

class teams. The School of Agriculture and the Farmers' Short Course students also entered teams.

For the last few years the contest has been conducted by the Block and Bridle Club, which has placed it on an individual basis instead of a team basis. It has also been divided into two divisions on the basis of the training which the contestants have received. The junior division, including all men who have had no advanced judging work, place the stock on a market basis and write the reasons for their placings. The senior division, composed of men who have had advanced judging work, place the stock from a breeder's and producer's standpoint and give oral reasons. The faculty of the Department of Animal Husbandry, who are specialists in the various classes of livestock, act as judges.

In the contest this year were 211 entrants. In the junior division there were 164 and in the senior division, 47. The junior division usually includes all the freshmen and sophomores and the juniors and seniors majoring in work in departments other than Animal Husbandry, while the senior division is made up almost entirely of juniors in animal husbandry. The seniors in animal husbandry conduct the contest, as most of them, having served on the intercollegiate judging team, are ineligible for this contest. The men on the judging team that was sent to the International Contest last fall, all placed high in the student contest last spring. A. D. Weber was high man of the contest last year and was also high man of the United States at the International at Chicago. Nearly all of the men on this International team are going into the livestock business as soon as they finish college.

# The Value of the College Show Herds

J. J. Moxley, '22

The college show herds are proving their value as a part of the educational program of the Department of Animal Husbandry, both at the college in instructional work and in livestock improvement work over the state. The college is preeminently interested in the advancement of Kansas livestock and realizes that any improvement must come through the use of purebred stock. The Department of Animal Husbandry could find no better way of convincing the stockmen of the value of purebred stock than by showing them the results of its breeding and feeding work. The state fairs offer an excellent opportunity for such a demonstration and the results are so apparent that none can fail to understand. These living specimens make a more lasting impression upon the stockman than could be made in any other way. It is human nature to react more to a study in animal form and excellence when displayed in actual bone and flesh than when the same object lesson is announced through the press columns.

The college show herds benefit both the breeder of purebred stock and the one raising mediocre stock. The purebred breeder could find no better recommendation for high grade

stock and the nondescript stockman no better proof of their value than these examples of good feeding and breeding which the Department of Animal Husbandry exhibits at the state fairs.

As a drawing card for prospective agricultural students, the show herd reaches out and makes an appeal in a more tangible way than the usual extension methods. The animals on display reveal the college method of judging and studying livestock with the most approved animals as a text. Many of our agricultural students first became acquainted with the college through these show herds. With a first lesson gained at the shows, it is but a natural inclination to go to college for further work in the animal husbandry line.

The show herds must be of the most approved type to compete for the fair awards. This serves as an incentive to keep the various breeds up to the most modern standards as dictated by show ring winnings. Thus the constant striving for improvement, with the show ring setting the ideal, furnishes typical examples of the various breeds for classroom instruction.

## Kanota Oats

Austin T. Heywood, '24

The Department of Agronomy of the Agricultural Experiment Station has a division of crop improvement. The farmers of the state hear little about this division except when something is accomplished which aids them directly. Thus, the distribution of Kanota oats to a few members of the Kansas Crop Improvement Association in the spring of 1918 definitely called the attention of farmers to this crop improvement work.

The origin of Kanota oats was as follows: In the spring of 1916 four lots of oats were brought in from Texas under the name of *Red Texas*. These strains were designated as Kansas Nos. 5179, 5180, 5181, and 5182, respectively. In 1918 these oats

were identified as Fulghum by C. W. Warburton of the United States Department of Agriculture. No. 5179, showing great superiority from the first year, ripening earlier and yielding higher than the others, was called, after 1918, *Kansas Fulghum* and in 1921 was renamed *Kanota*. Nos. 5180 and 5182 were discarded after 1918 and the other two were kept in experimental plots. No. 5181 yielded about 15 bushels less per acre than No. 5179 and was from two to nine days later in heading and in ripening.

This discussion is largely an excerpt from circular 91 of the Kansas Agricultural Experiment Station, "Kanota: An Early Oat for Kansas."

In the early spring Kanota oats make a rapid upright growth which is very desirable. Because of this habit in backward cool springs they are not held back, but make growth enough to materially keep down weeds. Kanota does not, however, grow as tall as Red Texas oats, but does get plenty tall enough to bind. In the springs of 1920 and 1921 Kanota showed marked resistance to late spring freezes. The same freezes damaged both Red Texas and Kherson oats quite severely by thinning the stand. This may be one reason that Kanota outyielded Red Texas and Kherson in those two years.

The average test weight of Kanota in the four years it has been grown in field plots was three pounds higher than Burt oats, and five pounds higher than Red Texas. To a certain extent this speaks very well for the quality of Kanota.

One of the characteristics of Kanota

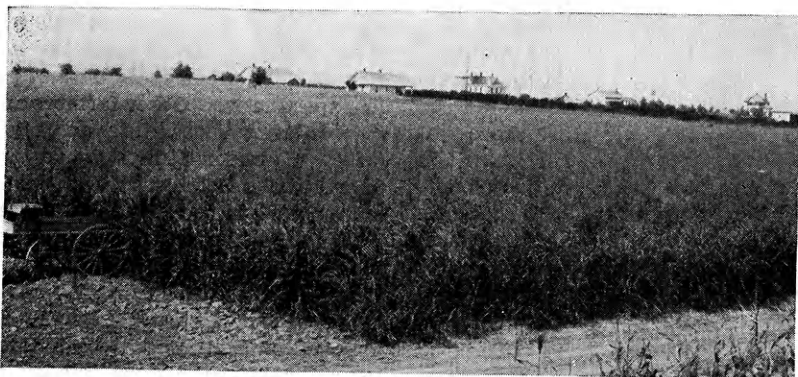
which makes it so valuable is its early maturity. It always matures earlier and sometimes as much as nine days earlier than Red Texas. This point is especially important in this location, because of the hot weather and drought which often do great damage to other oats. Of course there are exceptions, as in 1920 when unusually early hot weather damaged Kanota and did not injure later varieties so much.

Kanota is not resistant to crown or leaf rust as it occurs in Kansas. Like most varieties of red oats it is susceptible to black stem rust. Kanota is resistant to smut, but not altogether immune.

Kanota oats were grown quite extensively last year and the seed was in great demand during the winter. A large acreage has been seeded this spring, though unfavorable weather has reduced somewhat the acreage of oats in Kansas this year.

## Sudan Grass

N. H. Anderson, '22



A FIELD OF SUDAN GRASS AT THE FORT HAYS EXPERIMENT STATION

Sudan grass (*Andropogon sorghum*) is a tall, leafy annual grass, belonging to the sorghum family. It grows, under reasonably good conditions, to a height of six to eight feet. The panicle is loose and open, very much like Johnson grass, but it is larger and a trifle less open. The leaves are broad and more numerous than those of Johnson grass. However, it has no root stalks and this places it near the cultivated sorghums.

Sudan grass, like other sorghums, does best in a warm climate; however, it is known in nearly every part of the United States. It

grows as far north as southern Michigan and New York. It is safe to say that it will thrive well in any part of Kansas where soil conditions are favorable. While Sudan grass is not at all exacting in its soil requirements, it does best on a rich loam. Cold, wet, muggy soils are particularly unsuited for its production. An adequate drainage system should be provided before the growth of Sudan grass is attempted on sour soil.

In seeding Sudan grass a rather firm seedbed is best. Usually it will pay to prepare the seedbed with even greater care than is given

to corn. The ground should be prepared early by deep plowing. The seedbed should be free from weeds and contain plenty of available plant food and moisture. The seed should not be planted until the ground is thoroughly warm. This is usually about May 15 to June 15. However, the date depends upon the season. Usually two weeks after corn planting time is the right date.

The method of seeding depends on the purpose for which the crop will be utilized. If the crop is to be grown for hay, in the eastern section of Kansas, drilling has given very satisfactory results, while in the western section of Kansas better results have been obtained by seeding in rows. (See accompanying illustration.) If the crop is to be used as a pasture crop, drilling or broadcasting has proved to be the best method. If the crop is to be utilized as a seed crop, sowing in 36- to 44-inch rows is the best method. Likewise the rate of seeding depends upon the purpose for which the crop is grown. When the seed is drilled, usually 15 to 20 pounds per acre is sufficient, while if it is sown in rows, 3 or 4 pounds per acre will give excellent results.

The most common method of harvesting Sudan grass for hay is with the mower. It cures readily and can be cut in the morning and, if the day is drying, raked up that afternoon or the next morning. It should be placed in cocks and allowed to cure thoroughly before it is placed in a stack or barn. In eastern Kansas it usually makes two good cuttings, while in the western part of the state only one is to be expected. In both sections, however, good pasture may be obtained after the last cutting.

In semiarid regions where there is good drying weather and not too rank a growth of grass, a seed crop may be harvested like small grain; that is, with an ordinary binder, being allowed to cure in shocks. As a rule in the eastern part of the state or in cases where a good supply of moisture has caused an abundant growth of grass, the cultivated

rows of a seed crop can best be harvested by a corn binder.

The time of cutting Sudan grass depends a great deal upon the purpose of the crop and the number of cuttings expected. Experiments have shown that the largest production per single cutting may be obtained if the Sudan grass is cut just as the heads first appear. Also, hay cut at this period seems to be more palatable than that cut at a later date. If the crop is to be utilized for seed it should be harvested, with a small grain or corn binder, when the seed is practically mature. After it has cured thoroughly in the shock, it may be stacked or hauled directly to the threshing machine. However, there is some danger in stacking as the stems dry out very slowly. For threshing purposes an ordinary separator gives very satisfactory results, although care must be taken to prevent the air blast from blowing the seed over in the straw. The weight of the seed varies from 25 to 40 pounds per bushel.

Sudan grass is rapidly becoming the most important summer pasture crop in Kansas. In regions of low rainfall and high temperature its carrying capacity during the months of July, August, and September, is superior to that of any other grass or any legume. The dairyman uses Sudan grass as a supplementary pasture when the native pastures are least productive.<sup>1</sup> Other farmers are beginning to use it very successfully as pasture for their stock. However, it must be remembered that Sudan grass belongs to the sorghum family and on certain occasions hydrocyanic acid has been found in small quantities. Poisoning is likely to occur when the plant is recovering from adverse growing conditions. However, cattle turned on good growing Sudan grass have never been known to become poisoned, even though they were left on the pasture during the very driest portion of the season.

<sup>1</sup>The results of an experiment using Sudan grass for this purpose are given in circular 80 of the Agricultural Experiment Station, "Sudan Grass as a Supplementary Pasture Crop for Dairy Cattle."

## Beautification of Farm Homes

J. T. Quinn, '22

In many sections of our country during recent years there has been an awakening of interest among farmers, not only regarding their general conditions of living but also

concerning the beautification of their homes. They have learned that home includes more than a mere house in which to eat and sleep. When they speak of their home, they think



of a dwelling, large or small, well set in a planting of shade trees and surrounded by beautiful flowering shrubs, with an expanse of green lawn, which gives a pleasing setting to the house. They think of their flower garden, not as a public attraction but as a private portion of the grounds and essentially an out-of-doors living room. Thus surrounded by beautiful growing plants, people learn what true enjoyment of a home can mean.

Even from the mere standpoint of dollars and cents, the few shrubs and trees that surround the home become important. Consider how much more inviting to a prospective buyer is the home shaded by beautiful shade trees which blend into the surroundings of well-placed shrubbery, than the house, standing alone, unprotected from climatic changes, and presenting a bare and uninviting appearance.

It is fortunate that the wealthy are not the only ones who can enjoy the privileges of well-planned grounds. The average American home is of moderate or small size and the surrounding grounds are not large. But it is remarkable how much cheap and simple materials, in connection with just a little planning and labor, will do in the way of making the home surroundings more livable and attractive.

The average home owner should not try experimenting with trees and shrubs, but should choose those varieties that are known to be well adapted to his own locality. Having purchased adapted varieties according to reliable information, the next step is their correct arrangement and planting. For the average home the natural style of planting will give the best results. Shrubs when arranged in groups give a much more pleasing appearance than when scattered over the whole yard. Trees, with the exception of the evergreens, usually can be planted separately. However, they should be placed so as not to obstruct interesting views from the house or lawn.

Annual and perennial flowering plants may be used very effectively as borders along walks, or as small clumps in corners. They should not be used, however, so as to cut up the main lawn with formal flower beds. Such flower beds may be used to a good purpose in formal planting but should be avoided by the small home owner.

Judicious planting is not the kind that smothers the house in trees and shrubbery or fills the yard with trees and shrubs scattered about at random, but should have the surroundings answer a desire for beauty, which can only be obtained through order and harmony.

## The Relation of Dairying to Kansas Agriculture

F. L. Fleming, '23

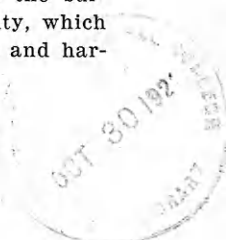
The fertility of Kansas soils is being rapidly depleted. Statistics show a rapid decline in the yield of crops over a period of the last 50 years. Analyses show that virgin soil contains much more organic matter and plant food than does the cropped soil from the same locality. This difference is due to cropping the soil without returning the plant food removed.

To overcome this condition some system of livestock farming must be practiced. Dairy farming is most certain and most profitable. In a system of dairy farming the crops grown are fed and only a small amount of plant food elements in the crop are removed from the farm.

When a ton of butter is sold, \$1.36 worth

of fertility is removed from the farm, while if the feed required in the production of the ton of butter were sold, \$1.50 worth of fertility would be removed. Also essential plant food elements are brought on the farm in the form of high-protein concentrates which are used as feed. Barnyard manure can be made use of easily, as the animals are housed a large part of the time. Besides supplying necessary plant food elements, barnyard manure supplies organic matter, which is an aid in the rendering available of plant food in the soil.

Marketing of dairy products is also a small problem compared to the marketing of farm crops. The freight rate from Hutchinson to Kansas City on 100 pounds of butter is 84



cents, and on 3,700 pounds of feed (the amount required to produce 100 pounds of butter) the rate is \$7.30.

Another reason for practicing dairying in Kansas is the adaptation of crops valuable for feeding. Alfalfa has reached its highest development in Kansas and can be grown in nearly every section of the state. In the western sections, Sudan grass successfully replaces alfalfa as a roughage. Corn is well adapted to some sections, being used for both grain and silage and where corn is not adapted, sorghums can be grown. According to experimental evidence at the Kansas Agricultural Experiment Station and also elsewhere, sorghums may be used either for grain or for silage, with good results.

The value of dairying lies principally in its relation to the upkeep of soil fertility. The problem of soil fertility is one which cannot be over-emphasized. Land at the present time in eastern United States is cheaper than it is in Kansas, by reason of the depleted soil as regards fertility. Might not the same condition prevail in Kansas in the near future if the present farming practices are adhered to?

Dairying is practiced quite extensively in some sections of eastern United States, not because of the adaptability of dairying but because of necessity. The soil has been depleted and farmers find that dairying is the best method to build it up again. Kelsey Brothers of Topeka have a dairy primarily because of its value as an aid in the upkeep of soil fertility.

Dairying provides constant employment throughout the year and utilizes waste labor, especially during the winter months. Although the turnover of capital is not large or immediate, the returns are constant and almost certain. The fluctuation in the price of dairy products is less than that of any other farm product, due probably to a more steady demand.

Dairy farming is more profitable than other types of farming, because it is an aid in maintaining soil fertility, provides a steady income and affords steady employment. Therefore, it has a very important place in Kansas agriculture. Kansas farmers are beginning to realize this fact, as is shown by the increase in the value and production of dairy products in the last decade.

## New Members of the Honor Society of Agriculture Gamma Sigma Delta

The purpose of the honor society of agriculture, Gamma Sigma Delta, as stated in the preamble of its constitution, is "to encourage high standards of scholarship in all branches of agricultural science and a high degree of excellence in the practice of agricultural pursuits." Candidates for the bachelor's degree in agriculture or closely related sciences are eligible for membership in the organization providing their scholarship is such as to place them in the upper one-fourth of the graduating class and they have otherwise demonstrated their ability as leaders and ef-

ficient workers.

The following members of the class of 1922 were recently elected to membership in this honor society: A. L. Austin, M. M. Bahgat, H. L. Baker, J. W. Barger, B. B. Bayles, D. D. Brown, F. A. Coffman, E. H. Coles, D. E. Davis, A. J. Englund, T. O. Garinger, C. H. Howe, M. Kamal, W. L. Martin, E. P. Mauk, E. T. Means, H. E. Moody, C. H. Morgan, J. T. Pearson, G. J. Raleigh, H. E. Smith, L. B. Solomon, G. E. Starkey, J. W. Van Vliet, F. M. Wadley, A. D. Weber, E. B. Wells, and Roy Williams.

## Agriculture Graduates in Phi Kappa Phi

Five graduates of the Division of Agriculture, class of 1922, were elected to membership in the honor society of the institution, Phi Kappa Phi. They were H. L. Baker, Arnold J. Englund, Truman O. Garinger, Ezra

P. Mauk, and Clinton H. Morgan.

Students, to be honored by election to Phi Kappa Phi, must have an average rating of not less than "1" and be in the upper 10 percent of the graduating class.

# Bank Before You Spend

It isn't possible, of course, for anyone to lay aside his full income in a reserve fund for future needs

But banking every dollar of one's income before using any part of it will act as a check to spending

Try it! Bank with the Farmers & Stockmens State Bank and let us help you build your reserve fund.

## Farmers and Stockmens State Bank

A FRIENDLY BANK

F. G. Bergen, President  
E. F. Apitz, Vice President

W. R. Yenawine, Cashier  
A. C. Apitz, Assistant Cashier

We support all student activities  
We print majority of student work  
No satisfaction—no pay  
Isn't this a fair deal?

# The Art Craft

PRINTING—ENGRAVING—EMBOSSING  
106—108 N. 3rd St. Phone 796

## Manhattan Candy Kitchen

*For Light Lunches,  
Home Made Candies  
and Quality Refreshments*

412 Poyntz

JIM AND PETE

## For Satisfaction

Come to

### The Pines Cafeteria

*Chicken dinner every Sunday*  
Meal tickets \$5.50 and \$5.00

1120 Moro

Phone 167



ROBERT C.  
**Smith**  
JEWELER

Phone 533

12th and Moro Sts.

## *Fink Electric Co.*

**Electrical Goods**

**Mazda Lamps**

Shelf Hardware and Bicycle Sundries

## **It Is Spring Time**

Visit Shafer's Grocery  
for all the Good Eats

**Fruits, Lunch Goods, Etc.**

**For Refreshments and  
Delicatessen**

Drop in at

**COLLEGE CANTEEN**

Main Hall

**ELITE** *Cleaning and Dyeing  
Works*

*"The House of Quality"*

*Dyeing, Cleaning, Pressing,  
Repairing*

Phone 299 1110-1110 1-2 Moro Street

## ***Crowder's*** ***Cleaning*** **AND DYE WORKS**



***We Are The Cleaners***  
**AGGIEVILLE**

**Phone 503**

**1109 Moro**

## **Now**

Is the time to Subscribe  
for

**THE KANSAS  
AGRICULTURAL  
STUDENT**

for next year

One dollar for four issues