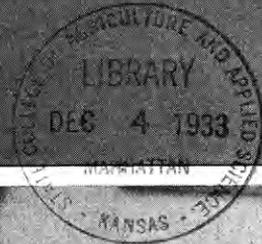




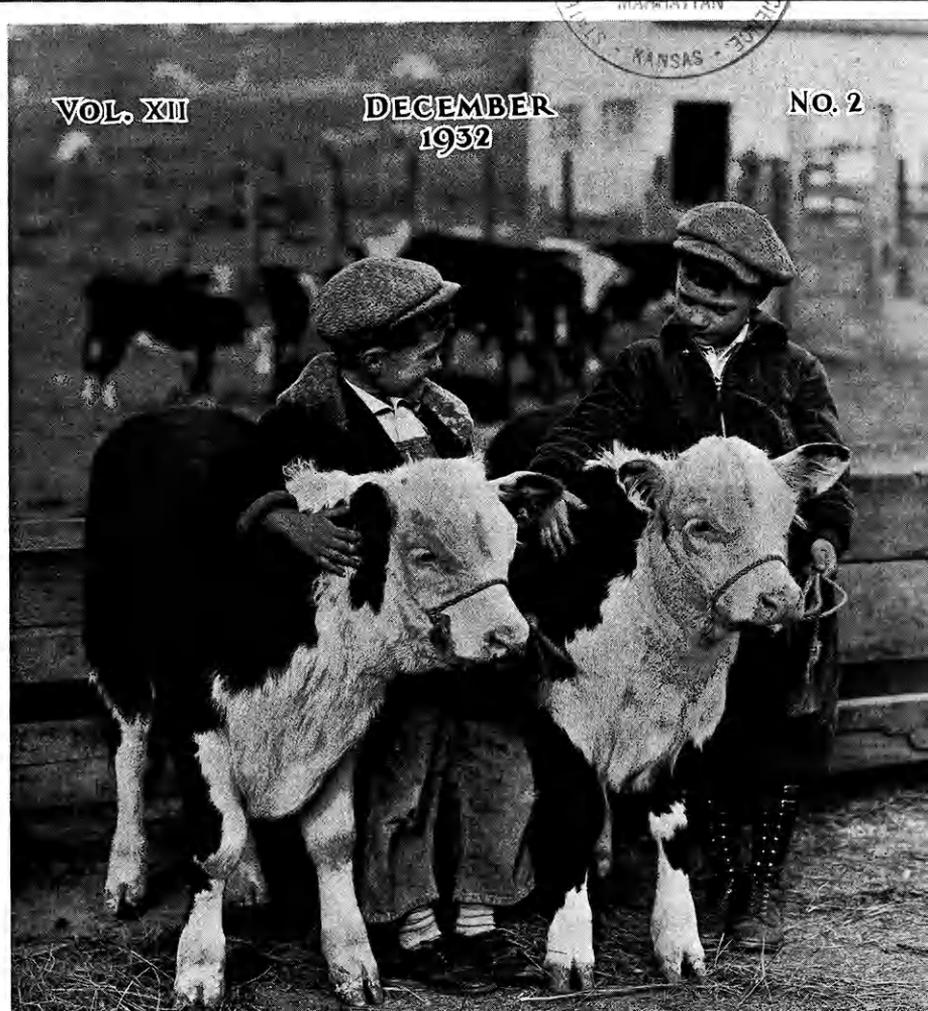
**THE KANSAS
AGRICULTURAL STUDENT
MANHATTAN, KANSAS**



VOL. XII

**DECEMBER
1932**

NO. 2



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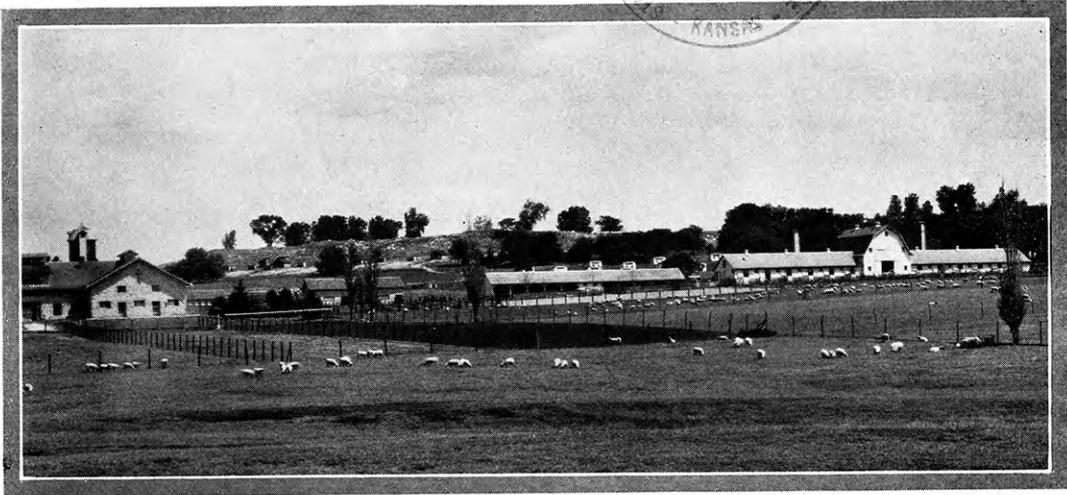
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A PORTION OF THE ANIMAL HUSBANDRY FARM LOOKING NORTHEAST FROM THE SOUTH ENTRANCE

CONTENTS

Cover Page.....F. J. Hanna
Which is the Better Calf?

Fall and Winter Conditions on Kansas
Farms37
Luke M. Schruben, '33

Listing as Compared to Surface Plant-
ing of Corn in Kansas39
Andrew B. Erhart, '33

EDITORIAL

Teaching College Agriculture.....40

Render Public Service.....40

Intercollegiate Judging Teams.....40

The Bases of College Instruction in
Agriculture41-51

A series of articles on agricultural departments briefly explaining why they can teach college agriculture. The work of the following departments is presented:

Agricultural Economics41

Milling Industry42

Agronomy43

Agricultural Engineering44

Animal Husbandry46

Dairy Husbandry49

Poultry Husbandry50

Horticulture51

COLLEGE NOTES

Meats Judging Team Win a Cup.....52

Live Stock Judging Team Place High
in Contests52

Poultry Judging Team Win Their Contest..53

Crops Judging Team Compete in Two
Contests57

The Apple Judging Team of 1932.....58

Departmental Clubs59

Greeley, an Early Maturing Grain Sor-
ghum for Western Kansas.....61
T. B. Stinson, '24

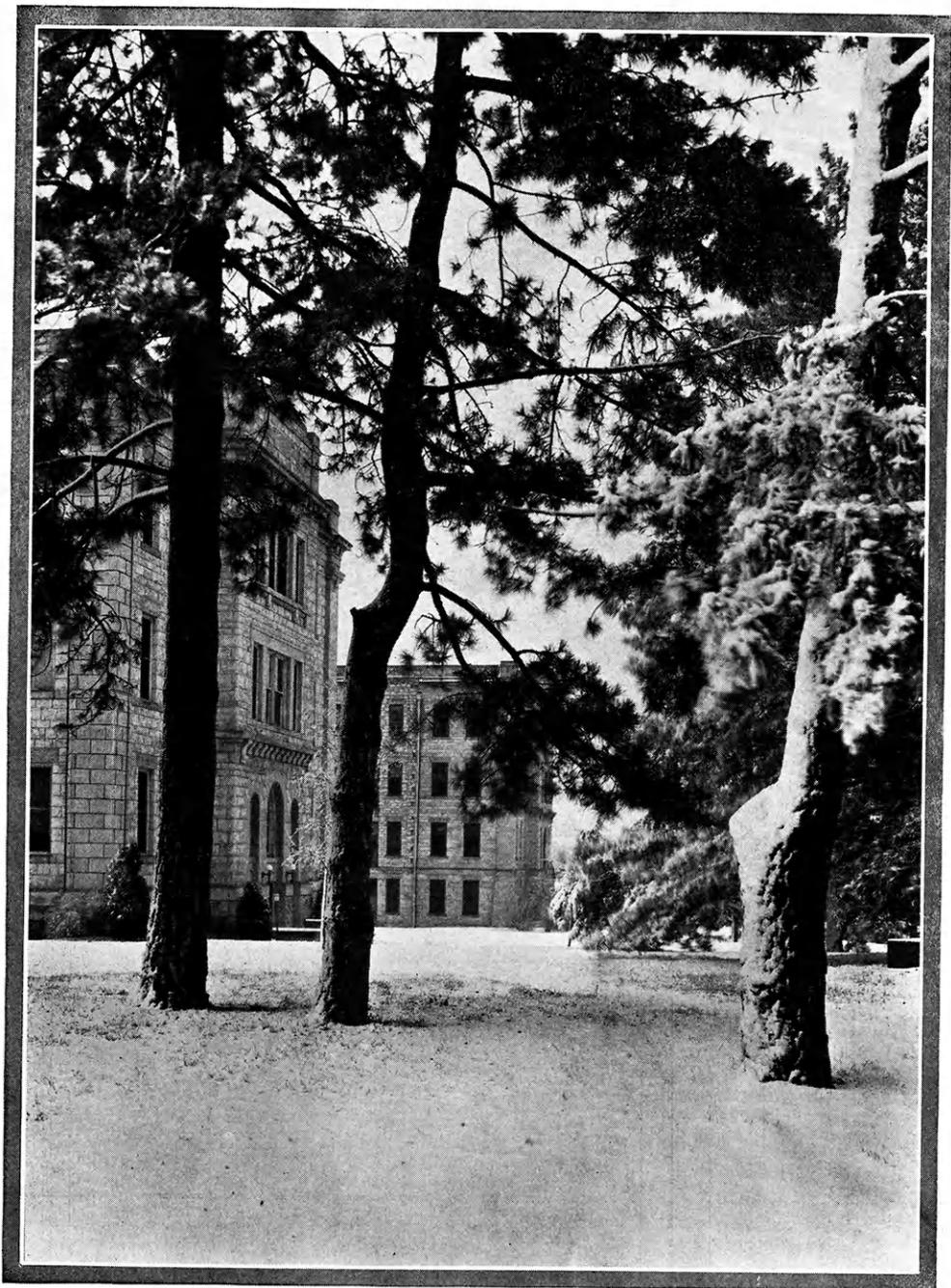
Apartments for Hens62
L. A. Wilhelm, '32

Bumping Our Way Into Debt Settlement.....63
Prof. R. M. Green

The second of a series of short articles on economic problems.

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WINTER SCENE—FRONT VIEW OF THE AGRICULTURAL BUILDINGS
FROM THE SOUTHWEST

The Kansas Agricultural Student

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Fall and Winter Conditions on Kansas Farms¹

Luke M. Schruben, '33

Fall and winter conditions on Kansas farms have brought about a psychological change in the people of Kansas in general. Farmers are realizing the effects of the depression and in many places are adjusting themselves to the circumstances and going ahead holding their own hoping for relief through better prices for their products but aren't fooling themselves, as they have generally during the last three years, by thinking prosperity will be here tomorrow. Many farmers are more optimistic than they were in September, even though fall conditions show a marked deficiency in rainfall throughout the state. This means they have adjusted themselves to conditions as they are.

The feed crops in eastern Kansas ranged from slightly smaller than average to far exceeding average. Orville F. Denton of Doniphan county reports corn yields from 40 to 70 bushels per acre. He further states that with the abundance of cheap feeds more cattle are in the feed lots and many sheep are being fed. John Hamon reports corn yields in Jefferson county above the 3-year average. Corn is replacing wheat to some extent there. He also says, "Cattle feeding is less than normal and the fall pig crop was small."

The loss of farms due to foreclosure is less this fall than last year in Jefferson county, according to Orville Chestnut.

Southeastern Kansas had from a fair to a bumper crop of feeds and corn. Because of the extended summer drought, which continued until late fall, little

alfalfa was planted this year. Fewer cattle are being wintered in this section than average due to the large sales in late summer and lack of capital to bring in more. Generally speaking feed is abundant with most silos filled, but due to the dry fall the small streams are dry and water is scarce, some being hauled a considerable distance according to Floyd E. Davidson of Greenwood county. Winter wheat in this section is short and far below normal in condition. Many farmers are trying to build up their land by the use of legumes, terraces, and diversified farming, including crop rotations. The farmers are hard hit because of low prices, but are making the best of it by trying to raise their own meat and vegetables. Chinch bugs did considerable damage in certain sections and some sections are practicing control measures, which consist of burning the fence rows at a certain time, according to H. A. Daily of Coffey county.

Ralph C. Munson of Junction City, Geary county, says, "A very prominent and successful project in this community is the creep feeding of baby beeves. Fred Morgan, state beef champion in 1931, has been a strong advocate of this system and this year he made a net profit of \$21 per head on his baby beeves. More cattle are being fed this year than the five-year average." Ralph further states that incomes on the farm these days go hand in hand with good management, with dairy and poultry products, and that beef production under the diversified farming plan will still pay the tax bill and offset the losses sustained through pork production and wheat farming.

1. I wish to express my thanks to the students and alumni who furnished information for this article.

The recent establishment and opening of the cheese factory at Junction City has greatly stimulated the dairy industry in that vicinity.

For the most part central Kansas soil had enough moisture to bring the fall sown wheat up but at present the soil is dry and for the most part needing rain badly. At present wheat conditions are from 10 per cent of normal in the south central part of the state to 60 and 70 per cent normal farther north. Many farmers are holding their crops hoping for a higher price in the spring or later.

The live stock industry gives encouragement in some sections and little encouragement in others. Cattle are just about average with extensive feeding in some sections and little in others. The pig crop is slightly below normal but much breeding stock is being kept instead of going to market as they normally would. Walter M. Lewis says, "Conditions in Pawnee county have caused the farmers in that section to plan work for the year around and not a one-crop enterprise. The cheese factory located at Larned has stimulated milk production." The corn crop on the average was far below normal. Eugene Sundgren of Saline county says, "A bumper corn crop was in the making until the summer drought which caused the best to fall below the average in yield."

Western Kansas, not including the sugar beet section, is in a critical condition. With no moisture early in the fall and little since, the wheat prospects for next year are very poor to say the least. The corn crop was nipped early in the season and very little corn came through for harvest. Live stock seem to be increasing in many localities of this section as a part of diversified farming practices which are being adopted.

Albert A. Thornbrough says, "Sugar beets netted the farmers from \$15 to \$35 per acre. The sugar beet factory at

Garden City bought 85,000 tons of beets, paying \$600,000 for them."

Because of the depression many farmers are producing their own meat and vegetables as nearly as possible. In addition to this many communities are finding better markets for their products. Pius H. Hostetler of Harper county reports a turkey pool which netted the farmers approximately \$5,000 above what they would have received from the local dealer. Frank S. Burson, Jr., Logan county, reports the operation of community sales of live stock which is making a much better market for hogs or cattle than the original local market.

Throughout Kansas the chief forms of income at present are poultry and dairy products. Farmers having a good poultry flock or a good dairy herd are worrying little about getting through the winter.

Dale Scheel, '30, is county agricultural agent of Cloud county (Concordia).

Raymond H. Davis, '27, is superintendent of the Upper Mississippi Valley Soil Erosion Station located at La-Crosse, Wis.

L. F. Hall, '23, has completed a 16-millimeter, 2-reel movie film depicting the activities of Kansas chapters of Future Farmers of America. The film is available to high schools and F. F. A. chapters.

J. D. Adams, '23, Garden City, and Ira L. Plank, '18, Winfield, presented papers on "Conduct of Evening Schools with Adult Farmers," at the American Vocational Agriculture Association meetings in Kansas City, December 10, 1932. Both of these men have had several years of successful experience in the conduct of such evening school work. Lester J. Schmutz, '25, Wakefield, presented a paper at the same meeting on "Class or Group Projects."

Listing as Compared to Surface Planting of Corn in Kansas

Andrew B. Erhart, '33

Kansas ranks eighth among the states of the Union in the production of corn, producing annually about 131,000,000 bushels. The importance of such a crop warrants a thorough knowledge of the most successful methods of corn production. At present the average yield for the state is approximately 20 bushels per acre. This low yield, while due mainly to attempts to grow corn in parts of the state and on soils to which it is not adapted, is partially due to wrong cultural practices. Farmers are often confronted with the question of the relative values of listing and surface planting of corn.

Some authorities believe that the use of the lister has done more toward decreasing the average corn yield from 40 bushels in the Eighties to 20 bushels at the present time than any other one thing. They admit, however, that the lister has a most important place in regions having a limited rainfall and a comparatively light soil. It has, therefore, an important place in Kansas corn growing and if used correctly will certainly not decrease and may help to increase present corn yields.

One of the objections to listing is that it encourages soil erosion. On the other hand, if listing is done in contours, that is, at right angles to the slope of the field, there is no better method of preventing loss by erosion.

Some of the advantages claimed for listing over the surface method of planting are: It is cheaper and quicker; it makes weed control a lesser problem; it causes the corn to stand up better and be more drought resistant. One investigator says results seem to indicate that listed corn is more drought resistant than surface-planted corn because of a more extensive root system during the last part of the growing season and especially because of the larger

ratio of the root length to the leaf area, rather than the deeper penetration of roots due to the depth of planting as sometimes thought.

Listing, however, is superior to surface planting only when the conditions to which it is adapted exist. Experimental data have shown that listing has a very important place in the production of corn in central and western Kansas and possibly even as far east as Manhattan in dry seasons.

Surface planting on the other hand, has advantages in that it gives better germination, a more rapid early growth, and less loss by washing, drowning, or burying.

By the use of furrow openers one can combine some of the advantages of both methods and have a method adaptable to a wider range of conditions.

Some results obtained by Salmon, at Manhattan, show a 10-year comparison of the different methods of planting corn:

Method	Yield, bushels per acre
Listed	47.1
Surface planted	46.8
Furrow openers	48.2

Proper cultivation of the land before listing is, as a rule, a very profitable practice. It puts the ground in a better condition to take in moisture, kills weeds which have already started, and helps to germinate those which have not started. Disking is probably the most satisfactory method and should be done in the fall or as early in the spring as conditions will permit. A second disking may be profitable if a heavy rain packs the ground or a crop of weeds starts early.

Disking is also practical before plowing for the same reasons as mentioned

(Continued on page 60)

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TEACHING COLLEGE AGRICULTURE

Why can Kansas State College teach modern agriculture in a scientific, fundamental, and practical way? Why is the agricultural teaching of K. S. C. spoken of so favorably by leaders in a position to know? It is more than the personnel of the agricultural faculty. It is based on the work that these faculty members do that in a large way keeps them equipped for teaching. Their agricultural research keeps them scientific. It is also a link connecting them with the farming problems of the state. A close study of these problems in the light of accurate experimental results insures practical teaching.

RENDER PUBLIC SERVICE

Charles S. Plumb, professor emeritus of animal husbandry, Ohio State University, summarizes the use that should be made of agricultural training as follows:

"The primary function of one who has benefited by agricultural training should be to render service, both to his local community and to his state. The

demand for helpful service is never ceasing, and if one has a fair degree of intelligence and is willing to use it in contributing to the progress and happiness of mankind he will easily attain a high place in public esteem. The country is not overburdened with such men. There is much truth in the old saying, 'For many are called and but few are chosen,' because but few seem to measure up to a generous service, in which self seems a secondary consideration. At no time in the history of this country has the field been so inviting as it is today."

INTERCOLLEGIATE JUDGING TEAMS

It is always a pleasure to present the intercollegiate judging teams to our readers. They are the pick of the young men of the Division and of the college. Most of them are superior students and they are determined to be able to apply their knowledge. They placed from first to last in their contests, but all made creditable showings and K. S. C. is more favorably known because of their work.

The Bases of College Instruction in Agriculture

The agricultural teaching provided in Kansas State College of Agriculture and Applied Science is given tone and accuracy by the research carried on by the Kansas Agricultural Experiment Station. Its practicability is checked by actual Kansas farm practices and practices in the agricultural industries.

In this article information is presented regarding the equipment of departments, the use made of that equipment, and the use made of agricultural practices in the state, that shows in a limited way why and how each department functions as it does.

One or more members of the teaching staff of each department have answered questions and given valuable suggestions and corrections in preparing this material. Their courtesy and helpfulness are gratefully acknowledged. —Ed.

DEPARTMENT OF AGRICULTURAL ECONOMICS

Agriculture is urgently in need of the advantages of the best business practices. The quantities of farm products produced are ample for the needs of the nation but the proceeds from their production are insufficient to provide farmers with satisfactory incomes. The Department of Agricultural Economics is constantly studying the business problems of farmers and making the results of these studies available to the students taking courses in the department and to the people of the state.

The work of the department includes farm management, marketing, and taxation and land economics. The work in farm management includes the cost of producing farm products, the organization and operation of farms, leasing terms, the outlook for various agricultural products, the use of credit, and other closely related fields. The work in marketing includes studies of the

time and methods of marketing the products important in Kansas agriculture, the trends of the markets, and the types of organizations in the marketing field. In taxation, studies are made of the amount of taxes on various classes of property and particularly on farm land, taxes of other kinds, and the ways in which the tax system of Kansas may be improved. The studies in land economics secure information on land values, land transfers, the income from land, mortgage debt on farm real estate, the use of the land, and other land problems that are important in Kansas.

The Kansas State College is the only agency in Kansas securing information and offering instruction in all of these fields. The members of the department who are making the studies give courses based upon this information. The students in their classes have the opportunity of securing instruction in these fields under men who are thoroughly familiar with the business problems of Kansas agriculture.

Students majoring in agricultural economics may take either the curriculum in agriculture with a major in agricultural economics or the curriculum in agricultural administration. The curriculum in agricultural administration stresses the business phases of agriculture and is intended for the student who is interested in the business problems of agriculture and of closely related fields.

The department is well equipped to secure information in all business phases of agriculture from all parts of the state. It cooperates with other agencies that secure information in one or more of the various fields of agricultural economics. This information is constantly being used in the class work of the department. Students are assured of having the latest and

most complete information available.

Students studying farm management have an opportunity to study the organization and operation of many farms in the state and to learn the causes of their success or failure. In the laboratories of the department these farms are problems for study and the student, under the guidance of the instructors, analyzes the problems of these farms and offers suggestions for their improvement. The various methods of leasing farms are studied with particular reference to their advantages and disadvantages for the one who is just beginning in the farming business.

A great deal of the material used in the courses in marketing is drawn from the research work in marketing. This is especially true of current material. While some of the marketing work deals with general questions, the bulk of the work is done on wheat, live stock, fruits and vegetables, and dairy products. In addition to its use as teaching material, the marketing research data are valuable to Kansas farmers in planning their farm marketing program. Assistance in the planning, organizing, and operation of cooperative organizations is a part of the work of the department and students have an opportunity to study the various types of marketing organizations.

All people are interested in taxes, either from the standpoint of what they pay, or of what they receive in return. Data on taxation are made available through research in land economics, and are used widely over the state as well as for teaching material in the department. Other phases of land economics deal with land utilization, land classification, conservation of natural resources, and other land problems. Courses dealing with these questions are given in the department and much information is given out concerning them.

—Wilfred Pine, '34.

DEPARTMENT OF MILLING INDUSTRY

The work of the Department of Milling Industry is teaching and research, but by far the larger amount of effort is spent on research. Three major lines of research are pursued at the present time: (1) Wheat quality as affected by genetic factors or inheritance. That is, how does wheat variety affect quality? (2) Wheat quality as affected by harvesting and storage conditions. That is, what are the factors which determine quality after the wheat has ripened? (3) Milling technology problems. That is, what conditions are best for converting the wheat into flour? In the first line of research, the Department works in cooperation with the Department of Agronomy, in the second with the Department of Agricultural Engineering, and the third line is carried on by the Department alone.

The chief reason for the quality study is this. An average large wheat crop in Kansas may be estimated at about 150,000,000 bushels. Of this about 20,000,000 bushels would be needed for seed and food. With normal wheat prices, when little is used for feed, there are available 130,000,000 bushels to send outside the state. The quality demanded of this wheat by the consumer becomes, therefore, of paramount importance. The chief quality characteristic of Kansas wheat is designated by the word strength, since it may be used to supply the deficiency in weaker wheats. Quality is determined primarily by climate, soil, factors of inheritance, and conditions of harvesting and storage. From one-eighth to one-fourth of all the wheat which comes to the Kansas City market has suffered damage of some kind during harvest and storage.

The methods used for measuring quality in flour may be classed as chemical, milling, and the actual baking of the flour into bread. The chemical determinations include protein, ash, moisture, fat, crude fiber, sugar, starch, acidity, hydrogen ion concentration,

conductivity, rancidity, as well as others. For all these adequate equipment is available. Milling tests may be made on samples of a few pounds or bushels or several hundred bushels. The smaller samples are milled on a small non-automatic mill and the larger samples on the automatic 65-barrel capacity mill. The Illinois Agricultural Experiment Station has sent wheat three times for milling on the larger Department mill, while Colorado, Arizona, and Texas have several times sent small samples to be tested. One set of small samples was received from India.

The equipment for making baking tests has been developed especially to measure quality as determined by genetic factors. It has been demonstrated by this Department, that resistance to mechanical action is a characteristic definitely related to genetic factors. This makes it possible to measure quality as determined by inheritance. To make this measurement, a special recording dough mixer has been constructed which traces a curve characteristic of the variety. The characteristics of this curve depend on genetic factors and not on those of soil, climate, or environmental conditions during harvesting and storing. For measuring quality as affected by environmental factors methods have also been developed.

The results of the research studies, as well as the fairly complete line of milling equipment, are available for student instruction in chemical determinations and in making baking tests. For giving instruction in milling technology, the Department has better equipment than is found in any other educational institution in the country. The flour mill was remodeled specially for conducting experiments in milling and giving instruction in milling technology. This equipment has attracted the attention of students and visitors from foreign countries.

The various subjects related to mill-

ing both in the Department of Milling Industry and other departments are included for instruction in a basic curriculum in milling industry. The electives are so arranged that the student may select work in three different fields: Milling technology, milling chemistry, and milling administration. The studies are so selected that the student shall be specially prepared for one of these fields, at the same time there is opportunity for electives which give scope for the individual tastes and desires of students. Since Kansas is the biggest wheat state, it should have in one of its state institutions a place where the problems related to the milling industry may be subjected to research and where adequate instruction in these problems may be given. This has been the basic aim in the development of the Department of Milling Industry.

DEPARTMENT OF AGRONOMY

Agronomy is that phase of agricultural science which deals with a study of crop plants and soils. A comprehensive knowledge of the factors affecting crop production in any specific area should constitute the fundamental basis for any course of study in this general field. The members of the Department of Agronomy at the Kansas State College are particularly well qualified to offer such courses to their students. They present not only theoretical information contained in books but also the results obtained from their experiments with crops and soils. These tests, which include laboratory, greenhouse, and field work, have been conducted for many years and each year additional information is obtained to supplement that already available.

The investigations are extensive as well as intensive. This is necessary, due to the varied climatic and soil conditions prevailing in different sections of Kansas. For this reason, the field plot investigations are conducted in many sections of Kansas, each of which

represents as nearly as possible, a particular environmental condition.

The Agronomy Farm of 320 acres, which is located near the campus of the Kansas State College, is well equipped for intensive experiments with crops and soils. The projects carried on here are under the direct supervision of the instructors who offer courses in the field of agronomy, thus enabling them to obtain technical information as well as practical knowledge. On this farm, grain and forage crops are grown and their different varieties tested. Cultural practices, rotations, fertilizers, and soil management problems are thoroughly studied. A cereal crop nursery situated near the farm, is well equipped to conduct a large plant-breeding program for the development of new and better varieties of cereal crops.

In addition there are four branch agricultural experiment stations, all devoted to a study of agronomic problems in the drier sections of the state. At the Fort Hays branch station, which probably is the largest agricultural experiment station in the world (3,560 acres), the investigations that are carried on include cultural methods, soil erosion, moisture conservation, and testing and improvement of varieties of both grain and forage crops. At the Colby branch station, cultural practices and varietal studies constitute the major agronomic lines of work. The Tribune branch station was organized to make an intensive study of forage crop production, and the Garden City branch station is devoted largely to methods of crop production including soil management, both with and without irrigation.

Groups of experiment fields are located in northeastern, southeastern, and south central Kansas. These fields represent areas which differ in soil and climatic conditions from those found at the main agricultural experiment station at Manhattan or the branch stations listed above.

Cooperative experiments of the Department of Agronomy were established in 1910 for the purpose of obtaining experimental field results under actual farm conditions and determining the areas of adaptation of crop varieties and soil treatment recommended by the Agricultural Experiment Station.

With this set-up of field experiments and the additional research work carried on in the laboratories and the greenhouses, it is possible to obtain a vast amount of accurate agronomic information. When the instructional staff, which is one of the outstanding groups in agronomic work in the country, supplement theoretical principles of crop production and soil management with these practical field results, it is feasible that they can offer far more practical courses in agronomy than would be possible if this information were not available and if they had had no part in supervising the actual work.

—C. W. Nauheim, '32.

DEPARTMENT OF AGRICULTURAL ENGINEERING

Kansas agriculture is characterized by the extensive use of machinery. Our state ranks first in the number of combines and second in the number of tractors on farms. Other labor-saving machines, the value of which runs well into the millions of dollars, find daily use on the farms of Kansas. The use of electricity has further mechanized agriculture. A knowledge of the basic principles and limitations of machines is essential to their successful and profitable use.

Agricultural Engineering has been defined as the art and science of engineering as applied to agriculture. The Department of Agricultural Engineering at Kansas State College, besides offering a regular four-year curriculum leading to the bachelor of science degree in Agricultural Engineering, offers to agricultural students courses dealing with farm machinery, gas en-

gines and tractors, farm buildings, farm and home conveniences, land drainage, and prevention of soil erosion. The courses offered are designed to give valuable technical information in a nontechnical manner.

Considerable time is spent by the instructor of each course in research—trying, testing, and devising new machines and methods. In a large measure the success of any farm machine or device depends upon its performance in the hands of the farmer and under

Hays station. Light plants and feed grinders are tested in the department laboratories. But to supplement the information gained in this manner the experiences and records of farmer operators are collected, analyzed, and compared with experimental data. The results of this research and practical work are passed on to the students in class and laboratory.

Through loan agreements with farm equipment manufacturers the Department of Agricultural Engineering is



BARN, SEEDHOUSE, AND FARM HOUSE ON THE AGRONOMY FARM;
VIEW FROM THE SOUTHWEST

farm operating conditions. For this reason the experimental work of the department is closely associated with the farming practices throughout the state. For example, several experimental septic tanks have been constructed and put into use on farms near Manhattan for study and observation to determine the best type of tank. The storage problem of damp combine-harvested wheat has been studied at the Fort Hays Agricultural Experiment Station. Many types of storage bins with different systems of ventilation have been tried there. New machines for harvesting grain sorghums are being tried out in the fields at the Fort

able to maintain laboratories equipped with the latest and best farm machines. Through the use of these laboratories each student taking courses in the department gains much knowledge and practical experience.

The farm machinery laboratory contains the latest models of binders, mowers, plows, drills, combines, etc., as well as many special machines such as a self-tying hay press, a hay crusher-mower, and a windrow pick-up hay press. The tractor laboratory is continually stocked with from 12 to 15 tractors. Among these the student will find a tractor suited to the needs of any farm. It may be a conventional

four-wheel type, a wide-tread general-purpose type, a four-wheel drive, a crawler type, a low-pressure pneumatic rubber-tired tractor, or a garden tractor. Light plants, pressure water systems, sewage disposal systems, and electric motors are available for student instruction. In the drafting room the agricultural student is taught the fundamentals of farm building design. The many tested and approved types of farm buildings on the college farms furnish a basis for study and design.

As the investment in farm machinery and equipment on Kansas farms increases, so does the importance of their intelligent operation and care. Through the courses offered by the Department of Agricultural Engineering the agricultural students at Kansas State College may prepare themselves to meet the farm problems of an engineering character.

DEPARTMENT OF ANIMAL HUSBANDRY

Since the Department of Animal Husbandry owns stock ranging in size from guinea pigs to draft horses, a large variety of buildings and other equipment is needed to carry on its activities. Experimental rabbits are kept in part of the judging pavilion and experimental guinea pigs, numbering about one thousand, are housed in the north barracks, located between the veterinary hospital and the college power house. Studies of inheritance in these small animals are aiding in finding the principles of inherited characters in all classes of live stock.

The animal husbandry farm, the home of the beef cattle, sheep, horses, and hogs belonging to the Department, lies north of the campus square, the south entrance being just north of East Waters Hall. The picture on the "Contents" page gives a general view of a portion of the layout. From left to right in the picture may be seen the stone barn, the bull barn, the sheep experimental plant, and the sheep barn. In the background may be seen low stony

hills, "Stony Heights," while at the foot of these hills may be seen a few of the experimental hog houses.

Pure-bred flocks and herds are maintained primarily for instructional purposes. A few of the best young stock, however, are shown at some of the major live-stock shows. The best young females are kept for replacement purposes. Each year there are a few surplus sheep, which are sold to breeders. Other surplus breeding stock and some experimental stock are butchered. These animals are slaughtered by classes in meats in the meats laboratory at the north end of East Waters or Agricultural Hall.

Passing through the gate north of East Waters Hall one first approaches the horse barn, a large two-story stone structure. Horses occupy only the west half, and then only during cold weather. The east half houses show steer prospects for next fall. At present there are eight Shorthorns, 13 Herefords, and two Angus calves there. These will provide a portion of the material for animal husbandry judging classes and the best will be shown. Paddocks south and across the road west from the stone barn furnish exercise lots for the horses.

On the north side a driveway leads to the second story of the stone barn. Storage for 10 carloads of grain and 200 tons of baled hay and straw is possible. One of the grinders of special interest is a new hammer mill, by which the practicability of grinding roughages is being tested. A glazed tile silo near the driveway is filled with 200 tons of silage.

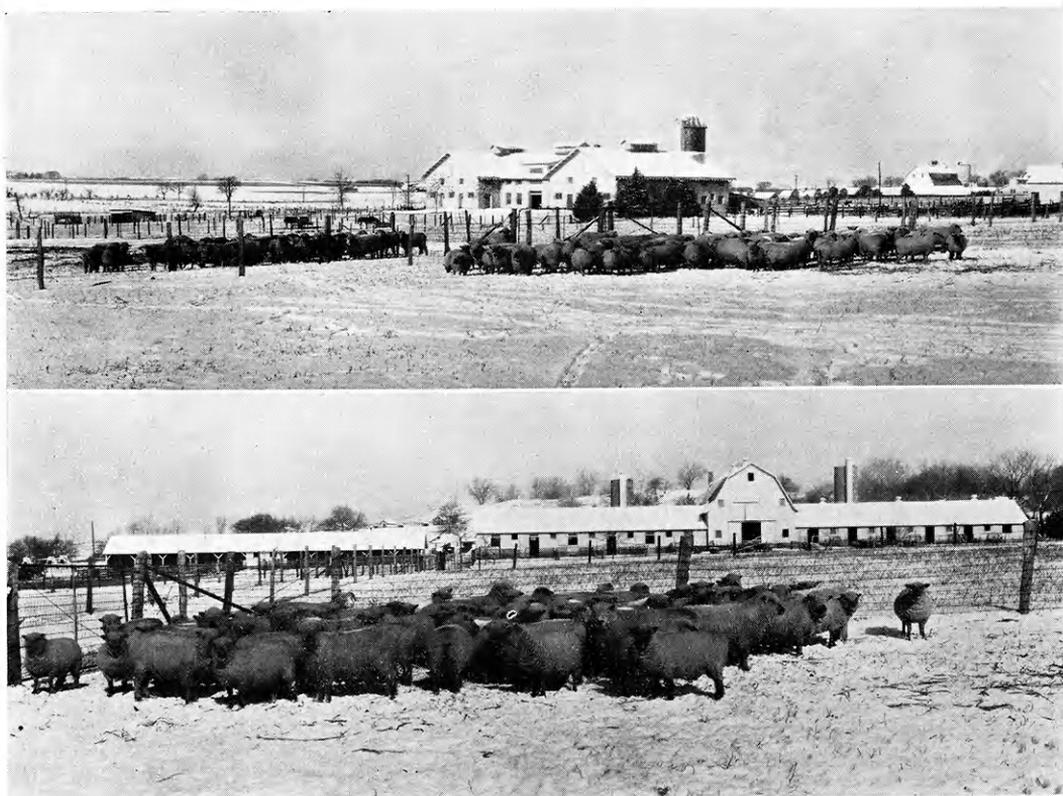
A dirt road leading east from the stone barn, called "Parrot's Pike," so named for a man who constructed it, takes one to the bull barn and the sheep barns. In the bull barn are kept the college herd sires, Rodney's Champion 1587291 and Ashbourne Ace 1694509, Shorthorns, and Mixer Mischief 1940-732 and Lassie's Tone 17519101, Herefords. Ashbourne Ace, the new Short-

horn bull, was a champion bull last fall for his breeder, A. C. Shallenburger, Alma, Nebr. Lassie's Tone has been generously loaned to the Department by Robert H. Hazlett of Eldorado.

East of the bull barn is the sheep experimental plant. This long structure is open to the south and is divided into

sorghum crops can be efficiently utilized for fattening western lambs.

The sheep barn is at the east end of the pike, with the two concrete stave silos. Select flocks of pure-bred Hampshires, Shropshires, Southdowns, Dorsets, and Rambouillets are maintained, and the flock of each breed is limited to



TWO VIEWS OF THE ANIMAL HUSBANDRY FARM WHEN THE THERMOMETER REGISTERED ZERO

The sheep are out primarily for exercise. Prominent and in the near background of the upper view is the stone barn. In front of it may be seen a few horses that have been turned in the paddocks for exercise. In the background and well to the right is the battery of buildings that house the experimental and breeding herd of beef cattle, while to the extreme right a small portion of the hog barn may be seen. In the lower view the sheep barn is in the right background with the sheep experimental feeding plant to the left. Stony Heights may be seen in the distant background.

ten parts, in addition to a central space for storage and weighing facilities. The plant has a capacity of approximately 275 lambs for each experiment. During the past two winters the experiments have involved studies to determine how

20 to 30 individuals. Rams have been drawn from many sources. Among the present sires there are natives of England, California, Utah, Wisconsin, Kentucky, and Vermont. Twenty acres of tame pasture is available south of

the barn. The pasture land is subdivided into small plots, so a rotation is possible. Sweet clover is provided for early spring and Sudan grass for summer and fall. Soybeans are grown for a soiling crop and rye furnishes winter pasturage. For summer the rough bluestem pasture land on Stony Heights is utilized.

The main hog barn, located north of the stone barn, will accommodate 40 brood sows. From 20 to 25 pure-bred Duroc and Poland-China sows farrow in this barn each spring and fall. The pigs are used for experimental and replacement purposes. Across the road are the summer pig experimental lots where the value of protein supplements on alfalfa pastures has been studied. East and north of the hog barn are the alfalfa pastures with A-type individual houses, to which sows and litters are removed about two weeks after farrowing. The individual boar pens are along the lane at the east side of the hog farm. The herd boars get plenty of exercise, running from their shelter houses at the south end to their feeding troughs at the north end.

Six experimental hog houses for winter dry-lot experiments are arranged on the south slope of Stony Heights. This winter wheat as a fattening feed for hogs is being tested. West of these houses is the old hog house, which houses brood sows in winter and show barrows in the fall. To the east is the tile house used for nutritional experiments, where the requirements of pigs for phosphorus are being studied this winter.

The largest battery of buildings of all, houses the experimental and breeding cattle. They are across the road and north of the main hog house. An outstanding result of recent experiments is the discovery of the fact that silage, with a small amount of ground limestone, is as good as any other roughage in cattle fattening rations. The values of cottonseed, linseed, and corn gluten meals alone and in com-

binations are being tested this winter, with eight lots of 10 steer calves each. Four other lots of calves, which will be marketed as fat yearlings, are now started on the winter phase of the Kansas deferred system of feeding. Work in previous years shows wintering well, grazing from May 1 to August 1, and full feeding 100 days in the fall is most profitable.

Two large silos and four smaller ones are at these cattle barns. Four small barns for heifer calves are west of the main barn. North of it are three long open sheds, used for part of the experimental steers and the breeding herd. At present there are 25 Hereford, 24 Shorthorn, and 12 Angus cows and 12 Hereford, 13 Shorthorn, and 6 Angus heifers in the college breeding herd. This fall 16 Hereford heifers, all sired by a son of Advance Domino, were purchased from Gordon and Hamilton of Horton. During the winter the yearling heifers will be kept at a shed farther north of the main barn.

Of the 504 acres of animal husbandry pasture, 300 acres are in permanent bluestem, the remainder being in annual and permanent tame pasture crops. The 120 acres of crop land are used entirely for forage crops, of which 27 acres are in alfalfa. Most of the remainder is planted to cane to furnish roughage for the live stock.

The equipment is not elaborate, yet it furnishes space to carry on experiments with small animals, beef cattle, hogs, and sheep. It represents a large investment, but a relatively small investment considering its value to students and the live-stock interests of the state. The personnel and reasonably large and adequate equipment of the Department make it a real college Department of Animal Husbandry. Thousands of Kansas farmers visit the college every year at special feeders' day programs and at other times for the purpose of securing information that may help to solve their live-stock feeding and management problems. Infor-

mation is available at any time of the year by visiting the college or by writing to the Department of Animal Husbandry or simply to the Agricultural Experiment Station.

—R. Boyd Cathcart, '33.

DEPARTMENT OF DAIRY HUSBANDRY

Probably more than ever before people who are planning to enter the field of dairying will look to K. S. C. for the answers to the problems confronting them. These problems, for the most part, can be handled properly only by men who are "dairy educated." The Department of Dairy Husbandry in K. S. C. is equipped to offer two branches of training—dairy production and dairy manufactures. The basis for dairy production is the dairy herd, and for manufacturing of dairy products, the college creamery.

The dairy herd consists of 171 head representing four dairy breeds. Including calves there are about 55 head of Ayrshires, 50 Holsteins, 32 Guernseys, and 34 Jerseys. The herd is maintained for: (1) Experimental purposes; (2) student instruction in judging; (3) demonstration of methods; and (4) production of milk for the college creamery.

In order to determine the best methods of feeding and management under Kansas conditions, experiments are in progress including animals of all breeds and ages. Some of the more important experiments deal with: (1) The feeding value of fodders, silage, and grain rations; (2) minerals in the dairy ration; (3) food value of dairy products; (4) the control of abortion; and (5) calf feeding. The students use the animals in judging practice and in studying herd management and the production of milk. The way in which the herd is handled demonstrates to visitors the best methods to follow in dairying.

Probably the greatest handicap to the Department is the small dairy barn, which has long been inadequate be-

cause it is equipped to handle only about one-half the number of animals which the Department now has. Work has begun, however, on the construction of a new dairy barn which will house conveniently all the animals, and have adequate room for conducting experiments. The barn will have a large space for feed storage and a fully equipped milk room, making it one of the most efficient and up-to-date structures of the Middle West.

Of the 120 acres of farm land used by the Department, about 50 acres are kept in alfalfa, about 10 acres planted to oats, and the remaining area is planted to a variety of suitable silage crops. In normal years this acreage supplies all the silage needed, also about two-thirds of the hay and a portion of the oats.

The college creamery is maintained to give instruction in the manufacture of dairy products; to carry on research with dairy products; and to serve as a demonstration plant. The creamery is very practical and efficient, and is conveniently arranged.

Instruction is given in the manufacture of ice cream, butter, cheese, condensed milk, and powdered milk. Courses are also taught in market milk, dairy inspection, and creamery management. Some of the experimental projects now in progress are: (1) Finding the relative efficiency of lye and chlorine as a disinfectant for cream separators and milking machines; (2) studying methods of recovering milk sugar from whey; (3) studying some of the factors influencing the degree of softness of curd in milk; (4) studying the economic value of the "home dairy spread," which is merely high-testing rich cream that hardens when cooled, and offers to the farmer the most feasible means of making high-quality butter; and (5) using milk proteins in the ice cream mix and studying their influence on freezing, whipping, texture, and flavor.

The normal yearly output of the col-

lege dairy herd in milk and milk products is approximately 20,000 pounds of butter, 3,000 pounds of cheese, 5,000 gallons of ice cream, and 50,000 gallons of milk. The products are retailed through a local dairy company and at the dairy sales counter.

With an equipment as adequate as that briefly described and a program of fundamental research and active cooperation with the dairy interests of Kansas, the Department of Dairy Husbandry is able to give, through an adequate personnel, the best of college training for future dairymen.

—Frank S. Burson, '34.

DEPARTMENT OF POULTRY HUSBANDRY

Kansas is enriched annually to the extent of twenty-five million dollars through the efforts of the hen and her allies. Is the poultry department of the Kansas State College organized and equipped to prepare students for work in this important industry of Kansas? A group of poultry students recently visited the poultry departments of numerous middle western institutions. They returned convinced that the Department of Poultry Husbandry in K. S. C. was second to none from the standpoint of physical layout, instruction, research, and extension.

The college poultry farm consists of 24 acres. This acreage provides for the brooding of more than 6,000 chicks annually, the housing of approximately 1,200 mature trap-nested birds, and the growing of some 500 turkeys. The buildings include a modern feed house equipped with up-to-date mixing and grinding machinery, feed storage bins, etc. The basement of this feed house is occupied by the latest battery-brooding equipment. Other buildings are provided for mammoth incubators, the farm office, and the superintendent's home. The operation of this experimental farm and the keeping of accurate records requires the service of five full-time individuals besides spare-time work given to several college stu-

dents. Students in poultry husbandry are afforded every opportunity to obtain practical experience on this farm.

Courses taught include farm poultry production, poultry breeding, incubation and brooding, poultry marketing, poultry management, poultry judging, and poultry research. Students are encouraged to engage in research work. The Department is fortunate in having the heartiest cooperation from strong supporting departments in chemistry, biology, bacteriology, economics, etc. Thus, it is possible for the poultry student to specialize in some particular phase of the work as for instance, poultry marketing, poultry nutrition, or poultry diseases.

The poultry industry, if it is to progress in this state, must receive assistance through research. Extensive researches are being conducted in nutrition, breeding, incubation, diseases, management, and marketing with the cooperation in many cases of supporting departments. The etiological factors involved in the malformation of bones in young chickens, the comparative nutritive value of certain grain sorghums, corn, and wheat, and the nutritive requirements of turkeys are a few of the subjects being investigated in nutrition. The research work in breeding has been principally upon the inheritance of egg production, effects of cross breeding on vigor, methods of mating to determine sex at hatching, and inheritance of defects and desired standard characteristics. In incubation, the growth of chicken and turkey embryos under varying conditions, ossification of bones, the control of disease in incubators, and the normal embryological development of the turkey embryo are being worked upon at the present time.

The results of these researches are carried to the farmer through the medium of station publications, correspondence, and efficient extension activities. Further, this fundamental research work in practical poultry problems

with adequate equipment keeps an efficient teaching staff well qualified to offer the best possible college training in poultry husbandry.

DEPARTMENT OF HORTICULTURE

The commercial growing of fruit, ornamental plants, flowers, and vegetables has become so technical and difficult that in the future only those equipped with a knowledge of the fundamental underlying principles can hope to succeed. The grower must not only have training in horticulture, but he must have some knowledge of entomology, soils, plant pathology, botany, plant physiology, and chemistry as well. Therefore, a college course in horticulture is becoming more and more a preliminary requisite for the successful grower.

Kansas State College is the only college in the state equipped to give this training, as it is the only one which can supplement classroom work with actual field practice. The student is not only taught how to spray, prune, and harvest, and the principles underlying these operations, but he is actually shown how, and then is required to prune trees and vines, to hold the spray gun, and to harvest, grade, and pack the fruit with his own hands. Students also aid in carrying on research work, thus securing an insight into the methods by which this work is conducted.

Students in horticulture at K. S. C. usually major in one of three phases of the work; namely, fruit growing, landscape gardening, or vegetable and flower gardening.

Students studying fruit growing have as their main laboratory the horticultural farm, with an area of 80 acres, located one mile west of the college campus. About 35 acres of this farm are devoted to apples, two and one-fourth acres to grapes, two acres to peaches, and four acres to cherries. Those students who have not lived on a fruit farm are required to obtain actual orchard practice before they com-

plete the course. This usually consists of working on the farm one or two summer vacations.

The apple orchard contains about 70 varieties. Of many varieties only one to five trees are being grown, to determine whether the varieties are of any commercial value in this region. Experiments being carried on at the present time are: (1) Variety tests, (2) pruning tests, (3) spraying for control of codling moth, scab, and frog-eye (black rot), (4) soil management, with special emphasis on cover crops, chemical fertilizers, and terracing, and (5) studies of the root systems of trees. When the apples are harvested a quantity is stored sufficient for variety studies in the classroom and for use in training the apple judging team. The rest is sold to the local trade.

In the cherry orchard the main experiments being carried on here are pruning and the use of various sprays for the control of cherry leaf spot. The most interesting thing in the cherry orchard is the terracing. It has been claimed that one cannot terrace an orchard without leaving out about a third of the trees in order to keep the terraces open. It was necessary in this orchard, however, to leave out only six trees in over 240 spaces.

The trees in the peach orchard are young, but are bearing. The principal experiments being conducted are in the use of various sprays for the control of bacterial leaf spot, the use of commercial fertilizers, and variety tests.

The vineyard is an impressive sight. It contains 12 varieties of grapes. Experiments are being carried on in (1) the use of cover crops, (2) different methods of pruning, especially as to length of canes and number of buds to leave, (3) different types of trellising, and (4) thinning the number of bunches on the vine.

There are no small fruits other than the grapes on the farm at the present time, but soil is being prepared to add

(Continued on page 60)

College Notes

MEATS JUDGING TEAM WIN A CUP

The Kansas meats judging team competing at the American Royal in Kansas City, November 16, placed first, defeating Iowa by a 3-point margin. Kansas scored 2,296 points out of a possible 2,700. This gave Kansas possession of the National Meat Board trophy for the second consecutive year. The cup must be won three times in order to become the permanent property of a college. The teams competing ranked in the following order: Kansas, Iowa, Missouri, Pennsylvania.

The contest consisted in judging carcasses and wholesale cuts of mutton, beef, and pork. On the Kansas team, John I. Miller, Prescott, made the highest individual score in the entire contest, making 814 points out of a possible 900. He was high individual in the judging of both pork and beef. L. R. Daniels, St. Francis, was fourth high individual, and Gaylord R. Munson, Junction City, was eighth. Harold L. Kugler, Abilene, was alternate.

After winning the contest the boys had their picture taken several times and were given the opportunity to speak over the network of the National Broadcasting Company during its Farm and Home hour. The boys say it was a real treat to see and hear Gaylord Munson following in the footsteps of Graham McNamee.

The team represented Kansas again in the meats intercollegiate contest held in connection with the International Live Stock Exposition at Chicago, November 29. Competition was most keen in this contest and Kansas ranked fourth. The order in which the teams placed was: Ohio, Nebraska, Iowa, Kansas, North Dakota, Virginia, Ontario, Massachusetts, Pennsylvania.

J. I. Miller was high man of the

Kansas team, tying for fifth place in the entire contest, and scoring 780 out of 900 possible points. He also ranked first in the judging of beef with a score of 385 points out of a possible 400. L. R. Daniels was ninth high individual with a score of 758. Gaylord R. Munson was the third member of the team and Harold L. Kugler was alternate.

John I. Miller, L. R. Daniels, and Gaylord R. Munson were also members of the senior live-stock judging team, hence, they had to make a rather sudden change in their judgment from the live animal which walked in the arena to the carcass which was to pass over the retail block.

The meats team was coached by Prof. Lyman J. Bratzler, a graduate of the University of Illinois. This is Professor Bratzler's first intercollegiate team and there is no doubt but what the team's success can be attributed largely to his efforts.

—Harold L. Kugler, '33.

LIVE-STOCK JUDGING TEAM PLACE HIGH IN CONTESTS

The Kansas senior live-stock judging team, competing at the American Royal Live Stock Show at Kansas City and at the International Live Stock Exposition in Chicago, placed seventh and second, respectively. Fourteen teams competed at the American Royal and twenty at the International. Members of the Kansas team were:

John I. Miller.....	Prescott
Earl C. Coulter.....	Willis
Laurence R. Daniels.....	St. Francis
C. Gross Page (alt. at K. C.).....	Norton
Gaylord R. Munson (alt. at Chicago)	
.....	Junction City
Arthur C. Thomson.....	McCune
Prof. F. W. Bell, Coach.	

In the American Royal contest, November 12, John I. Miller was high on

the Kansas team and fourth high of the 70 individuals in the entire contest. He was third in judging beef cattle. Arthur C. Thomson tied for first on judging horses and placed second in judging sheep. Gaylord R. Munson placed fourth in judging hogs. The Ohio team won the contest with a score of 4,364 points out of a possible 5,000. The score of the Aggie team was 4,257.

In the International contest at Chicago, November 26, the climax of the season's intercollegiate judging contests, the Kansas team placed second with 20 teams competing. The scores made in this contest were as follows:

Team	Score
Ohio State University.....	4,598
Kansas State College.....	4,560
University of Illinois.....	4,554
Ontario (Canada) Agricultural Col- lege	4,533
Iowa State College.....	4,509
University of Nebraska.....	4,451
University of Minnesota.....	4,432
State Agricultural College of Colorado	4,423
Oklahoma A. & M. College.....	4,412
Texas Technological College.....	4,396
A. & M. College of Texas.....	4,370
Michigan State College.....	4,289
University of Wisconsin.....	4,253
University of Missouri.....	4,247
Pennsylvania State College.....	4,224
West Virginia University.....	4,215
South Dakota State College.....	4,168
Massachusetts State College.....	4,050
Virginia A. & M. College.....	4,050
Connecticut Agricultural College.....	4,018

Laurence R. Daniels was high on the Kansas team and third high in the entire contest. He placed third in judging cattle and seventh in judging horses. C. Gross Page was sixth high in the entire contest and high on hogs, making the highest individual score of any divisional winner. Page was also ninth high in judging sheep. The team as a whole placed first on cattle, first on hogs, fifth on horses, and seventh on sheep.

The records of past contests in Chicago show that teams representing Kansas have placed higher for the entire series of contests than those of any other institution. In fact, ascertaining the average rank of each team that has competed in the International contest during the last 14 years (1919 to 1932, inclusive) by totaling its rank-

ings and dividing by the number of times it has competed, the Kansas average rank is 3.21, while that of Oklahoma (its nearest competitor) is 4.23. The high placing this year is another tribute to the coaching of Professor Bell. —Arthur C. Thomson, '33.

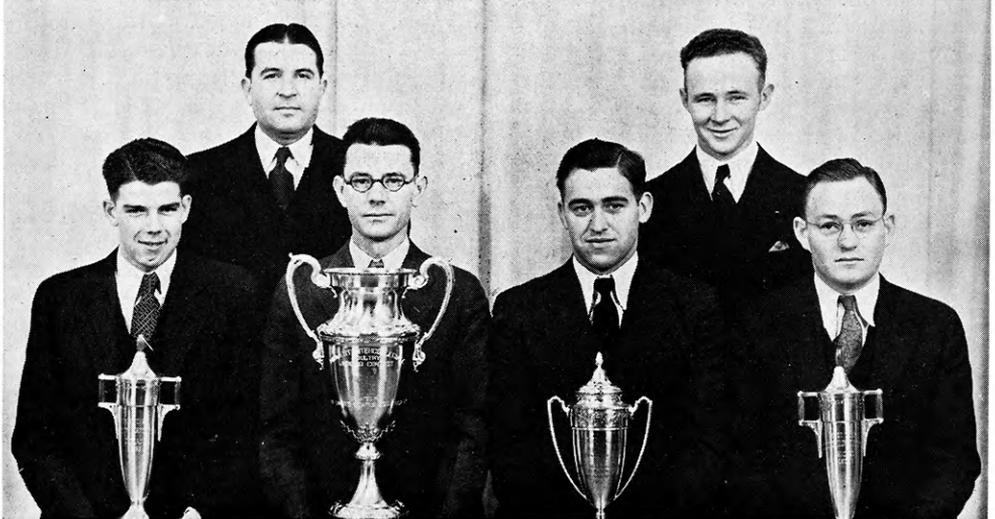
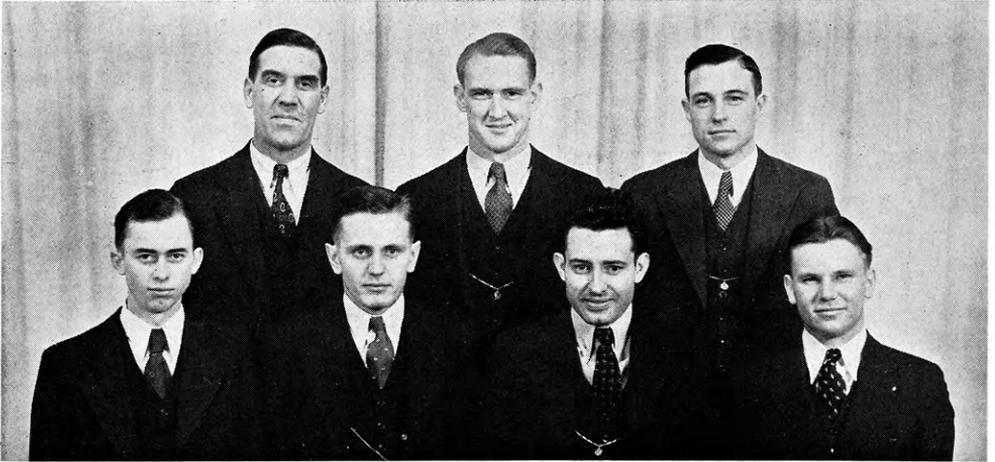
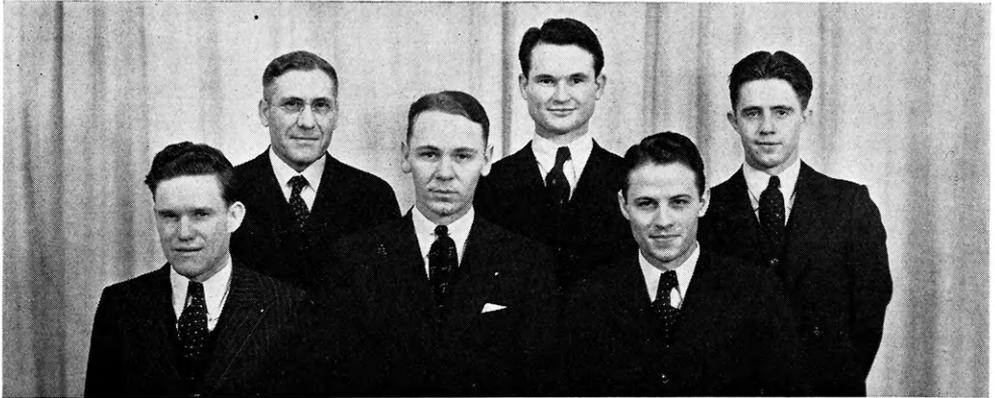
POULTRY JUDGING TEAM WIN THEIR CONTEST AND HAVE A GRAND TRIP

In the thirteenth Mid-West Intercollegiate Poultry Judging contest held at the Coliseum Poultry Show in Chicago, Saturday, November 26, the Kansas team made an outstanding record, winning \$30 in cash and bringing home four of the five trophies offered. The team was composed of the following men:¹

Thomas B. Avery.....	Coldwater
Raymond T. Harper.....	Manhattan
Gilbert C. Moore.....	Louisburg
Jerrold J. Wardell.....	Platteville, Colo.
Clarence H. Anderson.....	Richland
Prof. H. M. Scott, Coach.	

The contest consisted of a written examination which was taken Friday evening in the Hotel Crillon under the direction of H. H. Steup, formerly of K. S. C., and the placing of five classes each of (1) production poultry, (2) exhibition poultry, (3) market poultry, and (4) market eggs. The placing or judging of these four groups of poultry and poultry products lasted from 8 a. m. until 2 p. m., October 26. The judging of market poultry and market eggs is a new feature of the contest, as it was just added this year, and the scores made in those divisions were counted separately and no prizes were offered. Kansas placed third in the judging of market poultry products, and Oklahoma, first. Wardell was third high individual and Anderson, fourth. Wardell competed in both the judging of market poultry products and the old-type portion of the contest, while Avery and Anderson replaced Moore and Har-

1. Marvin E. Vautravers of Centralia was a member of the team first selected, but because of sickness he had to give up the trip. LeRoy A. Wilhelm, graduate student, attended the show and assisted in managing the contest.



CROPS, LIVE STOCK, AND POULTRY JUDGING TEAMS



APPLE JUDGING TEAM (UPPER) AND MEATS JUDGING TEAM (LOWER)

Apple Judging Team: Y. S. Kim, Prof. W. F. Pickett (coach), Phares Decker, Erwin Abmeyer, and Leonard W. Patton.

Meats Judging Team: Harold L. Kugler, Prof. Lyman J. Bratzler (coach), Gaylord R. Munson, John I. Miller, and Laurence R. Daniels.

NAMES OF MEMBERS OF THE JUDGING TEAMS SHOWN ON THE OPPOSITE PAGE

Crops Judging Team (top): Lester R. Chilson, Prof. J. W. Zahnley (coach), Thomas E. Hall, Herbert W. Clutter, Glenn S. Fox, and Andrew B. Erhart.

Live Stock Judging Team (middle): C. Gross Page, Prof. F. W. Bell (coach), Gaylord R. Munson, Arthur C. Thomson, Earl C. Coulter, John I. Miller, and Laurence R. Daniels.

Poultry Judging Team (bottom): Thomas B. Avery, Prof. H. M. Scott (coach), Raymond T. Harper, Gilbert C. Moore, Jerrold J. Wardell, and Clarence H. Anderson.

per in the judging of the market poultry products.

Eight states were represented in the contest. Kansas placed first with a score of 3,200 points in the old-type portion of the contest; Missouri, second with 2,978 points; and Oklahoma, third with 2,934. Wardell was high individual, Harper, second, and Moore, fifth. In production judging the Kan-

sas team placed first; Harper was high man. In the written examination the Kansas team also placed first; Moore was second individual, Wardell, third,

tion, and one as high team in the entire contest. The large Challenge Trophy, which this year was brought to Kansas for the second time, will become the



DAIRY JUDGING TEAMS: DAIRY CATTLE (UPPER), DAIRY PRODUCTS (LOWER)

Dairy Cattle Judging Team: C. Gross Page, Prof. H. W. Cave (coach), Wayne W. Jacobs, Pius H. Hostetler, and Orville F. Denton.

Dairy Products Judging Team: Harry W. Coberly, Prof. H. W. Martin (coach), Wilfred H. Pine, Floyd E. Davidson, and W. Harley Chilson.

and Harper, fifth. The Kansas team placed second in exhibition judging. The team won the three small cups shown in the picture, one on production judging, one on the written examina-

permanent property of the school first winning it a third time.

A big banquet for the contestants began at 6 o'clock Saturday evening. Dr. Kent of Chicago presided. Talks were

made by Mr. Rees V. Hicks, general manager of the International Baby Chick Association and Mr. Ferguson of Swift and Company. Dr. L. E. Card of Illinois read the reports of the contest and presented the awards.

The team report the trip most delightful and educational from beginning to end. They left Manhattan at 9 a. m., Tuesday, November 22, their car headed for Lincoln, Nebr. In the Nebraska College of Agriculture they were shown the poultry department, especially and in detail, by Professor Mussehl. On November 23 they spent several hours in Iowa State College, Ames. There they were shown the Iowa State poultry equipment in some detail by Dr. Wilcke. On Thanksgiving morning the boys visited the Poultry Tribune Experimental Farm, Mount Morris, Ill., going from there to Chicago where they joined Coach Scott, who made the trip by auto with Dr. J. S. Hughes and had spent some time visiting the University of Chicago.

Friday, November 26, the K. S. C. team made a marketing tour of Chicago under the direction of Dr. Kent. At the Mercantile Exchange the sale of "Futures" was explained after which the group was allowed to go on the floor and watch the bidding. They visited one of the largest cold storage plants, Mr. Kilbourne, a pioneer in that work, giving them much valuable information. Among other places of interest they visited the Board of Trade building.

Sunday, November 27, the boys visited the World's Fair grounds and the International Live Stock Exposition and Monday they went to St. Louis by way of the University of Illinois at Urbana. Tuesday they were guests of the Purina Mills of Saint Louis at a Field Day which was sponsored by the American Institute of Poultry Industries. The topic of the day was interior egg quality. The morning was spent in the Purina laboratories after which the group drove to the Purina experimen-

tal farm near Grays Summit. A roast turkey dinner was served in good old country fashion and the afternoon was spent in looking over the farm. Their next objective was K. S. C. and they lost little time on this last lap of a splendid trip. —J. J. Wardell, '33.

CROPS JUDGING TEAM COMPETE IN TWO CONTESTS

The Kansas crops judging team, competing at the American Royal Live Stock Show in Kansas City, November 12, and at the International Live Stock Exposition in Chicago, November 26, placed fifth in both contests. The team was composed of the following men:

Glenn S. Fox	Rozel
Andrew B. Erhart	Timken
Herbert W. Clutter (alt. at K. C.)	Larned
Lester R. Chilson (K. C. only)	Oberlin
Thomas E. Hall (alt. at Chicago)	
.....	Manhattan
Prof. J. W. Zahnley, coach.	

Though the Kansas team placed fifth with five teams competing at Kansas City, only 53 points separated fifth place from second place. The Kansas team scored 4,887 points out of a possible 6,000. The winning team, Iowa, scored 5,009 points. Oklahoma placed second with 4,940 points. Lester R. Chilson was seventh high individual. The contest consisted of commercial grading of wheat, corn, and oats, the judging of grains on a seed basis, the identification of common crop plants and weeds, and the commercial grading and stapling (determining the fiber length) of cotton.

The Kansas City contest is sponsored by the Kansas City Board of Trade and the Kansas City Chamber of Commerce cooperating. On the evening following the contest a banquet was given at the Kansas City Athletic Club for the competing teams at which time the prizes were awarded.

Three days were spent in Kansas City. The first was spent in preparation for the contest. Half the time was spent in the federal hay inspection lab-

oratory going over samples of commercial hay and studying and observing the methods used in determining the grades of the hay received at Kansas City. A special machine made of lenses and mirrors makes it comparatively easy for an inspector to determine the color of a hay sample.

The afternoon was spent in the federal grain inspection laboratory in grading commercial samples. The method and apparatus used in making protein tests of wheat were explained and a few actual tests made as a demonstration. All cars of wheat coming to Kansas City are tested for protein as the protein content is very important from the miller's standpoint.

Because of a quarantine Lester R. Chilson was unable to make the trip to Chicago. Thomas E. Hall was selected to complete the team.

Eight teams competed in the Chicago contest which was similar in all respects to the Kansas City contest. The placings again were extremely close, as may be seen from the following scores: Oklahoma, 3,645; North Carolina, 3,603; Nebraska, 3,506; Iowa, 3,500; Kansas, 3,485; Minnesota, 3,479; Michigan, 3,477; and Pennsylvania, 3,192. The Kansas team placed second in commercial grading. Glenn S. Fox was eighth high individual in the entire contest and Andrew B. Erhart and Herbert W. Clutter placed fifteenth and sixteenth, respectively.

The Chicago contest is sponsored by the International Crop Improvement Association in cooperation with the International Grain and Hay Show. Following the contest a banquet was given in honor of the competing teams.

One of the most interesting points of the Chicago trip was the visit to the Chicago Board of Trade building. This is one of the tallest buildings in Chicago and houses the grain exchange as well as numerous other businesses. The group was given a chance to observe the grain pits in action and then a lecture was given on the internal opera-

tions of this great market which is second only to the Liverpool, England, grain market. In this market are the pits for the trading in futures of corn, oats, wheat, rye, and cotton and also along one side of the room are the cash grain tables where the actual samples of grain are found and the cash buyers examine the quality of the grain they purchase. The very vastness of the grain trade is more nearly realized after observing this market and the immense and numerous storage elevators in Chicago. —H. W. Clutter, '33.

THE APPLE JUDGING TEAM OF 1932

The students' intercollegiate contest in apple judging was held this year on November 17 in Marshalltown, Iowa, in connection with the Ninth Mid-West Horticulture Exposition. After two months of intensive tryouts, Prof. W. F. Pickett chose the following men to represent Kansas State College:

Erwin Abmeyer	Grantville
Phares Decker	Holton
Y. S. Kim.....	Shanghai, China
L. W. Patton.....	Newton

These men with Prof. W. F. Pickett left Manhattan, Tuesday, November 15, on the train. The first evening was spent in Kansas City visiting the American Royal. The team left Kansas City the same evening at 11:30, and arrived in Marshalltown, Iowa, the following morning at 8:45. The remainder of that day was spent looking over the display of apples, vegetables, and nuts. The display of apples was unusual. The superior quality and uniformity of size and color were outstanding.

The contest was held on Thursday, November 17. It consisted of two parts. First, the placing of fifteen classes of apples, each class consisting of three plates of five apples each; and second, the identification of 100 specimens. The apples used were those of the more common varieties grown in the mid-western states.

The three teams entered placed as follows: Missouri, first; Kansas, sec-

ond; and Iowa, third. Kansas lost to Missouri by seven-tenths of 1 per cent, with Iowa a weak third. The winning team was awarded a cup, and the high individual received a gold medal. A man from Iowa succeeded in scoring 2,215 points out of a possible 2,225 for high individual.

In the evening a banquet was given by the Iowa Horticulture Society. The visiting teams were guests at the banquet and the awards were made during the program. The Kansas team was compelled to leave just before the close of the banquet to take their train for home. They arrived in Kansas City at 7:15 Friday morning. That day was spent visiting various places of interest about the city, arriving home late Friday night. —Phares Decker, '33.

Departmental Clubs

As a rule, advanced students majoring in each department of the Division of Agriculture maintain a departmental club. Members of the faculty of the department are either active or associate members. The total enrollment of each club varies from semester to semester, the minimum being scarcely more than a dozen members and the maximum being about 50.

Each club strives to promote good scholarship and a spirit of comradeship among students and faculty; to give some serious study to departmental problems, research projects, etc.; to conduct such student judging contests and other contests as may be feasible in its field; and to make such departmental exhibits and support such departmental activities as may be mutually advantageous. Regular meetings are held twice each month and, as a rule, one meeting each semester or one each year is made of outstanding importance, frequently by the address of a national leader in the work of the department.

These clubs frequently bear the name of the department in which they are

organized. The club of the Department of Agronomy, however, is the Klod and Kernel Klub. In the Department of Animal Husbandry, the Block and Bridle Club is a national organization, having membership in 12 colleges of agriculture.

The officers of these clubs as organized this semester are:

AGRICULTURAL ECONOMICS CLUB

President.....Orville F. Denton
 Vice President.....Harold L. Kugler
 Recording Secretary....Marion W. Pearce
 Corresponding Secretary, W. Newell Page
 Treasurer.....Luke M. Schruben

BLOCK AND BRIDLE CLUB

President.....John I. Miller
 Vice President.....Earl C. Coulter
 Secretary.....Raymond B. Wagner
 Treasurer.....Laurence R. Daniels
 Publicity.....Gaylord R. Munson
 Marshal.....Harold W. Overbey

DAIRY CLUB

President.....Pius H. Hostetler
 Vice President.....Wayne W. Jacobs
 Secretary-treasurer.....William H. Juzi

HORTICULTURAL CLUB

President.....Lloyd M. Copenhafer
 Vice President.....Phares Decker
 Program Chairman....Leonard W. Patton
 Secretary-treasurer.....Erwin Abmeyer

KLOD AND KERNEL KLUB

President.....Herbert W. Clutter
 Vice President.....John R. Latta
 Secretary.....Floyd E. Davidson
 Treasurer.....Val W. Silkett
 Reporter.....Alvin E. Lowe
 Sergeant of Arms.....John O. Miller

Luther A. Jacobson, '32, is employed in the Division of Forage Crops and Diseases of the United States Department of Agriculture. He is stationed at the Fort Hays Agricultural Experiment Station at the present time.

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 TOPEKA, KANSAS



LISTING CORN IN KANSAS

(Continued from page 39)

above. It also breaks down stalks and trash and incorporates them with the surface soil so that they will decay more quickly. The best results from surface planting can be obtained by fall or early winter plowing. Fall plowing subjects the stalks to weathering agencies during the winter and results in a better physical condition of the soil. It also aids in the control of certain injurious insects. If plowing must be delayed until spring it should be done at the earliest possible time.

A careful consideration of the advantages and disadvantages of these two methods, as well as the furrow opener method, their respective adaptabilities to the existing conditions, and the choice of the best method should result in an increased average yield of corn in Kansas.

DEPARTMENT OF HORTICULTURE

(Continued from page 51)

the blackberry, raspberry, gooseberry, and strawberry in the near future.

Students taking up landscape gardening have as their main laboratory for plant materials the college campus. This is supplemented by the campus nurseries, several plantings on the horticulture farm, and a nursery located just off the campus near the site of the old rifle range. These nurseries are in charge of the landscape gardening section of the Department. They are devoted to the growing of trees for windbreaks and woodlots, which are sold to farmers at cost. These nurseries give students an opportunity to study nursery practices.

The care and beautification of the campus itself is in charge of the landscape gardener of the Department of Horticulture. The campus is considered one of the most beautiful in America. Nearly two hundred varieties and species of trees, shrubs, and vines may be found here. The formal flower gar-

dens, rock gardens, and iris test garden also furnish a great variety of hardy flowers for study. Some of the other phases of the work taken up in landscape gardening include designing of public and private ground for human use and enjoyment, drawing of grading plans, planting plans, and construction details used in the landscape. Each spring all the landscape gardening students take an inspection trip to some city where they study large private estates, grounds of public buildings, playgrounds, parks, and boulevards.

Students studying flower and vegetable gardening have their laboratory work in the greenhouse, located just north of the horticultural building, and in the garden located east of the greenhouse. Three sections of the upper greenhouse and the headhouse are used for both classroom work and commercial production. All flowers which can be profitably produced on a commercial scale are grown. Some of the more important vegetables, such as tomatoes, lettuce, and radishes are also produced. The greenhouse work gives students training in greenhouse construction and management, fumigation, soil management, and planting and handling the different flowers and vegetables.

Practically all of the commercially grown vegetables are produced in the garden. Experiments being conducted include seed germination tests, variety tests, crossing varieties of tomatoes for resistance to wilt, breaking the rest period of asparagus, and irrigation, especially of the overhead type.

—Erwin Abmeyer, '33.

F. Dean McCammon, '32, enrolled as a graduate student this semester majoring in agricultural economics, has accepted a position as teacher of vocational agriculture in the Ford Rural High School.

Greeley, an Early Maturing Grain Sorghum for Western Kansas

T. B. Stinson, '24

Greeley, a dwarf, early-maturing, juicy-stalked, drought-resistant grain sorghum has been developed at the Tribune Branch Agricultural Experiment Station, Tribune, Kan. Under normal western Kansas conditions this variety grows to a height of about 42 inches, although under some conditions it has grown as high as 54 inches. It will mature grain in about 90 days when planted at the normal time which at Tribune is the first 10 days in June. It has matured grain when planted as late as June 20.

Greeley is the result of a field cross between Pink kafir and Freed sorgo found in Scott county in 1918. Pink kafir, one of the parents, ripens too late for the Tribune territory, grows about 5 feet tall, has leafy stalks and long cylindrical compact heads. Freed sorgo, the other parent, is an early-maturing, open-headed variety. It was hoped to secure from this cross a hybrid that would combine the early maturity of Freed sorgo and the general plant characters of Pink kafir.

About 100 head rows from this cross were carried annually at the Tribune station from 1919 to 1923. In 1924, 10 of the most promising head rows were harvested for plot testing. Four of these strains were discarded in 1927 and three more in 1930, leaving the three best strains for further comparison. Greeley is the one of these selections that was tested as Tribune Pink Freed No. 12. Beginning in 1927 seed heads were bagged in the more desirable types. The bagging process developed practically pure lines, some of which showed marked improvement. In 1930 about one-half acre of Greeley was planted from bagged heads for pure seed on an isolated field near the station. Unfortunately due to a poor stand and drought very little increase

was secured. In 1932 an isolated block was again planted and about 300 pounds of pure seed were grown. This seed in 1933 will be planted under the direction of the station on farms where it may be kept pure.

The following table gives the yields of Greeley along with some of the best-producing grain sorghums.

Year	Freed Dwarf Modoc Dwarf Fete-					
	Greeley sorgo	Freed	Pink	Y. milo	Feterita	
1925.....	21.1	4.9	0.0	0.0	23.3	28.3
1927.....	10.7	9.8	11.5	10.2	3.9	10.4
1928.....	22.7	26.2	13.5	17.8	15.4	15.2
1929.....	12.9	8.9	4.3	2.4	1.9	6.1
1930.....	34.1	7.0	8.9	23.7	23.0	15.2
1931.....	18.3	17.0	16.7	15.5	18.7	18.9
1932.....	11.9	10.6	5.9	.0	9.6	5.9
Av.....	18.8	12.1	8.7	9.9	13.7	14.1

Note.—Data for 1929, 1930, and 1932 are for one date of planting which was about June 5. Other years are for two dates of planting, May 20 and June 5.

From the table it can be seen that Greeley has outyielded all other grain sorghums in this locality followed by Dwarf Yellow milo and Feterita, the two best varieties of the standard grain sorghums. Greeley has been grown for two or more years on the Garden City, Fort Hays, and Colby branch stations in Kansas, and at Akron, Colo., and North Platte, Nebr. At the Fort Hays and Garden City stations, Greeley has not yielded so well as the standard varieties, but this was to be expected because of the longer growing season at these places. At the other three stations Greeley has made very good yields and the superintendents of the stations are of the opinion that it will be well adapted to their conditions.

William G. Nicholson, '31, is farming near Great Bend, Kan. He is feeding 3,000 sheep this winter.

Lawrence H. (Boots) Norton, '31, center of the varsity football team, 1929-'30 and 1930-'31, is farming near Kalvesta, Finney county, Kan.

Apartments for Hens

Without bath! With such a caption omitted from any modern hotel advertisement, the ad would ably describe the newest in the world of poultry—the hen battery.

Each hen with an individual room, approximately 18 by 14 by 18 inches, individual feed hoppers, running water, lights, heat, and almost perfect sanitation, may sound like a wild dream, but such is the case with the battery. The cages may be built either two or three stories high. In addition to all these modern features some types of batteries are equipped with automatic cleaners for removing droppings.

Hen batteries are not exactly new as they have been used in a limited way at the Ohio Agricultural Experiment Station for about eight years. They are, however, still in the experimental stage.

A set of hen batteries with a capacity of 32 hens was received at the Kansas Agricultural Experiment Station in October, 1932, and has been in use since that time. It was made available through funds supplied by the Kansas Poultry and Egg Shippers Association for research in yolk color. This battery is not being used to test its practicability in the field but only as a piece of experimental equipment. During the month of November the hens—even on experimental rations—gave a better egg average than any house of birds on the poultry farm.

The chief advantages of the hen batteries are:

1. Absolute control may be had over everything the hen eats or drinks.
2. Danger of worms and outbreaks of disease is greatly reduced because the hens do not come in contact with the droppings or contaminated ground.
3. Feed and water may not become so contaminated with droppings and litter.
4. Cannibalism is largely eliminated.
5. Trapping becomes a simple job which can be done only once a day if necessary.
6. Hens do not range, so eat less and get more rest.
7. The eggs when laid roll into an egg

basket in front and eliminate much staining of the shells.

8. More hens may be housed per square foot of space.

9. One man may care for more hens with less difficulty.

Another possibility of the battery lies in Record of Performance work. The hen battery aids in the improvement of the stock not only from the point of view of number of eggs but also of quality factors such as size, color, and shape.

The disadvantages of the hen batteries are:

1. The cost—probably the greatest disadvantage. The cost per hen will run about \$2.25 per bird for the battery only.

2. The newness—because it is new there are many faults that are rapidly being corrected.

3. The housing—a special type of building, which may be heated, lighted, and easily cleaned, will be required.

4. The ration—a special type of ration probably will have to be formulated.

These are perhaps the outstanding disadvantages. Anyone who wishes to see the first hen battery in Kansas in operation may see this new and unusual piece of equipment at the Poultry Farm of Kansas State College. —L. A. Wilhelm, '32, Research Assistant, Kansas Poultry and Egg Shippers Association.

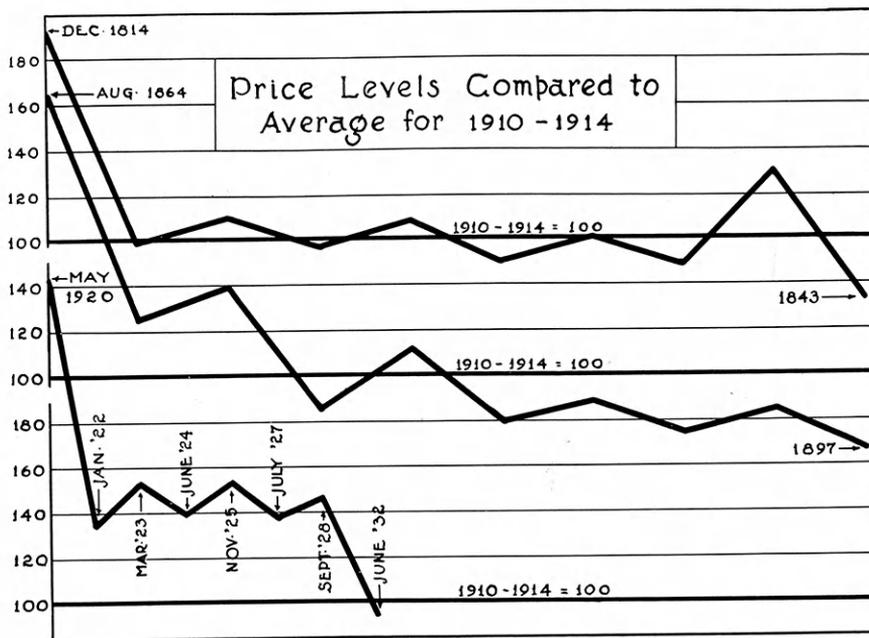
Harold B. Harper, '33, is county agricultural agent in Pratt county (Pratt).

Loren L. Davis, '27, is superintendent of the Rice Experiment Station at Biggs, Calif.

Ebur S. Schultz, '32, is county agricultural agent of Chase county (Cottonwood Falls).

Miner R. Salmon, '30, is working toward his master's degree in the University of Wisconsin (Madison).

W. Loy McMullen, '32, is director of vocational agriculture in the Rolla Rural High School, Morton county.



Bumping Our Way Into Debt Settlement

Common difficulty is the greatest unifier of opinion. After each great war in the last one and one-third centuries we have taken first, a big crash in prices. This bumped some persons pretty hard, but still there were those not getting much of a jolt. There was then a little price improvement. The feeling of those hurt the least was that it was all over. There was a second bump. A few more began to feel the effects. There was another small recovery, then a third bump, and similarly a fourth and a fifth bump (see illustration above). By this time, few there were that did not feel the jolt. By a little intelligence and much force of circumstances a number of debts had been settled. Agreement finally came as to what must be done and the stage was set for recovery.

There are only two broad roads out of these economic valleys of despair. We hope, wait, and kid ourselves into believing we see the fairy coming that is going to get us out another way. The longer we stand at the fork of the roads hesitating which road to take, the longer will we be in arriving at our destination. One of two things must be done—either we must scale debts down to the low-price levels and start over from there or we must raise the price level to somewhere near the level at which most of the debts, private and public, were contracted. There are no other ways out.

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



A College Education in Agriculture Pays the Farmer

College students in agriculture have an opportunity to apply the theories developed in the laboratory and classroom to the practical problems of farm life. Such training develops independent thinking and opens the way for greater happiness, progress, and prosperity on the farm.

The young farmer of today needs technical as well as practical training. Agriculture has become a most complicated industry, but for the young man who has adequate training to cope with its complexities it affords one of the most desirable and interesting forms of life work. College courses in agriculture provide such training.

An important aim of college work in agriculture is to educate young men for the business of life on the farm.
