

THE KANSAS AGRICULTURAL STUDENT

MANHATTAN, KANSAS



MAY, 1939



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The Kansas Agricultural Student

VOL. XVIII

Manhattan, Kansas, May, 1939

No. 4



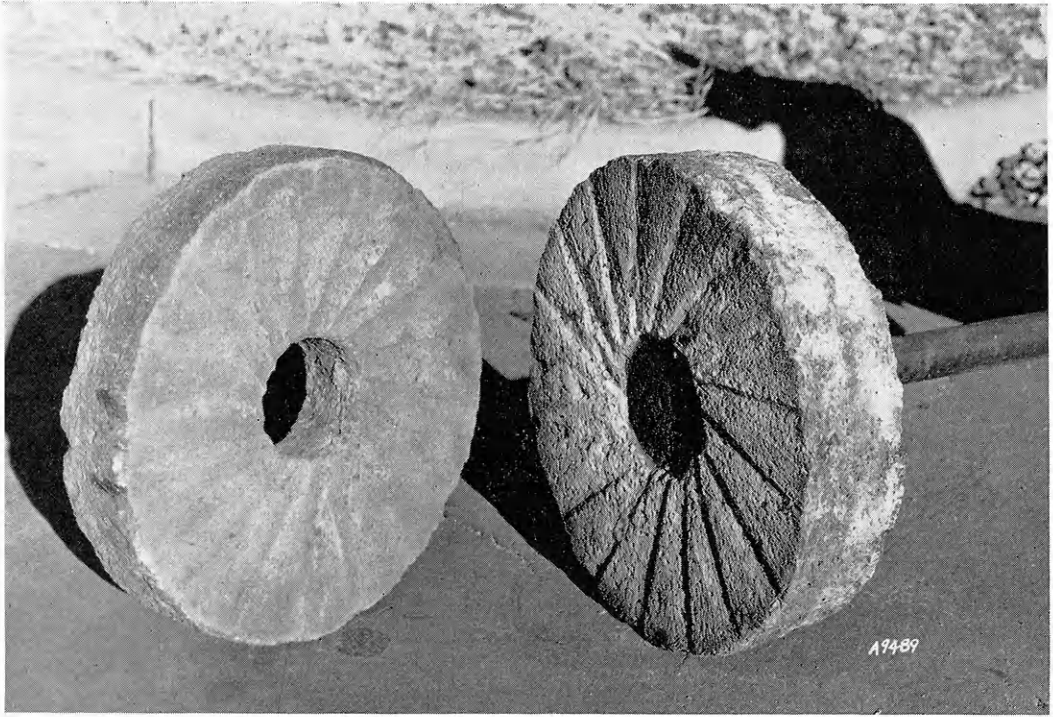
THE PAUSE THAT REFRESHES

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Published by the Agricultural Association of Kansas State College of Agriculture and Applied Science, Manhattan, Kansas, on or before the Twentieth Day of the months of October, December, March, and May.

Entered as Second Class Matter, May 21, 1925, at the Post Office at Manhattan, Kansas, under the Act of Congress of March 3, 1879. Accepted for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized May 21, 1925.



A lower run buhr at one time used as a custom mill in Manhattan. Note the furrows, stationary driveshaft, and the hole in the upper stone through which the grain was fed.

By the Old Mill Stream—

By MEADE HARRIS

SINCE time beyond record, bread has been man's staple food. How it happened that man hit upon the cereals as a main source of food is not known; but, in selecting the cereals, he made no blunder for they contain more nutritive substance than any other plants.

Machinery for preparation of the grain was made first of wood; later, of stone and metal in the form of mortars in which the grain was crushed by pestle blows. After this crushing process, the crudely crushed grain was sifted through a cloth made of horsehair. Sifting was done even in those ancient times. It is supposed that the Egyptians, who were of the earliest known to grind grain, heated the grain until dry before grinding it because it was more easily broken when heated. These methods are still used by Negro tribes in the valley of the Nile.

The next stage of the development of

milling introduced the use of a large and a small millstone, grain being ground on the larger stone by means of the smaller one. This method is still used by the Mexican Indians, descendants of the Aztecs.

The first type of mill was based on the impact principle, for primitive man knew the power of a blow struck by stone upon stone. Gradually, the conclusion was reached that this method was not efficient, and the grinding principle was brought into use as demonstrated by the second type. The grinding principle also was introduced by the Egyptians some 3,500 years before our time, and it is from them that information concerning the use of millstones came down through the ages. These stones were hand-operated by slaves, criminals, or animal power.

Since millstones pertain to that category of machinery which involves repeated ac-

(Please turn to page 126)



We're Studying Agriculture, too

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Out of these studies, many made in collaboration with other groups, have come some very interesting discoveries, most of which we have recorded in the bulletins pictured above. Our purpose in publishing these is to pass along to

those interested in agriculture some facts about a subject of growing importance to them—electricity.

We invite you to share in these findings. Some of our publications are listed below, and you are welcome to a free copy of any which interest you. In addition, we offer you, without charge, the services of our Rural Electrification Section in helping with specific farm problems that can be solved by the use of electricity. General Electric, Schenectady, N. Y.

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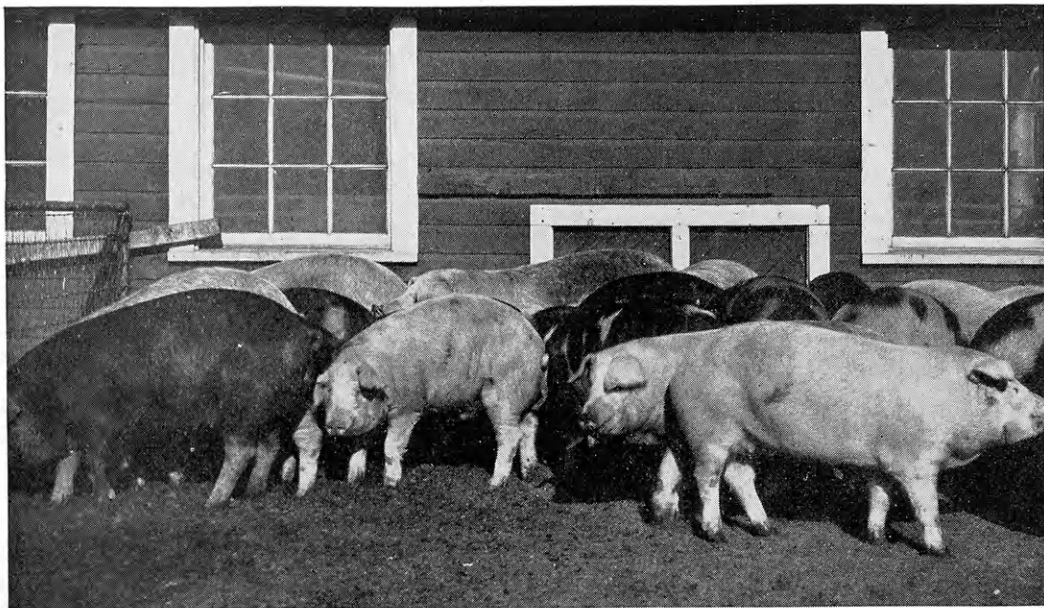
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The pigs in the above illustration are three-breed crossbreds. They are the result of a Poland China boar and a Chester White-Duroc Jersey sow. (Illustration by courtesy of the Minnesota Agricultural Experiment Station.)

Dividends from Crossbred Swine

By C. E. AUBEL¹

IT has long been observed that crossbred animals have advantages for market purposes over high grades and purebreds. For over a century crossbred cattle and sheep have been popular in Scotland quite largely because of their increased vigor. Denmark has utilized this added vigor and has made great use of crossbred swine for the production of its famed Danish bacon. Thus, through wide use it has been generally accepted that the crossing of two breeds gives a definite advantage in producing commercial animals. It also has been an accepted fact that the use of crossbred animals themselves for breeding is dangerous and ruinous. This latter view has developed largely from observing herds that have been the result of haphazard crossing rather than from true crossbreds.

Science recently has explained why increased vigor is found in crossbreds and claims it should maintain itself in the breeding stock. The Minnesota agricultur-

al experiment station has attempted to see how this would work out in practice by using crossbred gilts for breeding. Their results, published recently, should be of interest to swine growers. Three types of crosses were made: (1) First-cross, by mating sows of one breed to a boar of another breed; (2) three-breed-cross, by mating a first-cross female to a boar of a third breed; and (3) back-cross, by mating first-cross females to a boar of one of the breeds used in making the first cross.

CROSSBRED GROUPS DO BEST

When the performance of the pigs from these crosses was compared with purebreds, it was found that the farrowing results were almost wholly in favor of the crossbred groups. This included the number of live pigs in a litter and their birth weight. Only the back-cross pigs made a poorer showing in farrowing results than the purebreds. They had 0.19 of a live pig less to the litter.

(Please turn to page 125)

¹ Associate professor of animal husbandry, Kansas State College.

The Ag Senior Takes a Wife

By I. M. CRITICAL

I'm an ag student who plans to be a farmer—not a county agent or a vocational agriculture teacher, or a research scientist—but a farmer. Also—some day I hope to take to my farm a wife.

Last month we read what a representative of the prettier sex had to say about farmers for husbands—now, here's what I think about a home ec major for a wife. Please bear in mind that this does not represent the results of a division-wide survey to determine what the average ag wants in a wife, but they asked me and here's my answer:

First—perhaps we need a definition of terms. If we mean by home ec a co-ed who is submitting to a course in home economics while pursuing a more important, though extra-curricular, course in husband-getting which is eagerly sponsored and financed by her parents, then the answer is quite definitely *no*.

DOESN'T WANT A DIETITIAN

Again—if the home ec term is used to picture an efficient young woman studiously engaged in learning the caloric and vitamin content of and the physiological chemistry involved in the digestion of one hundred different menus for a noon-time meal (none of which contains any meat) and who plans to work on a master's thesis entitled "Early Life and Loves of Vitamin D"—then the answer is still *no*.

On the other hand—if our home ec is a bright and smiling girl who got a D in microbiology, who wrote her legislator about the new student union building, who is in the pep club, who can dream up some swell Sunday night feeds—then the answer is very likely to be *yes*.

I think you see what I mean. In other words, I want my home ec to be charming and capable, good-natured and hospitable, well-read and interesting, without social

ambitions but with the love of home, family and freedom so cherished by our forebears.

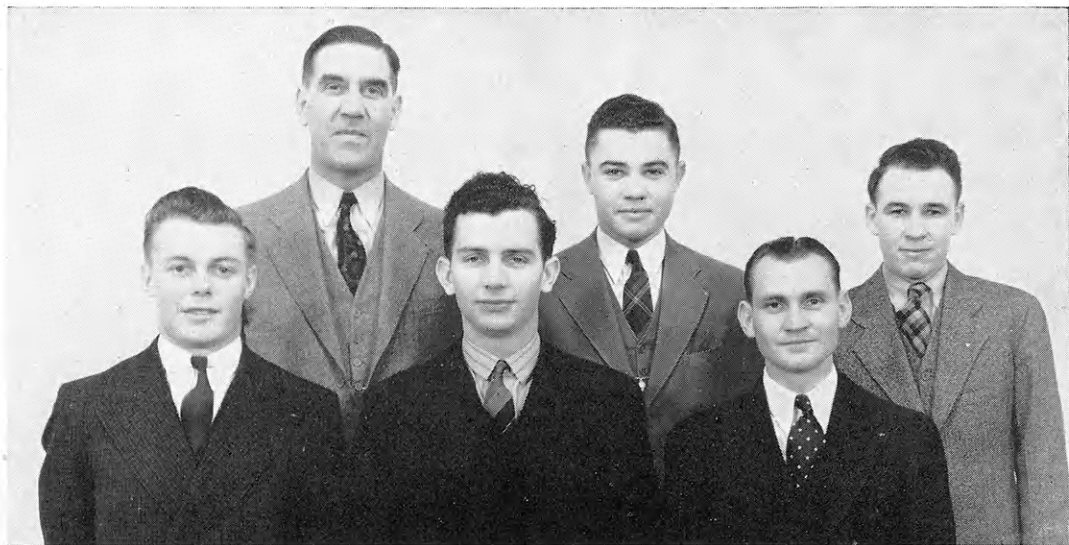
Admitting that I will probably take my wife to a home removed from the paved streets, convenient cinemas, nightly bridge parties and crowded stores of the city; also I will take her to a section of land where clean and quiet air promotes a rich and full life; where she and I will work hard and long with Mother Nature—asking only the chance to enjoy what God has given.

The farmer of today is enjoying many mechanical and scientific advantages and a stronger feeling of community life than has been known for some time. Rural electrification, college extension workers, the farm bureau have taught and are teaching the farmer many valuable steps toward a better life. Indeed—the farmer is once again finding his pleasures in his home and among his neighbors instead of in frequent trips to town. A rural "community" life is rapidly on its way.

MUST BE A "GOOD SCOUT"

Because of this trend I would want my wife to be generous and hospitable in our contacts with our neighbors, I would want her to be able to discuss intelligently current affairs and the economic conditions affecting the farmer. And I hope she possesses a fair knowledge of the fundamentals of nature, the arts and the sciences. She would have to be economical and sensible with the cooking, clothing and children, but I ask not that she have an A average in the subjects. She must be content to take the hard blows and the bitter disappointments as well as the bounteous crops and joys of freedom. And, of course, I hope she knows a harrow from a plow.

Given such a girl as is described above I am quite sure I can give you the address of two happy people.



THE FORT WORTH JUNIOR LIVESTOCK JUDGING TEAM

Front row: Wilbert Duitsman, William Ljungdahl, Evans Banbury. Back row: F. W. Bell, coach; George Kleier, Louis Cooper. (Verne Martin not present.)

Stock Judgers Tenth at Fort Worth Show

Kansas State's junior livestock judging team placed tenth in a field of 14 teams competing at the annual contest held in connection with the Fat Stock Show and Exposition at Fort Worth on March 11.

Evans Banbury, Pratt; William Ljungdahl, Menlo; Wilbert Duitsman, Washington; George Kleier, Oxford; Vern Martin, Bucklin; and Louis Cooper, Peabody, were members of the team. Banbury was second high individual in the judging of hogs and the team was ranked third in judging sheep.

The contest was won by the University of Missouri team with a total of 4,364 points. Texas A. and M. was second with 4,313. Oklahoma A. and M. ranked third with 4,295 points, Nebraska was fourth with 4,284 points and Wisconsin was fifth with 4,280 points.

Kansas State's team made the trip to Fort Worth by automobile, stopping at Wichita for a practice session at the Team Mule Company's barns. Charles Team, owner of the mule company and a former member of a Kansas State livestock judging team, entertained the members of the team.

The judging contest was well managed

and the Texans were genial hosts not only at the contest but also at a banquet where the results of the contest were announced.

On the return to Manhattan, the team stopped at the former Hazlett ranch, "Hazford Place," near El Dorado. Will Condell, former farm manager at Hazford Place, now is operating the ranch. He is starting to build another good herd on this ranch and has made a very fine start.

—Louis Cooper.

John Dean New A. Z. Head

John Dean was elected chancellor of the local chapter of Alpha Zeta at the fraternity's annual election held April 3.

Other officers elected to serve for the 1939-'40 school year are: Wilbert Duitsman, scribe; Kenneth Porter, censor; Ray Cudney, treasurer; John McCoy, chronicler; and Wallace Kirkbride, sergeant-at-arms.

Says a vice-president of one of the large banks of the nation: "One of the biggest problems to be faced by college graduates in entering the banking field is the reconciliation in his own mind to the very small amount of importance which will be attached to the fact he is a college graduate."



Willard Hall To Be "Heaven" for Chemists

By JACK BOZARTH

SINCE August, 1934, when Denison hall burned to the ground amid a spectacular display of pyrotechnics, the departments of chemistry and physics have been inadequately housed in Waters hall and two small, outmoded annexes. However, the departments will soon be located in a new modern building now being completed.

Located just north of the library, the new physical science building, Willard hall, faces west toward the quadrangle formed by the library, Veterinary hall and Waters hall. It is 304 feet long, 91½ feet wide at its greatest depth and consists of a full basement, three full stories and an attic. The central tower has a fourth floor which will be occupied by a federal meteorology laboratory. Built of reinforced concrete and native limestone, it is of an architectural type designed to harmonize with the library and the type selected for all future buildings on the campus.

HONORS DR. J. T. WILLARD

Willard hall is named in honor of Dr. Julius T. Willard, who has been associated with Kansas State continuously since he enrolled as a student in 1879. He served as professor of chemistry, 1901-1918; as dean of the division of general science, 1909-1930; and as vice president of the college,

1918-1935. Doctor Willard resigned as vice president, December 31, 1935, to devote his entire time to writing a history of the college.

The new building will provide ample room for the chemistry and physics departments, and offices and laboratories for the agricultural experiment station and the state board of agriculture.

The two buildings now occupied by the chemistry department will be remodeled. Annex I will be made into offices for the department of mathematics and general class rooms, while the other will be used by the chemical engineers.

EQUIPMENT FOR ADVANCED COURSES

In general, the north one-third of the building will be devoted to the physics department and the south two-thirds to the chemistry department. The physics department will have adequate equipment to offer all standard undergraduate and graduate courses and to carry on a half-dozen or more research projects. These will include spectroscopy, determination of elastic electron scattering, photoelectric and thermionic properties of metals and light and heat studies. The department has had no electrical equipment since the old building burned but will now have an extensive system.

(Please turn to page 122)



Steel Spindles Take Place of Numb Fingers

By C. W. MULLEN

IT was at the end of a long cotton row one hot afternoon in July when I was 20 years old that I reached a definite decision to quit the cotton field for a college campus.

Kansas born, and mostly Kansas raised, yet I have helped grow and pick too much cotton. For eight years I lived on a farm in southern Oklahoma on which cotton was raised. Those were my 'teen years, years when permanent impressions are made.

By late September, cotton may be ready to pick the first time, depending on the season. If it has been dry, cotton matures earlier.

Unfortunately, cotton bolls do not all mature at the same time. Usually it is necessary to pick cotton from three to four times. Frequently the last picking is done in January. Pickers may be picking in one part of the field while the plow is turning the soil on another part of the farm in preparation for next year's crop. That is



Cotton production is packed with hard work, drudgery. The young cotton plant is delicate. Weeds and young cotton plants are identical in size and rate of growth. Weeds can't be covered with soil as in the cultivation of corn because the cotton plants would also be covered. That's one of the reasons cotton, dethroned king of the South, requires so much hand labor. First, it has to be "chopped," that is, thinned to a stand, then hoed two or three times to destroy weeds in the row. When finally thinned to a stand, the remaining plants are 8 to 12 inches apart in the row, much wider spaced in the western, drier parts of Oklahoma and Texas.

the reason it is said that raising a cotton crop requires 13 months.

Picking cotton is a slow, tedious, laborious, back-breaking, knee-bruising, finger-gouging job. Cotton lint grows in a boll about the size of a walnut with the husk on. Cotton lint is attached to the seed in the boll. At maturity the boll pops open laying bare four or five, sometimes six, locks of cotton, each of which has developed in a partitioned section within the boll. The boll is not round. It is slightly elliptical. It breaks open in equal sections, splitting from tip to base. The outer end of each section is sharp and hard.

(Please turn to page 123)



The Farmers' Public Enemy No. 1

By HAROLD E. JONES

This innocent-appearing flowering plant is robbing Kansas farmers of millions of dollars in reduced crop yields. The farmers have declared war on bindweed and are determined to eradicate this noxious weed.

NO person upon whose head has been placed the doubtful honor of being identified as "Public Enemy No. 1" has lived long to enjoy that distinction. Public sentiment has demanded that justice catch up with him.

The same holds true for other "public enemies." The farmers of Kansas are demanding justice for agriculture's "Public Enemy No. 1," in this state—field bindweed. This destroyer of fertile farm lands is robbing Kansas farmers of millions of dollars every year.

This pest has continued relatively unmolested, until it has spread over 300,000 to 400,000 acres of Kansas land, choking growth, making harvesting difficult, and greatly reducing crop yields. Carefully prepared estimates from 86 farms in Kansas show that bindweed robbed the owners of about 6.5 bushels of wheat per acre for every acre of wheat harvested from infested areas last year.

BINDWEED SPREADS RAPIDLY

If some individual were to fleece the people of Kansas out of a million dollars, there would be a great hue and cry set up, demanding his capture and imprisonment. Bindweed has taken more than that sum from Kansas farmers annually during the last few years. The vine normally doubles

its acreage in five years. Bindweed can be distinguished by its small white or pink, bell-shaped flowers, and somewhat arrow-shaped leaves.

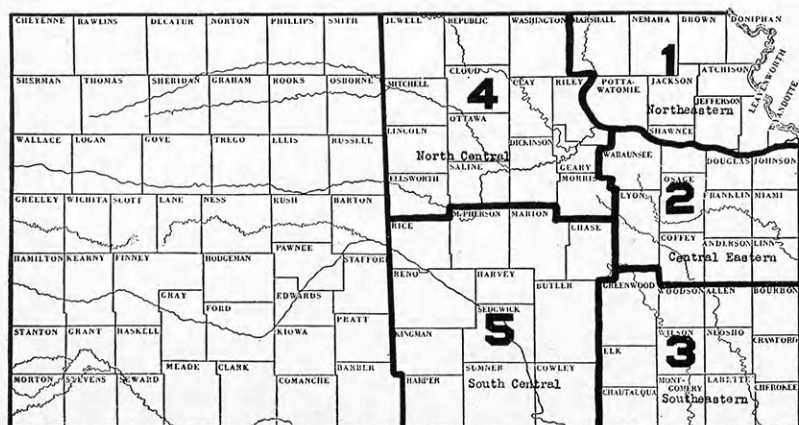
No public enemy has been pursued with more determination than has bindweed since the enactment of the noxious weed law of 1937. Field bindweed has become the most publicized weed pest that Kansas has ever known.

Under authority granted in the bindweed law, T. F. Yost, state weed supervisor, has assisted in setting up educational programs, in working out financial budgets, and in conducting public meetings and demonstrations in all parts of the state. Many counties own equipment which is used for demonstrating both methods of cultivation and chemical methods of control. Pratt county, for example, purchased an implement for destroying bindweed which was used to cultivate 150 acres last year. Brown county has a fleet of machines for spreading dry sodium chlorate upon infested areas.

CULTIVATION PAYS DIVIDENDS

There are many examples of surprising success in the control of bindweed. In 1934, W. A. Budde, of Rush county, purchased 80 acres of land that was two-thirds covered with bindweed. He learned that

(Please turn to page 111)



Districts of the 1939 Corn Performance Tests.

Field Tests for Hybrid Corn

By EARL J. COOK

THERE has been a rapid increase in the use of hybrid corn in Kansas during the last two years. This has been due in a large part to increased sales efforts of large hybrid seed corn producing companies of the middle corn belt states. The farmers of Kansas are naturally greatly interested since in Iowa, Illinois, Indiana and other corn belt states certain hybrids have yielded 15 to 20 percent more than the best open-pollinated varieties.

Not all hybrids are superior to the open-pollinated varieties commonly grown. In fact, some of them are decidedly inferior. There are now hundreds of hybrids in existence. Only by testing them for several years in comparison with common open-pollinated varieties under field conditions can the superiority of certain hybrids be learned.

U. S. D. A. COOPERATING IN PROGRAM

The Kansas corn performance tests were organized this spring in order to test more thoroughly the hybrids now offered for sale in Kansas and experimental hybrids which may be offered for sale in the near future. These will be conducted by the department of agronomy of Kansas State College, in cooperation with the division of cereal crops and diseases, bureau of plant industry, United States department of agriculture, and farmers. The committee in charge of these tests is A. L. Clapp, chairman, R. I. Throckmorton, H. H. Laude, H. D. Hollembeak and R. W. Jugenheimer. These

tests will be similar to the corn performance tests in Illinois, Iowa, Nebraska and Indiana.

The eastern half of Kansas has been divided into five districts. Two tests will be located in each district. Tests will be located in the following counties: Brown, Atchison, Jefferson, Franklin, Cherokee, Wilson, Sumner, Harvey, Ottawa and Cloud.

145 SAMPLES IN TEST

The tests will include hybrids from state experiment stations and from commercial hybrid seed corn producers. A total of about 145 varieties and hybrids will be in-

(Please turn to page 125)

To Continue Studies

Several senior ag students will continue their studies at other colleges next fall. Among those who have obtained scholarships, fellowships or graduate assistantships are:

Leonard W. Schruben, University of Illinois, department of agricultural economics, under Dr. H. C. M. Case.

Herman Reitz, Ohio State, department of horticulture, under Dr. J. H. Gourley.

Phil Allen, Montana State, agricultural economics, under Dr. R. R. Renne.

Kenyon Payne, University of Nebraska, agronomy department, under Karl Quisenberry.

Clyde Mueller, Cornell, poultry husbandry, under Dr. F. B. Hutt.

Perrin K. Symns—Master Farmer

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The division of agriculture lost one of its most outstanding graduates and friends with the death of Perrin Kent Symns, sr., on March 15. Mr. Symns, with his brother, operated 2,014 acres of land in Atchison and Doniphan counties.

Shortly after his graduation from Kansas State College in 1901, Mr. Symns formed a partnership with his two brothers and cattle-raising was their principal line of business. They were highly successful in raising quality stock and their show stock won the highest awards at the principal livestock shows in the Midwest. Cattlemen have long recognized the superior quality of Symns Brothers Shorthorns.

Mr. Symns was named a Master Farmer during the Farm and Home Week of 1932, and thus was a tribute paid to his ability as a farmer and stockman, as a gentleman and a citizen.

Perrin Kent Symns, sr., was a man of industry. He was a man who derived great joy and satisfaction out of his work and the condition and appearance of his livestock, his land and other possessions attested to his thoroughness.

Mr. Symns' oldest son, Perrin Kent, jr., is a sophomore in the division of agriculture. There is another son, John William,

who is a senior in the Atchison high school. These two boys, in all probability, will carry on the traditions of the Symns family and maintain the integrity of the Symns name.



P. K. Symns, '01

Eighteen years ago when the founding of an agricultural students' magazine was being considered in the division of agriculture, the first word of encouragement to come from an alumnus came from P. K. Symns, '01. Mr. Symns wrote that he hoped the proposed magazine would become a reality and that if it did he wished to be the first alumnus to subscribe. The Kansas Agricultural Student came into being during the college year 1921-22 and Mr. Symns promptly became a subscriber.

Of land-loving Virginian ancestry, Mr. Symns exemplified all that is best in American agriculture. To him farming was pre-eminently a mode of life. He loved the land and grass and trees and cattle and the beauties and comforts of a fine country home. Although his operations were on a large scale, he always placed major emphasis upon quality rather than quantity. Inevitably with his background and his philosophy he was a kindly gentleman, an admirable husband and father and an excellent citizen—a Master Farmer.

To have known P. K. Symns is a great privilege. His death is a great misfortune.

—F. D. Farrell.

Perrin Kent Symns was born and lived his very useful and full life on the "old Symns place" between Troy and Atchison. He was born on March 29, 1876. His father, William Perrin Symns, was a member of one of the prominent families of Virginia and he came to Kansas in 1866 after the close of the Civil war. Before entering farming, the elder Mr. Symns was engaged for a time in the mercantile business with his brother George at Wathena, and with another brother, A. B. Symns, at Doniphan.

Mr. Symns' marriage was the culmination of a romance that had its beginning on the Kansas State College campus. Miss Helena Pincomb of Overland Park was a classmate, and their college romance lived through the years between their graduation in 1901 and their marriage on December 31, 1914.

Mr. Symns was a member of the Masonic lodge, and of the Abdallah Shrine in Leavenworth. He was one of the leaders of the Doniphan county farm bureau organization.

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KANSAS STATE COLLEGE OF AGRICULTURE
AND APPLIED SCIENCE

MANHATTAN, KANSAS

VOL. XVIII

MAY, 1939

No. 4

Published quarterly during the school year by the Agricultural Association of Kansas State College of Agriculture and Applied Science. Subscription rate: One year, 75 cents; four years, in advance, \$2.00; single copies 25 cents. Advertising rates sent on application. Address all communications to The Kansas Agricultural Student, Manhattan, Kansas.

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Livestock Our Major Industry

By Jesse W. Greenleaf

Past Pres. Kans. Livestock Assn.

Kansas easily leads all the states of the Union in the production of wheat. Only three states have a larger known supply of oil, yet the revenue received from livestock in Kansas exceeds the combined return from the sale of wheat and oil. There is livestock on 160,000 farms in Kansas. The climate and soil of Kansas are favorable to the production of livestock; one-third of the area of Kansas is still in native grasses which can be harvested profitably only through livestock. The soil and climate are adapted to the production of grain sorghums, which must be marketed almost entirely through livestock.

Livestock farming tends to maintain soil fertility, furnishes year-round employment, and tends to distribute the income throughout the year better than grain farming. Livestock helps to center the interest of the children and young people on the farm. Everything that can be done, should be done to encourage the production of livestock on our farms.

The college, through its research departments and experiment stations, is con-

tributing a most valuable service to the livestock interests of Kansas. Every facility which will assist the college in performing this valuable service more effectively should receive serious and favorable consideration.

One of the most pressing needs at this time is a livestock pavilion, where the fine herds and flocks of livestock produced, developed, and owned at the college can be adequately exhibited to the students, their parents, and the many people who visit the campus. The Little American Royal is a most interesting and instructive exhibition. It is the most entertaining show I visit each year. It is too bad that because of lack of space so many persons are deprived of the privilege of witnessing this fine show.

Hundreds of people from all parts of the state, in Manhattan for Farm and Home Week, would appreciate seeing the 130 fine animals which have been painstakingly fitted and then exhibited by 130 ambitious Kansas boys interested in animal husbandry. Thousands of farmers and their families within easy driving distance would be happy to attend this unique exhibition of fine livestock.

Another and even greater need for a new livestock judging pavilion lies in the fact that the present small pavilion is not large

BINDWEED ERADICATION

enough to handle satisfactorily the students now enrolled in judging and other classes that should be held in a judging pavilion. A pavilion could be used in a most profitable manner also on Feeders' Day, Better Livestock Day, and upon many other occasions.

The valuable knowledge acquired at the college through feeding experiments should be disseminated throughout the state. An adequate livestock pavilion should pay good returns to Kansas on the money invested therein by stimulating interest in better livestock and more efficient methods of livestock production and feeding.

New Officers Named

William Ljungdahl was elected president of the Kansas State College Agricultural Association at this month's seminar, and George Kleier was chosen vice president. For the first time in the school's history, a woman student was named editor of the Ag Student, divisional publication, when Marjorie Higgins was elected to that office.

Other new officers are: Don Crumbaker, secretary; Roland Kruse, treasurer; Francis Friedli, manager of Ag Barnwarmer; Robert Swartz, assistant manager of Ag Barnwarmer.

Chase County High Wins

Chase County Community high school was winner of a parchment certificate as a result of winning high honors in the nineteenth annual vocational ag contest here this week. More than 800 Kansas high school students and their instructors participated in the meetings, contests and displays of the agricultural and farm mechanics departments.

Honorary state farmer degrees went to Prof. F. W. Bell, Dr. C. V. Williams, and T. O. McClung, Manhattan insurance man.

Word comes to the office of the dean that Gilbert C. Moore, '33, has accepted a position with the Fairmont Creamery Company. He is located at York, Nebr.

BINDWEED ERADICATION

(Continued from page 107)

frequent cultivation with a duckfoot would kill the weed. He invested \$110 in this type of machine and began cultivation April 1, 1935, cultivating the 80-acre field each week.

After three months, the bindweed was still growing fine, Mr. Budde said, and he was beginning to get discouraged. He persevered, however, and soon after the three-month period, the bindweed showed signs of weakening. Weekly cultivations were continued until late fall. Mr. Budde went over the field 26 times—or cultivated an area equal to $3\frac{1}{4}$ sections. Where the bindweed was thickest, it was necessary to disk before the duckfoot could work without clogging.

ERADICATED IN TWO SEASONS

Only six cultivations were necessary the next season and a light application of sodium chlorate to the few remaining plants was necessary to complete the eradication. Mr. Budde could have saved much expense had he known that cultivations every two weeks were just as effective as cultivating weekly.

An interesting fact in connection with this case is that the fuel costs were only \$6.

The crop of wheat harvested in 1937 produced 35 bushels per acre. Ordinary summer-fallowed wheat land yielded only 20 bushels per acre. Thus Mr. Budde's total increase in yield was 1,200 bushels, which more than repaid labor and fuel costs for the intensive cultivation. Other farmers have reported the same success in cultivating to eradicate bindweed.

Block and Bridle Elects

Marcel McVay was named president of Block and Bridle club for next year at an election held recently. Other officers who will serve with McVay are William Ljungdahl, vice president; Elwood King, secretary; Eugene Watson, treasurer; Louis Cooper, marshal; Robert Marx, reporter.

Federal Crop Reports Shrouded in Secrecy

By R. G. RAINES

GOVERNMENT crop reports, to many persons, are mysterious things. Comparatively few persons have any idea of the vast amount of work involved in making a crop report covering about 75 crops and practically all classes of livestock.

The work of the division of crop and livestock estimates is so systematized and arranged that no person has any means of knowing what the official federal estimates for any crop will be until the final computations are made and approved behind guarded doors a short time before the report is released for publication in the newspapers and over the radio.

BOARD ESTABLISHED 34 YEARS AGO

The crop reporting board, established by the secretary of agriculture in 1905, is responsible for the preparation of the monthly crop reports of the department. The technical staff of the division of crop and livestock estimates in Washington are permanent members, and two or more agricultural statisticians from the field offices of the division are designated as temporary members for each report.

There is a special cotton reporting board which prepares the estimates for the cotton reports each month. The number of active members serving on the general crop reporting board may be increased, but two or more members must be from the branch offices in cotton states. During the year statisticians from practically every state are called in to act as members of the board.

The crop reporting board has the written comments of the agricultural statisticians, explaining what has happened during the previous month in each state and region regarding weather, soil condition, progress of cultivation, amount of fertilizer used, presence or absence of insect pests and plant diseases, appearance and apparent condition of the crop, acreages and predicted yield.

In arriving at a forecast of the yield per acre for a given crop in a particular state, an allowance must be made for trends in yields, the presence of plant diseases or insect infestation, the earliness or lateness of the season and whether it has been a dry or wet season.

ACREAGE ESTIMATES SEMI-ANNUALLY

Estimates of acreages are made in July and again in December by state statisticians. The estimates are then sent to Washington by other members of the board, and finally on crop reporting day these estimates are combined with the indications of yield per acre to form the estimates of crop production.

When figures for a crop have been determined for a state by the board, the necessary computations are made by expert statistical clerks to ascertain the probable total production for each state.

SECRECY IN COMPILING FORECASTS

Many of the crop reports are forecasts of production and future supply. If these reliable forecasts should come into the possession of individuals in advance of their "release date," this knowledge could be used unfairly for speculative purposes. The government takes every precaution in assembling the forecasts to guard against possible "leaks"—and possible disruption of the cotton and grain markets.

The field reports are sent directly to a vault at the office of the secretary of agriculture upon receipt in Washington. The envelopes are deposited in a special mailbox having two locks. The key to one of the locks is in possession of the secretary of agriculture and the other key is in custody of the crop reporting board.

On the morning of the day the report is to be released, the chairman of the board, with one or two members, goes to the office of the secretary of agriculture, frequently

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THE DENVER JUNIOR LIVESTOCK JUDGING TEAM

Front row: Dale Mustoe, Ralph Gross, Dale Engler, Marcel McVay. Back row: F. W. Bell, coach; John Blythe, Elwood King.

National Western Livestock Show and Contest

The Kansas State junior livestock judging team selected from the class in Advanced Livestock Judging ranked sixth, competing with ten teams at the National Western Livestock show, Denver, Colo., January 28 to February 4, 1939. The team placed second in sheep and seventh in cattle, hogs and horses.

Scores of the teams entered were as follows:

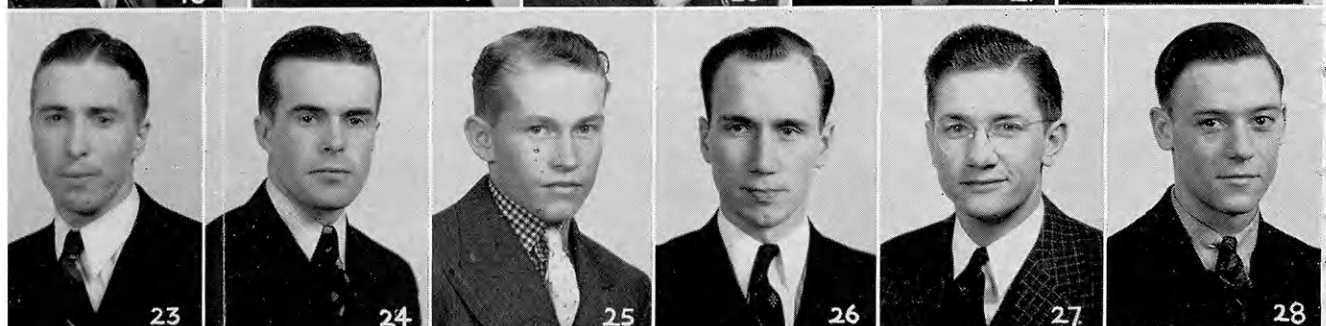
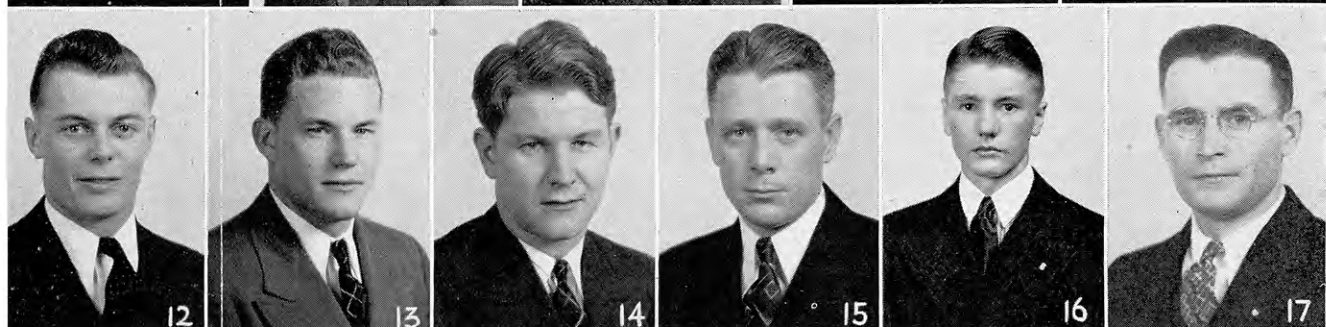
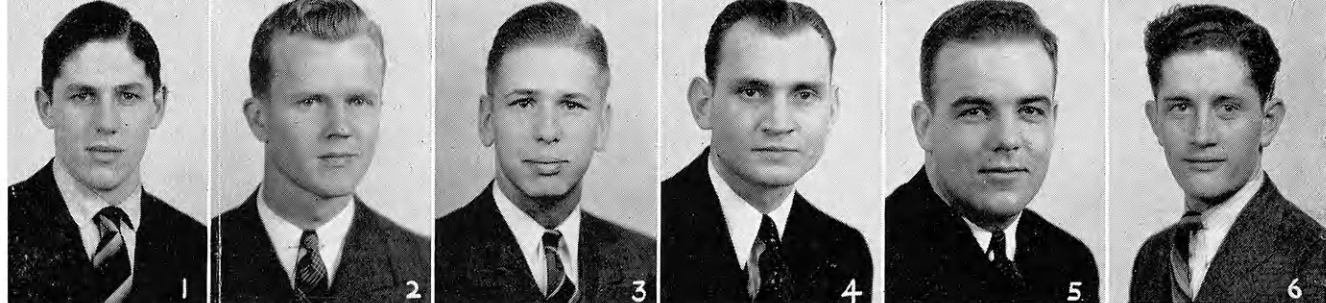
1. Colorado	3,266
2. South Dakota	3,241
3. Oklahoma	3,213
4. Texas Tech.	3,188
5. Wyoming	3,138
6. Kansas State	3,124
7. Panhandle A. and M.	3,109
8. North Dakota	3,107
9. Utah	3,061
10. New Mexico	3,035

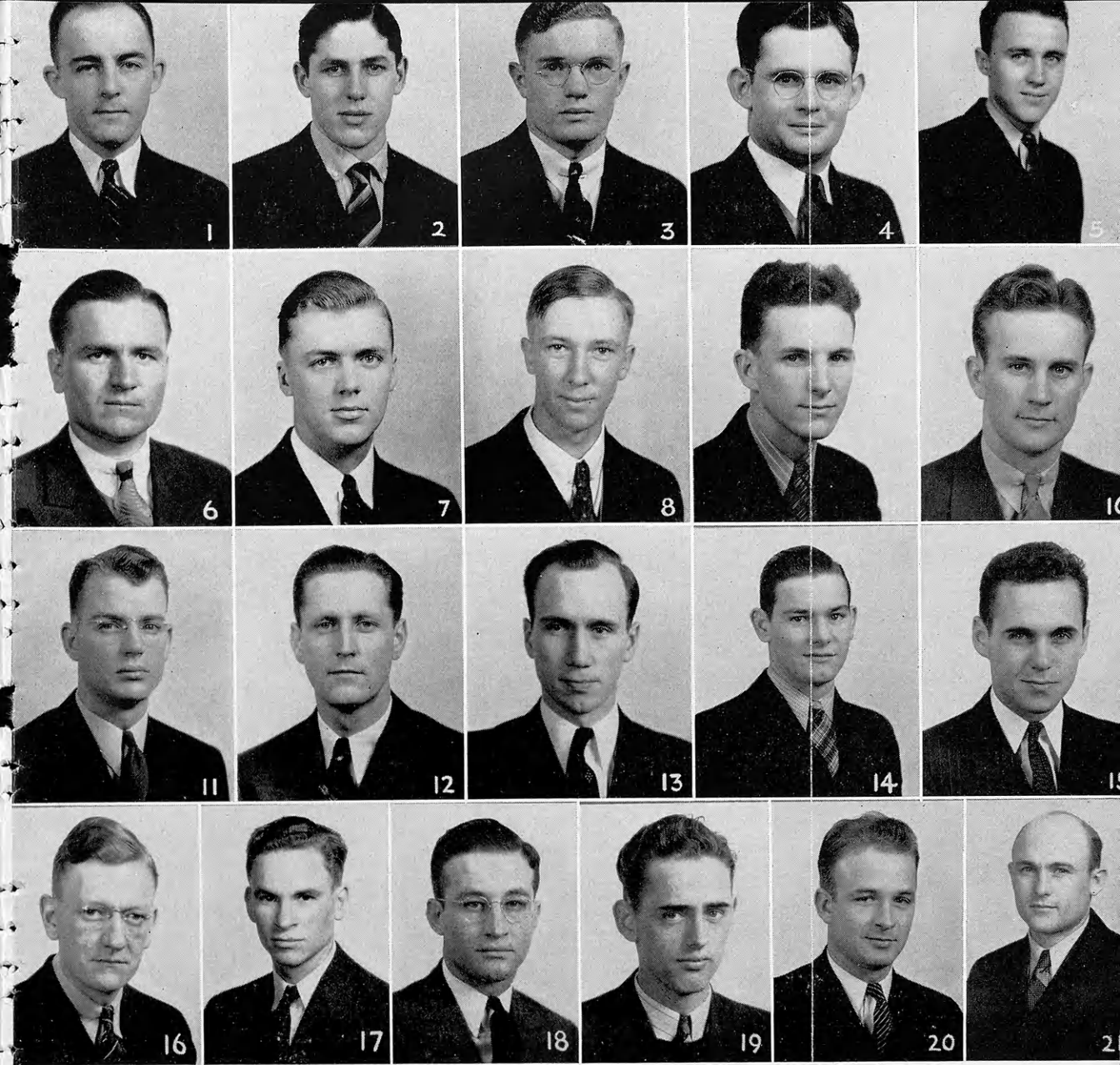
The students who represented Kansas State were: F. Dale Engler, Topeka; John K. Blythe, White City; Elwood King, Potwin; Marcel McVay, Sterling; Dale Mustoe, Rexford; and Ralph Gross, Oakley, as the alternate. They were accompanied by Prof. F. W. Bell, coach. All the students are juniors and were selected in line with the policy established four years ago, whereby one team goes to the National Western Livestock show at Denver and a

different team goes to the Southwestern Exposition and Fat Stock show at Fort Worth, thus providing an opportunity for a large number of students to benefit from trips to leading livestock shows and markets.

An outstanding feature of the National Western Livestock show is the exhibit of breeding bulls in carload lots. Nowhere else is there such a show of purebred bulls equal to the exhibits at Denver. Most of these bulls go to the large ranches throughout the range cattle production states, so this is an unusual opportunity for the students to study improved livestock and at the same time become acquainted with many of the leading livestock producers of the United States.

All the college teams were guests of the Denver Livestock exchange at a banquet Sunday night. Monday night the Kansas State students were guests at the annual banquet of Kansas State alumni who live in Colorado. In order to bring the latest news of the college to the alumni each member of the team was assigned a topic about which he made a short talk at the meeting. Following the program a very pleasant social hour gave the students an opportunity to become better acquainted with all the alumni present.—*Dale Mustoe.*





Alpha Zeta

1. Philip T. Allen
2. Hilding A. Anderson
3. Richard E. Atkins
4. Evans E. Banbury
5. William M. Beezley
6. A. Wade Brant
7. Richard M. Bullock
8. Glenn M. Busset
9. Louis W. Cooper
10. Ray E. Cudney
11. Max L. Dawdy
12. Wilbert W. Duitsman
13. H. Eugene Fair
14. Willis B. Faulkender
15. Donald E. Hall
16. John N. Haymaker
17. Leo M. Hoover

18. Clifton E. Jackson
19. J. Wallace Kirkbride
20. Wayne Klamme
21. Roland A. Kruse
22. Robert B. Lank
23. Donald I. McCoy
24. John H. McCoy
25. Marcel D. McVay
26. H. Earl Molzen
27. E. Dale Mustoe
28. James R. Peddicord
29. Joe E. Robertson
30. Henry Schweiter
31. James Thomas
32. Robert B. Wells
33. Glenn A. West

Gamma Sigma Delta

1. George W. Aicher
2. Philip T. Allen
3. Dewey Axtell
4. Ellwood T. Baker
5. Raymond E. Bert
6. Earl J. Cook
7. John V. Hansen
8. John Harris, Jr.
9. Meade C. Harris
10. Kenneth E. Kruse
11. Arthur F. Leonhard

12. Earl E. Miller
13. H. Earl Molzen
14. Clyde D. Mueller
15. Kenyon T. Payne
16. Morris W. Phillips
17. Herman J. Reitz
18. Henry Schweiter
19. John A. Shetlar
20. Leonard W. Schruben
21. Loyd E. Wildman



Phi Kappa Phi

- | | |
|------------------------|---------------------------|
| 1. George W. Aicher | 9. Arthur F. Leonhard |
| 2. Philip T. Allen | 10. Charles W. Lobenstein |
| 3. Hilding A. Anderson | 11. Earl E. Miller |
| 4. Ellwood T. Baker | 12. H. Earl Molzen |
| 5. Earl J. Cook | 13. Clyde D. Mueller |
| 6. John Harris, Jr. | 14. Kenyon T. Payne |
| 7. Meade C. Harris | 15. Herman J. Reitz |
| 8. Kenneth E. Kruse | 16. Henry Schweiter |

Ags Tops in Scholarship

Agricultural student organizations walked away with the lion's share of scholarship honors for the first semester of this school year, a report from the registrar's office shows.

Alpha Zeta led the men's honorary organizations with a point average of 2.01; Klod and Kernel Klub headed the professional organizations with an average of 1.76; and in men's social organizations the two agricultural fraternities, Farm House and Alpha Gamma Rho, ranked first and second, respectively.

FEDERAL CROP REPORTS

(Continued from page 112)

as early as 4 or 5 o'clock in the morning. Here they are given the reports received from the field offices. They retire to the rooms of the board to study and analyze the reports from various states. A complete section of the building is cut off from communication while the board is in session. The windows even have opaque glass in them to prevent any signals from being transmitted. No person is allowed to leave this section of the building until the reports are released to the newspapers.

A RUSH FOR THE NEWS

About one minute before 3 o'clock in the afternoon (the standard time for release), copies of the report are placed, face down, near telegraph instruments maintained by the press associations, grain brokers and others. At a given signal, the reporters rush to their instruments and flash the news contained in the reports to their newspapers.

"You'll Be Shocked," the Wise Cow Said

By LESTER HOFFMAN



THE familiar four-wire barbed wire fence gradually is being replaced by electric fences with the advent of rural electrification and home electric plants. It is estimated there are 150,000 commercial electric fence units in operation today in the United States.

The electric fence, as ordinarily used, consists of a single or double barbed wire supported by posts or stakes spaced about 50 feet apart. The wire is fastened to the posts by means of insulators.

A controller is usually located at the barn. One side of the controller is connected to the fence; the other side is connected to a metal rod driven into the ground. If an animal touches the charged wire, the voltage sends a tiny charge through the body of the animal to the ground.

Three types of electric fences are offered by manufacturers. They are the six-volt, the 32-volt, and a third unit which operates on 110 volts, alternating current. The six-volt and the 32-volt fence units are similar; both operate from direct current. Parts of a direct current fence unit are the coil, circuit interrupter, and condenser. The coil steps up the voltage from six to approximately 10,000 volts. The circuit interrupter prevents continuous flow of the voltage on the wire. This prevents paralysis or "freezing" of the animal to the fence. The condenser reduces radio interference from the unit.

Parts of the alternating current fence unit are fuses, a series lamp in the fence circuit, circuit interrupter, pilot lamp, and condenser. The current is limited by the fuses to one ampere. The series lamp limits the fence current from 20 to 80 milliamperes. The circuit interrupter performs the same function in the alternating current unit that it does in the direct current unit. The pilot lamp indicates whether or

not the interrupter is working properly. The condenser reduces radio interference. Some manufacturers offer units having a variable voltage control. This permits regulation of the voltage for wet or dry periods. Effectiveness during a dry period is improved by increasing the voltage on the lines.

"HOME-MADE" FENCES ARE DANGEROUS

There are no records of fatalities caused by commercially built electric fence units. Fatalities caused by electric fences are from units constructed by someone not familiar with electricity.

A milliampere is a charge so tiny that it can barely be detected by an average man. One milliampere is one-thousandth of one ampere. About 500 milliamperes are required to light a 50-watt bulb on a circuit of 110 volts. A continuous current of 100 volts at 60 milliamperes will kill a cow, horse, or hog.

Research workers have found that the physiological effects of an electric shock are related to the amount of current, rather than to the voltage. Death from electric shock is most likely caused by a change from the regular beating of the heart to a quivering action, in which the pumping of the heart stops.

Some of the advantages of the electric fence are: Low cost of installation, low cost of operation and upkeep, ease with which temporary fences may be erected, elimination of weekly repair to bull-pen fences, and keeping hogs from rooting under wire fences.

ECONOMICAL TO OPERATE

The cost of operating an electric fence on 110 volts alternating current is 5 to 10 cents per month. For a unit operating from a battery, the cost is represented by the expense of charging the battery every three or four months. Cost of the fence units is from \$8 to \$35.

(Please turn to page 118)

¹ In collaboration with June Roberts, A. E. '33, instructor in agricultural engineering, Kansas State College.

Preparing Prize-Winning Wethers

By FRANK W. FARLEY, JR.

THIS is about the time of year when the sheep breeders should be picking their show wethers for next fall's stock shows from among the spring lamb crop. Selection of the better individuals is, of course, the first essential in fitting any animals for exhibition.

High quality lambs that will respond to fitting and develop into smooth, thick-fleshed wethers should be chosen. The important points to keep in mind when selecting lambs are type, conformation, style, and quality. Another point to keep in mind



when selecting lambs is to take advantage of all the age possible. If the finished wether is to be shown in October, a lamb that was born in February would be best, allowing about eight months for preparation.

After the lambs are selected, care should be taken with feeding and management during the growing period. The lamb should be allowed to nurse his mother until he is 4 months old, then put on a full grain ration. A creep should be used and the lambs should be fed a mixture of bran and oats.

The lambs should be sheared bare after weaning in order to keep them cool. Allow them to run out at night, keeping them in the barn in the daytime. It is best to avoid straw bedding in hot weather. A dry, clean dirt floor will keep the lambs much cooler. The best ration during the summer months is a mixture of corn, oats, and bran, avoiding large amounts of concentrates on extremely hot days.

Toward the finishing period, the bran can be cut down and the corn increased. A ration of one-third corn, two-thirds oats, and all the alfalfa hay they will clean up is a good ration.

If barley can be obtained, it should replace corn in the ration. Barley is almost as nutritive as corn and it is a much cooler

(Please turn to page 119)

ELECTRIC FENCES

(Continued from page 117)

Before turning livestock into a field under electric fence it is very important that they be trained to keep away from the fence. This may be done by putting a charged wire across one corner of a lot and placing some feed in the corner. The livestock attempt to reach the feed and receive a shock when they touch the fence. After a few shocks they avoid the fence. Sheep should be trained in the spring after shearing, as a heavy coat of wool is a good insulator. Time required to train livestock varies from one-half hour to one-half day.

An electric fence has been in use at the college dairy farm for $3\frac{1}{2}$ years. Approximately $3\frac{1}{2}$ miles of fence are in use. The fence includes the calf pens, bull pens, and pastures. It has proved satisfactory.

Before installing the electric fence in the bull pens it was necessary for one man to spend one-half day every two weeks repairing the bull-pen fences. Since installing the electric fence very little repair has been necessary.

CLEVELAND TO BE A MECCA FOR POULTRYMEN THIS SUMMER

Kansas to Participate in World Poultry Congress

This year, for the first time, the World Poultry congress is to be held in the United States. The congress is a triennial affair and the seventh meeting since 1921 will be held in Cleveland, Ohio, July 28 to August 7.

Kansas participation in the congress was assured with the appropriation by the last state legislature of \$7,500 to be used in assembling an exhibit for the congress. The state appropriation will supplement the funds raised by the state poultry organizations and through the sale of membership certificates.

In recognition of the scope and value of research at Kansas State on the physiology of egg formation, this phase of poultry science has been chosen as the central motif of the Kansas exhibit booth. The actual and complete process of the formation of an egg will be illustrated with technicolor motion pictures. The film was completed on our own campus.

Other divisions of the Kansas booth will be devoted to the production phase, the consumers' phase and the industries' phase.

Decorations for the Kansas booth will be unique in that they will consist of drapes of Kansas hard red winter wheat, the principal agricultural product of the state. These strings of wheat kernels, threaded side to side, are due to the willing cooperation of hundreds of 4-H clubs over the state. Each club in the state was sent about 2,300 kernels of wheat and 20 feet of thread and asked to hold some sort of a get-together to thread the wheat. As a result, more than 400 completed strings have been returned to the college, and more are received each day. Rawlins county was the first to send in the complete quota.

An illustrated souvenir booklet advertising Kansas is being prepared for distribution at the congress. The importance of the poultry industry to the state, the natural resources, the agricultural interests and the mineral wealth of the state will be depicted.

The romance and history of the state will also be presented in the booklet.

Kansas 4-H clubs will have an active part in the Youth program to be held in connection with the congress. The F. F. A. orchestra from Solomon will play at the congress. This is the orchestra that made such a hit at the last Ag Barnwarmer. It is directed by Paul Chilen, a Kansas State grad and vocational agriculture teacher at Solomon.

With Kansas taking such an active part in the congress, and since poultry-raising is one of the enterprises of nearly every Kansas farm, many Jayhawkers will be turning toward Cleveland for their vacation trips this summer in order to take in the greatest poultry exposition ever to be staged in the United States.

—Clyde D. Mueller.

PREPARING PRIZE-WINNING WETHERS

(Continued from page 118)

feed. About one-sixth of a pound of linseed cake may be added to the ration occasionally.

START FITTING IN SEPTEMBER

The lambs should be allowed plenty of natural exercise and if they put on fat too rapidly they can be driven for short distances for additional exercises to cut down their weight.

Trimming and blocking the lambs should be done early in September. Shear the backs down properly, cut out the excess wool at the chest, and square it up at the dock. There will not be an excess of wool on the lamb after shearing bare in June, but if he is of the proper conformation there will be enough wool to make him attractive without excessive blocking. The lambs should be trimmed again in about two weeks, with the last trimming being done about a week before the show. Keep blankets on them at all times after the second trimming.

"I love to lose myself in other men's minds."—Lamb.

Reducing the "Guess" in Farm Marketing

By JOHN MCCOY

HOW can a farmer know when to "hit" the market? That is probably the most uncertain and vexing problem that farmers have to face. Missing the peak of the market by a few days, a week or a month may wipe out much or even all of a farmer's profit on a feeding project or on a crop produced for cash.

The science of agricultural economics is charged with the responsibility of contributing helpful information to farmers and others that will guide them in marketing with profit. No person can predict the exact time to buy or sell. However, there are aids which, if properly and intelligently applied, can be used to profitable advantage.

"OUT ON A LIMB" EARLY

The division of extension at Kansas State College has been one of the pioneers in this field and today is one of the few agencies that make specific forecasts as to the probable price trend and extent of expected change. Various publications are issued as a means of supplying producers with this information.

The Kansas Agricultural Outlook, a yearly publication, covers all of the major commodities of the state. It is a long-range estimate of shifts in acreages of crops likely to be planted and livestock likely to be produced, or of the probable demand for these products, carryover from the previous year, and other factors that affect prices.

A monthly publication, The Kansas Agricultural Situation, is issued throughout the year. This publication is more specific as to probable trends and indicates the reasons why these trends are anticipated.

To supplement the monthly publication, the Farm Bureau Farm Management Association issues a pamphlet, The Weekly Trend of the Market, containing the short-time and immediate outlook. Each month this association also issues a paper, "Picking

Profitable Projects." It is prepared by the marketing staff of the department of economics and sociology and is designed to help select projects from the viewpoint of price and probable profit. Both of the association's publications are sent regularly to members, and copies may be had by others upon request.

The Farm Outlook, published annually, is available from the bureau of agricultural economics. It covers the entire field of agriculture. There is available also the Agricultural Situation for each commodity. This information is published monthly. These forecasts give a more general estimate for the country as a whole, and are not so specific as to the actual extent of the fluctuations in prices.

In addition to these publications, practically all radio stations in the agricultural sections broadcast the daily market quotations, amounts of livestock, grain, and other commodities received for the information of the farmers.

ACCURACY DEPENDS UPON COMMODITY

During the past few years, price forecasting has been in a rather precarious position and has received much criticism. However, it requires more than mere manipulation of statistics. While a considerable number of misses have been registered, records show that a well-trained economist can forecast with about 65 to 95 percent accuracy, depending upon the commodity involved. The extent to which one should follow outlook information is largely a matter of personal judgment.

Outlook information is issued for two primary purposes. First, to determine what to produce. Second, to determine how and when to dispose of the commodities. While each form requires a fairly definite organization to fit the particular situation, it may be made flexible enough to allow expansion or contraction of enterprises within reasonable limits.

Student Counseling¹

As Kansas State College does not go to the expense of maintaining a centralized all-institutional personnel office, the question whether the institution is discharging its obligation to provide adequate student counseling sometimes is raised. To find an up-to-date answer to the question, a survey of student-counseling activities was made in June, 1938.

Systematic student counseling is carried on vigorously in every department of the college that has direct contact with students. This counseling involves vocational information, job placement, personality problems, social conduct, student health, a wide range of emotional problems, student-instructor relationships, and questions involving personal aptitude and study techniques.

The office of each dean and of each head of department provides counseling with reference to vocational or professional opportunities, requirements and limitations and to job placement. Such counseling is particularly extensive in the technical divisions and departments and in the department of education. Every freshman student is given a series of aptitude and personality tests and the results are used extensively in student counseling by the deans of divisions.

Divisional and departmental seminars throughout the institution provide extensive student counseling with special reference to orientation and to vocational and professional information and guidance. A committee of seven deans functions as a coordinating agency for vocational guidance.

In addition to these and other somewhat formal counseling arrangements, every dean of division and every head of department has informal personal interviews with individual students either by the request of the student or on invitation of the dean or department head. Thousands of these informal interviews are held each year.

Extensive counseling is provided for every organized student group. Each all-

college group operates under the general supervision of the Faculty Council on Student Affairs. Divisional groups are supervised by the dean of the division concerned. Departmental groups are supervised by the head of the appropriate department. Every student organization, of whatever nature, must have a faculty sponsor. The dean of women, the adviser of men, the vice president, the college physician, the student pastors, the registrar and other officers provide much valuable counseling. Contacts between the supervisory agency, the sponsor or other counselor and the student group are frequent and helpful.

Thus, the individual student and the student organization have the benefit of all the counseling that appears in all but highly exceptional instances to be necessary and advisable. Essentially, the counseling is informal rather than definitely prescribed and formal. Within wide limits, the student himself determines how much counseling he shall receive. In general, this avoids the inefficiency of giving a student more counseling than he wishes or will use and it tends to keep the initiative with the student, where it belongs. Experience for many years of the present informal, decentralized system of student counseling, the wide extent of which was revealed by the recent survey, appears to justify its continuance. Quantitatively, the system seems to be reasonably adequate. There are opportunities for improvement in the quality of the service. This improvement is to receive special attention from now on.

Robertson Heads Y. M. C. A.

Joe Robertson, junior student in the department of milling industry, was elected president of the Y. M. C. A. recently. He has been a member of the organization for three years and has held the office of fraternity forum chairman. Robertson's home is in Brownstown, Ind.

Other students in the division of agriculture who are on the Y. M. C. A. board are Bill Beezley, Girard, and Don Crumbaker, Onaga.

1. An extract from President Farrell's biennial report of the Kansas State College of Agriculture, June, 1938.

PHYSICAL SCIENTISTS TO MOVE TO NEW HOME IN SUMMER

A CHEMIST'S "HEAVEN"

(Continued from page 105)

A large photographic laboratory with ten individual dark rooms will be located in the basement. An interesting feature is the sound-proof room located on the fourth floor. This room is completely shielded from all outside vibrations and will be used for sound studies. A liquid air machine will produce liquid air to be used in connection with research requiring a high vacuum technic. The temperature of this liquid air is approximately minus 300 degrees F.

A physics lecture room is located in the north end of the first floor. Special laboratories for household physics, astronomy, engineering physics, advanced electricity, general science physics and physics for music students and class rooms and reading rooms are located on the second and third floors.

Offices and laboratories for the experiment station and the state board of agriculture are located in the basement. There will be space and equipment for experimental work in soils, dairy chemistry, meats, nutrition, plants and crops, poultry and for nitrogen and protein studies.

INCREASE IN RESEARCH WORK

The chemistry department will cooperate with the experiment station and the board of agriculture in conducting fundamental research in the properties of soils and of plant and animal life. There is an excellent setup for advanced work in which certain specialized types of equipment are required. Special emphasis will be given to the possibility of industrial development in the state utilizing natural resources and the chemical utilization of farm products.

Research experiments are now being conducted on methods of removing the starch and oils from sorghum grains and utilizing them in the production of new products. An attempt is also being made to produce a liquid fuel oil from Kansas coal or to combine it with mineral oils to form a hydrocarbon motor fuel. With the in-

stallation of new equipment this research will be extended to include all natural resources and farm products of the state.

LABORATORIES ARE COMPLETELY EQUIPPED

Equipment throughout the building is the most modern type available. All laboratories are equipped with solid wood tables. The table tops and hoods are made of shelstone, an asbestos board impregnated with chemicals to render it acid and alkali proof. Tables in the advanced chemistry and research laboratories are all equipped with modern services including 110 and 220 volt alternating and direct current outlets, storage battery current, A. C. and D. C. variable voltage current, hot and cold water, distilled water, high, medium and low pressure steam, compressed air and vacuum. Tables in the analytical chemistry laboratories are also provided with hydrogen sulfide gas. Six large refrigerator rooms in the basement will make it possible to maintain constant temperatures ranging from minus 30 degrees C. to 30 degrees C.

The attic contains ventilating blower fans, storage tanks for distilled water and other common chemical and storage rooms. Special ventilating equipment will rid all laboratories and lecture rooms of disagreeable odors.

Although the new building will not be completed as soon as originally planned, it will be ready for occupancy soon after June 1. Some summer school classes and all regular classes next fall will be held in the building.

The Cover Picture

The cover picture is from a photograph by Harold M. Lambert, 1938 Ashley road, Philadelphia, Pa. Mr. Lambert is a commercial photographer and he graciously consented to allow the use, free of charge, of the copyrighted photograph as a cover illustration for The Kansas Agricultural Student.

"Life is too short for reading inferior books."—Jos. Bryce.

MECHANICAL COTTON PICKER

MECHANICAL COTTON PICKER

(Continued from page 106)

In picking, the fingers and the thumb of the human hand gouge the locks from the open boll as the hand closes over the fluffy ball of white lint. Hands and fingers are moving rapidly. There isn't time to fit fingers between the sharp points. Result: Pricked finger tips, sore, cracked, sometimes almost bleeding, particularly during the early part of the season before they have become toughened.

A cotton picker must be ambidextrous. He picks rapidly with both hands, filling each hand with the lint from three or four bolls and hurriedly pushing the handfuls of cotton into the long sack hanging at his side, dragging some seven or eight feet in the row back of him. His left shoulder pulls the sack, which hangs open at the front of his right side where both hands easily reach it. A sack holds 50 to 75 or even 100 pounds. It drags heavily by the time it is nearly full. The picker alternately bends over and crawls. Leather pads, specially built to fit the bended knee, are strapped on the knees.

Pickers start early, at sunrise, sometimes earlier, because fall and winter days are short. Diligent pickers work until dusk. Some pickers gather 300 to 400 pounds a day but the average is less than 200 pounds. The rate of pay is 75 cents to \$1 a hundred pounds. Cotton can be picked only with the bare hands. There are many cold days in late November, December, and January. Mornings are frequently frosty. Hands are cold and red. The knees, even with protection, are sore and bruised for many days after picking begins. The back gets dreadfully tired from bending and pulling and half-carrying its load. Cotton picking is a job for a machine, not a human being.

Yet of all the tasks on the farm, few have resisted mechanization as has cotton picking. The human hand is exactly the right shape and of the dexterity to pick cotton. Efforts have been made to train monkeys to pick cotton because of the similarity of their "hands" to human

hands. But no go. Even a monkey has too much sense to pick cotton.

For 30 years, inventors have insisted they were making progress toward perfecting a mechanical cotton picker. The finest agricultural engineers and many untrained but mechanically minded farmers have labored with the idea. Both have contributed ideas to the picker that some day may satisfactorily do the job.

First efforts were to perfect a suction picker. That seemed a reasonable approach. But the intake of air made no choice between cotton and dirt and trash.

Spinning spindles next came into the picture. And steel fingers may finally get the job done. But it will probably be a long time before mechanical cotton pickers will displace a large proportion of the human pickers—children and their poverty-stricken parents.

The expense including overhead and loss of cotton left in the field is still high—\$1.65 per hundred compared with \$1 per hundred where picked by human hands.

Mechanical cotton pickers, as with wheat combines, are better adapted to large acreages, and level fields. Only 50 percent of our cotton farms are over 100 acres in size.

Mechanical cotton pickers cost from \$1,000 to \$2,000. More than half (about 2,000,000) of the cotton producers of the South are either tenants or share-croppers, all financially unable to invest \$1,000 or more in a cotton picker.

Even spinning spindles, 154 of them, on a rotating drum, which entwine the cotton about their slender fingers, even these spindles, feeling their way aimlessly among the branches loaded with open cotton, gather too much trash and leaves. The market value of the cotton picked by mechanical means is lower by 12 percent. Approximately 5 percent of the lint is left in the field. Those persistent defects are going to be most difficult to overcome.

But the machine does get over the acres, eight to 12 acres per day, half a bale to a bale an hour (a bale weighs 500 pounds),

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DR. W. H. RIDDELL LEAVES KANSAS STATE FOR ARIZONA U.

MECHANICAL COTTON PICKER

(Continued from page 123)

gathering more in an hour than two average men pick in a day, doing in one day the work of 20 or 30 humans, even then not able to compete with the dexterity of the human hand in picking white cotton, free of trash. If cotton pickers were paid a living wage, the mechanized cotton picker would be able to compete with them. The transient cotton picker of the South and his dependent family would be out of a job all year instead of two thirds of the year.

Those who hold it within their power to turn the mechanical cotton picker loose in the cotton fields of the South are at a loss to know what to do with the Frankenstein now that they have it nearly perfected. Large plantation owners would, many of them, prefer to buy and use machines instead of bothering with scores of Negroes and "whites" who have to be housed and supervised and loaned groceries and records kept of every pound each pair of hands picks.

It is no minor problem, this problem of knowing what to do about pressing to perfection a mechanical cotton picker. It would partially solve the problem of gathering cotton, but it would contribute to the already vexing economic and social problem of what to do with another million and more men, women and children who would be added to the millions already among the "technologically unemployed."

But again we say, it is a job for a machine, not women and children and old men or even strong men; if it were possible for them to find better employment for more months of the year.

If mechanical pickers are introduced gradually to the larger farms and plantations of the South, displaced labor may be absorbed elsewhere in the industry of the nation. Difficulty is those same laborers will be needed in the cotton fields at chopping time. Next problem will be to find labor to chop and hoe the cotton in June and July.

Doctor Riddell Leaves Faculty

Dr. W. H. Riddell resigned late in March as associate professor in the department of dairy husbandry to accept the position of professor of dairy husbandry and head of the department at the University of Arizona, Tucson. Doctor Riddell became a member of the staff at Kansas State College in 1925.

He assumed his duties at the University of Arizona May 1.



DR. W. H. RIDDELL

The field of dairy cattle nutrition has been Doctor Riddell's special field at Kansas State College. For many years he has served the Kansas Ayrshire Breeders Association as secretary. He was connected with the Kansas State Dairy Association in a similar capacity.

Doctor Riddell is a member of Gamma Sigma Delta, Sigma Xi and Alpha Zeta honorary societies and also a member of the American Association for the Advancement of Science, American Dairy Science Association and Genetics Society of America, professional organizations.

PROFITS FROM CROSSBRED PIGS

TESTING HYBRID CORN

(Continued from page 108)

cluded. The tests in Districts 1 and 2 will each contain 70 hybrids and varieties, while those in Districts 3, 4 and 5 will contain 60 entries. Each test will include about 25 to 30 entries from commercial hybrid seed corn producers, 20 from the Kansas agricultural experiment station, 15 from other experiment stations and 5 of the best adapted open-pollinated varieties.

Entries will be replicated five times in each test. The corn will be planted by hand in plots 12 hills long and 2 rows wide. All hills will be spaced $3\frac{1}{2}$ feet each way. The rate of planting will be three kernels per hill in the three eastern sections and two kernels per hill in the northcentral and southcentral sections.

RESULTS TO BE PUBLISHED

Planting and harvesting of the tests will be carried on under the supervision of the committee in charge. Precipitation records will be kept at each of the 10 tests. After the harvesting is completed, a report giving data on yield, stand, moisture, lodging, dropped ears and damaged seeds will be prepared and distributed. These reports will be available to the public.

In addition to the Kansas corn performance tests, 70 cooperative strip tests, including both hybrids and open-pollinated varieties, will be planted on Kansas farms. Hybrids also will be tested at all the branch agricultural experiment stations.

Besides the tests mentioned above, about 1200 hybrids of various types, most of which were produced by the Kansas agricultural experiment station, will be carefully compared in preliminary performance trials. Results of these trials are used as a basis for selection of Kansas hybrid entries for further testing in the Kansas corn performance tests.

A few of the most promising Kansas hybrids will be increased this year in order to secure enough seed for testing in 1940. By 1941, it is hoped to have enough seed of the hybrids which make a good showing in the tests to furnish trial lots to farmers.

PROFITS FROM CROSSBRED PIGS

(Continued from page 102)

The results of the nursing period were also almost wholly in favor of the crossbreds. The only exception was 0.6 of a pig less per litter at weaning time with the gilts of the first-cross group. The advantages in the nursing period of the crossbred pigs over the purebreds included a larger litter size and increased weight at weaning time.

PROFIT IN FEED LOT

Convincing as the farrowing and nursing advantages of the crossbreds proved to be, they demonstrated no less an advantage in the feed lot after weaning. From weaning time on the three types of crossbred swine continued to grow faster than the purebreds, requiring on the average about 20 days less time to reach a market weight of 220 pounds and making on the average a greater daily gain of about 0.12 of a pound.

They used also about 30 pounds less feed per pig and about 14 pounds less for 100 pounds gain. These differences in feed consumption mean a saving of over one-half bushel of corn per pig, which is enough difference under many conditions to make a swine-feeding operation profitable instead of a loss.

From the results of these experiments, the University of Minnesota says: "The use of crossbred sows for commercial swine production has been proved a sound practice both under careful experimental tests and in farmers' herds. The boar, however, should always be a good purebred." They advise the farmer wishing to practice crossbreeding to use one of two methods. First, to "criss-cross" by starting with high grade or purebred sows of one breed and mate to a purebred boar of another breed. The best gilts resulting should be kept for breeding, and mated to a purebred boar of the first breed; then, to alternate or "criss-cross" with boars of the two breeds used, or second to mate the first cross-bred females to a boar of a third breed. After that, rotate in the use of purebred boars of three breeds.

VANCE RUCKER TAKES JOB WITH FEDERAL BANK AT WICHITA

BY THE OLD MILL STREAM

(Continued from page 100)

tion with a common axis of rotation, it is possible to have three combinations of working surfaces, all of which have been in use at some time or other. These are: (1) Cylindric surfaces, inscribed one in another; (2) similarly inscribed conic surfaces; (3) parallel planes. In all cases, the axis of rotation may be vertical or horizontal. The millstones commonly thought of today belong to the third class, and have a vertical axis of rotation.

As the construction of the mill grew heavier to effect a greater output, a greater driving power was necessary. This need was fulfilled by the introduction of water as a source of power. The power was obtained by the use of an undershot water wheel. The Bowersock mill at Lawrence still employs the water wheel, not as a direct source of power but as a means of generating electricity. The two stones found at the west door of the East Agricultural building, the origin of which is not accurately known, are reported to have been a part of the old Blue Valley mill which was located on the Blue River at Manhattan. These stones probably were imported, and were driven by water power as evidenced by a 12-foot drive shaft now located at F. A. Marlatt's millwright shop in Manhattan.

Americans were the originators of the automatic mill, as they have been of many other improvements in machinery. The discovery of the French quarry "La Ferte sous Jouarre," which produces the famous buhrs (quartzose stones), was made by Americans. That stone, famous for 200 years, possesses hardness, tenacity, porosity, and uniformity in such a measure as to be the leader among millstones. Other quartzose stones are found in Hungary and Russia; porphyry and granite stones found in Germany also make good millstones.

It is a general practice to make artificial stones by cementing smaller stones together. Heated steel bands are placed around them to keep them from breaking

from centrifugal force, and are allowed to cool and tighten.

Furrows carved into the surface of the stones serve as spouts for the regulated delivery of the grist, as well as ventilation canals. The stones shown in the figure have the circular type of furrow. When the grinding surface becomes worn and polished, the miller "dresses" the stone by hand with a furrow hammer and hoe.

The correct fitting of the millstones and the balancing of their motion is of great importance. The fitting of the stationary stone is a very simple matter because it is firmly attached to the mill frame. The fitting of the rotating lower stone is accomplished by the use of a "floating" arrangement.

The Milford Water Power Mills, Milford, Kan., still make use of stones for grinding. They employ a 26-inch lower run buhr for grinding white and yellow corn meal. They also have a 34-inch upper run buhr for grinding graham, whole wheat, rye, graham, and buckwheat flour, and whole wheat breakfast food. This buhr was operated many years in the production of white flour. These mills were installed in 1883 by Mr. Streeter's father and grandfather and have been operated ever since.

Time marches on and the modern mill has replaced the old stone mill. The fact remains that for many years millstones played an important part in the processing of the greatest of all food crops.

Rucker to New Job

Vance M. Rucker, assistant professor of agricultural economics in the division of extension, resigned, effective March 15, to accept a position as secretary with the Federal Bank for Co-operatives. He will have his offices at Wichita.

Rucker was graduated from Kansas State College with the class of '28. He majored in agronomy, and after his graduation, he was county agricultural agent in Harper county for two years. He came to college from Burdett, Pawnee county.

THESE BOOKS ARE BOUND TO BE READ



Books You'll Like

By Jack Bozarth

Synthesizing Mother Nature

"Soilless Growth of Plants." By C. Ellis and M. W. Swaney. Reinhold Publishing Company, 1938.

This book is a concise and non-technical review of the chemistry of plant life as a background for a discussion of the three recognized modifications of soilless growth, namely, water-culture, sand-culture, and subirrigation methods.

No guarantee is offered that every novice experimenter will be successful but explicit directions and methods are given that have been employed successfully. Even though the reader does not intend to grow plants without soil, the book will prove interesting and informative.

An Old Chinese Custom

"Storage and Stability." By Benjamin Graham. McGraw-Hill Book Company, Inc., 1937.

The ever-normal granary is a Chinese phrase, which has rather suddenly become a central issue in the American economic policy. By way of offset against the substantial benefits accorded by our government to the farmers, the ever-normal granary is offered as a safeguard to the consuming public. The granary idea, briefly, means the storage of reserve surpluses of big crops for use in time of crop failure.

Out of this survey and discussion of the possibilities of storage, the author moulds a concrete proposal which combines into one concept these elements: (1) storage as an equalization reservoir; (2) storage of basic commodities as the foundation of a sound monetary system; and (3) the composite group, or "commodity unit," as the technical means for the realization of the advantages of a storage system.

Living the Full Life

"Profitable Farm and Life Management." By Wilbur J. Fraser. Interstate Printers and Publishers, 1937.

The author offers a personal approach to the successful operation of the farm as a business and as a home. He suggests a practical and economical method of making the improvements so sorely needed in farming and farm life and earnestly attempts to help farm people produce more profitably, save and invest more wisely, and live country life at its best.

"The greatest need in agriculture today is for thoughtful men and women who care mightily to make a real success of farming and farm life," the author states. "To do this, they must first of all get a clear vision of the definite high goal of a fine farm and a full life of achievement there, and then think through and follow a careful plan to reach that goal."

How Does Your Garden Grow?

"The Gardener's How Book." By Chelsea C. Sherlock. The Macmillan Company, 1935.

The author is editor of a garden magazine and a question from one of his readers was responsible for the book. The reader asked: "Please send me all the information you have for the public in relation to gardens."

In answering this all-inclusive question, Mr. Sherlock answers hundreds of other questions connected with gardening, ranging from "Why can't I make my wisteria bloom?" to "What shall I do for the green scum in the lily pool?"

The book is easy to read and is packed with information for anyone interested in gardening.

"In science, read by preference the newest works; in literature the oldest."

—Bulwer-Lytton.

"Every book is worth reading that sets the reader in a working mood."

—Emerson.

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