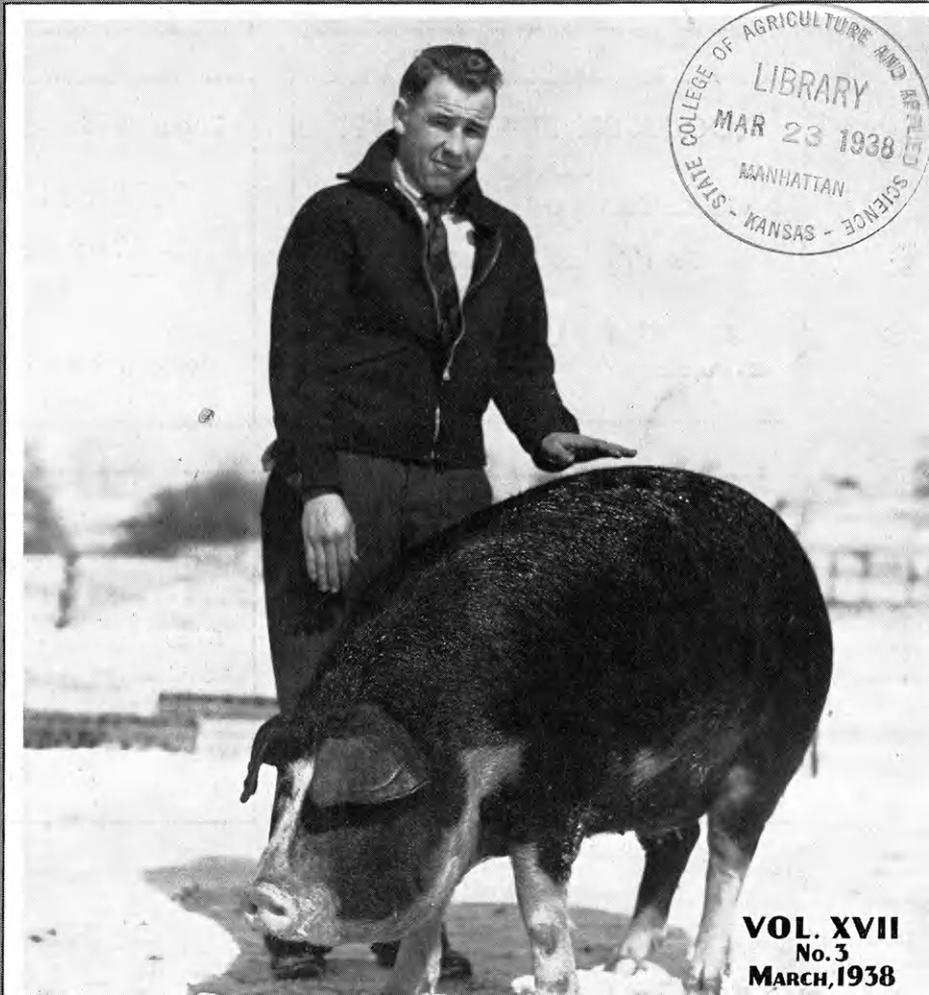


THE KANSAS AGRICULTURAL STUDENT

MANHATTAN, KANSAS



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VOL. XVII
No. 3
MARCH, 1938

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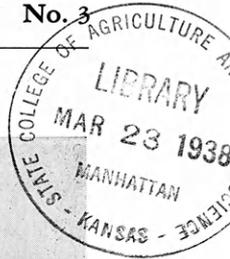
Nearest the Campus

The Kansas Agricultural Student

VOL. XVII

Manhattan, Kansas, March, 1938

No. 3



BLUE RIBBON WINNERS IN THE 1938 LITTLE AMERICAN ROYAL

Top row—Evans Banbury, Dale Engler, Noel Robb, Roger Hendershot, John Moore. Second row—George E. Murphy, Eldo H. Meyer, Max Dawdy, Charles Jordan, Dale Mustoe, Mack Yenzen, Doyle La Rosh. Third row—Harold Clay, William Ljungdahl, Mark Wilson, Louis Cooper, Clifford Beyler, Kenneth E. Johnson, Merle Parsons, Ray Cudney.

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National Western Livestock Show and Contest

A GAIN Kansas State wins honors in livestock judging. The junior team selected from the class in Advanced Livestock Judging placed first in judging all market classes at the National Western Livestock Show, Denver, Colo., and second in judging breeding classes. The team was first in beef cattle and second in hogs. In total score for all classes the University of Wyoming gained five points over Kansas State. Colleges competing at the National Western scored as follows:

the policy established three years ago of providing an opportunity for a large number of students to benefit from trips to leading livestock shows and markets.

The leading livestock shows provide facilities for competition among students of agriculture in order to stimulate the study of livestock improvement. These shows are held at leading livestock markets and offer an excellent opportunity for students to study livestock production and marketing. The exhibits in the stock yards and



DENVER LIVESTOCK JUDGING TEAM

Left to right—Robert B. Shepherd, Prof. F. W. Bell, Irwin A. Miller, M. Neal McVay, Jess R. Cooper, William D. Paske, Willis R. Wenrich.

- | | |
|--------------------------------------|-------|
| 1. University of Wyoming..... | 3,203 |
| 2. Kansas State College..... | 3,198 |
| 3. Colorado State Agr. College..... | 3,157 |
| 4. Utah State Agricultural College.. | 3,130 |
| 5. Texas Technological College..... | 3,109 |
| 6. New Mexico Agr. College..... | 2,983 |

The students who represented Kansas State were: Irwin Miller, Oberlin; Willis Wenrich, Oxford; Jess Cooper, Preston; Robert Shepherd, Alden; Neal McVay, Sterling; and William Paske, Toronto. All these students are juniors and were selected in line with

show barns have been brought there from all parts of the country, thus providing an unusual opportunity to study both market types and breeds of livestock.

An outstanding feature of the National Western is the exhibit of breeding bulls in carload lots. Nowhere else in the world is there a show of purebred bulls equal to the display at Denver. Hundreds of high class bulls change hands during the week, most of

(Continued on page 91)

Dry Kansas

TRYING has been the lot of the Kansas farmer the past few years. Economic difficulties, grasshoppers, drought conditions, and the dust storms of the western part of the state have played a vital part in these adverse conditions.

Most extreme of these conditions is the almost continuous drought since 1932. In that year a deficiency of 2.78 inches prevailed over the state as a whole, with a deficiency of 4.72 inches in the eastern section. Since 1932, only one year, 1935, had above the average of 26.54 inches of rainfall and that year was not a particularly good crop year. Almost half its rainfall came in May and June; and July, according to the Climatological Data, published by the U. S. Department of Agriculture Weather Bureau, was the third driest July in the history of the weather records. The Weather Bureau reports also show that 1935 was decidedly deficient in moisture for the first four months of the year.

In 1936, Kansas received the lowest rainfall for the state as a whole of the entire fifty-one years of records. The fifth lowest year was 1937, with only a little more than in 1936. The rainfall in 1910, 1917, 1934, and 1936 was lower than in 1937. These figures show clearly the importance of the recent drought conditions since, in the last five years, there were three (1934, 1936, and 1937) with rainfall very nearly if not the lowest among the fifty-one years for which state wide records have been published.

The average rainfall by five-year periods beginning with 1888 is given in Table I for each of three sections in Kansas and for the whole state. It can be seen that the last five-year period (1933-37) was the driest. This was also the driest of any period of five consecutive years. The average deficiency each year for the state for the 1933-37 period was 4.5 inches. The total deficiency for the last five years is 22.5 inches, or .5 inch more than was received annually for the five-year period.

For the periods shown in the table,

1903-07 received the greatest amount of rainfall in each of the three sections. However, in a five-year period including 1902-06, the rainfall was slightly larger than in the 1903-07 period.

The Climatological Data (annual 1937) contains the statement that this year's fall of moisture was deficient in every county, except a few in the southeast quarter. This deficient supply of moisture has led to much difficulty in certain sections of Kansas in securing a stand of wheat this past fall.

This prolonged drought condition may have far greater injurious effects than might be expected. The subsoil moisture has in most sections of the state been depleted to such an extent that it will take several years of above normal rainfall to build up this subsoil moisture to normal. This dry subsoil explains why alfalfa growers are having such a difficult time in re-seeding land and maintaining stands of the crop.

H. H. Laude, professor of agronomy at Kansas State College, in correlation studies found a significant relation between the yields of corn and kafir and the amount of rainfall received during different growing periods. Some of these correlations are shown in Table II.

The yields of corn and kafir were more closely related to rainfall in the 10- and 20-day periods in Wallace county than in the other two counties as shown by the higher correlation coefficients. This probably should be expected since this county is located in the extreme western part of the state where rainfall is most often a limiting factor in crop production.

In McPherson county in central Kansas the importance of rainfall during each of these periods was somewhat less and in Franklin county in eastern Kansas the relation was still lower as indicated by the smaller correlation coefficients. According to Fisher's method for testing the statistical significance of correlations, the coefficients in Table II are all significant

JUDGING TEAMS' BANQUET

except for the relation between corn yield in Franklin county and rainfall in the 10-day period and between kafir yield in the same county and rainfall in both the 10- and 20-day periods. The correlation coefficients show that the yield of corn is more dependent upon the rainfall than the kafir yields are.

Since crop yields are related to rainfall, it is to be hoped that during the next few years the quantity of rainfall will return to normal so that Kansas agriculture may be more prosperous.

Table I.—Five-Year Averages of Rainfall in Kansas, 1888-1937

Years	Eastern Sec. (Ins.)	Middle Sec. (Ins.)	Western Sec. (Ins.)	State (Ins.)
1888-1892	34.8	25.8	19.9	26.8
1893-1897	32.1	23.7	17.7	24.4
1898-1902	36.8	28.4	19.8	28.4
1903-1907	38.6	29.3	21.0	29.6
1908-1912	36.1	26.3	18.3	26.9
1913-1917	34.6	24.8	18.4	26.1
1918-1922	33.9	26.6	19.4	26.6
1923-1927	36.6	27.1	19.3	27.7
1928-1932	35.0	27.5	20.2	27.6
1933-1937	30.2	21.4	14.2	22.0
Average	34.7	26.0	18.9	26.5

Table II.—Correlation of the Yield of Kafir and Corn to Rainfall

Counties	Number of Years	Periods		July
		July 31- August 9 (10 days)	July 21- August 9 (20 days)	
Kafir				
Wallace	20	+ .60	+ .60	+ .45
McPherson	20	+ .40	+ .51	+ .48
Franklin	20	+ .16	+ .39	+ .53
Corn				
Wallace	24	+ .70	+ .66	+ .48
McPherson	22	+ .55	+ .60	+ .55
Franklin	22	+ .32	+ .46	+ .46

—R. K. McCammon, '38.

After several years teaching Vocational Agriculture, V. E. McAdams, '28, began work as County Agricultural Agent in Barber county in 1934. He has been extremely successful in interesting adults in an educational program. More than 300 women have been organized into 19 farm bureau units for the purpose of studying home economic problems. His 4-H Club program has also developed rapidly. Last year the number of men members of the Barber County Farm Bureau was 426.

Judging Teams' Banquet

The annual banquet for judging teams was held January 21 at the college cafeteria. This event is sponsored by the wives of the department heads of the Division of Agriculture that have judging teams—Mrs. C. W. McCampbell, Mrs. R. I. Throckmorton, Mrs. R. J. Barnett, Mrs. F. W. Atkeson, and Mrs. L. F. Payne together with Mrs. F. D. Farrell and Mrs. L. E. Call.

The program, with Dean Call acting as toastmaster, consisted of a series of short talks by representatives from each of the various teams. The speakers were: Verlin Rosenkranz, Washington, representative of the Dairy Cattle Judging Team; H. S. Davies, Manhattan, Dairy Products Team; Wayne Freeman, Kirwin, Crops Team; Roland Elling, Manhattan, Livestock Team; Willis Wenrich, Oxford, Men's Meats Team; Hazel Frager, Wamego, Women's Meats Team; Clyde Mueller, Sawyer, Poultry Team; and Robert Kitch, Winfield, Apple Team.

While introducing Roland Elling, high man in the contest at the International, Dean Call brought to light a colorful story concerning Roland's aptitude for judging. He attributes Roland's ability, in part, to inheritance. Both of Roland's parents were good judges. On his mother's side, his great grandfather, Prof. B. F. Mudge, was a national authority on geology, and his grandfather was an active Granger and at one time manager of the Grange store in Manhattan. His mother, Mary Mudge Elling, is a lover of nature and at one time was assistant librarian. Roland's father, Prof. Carl Elling, in 1903 was on the first livestock judging team to represent Kansas at the International contest and was high man in that contest. This part of the story was told in the December issue of the Agricultural Student.

The judging banquet is an event looked forward to by all team members and one that each will remember as a happy occasion.—William R. Allen, '38.

Student Essay Contest

A GAIN, in 1938, the American Society of Agronomy will sponsor an annual student essay contest to stimulate interest in agronomic problems among college students. The committee in charge of the contest has recently announced the subject for this year's contest as "Contributions of Agronomic Research to Agricultural Progress." Either soils or crops phases of the subject or both may be developed. Due to increased interest in the contest—35 essays in 1937 as compared to 14 in 1936—the contest committee has found it necessary to limit the subject list. Formerly, six subjects were announced, but the difficulty of rating such a combination of papers made it necessary to adopt the single subject contest.

In 1937, financial aid from the Chicago Board of Trade enabled the committee to increase the prize list for the contest from \$25 to \$225. Students submitting the three high essays now receive approximately \$50 which is used for expenses to the International Hay and Grain Show in Chicago. In addition, each of the three receives medals and a year's subscription to the Journal of the American Society of Agronomy. The next five winners receive cash awards of \$25, \$20, \$12, \$10, and \$5, respectively.

Last fall, Gilbert Terman, Wayne Freeman, Dewey Axtell, and Hugh Myers of Kansas State College, entered essays. The judging committee, consisting of faculty members from the Universities of Minnesota, Illinois, Nebraska, and Kansas State College ranked the twenty best essays. All four of the Kansas boys were ranked in the top twenty with Myers placing second and Terman, fifth.

Myers, along with winners of first and third places, received a \$50 trip to Chicago. The winners this year also attended the meetings of the American Society of Agronomy and the Soil Science Society of America which coincide with the International Hay and Grain Show on odd numbered years.

First and third places in the contest were taken by Nebraska students, Bengston and Petersen, giving Kansas and Nebraska four of the five top rankings.

The contest was started in 1934 and since then interest and popularity have increased steadily. Other students placing in former years are Horton Laude, '37, who won second in 1935 and Walter Abmeyer, '38, who won fifth place in the 1936 contest.

Judging from the amount of interest last year and the increased prize money, next year's contest should be the largest yet. Seniors who wish to enter the contest may do so, provided they submit their essays, between 3,000 and 4,000 words in length, to the committee before the day of their graduation, either at the close of the second semester or summer school. Entrants must be members of the Junior Section of the A. S. A.—known at Kansas State College as the Klod and Kernel Klub. All papers must be in the hands of the committee before October 1, 1938.

Students are also asked to prepare abstracts of their essays. The abstracts of the five best essays were printed in a small pamphlet last year and distributed at the meetings of the Society. There has been some discussion of printing the winning abstracts in the Journal of the American Society of Agronomy but in past contests this has not been done.

Some institutions have made provisions for credit hours for the essay. Although such arrangements have not been made here, students may be able to get permission to use the essay as a term paper in such courses as Agronomic Literature, Agricultural Journalism, or Rhetoric. Even though the student did not place in the contest or could not use the paper otherwise, the experience of collecting, reading, and selecting information and then composing a semi-technical paper of the findings is alone well worth all the effort and time required.

—Hugh Myers, '38.

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MANHATTAN, KANSAS

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SUCCESS

"This was the tenth Little American Royal I've attended and by far the best!" was the comment of one well known Farm and Home Week visitor. We can truthfully back this statement up without bragging in the least. We are proud of the group that made this show click so well. It was the highlight entertainment of the week for our Farm and Home Week people.

It is very gratifying the way everyone, the Agricultural Association, and the departmental clubs cooperated in making the 1938 Little American Royal such an outstanding success. We are very thankful to the faculty members who gave us their untiring help and guiding advice. A word of praise is due to the committees in charge, to the showmen, and to all others who cooperated in such a whole-hearted way to help present this year's show.

The ability to work and cooperate with our fellowmen is one of the stepping stones to success. Cooperation

was in evidence on every hand among those who worked and showed in the 1938 Little American Royal. The smoothness with which the show progressed well demonstrated that the students in the Ag division are well on their way to success from this standpoint.

We take our hats off to the ringmasters who showed so much ease and assurance in handling the show. The masters of ceremonies handled their parts smoothly and kept things moving. We are proud of the students who showed. They cooperated to the fullest extent in fitting their animals and also in the ring during the show.

Other benefits obtained by students who took part are the friendships established, contacts made with men prominent in the livestock world, and practical experience gained in fitting and showing their animals. Here's to the 1938 Little American Royal Show: "Grand Champion of its class."

—W. W. P., '38.

EDITORIALS

THE WORK AND THE WILL TO WIN

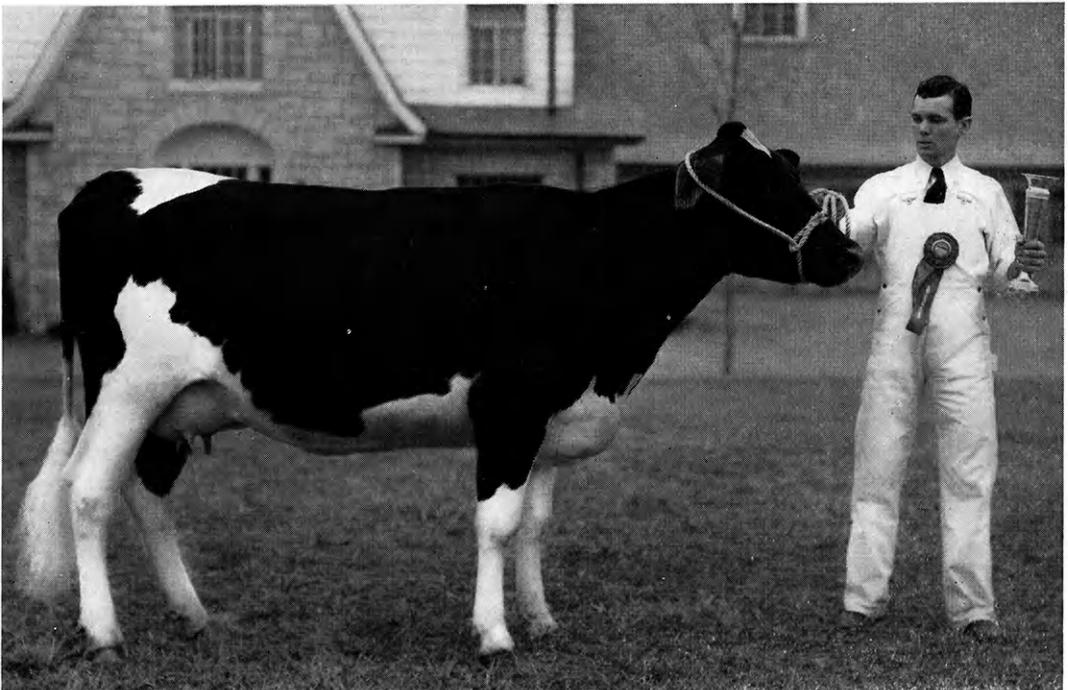
Was it only by working more than the others that Clifford Beyler became the grand champion showman in the Dairy Division of the Little American Royal? Clifford is a freshman in college but he is far from a "freshman" when it comes to handling dairy animals, due to several years experience in 4-H club work. Perhaps the fact that he has regular work at the college dairy barn, gave him a chance to spend a few extra minutes each day with his animals. He worked hard, but others worked hard too, some perhaps as hard as Clifford.

However, in Clifford's case, there must have been a little more will to win, a bit more efficient work, and perhaps a little more ready response to training by Dean Inka Evelyn, the Holstein cow which he showed.—H. W. C.

PIG AND SHOWMAN COOPERATE

At the "feed" after the Little American Royal, Louis Cooper said that his winning the championship was because he had a good pig that "cooperated" with him. The remark brought a laugh from his listeners yet there is more truth than jest in what he said. The pig he showed cooperated with him because he knew pigs. He knew how to handle his pig so that she was never excited, only natural. When the judge looked at her she was always in position and looked her best, and the judge kept looking at her because of the striking yet modest actions that Louis used to bring themselves to his attention. He followed the axiom of keeping "one eye on the judge, the other on your animal." Louis was awake, he was alive. That is being a good showman and that is why he won the championship.

—C. E. A.



CLIFFORD BEYLER AND HIS GRAND CHAMPION HOLSTEIN



1938 Little American Royal

KENNETH EUGENE JOHNSON AND HIS CHAMPION MARE

Kenneth has shown at so many fairs that he may well be called an experienced exhibitor. He won his latest rosette by showing Boer d' Boy's Lady. He has exhibited at eight county fairs, three Kansas Nationals, Ak-sar-ben Stock Show, Western Livestock Show, and Little American Royal. In 1929 he won a trip to the International in Chicago for being outstanding 4-H Club member in Norton county. He is a junior in agriculture.



WILLIAM LJUNGDAHL AND HIS CHAMPION HEIFER

The winning of the beef cattle championship with his Aberdeen-Angus heifer went to William Ljungdahl. He has lived all his life on a farm where this breed of cattle has been raised and shown. He won second prize two years at the International and continued his high placings by a winning at the Little American Royal. He is a freshman in agriculture.

MARK WILSON AND HIS CHAMPION SHEEP

Mark has been showing sheep for ten years. He won two firsts during that time and was named state sheep champion for all-around achievement in 1935. This winning gave him a trip to the International. He is a freshman in agriculture.



COLORED sawdust—purple banners — flags — ring-masters in tuxedos — marcelled calves—more than 1,300 Farm and Home Week visitors—sharp, clear staccato notes of the bugler—and the 1938 Little American Royal was on. At 7:30 on the night of February 10, these buglers called the first class in the arena of the K-State judging pavilion. The buglers, dressed in striped trousers, long-tailed coats, and high top hats of Uncle Sam,

Takes Outstanding Place in Diamond Jubilee

RAY E. CUDNEY AND HIS JERSEY CHAMPION

The Jersey breed championship was won with Ray's showing of Lunar Light Testimony. Ray has lived on a Jersey farm all of his life. In 1934 he was Grand Champion at Hutchinson and in 1935, he not only showed the Grand Champion Senior yearling heifer, but was named Grand Champion Showman. Ray is a sophomore in agriculture.

MERLE PARSONS AND HIS AYRSHIRE CHAMPION

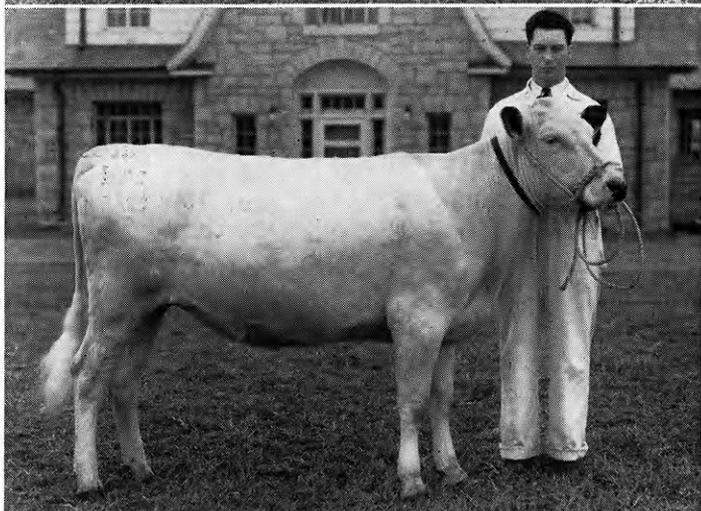
Last year Merle showed a Holstein cow, Coral, and won second place in its class. This year with his Ayrshire he was able to step up to breed championship. All his show experience has been confined to these two shows, but he is at home in the creamery where he has worked hard at these enterprises during most of his available time for the last two years. Merle is a junior in dairy manufacturing.

HAROLD CLAY AND HIS GUERNSEY CHAMPION

The showing of Monarch's Dafodil gave Harold Clay the Guernsey breed championship. Harold is a freshman in agriculture and is the holder of a Sears and Roebuck scholarship for outstanding achievement in 4-H Club work.

stalked to their chairs as the fifteenth annual Little American Royal swung into progress. There was all the color and atmosphere of any large livestock show.

The centerpiece, a large K. S. C. in purple and white sawdust, confronted the visitors. The words "The Little American Royal—1873-1938," with the diamond, emblematic of the seventy-fifth birthday of the college, encircled the



LITTLE AMERICAN ROYAL

centerpiece. The 1938 show was the largest yet, 20 classes passing through the arena during the evening. One hundred fifteen animals, all owned by the college, fitted and shown by students, paraded in and out of the south arena, each class repeating its show in the north arena. From all reports this show topped that of last year which was an all-time record. The animals were drawn January 15. Students began work on their animals January 22. Two weeks of nice, warm, sunshiny weather enabled each showman to have his animal in fine condition for the show. The students spent many hours out at the barns working, washing, curling, blocking, and training the animals to lead.

The judges, J. W. Linn, dairy extension specialist, and A. M. Paterson, secretary of the American Royal Livestock Show of Kansas City, made the awards on the south side of the pavilion. Their decisions were based 50 percent on the improvement made in fitting and 50 percent on the skill exhibited in the ring by the entrants in showing the animals. D. M. Seath, dairy extension specialist, and J. J. Moxley, animal husbandry specialist, made the awards on the north side of the pavilion.

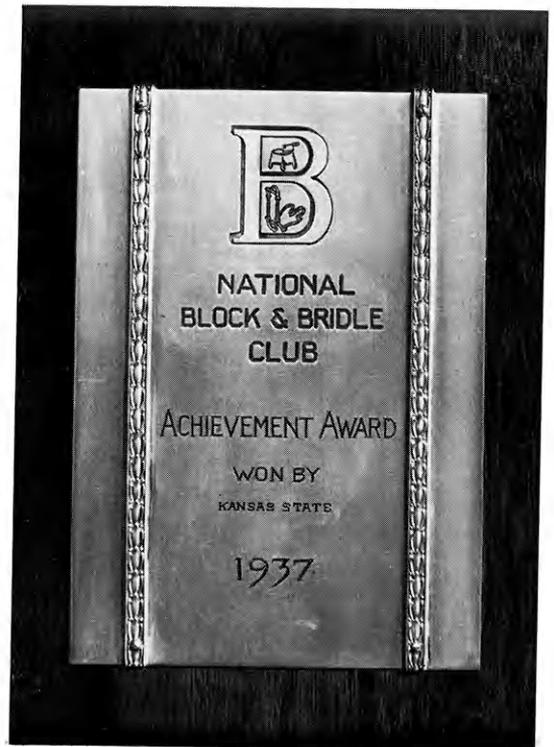
The ringmaster on the south side of the pavilion, Elmer A. Dawdy, Washington, president of the Agricultural Association and Dairy Club, kept the show running smoothly with his very formal manner. Willis Wenrich, Oxford, president of the Block and Bridle Club, and announcer for the Block and Bridle division, handled his part well with a few added facts about the different breeds. Jim Cavanaugh, Dodge City, vice president of the Dairy Club, and announcer for the Dairy division, put life in the show with some interesting facts about the boys showing dairy cows. President F. D. Farrell presented this year's judging teams to the audience. Dean L. E. Call introduced W. G. West, secretary of the Kansas Livestock Association, Topeka, who presented trophies to Louis Cooper, Peabody, and Clifford Beyler, Harper, championship winners of the Block and Bridle and Dairy divisions. The

trophies were offered by the American Royal Livestock Show and the Kansas City Stockyards Company.

On the north side of the pavilion, Roland Elling, Manhattan, and Willard Davis, Halstead, announced the two divisions. George Aicher, Hays, vice president of the Agricultural Association, acted as ringmaster. Jack S. Jorgensen and Gail Salisbury were the two buglers.

The 1938 Little American Royal is history, but we need to express our appreciation to the men behind the scenes. Dr. W. H. Riddell, Prof. D. L. Mackintosh, and Dr. W. E. Grimes were faculty men who gave much time to the Little American Royal and its presentation to the 1938 Farm and Home Week visitors.

A lunch was served in the meats lab after the show for all who showed, those on judging teams, committeemen, and about 50 guests. There were short talks by Dean Call, the judges, the championship winners, and the men behind the scenery.—W. W. P., '38.



LITTLE AMERICAN ROYAL

Animal Husbandry Division

A CAPACITY crowd witnessed the fifteenth annual Little American Royal Livestock Show at the college pavilion Thursday evening, February 10, 1938. The manner in which the 72 animals were fitted and shown indicated that time, patience, and skill were required in grooming the animals for the event. Good weather permitted outside washing and training of the animals in preparation for the show.

Grand Champion Showman of the Block and Bridle division was Louis Cooper, Peabody, who topped the list of honors by showing the Poland China gilt, Navajo Queen. W. G. West, Secretary of the Kansas Livestock Association, presented to Mr. Cooper the trophy donated by the American Royal Livestock Show and the Kansas City Stockyards Company.

Champions in the other three kinds of livestock in the animal husbandry division were:

KENNETH EUGENE JOHNSON, Manhattan,
Horses
MARK WILSON, Ashland, Sheep
WILLIAM LJUNGDAHL, Menlo, Beef Cattle

Those placing first, second, and third in each of the twelve classes were:

Draft Mares

CHARLES JORDAN, Beloit
ROSCOE LONG, Drexel, Mo.
BRACE ROWLEY, La Cygne

Draft Fillies

KENNETH EUGENE JOHNSON, Manhattan
EDWARD MOODY, Greeley
WILLIAM DIETERICH, Minneola

Southdown Sheep

DOYLE LAROSH, Natoma
ARTHUR LEONHARD, Lawrence
NORMAN LOHMEYER, Washington

Shropshire Sheep

MARK WILSON, Ashland
GEORGE KLEIER, Oxford
JOHN DRYDEN, Larned

HAMPSHIRE SHEEP

EVERETT MURPHY, Detroit
LAWRENCE ZOBERST, Gem
LOUIS COOPER, Peabody

Hereford Bulls

DALE ENGLER, Topeka
DEAN ELLIOTT, Elmo
LOUIS KIDDER, Pittsburg

Aberdeen-Angus Heifers

WILLIAM LJUNGDAHL, Menlo
D. D. JONES, Mulvane
KEITH PENDERGRAFT, Emporia

Hereford Calves

ROGER HENDERSHOT, Hutchinson
STANLEY WINTERS, Frankfort
THOMAS BROWN, Fall River

Shorthorn Calves

EVANS BANBURY, Pratt
RICHARD MOORE, Wellington
PAUL HENSLEIGH, Winchester

Hereford Steers and Heifers

DALE MUSTOE, Rexford
JOHN ELLING, Manhattan
KENT PATTON, Chase

Poland China Barrows

MACK YENZER, Saffordville
GEORGE COCHRAN, Topeka
WILLIAM ROGERS, Junction City

Poland China Gilts

LOUIS COOPER, Peabody
PAUL SANFORD, Milford
MERRILL ABRAHAMS, Wayne

Rosettes for breed championships and ribbons for class placings were awarded these winners.

—Dale E. McCarty, '39.

Dairy Husbandry Division

THE Dairy division of the Little American Royal continued the policy of making each year's show an improvement over the last. A program, well planned and executed with the assistance of the Dairy Club, was given with splendid smoothness before an appreciative audience of Farm and Home Week guests and local townspeople.

Much credit for the success of the show is due each of the students who fitted and showed an animal. Fine work and excellent sportsmanship prevailed throughout the contest. Along with the students in Dairy Production, a sizeable group of Dairy Manufacturing and general agricultural students completed the largest entry list in the history of the event, 45 animals being shown.

The judges were J. W. Linn and D. M. Seath, extension dairymen of the college. They were assisted by C. O. Bigford and E. M. Morgan, herdsman in charge of the college dairy herd.

Grand Champion Showman was won by Clifford Beyler, Harper, showing Dean Inka Evelyn. Clifford is a former 4-H Club member and has shown Holsteins at Kansas fairs for several years. In 1937 his Holstein Club calf placed first at the State Fair, Hutchinson. As outstanding showman of the 1938 Little American Royal, he was awarded the trophy presented by the American

LITTLE AMERICAN ROYAL

Royal Livestock Show and the Kansas City Stockyards Company.

Champions in the other three kinds of dairy cattle in the dairy husbandry division were:

MERLE PARSONS, Emporia, Ayrshires
HAROLD CLAY, Meade, Guernseys
RAY CUDNEY, Trousdale, Jerseys

Those placing first, second, and third in each of the eight classes were:

Ayrshire Cows

JOHN MOORE, Olathe
GLENN BUSSET, Le Roy
DONALD KLIENSEN, Dodge City

Ayrshire Heifers

MERLE PARSONS, Emporia
VERLIN ROSENKRANZ, Washington
WILBERT WILSON, Manhattan

Guernsey Cows

HAROLD CLAY, Meade
DEAN WHITMORE, Portis
WALTER LELAND, Manhattan

Guernsey Heifers

ELDO MEYER, Edmond
CHARLES BAXTER, Circleville
STANLEY COMBS, Wilson, N. C.

Holstein Cows

CLIFFORD BEYLER, Harper
WILLIAM WINNER, Topeka
CLAYTON DAVID, Topeka

Holstein Heifers

MAX DAWDY, Washington
HAROLD RALL, Menlo
BOB BRUSH, Wichita

Jersey Cows

NOEL CUDNEY, Dodge City
CHARLES STREETER, Milford
BERT GARDNER, Carbondale

Jersey Heifers

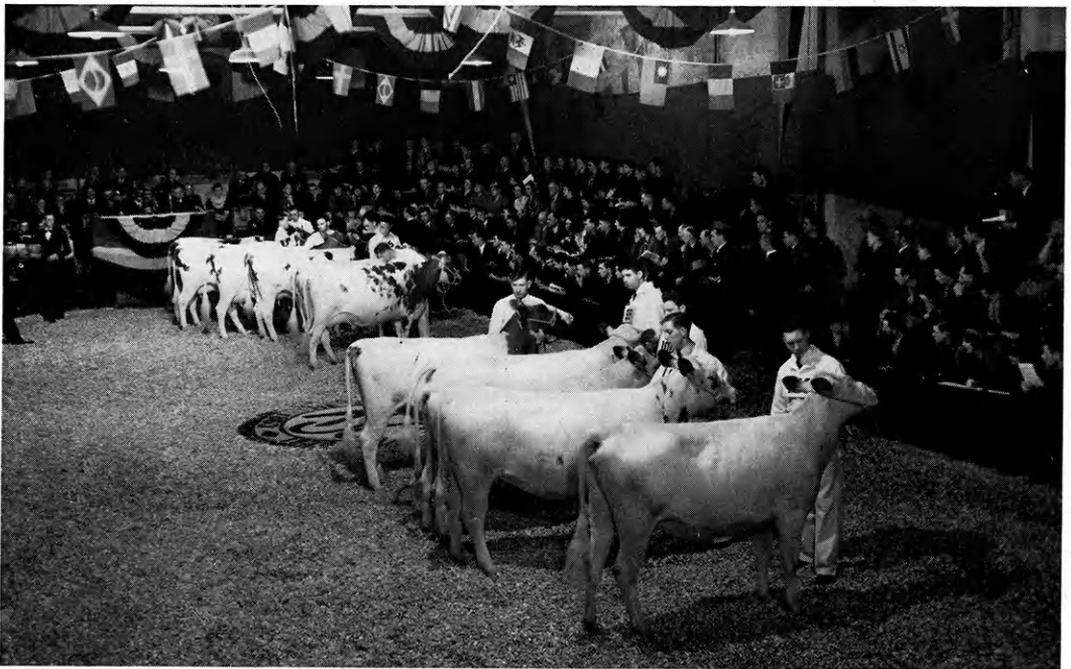
RAY CUDNEY, Trousdale
KENNETH JAMESON, Ottawa
CECIL ROBINSON, Nashville

Ribbons for class placings and rosettes for breed championships were awarded these winners.

—Jim Cavanaugh, '40.

I. Harold Davies, '37, is 4-H Club Agent, Kansas City, Kan.

After serving two years as County Agricultural Agent in Chase county, F. D. McCammon, '32, was transferred to Ford county. There he is making a special showing in agronomy. This year he has over 50 cooperators equipped with rain gages to keep a record of the rainfall throughout the year. These same cooperators are keeping records of tillage operations on fallowed fields and otherwise collecting data concerning the relationship of soil moisture to wheat yields.



TWO CLASSES OF AYRSHIRES IN THE SHOW RING
Little American Royal, February 10, 1938

Strawberry Growing in Kansas

IN the Kansas production of fruits, strawberries rank very near the top—their high quality, large acreage and yields, wide adaptability, ease of culture, and great number of varieties all contribute to their popularity.

The strawberry with raspberry, blackberry, gooseberry, and grape constitute the class known as small fruits. Although ranking second to grapes in acreage planted, the strawberry takes the lead in net returns. The 1936 biennial report of the Kansas State Horticultural Society gives the 1935 figures for Kansas strawberries as follows: acres, 1,130; production, 66,416 crates; estimated value, \$132,832.

The northeastern part of the state is well suited to grow small fruits for several reasons. First, there is adequate rainfall, approximately 35 inches; second, the soil is very fertile and of good texture; third, it is too hilly to be adapted to the production of general farm crops and the strawberry grower takes advantage of this fact and uses the best ground for his purposes.

None of the fields is very large because of the intensive type of farming practiced. It is necessarily intensive as a great deal of the work has to be done by hand. The plants are set out around the latter part of March in carefully prepared soil having an ample supply of moisture. Good healthy plants that are adapted to the district are planted. These are secured from various nurseries by shipping them in or from local plant growers. The local plants have some advantages over the others in that they can be set out the same day they are dug, are often stronger plants, and are better adapted to the region.

Leading varieties are Howard or Premier, Paul Jones, Dunlap and Blakemore. Good growers set the plants from 18 to 24 inches apart in rows which are 42 inches apart. This enables the plant to make an extensive growth and still have room enough to use a "five shovel" cultivator with a single horse or a wheel hoe in cultivating between the rows. The plants

must be cultivated frequently to prevent weed growth and to keep the soil in good tilth. No crust must be allowed to form as this prevents runners from taking root.

Strawberry plants are not allowed to bear the year they are set out as the production of fruit weakens the plant and it thus sets fewer runners. Only these new runner-set plants bear fruit the next year.

In the fall after a few hard frosts, a straw mulch is put on the plants. They are evenly covered to a depth of 3 to 6 inches and thus overwinter. If no mulch is put on, the plants are liable to winter-kill. In the spring when growth starts, the straw is taken off the plants and allowed to remain between the rows where it prevents weed growth and loss of moisture and keeps the berries free from dirt. This last effect is important because rain causes berries to get dirty by splashing dirt on them, thus ruining their sale value.

The first berries may start to get ripe about May 27 to 30. Naturally these command a high price. The regular harvest starts around the first of June, depending of course on the season, and will be practically over by June 20. The price of berries varies. In normal years the price will average between \$1 and \$2 a crate. A crate is a light wooden framework 11 inches wide, 11 inches deep, and 22 inches long and is used to hold 24 quart boxes, 5½ inches square and 3½ inches deep. The quart boxes are nested in the crates three tiers deep, two boxes wide and six boxes long.

Ordinarily, a field will yield from 75 to 200 crates an acre depending of course on the care given it during the season, the differences in varieties, etc. Normally the returns will vary from \$75 to over \$200 an acre, although extremes are sometimes observed. Some years the weather will be "against them" and practically no crop will be harvested or they may have an unusually large crop and a very low price.

(Continued on page 93)

Student Clubs of Agriculture



POULTRY CLUB

From left to right: Floyd J. Maynard, Treasurer; Prof. L. F. Payne, Sponsor; Miss Wai Lan Wong, Keeper of Relic; Richard Schnepel, President; James F. Mugglestone, Secretary; Clyde D. Mueller, Vice President.

THE POULTRY CLUB was originally formed to manage the annual chick show which was the first of its kind to be held in the United States. Since then many other states have taken up the idea.

During the fall semester the club holds weekly meetings at which recent discoveries in research and problems of the industry are discussed. Irregular meetings are held during the spring semester.

The Poultry Club has sponsored other activities such as the college and high school poultry judging contests.

The headquarters of the Poultry Club is the "Chicken Roost," a resi-

dence on the college poultry farm where most of the major students in poultry husbandry live during at least a part of their college career. While living at the Chicken Roost students gain practical experience working on the college poultry farm.

The social activities of the club are a picnic in the fall, a chicken barbecue, and an egg roast in the spring.—Richard Schnepel, Utah State Agricultural College, '36.

THE AGRICULTURAL ECONOMICS

CLUB was organized in 1921 to further professional and social interests among students majoring in the curriculum of agricultural administration and in agricultural economics, and to foster a closer relationship among its members and the faculty of the Agricultural Economics Section of the department of Economics and Sociology.

Men prominent in some field of agriculture or related fields are invited to speak at the meetings. These men aid in bringing the student in closer contact with current agricultural problems and the methods by which they are being solved. These meetings are educational in character and help the members to become familiar with the most recent developments in the field of agricultural economics. A round table discussion of each talk adds interest to the meetings.

Agricultural Economics Club members look forward to the "get acquaint-



AGRICULTURAL ECONOMICS CLUB

From left to right: Dr. W. E. Grimes, Sponsor; Leonard W. Schruben, Treasurer; A. Eugene Harris, President; C. Peairs Wilson, Corresponding Secretary; F. Louis Brooks, Vice President; Earl E. Miller, Recording Secretary.

ubs in Division griculture

ed" smoker staged each fall, which features refreshments and forms of amusement.

Each winter the club and the faculty sponsors give a party at the home of a faculty member. All Ag Ec students and faculty members are invited. Numerous men active in the administration of agricultural work and programs also are invited and have an opportunity to become acquainted with the students.

The year is terminated by a steak fry in May. This is the final meeting with the seniors, each of whom gives a short farewell talk.—Earl Miller, '39.

THE BLOCK AND BRIDLE CLUB is the only club on Kansas State's campus that can claim the distinction of being national in aspect. Various animal husbandry clubs throughout the country have become affiliated with the national organization and only this year several others petitioned for membership. The officers of the National Block and Bridle Club are elected at the annual meeting of the club held in conjunction with the International Livestock Show in Chicago. The club annually holds its meetings and banquets in the famous Saddle and Sirloin Club in Chicago. The Kansas State chapter's delegates to this year's annual meeting were Elmore G. Stout, Cottonwood Falls, and Roland B. Elling, Manhattan.

At present there are forty members of the Kansas State chapter of Block and Bridle. The membership is largely derived from students majoring in animal husbandry; however, members of other departments who are primarily interested in livestock may be admitted. Members are admitted by petition and



BLOCK AND BRIDLE CLUB

From left to right: Dale E. McCarty, Marshal; Prof. D. L. Mackintosh, Sponsor; W. R. Wenrich, President; George W. Aicher, Reporter; Kenneth E. Johnson, Secretary; Roland B. Elling, Vice President; Joe W. Lewis, Treasurer.

are then voted on by the chapter as a whole.

The activities of the Block and Bridle Club are widely varied and enter into many fields. The club was primarily the sponsor of the Little American Royal, which has since combined with the Dairy Club and the Agricultural Association to make an integral part of the annual Farm and Home Week program. The club also helps the Department of Animal Husbandry in conducting Feeders' Day. The Block and Bridle judging contest for all college students caring to enter is held toward the close of the second school semester. A medal is awarded by the Block and Bridle Club to the outstanding livestock judge in the spring High School Vocational Agriculture judging contest.

Each fall an outing and steak fry are held as a general mixer for club members and also to act as a means of getting acquainted with new men desirous of joining the club. Early in the second semester there is a banquet held for departmental members and members of the club. Last year the club received a gift of six prime turkeys from the Robbins Ranch, Belvidere, Kan., for the annual banquet.

One of the most outstanding contributions of the Block and Bridle Club is the picture gallery of famous livestock men located on the first floor of east Waters Hall. Each year, one or more photographs of outstanding men are

STUDENT CLUBS



DAIRY CLUB

From left to right: Elmer A. Dawdy, President; Prof. F. W. Atkeson, Sponsor; Verlin Rosenkranz, Program Chairman; Jim F. Cavanaugh, Secretary-Treasurer; C. Willard Davis, Vice President.

added to the collection. The club has decided that in future years, because of the bareness of the walls, they will hang pictures of model types and prize winning animals in all of the animal husbandry class rooms. This will make the rooms more decorative as well as illustrate the proper style and type of livestock to succeeding generations of students.

Each year an outstanding livestock man in the state is selected and initiated as an honorary member of the Block and Bridle Club. Last year Dan Casement, Manhattan, was initiated as an honorary member.



TRI K CLUB

From left to right: Kenneth A. Fisher, Reporter; Prof. R. I. Throckmorton, Sponsor; Wayne H. Freeman, Secretary; Robert F. Sloan, Vice President; William B. Allen, President; Rodney K. McCammon, Treasurer.

At the last annual meeting of the National Block and Bridle Club, the Kansas State chapter won more than proportionate honors. Of five prizes offered by the National Club, Kansas State was the winner of first in three of them and second in a fourth. The Kansas State chapter won first in chapter achievements, first in judging livestock, first for outstanding individual, and second on the secretary's report. Fred L. Fair, last year's president of the club, won the prize offered by the National

Block and Bridle Club for the most outstanding animal husbandry student in the United States.

—Wendell Dickhut, '38.

THE DAIRY CLUB, after twenty-four years' active existence at Kansas State College, is bigger and stronger than ever. To promote fellowship among the students interested in dairying and the faculty members of the Department of Dairy Husbandry is the primary purpose of this organization. This results in contacts and activities that are not available to students or instructors in class room work.

At the regular bi-monthly meetings held on alternate Tuesday evenings, educational talks and film strips are featured. Frequent raids on the dairy sales counter climax the meetings. During the past semester thirty-six student members and nine faculty members showed active interest in the club.

In the spring semester a student collegiate dairy cattle judging contest is held in which students from all departments are invited to participate.

The club assists the Department of Dairy Husbandry in conducting the

STUDENT CLUBS

state dairy cattle judging contest for students of vocational agriculture; the Annual Breeders' School; and the dairy program of Farm and Home Week.

As a highlight of the year's activities the Dairy Club in cooperation with the Block and Bridle Club sponsors the popular fitting and showing contest known as the Little American Royal.

—Elmer Dawdy, '38.

KLOD AND KERNEL KLUB, or Tri-K as it is more commonly known, was organized at Kansas State College in 1917 as an organization of students and faculty members in agronomy. It replaced the organization known as the Agronomy Club. On January 1, 1935, a charter of membership was granted by the Student Section of the American Society of Agronomy.

The membership of Tri-K is composed of undergraduate students, who have indicated their intention of majoring in agronomy, graduate students, and faculty men. Students are selected on a basis of their interest in agronomy, scholarship, and leadership. In scholarship rating it was the highest of all the departmental clubs in the Division of Agriculture during 1936-1937. The present membership consists of fifty-five undergraduates, seven graduate students, and thirteen faculty members. During the fall semester the attendance of undergraduates has averaged 52 percent.

The club attempts to bring about a closer relationship between the faculty and students in agronomy. In this way students become more closely associated with the work of the department and thus maintain their interest in agronomy. The club is so conducted that the activities and contacts develop leadership and a spirit of good fellowship among the members.

It sponsors and encourages partici-



HORT CLUB

From left to right: C. William Lobenstein, Secretary-Treasurer; Prof. R. J. Barnett, Sponsor; John W. Tonkin, Vice President; Herman Reitz, President; Linus H. Burton, Program Chairman.

pation in a number of activities including the Student Crops Judging Contest which is held each spring. An extensive list of prizes and awards is secured and presented in three divisions—Freshman, Junior, and Senior, depending on the amount of training the students have received in crops judging work.

The crops section of the Vocational Agriculture contests in the spring is conducted with the assistance of Tri-K members. Another activity encouraged by Tri-K is the crops judging team which participates in the Intercollegiate Crops Judging Contests held at Kansas City and Chicago. In addition the club encourages its members to enter the student essay contest sponsored by the American Society of Agronomy.

Tri-K meetings are held regularly on the second and fourth Tuesdays of each school month. Speakers are selected for the purpose of acquainting students with fields and vocations other than agronomy.—Wayne Freeman, '38.

THE HORT CLUB, consisting of a group of horticultural students and faculty members, meets in Dickens Hall twice each month. They conduct a short business meeting and follow it with an interesting program. The purpose of the club as stated in its constitution is "to promote good fellowship

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ALPHA MU

From left to right: Robert O. Baber, President; Prof. R. J. Clark, Sponsor; Dave Page, Reporter; Robert J. Anderson, Secretary-Treasurer; Joe M. Bonfield, Vice President.

among members and to advance the science of horticulture.”

In order to achieve its purpose the club utilizes every opportunity to advance horticulture that may be offered. We do this first by obtaining interesting speakers for our regular meetings. Outstanding among these speakers the past year have been Drs. E. C. Miller and S. A. Nock, Profs. Harold Howe, A. B. Sperry, Kingsley Given, and Siang Tang of China.

Last December ten members of the club had the privilege of presenting a lunch hour program before the Kansas State Nurserymen's School held on the campus. The Hort Club also aids in the engraving work done on the plaques won by the Apple Judging Team, and last year presented to the college a name plate to be hung under the painting of the late Prof. A. Dickens.

The serious work done by the club is not the only phase of the club's work. It also has the purpose of enabling students to become better acquainted with the faculty and with each other. In regular meetings it presents readings, music, or stunts for the entertainment of the members and visitors. These features are presented both by members and non-members of the club. Frequently the meetings are adjourned to the basement for refreshments and other diversions, such as ping pong. Last year the club challenged the

other Ag Clubs to a tournament. Thanks to Lyle Murphy the Hort Club won both singles and doubles, though Joe Lewis gave us plenty of trouble. Another tournament will be held this spring.

The social event of the semester is the Hort Club hike which since 1926 has been a hike in name only. About forty members, visitors, and guests attend. Last spring the "Top of the World," northwest of Manhattan, was the scene of the hike and the highlight was the delicious

chili prepared by Wayne Whitney. Last fall the hike was held on a rainy day, therefore we stayed in Dickens Hall, played games, and ate great quantities of food. At this time six new members were initiated by participating in a fruit eating contest.

This is only a partial list of the activities of Hort Club showing both serious work and recreation on the program. Don't you think Hort Club is worth belonging to?

—Herman Reitz, '39.

FLOUR MILLING is the second largest manufacturing industry in Kansas. Technically trained men are of course demanded in milling just as for any other progressive commercial organization. It is very natural, therefore, that Kansas State College should have a curriculum designed to train students planning to enter the milling industry. The Department of Milling Industry at Kansas State College bears a unique distinction. It is the only place in the United States where a student may obtain a college degree in flour milling.

A student majoring in this department may prepare himself for any one of three major fields of the industry. If he wishes to become an operative miller, thereby eventually advancing to be superintendent of a flour mill, he may

STUDENT CLUBS

choose his major subjects in milling technology. Such studies teach him how to properly grind wheat, how to plan alterations on a mill, what machinery is necessary to equip a mill, and how to operate the mill. Engineering courses such as higher mathematics, power production and utilization, together with some courses in chemistry form the ground work of milling technology.

If the student wants to become a cereal chemist and take charge of a flour mill or bakery laboratory, he should select his major subjects in milling chemistry. He must learn how to grade wheat and other grains, how to test wheat and flour for quality, and what the baker requires in the flour he buys. It is important that the student learn how to maintain a uniform wheat blend for a flour mill and be able to advise the baker about the best way to bake the flour produced.

The third field for which the student may prepare himself is that of a flour mill executive. One taking this curriculum expects eventually to become the manager of a mill and direct its entire organization. Many very interesting and practical courses are included in the milling administration division. Extemporaneous speaking, commercial correspondence, accounting, money and banking, business law, and business finance are all subjects with which the student must become familiar before he can hope to become an executive.

Not all the time of the student is spent in his studies. A department seminar holds its meetings twice a month. At such gatherings the students and faculty members listen to lectures given by noted millers and leaders from outside the campus as well as programs prepared by talent drawn from the college itself.

A few years ago some of the milling students organized an honorary fraternity whose membership is limited to men majoring in the Department of Milling Industry. Alpha Mu is now in its fourth year of activity. Membership

is based primarily upon scholarship and secondly upon personality. This fraternity promotes a more friendly relation between the school and the industry through its alumni. It encourages scholastic attainments and offers a common meeting ground for those students who expect to make milling their life work.

Besides the various courses offered in flour milling, baking, and the analysis of wheat products, the department also carries on extensive research. A few of the many problems now under investigation in the department are: how wheat should be properly conditioned for milling; the milling, analytical, and baking characteristics of various wheat varieties; factors affecting the colloidal properties of dough; moisture in wheat and its effect on the wheat's milling and baking qualities; and the respiration of wheat and flour. The facts learned in research today become the class room topics of discussion and teaching tomorrow. In this way the milling students as well as the industry benefit from the research program.

The Department of Milling Industry, therefore, is busy in properly preparing its students to enter the field of flour milling, in offering them organization in which they can discuss their life work, and in conducting cereal research with which to guide future teaching and industrial operations.

—Rowland J. Clark.

Charles Beer, '37, is farming near Larned, Kan.

Charles Dean McNeal, '34, is statistician for Purina Mills, St. Louis, Mo.

R. M. Green, M. S. '23, has recently been appointed manager of the Federal Crop Insurance Corporation.

H. L. "Pat" Murphy, '28, is County Agricultural Agent at Coldwater, Kan. He coached the 4-H Club Livestock Judging Team representing Kansas at the International Livestock Show, Chicago, November 28 to December 4, 1937.

Methods and Importance of Corn Improvement¹

OF all the things that are characteristic of America, corn is perhaps the most outstanding. It is a native of the Americas, having been cultivated for many centuries by the Aztecs, Incas, and Mayas. Today corn is the backbone of American agriculture. The United States, the principal corn-producing country, grows roughly three fourths of the world's supply. It is grown in every state in the Union, about one hundred million acres being planted to the crop each year. It exceeds in production and value the combined crops of wheat, oats, barley, rye, rice, and buckwheat.

The origin of corn has never been determined. Many hypotheses have been presented, each having its followers. The most generally accepted hypothesis to account for the origin of corn assumes that it arose from teosinte, a tall grass native to certain sections of southern Mexico and Central America. However, the validity of this hypothesis has been questioned recently by a noted plant investigator who offers evidence to indicate that teosinte originated from some cross between corn and another species of plant rather than corn developing from teosinte.

Whatever the origin and early development, the corn plant of today is little different from the plant Columbus found when he discovered this continent. However, there has been improvement in corn, chiefly in uniformity and yield, through breeding and better cultural practices. Many varieties have been developed by various methods of selection among open-pollinated plants. Because of its extremely heterozygous condition as a result of cross pollination, corn requires consistent selection over long periods to develop and maintain any reasonable uniformity of type within varieties.

Of the various methods followed in

corn improvement work, mass selection has probably been the most conducive to success. This consists of choosing certain desired individuals from the main crop and planting the seed harvested from them. By this method the corn breeder can select and perpetuate only those plants which possess the desirable characteristics which he is seeking.

The ear-to-row method of breeding seemed to offer much promise when it was first introduced at the Illinois Agricultural Experiment Station in 1897. This method of breeding attempts to determine the relative breeding value of different ears by planting a portion of the seed from them, an ear to a row, and measuring the yields of the resulting plots. It was thought that, by selecting seed from the most productive rows or by planting the remaining mother seed from the highest yielding mother rows and continuing this process for a number of years, the yielding ability of the variety could be improved.

In spite of the early promise of the ear-to-row method of breeding when first introduced, the results of its use over long periods of time have been disappointing. In general this method of breeding has improved the yields of relatively unselected varieties during the first few years of selection. There has been no evidence of cumulative effect, however, and for this reason there has been little to recommend it. Also, selection of this type introduces a certain amount of inbreeding which is always associated with reduced vigor in corn.

The third and most recent method of corn improvement involves selection within and among inbred lines. Inbred lines are developed by self-pollinating or "selfing" the corn plant through several generations. Self-pollination is the process of applying to the silks of a corn plant pollen from the same plant. Various procedures are followed to pre-

1. The author wishes to acknowledge the assistance given by Dr. A. M. Brunson, Agronomist, U. S. D. A., in preparation of this article.

METHODS AND IMPORTANCE OF CORN IMPROVEMENT

vent fertilization by pollen from other plants. The most common method is to cover the ear shoots with paper bags before any silks appear. After the silks do appear, pollen is carefully collected from the tassel and dusted onto the silks. After being artificially pollinated, the silks are again covered to prevent later cross fertilization.

In the development of inbred lines, desirable plants of productive varieties are selfed. The resulting ears are harvested and the better ones are planted an ear to a row and the good plants again selfed. This process is continued for several generations until the lines thus developed breed true for most of the obvious characters.

During the inbreeding process various complements of the good and bad traits of the parents become fixed in the different inbred progeny. Many of the progenies may receive an overdose of the bad traits and are eliminated while others receive a preponderance of good traits and are continued. There is endless variation among the different inbred lines but the plants within a line are extremely similar. As inbreeding is continued there is a great reduction in vigor. This reduction is greatest the first year of inbreeding and gradually becomes less and less. After four or five generations of inbreeding, the resulting plants are much smaller and

weaker than the original parent but there is a marked similarity of the plants within a line. The corn breeder may select and perpetuate lines which excel in various characters which he desires.

After the inbred lines are developed, many combinations or crosses are worked out by the corn breeder and tested. This crossing results in a great increase in vigor in practically all cases. Some of the hybrids thus formed show a great increase in yield over open-pollinated varieties, while others may not equal them. Although hybrid corn is a new development, several hybrids already produced have established their superiority in productiveness and resistance to wind, disease, and other unfavorable conditions.

Since every grower is interested in obtaining large acre yields, comparisons between hybrids and open-pollinated varieties have awakened keen interest. Several hybrids have been developed in the Corn Belt states which are very successful. Many farmers are growing these recommended hybrids and are consistently obtaining yields above those of open-pollinated varieties.

The following table copied from the Iowa Agricultural Experiment Station, Bulletin 355, "The 1936 Iowa Corn Yield Test," shows the superiority of hybrids in that state.

AVERAGE YIELD OF ALL HYBRID SECTION ENTRIES IN PERCENTAGE OF THE
AVERAGE YIELD OF OPEN-POLLINATED SECTION ENTRIES FOR THE
YEARS 1926-1936, INCLUSIVE.

	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936
1	117.1	109.2	109.8	108.9	114.3	116.2	115.3	114.3	112.4	111.3	106.6
2	104.6	117.4	120.4	124.1	113.3	.....	101.6	109.5	100.5	108.6	118.0
3	97.4	102.9	109.3	114.4	110.7	105.9	102.2	107.0	119.4	105.9	126.4
4	115.5	104.6	110.0	110.1	115.5	111.8	107.2	128.8	111.2	121.2	.....
5	106.5	111.1	107.8	108.3	114.4	113.2	108.2	127.6	107.9	107.0	128.5
6	104.5	109.7	102.8	103.4	104.5	109.0	106.0	116.0	106.0	103.4	117.2
7	105.3	102.8	113.7	109.1	112.6	107.4	112.0	109.4	.....	121.7	.....
8	103.9	98.1	115.3	109.1	123.5	108.4	109.6	114.1	148.7	112.7	127.2
9	104.9	102.3	113.9	114.1	105.6	106.8	105.5	105.3	115.2	105.3	149.1
10	111.4	102.2	111.0	107.7	102.3	104.8	102.2				139.6
11	102.9	114.3	108.2	112.2	111.4	106.3	110.6				153.9
12	110.3	107.1	104.2	106.0	103.2	102.2	99.8				141.0
Av.	107.0	106.8	110.5	110.6	110.9	108.4	106.7	114.7	115.2	110.8	130.8

METHODS AND IMPORTANCE OF CORN IMPROVEMENT

These figures are based on the average yield of hybrids in percentage of the average yield of open-pollinated varieties. For example, the average yield of all hybrids in 1936 was 130.8 percent or 30.8 percent higher than the average yield for open-pollinated varieties. In every year the average yield for all the hybrids was above that of the open-pollinated varieties. This is especially significant since several inferior hybrids were included in the tests and not just the better ones recommended by the station.

Because of the marked success with hybrids in the Corn Belt states many questions have been raised as to their possible value in Kansas. Several hybrids have been developed at the station which show considerable promise. In yield tests some of them have shown marked superiority over open-pollinated varieties. However, because of a succession of corn failures here at Manhattan, these hybrids have not been tested sufficiently to warrant distribution. A bad drought not only prevents reliable yield comparisons that year but also prevents seed production for tests the next year. Consequently, the corn improvement work in Kansas has been delayed until new seed supplies are produced.

To produce a satisfactory hybrid the corn breeder must test a large number of crosses between his outstanding inbred lines. When a desirable combination is found, it can be expected to perform in the same way each time it is produced. Several kinds of hybrids are possible, depending upon the number of inbred lines involved. The simplest hybrid, known as a single cross, is made by crossing two inbred lines. A cross between a single cross and an inbred line is known as a three-way cross, while a cross between two single crosses is called a double cross. Double-crossed seed is produced on single-crossed plants which are much more productive of quality seed than are inbred lines. The low yield of inbred lines makes the production of single-crossed seed relatively expensive. When the single-crossed seed is used only as a

parent stock for making double-crossed seed, however, the quantity needed is small, and its high cost relatively unimportant.

In the commercial production of hybrid seed corn the crosses are developed and the parent stock is planted in isolated crossing plots. In these crossing plots the parent which furnishes the pollen is called the male or pollen parent and the one detasseled is called the female or seed parent. Tassels must be removed from the female rows before they have shed any pollen so that self-fertilization cannot occur. This involves a large amount of labor since the entire field must be covered daily from the time the first tassels are well out of the "boot" until all have been pulled. Care must be taken to avoid leaving any tassels on the plant or on suckers of the female parent. The only pollen produced should be that by the male parent.

The ratio of male to female rows in the field depends upon the kind of cross to be made and the abundance of pollen produced by the male parent. In the production of single-crossed seed it is safest to plant one row of male parent to every two rows of female parent since the inbred lines lack vigor and pollen-producing ability. When single-crossed plants supply the pollen, one row of male parent to four rows of female parent is satisfactory.

Because of the great amount of time and labor involved in the production of hybrid seed corn, the cost of such seed is relatively high. However, since only a small amount of seed is needed per acre and since higher yields are obtained from hybrid corn, the initial cost of seed corn for the grower becomes relatively unimportant.

The increase in importance of hybrid corn in the future depends largely upon the ability of the corn breeder to develop new lines which will be suitable for sections where hybrid corn is not grown at present. Adapted hybrids have definitely proved their superiority over open-pollinated varieties in the Corn Belt and the work for the future lies in developing even better ones. Un-

New Sorghum Varieties for Kansas

fortunately, however, these same hybrids are not adapted to the climate of Kansas and should not be expected to give satisfactory results. It should be remembered that hybrids vary in adaptability fully as much as do open-pollinated varieties.

In conclusion, there are at least three points which should be stressed.

First, all hybrids are not good hybrids. The term "hybrid" does not in itself assure superiority. Hybrids vary greatly and only recommended ones should be used.

Second, hybrids which are superior in one section are not necessarily suitable for other sections which have different climatic conditions.

Third, seed should not be saved from hybrid plants for future planting because of the reduction in yield in following generations. Seed must be produced anew each generation from the original inbred lines.

—Rollin Parsons, '38.

J. D. Montague, '20, has served as County Agricultural Agent in Sedgwick county since 1930. He has done outstanding work, both with milk producers and truck gardeners. A large central market has been developed for use of truck growers, wholesalers, and jobbers and this is considered the official trading point for producers in Wichita.

W. E. Gregory, '29, County Agricultural Agent, has done a splendid piece of work on his sheep project by the improvement of farm flocks in which high grade breeding stock is used. Last year his county, Harper, produced the five outstanding lambs in the Lamb Show at Kansas City.

The following county agricultural agents have done outstanding work in their respective counties: R. L. Stover, '24, Hiawatha, Brown county; W. W. Zeckser, '33, El Dorado, Butler; W. J. Daly, '25, Winfield, Cowley; and Preston O. Hale, '16, Topeka, Shawnee.

DURING the past year four new sorghum varieties were approved by the Kansas Agricultural Experiment Station for distribution and by the Kansas Crop Improvement Association for certification. They are Club kafir, Colby milo, Early Kalo, and Finney milo. These sorghums originated at different places and for several years have been tested and selected at the various Agricultural Experiment Stations and in the cooperative experiments conducted by the Department of Agronomy of Kansas State College. It is expected that these new sorghums will find a useful place on Kansas farms, as have other new varieties such as Atlas and Wheatland.

Finney is a yellow seeded milo that is resistant to the Pythium root rot disease which attacks milos and milo derivatives. In 1930 F. A. Wagner, Superintendent at the Garden City Branch Experiment Station, observed two healthy plants in a plot of Dwarf Yellow milo that had been killed by the Pythium organism. The seed from these two plants was kept separate and planted the following spring. After several years of testing, one of these strains proved its worth and is now being distributed to farmers as Finney milo. Finney cannot be readily distinguished from Dwarf Yellow milo either in the field, except on disease infested soil, or after threshing. It is recommended for southwestern Kansas wherever Dwarf Yellow milo is adapted and especially where the Pythium root rot organism is present in the soil. William Murray, Deerfield, was the only grower to certify his seed last year.

Early Kalo was selected in 1931 at the Fort Hays Branch Experiment Station by A. F. Swanson, Associate Agronomist, Division of Cereal Crops and Diseases, U. S. D. A., in charge of cereal investigations at the Fort Hays Station. It is a selection from Kalo which originated from a natural cross

COOPERATIVE ELEVATOR SURVEY

between Pink kafir and Dwarf Yellow milo. The grain of Early Kalo is reddish-yellow in color and matures several days earlier than that of Kalo. The plants grow to a medium height of from 3 to 3½ feet. In general it is adapted to shorter growing seasons and upland soils in dry years. It is recommended for western and northwestern Kansas but not for eastern Kansas because of its susceptibility to chinch bug injury. The Fort Hays Station is the only source of certified seed in Kansas and its supply is limited. Early Kalo is popular in the region of North Platte, Nebr., and is being certified by the Nebraska Crop Growers Association.

Colby milo was developed at the Colby Branch Experiment Station by E. H. Coles, Superintendent. It is one of several strains that originated from a cross between Early White milo and Dwarf Yellow milo made by J. B. Sieglinger at the Woodward, Okla., Agricultural Experiment Station. It has a dwarf habit of growth, is straight-necked and exserts its head well above the leaves, all of which go to make it a desirable combine type. Because of its earliness it is recommended for northwestern and north-central Kansas. Certified seed was grown in 1937 at the Colby Station and by Wilbur Bartlett, Bird City, Kan.

Club kafir was also developed at the Fort Hays Branch Station by A. F. Swanson. It originated as a new type in head row of Dawn kafir. Some authorities believe it to be the result of a mutation in the variety Dawn kafir. Others believe it to be the result of a natural cross between Feterita and Dawn kafir. It is a white-seeded sorghum with the grain resembling that of Blackhull kafir. The heads are compact and club shaped. It is not an early-maturing variety, requiring from 110 to 120 days to mature. It yields well where the seasons are long enough to permit maturity. The plants average about 50 inches in height and are moderately resistant to chinch bug injury. It is recommended for the kafir growing areas in eastern and central Kansas. It is not recommended for western

Kansas because of the shortness of the growing season there. The Fort Hays Station has a limited supply of certified seed.—Robert Sloan, '38.

Cooperative Elevator Survey

Cooperative elevators play an important part in the marketing of grains, especially wheat, in Kansas. At the present time there are approximately 350 such elevators in the state.

In 1931 the Extension Service in cooperation with the Department of Agricultural Economics began a survey of cooperative elevators in Kansas. The purpose of the project is to assist in the management of the elevators by making suggestions based on the study of the records and audits of the local associations.

During the first year of the survey, 35 elevators in southwestern Kansas cooperated with the project. The project is now widespread over the entire state. In 1937, 128 elevators in 58 counties were surveyed. In addition there are 33 new requests for surveys on file.

In carrying out the program the state is divided into three regions, southwestern, northwestern, and eastern. This division roughly separates the local cooperative elevators as to their membership in three regional associations. However there is some overlapping. The Farmers Cooperative Commission Company has members in the southwestern part of the state, the Equity Union Grain Company in the northwest and the Farmers Union Jobbing Association in eastern Kansas.

The extension marketing specialist goes directly to the elevator to get the information for the survey. The survey is voluntary in every respect and the local association is in no way obligated. Information that the marketing specialist gets includes such things as:

1. The size of the elevator and facilities in relation to investment.
2. Volume of business.
3. Methods of selling grains.

NATIONAL WESTERN LIVESTOCK SHOW

4. General financial condition of the organization.

5. The effect of sideline business upon earnings.

6. Business policies of the board. The constitution and by-laws are also checked over to see if they meet the present day needs of the organization.

This information is brought back to college where an analysis is made. In order for a cooperative to be most successful it must maintain certain standards that are considered desirable by most businesses.

The analysis covers such things as:

1. Working capital sources, costs and needs.

2. Ratio of current assets to current liabilities.

3. Ratio of fixed assets to capital invested.

4. Ratio of profits to gross sales.

5. Credit policy in relation to financial condition.

6. Relation of labor costs to gross sales.

7. Membership patronizing the association.

After careful study of the analysis, recommendations and suggestions are made for each association as to where the methods of business could be altered or changed for the benefit of the organization. These recommendations and suggestions are taken back to the local elevator where they are explained to, and discussed with, the manager of the board of directors.

The purpose of cooperative elevators is to put the farmer's grain on the market with a greater saving to the farmer. By pointing out the way to a more successful organization, the extension service and agricultural economics department are performing a valuable service to the farmers of Kansas.—C. P. Wilson, '38.

E. Garth Champagne, '29, is Shelterbelt Assistant, Neligh, Nebr.

Henry W. Gilbert, '31, is Landscape Extension Specialist, Kansas State College.

NATIONAL WESTERN LIVESTOCK SHOW

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them going to the large ranches throughout the range states. It is an unusual opportunity for our students to study improved livestock and at the same time become acquainted with many of the leading livestock producers. Kansas breeders are well represented at this show and market much of their surplus stock at this time.

All college teams were guests of the Denver Livestock Exchange at a banquet Sunday night. On Monday night our 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 acquainted with all the alumni present.

The members of the team benefited greatly from the three days spent at the Denver Stock Yards and the National Western Stock Show. Another group of juniors will have the privilege of attending the Southwestern Exposition at Fort Worth in March, and on that occasion become better informed about livestock production in the southwest. It is from this territory that most of the cattle are shipped to Kansas blue-stem pastures for grazing. Acquaintance of many livestock raisers who depend on Kansas grass to finish their cattle for market will be made at this time.—Arthur Leonhard, '38.

Lyle M. Murphy, '37, is doing graduate work at Michigan State College.

George L. McColm, '35, is U. S. D. A. Soil Surveyor, Albuquerque, N. M.

Ralph B. Ricklefs, '26, is Landscape Gardener and Nurseryman, Salina.

F. C. Warren, '37, is Graduate Assistant, Department of Dairy Husbandry, Pennsylvania State College, State College, Pa.

Inspection of Grain by the Kansas State Grain Inspection Department

The State of Kansas has had a State Grain Inspection Department for almost forty years. Prior to 1915 the actual inspectors were political appointees and were, in many cases, not properly qualified for the positions. Organizations such as the Kansas City Board of Trade maintained their own inspection offices and the State inspected mainly at interior markets where there was no other inspection service.

In 1915, however, the legislature passed the law which organized the department as it is known today. Under this law all inspections within the state must be made by official state inspectors.

One of the most important of the new methods inaugurated with this new arrangement was the adoption of a new nomenclature for grading of grain. Heretofore, such loose and indefinite terms as dry, plump, bright, wet, sound, and similar terms were used. The new nomenclature which classifies as No. 1 dark hard winter, No. 2 mixed, etc., is more definite and binding.

Inspections which had been made at the car with a trier and a test kettle under the old system are now made in offices established for that purpose with modern machines and mechanical devices designed to produce uniformity and accuracy in grade.

Under the existing law, the state inspectors must be licensed by the United States Department of Agriculture and are under the direct supervision of the Bureau of Agricultural Economics. While many factors are determined by mechanical means, there are still a number which are based solely on the individual judgment of the inspector. The inspector must have good judgment, good eyesight, and a good sense of smell in order that he may distinguish odors common to grains. In addition to this, he must be able to make those divisions between grades which

are of necessity, in some cases, based upon the general appearance of the grain.

At present there are twenty-five official state inspectors employed in the department. Of these, seven are in Kansas City and the rest are in other offices. Other employees of the grain inspection department include samplers, whose job it is to secure the actual sample from the car or truck and bring it to the office; clerks, weighmasters (who weigh in and out cars of grain at the terminal elevators), and chemists, who determine the protein content of the samples.

The department maintains a complete inspection service at Abilene, Arkansas City, Atchison, Coffeyville, Dodge City, Fredonia (flaxseed only), Great Bend, Hutchinson, Kansas City, Lawrence, Leavenworth, Salina, Topeka, Wellington, and Wichita. In addition to these points, at Anthony, Belleville, Fort Scott, Girard, Lyons, and Sterling, samples are taken and sent to official markets for inspection.

For example, a broker on the Salina Board of Trade buys a car of wheat on consignment. When the car enters the Salina yards, the inspection department is notified by the railroad as to the car number, contents, consignee, and location. A sampler then secures a true sample by thrusting the trier five times into the car; once in each end, once by opposite doorposts, and finally in the middle of the car. The sample is then sent to the office where the state inspectors conduct the following tests: First, a small portion is removed for the chemist's protein analysis; second, 1,000 grams are weighed out; third, the sampler's sample card is checked with the manifest or railroad notification slip in order to insure accuracy; fourth, the 1,000 gram sample is run through a "kicker" or dockage tester which screens off the weed seeds, foreign matter, and other kinds of grain; fifth, an

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accurate test weight per bushel is obtained with the ordinary test kettle and scale; sixth, the grain is graded, judged, and classified by the inspector.

The sample, together with the report, is sent to the broker's office who now has the information necessary for the purchase or sale of the car of wheat. Protein reports are sent him direct from the laboratory.

During the rush season the time element or rapidity at which an accurate series of tests can be made is of paramount importance. An office which normally handles an average of 15-20 cars of grain daily will in all probability, during the month of July, average 300-400 cars daily for several weeks. In an effort to maintain the usual swift and accurate inspections, the inspector in charge will hire additional men to supplement his samplers and weighmaster's crew. For example, the Salina office which normally employs six or seven men had as many as twenty-five hired during the 1937 peak.

—R. O. B., '39.

H. J. Stewart, '28, has been County Agricultural Agent in Cheyenne county since December, 1929. His outstanding achievements have been the work on grasshopper control and the extension of cultural practices for the conservation of moisture in wheat production.

M. M. Taylor, '30, made a very successful County Agricultural Agent in Rice county for five years, starting work there in 1931. He then went to Thomas county where he has made outstanding progress in 4-H Club work and in contouring thousands of acres of farm and pasture land for the conservation of moisture.

Karl F. Finney, '36, M. S. '37, has recently been employed by the Department of Milling Industry, Kansas State College, as Baking Technologist in connection with the Regional hard wheat laboratory, which is being established in East Waters Hall.

In 1937, a fair crop was harvested and the price was unusually high averaging \$4 a crate so the net return was large. The reason for this high price was the shortage of berries due to frosts, etc., in other berry-growing regions. There are few crops grown on farms which will net the returns the strawberry harvest does even though the cost of production is high.

In strawberry harvesting season, everyone is out in the berry field picking berries whether it be Sunday, holiday or work day. The strawberries have to be picked at least every other day to have good, firm, plump, salable berries. Large fields are usually divided into two parts, one of which is picked one day and the other part the next so the pickers will have work every day. Pickers are paid by the amount of berries picked per day. The prevailing price this last year was 40 cents a crate. A good picker will earn from \$2.00 to \$3.50 a day at such prices.

Another addition to the cost of production is the cash outlay for insect control. The strawberry leaf roller, in particular, does considerable damage each year cutting down next year's production by damaging the leaves in such numbers as to injure and sometimes kill the plant. A great deal of experimental work is being carried on at the present time with the control of this pest as its goal.

All in all, strawberry growing for commercial purposes is a healthful, interesting and usually a very profitable job. It's up to the grower to make it so in many cases. He can do this by employing cultural practices to their best advantages. He should not work in a haphazard manner, but should be vitally interested in what he is doing, plant the best varieties, and do everything to try to get the greatest possible returns per unit of labor involved. This can be done only by being alert at all times for new possibilities that may turn up.—Melvin Peterson, '40.

ALUMNI NOTES

Fay Mueller, '31, is now in the poultry business with Metz Produce Company, Mankato, Kan.

W. F. McMillin, '27, is now with the Production Credit Corporation in Wichita.

Raymond T. Harper, '33, is traveling representative for Swift and Company, as inspector of their Hatcheries over the United States and Canada with headquarters at 1112 Twenty-sixth Street, Des Moines, Iowa.

Ralph D. Barnhart, '32, is a commercial florist in Coldwater, Kan. He recently added a greenhouse to his equipment.

Lawrence Kelly, '34, a landscape architect, is with the Kansas Landscape and Nursery Company in Salina.

Ed. C. Edinborough, '32, is foreman in the National Park Service, U. S. D. I., Sublimity, Ore.

Howard Vernon, '28, is County Agricultural Agent at Osborne, Kan.; Carl Williams, '32, Ashland; J. Edwin McColm, '36, Meade; Ben Kohrs, '35, Cimarron; Samuel E. Alsop, '35, Sublette; Frank Burson, '34, Cottonwood Falls; Karl Shoemaker, '36, Hays; Carl E. Eling, '37, Scott City; Arthur E. Schafer, '37, Norton.

Richard Campbell, '35, is in the Soil Conservation Service at Oskaloosa, Kan.

C. C. Milligan, '32, is teaching Vocational Agriculture in Linn Rural High School; Paul Rust, '37, in Argonia Rural High School.

Ned O. Thompson, '36, is taking his master's degree in Farm Management at the University of Illinois.

Russell T. Reitz, '27, is State Director of the United States Forest Service, Manhattan.

After several years of teaching Vocational Agriculture in high school, R. C. Lind, '23, became County Agricultural Agent in Lincoln county. His outstanding accomplishment has been the formulation and carrying out of an extremely well-rounded extension program.

Erwin Abmeyer, '33, is Superintendent of the Northeast Kansas Experiment Farm, Atchison, Kan.

Theodore C. Stebbins, '36, M. S. '37, is a Ranger, Shelterbelt Forest Service, Hutchinson.

Leonard A. Zerull, '36, is working for Washburn Crosby Milling Company, Kansas City, Mo.

Harold J. Scanlan, '37, is Dairy Cattle Herdsman, St. Joseph's Home, Abilene.

Charles W. Myers, '36, is Sanitary Milk Inspector for the State Board of Health, Topeka.

Everett Byers, '35, is Plant Superintendent of the University of Wisconsin Creamery, Madison.

Harry Baird, '11, has been in extension work since 1920. He served in Ford county for eight years and then was transferred to Lane county to organize the work there. He is now in the central office as assistant district agent.

Henry L. Lobenstein, '26, is in the United States Forest Service, Lincoln, Nebr.

Carl F. Huffman, '17, received the Borden award of a gold medal and \$1,000 in cash at a recent meeting of the Dairy Science Association for outstanding research in the field of dairy production in the last five years. Since 1922, Dr. Huffman has been in the Department of Dairy Husbandry in Michigan State College.

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