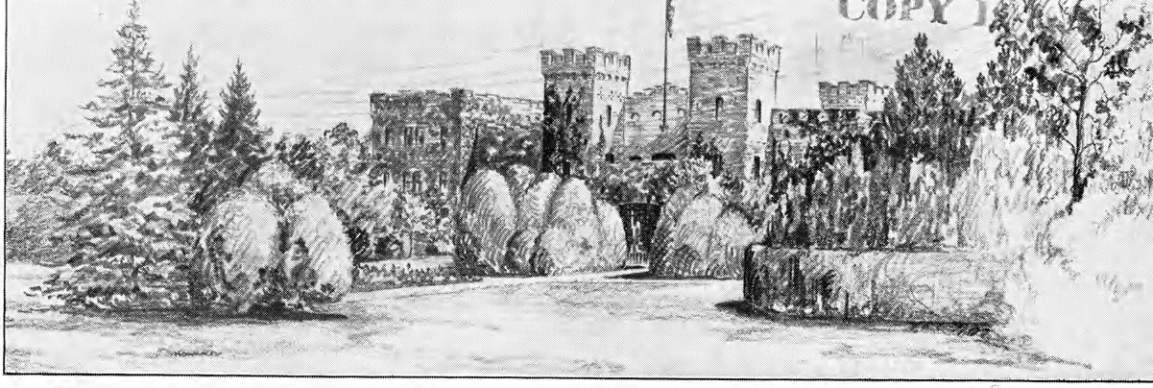
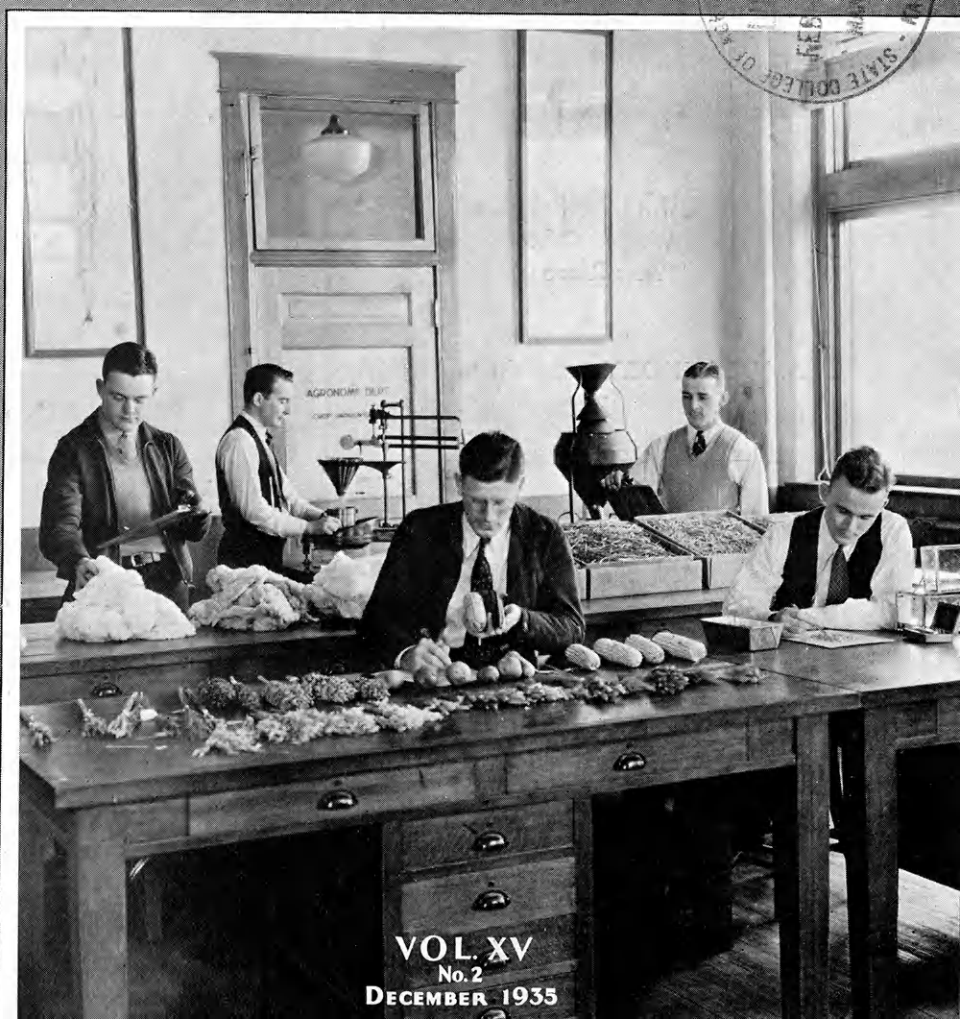


THE KANSAS AGRICULTURAL STUDENT

MANHATTAN, KANSAS



VOL. XV
No. 2
DECEMBER 1935

The Kansas Agricultural Student

VOL. XV Manhattan, Kansas, December, 1935 No. 2

THE EAST AG BUILDING AFTER A WINTER SNOW. ONE WING OF WOMEN STUDENTS' DORMITORY MAY BE SEEN IN THE RIGHT BACKGROUND

CONTENTS

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MEMBERS OF THE HONORARY FRATERNITY OF ALPHA ZETA

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The Producer's Type of Hog

Roy H. Freeland, '37

For the past 30 years there has been much difference of opinion concerning the most profitable type of hog to raise. Such a controversy naturally arises from the fact that the type most desired by the packer is somewhat finer-boned and earlier-maturing than the type which is most profitable to the producer. However, the actual difference between the packer type and the producer type is not so great as is indicated by the wide difference of opinion that has prevailed concerning the two types and the extreme changes that have occurred in hog type.

History of the type question shows that for the past century, hog type has constantly been changing from one extreme to the other. In most cases the changes in type were brought about to meet changes in the kinds of pork cuts demanded. In practically every case, however, the change in type was carried too far, resulting in an extreme that was unprofitable to both the producer and the packer.

During the period preceding 1870, very large, coarse hogs were raised in the United States. These hogs were suitable for that period because the pork demand of that time was for heavy salt pork. During the years following 1870, demand for fresh pork began to replace the demand for heavy salt meat. This called for hogs of a size that would furnish carcass cuts of a lighter, more convenient size, so early maturity and fineness of bone were stressed in the breeding of hogs. By 1908, hog breeders of the day had developed an extremely short, chuffy, fat-backed type. These hogs were extremely fine-boned, were lacking in constitution and prolificacy, and made very slow gains.

Then a larger type was advocated to overcome the serious objections of this fat-back type. But, true to form, the change was again carried too far. Everyone is familiar with the results of this last extreme. By 1926 the so-called "greyhound" type was in full swing. In many cases it required a long, narrow, slender-bodied hog to win at the stock shows. Many judges of the time neglected constitution, ham, width, and depth of body, in their search of extreme length and height. As a result, hogs once again became poor in constitution, were poor feeders, and were deficient in desirable carcass cuts. At the present time hogs all over the country are in various stages of recovery from this "greyhound" type and there is some disagreement as to how radical a change should be made.

An analysis of the situation shows all this disagreement to be unnecessary so far as the producer is concerned. He should keep a level head and breed a medium to moderately-stretchy type, but by all means be careful to include plenty of depth and width of body and deep, full hams along with this length. The producer should not be influenced too strongly by the packer's demand for early maturity and fineness of bone, especially under the present price system. The average range in market price for hogs of the same weight is usually not more than 25 cents per hundredweight. Experiments show conclusively that the larger growthier type of hogs will make larger and more profitable gains as well as being more prolific. The advantages in rate and economy of gains are enough to offset the small difference in price, many times over.

This type is not far from ideal to suit even the packer demands. Although they pay top prices for short fat hogs because of the higher dressing percentage, packers do not desire the extreme fat-back type that was popular in 1908. They get more desirable cuts to meet present pork demands from a medium-type hog with lots of smoothness, quality, and refinement.

(Continued on page 62)

College Notes

KANSAS STATE WINS AT APPLE EXPOSITION

The Missouri Valley Apple Exposition held at St. Joseph, Mo., December 3 to 5, 1935, was jointly sponsored by the State Horticultural Societies of Kansas, Missouri, Nebraska, and Iowa and the St. Joseph Chamber of Commerce. The apple show was in charge of Mr. W. R. Martin, Jr., secretary of the Missouri Horticultural Society and extension horticulturist in the University of Missouri. The exhibits were nicely arranged in the center of the auditorium main floor, at the outer edge of which commercial exhibitors displayed their orchard equipment, spray materials, and nursery stock.

The program conducted in an adjoining room was in charge of the various horticultural societies. Some well-informed speakers appeared on the program and imparted to the attending fruit growers some valuable practical information.

The intercollegiate apple judging contest was held on December 4. The four teams in the contest were from: Iowa State College, University of Illinois, University of Missouri, and Kansas State College. Nebraska did not compete. Each team was composed of three members and one or more alternates. Alternates judged along with regular team members but their scores were not counted in the winnings.

The contest consisted of 100 apples for identification, chosen from 26 varieties, and 15 classes of three plates each for judging on a basis of form, size, color, uniformity, and condition. A possible score for each contestant was identification of 100 apples, 500 points; identification of judging classes, 225 points; and perfect placing of all judging classes, 1,500 points, making a total of 2,225. A perfect score for a three-man team therefore was 6,675. Kansas State won first place by a score of 6,070; Missouri second with 5,985; Illinois, third with 5,395; and Iowa State, fourth with 5,390. Theodore C. Stebbins was high individual in the entire contest with a score of 2,115. LaVerne Spears, Kansas State, was second with a score of 2,080, and Elbert L. Eshbaugh, third, with 2,015.

The Kansas State team was composed of Theodore C. Stebbins, White City; Elbert L. Eshbaugh, Manhattan; and Emanuel Zoglin, Kansas City, Mo. Delbert E. Eshbaugh, Manhattan, and LaVerne Spears, Rossville, were alternates. Dr. W. F. Pickett coached the team.

A bronze plaque with the name of Missouri Valley Apple Exposition on it and mounted on an apple-shaped slab of native cherry wood, was presented to the Kansas State team at an all-exposition banquet held in the dining hall of Hotel Robidoux, St. Joseph, on the evening of December 4. This appropriate and attractive trophy is the permanent property of Kansas State and is a worthy addition to the group of trophies in Dickens Hall won by apple judging teams in years past.—L. S., '36.

TWO FIRSTS TO WOMEN'S MEAT JUDGING TEAM

The Kansas State home economics meat judging and identification team competed in two contests last fall, placing first in both. The first contest was held at the American Royal Livestock Show in Kansas City, October 21, with only Oklahoma A. & M. and Kansas State competing. The score of the Kansas team was 2,360; of the Oklahoma team, 2,301. The second contest was the Mid-West Meat Identification and Judging Contest held at the Cudahy Packing Plant, Wichita, Wednesday, November 13, 1935. Here the Kansas team competed with teams from the

THE AGGIE APPLE JUDGING TEAM AND THE TROPHY WHICH THEY WON

From left to right: Delbert E. Eshbaugh (alternate), Emanuel Zoglin, Theodore C. Stebbins, Dr. W. F. Pickett, coach, LaVerne Spears (alternate), and Elbert L. Eshbaugh.

THE KANSAS WINNING APPLE JUDGING TEAM IN CHARACTERISTIC POSE

Stebbins is taking time out to discuss with Spears the engraving on the apple-shaped trophy which the team won.

University of Nebraska and Oklahoma A. & M. College. The scores of the three competing teams were: Kansas, 3,360; Oklahoma, 3,004; and Nebraska, 2,674.

The members of the team were Ruby Corr, Clearwater; Mrs. Nina Sherman-Kent, Grinnell; Sarah Anna Grimes (alternate at Wichita), Manhattan; and Ethel Iris Collins (alternate at Kansas City), Dwight.

Ruby Corr was high individual in both contests. In the Kansas City contest she was high in both judging and identification, establishing a new high record for any individual with a score of 570 out of a possible 600 points in the judging of meat and a score of 1,143 out of a possible 1,200 points for the entire contest. Ethel Iris Collins placed second in the Wichita contest, but first in identification of retail cuts of meat, setting a new record by scoring 579 out of a possible 600 points. Mrs. Kent placed second in the American Royal contest and third in the Wichita contest.

This is the second successive year that the Kansas team has won at the American Royal and the third successive year at the Mid-West contest in Wichita.—S. A. G., '36.

PHILIP W. LJUNGDAHL

Philip is president of the Agricultural Association and has an outstanding record as a livestock judge.

INTERNATIONAL MEAT JUDGING CONTEST

The Kansas State College meat judging team placed second in the intercollegiate meat judging contest at the International Livestock Exposition in Chicago December 3, 1935. Eleven teams competed in the contest. The five high teams and their scores were as follows: University of Nebraska, 2,392; Kansas State College, 2,353; Iowa State College, 2,336; Pennsylvania State College, 2,326; and University of Missouri, 2,325.

The Kansas team was composed of Miss Ruby Corr, Clearwater; Mrs. Nina Sherman-Kent, Grinnell (alternate); Wilton B. Thomas, Clay Center; and Ned O. Thompson, Manhattan. Kansas State College was fourth in lamb judging, third in beef, and second in pork. Wilton B. Thomas tied for third high individual in the entire contest and placed first in pork judging. Ruby Corr was eighth in the entire contest and tied for eighth in both pork and lamb judging. Ned O. Thompson was fifth high in judging beef.

The National Livestock and Meat Board offered a trophy in 1926 which was awarded each year to the team winning the International Meat Judging Contest. The institution winning it three years was to have permanent possession of the trophy. This year Kansas and Nebraska were the only teams that had won two contests each. Kansas won in 1931 and again last year. Nebraska won in 1926 and 1928 and again this year for the third time, thereby winning permanent possession of the trophy. It seems quite fitting that this cup should go to Nebraska because it was through the efforts of Prof. W. J. Loeffel, associate professor of animal

K. S. C. MEAT JUDGING TEAMS

Left to right: Wilton B. Thomas, Mrs. Nina Sherman-Kent (alternate at Chicago), Ethel Iris Collins (alternate at Kansas City on women's team), Ned O. Thompson, Ruby Corr, Prof. D. L. Mackintosh, coach, Lebert R. Shultz, Sarah Anna Grimes (on women's team in Kansas City).

husbandry in the University of Nebraska, that the International Meat Judging Contest was organized in 1926.

It is interesting to average the placings of the teams that have taken part in the international contests since its inauguration. The average placings for the four high states are: Nebraska, 2.8; Kansas, 3.2; Iowa, 3.5; and Missouri 5.

Prof. D. L. Mackintosh coached the team and accompanied them on the trip to Chicago.—J. C. B., '37.

CROPS JUDGING TEAM STEPS ON HIGH

The Kansas State crops judging team entered two contests this year. Each contest consisted of three divisions: Identification, seed judging, and commercial grading of grain, hay, and cotton.

The first contest, which was held in Kansas City, Mo., November 22, 1935, was sponsored by the Kansas City Board of Trade. The Kansas State team, composed of Leon E. Wenger, Powhattan; H. Frederick Dudte, Newton; Royse P. Murphy, Norton; and Floyd L. Siegrist, Hutchinson (alternate), placed third in a field of five teams. The team as a whole ranked first in commercial grading, second in identification, and third in judging. Murphy was high man in identification and third high in the entire contest. Dudte was seventh and Wenger was tenth in all divisions. The Iowa State College team placed first and the University of Ne-

(Continued on page 44)

THE KANSAS AGRICULTURAL STUDENT

KANSAS STATE COLLEGE OF AGRICULTURE AND APPLIED SCIENCE

MANHATTAN, KANSAS

VOL. XV DECEMBER, 1935 No. 2

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THE FALL JUDGING CONTESTS

An erroneous impression seems to be common in the student body that the past judging season has not been so successful for K. S. C. judging teams as those for several years past. There are reasons for this impression, of course, but in the broadest sense it is strictly erroneous. This has been the best all round judging season the college agricultural judging teams have had for several years.

Occasions for striking headlines, however, have been somewhat limited the past season. A few teams that during recent years have brought in some $600 scholarships or numerous trophies —sometimes as many as four fifths of those contested for—haven't clicked in just that way this year. The absence of the clamor is noticeable, but it doesn't spell defeat.

A study of the work the students have done in connection with recent intercollegiate judging contests, as well as the rankings the teams have received from the contest official judges, shows most creditable work on the part of K. S. C. coaches and students. In the first place in almost every case larger numbers of students were reached than usual. Local interest and competition were, therefore, keen.

In the next place, not counting the meat team of the Division of Home Economics, which won two firsts in two contests, the Division of Agriculture sponsored teams in eleven intercollegiate contests. In these contests they won three firsts and in two other cases placed in the upper 25 percent. In the sixth case they placed third with five teams competing and in the other five cases, while placing in the lower 50 percent, kept out of the cellar position.

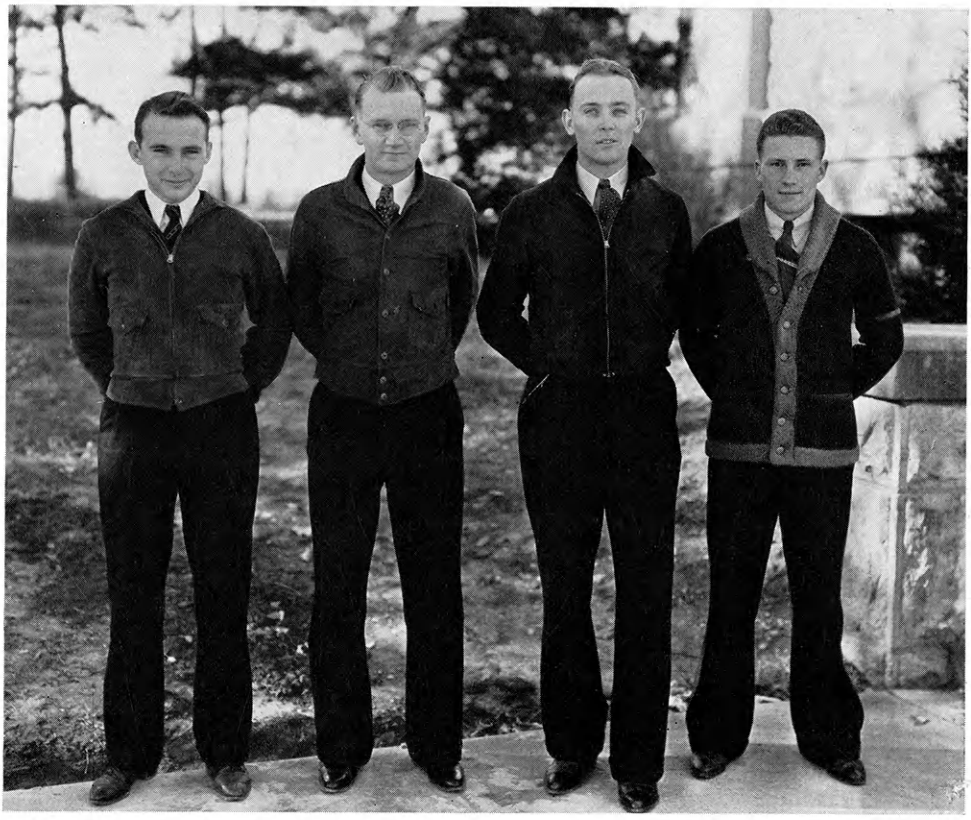
Further it is interesting and of importance to note the following about four of the low placings: (1) The dairy cattle team after suffering defeat at the Waterloo Dairy Cattle Congress, won over 18 teams in the National Dairy Show at St. Louis, the greatest annual dairy cattle judging contest in the country. (2) The crops judging team after placing third among five competitors at Kansas City, won the contest in the International Livestock Exposition in Chicago, first among ten teams. (3)

The livestock judging team after placing fourteenth in Kansas City, placed fifth among twenty-four teams in the International contest, defeating ten of the thirteen teams that placed above them in Kansas City. (4) The meat judging team placed fourth among six teams in the American Royal contest in Kansas City, but second among eleven teams in the International in Chicago. What the other two low-placing teams would have done if they had had another chance, who can tell?

Altogether the teams did great work; gave a splendid accounting of themselves, ably upheld the standards of K. S. C., and The Kansas Agricultural Student is proud of them and their coaches. The pictures of all the teams are presented on the pages of this issue. These pictures are just honest every-day pictures showing the students at work. We will be disappointed if our readers are not interested in them and to the teams and their coaches we say, honor to whom honor is due.

Tudor J. Charles, Jr., '29, associate editor of Kansas Farmer, is in charge of the pasture rotation contest for central and western Kansas.

Dr. D. F. Jones, '11, geneticist of the Connecticut State Agricultural Experiment Station, New Haven, is attending the California Institute of Technology, Pasadena, this year while on sabbatic leave.



OFFICERS OF AGRICULTURAL ASSOCIATION, 1935-'36
Left to right: David A. Reid, Manhattan, secretary; Leonard F. Miller, Agra, treasurer; Philip W. Ljungdahl, Menlo, president; and Fred L. Fair, Alden, vice-president.

CROPS JUDGING TEAM

(Continued from page 41)

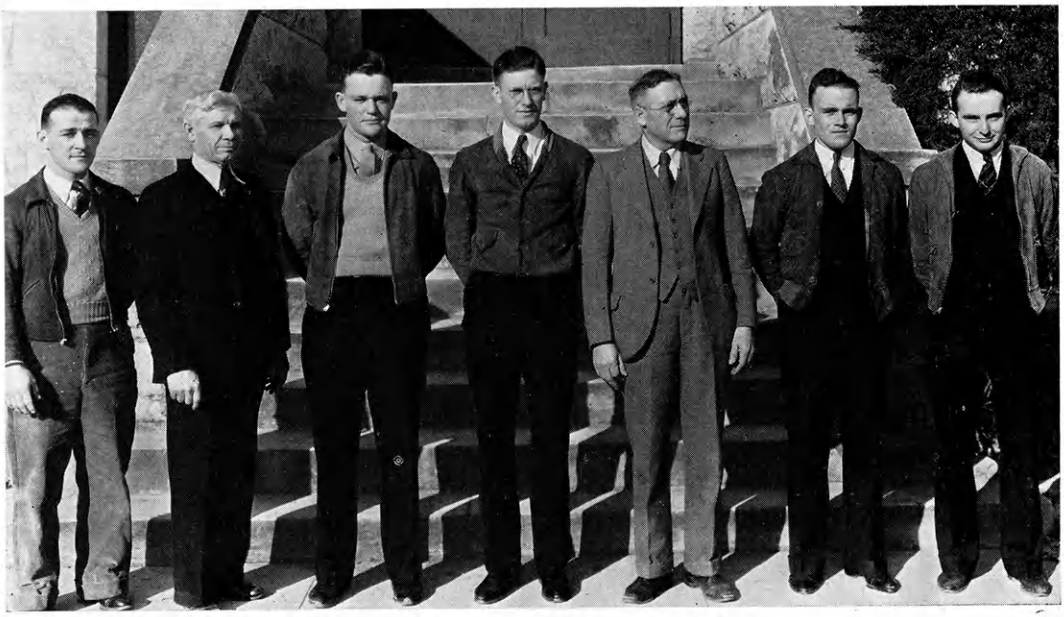
braska team, second.

In the International contest at Chicago, November 30, 1935, the Kansas State team composed of Murphy, Dudte, Wenger, and David A. Reid, Manhattan (alternate), won first place among ten competing teams. Murphy and Dudte tied for second high individual honors and Wenger was eighth high man. The team placed first in identification, first in commercial grading, and third in judging. The rank of the ten teams is as follows:

Team	Score
Kansas State College	3,868
University of Nebraska	3,829
Oklahoma A. and M. College	3,789
Iowa State College	3,784
North Carolina State College	3,777
Michigan State College	3,707
Texas A. and M. College	3,705
University of Minnesota	3,666
Mississippi State College	3,229
Pennsylvania State College	3,191

As a result of the high placings made by this team, the school was awarded a $50 scholarship by the Kansas City Board of Trade and a $100 scholarship by the Chicago Board of Trade. In addition to this, the team brought back the loving cup from Chicago which will remain here until next year.

The crops team was coached by Prof. J. W. Zahnley, who was ably assisted in this work by Prof. C. D. Davis.—D. A. R., '36.



AGGIE WINNING CROPS JUDGING TEAM

From left to right: Floyd L. Siegrist (alternate at Kansas City), Prof. C. D. Davis, assistant coach, Royse P. Murphy, Leon E. Wenger, Prof. J. W. Zahnley, coach, H. Frederick Dudte, and David A. Reid (alternate at Chicago).

The Kansas Agricultural Student is pleased to present this winning team on its cover page as it was photographed while working on crops materials in the college laboratory. From left to right are: Royse P. Murphy, David A. Reid, Leon E. Wenger, Floyd L. Siegrist, and H. Frederick Dudte.—Ed.

POULTRY JUDGING CONTEST

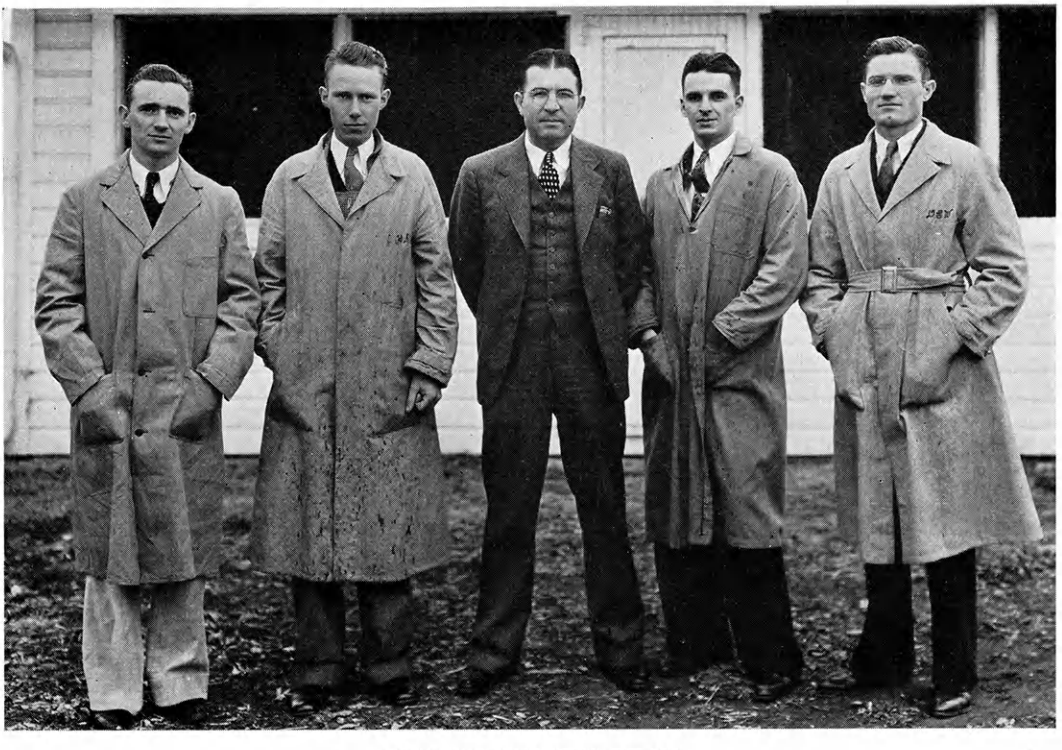
In the annual Mid-West Intercollegiate Poultry Judging Contest held in Chicago, Saturday, November 30, 1935, the Kansas team placed seventh in a field of eight competing teams.

The Kansas team was composed of:

Gerald J. Brown.....Circleville
Elmer B. Winner.....Topeka
Carrol L. Wahl.....Wheaton
Marshall R. West (alt.).....Blue Mound

The contest was divided into three distinct divisions with one division being divided into two sections. The exhibition division and the production division consisted of five classes each. The other division—that of market products—consisted of three classes of competing teams and their coaches were guests at a banquet given in the Hotel Auditorium. The winners were announced and prizes awarded at the banquet.

Prof. H. M. Scott, coach, accompanied the team on the trip.—M. R. W., '36.



POULTRY JUDGING TEAM

Marshall R. West (alternate), Carrol L. Wahl, Prof. H. M. Scott, coach, Elmer B. Winner, Gerald J. Brown.

dressed birds, two classes of live birds, and a class of eggs.

In the entire contest Purdue University placed first; Texas A. & M. College, second; University of Nebraska, third; University of Missouri, fourth; and Iowa State College, fifth.

Wahl was third in judging market products and Winner and Brown tied for eighth in production judging. The team placed fourth in market products, sixth in production, and eighth in exhibition.

Saturday night after the contest the

LIVESTOCK JUDGING TEAM IN THE INTERNATIONAL CONTEST

In the biggest contest of their judging careers the senior livestock judging team, composed of Howard A. Moreen, Salina; Philip W. Ljungdahl, Menlo; J. Edward McColm, Emporia; Ned O. Thompson, Manhattan; Lester A. Zerbe, Salina; and L. Wayne Herring, Tulia, Tex. (alternate), placed fifth among 24 teams competing in the International contest on November 30, 1935. This contest was one of the biggest ever held in connection with the

International Livestock Exposition and in placing only 111 points out of first place the team made a creditable record for their school and for their coach, Prof. F. W. Bell, of the Department of Animal Husbandry.

The team placed first on hogs, third on beef cattle, and eighth on sheep. Moreen was eighth high individual in the entire contest, with 913 points out of a possible thousand. He placed ninth on cattle and tenth on sheep. Ljungdahl and Thompson tied for tenth place on hogs.

The scores of the teams in the entire contest were as follows:

University of Missouri	4,521
Purdue University	4,498
University of Nebraska	4,457
Iowa State College	4,430
Kansas State College	4,410
Ohio State University	4,406
Pennsylvania State College	4,386
North Dakota Agricultural College	4,375
Montana State College	4,353
Oklahoma A. & M. College	4,352
Texas Technological College	4,344
University of Illinois	4,322
Ontario Agricultural College	4,311
Utah State Agricultural College	4,304
University of Wyoming	4,292
A. and M. College of Texas	4,246
Michigan State College	4,238
Colorado State College	4,236
West Virginia University	4,200
University of Wisconsin	4,198
Virginia A. and M. College	4,134
University of Minnesota	4,082
Connecticut State College	3,997
Massachusetts State College	3,974

The members of the team were very uniform in their individual scores which accounts largely for the favorable placing the team made. There were only 54 points difference between the low and high men on the team.

K. S. C. LIVESTOCK JUDGING TEAM

From left to right: J. Edwin McColm, Lester A. Zerbe, L. Wayne Herring (alternate at Chicago), Prof. F. W. Bell, coach, Howard A. Moreen, Philip W. Ljungdahl, Ned O. Thompson, and Arthur C. Ausherman (alternate at Kansas City).

The fact that in the International contest the Kansas State team defeated ten of the thirteen teams that placed over them in the American Royal contest is ample proof of its ability and drive. The boys fought all through the year and deserved their winnings at the International.—L. W. H., '36.

Harry E. Ratcliff, '23, is cooperator of the western division of the Farm Credit Administration, Washington, D. C. He is working on cooperative marketing of grain.

THEODORE C. STEBBINS

Mr. Stebbins completes his work for his degree this semester. He is majoring in horticulture and was high man in the recent intercollegiate apple judging contest.

CLARENCE L. BELL

Clarence is not only an outstanding livestock judge but an outstanding student. He was high man in the national dairy judging contest last fall.

Baking Our Daily Bread

Rowland J. Clark

Associate Professor of Milling Industry

It's a long journey from the raw materials which enter a modern bakery to the finished loaf of bread on the family dinner table. Many ingredients may be used in making the bread, five of which are usually considered essential; namely, flour, water, sugar, salt, and yeast. An excellent loaf of bread can be baked through the use of only these five basic materials; but in order to make the bread stay fresh longer, the baker uses shortening. Malt extract may be used to add flavor and to aid in fermentation. Milk may be used for its flavor and nutritional properties.

All these ingredients are received in the storage room of the bakery. Flour is stored to the best advantage in sacks which are stacked in piles about six feet high on "skids" or small low sleds. Care is taken to allow plenty of air spaces around these piles so there will be good ventilation. This helps in aging or maturing the flour. The flour storage room should be maintained at a temperature of not less than 70 degrees F. and preferably a little higher in order to warm the flour to 70 degrees F. before it is used.

The weighing or scaling room is the next step in the process. Here each material is weighed out for its respective dough and put in buckets. Flour is weighed into a large hopper hung above

H. FREDERICK DUDTE

In connection with the Kansas City crops judging contest, the Kansas City Board of Trade sponsored a half-day inspection trip. All members of the five competing teams, their alternates, and others accompanying the teams to the contest took part in the trip. At its close each participant wrote an essay on "My Impressions of Kansas City as a Grain Market." Mr. Dudte won first prize on his essay—$25.

the mixing machine and so arranged that the flour can be dumped by pulling a slide valve. The required amount of water is weighed into a tank hung beside the flour hopper.

The greater proportion of bread on the market today is made by the sponge dough method. To make the sponge, part of the weighed materials are dumped into the mixer and thoroughly mixed together. This sponge is turned out into a trough (pronounced "tro" in bakery parlance) which is a narrow, rectangular, open-topped box built on casters. This trough is pushed into the dough room for fermentation. The temperature in this room is held constant at 80 degrees F. and the humidity is high enough to prevent crust formation on the dough tops, usually about 80 percent. After about five hours of standing in this room, the trough is pushed back to the mixer, the sponge thrown back into it, the remaining flour, water, and other materials added, and the whole mixed into the "dough" as the baker says.

This second mixing operation is very carefully watched. Too much or too little mixing would spoil the bread so at frequent intervals the mixer is opened and the dough examined until the correct dough development is obtained. In certain high speed mixers running at about 60 R.P.M., five minutes is sufficient time. In other mixers where the treatment is not so severe, fifteen or twenty minutes may be required. Temperatures are carefully watched at this stage. Adjustments are made to bring the dough from the mixer at approximately 80 degrees F. Again the dough is dumped into the trough and allowed to stand in the fermentation room, this

EDNA MAY ARNOLD

Miss Arnold is the only young lady in the freshman class of the Division of Agriculture. Her home is Wichita and she is going to major in horticulture.

time for only a short period, perhaps about fifteen minutes.

The dough mass varies in weight according to the size of the mixer in the shop. Sometimes only a few pounds of dough can be handled in a mixer; but the large plants of the country are equipped to handle 600 pounds of flour to a dough which makes the total dough weigh over 1,000 pounds as it goes into the dough stage of fermentation.

Having completed this "dough-time fermentation" the large mass is ready to be scaled into sizes suitable for individual loaves. In large shops the dough is fed down a chute into a "divider" on the floor below. This machine contains pockets which automatically fill with a given amount of dough and discharge the pieces as pistons move back and forth within cylinder walls. The pieces of dough, each just large enough to make a loaf of bread, drop from this machine onto a moving belt which carries them to the rounding machine. Here each ball of dough is rolled over and over until the wet surfaces produced by the divider are sealed and dried by rolling in flour.

JOE W. LEWIS

Joe has the enviable record of being high man in three successive annual state 4-H Club livestock judging contests.

CLYDE D. MUELLER

Almost 1,100 students took the freshman aptitude tests last fall. The five receiving the greatest number of points were given scores of 100. Mr. Mueller of Sawyer was one of the five and the only one from the Division of Agriculture.

These two machines have given the dough severe punishment so it is necessary to give it a rest period. Therefore, the doughs are conveyed to the overhead proofer where they travel back and forth on a series of endless belts for about fifteen minutes. The proofer drops the doughs into the top of the molder. This machine first presses the dough out into a thin sheet and then rolls it up into a tight compact cylinder which is placed in the bake pans.

Before the panned doughs can be baked they must stand in the pans for proofing. This takes place in the proof box which is held at a temperature of 95 degrees F. and is filled with steam to prevent dry crusts forming on the tops of the doughs. Proof time varies

with the kind of bread being made and the materials used but usually about forty-five minutes is the average time for white-pan bread.

When the dough has risen to the proper height the pans are placed in the oven for baking. This stage in the fermentation process is very important. Too hot an oven will burn the bread crust before the inside of the loaf has been baked. Too cold an oven will allow fermentation to continue beyond the desired amount. An ideal baking temperature on most white-pan breads is 475 degrees F. Steam is used in the oven so the crusts will not be too hard. About thirty-five minutes is required for a normal baking time.

TWO FRESHMEN IN THE DIVISION OF AGRICULTURE

Horton E. Kimble of Kansas City, Mo., is discussing matters of current importance with Fred W. (Shorty) Leimbrock of Wichita, one of his classmates.

When the bread comes from the oven it is placed on racks to cool, after which it goes to the slicing machine. Here the loaves are fed in sidewise and are pushed against a dozen or more knives set at about one half inch intervals. The sliced bread coming from this machine moves on a belt directly into the wrapping machine where each loaf receives its wrapper. The packaged bread is then loaded into trucks and delivered to the grocer.

The last step in this journey to the family dinner table is the delivery from the grocer to the housewife. How appetizing the loaf smells as the wax package is broken and the slices are removed for eating. What a combination of skill and art is contained in the finished loaf. Each step of the journey from raw materials to the finished product has contributed its part in making the loaf nutritious, wholesome, and fresh for the table. How little is the intricate process which enters into baking our daily bread appreciated.

Cream Improvement in Kansas

The installation of cooling systems in 80 percent or more of the cream stations in Kansas is a most significant forward step in the present Kansas cream quality improvement campaign. The two types of cooling systems which seem best adapted for use in the average cream station are the so-called wet sack and the spray systems or a combination of these.

Unfortunately there are little if any experimental data available to show the relative merits of these different cooling devices. The Departments of Dairy Husbandry and Bacteriology of Kansas State College are cooperating with the State Dairy Commissioner in collecting data which they hope will throw some light on the subject.

Preliminary trials show that the spray system cools more rapidly than the wet sack method. The most important factors limiting the cooling obtained by the spray method are the temperature and volume of spray water

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At What Price a Forest?

I. J. Ramsbotton, '36

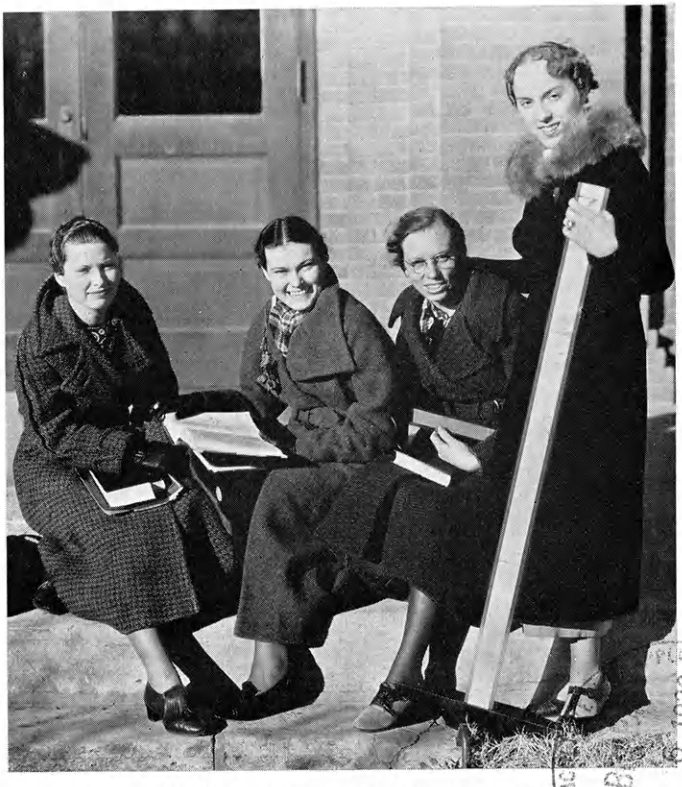
Man has decided only recently that his natural resources might become exhausted. It seems that we naturally took it for granted that when every well in an oil field became a dry hole, a new field would be developed. Individuals were allowed to exploit and capitalize these natural resources. They were making fortunes and exhausting the supply for future generations. Recently, however, men have been waking up and have been doing something about it.

On April 17, 1933, the first Civilian Conservation Corps camp was established. Soon camps for conserving our resources were established throughout the United States. To these camps we must attribute the preservation and establishment of many forests. The total value of the work completed by the CCC camps has been estimated at $428,000,000. Of course it is difficult to make any estimate of this sort but nevertheless, the accomplishment has been great.

Two hundred and ninety-one million trees have been planted by these camps. Is that not worth consideration? Many of these trees were planted on denuded areas, perhaps made barren by the carelessness of some smoker or camper. Camp members have spent more than 1,841,000 man days in fighting forest fires.

The CCC has been much more beneficial in the preservation of existing forest areas than it has been in establishing new ones. Thousands of miles of roads and trails have been constructed through the rough, timbered areas, principally for fire protection. Telephone and telegraph lines have been built for alarm systems. Lookout houses and towers have been built for the detection of fires. Even fire-breaks have been opened up through forested areas to facilitate fire fighting and to remove inflammable hazards.

The CCC has made a drive to reduce or control the ravages of forest-destroying insects, diseases, and rodents. Progress has been shown in the cam-



THE FOUR YOUNG LADIES ENROLLED IN THE DIVISION OF AGRICULTURE

From left to right they are: Miss L. Elizabeth Mott of Poplar Bluff, Mo., sophomore majoring in horticulture; Miss Edna May Arnold of Wichita, freshman majoring in horticulture; and Misses Olive E. Schroeder of Lorraine and Mary Jane McComb of Wichita, juniors in landscape gardening.

paigns against pine beetles, gypsy moths, and other pests. Of course, this work could not go without any supervision or without experimentation. More than 9,000 forest experimental plots have been established for research purposes.

The CCC has aided indirectly as well as directly in the conservation of forests. Due to the stimulus of these conservation programs, the individual states have added approximately 500,000 acres to their state parks. A large acreage has been cleared for public camp grounds. Southern farmers planted 3,000,000 young trees last spring from state-maintained nurseries. These nurseries are working in cooperation with the national government under the Clark-McNary law. It has been estimated that 9,000,000 seedlings have been propagated in these nurseries. Seedlings not distributed to farmers were planted on state and private lands outside of farms, allotted to schools for demonstration plots, or were used for erosion control projects.

In the last few months approval was made by the National Forest Reservation Commission for the purchase of 949,804 acres of land for national forests at a cost of $3,493,328. The heaviest purchases were in the Appalachian, Ozark, Southern Pine, and Lake and Upper Mississippi forest areas. CCC camps will aid in the development and improvement of these areas.

President Roosevelt has recently approved an allotment of $970,000 for the control and the prevention of the spread of the brown-tail moth. Another allotment of $2,800,000 is for the control of the gypsy moth; and another allotment of $6,378,735 for the control of the blister rust on white pine.

Another reforestation program is the Plains Shelterbelt Project. A report by Paul H. Roberts, acting director at Lincoln, Nebr., says 125 miles of shelterbelt plantings have been completed in the six states traversed by the zone. Of this mileage, Kansas has 28 miles of strip plantings. An additional 5,117 acres of special tree plantings on 1,926 farms have been completed. These plantings have been made in cooperation with the farmers. Seeding is rapidly taking place on the 650 acres of land now leased for nursery purposes for this project. The mileage planted this year was largely restricted by the amount of suitable nursery stock available, both as to age and to the variety of trees. But with the development of the nurseries, it is evident that future plantings will not be handicapped by such restrictions.

However, through these projects and by the increase of plantings made by individuals, an all time record was established last year. More than three times as many trees were planted last year as the annual average previous to 1933. Progress is being made in restoring losses suffered through many years of reckless exploitation. Last year's plantings, however, did not even keep up with the present annual losses. Forest fires are continuing to destroy timber faster than new growth can be started. When forest plantings begin to equal our annual forest losses, a healthy report of progress can be made. Thousands of acres are now being restored annually instead of millions that must be planted in order to keep up with annual losses. There is at least comfort and encouragement, however, in the knowledge that the negligence of the past is being recognized and something is being done about it.

J. A. Terrell, '30, is field man for the Warren Mortgage Company, Emporia.

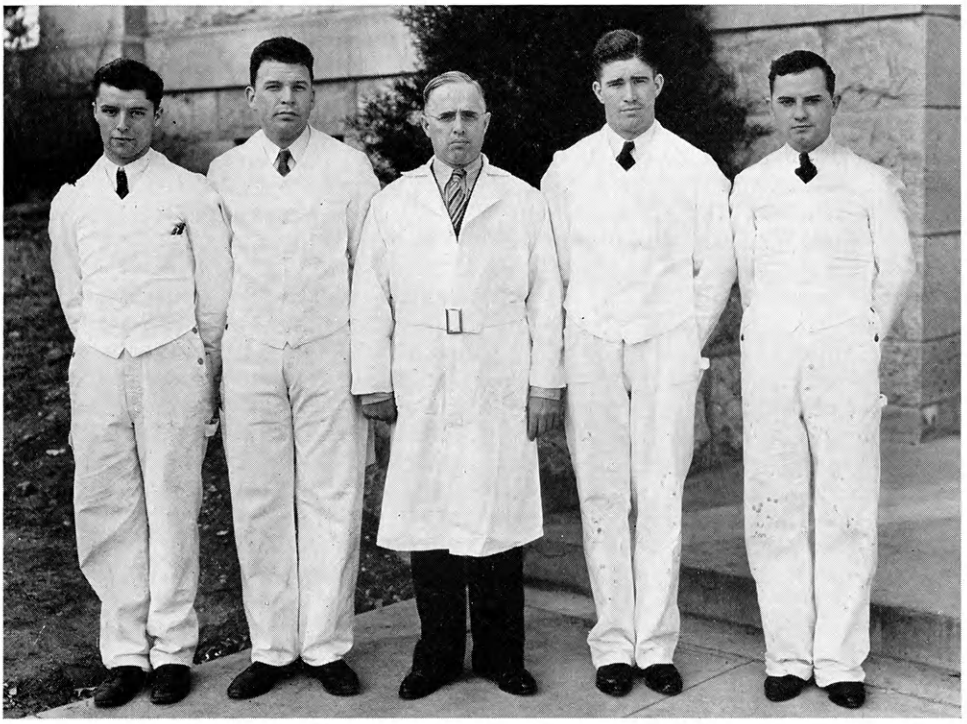
Charles E. Fisher, '34, is in charge of the cooperative fertilizer tests with cotton in the Blackland Belt of Texas. He is working on an American Cyanamid Fertilizer Company fellowship. He is also taking graduate work in Texas A. & M. College and expects to receive his master's degree at the end of the summer school session.

The Best Butter Customers

J. B. Roberts, '33

Assistant in Agricultural Economics

The dairy industry dates back to time immemorial and from the earliest times there have been butter users. The Indians of Asia, the Hebrews, Greeks, Romans, and other ancient peoples used milk of various animals and butter. In early times a few people used butter as a food and those who did seldom used fresh butter. The butter was melted and stored, and salted butter grease over 100 years old was highly prized. This rancid butter was used in cooking or as an appetizer for special occasions.



DAIRY PRODUCTS JUDGING TEAM
From left to right: Wilmer R. Smittle, Laurence G. Harmon, Prof. W. H. Martin, coach, Frederick G. Warren (alternate), and Lebert R. Shultz.

At the time of Alexander I, the Macedonian women of wealth were the best butter customers. They bought butter to use as a cosmetic, a skin ointment, and a hair dressing. The Greeks and Romans used it as a cosmetic, too, and as a medicine. Soot from burnt butter was used to cure sore eyes. Fresh butter was used on wounded elephants and for skin injury by the Roman armies. As late as the seventeenth century, butter was used by the Romans for external use only.

In the twelfth century, butter was demanded by certain traders as an article of commerce replacing money. Strange as it may seem, the Irish at one time valued rancid butter as a measure of wealth just as do certain mountain tribes in Chile today.

The butter customer today values butter for its freshness rather than for its age, and instead of rancid butter he wants the wholesome, pleasing flavor of freshly-churned butter. There is a wide difference of opinion as to why some people use more butter than others.

Recent studies show that the man who uses the most butter is the man who is best able to pay almost any price that may be asked for it, while the poorest butter customers are those whose incomes are low and who use butter only when the price is relatively low. For the period 1920 to 1934, studies show that changes in the retail price of butter and consumers' income (as represented by factory payrolls) accounted for about 80 percent of the change in annual per capita consumption of butter in the United States.

Of course price of butter and the ability to pay for it are not the only factors affecting consumption. Other things being equal, office workers use less than men at physical labor, adults eat more than children. Religious belief, habits, and customs are known to have some influence even today. Unrestricted native Americans, Germans, and Jews are the best butter eaters, while Negroes and Italians seem to care less for it. Americans and Northern Europeans like the flavor of butter while Italians and other Southern Europeans often prefer oily fats such as olive oils.

Margarine, as a competitive product for butter, is not so important an influence upon butter consumption as is popularly believed. The regular users of margarine may become butter users in case butter prices are extremely low, but in general this extremely low price level would soon put dairymen out of business. The ordinary middle-class American definitely likes butter but will switch to a substitute when butter prices become too high. The maximum price a customer will pay for butter varies from time to time and with the individual concerned.

The modern American would care little for the dark red fluid from aged and fermented butter that the South American Indian prizes, but he does want a clean, fresh, high-quality product at a price he can afford to pay. The potential market for butter in the United States is great and when the buying power of the low- and middle-income groups is increased, these persons will become America's best butter customers.

Cooperative Experiments in Kansas

Cooperative experiments consist of crop variety and soil treatment tests that are conducted on farms with the cooperation of farmers, county agricultural agents, and teachers of vocational agriculture. The primary purpose of this work is to secure information as to the adaptation of different crops, crop varieties, and soil treatments under soil and climatic conditions which are not represented by the agricultural experiment stations or experiment fields of the state.

Kansas cooperative experiments began with the organization of the Kansas Corn Growers' Association in 1902. As a result of the encouragement of this organization, five corn variety tests were conducted on farms in 1905 under the supervision of Prof. A. M. Ten Eyck, then head of the Department of Agronomy. A limited number of cooperative tests were conducted in each of the next six years. In 1911, C. C. Cunningham, then a member of the Fort Hays Agricultural Experiment Station staff, was called to Manhattan to give his full time to this work. Under the direction of Mr. Cunningham, and later under Prof. H. H. Laude, the work has been greatly expanded.

Since 1911, 11,466 experiments have been conducted on farms in the state. Of these experiments, 1,604 were wheat

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Termites in Kansas Homes

Paul W. Rust, '38

Termites comprise a group of insects which have become pests of major importance in Kansas. They occur everywhere, especially in cities, and their control and damage are often very expensive. Attacks upon homes have become more noticeable because of the increase in size of cities which afford concentration of their principal foods —oak, maple, and hard pine. The sprinkling of lawns and leaky hydrants have also served as an attraction because termites cannot live without moisture.

There are three stages in the life history of the termite: the egg, the immature form (nymph), and the mature individuals which include five castes in every colony as follows: (a) Males and females, which are the reproducing form; (b) the workers, which do the damage to the wood and make the tunnels; (c) the soldiers, which act as protectors of the colony; and (d and e) first and second supplementary forms or substitute kings and queens.

Termites are insects closely related to the cockroach, but which more closely resemble ants in appearance and organization of colonies. Their habits make them inconspicuous, since the colony is always hidden either below the surface of the ground or in old wood and logs. They come into the sunlight only during their annual colonizing swarm; hence, they are rarely noticed until they have become injurious.

The principal food of the termite is wood which they obtain from either dead or living vegetation. Due to a protozoan within their intestines the termites have been thought to be able to digest the cellulose of the wood and use it for body food. More recent investigations have suggested that the protozoa live upon the cellulose and that the termites live upon the protozoa. The subterranean group of termites also cannot live without moisture, which they obtain from the earth. If shut off from their moisture supply they dry up and die.

Termite damage is generally hidden inside the wood. The interior rafters, joists, and beams or other timbers of a building may be entirely eaten out before the presence of the insect is noticed.

Dry rot is quite often confused with termite infestation but differs in that the rot does not produce cavities in the wood, which merely shrivels up and is spongy and brownish in appearance. Termites leave only an outer shell, eating away the interior, working with the grains of the wood. Ant damage may also be mistaken for termite damage but their colonies will almost always be found at the place where the wood is being destroyed while termites usually have colonies considerable distance away, and in the Great Plains States, in the ground.

Evidence of the presence of termites may be discovered by the flying forms or swarms coming out of the woodwork following rains. This will indicate where one of the tunnels is in the wood and often there will be large numbers of the shed wings near by. So merely fumigating and killing those in the house will not destroy the pests. Another warning is the branching shelter tubes found upon the walls or woodwork leading from the ground to the wooden structure.

In building a new home, walls should be made of concrete or stone or brick laid in good grade of cement mortar. No wood should be used in the basement unless there is at least three inches of concrete under it. Steel posts, steel cellar window casings and frames, and brick or stone partitions are preferred. An added precaution is a shield of copper placed on top of the foundation. This copper prevents the pest from coming through cracks in the wall and on up to the woodwork of the house.

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The Packer as a Hatcheryman

David W. Gregory, '36

During the last few years poultry packers have gradually entered the hatchery business. At the present time their holdings are not extensive, considering the great number of privately operated hatcheries, but nevertheless packers' output of baby chicks amounts to significant numbers. Packers hardly regard themselves, however, as being in the hatchery business. Meat packing, in the broader sense, is their business and their hatcheries are operated for the sole purpose of bettering the quality of poultry received.

Practically all of the hatcheries of four packers—Swift and Company, Armour and Company, Priebe and Sons, Inc., and the Fairmount Creamery Company—are situated in the Middle West, the largest concentration being in Iowa and Nebraska. Collectively these four packers own and operate a total of 46 hatcheries located in 15 states. Four of these packer-owned hatcheries are situated in Kansas—two Swift hatcheries, one in southwestern and one in southeastern Kansas; an Armour plant at Marysville; and a Fairmount hatchery at Concordia.

The packer is interested in the slaughter of animals and the sale and distribution of the meat products including the by-product. The hen has found favor with him because he is interested in supplying the buying public with table poultry and eggs. The consumer demands a certain quality of eggs and a meat bird of certain type and quality. Through their own hatcheries, the packers are attempting to supply the farmer with chicks which will find favor with consumers' demands.

In passing through almost any part of the country one notices a vast difference in the type and variety of birds kept on various farms. The consumer demands uniformity in market poultry and under conditions such as these, uniformity is difficult to obtain. One farm may have a heavy breed while an adjoining farm may have Leghorns or a mixture of several breeds.

On the east coast, with the exception of the New England states, and on the west coast, Leghorns are greater in number because of the demand for eggs and the preference for white eggs. Leghorns, however, do not furnish a high grade of market poultry. They do not fatten well in batteries; they are small; their dressing percentage is low; their meat is not so tender; and the public holds a prejudice against Leghorn meat. As far as quality is concerned, the Leghorn compares with American breeds as the dairy type steer compares with the beef steer. The packer is attempting to change the trend toward Leghorn production by installing hatcheries and offering chicks of the dual-purpose breeds only.

Thus because of his interest in market poultry, the packer has become interested in the day-old chick which will eventually become market poultry. He is attempting to put good chicks in the hands of the poultry producer in order that salable market poultry will find its way to the packer. In other words, he is trying to get superior poultry in the hands of the consumers and is not attempting to displace the private hatchery operator except in those cases where the private operator is not in accord with the program set forth by the packer.

On the other hand, there are undoubtedly cases and conditions where the poultry packer has erred. Additional hatcheries installed in some communities have not been installed for the sole purpose of elevating the quality of the local poultry population. The factor of price competition has been introduced in the packer's hatchery operations. He has lowered prices on baby chicks to the point where there was no profit. This would naturally

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Ancient and Modern Poultry Husbandry

Prof. Loyal F. Payne
Head of Department of Poultry Husbandry

It is interesting to those who enjoy reading ancient writings to compare them with the writings of today. It appears that fundamental economic poultry problems change slowly. Aristotle who has been listed by H. G. Wells as one of the three greatest men in history was a prodigious collector and recorder of information.

In his History of Animals written about 350 B. C., he observed that domestic fowls sometimes "lay soft eggs," a problem which still confronts poultry producers. "The color varies in different kinds of birds," he wrote, and eggs differ in shape, "for one end is pointed, the other round, and the round end is produced first." This last statement was generally believed to be true until a few years ago when a critical experiment demonstrated that either end of the egg may be laid first. Another statement of Aristotle which is still found in fairly modern poultry books was that large, sharp eggs would produce males; while those which are round at the sharp end produce females. It is remarkable that such a fallacy so easily tested would be accepted as true for centuries before it was disproved by actual tests. One is reminded of the patriarchs who debated for years over the number of teeth in the upper jaw of the cow's mouth before it occurred to a brilliant student that the debate might be settled by counting the teeth. A statement which Aristotle made and which has not as yet been satisfactorily verified or disproved is that a thunder storm during the season of incubation will destroy the hatchability of the eggs. He further observed that the yolk and white are different, not only in color, but in other properties, for he said, "the yolk coagulates with cold, while the white remains fluid, but the white coagulates with heat, which the yolk does not, but remains soft, if it is not burnt."

In The Natural History of Pliny the Elder, written about 50 A. D., reference is made to two methods of caponizing and it is stated that capons are fattened much more easily after the operation. Pliny concluded that his people were wise "for they only esteem the goose for the goodness of its liver." "When they are crammed," he continued, "this grows to a very large size." Then he raised the question as to who it was that first discovered so great a delicacy; "whether in fact, it was Scipio Metallus, a man of consular dignity, or M. Seius, a contemporary of his and a Roman of equestrian rank." He chided the men for becoming "so effeminate now-a-days not to think of lying down without the aid of the goose's feathers for a pillow."

Goose livers are still considered a great delicacy. They appear on the menus of exclusive hotels as *Pate de foi gras*. In the early days the feet of geese were nailed through the web to boards while they were being crammed for the development of large livers. Public sentiment, however, soon caused a discontinuance of this inhumane practice. The art of noodle feeding geese is still followed in America, notably about Watertown, Wis. The geese are confined in very small quarters and "noodled" for three weeks before being slaughtered.

The modern practice of milk fattening poultry, according to Pliny, had its origin in Delos where the people were the first to cram poultry. "It is with them that originated that abominable mania for devouring fattened birds"—a practice later forbidden. Continuing, he alludes to the fact that, "A method, however, has been devised of evading it, by feeding poultry upon food that has been soaked in milk: Prepared in this fashion they are still more delicate."

The light and dark meat of the fowl

made its appeal to the epicures, then as now, for it seems the Parthians taught their fashions to the Roman cooks. "In spite of their refinements in luxury," said polymath Pliny, "no article is found to please equally in every part, for in one it is the thigh, and in another the breast only, that is esteemed."

Pliny's enormous capacity to read and make extracts of books would lead one to expect that much of his writings on poultry were quotations. He was familiar with Aristotle's recommendations and others who had written on this subject. It is not always easy to determine when those early writers were quoting and when they were expressing their own observations. It appears the precocious Pliny had certain convictions as to how eggs should be set and the manner of development of the chick embryo. A recommendation of his which is still practiced was that an uneven number of eggs ought to be placed under a hen, and further that incubation ought to begin just after the new moon. He observed that the position of the head of the chick just before hatching was under the right wing, a fact which has been elaborated upon extensively in recent years in the discussions of certain malpositions which prevent chicks from hatching. "The best broods," he concludes, "are those which are hatched before the Vernal equinox" (about March 21), a recommendation still good and freely practiced.

Coming to some of the more recent writings, M. de Reaumur, a Frenchman, in 1750 alludes to individual compartments for hens which today we term hen batteries and thought they were strictly a modern invention. He made extensive tests on the palatability of feeds as determined by "cafeteria feeding" and he established the fact that certain grains such as corn, buckwheat, and rye will increase much more in volume when "cooked to bursting" than wheat, oats, or barley, a fact of special interest to poultrymen who use grains which will absorb the maximum amount of milk for fattening poultry. Crooked breasts in chickens which have engaged so much attention in recent years at the Kansas Agricultural Experiment Station were listed by Sketchley, author of "The Cocker," a famous book on game cocks, as imperfections in game chickens.

The early writers were positive in their ideas as to how to identify fertile and infertile eggs before setting and the sex of chicks within the eggs, but their theories have long since been disproved. The actual separation of the sex of baby chicks has been developed the past few years. The two methods used are based upon scientific facts and not upon mythology as of old.

An Italian, named Spallanzani, proved the gizzard of the turkey to be a powerful grinding agent when he imbedded many needles in a lead ball, fed it to a turkey, and later found the ball ground smooth to the surface.

These and other freakish stunts were no doubt the forerunner of what we now pursue as scientific research. There were also skeptics then as now. As recently as 1845, Peter Boswell, an Englishman, wrote, "except for mere curiosity, it is not worth while to attempt artificial hatching in this country."

After reading much that was written centuries ago, one concludes that the early writers were keen observers, skilled naturalists, well informed, and capable of recording their studies remarkably well considering the facilities available for doing so. They knew that sunlight prevented weak legs, that moulting stopped laying, that infertile eggs keep better than fertile eggs, and that the feed affects the flavor of the eggs; but they did not know WHY these things were so. It has been the contribution of the present scientific era to give the reasons for, and the answers to some of the questions the time-honored scholars of more than 2,000 years ago were pondering over.

The "Dough Ball" Test for Wheat Quality

Dr. C. O. Swanson

Head of Department of Milling Industry

Plant breeders need a simple test for wheat quality which can be used when only small amounts of wheat are available and the "dough ball" test may serve this purpose. The full name of this test is, "wheat meal-time-fermentation test," but the shorter name is more convenient.

If a test for quality can be made early in the wheat-breeding program, much time and expense can be saved by discarding those strains or varieties which will not prove satisfactory for milling and baking. Plant breeders find that it is easy to select but difficult to discard. This test is designed to help them discard strains of wheat of inferior quality.

The first appeal of the test is its simplicity, but this very simplicity has also brought trouble since the test is not so simple as it looks, especially when it is used on the strong, hard wheats. A usual procedure is briefly this: About an ounce of wheat is carefully ground in a small mill. Fifteen grams of this meal (a little over half an ounce) are weighed out and put into a cup. To this is added a little over 8 cubic centimeters of a fresh 10 percent yeast suspension. This mixture is then worked into a dough while still in the cup using a flattened glass rod. The dough is then taken into the hands and worked until it is smooth. It is next rolled into the shape of a short sausage and divided into three equal parts, each of which is then rolled in the hands into a round ball. This is the "dough ball." The three balls are then placed in tumblers nearly full of water at a temperature of 30° C. (86° F.) and a cover put on each tumbler. These tumblers are next placed in a cabinet with glass doors so that the behavior of the balls can be easily observed. The temperature of the cabinet must be held constant at 30° C.

The time when the dough balls are placed in the water is recorded. At first they sink to the bottom of the tumblers, but in a few minutes the fermentation of the yeast makes them swell a little, which makes them lighter and they rise and float. For a while no change seems to take place, but after a certain time the balls begin to disintegrate and fragments of the dough fall to the bottom of the tumbler. The exact time at which this disintegration starts is noted. The number of minutes which have elapsed from the moment the ball was put into the water to the start of the disintegration is the "time" of this test. The length of this time is used as a measure of quality. The strong wheats desired for making bread flour such as Marquis among the hard red spring wheats and Tenmarq and Turkey among the hard red winter wheats, have a long "time," often several hours, while the soft wheats desired for making pastry flours have a short "time," usually from 25 to 50 minutes.

The test apparently originated in England and has been used by plant breeders in Germany as well as by soft-wheat breeders in the United States. With soft wheats the test seemed to be successful from the start, but when attempts were made to use it on the strong, hard wheats, several difficulties were encountered. It was easy enough to separate the very strong from the very weak, but the test failed to differentiate satisfactorily among the several varieties of the strong, hard wheats which were known by other tests to vary in quality.

While the procedures of the test are apparently simple, the various details must be rigidly followed. Three of the most important conditions are: (1) Method of grinding; (2) amount and method of mixing the dough; and (3) the control of temperature.

Grinding the meal coarser or finer

will influence the "time," especially on hard wheats. No small mill which is really satisfactory for this work seems to be in existence. The best that can be done with present equipment is to grind in several stages, sifting over a 40 mesh wire between each grinding and continuing the operation until all but a few flakes have passed the sieve. The operator must acquire skill in this method of grinding in order to get uniform results.

To obtain a more uniform mixing than was possible by using a glass rod and the hands, a small mixer, which will make a dough from 15 grams of meal, was designed and constructed by Dr. Earl B. Working of the Department of Milling Industry. The time of mixing required to make a smooth dough can be accurately gauged and is found to vary among various varieties of hard wheats.

In a laboratory where the temperature varies considerably, the control of temperature is a problem. The yeast suspension and the meal must each be at 30° C. before mixing. The bowl of the mixer must also be at such a temperature that it does not lower the temperature of the dough ingredients. With all these precautions the dough often comes from the mixer several degrees below 30° C., but the operator's hands soon warm it to this temperature. The control of the temperature of the water in the tumblers is the most important and for this reason the tumblers must be placed in a cabinet thermostatically controlled within 0.1° C. This would be fairly simple if the cabinet was kept closed, but it is necessary to open the doors several times to put in the balls just made and remove those which have disintegrated. As a precaution that no changes have occurred, the temperature of the water in the tumblers is taken as soon as these are removed from the cabinet.

Thus while the test at first seems simple, the most rigid attention must be given to details. As there is no easy road to learning, so there is no easy road to success even with the "dough ball" test.

The amount or percentage of protein has very little influence on "time." This is chiefly determined by the quality as inherent in a variety. The protein percentages and the "time" in minutes, of four varieties from the 1935 crop were as follows:

Hard red winter wheats	Protein percentage	Time in minutes
Tenmarq	13.3	125
Turkey	13.0	74
Blackhull	13.8	49
Soft red winter wheat		
Clarkan	12.4	35

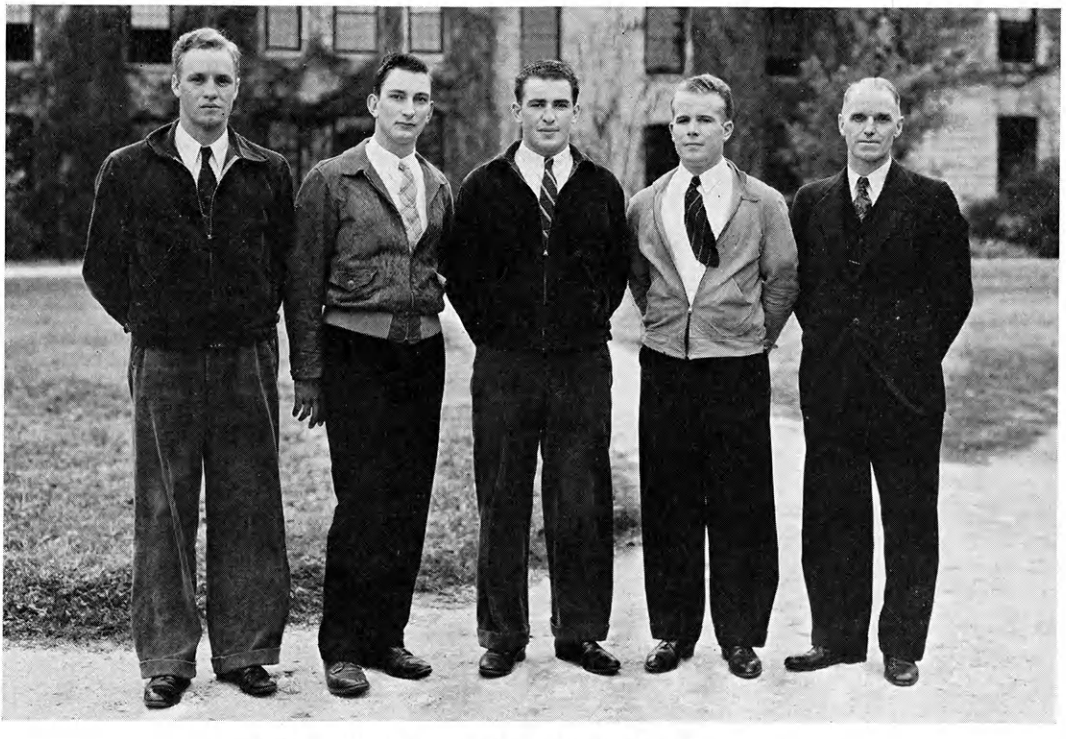
While the time figures will vary somewhat because of conditions of the experiments, the relative position in which the test places these wheats will be the same. It has also been found that the time for Tenmarq will fluctuate more than for Turkey and much more than for Blackhull and Clarkan. It is much easier to obtain closely concordant results on the latter from day to day, than on Tenmarq. The longer the time the more difficult it is to control the conditions so as to have them constant. This is one of the reasons the test has been more successful for soft than for the hard, strong wheats.

In testing 139 wheats from the plant-breeding nursery at Manhattan, crop of 1934, the time varied from 34 to 195 minutes, with a median of 97. All the soft wheats were below this median and all the hard above, except Superhard Blackhull, which had 70 minutes, and a Turkey selection, Neb. No. 1070, which had 71 minutes.

It was mentioned above that this test would be of most value if it enabled the plant breeder to throw away weak strains early in the crop improvement program. Among the 1934 nursery wheats tested there were 32 selections of the Kanred x Hard Federation cross. Of these 15 had a "time" above 130, and 10 above 150, while only 7 were below the median 97. If this test means anything, these 7 could be discarded at once and there are at least 10 which give

very good indications that they will be satisfactory as to quality.

The "dough ball" test then has good indications that it will be a useful tool in helping to reject varieties or strains of wheat which have little promise that they will qualify when subjected to further testing, and it will also help to select and further propagate those that will qualify. However, there are several problems in connection with this test that need to be subjected to careful investigation. Among these are methods of grinding, the best amount of mixing for each variety, and control of temperatures throughout the test.



THE WINNING DAIRY CATTLE JUDGING TEAM

From left to right: F. Monroe Coleman, Carl H. Beyer (alternate), Lester A. Zerbe, Clarence L. Bell, and Prof. H. W. Cave, coach.

CREAM IMPROVEMENT

(Continued from page 50)

used. Indications in these tests are that room temperature is the most important factor in limiting the cooling to be obtained by the wet sack method. Humidity is also an important factor in this method of cooling.

A series of experiments has been run recently using the wet sack method of cooling. In these trials the room temperature was controlled at various levels from 50 to 100° F. and the humidity held at approximately 50 percent. It was found that there is a definite spread (difference between can temperature and room temperature) for each room temperature level. This spread tended to be larger as the room temperature was raised.

As yet the data on spray method of cooling have not been compiled and no definite statements can be made. By the time warm weather returns some helpful information should be ready for publication.—W. R. S., '36.

THE PRODUCER'S TYPE OF HOG

(Continued from page 37)

Hog breeders must discontinue the practice of blindly switching from one extreme type to the other. Breeders and feeders should unite their efforts

THE SWINE HERDSMAN MOVING A FEW OF THE COLLEGE HOGS

to produce a long, smooth, deep-sided hog with plenty of width, full deep hams, and lots of feeding qualities.

COOPERATIVE EXPERIMENTS

(Continued from page 54)

tests, 2,409 were corn variety tests, and 1,058 were sorghum variety tests. During the last 25 years, information has been secured on approximately 50 different practices pertaining to the production of all the commonly grown Kansas crops including spring and winter wheat, oats, barley, flax, corn, popcorn, soybeans, sorghums, alfalfa, pasture crops, cowpeas, broomcorn, cotton, clover, red clover, and grass varieties. In 1935, 514 experiments were located in 93 of the counties of the state.

Cooperative experiments have secured information on the value and area of adaptation and have assisted with the distribution of Kanota oats; Kanred, Tenmarq, and Kawvale wheat; Pink, Western Blackhull, and Sunrise kafir; Atlas and Leoti Red sorgos; Greeley and Wheatland grain sorghums; Hays Golden, Midland, Freed, Cassell, and Pride of Saline corn; and Supergold popcorn. They have also secured information on the use of lime and phosphate as soil treatments; the treating of wheat, oats, and sorghums for smut; and many other adopted farm practices of a less extensive nature.—Prof. A. L. Clapp, '14.

TERMITES IN KANSAS HOMES

(Continued from page 55)

In the case of a porch the wood sidings should not extend below the surface of the ground. Front and back steps should be made of concrete, or placed well above the ground on concrete foundations.

In old buildings, repairs which will keep termites out should be used. All soil which is in contact with the lattice or weather boarding should be removed. All cracks in the walls should be filled with asphalt. All boards, posts, and braces in the basement should have at least three inches of concrete under them. All old wood should be cleaned up from the basement, under the porches, and from around the house. All leaky pipes, drains, and faucets should be repaired and plenty of ventilation under the porches and in the basement should be provided. This will keep the place dry and the workers will die from lack of moisture.

The best way to determine the cost of repairing a building is to have a local carpenter or mason check it. He can tell by examination the cost of repairing the walls, of placing a shield cap on the foundation, and with the aid of a hammer and chisel he can determine the amount of damage that has been done inside the woodwork.

Termite control companies will also figure the cost of control. In some cases

where the owner feels that the cost of reconstruction is too great, he may eliminate termites for several years by using a good bonded company's exterminator. Sprays, fumigation, and repellents are used by many people but are found to give no more than temporary results. For instance pyrethrum fly sprays and dusts will kill all the termites hit, but the queens and great mass of workers, which are in the nest, are not reached by these sprays. Likewise, with fumigants the poison gases kill all termites reached but the main colony is left intact. Coal tar creosote is an excellent repellent but does not insure freedom from future infestation unless applications are repeated at intervals. The buyer of proprietary treatments must be very careful in purchasing them because in the salesman's overanxiety to make a sale he may exaggerate the dangers or losses which may be expected from termite infestation. All contracts should be carefully read so as to avoid misunderstanding.

Every home owner should have some knowledge of these pests. He should be on the constant lookout, keeping all entrance points closed, making all necessary building improvements, and always watching for termites especially during the spring and summer months.

THE PACKER AS A HATCHERYMAN

(Continued from page 56)

tend to force the private hatcheryman out of business. The packer could afford to run his hatchery without profit because of the increased receipts in the packing end of the business.

It is also claimed that the packer has established and is establishing hatcheries in communities where there are reliable hatcheries that are active in the improvement of poultry quality. Additional hatcheries under these conditions do not appear to be necessary.

In improving poultry quality, the packer is playing a lone hand against private hatchery operators. While certain private operators are acting cooperatively on organized improvement work, the packer is staying away and is not concerned with cooperation. If the goal in establishing hatcheries is to better the quality of the farm poultry flocks, surely much more can be accomplished by cooperative efforts.

Earl C. Coulter, '33, is now assistant county agent at large with headquarters at Manhattan.

W. M. Myers, '32, is instructor in agronomy and plant genetics, University of Minnesota, St. Paul.

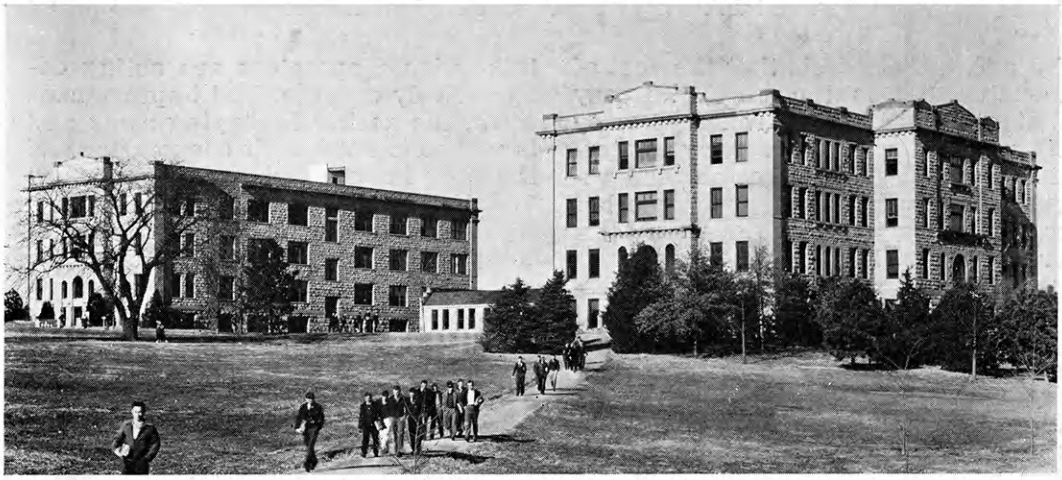
I. K. Landon, '21, was transferred last summer from the Wisconsin Soil Conservation project to Washington. He is one of the national coordinators in soils conservation.

R. B. Mather, '30, will begin work as manager of the R. T. Smith farms near Stanley, Kan., in December. The chief enterprises on the farm are orcharding and poultry keeping.

R. M. Green, M. S., '22, formerly professor of agricultural economics, is now principal agricultural economist in the Farm Credit Administration. He has charge of studies in cooperative marketing.

Jerrold J. Wardell, '33, is manager of a dry-land farm and cattle ranch near Platteville, Colo. During the hatchery season each spring he assists in the operation of the Cherrylinn Electric Hatchery.

H. P. Gaston, '23, research assistant in horticulture in Michigan State College, has recently written a bulletin on "The Thin Wood Method of Pruning Bearing Apple Trees." Director V. R. Gardner of the Michigan Agricultural Experiment Station says the bulletin presents the greatest advance in pruning methods of the last quarter century.



WEST AND EAST WINGS OF WATERS HALL (AG BUILDINGS) SOON AFTER DISMISSAL OF CLASSES AT NOON

I. N. Chapman, '16, is chief soil conservationist in farm management in the S. C. S., Huron, S. Dak.

A. J. Mangelsdorf, '16, is plant geneticist for the Hawaiian Sugar Planters Association, Honolulu, T. H.

G. J. Ikenberry, '20, is teaching in the Department of Biology of Eastern New Mexico Normal School, Portales, N. M.

W. W. Jacobs, '34, is butter maker in the Fairmount Creamery plant at Guthrie, Okla. He was married a few months ago.

Everett L. Byers, '35, is studying for his master's degree in the University of Wisconsin, utilizing the $600 scholarship won by the Kansas State team in the judging of dairy products at Cleveland, Ohio, October, 1934. He is investigating "The Effect of Salt on the Quality of Brick Cheese" and will write his thesis on that subject.

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