

THE KANSAS

# Agricultural Student

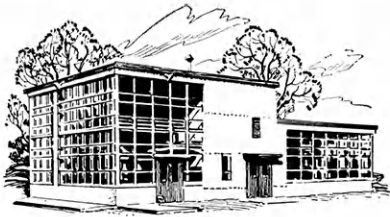


M  
A  
Y  
1  
9  
4  
9



COPY 1

V. 25, 4



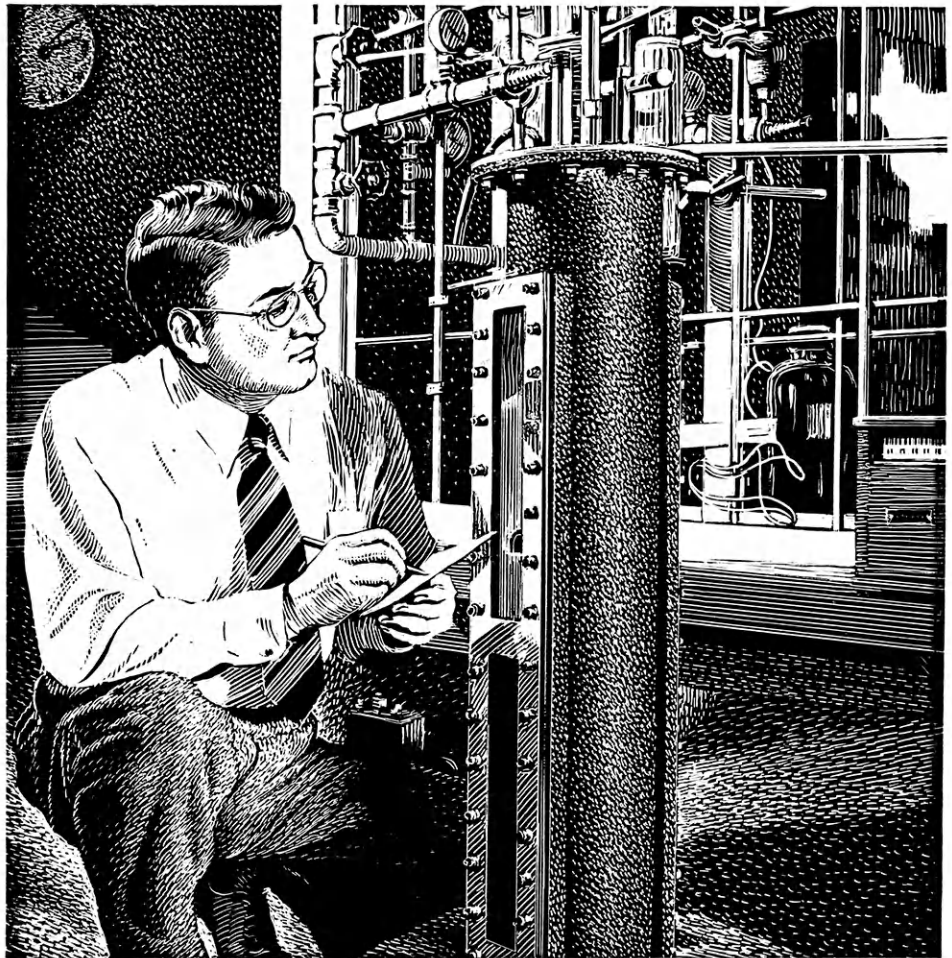
NEW LABORATORY UNIT, part of G-E Research Laboratory, is the center of General Electric research into such low-temperature phenomena as...



SUPER-FLUIDITY of helium—meaning that at near-absolute zero it loses its viscosity, can spin forever...and



SUPER-CONDUCTIVITY—the loss of all electrical resistance by some materials below about 15° absolute.



## Near absolute zero, matter does strange things...

AT 455 degrees below zero Fahrenheit, liquid helium becomes a "superfluid." That is, it loses its viscosity; if it were to be set in motion like stirred coffee spinning in a cup, part of it would theoretically continue to spin forever.

It also becomes a "super-wetting" agent, meaning that it will creep up the sides of a container and flow over the edge.

Other types of matter develop the property of "super-conductivity." Columbium-nitride, for example, loses all electrical resistance below 15 degrees absolute. If an electric current were set in motion in a closed loop of this substance, it would in theory flow indefinitely.

These are some of the facts of cryogenics—the study of low-temperature phenomena—into which a group

of young General Electric scientists are directing their investigations.

So far their studies are in only the earliest stages. But already the facts of this nether world of temperature have aroused enough interest that with the building of a new Research Laboratory near Schenectady, a \$250,000 laboratory unit has been especially constructed to aid and amplify their work.

Through its emphasis on research and creative thinking, through encouraging fertile minds to follow their own imaginative bent and by implementing their work with the best available facilities, General Electric remains "a place where interesting things are happening," and stays in the forefront of scientific and engineering development.

*You can put your confidence in—*

GENERAL  ELECTRIC

THE KANSAS  
*Agricultural Student*  
 KANSAS STATE COLLEGE  
 OF AGRICULTURE AND APPLIED SCIENCE  
 MANHATTAN, KANSAS

VOL. XXV

MAY, 1949

No. 4

STAFF

MELVIN COTNER .....	<i>Editor</i>	JIM ORTON .....	<i>Photographer</i>
DALE WISEMAN .....	<i>Associate Editor</i>	JIM MILLS .....	<i>Associate Photographer</i>
NORVILLE GISH .....	<i>Associate Editor</i>	DEAN REESE .....	<i>Business Manager</i>
ELBERT MACY .....	<i>Faculty Adviser</i>	JOHN SCHNITTKER .....	<i>Associate Business Manager</i>

DEPARTMENTAL REPORTERS

NORMAN COLLINS .....	<i>Agricultural Economics</i>	GLEN McCORMICK .....	<i>Dairy Husbandry</i>
MERLE HOWES .....	<i>Agricultural Education</i>	JOE BRADY .....	<i>Horticulture</i>
GARRETT SEATON .....	<i>Agronomy</i>	HAL ROSS .....	<i>Milling</i>
ED MCGINNESS .....	<i>Animal Husbandry</i>	TOM JAMES .....	<i>Poultry Husbandry</i>

Contents

On the Cover .....	1	Buffalo Alfalfa .....	15
Mill Paces Progress .....	4	Colostrum Uses .....	15
Popcorn Tests .....	5	New Who's Whoot .....	16
Kansas Hybrids .....	6	Dean Call .....	16
Rodent Control .....	7	Kansas Chickens .....	17
Skies Rain Death .....	8	Little Royal Showmen .....	20
FFA Contests .....	10	Barbed Wire .....	22
New Ag Wing .....	10	Future Farmers Grow .....	24
Isotope Research .....	11	Corn Wireworm .....	27
Heat Pump .....	12	Ice Box Testing .....	33
Turkey Farm .....	13	Sheep in Snow .....	34
New Machine Developed .....	14	The Last Word .....	36

Published by the Agricultural Association of Kansas State College of Agriculture and Applied Science, Manhattan, Kansas, on or before the Twentieth Day of the months of October, December, March, and May. Subscription rates \$1 per year; 2 years for \$1.50; single copy 30c.

Entered as Second Class Matter, November 9, 1946, at the Post Office at Manhattan, Kansas, under the Act of Congress of March 3, 1879. Accepted for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized November 9, 1946.

On the Cover---  
 Ag Photo Winner  
 of Mike and Cindy

By DANA C. JENNINGS

His Small Majesty King Michael "Mike" McCarty and Her Little Highness Cynthia "Cindy" Griggs were elected to rule over the Little American Royal by the contestants in the show. Mike's father is Dennis McCarty of Wichita and Cindy's old man is Otis Griggs of Marion. Both men are sophomores in the School of Agriculture. Cindy's mother made her cowboy-girl costume with the exception of boots and hat.

Technical data: The camera used was a Speed Graphic 4x5 tripod-mounted with an Optar 135 mm. lens. Exposure was f. 22 at 1/100, medium yellow filter on Ansco Superpan Press, developed for normal contrast in Ansco 47. The enlargement is a straight print on Velour Black R 2, developed in Ansco 103. Two Press 25 flashbulbs were used, one high and about two feet to the right of the camera, about six feet from the subjects. The other was 18 inches above and to the left of the camera, about five or six feet from the subjects. The children stood on a low tea-table in front of pale yellow muslin curtains.

Fletcher Riggs, who will receive his MS this August, plans to work on his doctorate in ag economics at Vanderbilt University, Nashville, Tenn. Riggs teaches part-time and is doing dairy marketing research here at Kansas State. He will be on a scholarship offered by the University and will not teach part-time.

Grandpappy says it is just like the meddlesome plant breeders to turn out a flat sided pea when he has finally learned how to eat them with a fork.

ENGLISH AT ITS WORST

"What does taut mean?"  
 "Tight."  
 "Right. Were you taut very much at college?"

Girls experimenting with men's generosity are known as "human gimme pigs."



The TOP TRACTION TIRE for  
Every Job the Year Around . . .

# Firestone

**CHAMPION** LOW PRESSURE **Ground Grip**

**S**OME tractor tires get by best on *this* job . . . or *that* job . . . some pull best in soft ground, some show up better on hard ground. But, there's one tractor tire that gives you top performance on *every job the year around*. That's the *Firestone Champion Low Pressure Ground Grip*.

When your tractor is on Firestone Champions you can hitch it to any implement . . . hook it up to any load . . . and it will take you through — on hard ground, on soft ground . . . on sod . . . on stubble . . . in Spring, Summer, Fall . . . through the snow of Winter.

The Firestone Champion Low Pressure Ground Grip is the top traction tire under all conditions because its high curved bars take a *clean, full-traction power bite clear across the tread from shoulder to shoulder and in the center*.

Before you buy any tractor tire try a set of Firestone Champion Low Pressure Ground Grips on your tractor on your toughest jobs, in any kind of soil. Let them prove that they pull better.

*Listen to the Voice of Firestone every Monday evening over NBC and Americana over NBC Network Television Stations*

Copyright, 1949, The Firestone Tire & Rubber Co.

THE  
**3** RULES for  
MAXIMUM  
TRACTION

- 1. USE FIRESTONE CHAMPIONS**
- 2. USE FIRESTONE HYDRO-FLATION**
- 3. USE ONLY 12 LBS. PRESSURE**



*There's something here  
no photograph could show*

Pictures could convey a clear idea of the buildings of Standard Oil's new research laboratory at Whiting, Indiana. We could also photograph the many new types of equipment for up-to-date petroleum research that are housed in the laboratory, one of the largest projects of its kind in the world.

Or we could photograph the men who work here, many of whom have outstanding reputations in their fields. For many years, Standard Oil has looked for and has welcomed researchers and

engineers of high professional competence. We have created an intellectual climate which stimulates these men to do their finest work.

But no photograph could show the basic idea that motivates Standard Oil research. It is simply this: our responsibility to the public and to ourselves makes it imperative that we keep moving steadily forward. The new Whiting laboratory is but one evidence of Standard Oil's intention to remain in the front rank of industrial research.

# Standard Oil Company

(INDIANA)

910 S. MICHIGAN AVENUE, CHICAGO, ILLINOIS



# Kansas State Mill Gets Its Face Lifted To Keep Pace with Industrial Progress

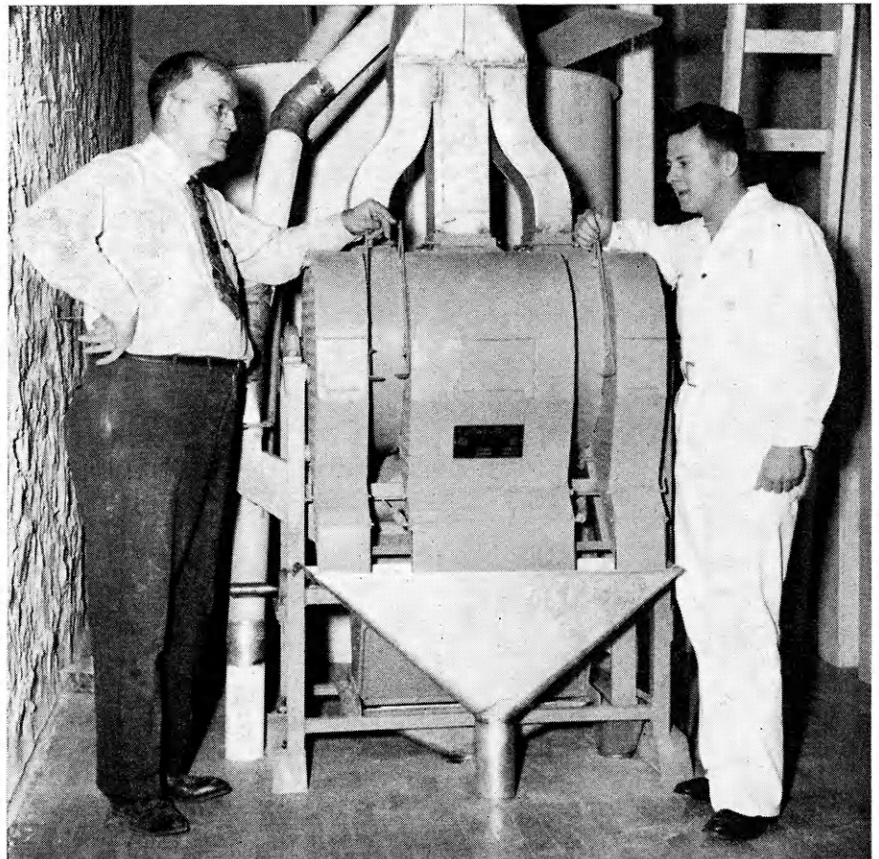
By HAL ROSS

In recent years flour mills throughout the country have taken big steps toward the modernization of their mills—steps which make it easier to comply with government sanitary regulations and also to increase production capacities. Coupled with this modernization is the fact that the nation's mills are constantly adding more and more new machines in their search for greater efficiency in methods of operation.

The Kansas State college mill in order to keep pace with modern plant design is undergoing a complete modernization process itself. Although the college mill is complete in every detail, the machines are old and in many cases obsolete. Much of the equipment in the mill had been installed in 1913 when the mill was built. Remodeling was needed so that future operatives could be trained in the technicalities and practical applications necessary to operate the equipment found in a modern mill.

To formulate plans for modernization an advisory board was appointed in 1947 by R. I. Throckmorton, dean of the School of Agriculture, and J. A. Shellenberger, head of the Department of Milling Industry. The board suggested a program of complete modernization to take place in the next few years. The principal idea was that as the modernization program progressed old machines in the mill would be replaced by modern equipment until the college mill afforded an opportunity for students to obtain the training necessary for a job requiring practical knowledge of today's methods and machines.

The advisory board, headed by J. W. Cain, President of the Midland Flour Milling company of Kansas City, Missouri, saw the need for assistance in selecting machinery and formulating a plan of procedure. Consequently a second committee composed of operative millers was selected. The operative group was led by Roy K. Durham, technical service



Prof. R. O. Pence and Jim Mills examine a modern wheat scourer. This is one of the new additions to the wheat cleaning department of the mill.

director of the Millers National Federation.

After a meeting of the operative committee with the faculty and an inspection of the existing equipment, the operative group submitted their report to the original advisory group for action. The plan of the combined committees called for a long range program of modernization with the object of providing a thorough program of education and research.

Anyone who has visited the college mill recently can see the results of this modernization program. One of the greatest changes made was the almost complete separation of the stored wheat and wheat cleaning machinery from the rest of the mill. This change aiding the maintenance of sanitary conditions.

New machinery was installed replacing that which had become obsolete. The latest types of scourers, aspirators, and separators, each designed to aid in preventing insect infestation, were installed. New sifters are now being added and the old reels are being replaced with new high speed sifters much smaller in size. Other special units are being added with features enabling research and instruction on special problems.

Although much work has been done in the remodeling of the mill there is still a long way to go before the program of complete modernization is finished. Practically all the equipment which has been added to the mill thus far has either been loaned or given to the college. The

(Continued on page 26)

# Popcorn Tests Are Interesting Research Projects at K-State

By RICHARD THUMA

Irresistible, tantalizing, and appetizing are just a few of the words that have been used to describe the aroma which seemed to fill East Ag frequently last winter. Students have remarked that they could hardly wait for the bell to ring to go in search of its source, and even faculty members have also admitted they found excuses to go on errands in search of this wonderful odor.

What is this something which seems to have such a powerful effect upon the sense of smell? It is the delicious aroma of freshly popped popcorn. Few ever found the origin of this odor, however, for the popping tests are conducted in a seldom visited room in the sub-basement of East Ag.

These popping tests have three objectives. The first is to determine which kinds of corn give the greatest popping expansion. The second is to grade the popped corn according to the amount of horny hulls present. The third is to detect differences in eating quality.

A commercial popper is used in these tests to make the results compare as closely as possible with commercial or home popped corn. This popper is mounted on a hopper which acts as a funnel to fill a cylinder which is calibrated to give popping expansion.

Popping expansion is the ratio of the volume of corn after popping to the volume before popping. Therefore, if one pint of popcorn has a volume of 25 pints after it is popped it has a popping expansion of 25 volumes.

Results indicate that popping expansion depends on three major conditions: the inherent structure of the kernels, their moisture content, and the proper application of heat. Popping expansion of the different types of popcorn follows rather closely the relative proportion of horny, or hard, starch contained in each kernel. Freedom from soft starch, therefore, is probably the most important feature determining popping expansion.

Popcorn containing from 11 to 15

percent moisture has given good results. However, a moisture content of 13.5 percent has proven most satisfactory. Popcorn containing too much moisture can be dried easily by exposing it to the air in a heated room. The moisture content can be increased by sprinkling the corn lightly with water and then storing it in tight containers. In general popcorn stored where it is in contact with the outside air will have a moisture content suitable for popping.

Two-hundred cubic centimeters, or about one-half pint, of popcorn is used in the standard popping expansion test. Regulation of heat is largely a matter of experience. However, under most conditions temperatures that will produce popping in 60 to 90 seconds give the best results. Ten to 20 percent as much seasoning as unpopped corn, or 20 to 40 cubic centimeters for a 200 cubic centimeter sample of corn, is the usual propor-

tion of seasoning used in popping tests.

Kansas popcorn consumers and producers find K4 the best popcorn hybrid now available to the public. K4 has a popping expansion of 32 volumes and fair quality but has several undesirable hulls. Present popcorn research has as one of its goals the development of a new hybrid equal or superior to K4 in popping expansion and free from the hulls which reduce the eating quality of K4. If this goal is reached, theater managers can plan to feed each of 2,000 patrons one pint of high quality popped corn from just one bushel of popcorn.

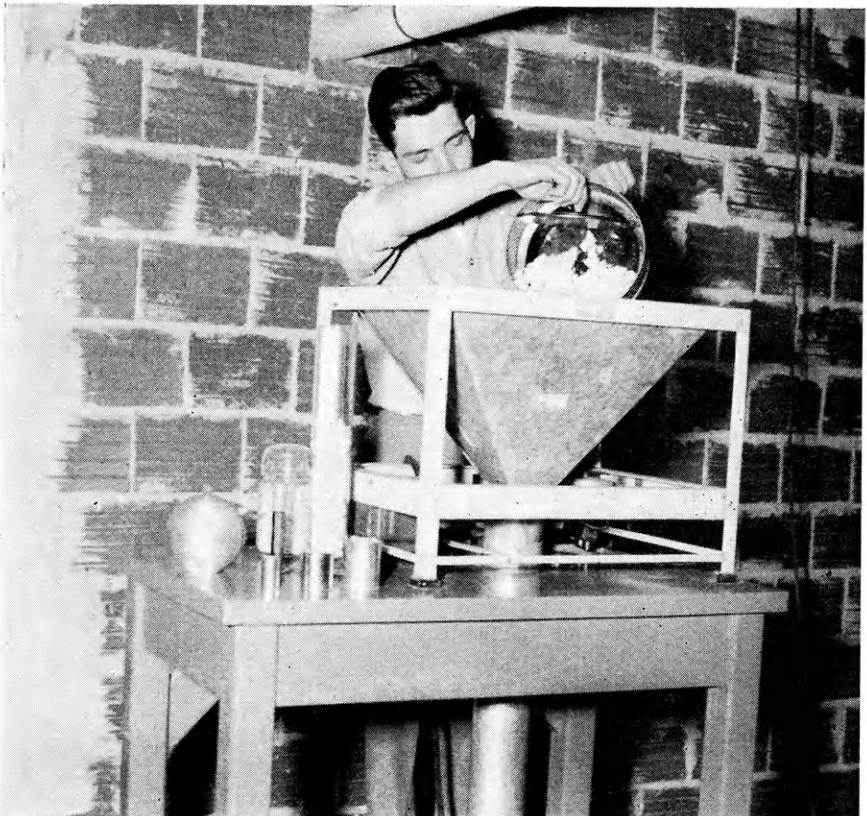
When next you detect that tantalizing odor in East Ag, come to the sub-basement and witness a bit of history in the making. Incidentally, the popped corn is free.

---

The average rainfall in Kansas is greater than that of Nebraska, North Dakota, South Dakota, Colorado, Wyoming or Montana.

---

Kansas State College provided ground school instruction for 211 students in the national program of pilot training. This was in addition to the College War Training courses.



Popcorn going into the measuring hopper to be tested for popping expansion.

# Tests Prove Kansas Hybrids Superior To Open Pollinated Varieties

## Research Program Produces Inbred Lines Used in Several States

By HAROLD RAMSEY

Kansas hybrids are superior to both open pollinated varieties of corn and other hybrids, data taken from the 1948 Kansas corn performance tests show. In northeast Kansas, where almost one-half of the state's corn is grown, Kansas hybrids outyielded open pollinated varieties by 25 per cent.

Of equal significance is the fact that Kansas hybrids, including experimental as well as certified combinations, averaged five bushels more per acre than all other hybrids included in the tests. Several of the experimental hybrids made very promising records, so it appears that progress is being made in developing still better varieties for Kansas.

An intensive program for developing hybrid varieties adapted to Kansas has been continuous since 1923. Similar programs were started in other corn belt states about the same time. The work is cooperative between the Kansas Agricultural Experiment Station and the Division of Cereal Crops and Diseases of the United States Department of Agriculture.

Programs of the different states are closely coordinated. There is a free exchange of ideas and breeding materials, including inbred lines as well as cooperative testing of experimental hybrids. Thus, there is in effect a large regional breeding program which could be accomplished in no other way. Each state has access to the very best material from other states as well as to that developed in its own program. The great value of this cooperation and free exchange of material is evident, as each corn belt state uses several inbreds developed in some other state in producing its own recommended hybrids.

The Kansas program has been particularly productive in developing inbred lines which are used extensively in other states as well as in Kansas.

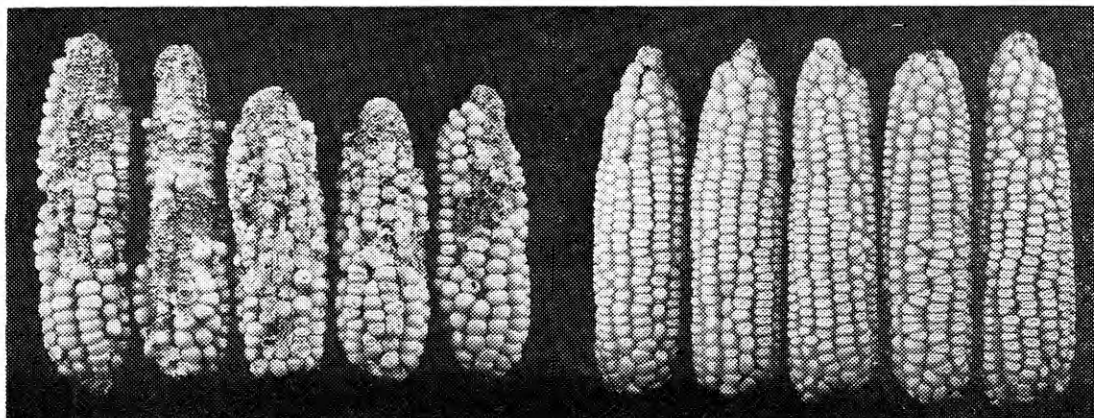
There are several reasons for the high quality and wide adaptability of Kansas inbreds. These inbreds were developed from varieties which had been grown in Kansas for many years, during which time they were subjected to drought, and to attack by grasshoppers, chinch bugs, and corn ear worms. By rigorous natural se-

lection over the years, they became highly resistant to the rugged conditions which often prevail in Kansas. It was to be expected that inbreds coming from such varieties should transmit these resistant characters to their hybrid combinations, and this has been the case. Intense selection was carried out. Of the large number tested, only those inbreds possessing the greatest degree of resistance were saved. Much success of the corn breeding program may be attributed to the keen powers of observation and great skill in selection possessed by Dr. A. M. Brunson, director of the project from 1923 to 1938.

The series of crop failures experienced in the dry years of the 1930's somewhat retarded the process of getting these inbreds into hybrid combinations. Testing to determine which hybrids were best adapted to Kansas conditions was similarly delayed. However, these dry years were of great value in demonstrating which inbreds were most drought resistant.

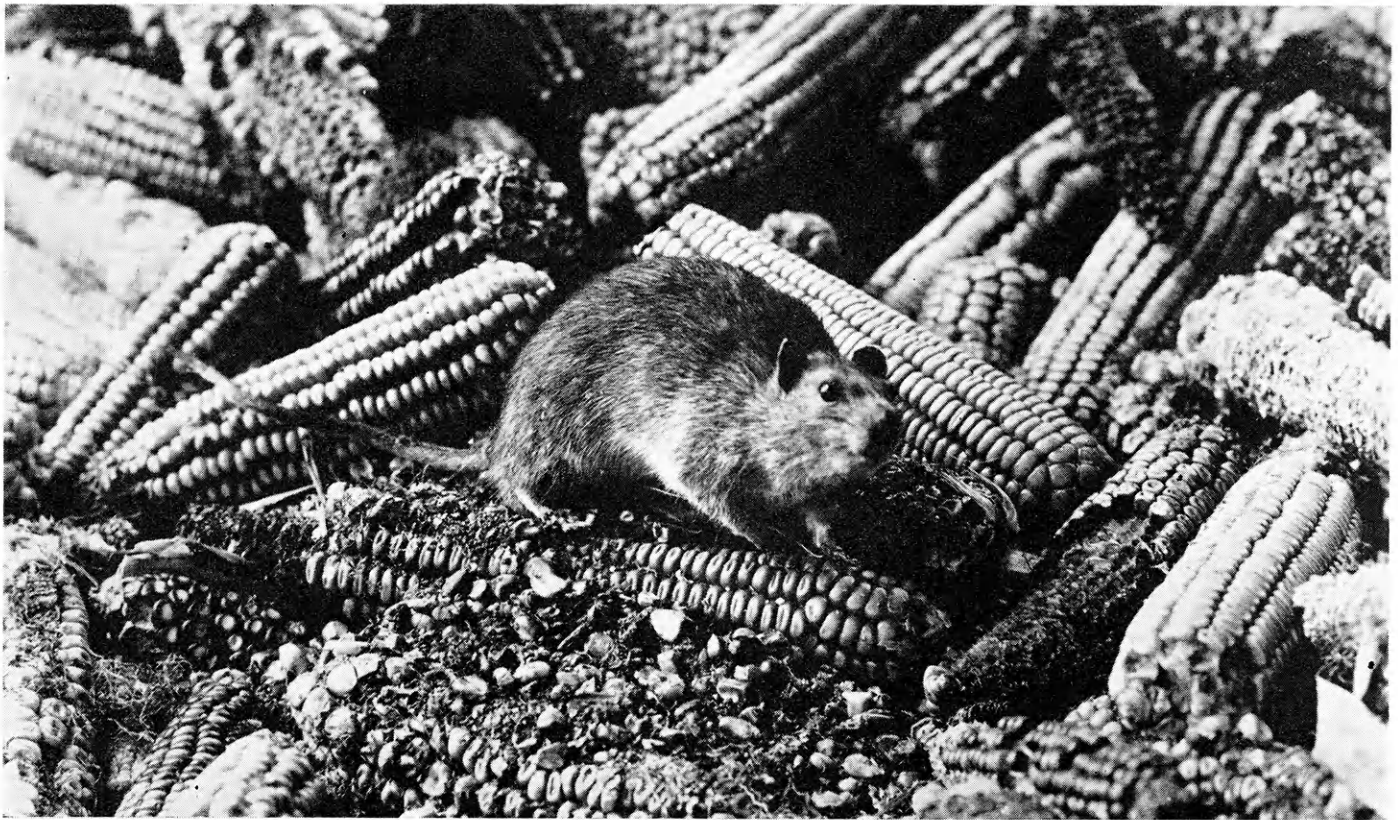
When hybrid seed from neighboring states first began moving into Kansas, the results were not good.

(Continued on page 34)



This illustrates the difference in injury to corn by corn ear worm. By selecting resistant inbreds, Kansas Experiment Station workers have developed resistant hybrids.





Pictured above is a typical scene showing rat depredations on corn stored for future use. (Photo courtesy Fish and Wildlife Service, U. S. Department of the Interior.)

Two Rats to Every Person

# Rats Populate Nation's Farms

## U.S. Wildlife Service Offers Five Point Plan for Rodent Control

By DEAN REESE

American farmers are confronted with one of the greatest menaces known to mankind—rats, according to the United States Department of Agriculture.

Total rat population on the nation's farms is estimated at 60 million, or twice the human population. Adding to the 60 million are approximately 80 million rats in the cities, making the estimated total rat population in United States 140 million or, approximately that of the human population.

Annually, rats are responsible for two billion dollars worth of damage in the nation of which approximately 50 percent is in food supplies. Government estimates show that each year these rats destroy or contami-

nate 200 million bushels of grain, which is the equivalent of 315 loaves of bread per family, and tons of other foods.

Because of more abundant food supplies and greater opportunities for harborage, there are considerably more rats on farms than in cities and towns, investigations show. Few persons comprehend the magnitude of losses caused by rats. Small daily depredations go unnoticed, and only the unusual cases are brought to the attention of government authorities.

Further government findings indicate that the rat population of farms is greater in the northern than in the southern part of the United States. This is explained by the fact that in the South a larger proportion of non-edible crops, such as tobacco and cot-

ton, is produced, that southern families more frequently live in towns, and that their houses and other structures are often built on posts well above the ground, thus eliminating the acceptable underfloor rat harborage.

The number of rats on farms has diminished to some extent with the increased intolerance of their presence, with the erection of better buildings, with reduced use of horses, and with improved rat-control methods, but progress in elimination has been slower than in cities and in small towns.

Taking all farms into account, however, experience indicates the annual loss to be at least 10 dollars per farm, or about \$63 million for all

(Continued on page 30)

# Skies Rain Death on Pests

## Widespread Use of Airplanes for Spraying To Offset Crop Pest Dangers

By DANA JENNINGS

Farmers and fliers of the Great Plains wheat belt are oiling up their flit guns and shaking the mothballs out of their airplanes preparatory to an open season on wheat-killing weeds and insects. Last year saw an unprecedented use of aircraft for spreading chemical weed and insect killers, and 1949 promises to beat '48.

In Kansas alone last year, airplanes spewed 2,4-D over 628,000 acres. A preliminary survey shows that 1,416,000 Kansas acres will need it in 1949, reports J. W. Zahnley, professor of agronomy at Kansas State college, Manhattan.

The value of 2,4-D lies in its selectivity—its ability to kill weeds and not the crop. It can be used, however, only against broad-leaf weeds in corn, the small grains, pasture

grasses, and other crops belonging to the grass family.

Three forms of 2,4-D are in general use: the ester, amine, and salt. The ester is most effective against weeds but also is the most likely to damage crops. It is usually applied at the rate of 1 pound of the ester per acre. This may be mixed in 5 gallons of water or 1 gallon of Diesel oil. Use of Diesel fuel has an obvious advantage in aerial operations where weight is the limiting factor. In arid climates, also, Diesel fuel works better because too much of a water spray evaporates before reaching the ground. There is some danger of Diesel fuel causing oil burns on crop plants, however.

Insect control from the air was first tried in Ohio in 1921 when poison dust was used against the ca-

talpa sphinx. Since that time, flying machines have successfully controlled many other insects in many parts of the nation. The coming crop season will see still wider use of it, thinks Dr. Roger C. Smith, head of the entomology department at Kansas State. He warns that a large population of grasshoppers developed in Kansas during 1948, and that the lady 'hoppers did a thorough job of egg laying. Planes, he predicted, may be required to spread poison bait to protect crops in 1949.

The greatest potential grasshopper threat in 10 years now exists, according to John S. Riss, USDA. There has been an increasing build-up of the lesser migratory grasshopper in Montana, Wyoming, Nebraska, Colorado, Kansas, and Oklahoma. Fall baiting, he said, does not affect the



A slightly different installation on another Cub. Notice the tank in the rear seat, the spray boom below the struts, and another slipstream-driven pump fan. Photo by Jennings.

next year's population because eggs are laid earlier in the season and grasshoppers don't live through the winter anyway. Fall baiting does protect fall-sown crops, however. Spring spraying will materially reduce the new grasshopper population. Chlordane, toxaphene, and benzene hexachloride will kill 90 to 100%. Recommended coverage is 1 pound of chlordane per acre in sprays, 1.5 pounds in dusts. For toxaphene the dosage is 1.5 and 2 pounds per acre for sprays and dusts, respectively.

The Division of Grasshopper Control, USDA, has studied costs of spraying with three types of airplanes. The largest, a DC-3, was a twin-engine 21-passenger transport which could spray 4200 acres a day. Smaller ships tried were the Stearman N3N, a Navy primary flight trainer similar to the Army's well-known "yellow peril," and the White Standard, somewhat comparable to the Stearman. These smaller ships covered 750 acres a day. The cost of spraying, including cost and transportation and mixing of chemicals, fuel, and pilots' wages, was within a fraction of a cent of \$1.35 an acre for all three types of craft using chlordane, and \$0.94 an acre when toxaphene was used.

In diversified farming areas where land is not flat, fields are small and crops susceptible to 2,4-D grow adjoining grass and cereal crops, aerial spraying is attended with more difficulty and expense. Rough topography means less thorough coverage. Diversified farming means more chance of loss in adjoining broad-leaf crops and consequent damage suits, and wind can carry chemicals a surprising distance (38 miles is the known record). This last difficulty, of course, is not so important with insecticides as with 2,4-D. More obstructions such as trees, buildings, and power lines in a diversified farming area require more groundwork to get patches the airplane missed.

A serious threat to winter wheat is the greenbug or aphid. These bugs winter in the south and fly north in March. They suck the sap from wheat plants, turning leaves a reddish brown. Heavy infestations cause shriveled grain and death of plants. These aphids produce several generations a year which continue their northward migration as far as Canada. Benzene hexachloride, according to Dr. Smith, is the best control.

Both Dr. Smith and Prof. Zahnley

emphasized that predictions of need for insect and weed control are at best only approximate estimates and that many forces can cause drastic changes in spraying prospects. Prolonged drought or wet spells, unseasonable warmth or cold, crop prospects and capers of the grain market all exert their effect on insect and weed populations and on the economics of spraying. Dr. Smith volunteers that insect forecasts are inaccurate, so that flight operators cannot make fixed schedules.

The time to spray depends on the species of crop and weeds and the condition of each. Winter wheat is best sprayed in the spring during the fully tillered or early joint stage. The crop is likely to be damaged if sprayed later, although in 1948 some wheat sprayed in the boot and soft dough stage showed no injury. Researchers warn against this practice, however, and discourage taking the results of a single year as rules for all time. Weeds kill more easily when young, although the operator should wait until they have fully sprouted.

A wheat farmer from Thomas county in northwestern Kansas, Harry Eicher, reported that he waited until late June to spray his wheat,

when weeds already were big. The chemicals stopped their growth and turned their tops down so that they gave less trouble in harvesting. In his area, he says, it is customary to shock oats and thresh them late in the season when other work is not so pressing. Usually there is a heavy growth of weeds in the fields and about the shocks, making work extremely difficult. In 1948, he said, oat fields were sprayed and this difficulty eliminated.

The ester form of 2,4-D is a good tool for control of annual weeds in wheat if used in proper amounts at the right time, in the opinion of Vernon Woestemeyer, in charge of a bindweed control project at Canton, Kansas. In the full tiller or early joint stage he recommends  $\frac{1}{2}$  to  $\frac{2}{3}$  pound per acre. Eradication of bindweed requires a heavier dose than crops will stand. However,  $\frac{1}{3}$  pound of the ester or  $\frac{1}{2}$  to  $\frac{2}{3}$  pound of the amine or salt will not damage crops and will prevent bindweed from making seed.

There is still much to be learned about using herbicides and insecticides on a field scale. The toxic ef-

(Continued on page 28)

A curious visitor to the Manhattan airport examines tank and nozzle installations on a Cub. Notice the automobile fan just below his chin. The fan is turned by the prop wash, drives the pump. Photo by Jennings.



# Clay Center, Belleville Chapters Capture Honors in FFA Contests

By MERLE HOWES

Kansas State was host to approximately 1200 high school students and instructors in the annual Vocational Agriculture Judging and Farm Mechanics contest and State Future Farmers of America convention, May 2 and 3.

Honorary State Farmer Degrees were conferred upon L. C. Aicher, Superintendent of the Hays Experiment Station, E. H. Coles, Superintendent of the Colby Experiment Station and E. D. Mustoe, Manager of the Foster Farm of Rexford, Kansas.

At the House of Delegates meeting, new state F.F.A. officers were elected for the coming year. They include Paul Mugler of Clay Center, president; J. E. Zimmerman of Olathe, vice-president; Kenneth Buller of Buhler, secretary; Billy Bert Jessee of Columbus, reporter and Elmer Kern of Stockton, treasurer. The House of Delegates also conferred 104 State Farmer Degrees on outstanding F.F.A. boys who had excellent farming programs. This degree also takes into consideration leadership and scholarship.

One hundred four teams of three

men each competed in the agriculture judging contest and 79 teams of two men each in farm mechanics. Results of the two-day meet were announced at the final banquet Tuesday evening and are as follows: Belleville High School, coached by Carl H. Beyer, was high in agriculture judging. Runner-up teams were Newton High School, R. M. Karns; Frankfort High School, Harold E. Frank; Olathe High School, A. G. Jensen and Inman Rural High School, coached by William J. Braun. The five high individuals in the judging were George Brzon, Belleville High School; Gene Hawkey, Newton High School; Bud Hanzlick, Belleville High School; Roydean Cooley, Alton High School and Galen Morley, Belleville High School.

Winner of the Farm Mechanics contest was Clay County Community High School, coached by Ray Morrison. Other teams in order of placing were Oberlin High School, Lloyd L. Moody; Smith Center, Chas. Mantz; Hiawatha, Winzer J. Petr and Beloit, coached by Howard R. Bradley. Curtis Minter, Clay County Community High School, was high individual followed by Karl Rau, his team-mate.

Other high individuals were George Daniels, Smith Center; Leon Shannon, Hiawatha and Kenneth Kelly, Chanute.

Don Volker of Stafford, winner of the speech contest, gave his winning address at the banquet before a number of honored guests, among whom were C. M. Miller, Director of the State Board of Vocational Education; Adel F. Throckmorton, Superintendent of Public Instruction and Paul Lindholm, 1st vice-president of the national organization of F.F.A.

## Agriculture Wing Will Be Valuable Addition to Campus

By DALE WISEMAN

The campus of Kansas State college will continue to enlarge with the recent appropriation of \$655,000 for a wing to connect the two present ag buildings. The amount has been approved by the Board of Regents and the last state legislature.

When the second ag building was completed in 1923, the enrollment was 561 in the School of Agriculture. Now with the present students, faculty and researchers, the school numbers approximately sixteen hundred. Even the Agricultural Experiment Station budget has grown. In 1923 it was but \$100,000 while last year the total was \$800,000.

The wing will provide added space for Agronomy, Milling, Economics and Horticulture. The tentative plans call for laboratories for Milling, Agronomy and Horticulture, drafting rooms for Landscape Design and Milling and will also house the extension specialists in agriculture.

At the present, equipment provided by industry for teaching and research in Milling cannot be used because of lack of space. The same applies to the seed testing laboratories.

Actual completion of the building cannot be soon enough. People of Kansas, the United States and of the World have a chance to gain whether it be increased Milling enrollment or room for the development of a new Kansas hybrid.



New FFA officers for the coming year. L to r, Billy Bert Jessee, reporter; Elmer Kern, treasurer; Paul Mugler, president; J. E. Zimmerman, vice-president and Kenneth Buller, secretary.

# Isotope Research Opens New Fields In Medical Science

By RICHARD SIMMONS

In the March issue of *The Agricultural Student* there was an article about the use of radioactive isotopes as a research project at Kansas State. It might be of interest to know to what use the radioactive isotopes may be put.

Imagine comparing the human body to a military regiment which retains its size, form, and composition while the individuals of which it is composed are continually changing, joining up, being transferred from post to post, promoted or demoted, acting as reserves, and finally departing after varying lengths of service. This analogy was made by Professor Underbjerg, head of the physiology department, after a study of the use of radioactive isotopes as tracers in medical research.

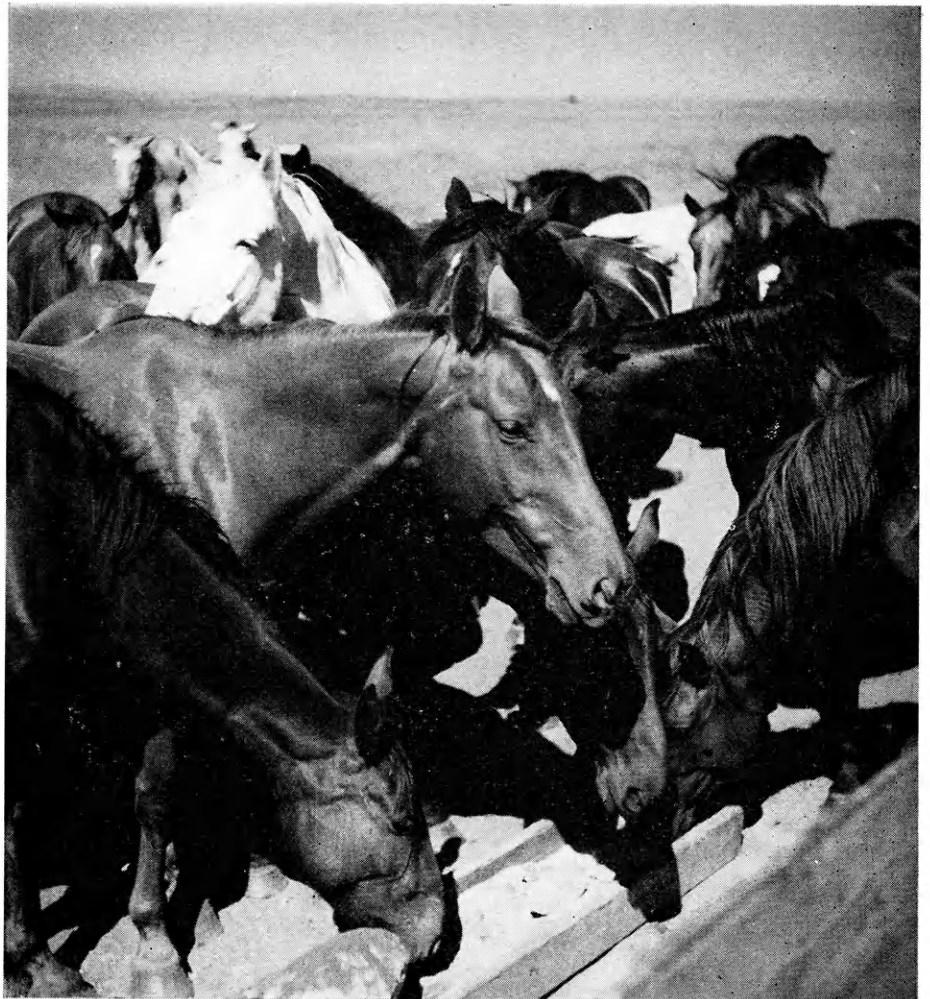
Several amazing discoveries have been made by using radioactive tracers. For instance, it has been found that the transfer of fluid in and out of human veins is so rapid and continuous that it carries back and forth with it 50 pounds of salt on the average every day.

Today isotopes provide labels for all the fundamental life elements. These labels are indistinguishable from the normal material. Biologists have already used them to trace such a variety of bodily ingredients as alcohols, amino acids, antigens, bacteria, bile acids, hormones, insulin, penicillin, starches and vitamins.

By far the most tracer investigations with biologics have been carried out with the radioactive iodine isotopes. This fact reflects the unique role played by iodine as a central factor in thyroid function.

The thyroid is a small but important endocrine gland located in the neck. This organ contains most of the iodine in the body. By repeated observations, curves showing iodine concentrations in the gland were obtained which were found to be characteristic of certain types of thyroid diseases. This test has been used

(Continued on page 32)



Mary MacCaskill won second place in the photo contest with this picture. Mary also turned in a picture last year that placed.

Foto by Dana

## Jennings Wins Ag Photo Contest With Little American Royal Shot

By JIM ORTON

Although fewer pictures were entered in the *Ag Student* magazine photo contest this year, almost every picture was good enough to be a prize winner. Faculty members interested in both agriculture and photography did the judging.

After looking at several of the winning photographs in this issue, you will be able to see what a problem the judges actually had. Judging was based on subject material, composition and technical quality. When considering composition, the judges allowed for the kind of camera used.

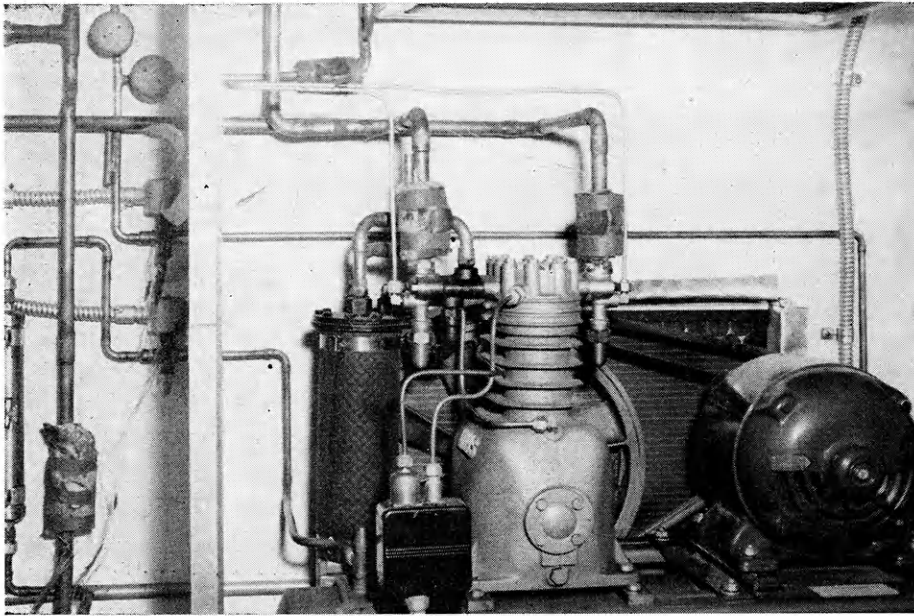
Subject matter of the photographs entered ranged from the winning pic-

ture by Dana Jennings of the Little American Royal King and Queen to a self-propelled buggy that didn't place.

Second place went to Mary MacCaskill, Wichita, who used a crioflex to catch a group of horses eating out on the range. Miss MacCaskill turned in a picture of a saddle horse last year that placed.

A picture of a mare and her colt entered by Charles R. Stevenson, animal husbandry major from Manhattan, barely edged the snapshot of three cowgirls framed by a horse that Dale Apel, Sedan, turned in. Stevenson won third and Apel fourth.

(Continued on page 13)



No dirty work involved when the heat pump is used. The same system will work in summer as well as winter by turning a set of valves.

#### Draws Heat from Ground

## New Invention Cools in Summer, Warms in Winter

By WILLIAM K. JORDAN

No coal to shovel, no flame to burn, no ashes, no smoke, no dirt. That's the way to heat your house by taking heat from a well. And that's not all. You may cool your home in the summer with the same system. The heat pump isn't installed in many homes yet, and you can't go down to the hardware store for one, but the future is promising.

Kansas State college is one of the schools carrying out experiments with the heat pump. Research started here in 1947, and is sponsored jointly by the College Engineering Experiment Station, represented by Prof. G. H. Larson, of the agricultural engineering department; the United States Department of Agriculture, represented by Mr. Warren Trent; and the Kansas committee on the relation of electricity to agriculture, represented by Mr. Ralph Lipper.

The easiest way to understand the heat pump is to compare it with your household refrigerator. When the refrigerator is working, the radiator-like coil (which is usually near the motor) is warm. The heat comes from the left-over roast or potatoes

that were put in the refrigerator to cool. The heat passes off into the air through this coil.

The heat pump principle works the same way—except that the heat is saved and built up under added pressure.

Engineers have long agreed that the idea might work in heating a house, but the problem has been to find a cheap source of heat to take the place of that roast or potatoes in the refrigerator. Experimenters have tried air, the earth itself, and water. So far water has been the most practical source for both heating and cooling the home.

Instead of the one-fourth horsepower compressor, condenser and air circulator fan of the refrigerator, the heat pump requires a five to seven and one-half horsepower unit. Its method of operation is through pumping heat from an outside source, such as water or the ground, into the house, where it is intensified by means of the compressor. This heat it used to heat the home by a forced warm air circulation system. Another feature of the heat pump is that once it is installed in a home, all that is

necessary for summer operation is the reversing of a set of valves and the cooling system for the home is ready to function. In other words, setting the thermostat for the desired temperature for winter, summer, spring, or fall will be an easy task with the heat pump.

It will still be a few years before this equipment is available on the market for the average home. At present, the first cost is too high. There are also many problems of installation which must be worked out. Research work at Kansas State is helping solve some of these problems.

A working model of the heat pump has been built by the agricultural engineering department at Kansas State. The model was on display in the agricultural engineering department during the Engineers' Open House this year.

Advantages of the new method of heating and cooling far surpass those of any other method. They include cleanliness, greater safety, ease of control, and automatic operation. Studies indicate that the cost of operation will be comparable if not lower than for other methods.

Soil erosion by blowing is negligible when compared to that of heavy rains in more humid parts of the country. While it is often disastrous to current crops, it consists more of an exchange of soil from one section to another rather than a permanent and irreparable erosion.

Weather in affecting all types of plant life is never the same any two years. To a large extent, the abundance or lack of insect life in any one season is the result of the ever changing weather.

Military training was recognized as important at Kansas State College in 1865 by persons who had witnessed the border conflicts and the Civil War.

In 1925, the average American in one year ate 2.5 gallons of ice cream; in 1942 his average consumption was 3.5 gallons.

"Jones," asked the professor, "how far away were you from the answer?"  
"Only three seats, sir."

# College Professor Puts His Teachings To the Test in Practical Manner

By CHARLES MCGHEE

How would you like to own a small farm a few miles from Manhattan? Everyone has dreamed of just that at some time or another. Some of us live to see our dreams come true.

A man who has done something about his future plans is Asst. Prof. Clarence Gish of the poultry department. Professor Gish received his education at Kansas State College. He has worked at several jobs since then, including a job as government inspector during the war. At the close of the war Mr. Gish took a job as assistant professor in the poultry department.

Last year Professor Gish bought a small tract of land east of Manhattan on highway 40. He started a general cleanup right away and it wasn't long until he was ready for the first building. He built a stone feed building which was converted into a home for his family until the cost of building materials would permit the building of a house.

Two poultry houses, 24 feet square, were added to accommodate the initial flock of turkeys, which would produce Gish's setting eggs. One hundred fifty Beltsville white hens and eight Beltsville white toms were purchased to do the job.

Professor Gish used lights to speed his hens into production. He installed his own incubator and electric brooders and has several hatches of young turkeys started. Gish plans to add chickens later to his pens to supplement the seasonal turkey income.

An adequate water source was needed to supply all of the buildings with running water. An eighty foot well was dug and a jet pump installed.

Celotex ceilings were installed in the turkey sheds instead of straw lofts. Gish says that this eliminates fire hazard and that turkeys do not need the ventilation chickens require. Ground cob litter is used on the floor. The front and back of the turkey sheds are removable so that maximum ventilation may be attained in hot weather. Mechanical feed elevators are planned later to ease the work of feeding.

Professor Gish keeps a bale of green alfalfa in the turkey sheds in the winter months to supplement the diet. This provides Vitamin C which the birds get on the range in the summer. He says a balanced diet is necessary to produce good hatching eggs.

Beltsville white turkeys are not an exceptionally large breed of birds. Gish says that his hens weigh about

10 pounds and his toms average 20 pounds. Hatching eggs for this breed of birds sell on last season's market for 35 to 50 cents each.

Anyone wishing to start a turkey farm of their own may call on Professor Gish for more detailed plans. Turkeys are hard to raise, because they are more susceptible to disease than chickens. Gish's advice is "get plenty of information on turkeys before you start to raise them."

## JENNINGS WINS PHOTO CONTEST

(Continued from page 11)

Other winning photographs and their placings are: Fifth place: 35 mm picture of a future Kansas State student (1964) turned in by Rodger Funk; sixth place—a farmer and baby calf astride a horse, submitted by Roland Weaver; seventh place—a boy at the wheel of a tractor turned in by Wilfred G. Reist.

The picture by Roland Weaver also won the special box camera award.

## TALL STORY

We have some farms out our way that are pretty good size. I've seen a man on one of our big farms start out in the spring and plow a straight furrow till fall. Then he harvested back. But that's not all. It is the usual thing to send newly married couples out to milk and their children bring back the milk.

"Fishing?"

"No. Drowning worms!"



Ag Association officers for next year are Charles Glenn, Ag Barnwarmer manager; Dale Wiseman, Ag Student editor; Jack Graham, treasurer; Bob Kuhn, ass't Barnwarmer manager; Jim Dixon, president; Oliver Russ, secretary and Norman Collins, vice-president.

# Fort Hays Station Personnel Develop New Machines

By ALLEN ORTON

"Better farming made easier," might well be the slogan of the Fort Hays branch experiment station which has been turning out new and improved farm machinery since its founding in 1900.

Farm machines that have originated at the Fort Hays station during the last 28 years include a tractor-powered post hole auger, basin lister, duck-foot weeder, grass harvester, and self-propelled combine. The Hays station also designed the second

automatic pick-up baler in Kansas.

A two-row self-propelled ensilage cutter was one of the main attractions in the Agricultural Engineers' Open House display in March. "About everything we could get our hands on went into the ensilage cutter," says L. C. Aicher, superintendent of the Fort Hays station.

The Hays experiment station personnel started building the machine two years ago when the need arose for a faster and more economical ensilage harvester. After two years

of fixing and re-fixing, Aicher believes the machine is just what they want.

The successful combination of a variety of parts resulted in the only self-propelled two-row ensilage cutter in existence. The inventors used the rear end of an English Austin, the front end of a two plow tractor, the rear end of a truck, a gehl cutter, shop built wheels and gears, and powered it with a 49 horse-power engine.

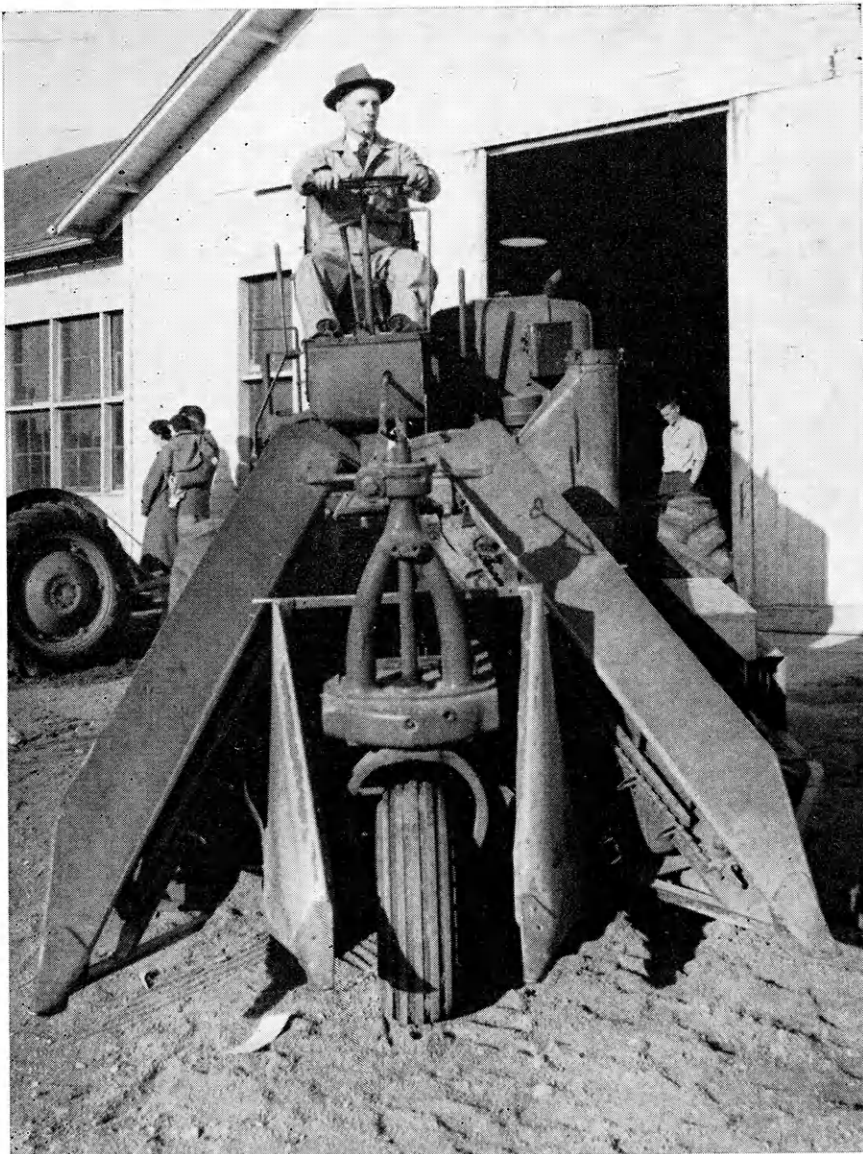
The small Austin rear-end is just right to operate the feeder chains and sickle. The hydraulic brakes enable the machine to turn in a very small area.

In western Kansas where a good sorghum crop is about 10 tons to the acre, the cutter can fill a 200 ton silo easily in an 8 hour day. In this section of the state, where 20 tons to the acre are common, Aicher says the machine could harvest 40 or more tons in an hour.

The best feature of the ensilage cutter is its low cost of operation. About two gallons of gasoline an hour will keep the machine running. That is less than a tractor will use pulling a one-row cutter. "The secret of low cost operation is the variable speed control that we installed," Aicher explained. This keeps the cutter always running at a uniform speed. This variable speed control is now used on all self-propelled combines.

A processing plant at Fort Hays for buffalo grass seed is the only one of its kind. Before it will germinate, buffalo grass seed must be soaked in saltpeter for 25 hours and then put into a refrigerator for six weeks at 40 degrees F. The Army needed buffalo grass seed to prevent sand erosion near air fields during the war so the Fort Hays station processed some 65,000 pounds of buffalo grass seed in three years for Army use alone.

Fort Hays itself was originally one of a line of forts extending from Kansas City to Denver. It was first established several miles south of the present town of Walker in 1866. After a disastrous flood it was moved to its present location south of Hays. The fort was abandoned in 1889 and in March, 1900, an act was passed by Congress granting the fort reservation to the State of Kansas for three designated uses, one of which was a state branch experiment station.



This two-row self-propelled ensilage cutter was made by the Fort Hays station. It was on display at the Engineers' Open House.



# Twenty Years of Tests Result in Production Of Buffalo Alfalfa

By DEAN NEWELL

Among the studies carried on in the agricultural experiment stations over Kansas in the last several years has been the development of Buffalo alfalfa. Observers often do not realize the processing the development of such a thing involves. It takes the cooperation of many people and the diligent care of specialists to develop a new variety such as Buffalo alfalfa.

This new variety was developed from Kansas Common, a variety known to have been grown as early as 1907. The superiority of the new variety was first called to the attention of L. E. Call, then head of the K-State department of agronomy, in the early twenties. The first seed placed under observation of the agronomists was planted in 1922. It was discovered that the new variety was equal to its ancestor in yield, quality of hay, cold resistance and superior to it in longevity.

From the seed of the original test, plants were grown and set out far enough apart to permit study and observation of the individual plants. The progeny of the selected plants were studied in laboratories and tested in wilt nurseries for wilt resistance. The new variety was again found to be equal to other varieties in many ways and superior in wilt resistance. The final selection was made at Garden City Branch Experiment Station, where tests were continued for wilt resistance and agronomic characteristics.

The main factor in the increased longevity of Buffalo is its resistance to bacterial wilt, a disease that has been a factor in the production of alfalfa since about 1920. The seriousness of the disease was recognized then and varieties were tested to determine their resistance to wilt. This investigational work was started in 1929 and also resulted in the production of Buffalo alfalfa.

In tests carried on at Manhattan, it was discovered that during a three year period from 1939 to 1942 Buffalo proved to have 95 percent stand remaining, while other varieties tested showed a decrease in stand as low as 25 percent over the three year period.



Buffalo alfalfa (left) growing in a field beside Kansas Common (right) on the agronomy farm, Kansas Agricultural Experiment Station, Manhattan. The thin stand in the Kansas Common, as indicated by the foxtail grass (*Hordeum pusillum* Nutt) was caused by bacterial wilt (*Corynebacterium insidiosum*).

## Scientists Discover Uses of Colostrum

By RICHARD JAMESON

Speculation, as to what the exact function of colostrum is, has been going on for many years. Before scientists probed into the unknown qualities of this substance, it was believed that colostrum played only a minor role in the complex organization of life.

Now, that research workers have thrown some light onto this subject, there has been revealed a maze of possibilities. The entire secret of colostrum is yet to be found, and perhaps even many of the secrets of life itself.

Colostrum was thought at first to be merely a laxative to remove the wastes accumulated by the fetus. Then it became apparent that antibodies were received by the young of ruminants through colostrum. Molecules which the anti-bodies were associated with seemed to be too large to pass through the placenta into the fetus.

Then research workers' interest in anti-bodies began to die out, and

work on vitamin A and its relatives, became their study. In recent years, interest has again been aroused in anti-bodies in colostrum, and this coupled with vitamin A research has led on into other fields.

Colostrum could probably be considered one of the most potent foods in existence. It is high in practically all known nutritional factors except water, lactose, and some specific minerals. These three missing substances can, for the most part, be supplemented to form almost the perfect feed.

There was an experiment carried on by Ohio State University, in which colostrum was fed to calves on a percentage basis of their body weights. These percentages also varied with their ages. The experiment showed that calves fed on colostrum had a higher blood plasma level of carotene and vitamin A. They were more alert and had a more glossy coat than were calves that had been fed on a plain milk diet. Although some of the calves were abruptly changed from a plain milk diet to a colostrum diet, they showed no signs of going off feed, or losing weight.

Many farmers consider this highly nutritional food almost a nuisance. It is estimated that 50 percent of the

(Continued on page 32)

# Collegiate 4-H'ers Prepare Largest Who's Whoot Annual in History

By DALE JOHNSON

Since early in January the Collegiate 4-H club office in the extension barracks has been busier than usual. Approximately 200 4-H club members have been planning, assembling, cutting, and pasting pages for the 1949 "Who's Whoot", official Kansas 4-H Club yearbook.

The "Who's Whoot", which gives a pictorial record of the 4-H happenings and achievements of the year, is published annually by the Collegiate 4-H club. This club project is another service performed for the 4-H members of Kansas.

Members of the Collegiate club are appointed to the "Who's Whoot" staff early in the fall by the executive council of the club and the state 4-H club department. This year's staff includes Dale Apel, Sedan, editor; Marlys Waln, Canton, assistant editor; Laberta Kugler, Abilene, county page editor; Don Jacobson, Everest, advertising manager; Enid Keiswetter, Hill City, special features editor; Stanley Wood, Elmdale, Collegiate editor; Dale Johnson, Salina, sales manager; Maridell Byler, Newton, artist; and Tennyson Collins, Manhattan, photographer.

The staff appoints a former 4-H club member from each of the counties as a county representative. Pictures of club members, their projects, and activities are secured through the county extension agent by the representative. During the winter these pictures are trimmed, assembled, and finally pasted to a scaled page. A completed page usually contains a picture from every club in the county. Calves, pigs, sheep, a 4-H camp, picnics, food and clothing projects are often shown. This year's annual contains pages from 94 counties.

The Collegiate section of the yearbook includes pictures of the presidents, vice-presidents, and secretaries of the Collegiate 4-H club for the past two semesters. Members of the club are shown in group pictures. Informal snaps also show the radio broadcasts, the dinner dance, spring formal, club meetings, the presenta-

tion of various awards and other activities here at Kansas State.

State champions, the members of the honorary "Who's Who" club, and various scholarship and trip winners are pictured in the special features of "Who's Whoot". The 1949 annual will, for the first time, show scenes from the state fairs, Round-up, the Wichita fat stock show, and Rock Springs ranch, the new state 4-H camp.

The officials of Kansas State college are familiar to "Who's Whoot" recipients as KSC administrators are pictured in the book.

Various firms and organizations from over the entire state subscribe for advertising to help finance the publication. These advertisements compose the last section of the "Who's Whoot".

After all the various pages have been assembled and set-up, they are sent to the engraver, and finally to the printer. The 1949 "Who's Whoot" should be ready for distribution to K-State students the last week of school. The delegates to Round-up May 31 to June 3 will receive copies. The county extension agents distribute the remaining books to 4-H'ers in the counties who have placed orders. This year 2500 copies are being printed.

The first edition of "Who's Whoot" was published in 1927 by the "Who's Who" club. It contained pictures of "Who's Who" club members and had three pages of snapshots showing 4-H activities. The 1928 publication pictured the members of the first Collegiate 4-H club. In 1929 the "Who's Whoot" had five county pages. As time passed the other sections have been added. Each edition has been larger than its predecessors. The new "Who's Whoot" will contain approximately 225 pages.

K-Staters willingly work long hours on the "Who's Whoot" for Kansas is one of the few states in the nation to have such an annual. The "Who's Whoot" is another 4-H project of which Kansans may justly be proud.



Another prize winning photo of the contest. This picture was turned in by Roger Funk.

## Dean Call to Return To Philippine Islands

By JIM ORTON

Dean Call is going back to the Philippines. This time he will help professors at Silliman university, Dumaguete, Island of Negros, organize a course of instruction in agriculture.

This time Dean Call will not travel alone. He will be accompanied by his wife and will leave Manhattan May 22 for Silliman. They are going under provisions of the Fulbright act which put into operation international education exchanges.

Both Dean and Mrs. Call will teach at Silliman. Mrs. Call, an art instructor, taught for eight years at Kansas State college in the school of home economics.

Dean Call is acquainted with agriculture in the Philippines. In 1946 he was chief of a mission to the islands sponsored by the United States Department of Agriculture. He traveled some 7,000 miles by air, boat and jeep that year to visit principal

agriculture regions of the islands.

As a result of this mission, Silliman university officials requested the services of Dean Call in working out a suitable agriculture curriculum for their school.

In addition to his duties of setting-up courses of agriculture instruction at the University, the Dean will teach a course in world agriculture. All courses are taught in English at Silliman.

This isn't the first trip to the Pacific for Mrs. Call but it will be her first boat ride. She traveled as far as Honolulu by air with Dean Call on his first trip to the Philippines. Because of the shipping strike at that time, they were unable to catch a boat.

"The trip by air is all right but you go too fast to see anything," Mrs. Call said. She is looking forward to the trip by boat.

Mrs. Call isn't worried about cooking Philippine dishes—mainly because that will not be her job. The natives over there are good at whipping up American dishes, she said.

The Calls will sail from San Francisco June 3 on the SS General Gordon. They will travel by way of the Hawaiian Islands, Japan and China and will reach Manila on June 27.

They will reach Dumaguete just in time to start working. At Silliman, the school year begins in July 1949 and will end in April 1950. The Fulbright grant to Dean and Mrs. Call is for that nine month period.

The return trip will be longer. The Calls plan to sail from Manila to Bombay, India, for the first leg of their journey. Then they hope to visit India and sail to Europe through the Suez canal, making it an around-the-world jaunt.

In Europe they have a lot of things to do. Among other things Dean Call expects to attend the international botanical congress at Stockholm, Sweden, in July 1950.

A large woman and her meek little husband stood before the judge in traffic court.

"What were you doing at the time of the accident?" asked the judge.

The woman spoke up. "Your Honor, I was driving down Main street, with my husband at the wheel . . ."

# New Kansas White Rock Strain Gains in Popularity

By WILFRED REIST

Fried chicken is an enjoyable meal time dish for millions of people. Yet few of them realize the work and research needed to make this treat possible. Much experimental work has been done by poultry breeders to bring about the best quality friers.

The Kansas Strain of White Rocks is one of the many breeds thus developed. It was started by Dr. D. C. Warren in 1938 at Kansas State college poultry husbandry department. It is now under the direction of Dr. Clyde D. Mueller, poultry geneticist of the department.

The Kansas Strain of White Rocks has rapid feathering, rapid growth, high egg production ability, good meat-type conformation, and white plumage characteristics. They are becoming more popular because they meet both the broiler and egg producers' demands.

They originated as a cross between White Rocks, New Hampshires, and Rhode Island Reds. The rapid growth and feathering characteristics were contributed by the New Hampshires.

Rhode Island Reds furnished high egg production qualities while the White Rocks furnished the white plumage and meat-type conformation. After crossing they were bred back to the White Rocks to get a pure white color and the correct conformation.

Rapid feathering has been established 100 percent in the stock the last several years. Progress on other traits has been slower because their inheritance is more complex. Environmental conditions also have more effect on these traits.

Most of the progress in the last five years has been in faster maturity, increased mature weight, and average annual egg production. Age at first egg has been reduced two weeks and an average of 30 eggs more per hen has been obtained. The mature body weight of females has been increased nearly one-half pound and the weight at eight weeks has been increased one-fourth pound per bird.

Efforts are now being made to purify the color patterns in the stock. When this is accomplished they will

(Continued on page 27)

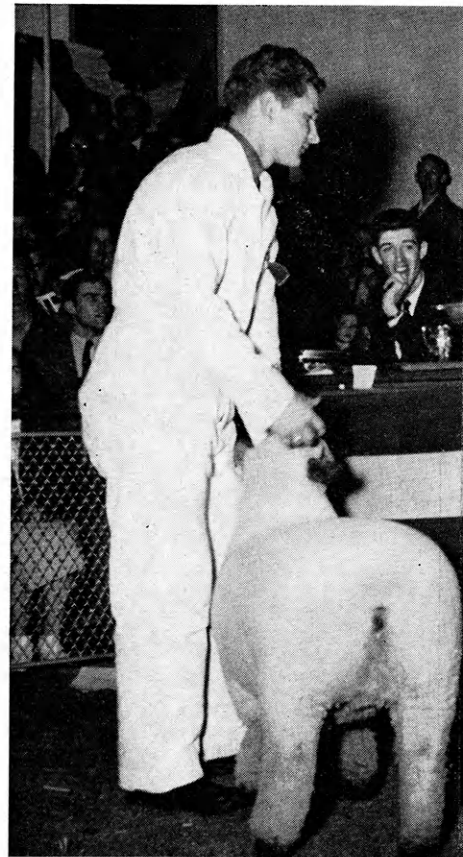


Next year's staff for the Ag Student will be Jack Mings, ass't photographer; Jim Mills, photographer; Don Tarver, business manager; Prof. Elbert Macy, faculty adviser; Dale Wiseman, editor; Bob Wulfkuhle, ass't business manager and Delmar Hatesohl, associate editor.

# Kansas State's Little American



Two Poland China hogs are shown at the Little American Royal by Jack Vanier and Reggie Reed.



Eugene Brinkman took Grand Champion honors with the prize Hampshire ewe which was also champion.



Grand Champion showman of the Dairy division of the Little American Royal went to John Wilk. He is shown receiving a cup from Congressman Clifford Hope.

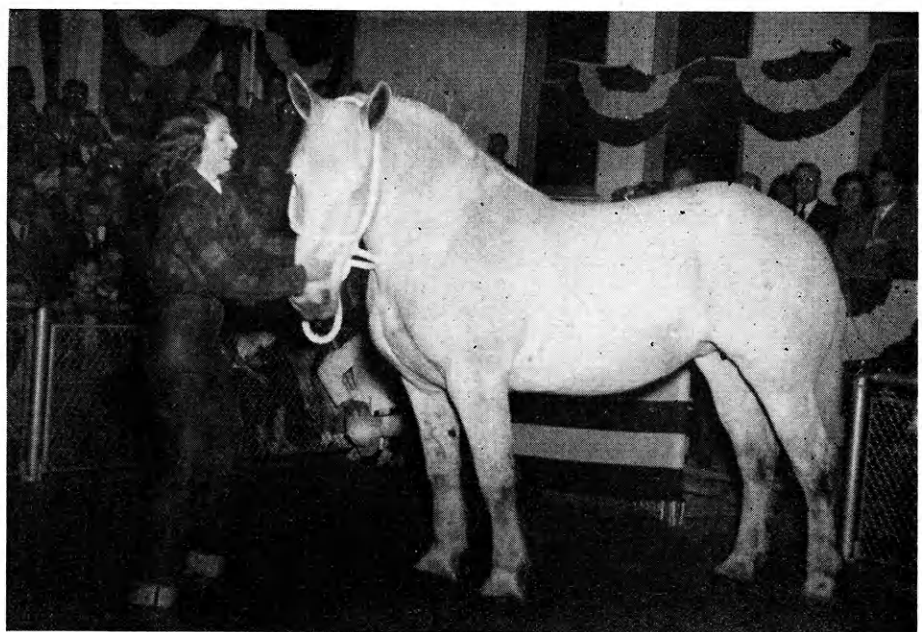
# Royal Proves To Be Best Yet



in the Animal Husbandry division. He is shown  
champion in the sheep division.



Building the center piece for the Royal was by the decoration committee with chairman Harold Ramsey in charge.



The champion horse was exhibited by Mary MacCaskill. Mary also won first in the draft division and has the honor of being the only girl to participate in the show.

# John Wilk, Eugene Brinkman Named Champion Showmen at Little Royal

## 1000 Spectators Jam Livestock Pavilion To See 21st Annual Event

By NORVILLE GISH

More than one thousand spectators crowded into the Kansas State livestock pavilion on the campus April 9 to watch some one hundred K-State ag students compete for honors in the 25th annual Little American Royal livestock show.

The Little Royal, which has developed through the years from a parade to one of the most impressive events of the year in the school of agriculture, was a great success. Interest and competitive spirit was at a high level throughout the weeks of preparation for the event. Long hours of work and care by student showmen were rewarded on the night of the show when observers called the 1949 Little American Royal one of the best in history.

Grand champion honors this year went to John Wilk of Clearwater and Eugene Brinkman of Coffeyville. Wilk was grand champion showman in the dairy club division while Brinkman captured top honors for the animal husbandry division.

Don Hopkins, Clearwater, took the reserve champion award for the dairy division while Norman Johnson, Benda, was reserve champion showman in animal husbandry.

Ribbons and prizes also went to some twenty other competitors who were winners in their respective classes.

Highlights of the activities during the show included the presentation of the little king and queen of the event. Chosen by student participants in the Little Royal, the reigning monarchs were presented to the audience and crowned by Dean R. I. Throckmorton of the School of Agriculture.

The rulers, both three years old, were Cindy Griggs and Mike McCarty. Both Cindy and Mike are children of K-State ag students who were entered in the show.

Trophies were presented to the

winners in the Little Royal by Congressman Clifford Hope of Garden City. Congressman Hope, former chairman of the house agriculture committee, flew from Washington, D. C., for the occasion. He awarded silver trophies to grand champion showmen and reserve champion showmen in each division. Ribbons and prizes went to other winners in the show.

Trophies were provided for the Little Royal this year by the Kansas Interbreed Dairy Association, the Kansas City American Royal, and the Kansas City Stockyards company.

Since the beginnings of the Little American Royal, the show has developed from a parade of prize winning college livestock before an audience of students and visitors to a highly competitive contest.

Shortly after the turn of the century, students at Kansas State began showing and parading show stock belonging to the college which had been exhibited at the International Livestock Show in Chicago. A parade, passing Anderson hall before the entire student body, was the beginning of what has developed into a highly organized fitting and showing contest for students at Kansas State.

The first actual fitting and showing contest was in 1924 when fifty-two students drew animals for the event. This year's show was nearly double the size of the 1924 event in numbers of contestants.

The first Little Royal had only the animal husbandry division but by 1926 the dairy division was added. The dairymen were the first to actually fit and show college animals since the original animal husbandry show did not include the fitting and showing work. In 1929, however, the Block and Bridle club, co-sponsors of the event with the Dairy Club, put their part of the show on a similar basis with that of the dairymen.

Eleven days were first allotted for

preparing the animals but as the show enlarged longer times were allowed until this year a total of six weeks was spent by most entrants in getting their animals ready.

Winners were named in some twenty separate classes of stock with breed winners and division champions named separately.

Judges for the contest were: Dairy Division, Elmer Dawdy, Ballard Bennett and Joe Wallace. In the Block and Bridle Division were H. L. Murphy, cattle; Waldo Pooney, sheep; Roy Freeland, swine; Sam Bigham, horses, and Andy Patterson as supreme judge.

The winners by division and classes:

### DAIRY DIVISION (Dairy Club)

Grand Champion Showman—John Wilk, Clearwater.

Reserve Champion Showman—Don Hopkins, Clearwater.

Ayrshire champion—Dwight Hull, El Dorado.

Ayrshire cows—Dale Gigstad, Effingham; Ayrshire heifers—Dwight Hull, El Dorado.

Jersey champion — John Wilk, Clearwater.

Jersey cows — Kenneth Carson, Hartford, Ky.; Jersey heifers—John Wilk, Clearwater.

Guernsey champion—Clint Jacobs, Holton.

Guernsey cows—Clint Jacobs, Holton; Guernsey heifers—Lloyd Hershberger, Newton.

Holstein champion—Don Hopkins, Clearwater.

Holstein cows — Don Hopkins, Clearwater; Holstein heifers — Bill Collins, Columbus.

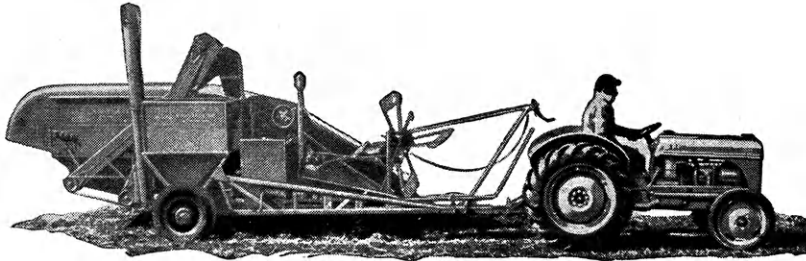
### ANIMAL HUSBANDRY DIVISION (Block and Bridle club)

Grand Champion Showman — Eugene Brinkman, Coffeyville.

Reserve Champion Showman —

(Continued on page 36)

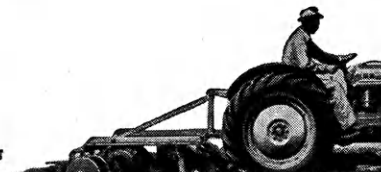
# All these and many more engineered for the



Dearborn-Wood Bros. Combine



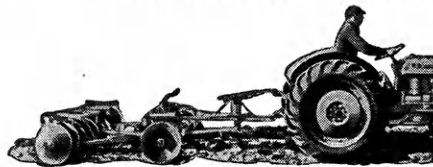
Dearborn Spring Tooth Harrow



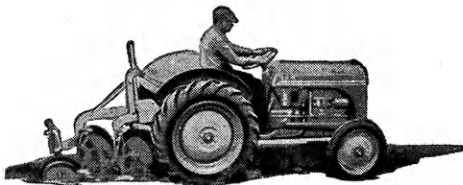
Dearborn Lift-Type Disc Harrow



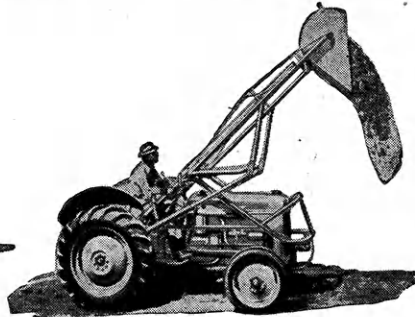
Dearborn Scoop



Dearborn Tandem "B" Disc Harrow



Dearborn Disc Plow



Dearborn Heavy Duty Manure  
and Material Loader



Dearborn Spring Shank Cultivator



Dearborn-Wood Bros. Corn Picker

*Look For This Sign . . .*



It marks the headquarters of your nearby Ford Tractor and Dearborn Implement dealer. He has a genuine interest in cooperating with you in every way. It will pay you to know him better.

DEARBORN MOTORS CORPORATION, DETROIT 3, MICHIGAN



*The only time that Counts is Working Time*

COPYRIGHT 1949. DEARBORN MOTORS CORPORATION

# Ford Farming

MEANS LESS WORK . . .  
MORE INCOME PER ACRE

Select your mounting and stone . . .

## Have It Mounted by **REED'S**

A good choice, honest value



### QUALITY

is many things  
you cannot see . . .

4 C's that determine a  
diamond's value

- Color
- Cut
- Clarity
- Carat Weight

It would be quite difficult to ascertain a stone's true value when it is mounted. Diamond experts generally grade diamonds when loose or unmounted.

- A Reed diamond . . .
- is a quality diamond . . .
- a loose diamond.

## REED'S TIME SHOP

SOSNA THEATRE BLDG.  
AGGIEVILLE

# Old Wild West Changed by Three Men Who Invented Barbed Wire

By CHARLES GLENN

Three men went to an Illinois county fair. What they saw at the fair grew until it was big enough to change Texas and the whole west. It was at the fair that the men got their ideas for barbed wire.

Within five months after the three men had viewed the exhibit at the fair, they had each made application for a patent on their version of barbed wire. It was in 1873 that Joseph Glidden, Jacob Haish, and Isaac Ellwood saw what the inventor, Henry M. Rose, described as a "Wooden Strip with Metallic Points." It was this crude, unpractical barbed strip that gave the men their ideas for barbed wire.

Glidden's patent, No. 157,124, was the most important barbed wire patent. It was the first patent applied for by the three Illinois inventors. Glidden's barbed wire was the easiest to make and proved to be the most popular from the start. Almost all the barbed wire now in use is patterned after Glidden's invention. The barb is bent around one of the strands of wire, then two strands are twisted together to hold the barb in place.

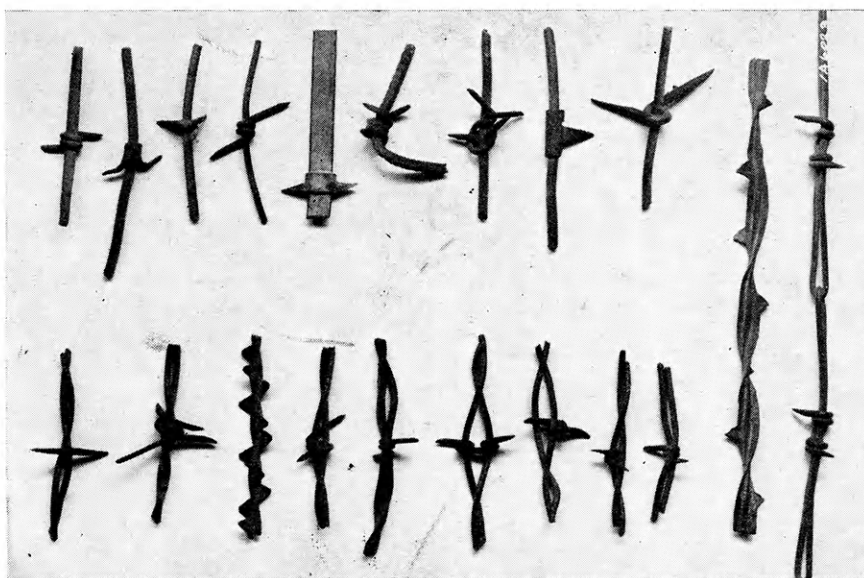
Haish patented an attachment to be placed on rail fences already built. He patented an invention consisting

of one continuous strand of wire about which shorter lengths were twisted, and metal barbs were placed on each side of the fence at the point of junction of the shorter wires.

The last of the three to get a patent was Kennedy. His invention was concerned mostly with barbs to be attached to plain wire, mainly on fences already up.

Before machines were invented it was an interesting sight to watch Glidden manufacture fence. One workman would climb to the top of a windmill tower with a bucket of barbs. Another would follow him with a strand of wire. The workers would string barbs on the strand of wire, the barb sliding down the wire, across the street and into a building. There the wire was greased to hold the barbs in place until they could be pinched tight to secure them. After this the wire was wound with a second strand.

By the time barbed wire was seven years old it began to change Texas. People laughed when they heard about a wire that could protect itself. Selling barbed wire in Texas became big business. One salesman, to prove the strength of barbed wire, put up a fence in San Antonio's Alamo Plaza. Then he invited all the cattlemen who



Few students in agriculture may recognize these pieces as barbed wire in its growing stage. Picture through courtesy of Dr. Hurley Fellows, KSC.



had laughed at his claims to bring on their meanest longhorns. The fence itself had attracted much attention and when people heard it was supposed to stop longhorns many gathered to watch the fun.

There wasn't any fun except for the salesman. The longhorns were run into the corral. They bumped into the fence several times, bounced back, shook themselves, snorted and then gave it plenty of room. The salesman had proved his point.

Cattle raising had to change as the prairies became lined with fences. After trail drives were fenced off cattlemen had to ship stock to market whether they liked it or not. Towns liked it, for a herd of wild cattle going down main street was rather disturbing.

Trouble broke loose in Texas as more fences began to appear. Where there were people who wanted fences and put them up there were those who didn't want fences and tore them down. There were complaints of land-grabbing. The general land office conducted a series of investigations in 1884 and found 32 cases of illegal fencing. One enclosure contained 600 thousand acres, another forty townships, and one cattleman had 250 miles of fence. Sometimes people were completely surrounded by fence and couldn't get out unless they cut their way. There was much fence cutting in resentment against being shut out of free grazing. Until 1884 fence-cutting was not a crime so there was no legal way a ranchman could defend himself.

The ranchers took the law into their own hands and formed associations to guard themselves against fence cutters. A condition of civil war resulted and the state was forced to restore order. In 1884 the necessary laws making fence-cutting a felony were passed providing penalties for fencing public lands without authority, requiring that public roads be left open and gates placed every three miles, and in other ways regulating the fencing of the land. Rangers were sent out after fence-cutters and fence-cutting soon ceased. Barbed wire had fought its battle and won over open range and free grass.

Barbed wire changed cattle raising in more ways than marketing. Breeds could be kept true with fences, cattle could be handled easier and kept from straying. The old gun-toting cowboy disappeared.

## *Make Our Flowers Your Habit*

CORSAGES



ANNIVERSARY FLOWERS



GIFTS FOR ALL

## MARGARET'S Flowers & Gifts

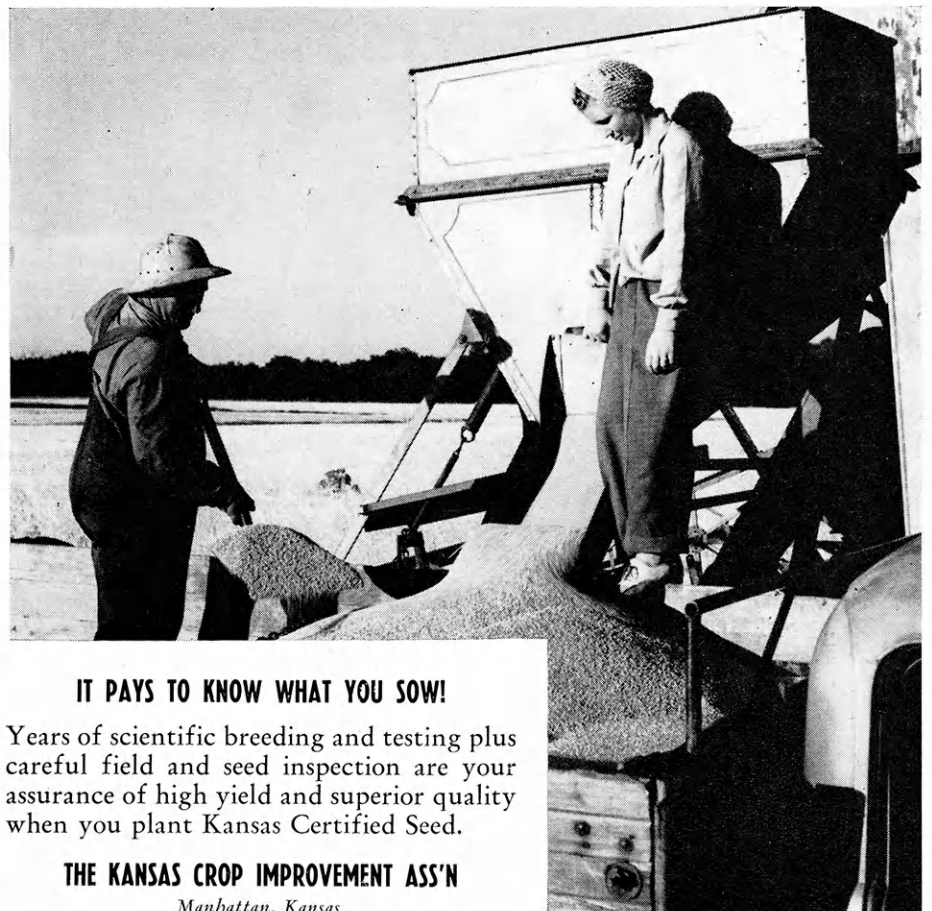
Aggieville

Phone 3314

LISTED IN  
DUNCAN HINES'  
*"Adventures in Good  
Eating"*

## Hotel Gillett Dining Room

You'll Like the Food  
and the Service



### IT PAYS TO KNOW WHAT YOU SOW!

Years of scientific breeding and testing plus careful field and seed inspection are your assurance of high yield and superior quality when you plant Kansas Certified Seed.

**THE KANSAS CROP IMPROVEMENT ASS'N**

Manhattan, Kansas

# Future Farmers Organization Shows Healthy Growth in Recent Years

By WAYNE DOLL

Future Farmers of America and New Farmers of America have every right to thank their sponsor organization, the Future Farmers of America Foundation, Incorporated, for its help and support during the last year. This "father" incorporation presented over fifty-four thousand dollars in awards and prizes to members of the F.F.A. and over forty-five hundred dollars to the members of the N.F.A.

The Future Farmers of America Foundation, Incorporated, was established in 1944, and is the national foundation for students and former students of vocational agriculture. It was organized to provide business, industry, farm and civic organizations, and individuals with an opportunity to make financial contributions for the stimulation of worthy achievements by students and former students of vocational agriculture

who are members of the F.F.A. and N.F.A.

Students of vocational agriculture include those who are receiving training under the nation-wide federally aided program of systematic instruction in agriculture and farm mechanics of less than college grade. This instructional program is conducted in public schools or classes for those persons over 14 years of age, "who have entered upon or who are preparing to enter upon the work of the farm or the farm home." This is under a plan of cooperation between state boards for vocational education and the U. S. Office of Education.

The Future Farmers of America is the national organization of, by, and for boys studying vocational agriculture. These organizations are found in public secondary schools which operate under the provisions of the National Vocational Education Act. It is an educational, non-profit, non-political farm youth organization of voluntary membership, designed to develop agricultural leadership, character, thrift, scholarship, cooperation, citizenship, and patriotism. Its members learn through participation how to conduct and take part in public meetings, to speak in public, and to assume civic responsibility. The F.F.A. is an extracurricular part of vocational education in agriculture in the public school system of America.

The New Farmers of America is a national organization of Negro farm

boys who are studying vocational agriculture in the public secondary schools. These schools operate under the provisions of the National Vocational Education Act in those states where separate schools are maintained for Negroes. This organization is similar to the Future Farmers of America.

Accompanying the healthy growth of the F.F.A. and N.F.A., there has been an increasing number of farm and civic organizations, individuals, corporations, and business concerns which have become enthusiastic supporters of these farm youth organizations. Many commercial concerns have cooperated by providing substantial prizes and awards for deserving students of vocational agriculture and members of the Future Farmers of America and New Farmers of America. These boys must have achieved outstanding ability in vocational agriculture and supervised farming activities. They recognize the interdependence of agriculture and business and realize that business and industry cannot prosper indefinitely without a successful agriculture. Consequently, any financial support given for the development of better trained farmers is regarded as good business.

By incorporating, the F.F.A. has a more uniform program of contests and activities since it allows all organizations, corporations, individuals, and business concerns which wish to cooperate to do so. They do so without the necessity of establishing and sponsoring additional activities on a nation-wide basis.

The following types of projects or activities are representative of those which are now or may later be sponsored by the foundation:

1. F.F.A. and N.F.A. public speak-

IT'S THE  
**CAMPUS  
 BOOK  
 STORE**

for all College  
 Books and Supplies

PLUS—

*that friendly  
 college atmosphere  
 we know you'll like*

●

**CAMPUS  
 BOOK STORE**

**Riley County Abstract Company**

ABSTRACTS OF TITLE

Insurance                      Notary Public

**J. F. MUSIL**                      **W. W. JUSTUS, '42**

Bonded Abstracters

103 N. 4th St.                      Dial 2041



Next year's FFA officers receive congratulations from Paul Lindholm, 1st vice-president of the national organization of FFA and by Virginia Osborn, past president of the Future Homemakers of America.

- ing contests.
2. Star STATE and MODERN farmer awards.
  3. American farmer and superior farmer awards.
  4. Farm mechanics awards.
  5. Farm electrification awards.
  6. Farm improvement awards.
  7. Farm home improvement awards.
  8. State initiated projects—purchase of machinery, equipment appliances, registered animals, certified seed, etc.
  9. Livestock and other judging contests.
  10. Establishment of farming awards through a guaranteed loan plan.

Kansas has at the present approximately five thousand F.F.A. members and will receive over four hundred dollars for state initiated proj-

ects this year. The amount of other awards will depend upon the future winners of the various contests and activities.

Norris Maydew of Lebanon and William G. Schrock of Kiowa were recipients of last year's American Farmer degrees, which represents the highest achievement of members of the F.F.A.

Not only should members of F.F.A. and N.F.A. feel grateful for the work of the Future Farmers of America Foundation, Incorporated, but the whole nation should salute this organization which is giving benefits to all.

The shortest possible unit of time that scientists have discovered is that between the turn of the light to green and the honk of the horn behind you.

## THE Kansas Poultry Improvement Association

MANHATTAN, KANSAS

*"Working to Improve Kansas Poultry"*

**OFFICIAL STATE AGENCY**

Authorized by the Bureau of Animal Industry, U. S. D. A. to supervise Poultry Improvement work in Kansas under the NATIONAL POULTRY IMPROVEMENT PLAN.

*Ask Your County Agent*

U. S. D. A. Miscellaneous Publication No. 300  
Gives the Plan in Detail.



# HIDES WOOL FURS SHEEP PELTS

## Kansas Hide & Wool Co.

2nd and Osage  
MANHATTAN, KANSAS



### FACTORY AUTHORIZED ALL LEADING MAKES

• The world's leading pen makers have made us their authorized service station.

• Genuine parts and factory trained service on Parker, Sheaffer, Eversharp and all other makes.

• A small adjustment may quickly put your pen in perfect condition. Bring it in today!

Palace Drug Store  
Aggieville

# WE FRAME PICTURES

200 Molding Samples  
to Choose from

We make frames  
and mats to fit the  
individual picture.

## Aggie Hardware & Electric Co.

G. W. GIVIN

1205 Moro

Phone 2993

### SUITS BY

Society Brand  
Varsity Town  
Strathmore

### SPORTS WEAR BY

McGregor

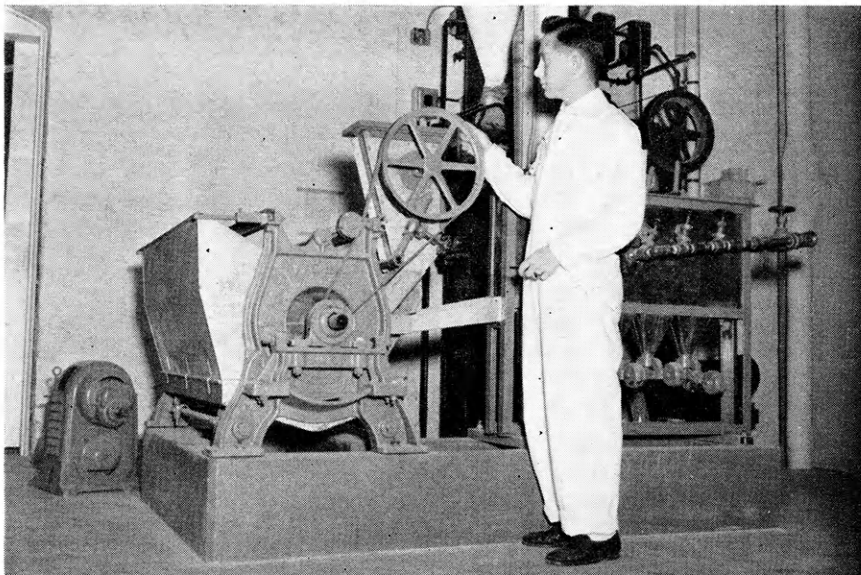
### SHIRTS — Arrow

### SHOES BY

Florsheim  
Bostonian  
Allen Edmonds  
Winthrop

*Stevenson's*

The Store for Men and Women



A Milling student, Dave Ward, examines the latest equipment for washing wheat and removing small stones.

## KANSAS STATE MILL

(Continued from page 4)

machines were loaned with the thought in mind that as new developments were made in a machine the older model might subsequently be replaced. When the full plan of modernization is completed there will be machinery valued at approximately 40 thousand dollars.

Finances for the remodeling have come from several sources. The Kansas Legislature enabled work to start when they appropriated ten thousand dollars. The Millers National Federation helped still further when it gave a grant of ten thousand dollars to be used for research. Some of this money has been used in the modernization program. It is essential that additional funds be secured by the milling department or it will be unable to continue the installation of the machinery which has already been given.

As part of the program to modernize facilities for student training, a new pilot baking plant was set up about a year ago. In the bakery, students get practical experience in operating commercial baking equipment for the plant has a capacity equal to most small town commercial bakeries. The bakery contains over twelve thousand dollars worth of new equipment and makes it possible to carry on research with flour and dough quantities used in commercial work.

The modernization of the college mill will give students at Kansas State a well rounded experience in the use of milling and baking equipment. Added to this is the fact that it will enable new projects in research to be carried out at the college.

The Maine hen that laid 303 eggs in a year must believe that a cackle a day keeps the hatchet away.

## KANSAS HYBRIDS ASSN. Seed Stocks Grown in Kansas FOR KANSAS ADAPTED HYBRIDS

Please write for information on

**"HOW TO GROW YOUR OWN HYBRID SEED CORN"**

Seed available for the 1949 planting season

K 2234, K 2275 white, K 4, popcorn, U. S. 13,  
K 1585, K 1583, K 1639, K 1784 yellow

Phone 5358

Manhattan, Kansas

# Corn Wireworm a Dangerous Threat To Corn Crops Throughout Kansas

By C. R. PILCHER

Some insects get away with anything. The adults are the demons in some cases and the larvae in others. About 75 percent of all the known kinds of living animals are insects. Between 600,000 and 700,000 different kinds have been discovered, properly named, and described. The number of kinds that are probably living in all parts of the world is variously estimated at from 2,500,000 to 10,000,000 with the probability favoring the latter figure as the more nearly correct.

According to Prof. H. R. Bryson of the entomology department, the corn wireworm is one of the most harmful insects in which the young do the dirty work.

The adult of the wireworm is the click beetle. It is known for its ability to snap into the air when placed on its back. This is accomplished by striking the base of the wing covers against the ground. It is a hard, smooth, streamlined, narrow beetle mostly brownish or blackish in color. It is attracted to lights in the summer.

Professor Bryson says this native grass insect became a pest when the grasslands of Kansas were plowed up and planted to annual crops. The pest did no appreciable damage to plants on the prairie because insect population was not as great then as now. Since many of the plants were perennial, they recovered from the temporary injury. Annuals belonging to the grass family do not recover so readily.

The wireworm is brownish to orange and cylindrical in shape. It feeds on roots, tubers and germinating seeds. It attacks corn seeds which are planted under unfavorable germinating conditions such as cold, wet soil. Most wireworms in Kansas do greatest injury to corn planted in early spring or on low, wet soils of bottomlands. Another way in which it attacks the corn plant is by boring into the lower part of the corn stalk at the node where the permanent roots come off. It attacks wheat in the same manner.

This rogue of the cornfield does more damage to surface planted corn

than to listed corn. It feeds on weed seeds when there is no corn to feed on. It will not attack, however, legumes or sorghums. Wireworm infestation is usually worse in corn planted on land that has been grassy a year or two before corn is planted.

It requires 3 years for the wireworm to complete its life cycle. Alfalfa is a good crop to aid in getting rid of the worm.

The wireworm can be controlled by sowing sweet clover or some other legume on the land 2 years prior to planting to corn, potatoes or strawberries. DDT at the rate of 250 lbs. per acre can be used on small areas. It is too expensive for Kansas because the corn yield is too small. Soil conditions should be right before planting. May 1 is generally the best time to plant corn. It should be planted in shallow furrows.

False wireworms should be distinguished from the true wireworm. The former causes damage to wheat in Western Kansas.

## NEW WHITE ROCK STRAIN

(Continued from page 17)

be more suitable for crosses with New Hampshires. Kansas White Rock males when bred to New Hampshire females will then give all Silver Columbian chicks while New Hampshire males when bred to White Rock females will give Silver Columbian males and red females. Crossing at present without pure color patterns will not give a uniform group of offspring. The reason for doing this is the increased demand for broiler stock. The New Hampshire is now the most popular broiler breed, and outnumbers other pure breeds in Kansas. It is desirable to have the Rocks pure for color patterns so they can be crossed with New Hampshires to produce chicks uniform in color.

During the past three years nearly 150 thousand eggs have been sold to hatcheries in Kansas and more than one-half of the other states. In addition to eggs a large number of breeding cockerels have been sold.

One project now underway is to establish an inbred line of the Kansas Strain of White Rocks. This is probably very unique among inbreds because of their crossbred origin.

## Education by Protection

Protect your chances for using your education by practicing safety during your advanced study of the business of farming.

Farming is a business, and as a business it brings many of the hazards of an industrial occupation. That fact must always be considered. Safety practices of the farm can prevent the annual average of 6,000 farm work accidents.

The Kansas Agricultural student can learn while still in college to make the most of farm safety practices.

## FARM BUREAU MUTUAL INSURANCE COMPANY

Manhattan, Kansas

## SKIES RAIN DEATH

(Continued from page 9)

fects on cattle that eat the crops, and on people who eat the meat and livestock products produced with sprayed feed crops still are not fully known. For this reason, Dr. Smith warns, the promiscuous use of sprays or dusts is dangerous. Manufacturers of these chemicals report that there is no residue left either on the plants or in the soil after three weeks when applied at recommended rates. Neither do they affect the germination of seed wheat if properly used.

Flight operators experienced in wheat spraying, agronomists, and entomologists have some warnings for those contemplating the Big Spray. W. H. Phillips, USDA, warned against the "spray any time" attitude that many farmers and flight operators developed after seeing good results from their sprays in a single year, and that an exceptional one from the standpoint of weather and weeds. He urges that sprays be applied only at proven times and dosages. He reports that some farmers delayed spraying until grain was near-

ly ready to harvest, and were disappointed in the results. Operators, to avoid misunderstandings and resentment directed upon them, should tell farmers what to expect under these conditions. Big weeds will not fall down, but if harvesting is delayed for one to three weeks after spraying to give them time to dry out, they will cause much less trouble in harvesting.

Sometimes when broad-leaf plants are sprayed with the same equipment that previously handled 2,4-D entire orchards or crops are destroyed. For this reason, equipment which has handled an herbicide should be thoroughly cleaned with hot soapsuds and activated charcoal before using for any other purpose. Better still, according to Mr. Riss, use separate tanks for herbicides and insecticides. He warned particularly against wooden tanks, which absorb chemicals and are extremely difficult if not impossible to render safe.

Weed, and especially insect, control is far more effective if applied to entire communities than if only patches here and there are treated.

Thorough treatment of large areas prevents the spread of pests from field to field. If a community can keep an operator busy for an entire season, everybody benefits. More of the money spent stays in the community. The operator will do a more thorough and conscientious job for friends and neighbors than he will for strangers. A barnstormer is tempted to zip through a community so he can get to the next one (which usually looks more lush) before some other character beats him to it. This, like proper dosage and methods, is an educational problem.

Some observers are worried at the prospect of incomplete kills of weeds or insects acting through mass selection to produce strains of these pests which are genetically immune to herbicides and insecticides. They point out that flies have become immune or nearly so to DDT in some areas.

This danger is discounted both by Prof. Zahnley and Dr. Smith. It is believed by Prof. Zahnley that such a process would be so slow that the problem could be met when it arose with new and better herbicides which, he feels, will be developed.

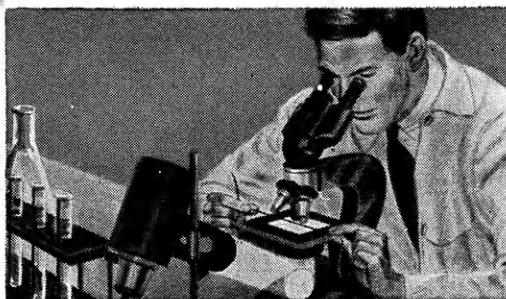
Dr. Smith reports that the immunity of flies to DDT is transitory, fading after a single generation has not been exposed to it. Using a variety of insecticides such as chlordane, toxaphene, and benzene hexachloride will keep insects so confused that any acquired or genetic immunity to one will be offset by their susceptibility to another.

It would seem that crop pests are in for a hard time in '49.



*do you have Armour  
in your future?*

**ARMOUR  
AND COMPANY**



With graduation just around the corner, you're looking to the future . . . looking for your job with a future.

Whatever your interests might be . . . livestock buying, processing or sales . . . laboratory research . . . foods and nutrition . . . Armour offers college graduates many fine openings. We invite you to visit any of our plants. Stop in and get a first-hand picture of the many excellent job opportunities with Armour and Company.

Kansas has between 15,000 and 18,000 species of insects within its borders. The number of species in Kansas which are harmful to the interests of man is relatively small. Control efforts to protect crops or domestic animals are not ordinarily necessary for more than perhaps 100 species. About 75 percent of all the financial loss to the people of Kansas from insects is usually narrowed down to not more than fifteen or twenty species.

Beginning in September, 1942, a new 2-year course in industrial technology was offered at Kansas State College to prepare technical supervisory personnel for war industries.



... **AND SON**

This happy realization of a father's dream is being painted proudly on barns all over the land. In spite of the lure of the city and the appeal of exciting new occupations, more and more farm boys are sticking with the land.

Fondling plump kernels of number one grain at harvest time . . . topping the market with a load of sleek, fat steers—these and other farm thrills are hard to match. The miracle of germination and growth in the Spring, the fellowship of good neighbors, and the independence that comes from being your own boss, all combine to make farming not merely a way of earning a living, but a satisfying way of life.

In years gone by, back-breaking labor and spirit-dulling drudgery sent thousands of young folks scurrying off to easier jobs in the city. Today, it's a different story. Power equipment shortens the working day and saves much of the muscle work that used to be a part of farming. It reduces the weather hazard, slashes production costs, and helps to make farming a more stable and profitable business.

Yes, modern power equipment is helping more and more of our young folks make up their minds to stay on the farm. One of the best omens that better things are in store for our agriculture and our nation is the addition of two heart-warming words to farm names on thousands of barns—"AND SON"!

**JOHN DEERE • MOLINE • ILLINOIS**



Hart  
Schaffner  
& Marx

•  
BOTANY  
500

•  
KNOX HATS

•  
JARMAN SHOES

**Don and Betty**  
**CLOTHIERS**

309 Poyntz

*Fine Gifts in Jewelry*

DIAMONDS  
WATCHES, JEWELRY

BRACELETS *stone set  
filigree  
identification  
watch*

Elgin American Compacts  
and Cigarette Sets

Waldemar Chains, Knives,  
Cravats, Key Chains

Silverware - Holloware  
Electric Clocks

*Use our lay-away plan*

**Paul Dooley, Jeweler**

We Engrave      Aggieville      We Repair

**RATS POPULATE NATION'S FARMS**

(Continued from page 7)

farms in the United States. On the basis of two rats to each of the 30 million people living on farms, a government survey shows that this would make the annual loss occasioned by each rat close to \$1 which is probably a conservative but dependable figure.

What steps should be taken to arrest this appalling damage by the rat each year, one might ask. Many suggestions are offered by the Fish and Wildlife Service of the U. S. Department of the Interior, which is primarily concerned with this problem.

Successful procedures of rat control include: Rat proofing farm buildings and the use of poisons.

A rat-proof farm, it is pointed out, is not necessarily one in which the entire farmstead is absolutely proofed, but rather one where conditions are so unfavorable for any invading rats that they either will desert the premises of their own accord or may be easily routed by man or dogs.

Another important step is to see that all sources of food are protected from the rat. Cribs and other places of feed storage must be rat-proofed. Haystacks and strawstacks should be kept at some distance from buildings.

In general, rat-proofing can be accomplished by the following procedures:

1. Close all breaks, cracks, pipe openings, vents or other openings in the foundations with concrete, or sheet metal.
2. If a building has no foundations, or one less than 18 inches high, put hardware cloth down in the ground to a depth of two or three feet entirely around the buildings. The buried edge of the cloth should be bent at right angles away from the building.
3. Screen all drains and sewers.
4. Place hardware cloth around outside corners of outside buildings, as this is a common place of entrance.
5. Repair doors, windows, and other places where rats have made entrance holes.

Repellents of many kinds also have been suggested, but, as they dissipate rapidly, their use is limited to small confined spaces, and even there they must be replenished constantly. Furthermore, it is concluded, they bring about no decrease in the rat population.

**Education and Insurance  
For Your Future**

Education prepares the Kansas Agricultural student for the Future.

Life insurance helps to give the student the same preparation for the future. Life insurance as a companion in the Kansas Agricultural student's life can give the protection and security that all men seek in life.

Education does not stop with graduation. It continues throughout life. The protection and security you find in Kansas Farm Life Insurance also continues through life. Your FUTURE can be PLANNED for SECURITY.

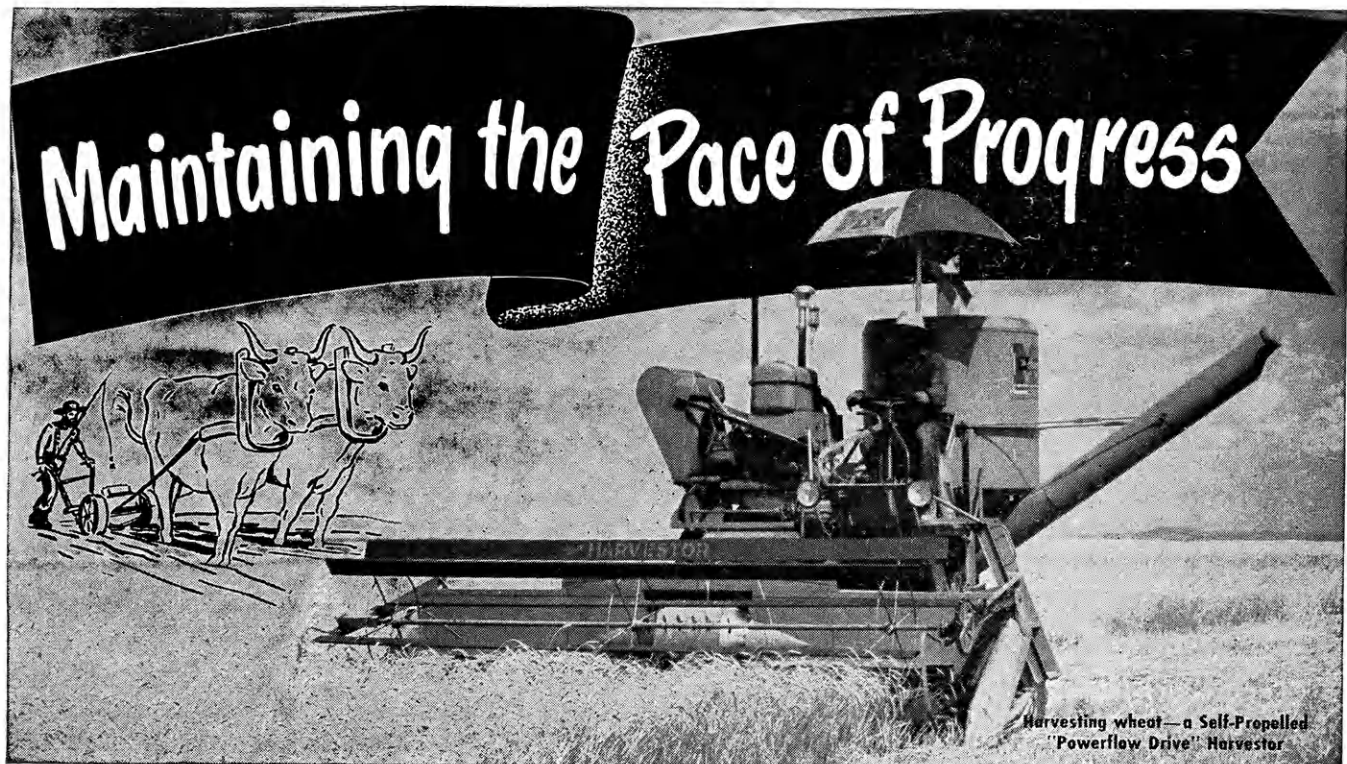
•  
**KANSAS FARM LIFE  
INSURANCE COMPANY**

Farm Bureau Building

417 Humboldt St.

Manhattan, Kansas





Harvesting wheat—a Self-Propelled "Powerflow Drive" Harvester

## Strengthening the Basis of Our Economy...

The American standard of living is a tangible monument to the progress of free men. In no other country, in any age, have people enjoyed all the rights, privileges and benefits which we in this country now take for granted. We can point with pride to the accomplishments of this great nation, but we must also accept these rights and benefits as a responsibility that none of us can shirk without inviting trouble.

The industry and ingenuity, the cooperation and teamwork of American labor and management, the American system of free enterprise—these things made possible our present standard of living, which is the *envy* of the world.

These qualities, or attributes, of the American way of life are secure to us and our posterity only as long as we continue to exercise vigilantly and diligently our responsibilities in a democracy. Elsewhere in the world, these responsibilities would not be considered a disagreeable obligation but a welcomed privilege. The exercise of our franchise to vote . . . the willingness to do more than is expected . . . the cooperativeness to give ground at personal sacrifice for the common good of all mankind . . . the ingenuity to overcome apparently insurmountable obstacles—these are but practical applications of the golden rule which will secure the continuation of the blessings of our free enterprise system and democracy.

We have many obligations to discharge if we are to maintain the pace of progress and strengthen the basis of our economy. We must conserve our natural resources so that our children and our children's children will not face want, social unrest, and an uncertain future.

Food, clothing and shelter are derived from the soil. Without these products of the soil, the wheels of industry would cease to turn; business would suffer; the economic welfare of the nation would deteriorate; and unemployment with its bitter consequences would again haunt many American homes.

### MM Builds Quality Modern Machines

Minneapolis-Moline takes pride in providing *quality* machines for agricultural America . . . machines planned and designed by Minneapolis-Moline engineers to equip progressive farmers to cut costs and to eliminate drudgery so that they may utilize the potential possibilities of modern methods of agriculture . . . more faithfully discharge their stewardship over one of our most important basic natural resources—our soil. To this end we rededicate our skill, our experience, our knowledge, our deep-rooted regard for quality. This we do with some pride, of course; but more so with the humble feeling that we are but fulfilling our responsibility to those we serve.



# MINNEAPOLIS-MOLINE

MINNEAPOLIS 1,  
MINNESOTA



Seeding wheat with a Moline-Monitor Drill



Planting corn and fertilizing too



Cultivating checkrowed corn 4 rows at a time

Welcome  
to the  
**Sosna Theatre**  
in  
Aggieville

Continuous shows every day  
from 1 p. m. Phone---2990

Admission 12c and 50c

We present a major first run  
attraction every Thursday thru  
Saturday and Sunday through  
Wednesday.

*Hey*  
**FELLOWS**

NEED A  
BOOK  
or  
A PENNANT  
or a  
GISMO  
for that  
Lab?

•  
**College Book  
Store**

*Nearest the College*

**A Voice for  
Organized Agriculture**

Farmers can protect agriculture's historic tradition of freedom and independence, and they can bring about national farm policies that will preserve the nation's greatest source of wealth—the soil—for the welfare of future generations.

Acting as individuals, farmers have comparatively little influence. Acting together in the best interests of the nation, they are a powerful force!

•  
**KANSAS  
FARM BUREAU**

**ISOTOPE RESEARCH**

(Continued from page 11)

diagnostically to distinguish thyroid diseases from other conditions that appear similar. Heaviest concentrations of radioactive iodine appear in regions of overactivity in the thyroid gland. The gland is sensitive to the radiations of radioactive iodine and if it is administered in the proper dose it may be used to destroy overactive tissue. Hyperthyroidism has been treated in the past by surgical removal of the gland, a difficult and hazardous operation. Now with the use of radioactive iodine the treatment is just as effective and much less dangerous.

Because of its selective uptake in bone and rapidly growing tissue, radioactive phosphorus has been used in the treatment of various hematologic dysfunction and malignant neoplastic diseases. Some of the advantages are its easiness to administer, its easiness to be controlled, and its selectivity of concentration.

In addition to therapeutic applications of radioactive isotopes, there are possibilities for more diagnostic procedures. Labeled bromine, when introduced intravenously into rabbit, will indicate spots of infection by concentrating at the point of abscess. The concentrations may be located by a Geiger-counter.

The functions of other elements in the body, such as iron, cobalt, and copper, have been clarified by the use of radioactive isotopes, whereby ordinary procedures may have never discovered them. Scientists look forward to new strides in this field with great anticipation, for it promises to reveal even more important discoveries.

**SCIENTISTS DISCOVER**

(Continued from page 15)

colostrum on farms is wasted. In some places colostrum is frozen and preserved, but this is rather an expensive process. Yet, if a cow freshens and you have an excess of colostrum, it would pay to substitute it for milk being fed to other calves. Colostrum fed to calves is just that much more normal milk that can go in the can.

Some have questioned the possibility of colostrum causing scours. Experiments so far show that colostrum neither caused nor prevented scours.

# Corn Growing Moves into Ice Box for Testing

Tests on corn growing in refrigeration are being conducted by the University of Wisconsin. Germination tests on hybrid corn breeding and seed stock are now in process in disease infested soil at constant low temperature of approximately 50 degrees F.

In a 10 by 12 ft. refrigerator two USDA corn pathologists have been able to nearly simulate the conditions under which corn must frequently germinate on Wisconsin farms. In cold soils, soil-borne seedling diseases thrive, and have a destructive heyday while the cold-susceptible corn hybrid has no chance.

These men are not just testing hybrids; they are breeding new hybrids that will give prompt germination, good stands, and vigorous seedling growth in cold soils.

It is hard work to combine in one strain the many qualities required in a good hybrid—adaptation as to soil and climate, diseases, insect resistance, high yield of grain and fodder and good keeping qualities.

It takes about ten years to develop a new strain. Due to the installation of a new and larger refrigerator to permit more accurate testing for cold resistance, new possibilities have opened in the Wisconsin corn breeding program.

Wisconsin corn hybrids now in commercial production have an enviable reputation which should be enhanced as promising new hybrid lines are developed. In fact it is predicted that within four to seven years, most of the corn hybrids now grown in Wisconsin will be obsolete.

---

An experienced junior says ciga-  
rettes are like girls.

They come packed. They get lit,  
hang on your lips, make you puff, go  
out unexpectedly, leave a bad taste  
in your mouth—yet they satisfy.

---

Professor (sternly): "When the  
room settles down I will begin the  
lecture."

Student: "Why don't you go home  
and sleep it off."

There's No Substitute  
for a Good  
PHOTOGRAPH

Everyone should have  
one on hand for any  
eventuality.

•  
**Studio Royal**

1200 Moro

Dial 3434

OF COURSE

Everybody likes to see a clean  
(white) face, but the *Do-re-me*  
is important throughout life—  
before and after taking school-  
ing. The Best is none too good  
for any Ag graduate.

In beef cattle, it is Angus, the  
winner in *Interbreed* slaughter  
tests at Chicago for the past  
forty (40) years—the greatest  
success story of modern times.

In Kansas the tops are Beef-  
maker Angus. Come see us any  
time.

**C. E. Reed**

4114 East Central Ave.  
Wichita, Kansas

Phones: Res. 68313, Farm 53868

## Kansas Wheat Products World Famous

**Top Varieties—Pawnee, Comanche, Wichita**

**Good Production and Handling Operations**

**Excellent Milling and Baking Methods**

**Have given them an Enviably Reputation**

LET'S RETAIN IT

**Kansas Wheat Improvement  
Association**

**Manhattan, Kansas**

## SECURITY NOW Full Service Policy

Reduction in Rates  
Since July 1

SEE your State Farm agent today! He can tell you why all Insurance is NOT alike... why **State Farm Mutual Automobile Insurance** is best for you. Get the facts today, tomorrow may be too late.

LIFE INSURANCE  
SURE

*We have one of the best*

**Geo. F. C. Hoerner**  
AGENT

Union National Bank—Room 20  
PHONE 3039

The Industrialist, official college newspaper of Kansas State College, was established April 24, 1875.

If all college students who slept in class were placed end to end, they would be much more comfortable.

# Hardy Sheep Alive After Two Weeks Buried Under Snow

By MALCOLM COLDWELL

Sheep living for two weeks buried by snow? It is not impossible. According to Prof. Rufus Cox, of the Animal Husbandry department at Kansas State, this has happened several times. In the recent blizzards which struck Kansas, many sheep were excavated from the snow and found alive.

Sheep with their natural winter hardiness plus their thick wool coat stand hibernation beneath the snow very well. Their preference is to remain outdoors and they should be allowed to do so except in the worst weather. The one exception is that during lambing time the ewe should be brought in. Although it would not injure her it is dangerous to the lamb. A ewe that is comfortable will not move but in the meantime the lamb will freeze.

Kansas is an up and coming lamb feeder state. This means we must protect our lambs. There are very few states which can equal the advantages of Kansas in lamb feeding. A few of these advantages are a dry, cold climate which sheep thrive on,

good roughage produced in the state, centrally located sheep markets and good transportation facilities. Taking these facts into consideration Kansas is the promised land for lamb feeding.

Up to six years ago, Colorado was at the top of the list in this category. Kansas has risen from the ranks and has been first the last five years out of six. Perhaps this is an indication of what is yet to come.

This hardy creature is fast becoming another indication of Kansas' rise to prominence.

## KANSAS HYBRIDS SUPERIOR

(Continued from page 6)

Most of these hybrids were not as productive as our adapted open pollinated varieties. In 1939, the corn testing program, under the leadership of A. L. Clapp and R. W. Jugenheimer, was greatly expanded to determine which of these hybrids becoming available might be of value in Kansas. This work showed that several hybrids, including US 13, Ill. 200, and US 35, were generally superior to our open pollinated varieties. It is of interest to note that one-fourth the parentage of each of these hybrids consists of inbreds developed in Kansas, though the hybrids were first produced and tested elsewhere.

About this same time, intensive work got under way toward getting Kansas inbreds and a few outstanding inbreds from other states into hybrid combinations specifically adapted to Kansas. It was soon found that better hybrids could be made by using two or three, and in one case four, Kansas inbreds in double crosses. K1585 and K1583 each are made up of three Kansas inbreds and one Indiana inbred. K2234 is wholly made up from Kansas inbreds out of Pride of Saline variety. K1639 and K1784, of about the same maturity as US 13, both have one-half Kansas lines in their parentage. This probably explains their adaptation in both Kansas and Missouri.

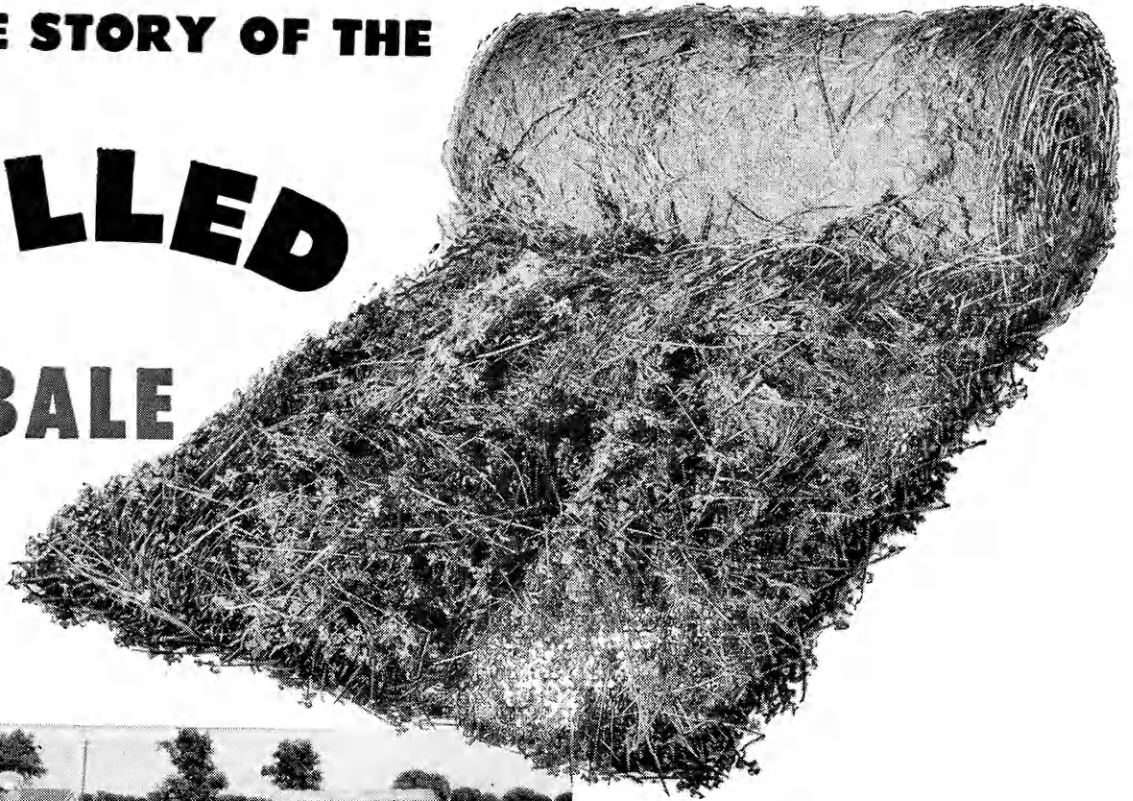
Nurse (to young man attempting to enter hospital nursery): "You can't go in there. You're not sterile."  
Pappy: "You're telling me."

A good story teller is a person who has a good memory and hopes others haven't.



Third place winner in the Ag Photo contest went to Charles Stevenson of Manhattan with this shot.

# INSIDE STORY OF THE ROLLED BALE



You simply unroll it and there it is... a thick, soft, leafy carpet of hay. The leaves are still on the stems. The natural protein and color are still there. Livestock show a preference immediately.

Roto-Baling is the new art of packaging hay or straw. The farmer pictured at left is showing how it is properly done. Wide *double* windrows cure fast and make the best rolled bales. (And you travel only  $\frac{1}{2}$  as far per bale.)

The ONE MAN ROTO-BALER, for the first time, makes possible home ownership of your own machine. You can save your crop the hour it is ready. Once hay is in the rolled bale, you can breathe easy, *for it sheds rain like a thatched roof.*

ROTO-BALING is setting new standards for preserving hay *quality.*

Double windrows are easily made by reversing direction of raking.

Ideal for the job is the new POWER DRIVEN air-tired Allis-Chalmers Side Delivery Rake and Tedder, with selective reel speeds. It steers true, makes straight, airy windrows.

**ALLIS-CHALMERS**  
TRACTOR DIVISION MILWAUKEE 1, U. S. A.

# The Last Word



## 'Help Wanted' Flag Flies at Half Mast as 146 Ags Graduate

By ASST. DEAN C. W. MULLEN

The "Help Wanted" sign is no longer flying at full-mast for college graduates.

A year ago at this time, nearly every prospective spring graduate in agriculture knew where he was going. Half of them were returning to farms and ranches. Not so this year.

Dean Throckmorton has recently completed interviews with 146 prospective spring graduates. Connections after graduation have been made or are quite assured for 74 percent of the group. Graduate work will be pursued by 9 percent of the graduates. Only 10 percent were, at the middle of April, uncertain as to their connection after May 31.

A total of 29 of the graduates will go to farms or ranches. Soil Conservation Service will absorb 21 of the young men; 20 will become teachers of vocational agriculture, and 10 will go into commercial work related to agriculture. Others will be distributed among extension work, on-the-farm training for veterans, warehouse examiners, milling industry and miscellaneous positions.

The fact that 24 graduates were not placed April 15 is not serious. Many out of that group will have made connections for employment by the end of May.

It would be surprising if, over a period of years, all agricultural graduates, or graduates in any field, might find positions ready and waiting for them on the day of graduation.

We were reaching the point of saturation in the two or three years before World War II. It becomes apparent now that in the future there may be graduates in agriculture who will not at once find a position to fit their training and expectations.

If it comes to a surplus of college-trained graduates in agriculture, it is likely that high school graduates who

have been acceptable for many desirable jobs will encounter the competition of college-trained men.

Competition will be keenest among men having the bachelor's degree. In future years, it may be that the percentage who will be pursuing graduate work will be larger than the 9 percent who expect to take graduate work in agriculture this year. Persons with higher degrees are always in a preferred position. Colleges and universities are placing more and more emphasis upon advanced degrees for staff members.

If recession comes, it can be expected that service agencies to meet the changed circumstances of farmers will come into the picture to absorb the services of college-trained men in agriculture. Recession is not particularly a happy situation to anticipate, but the fact remains, agriculture helps itself in times of adversity by making better use of more of its own trained men in agriculture.

It is the plan of the School of Agriculture to develop added services in connection with the placement of graduates who leave the campus without having made a satisfactory connection. Placement cards are being prepared which will list the general qualifications and the sort of connection graduates may desire. It is hoped that in the future this card index may help locate the right man for the right job as openings come to light.

## Another Issue Another Year

We ring the bell on another year with the *Ag Student*. This, the 24th year of publication, has proven to be an educational one for all those concerned in putting the magazine out.

This experience we have gained will prove valuable no matter what line of work we pursue after graduation. We are indebted to those who made these responsibilities possible for us and regret that more could not participate.

As for the success of this year's issues, we will let you decide! We tried to increase the number and quality of illustrations. A different head style was initiated. The magazine's size increased due to more copy and advertisements.

The staff would like to extend their appreciation to the departmental reporters and those we have called upon as special writers. We also want to thank Professor Macy for his timely advice during the year.

Personally, I wish to thank the staff members for their good work, as many of them have had more journalism experience than I. To conclude, I would like to say "Thank You" to each who has contributed to the success of the *Ag Student*.

MELVIN COTNER, *editor*

## CHAMPION SHOWMEN

(Continued from page 20)

Norman Johnson, Bendena.

Beef champion—Norman Johnson, Bendena.

Reserve Beef champion — Laurel Sundgren, Lindsborg.

Angus lightweight steers—Norman Johnson, Bendena; Angus heifer — Nelson Stroud, Coffeyville; Short-horn heifers — Dale Gillan, Garden City; Mixed heavyweight steers — Larry Seaman, Wilmore; Mixed lightweight steers—Frank Solomon, Yates Center; Hereford heifers — Trevor Rees, Emporia; Mixed steers — Ray Brock, Matfield Green; Mixed bulls — James Drain, Yates Center; Mixed calves—Laurel Sundgren, Lindsborg.

Horse champion — Mary MacCaskill, Wichita.

Draft mares — Mary MacCaskill, Wichita; Light horses—Tom Morast, Kansas City, Kansas.

Hog champion—Bob Sayler, Manhattan.

Hampshire barrows — Melvin Bunge, Waverly; Duroc and Poland China hogs—Bob Sayler, Manhattan.

Sheep champion—Eugene Brinkman, Coffeyville.

Southdown ewes—Quentin Carnahan, Garrison; Shropshire—Miles McKee, Elmdale; Hampshire—Eugene Brinkman, Coffeyville.