

APRIL, 1953



Grass Juice for Calves? . . . page 8

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"But, above all, Mr. Artist, muster all your skills and talents . . . use your most exquisite colors and your most gifted touch . . . to paint into the scene a church. Let its steeple pierce the clouds . . . let its lighted windows glow . . . let its doors swing wide in welcome. Let it stand, the center of my picture . . . explicit symbol of a people's Faith . . . Faith in their God and their country, in their neighbors and themselves.

"Paint me a picture, Mr. Artist."

JOHN DEERE

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THE KANSAS *Agricultural Student*

Vol. XXIX

April, 1953

No. 5

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ON THE COVER

DE ETTA CLARK seems to be having quite a time getting this calf at the College Dairy barn to take one of the new grass juice capsules. Scientists think grass juice may prove to be what dairymen have been looking for to get their calves off to a good start. De has been working at the Dairy barn this year helping with research projects and learning more about cattle before taking a trip to Bolivia next September. The problem of raising the standard of living in this South American country has interested her for several years and she now thinks she will make it her life's work. However, her six months stay there starting next fall is just a tasting period to see if she likes it and to see what other courses she needs to do the job. Then she plans to return to K-State for her bachelor's and go on to Cornell for her master's before returning to Bolivia.

Editorial . . .

(This is the first in a series of two editorials on the proposed Tuttle Creek dam. Next month's editorial will take a negative stand on the construction of large dams.—Ed.)

I'M FOR THE completion of Tuttle Creek dam! I'm sick of floods on the Kansas river valley. Tuttle Creek won't stop another deluge like the 1951 "granddaddy" of floods, but it will stop the minor ones.

With little more than sand dikes for flood protection along the Kaw, each year farming is a gamble. It is not pleasant to lose one year's work in every three. Nor is it conducive to maintaining financial stability.

In 1951 had the Tuttle Creek dam been installed the crest would have been cut an estimated 7 to 8 feet. That's not much, but when that much would keep it from entering your home it means a lot.

I was, so to speak, raised on floods. Eight floods in 19 years is nothing to take lightly. I hate them. I'm sick of seeing months of labor lost—and in the case of the 1951 flood, many a life's work swept down the river.

Many of you reading this article are against Tuttle Creek—you sympathize with the farmers of the Blue Valley. Sure, I do too. I hate to see some 50,000 acres of farm land go under water. I've seen the Blue Valley. It's beautiful in the summer time. It's a crime to inundate it.

I'd hate to see the farm I grew up on sold to form the bottom of a huge flood reservoir. A person can develop a great deal of sentiment for a farm he's lived and worked on most of his life.

But isn't it better to sacrifice some farms than have the entire Kaw Valley flooded when high water comes? I'd be willing to see our farm go if

it meant that the majority would be protected.

Most of Manhattan is built on the flood plain just as are the industrial and residential areas of Kansas City, Lawrence, Topeka, and other towns. Dikes can't hold back major floods. But many of the industrial areas are well fortified against minor floods.

I sincerely believe Kansas people will see Tuttle Creek through to completion. It's a good start in a good location—but just a start in a comprehensive flood control plan. Sure, we also need that much talked of soil conservation. We need the dams first, however, on every major tributary of the Kaw. Sure I'm going beyond Tuttle Creek, but it's necessary. Yes, we need soil conservation at the same time to prevent dams from filling up.

Above all, if and when we do get Tuttle Creek and other dams, we will need level-headed men to operate the dam. Men who know when to release and when to hold the water. For along with the dam comes water power, possibly irrigation water and recreation. But better be it primarily or wholly for flood control.

Then and only then can farmers safely move back into the Kaw valley and build fine homes. The valley is a wonderful place to live, farmers should have an opportunity to enjoy the privilege. Without floods to deposit rich soil on valley land, farmers will have to conserve their soil. Here again looms the need for soil conservation. Dikes, they too are needed to hold back a repeat of the 1951 flood. I believe good dikes with rocked surfaces, dams, and soil conservation are inevitable—only a matter of time until flood control will be no absolute problem to your children and mine.—Herb Lee.

Photo Credits

DICK STEFFENS, cover, page 2; KSC News Bureau, page 4; Harold Shankland and Stan Creek, page 9; Nick Kominus, page 10; Dick Steffens, page 11; Kansas Agricultural Experiment Station, pages 12, 13; Nick Kominus, page 15; and Dick Steffens, page 16.

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Chit Chat

By Dean Clyde W. Mullen



Dean Mullen

DO YOU KNOW, we sometimes forget how big this campus seems to a freshman in that first semester when he starts across the quarter section to locate a class room, or a department, or even the Dean's office.

That situation was re-emphasized the other day when we were at Coffeyville on a College Day tour, and Marvin Riggs related to a high school group, by way of introducing a speaker, how big the Kansas State campus seemed to him that September morning when he arrived a day or two ahead of registration to find a job. At two or three points across the campus, upper-classmen, who were already here, assisted him by pointing and directing Marvin in the general direction of the Dean's office.

As he looks back on all of that now, he is still very appreciative for

those little things that were done for him by other students in the fall of 1944. Little courtesies the folk in the Dean's office extended to him are yet fresh in his mind.

Marvin said that, honestly, it would not have taken very much to have caused him to pick up his little bag and head for home. He had only \$175. Already he was beginning to discover it was going to cost him more than he had expected to register, to buy books and to pay board and room.

Everyone Was Friendly

Then, everyone was so nice to him! It saved the day for Marvin. He got a job, and he worked his way through college, in spite of the fact that as the result of his ACE test he was told he was not of college caliber and he might as well go on home at the

end of that first semester. He came out with a point average of 2.2, and now teaches one of the fine vocational agriculture schools in Kansas.

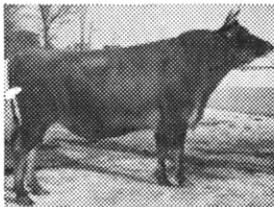
The lads who pointed north and said "Keep Going" had a part in turning a freshman into a useful citizen.

Next fall, let's all determine to make it easy for freshmen. One sug-
(Continued on page 18)

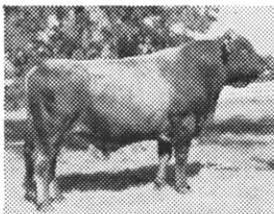
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1953

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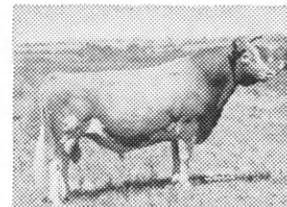
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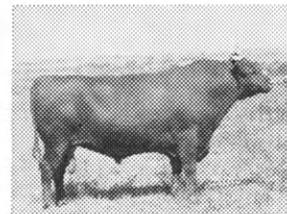
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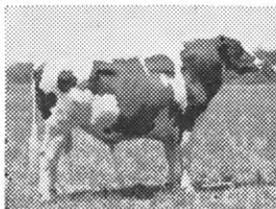
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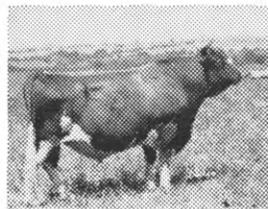
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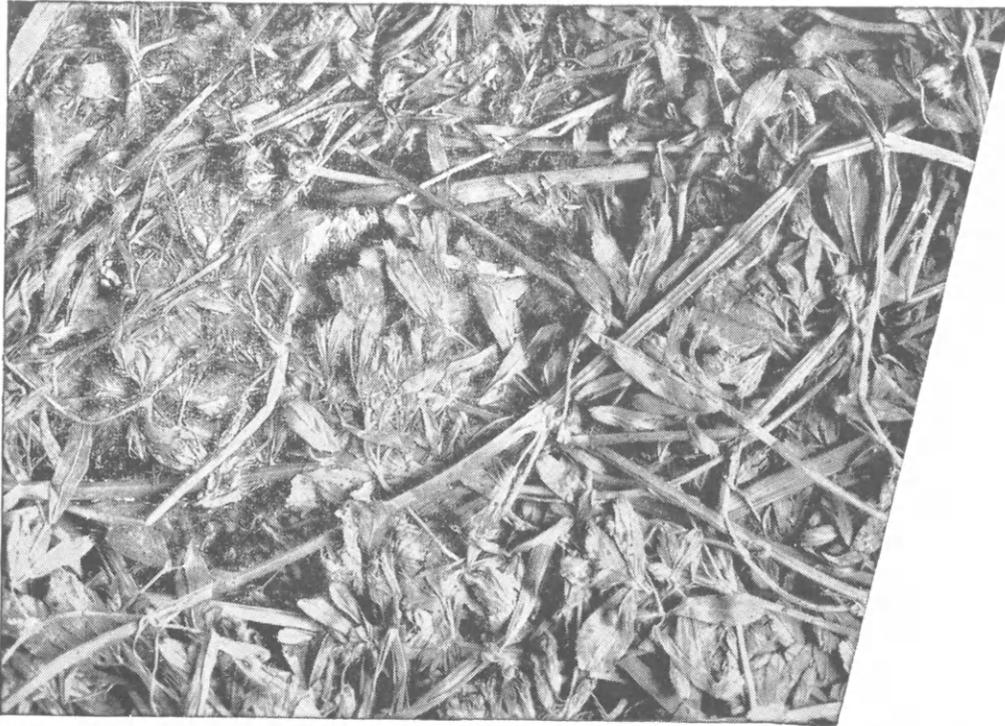
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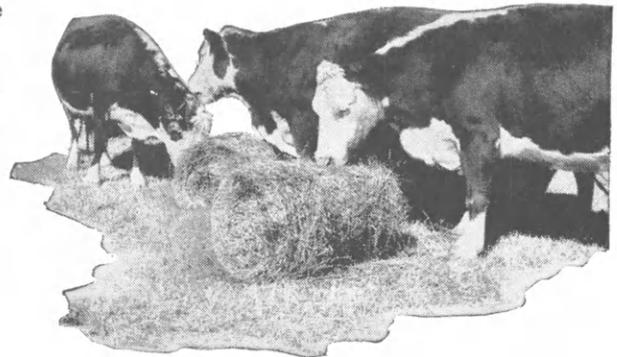
The camera moved up close to give you this Hereford's-eye view of nutritious roll-baled hay.

See how the leaves are roll-pressed and stems are flattened. Packed with protein and carotene, they approach the feeding value of a concentrate feed. Three tons of early-cut, roll-baled alfalfa can equal a ton of protein meal — plus a ton of ground ear corn or grain.

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Ag School Angles

By Herb Lee

KANSAS BANKERS went to Ag School for the first time at K-State in February.

The "money men" became acquainted with Kansas agricultural practices by attending discussion classes on legume crops, soil conservation, insect control, and grassland farming.

Working with the bankers to make the school possible were Rufus Cox, head of the Animal Husbandry department; R. I. Throckmorton, dean emeritus; and M. L. Otto, associate professor of Economics and Sociology.

Atomic Eggs

First it's atomic bombs—now atomic eggs laid by chickens.

Yes, it's true! Three normal,

healthy hens were fed radioactive phosphorus at the rate of 1½ milligrams a day for a week by associate professors R. E. Clegg and R. E. Hein, Chemistry, working with Dr. R. H. McFarland, Physics.

The hens laid radioactive, inedible eggs, which are being used in the study of phosphorus labeled proteins, a protein to which a radioactive phosphate radical has attached itself.

Thirteen eggs were produced although one was broken. To prevent radioactive humans these eggs were carefully marked so they would not accidentally reach the breakfast table.

Eating just one egg wouldn't hurt a person, Dr. Hein said. "Persons with leukemia are injected with greater amounts of the same material, he said. "It temporarily reduces the white blood count, though it is not a cure."

Pigs and Girls

Pigs and girls have something in common. No offense meant, but they both use talcum powder. That's right; talcum powder is commonly applied to orphaned pigs and the pigs of another sow's litter so the new

mother will accept her new children.

The farmer can also fool the new mother by placing the orphaned pigs in a basket with pigs from another litter. The orphans absorb the odor of the other litter and they are thus accepted by the sow.

Genuine Farm Girl

Here's a genuine little farm girl—Millicent Schultz, HDA freshman from Pawnee Rock.

An Ag Barnwarmer queen attendant last fall, Millicent says profits from a herd of seven Brown Swiss cattle are helping her foot the college bill.

In addition Miss Schultz has been very successful in exhibiting her cattle. From 1948 to 1951, one of her cows was state champion in the 4-H division and in 1951 the cow was grand champion at the state fair. To top off the glory, two of the cows took first as junior yearlings at the American Dairy Royal in Kansas City in 1951.

Among the prizes Millicent has received as owner of the ribbon winning cattle are a trip to the national

(Continued on page 23)



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Grass Juice

*Will it be the answer to
healthier, faster growing calves?*

By De Etta Clark

GRASS JUICE WITH a sharp molasses odor is being fed dairy calves at K-State to see what effect the juice will have on developing the rumen and stimulating growth, Drs. E. E. Bartley and F. C. Fountaine of the Department of Dairy Husbandry, report. Experiments with grass juice have been conducted on rats and poultry at other experiment stations, but K-State is pioneering in this research with dairy calves.

Grass juice is rich in vitamins and minerals besides containing carbohydrates, proteins, and some unknown factor, commonly called the "grass juice factor." The juice is so concentrated that one pound of the liquid equals the juice of 16 pounds of hay, Fountaine says. The juice is available only for experimental use. Calves at the College Dairy farm are now being fed 25 grams of the juice each day in capsule form. This experiment has just been started and has not progressed far enough for scientists to tell whether it will be beneficial or detrimental to calves.

Summer Milk Is Richer

In reviewing data from other Experiment Stations, the author found that rats fed milk from cows on pasture make better gains than those on hay. Further experiments show that the addition of all known vitamins did not produce growth rates the same as those from rats fed milk from cows on summer pasture. This has led scientists to believe that grass juice must contain some yet unknown factor. Similar results have been obtained with poultry on range compared to poultry kept indoors.

Antibiotics complicate the picture somewhat, however. Turkeys were found to require less of the yet unidentified factor when fed aureomycin. The same was true when poultry

were fed penicillin. This indicates that the factor present in grass juice is either produced in the intestinal tract or is made more readily available with the presence of aureomycin or penicillin.

Potency Varies with Growth

It was found, however, that the potency of the stimulating factor also varies with the stage of growth when the grass is cut. Mature plants seemed to be much less effective than rapidly growing plants. Drying and storing plants destroys their content of the growth factor. Since farmers usually cut their hay crops in a mature stage, and drying and storage affect it further, it is easy to understand why winter milk is low in the grass juice factor.

Acid prepared silages are superior to molasses prepared silage in content of the grass juice factor. The A.I.V. method was found to be the most superior method and by ensiling at an immature stage of growth, the factor may be well-preserved.

In one of the methods for obtaining concentrated grass juice, fresh alfalfa or grass is ground up, water added and pressure is applied. After an intricate process of heating, centrifuging and evaporation, a thick brown juice which looks and smells like molasses is produced. This is the concentrated grass juice and contains about 50 per cent solids.

Last year 6,000 pounds of grass juice were sent to experiment stations for experimental purposes, Dr. George Kohler, research chemist at Cerophyl laboratory, Kansas City, Missouri, reports.

When a woman loves a man, he can make her do anything she wants to.

Pole-Type Housing

Cuts Poultry Costs

By Dick Steffens

POLE-TYPE POULTRY houses with dirt floors and deep litters are helping farmers in many egg-producing areas cut housing costs so Leo T. Wendling, extension engineer, drew up plans for a pole-type house adapted to Kansas conditions in cooperation with poultry extension specialists and the College Poultry department.

Bill of materials for this 40 x 40 expansible pole-type house runs around 65 to 75 cents a square foot, depending on local prices. Using native lumber and poles will make a big dent in this cost. Five hundred hens can be kept in the house which is ideal for Kansas conditions where poultry is to be considered a major farm enterprise. It can be expanded in 10-foot sections with ease. Each additional unit will handle 150 birds, Wendling points out.

This modern poultry house has a feed room ten feet square located in one corner. This room should be located so it will be in the middle of the house if the basic unit is to be expanded for commercial production eventually, Wendling says.

To improve insulation qualities of the built-up roof, insulation board may be used for sheeting and the roof itself painted with aluminum paint. Ventilation is provided along the ridge of the roof through newly-designed weighted vents which are easily adjusted from the floor.

Materials Needed

Poles treated with creosote or one of the native woods such as Osage Orange can be used in the building, depending on the availability and price. Twelve 14-foot poles and ten 10-foot poles are used in the building. The poles should be at least five inches in diameter at the top. Rafters are of 2 x 6 stock and the siding suggested is 1 x 6. Twelve hundred board

(Continued on page 23)

Dan Dillon Casement

One of the Last Real Cattlemen

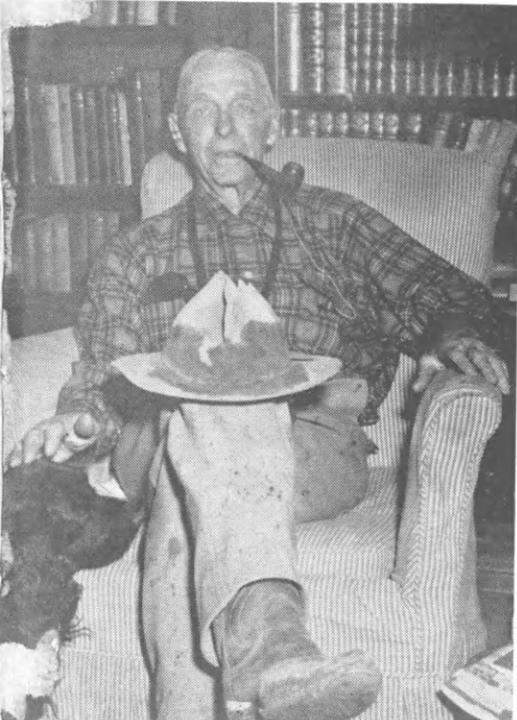


DAN CASEMENT relaxes in his feedlot looking over his prize Hereford cattle. After taking over the famed Juniata farm as a birthday gift when 21 years old, Casement became a nationally recognized cattleman.

By Dick Fleming

A MAN MADE HIS first dramatic appearance at the American Royal in 1908 dressed in a checkered suit, a red vest, a blue shirt, and a wide-brimmed hat. He wore a scarf pin with a miniature horse and rider on it and a wide black ribbon attached to his glasses. Dan Dillon Casement's deep booming voice was heard around that and many other top livestock shows from then until his death March 7th as his cattle continued to take blue ribbons wherever

THIS IS TYPICAL of the way Dan Casement looked a few months before his death with his favorite dog "Nicki" at his feet.



they went. He also raised his voice and exercised his pen in the interests of resisting the growing encroachment of government controls and regimentation in America.

He gained wide recognition among cattlemen for his good judgment as a breeder, feeder, and exhibitor of livestock. He bitterly detested doctoring up animals to make up for their shortcomings so they would win blue ribbons at the expense of permanent injury and the creation of false impressions. Instead, he advocated showing cattle in carload lots where the stress is put on developing a group of well-fitted animals, not just one. A person to support his own beliefs, Casement took great pride in his Hereford cattle, feeding them "in the manner of a dietician feeding a baby." His efforts brought him at least nine carload championships from 1929 to 1950, at several large stock shows.

Paints Cow's Tails

In 1946 Casement was discovered painting the tails of his animals with purple paint. He later explained that they "look prettier when the sunlight hits their tails." Casement was the first man to clip the heads of Herefords to make their bodies seem heavier and chunkier.

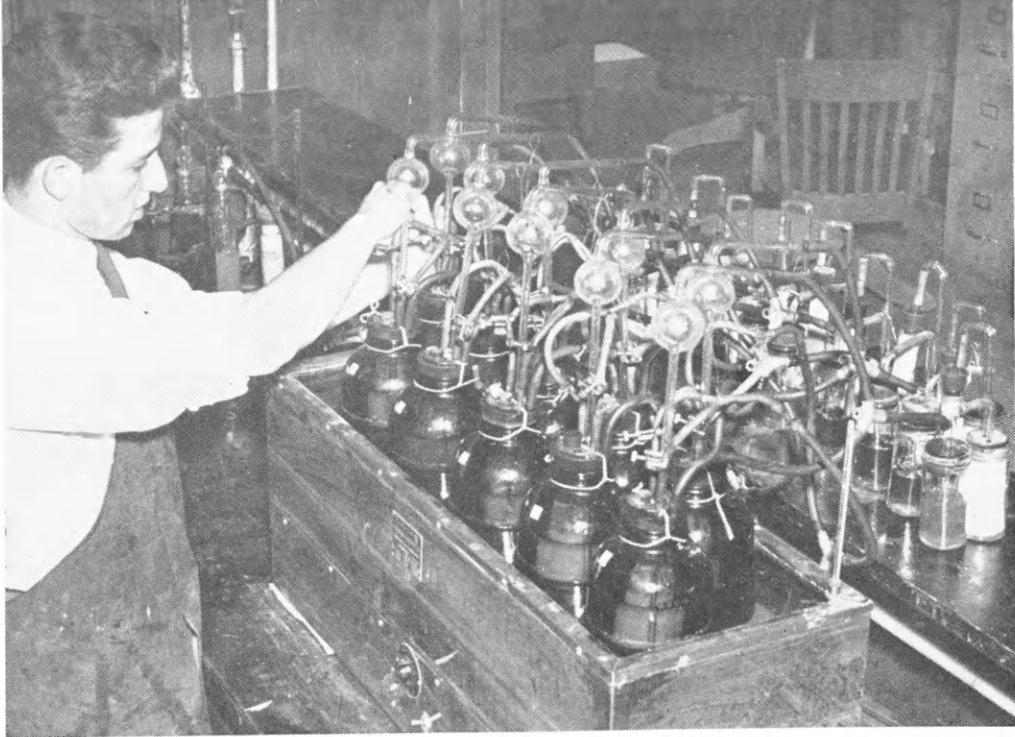
His famed Juniata farm, a few miles north of Manhattan, was the

site for the first grass utilization research project conducted by Kansas State in 1915. The ranch of 705 acres of arable river bottomland and 2,050 acres of bluestem pasture, was also the place where he developed fine Hereford cattle, carlots of which have won top prices in every leading livestock show in the country. Casement balanced out his farming program with swine, sheep, dairy cattle, and a diversified range of crops. The ranch had been given to him by his father, John Stephen Casement, General in the Union Army in the Civil War, on his 21st birthday. After taking possession, Casement expanded the operations and soon became known as an erudite and articulate spokesman for ranchers and farmers and who was a stalwart believer in freedom.

In more recent years Casement detested price supports saying "let the old law of supply and demand take its course." Back when the Agricultural Adjustment Act was proposed in the late 30's, Casement began an argument by letter with Henry Wallace, then Secretary of Agriculture, saying that such acts would stifle individual enterprise and initiative.

One to practice what he preached, Casement started a share-the-profits plan with the men who worked on his ranch. He protested the "New Deal" for robbing men of individual resourcefulness and incentive. Instead he created incentive for those who worked for him with the result that

(Continued on page 20)



JEAN RADISSON, a French graduate student, makes an adjustment on this artificial rumen in which rumen juice from live calves is used. This unusual piece of equipment, one of five in the United States, is showing how antibiotics promote growth in calves.

Antibiotic Secrets from an . . .

Artificial Rumen

By Dick Brown

ONE OF THE MOST unusual pieces of research being carried on in the Kansas State Dairy department is the operation of an artificial rumen. The project is being done by Jean Radisson, a graduate student in animal nutrition from Villeneuve, France. He is using it to assist in studies which will help show the way in which antibiotics promote growth in dairy calves.

Radisson's artificial rumen, a maze of bottles, tubes, and complicated apparatus, imitates the action of the dairy calf's rumen. The rumen is the capacious organ, sometimes called the "first stomach" of the calf and cow, which makes it possible for them to ingest and utilize large quantities of hay and other roughages. Its bacteria use the raw materials of the

feed to make protein constituents and synthesize vitamins.

Although it has been shown that antibiotics increase the growth rate of dairy calves, the way in which they work to achieve that end is not understood. Jean Radisson's job is to find out if antibiotics begin to act in the rumen, or whether they do their work in some other place. He uses his artificial rumen to run preliminary tests prior to tests on dairy calves. When it shows something particularly interesting, he then tries the same thing on calves. Use of the artificial rumen is cheaper and faster than use of dairy calves alone.

One of the four or five similar pieces of apparatus in the world today, K-State's rumen was started last November. It consists of ten brown

bottles, holding about one-half gallon, which are immersed in a constant-temperature waterbath. Each bottle is in itself a rumen. Suspended inside the bottle is a semi-permeable membrane in which are placed the materials necessary to make the rumen work. Rubber tubes lead from inside the bottle and from inside the suspended membrane to a bottle of compressed nitrogen gas on one side, and to carbon dioxide absorbers on the other.

Rumen Juice Starts It

To start the apparatus, it is first sterilized. Then about one-fourth pint of rumen juice, collected from the rumen of a dairy calf by the use of a suction pump, is put inside the semi-permeable membrane that is suspended in the bottle. Mixed with it are cellulose, starch, antibiotics, and synthetic saliva. Synthetic saliva is also poured into the bottle in the space around the suspended membrane. It is a mixture of minerals which provides nutrients for synthesis and maintains correct pH and osmotic pressure.

Nitrogen gas is then bubbled through the bottles to keep out oxygen and to stir the contents. The nitrogen is kept flowing throughout the experiment, which usually takes about 36 hours. Every four hours a sample is taken from inside the membrane and tested for acidity. If it is too high, an alkali is added.

At the end of the run, the contents of each bottle are analyzed to determine the amount of cellulose digested, amount of protein synthesized, number of bacteria, and amount of carbon dioxide produced. When all these results are compiled they enable Radisson to carry on more extensive work with dairy calves.

The artificial rumen is indeed a complicated apparatus and is fascinating to watch. But more important, it is a good example of how basic research in the Dairy department is being applied to everyday problems in animal nutrition.

Geology Professor: "How can you tell whether this river is old or of recent formation?"

Student: "That's simple, this is a young river—you can see that its bed is still wet."

Grand Coulee Dam, third highest dam in the world, is 550 feet from base to top.

No More Sticky Fingers with . . .

Honey Bread

By Dan Henley

HONEY! The kind we spread on bread tasted pretty good when we were kids. But mom would always complain when we got the sticky stuff all over our faces and her clean tablecloths and furniture. But now scientists in the Milling department are studying ways of baking it right in the bread as a sweetener. Prof. John A. Johnson and Loren B. Smith, research assistant, of that department have worked for two years on techniques of substituting honey for part of the sugar used in bread, cookies, and cakes. Though the studies are

not nearly complete, here are the results so far.

Honey from the flowers of 15 different plants was collected from all sections of the U.S. for use in the studies. The different honeys vary in their effects on color, taste, and odor of the baked goods when used in the correct amounts, Johnson said. He and Smith have found that not over six percent of the total bread weight can be honey of any kind or the bread will have a dark color and may even taste burnt.

Buckwheat and heartsease honey

nearly always produce offensive odors and tastes, while orange blossom honey produces a very pleasing taste, and does not affect the color of the bread. Variations in color and taste in bread, it was found, are due to differences in color and taste of the honey used.

Special acceptability tests are conducted in the laboratory by consumer panels. Bread and other baking products sweetened with honey are compared with those in which sugar is used. In nearly every test so far, each person on the panel could identify the bread containing honey by taste or odor. The group sampled loaves sweetened with each of the 15 kinds of honey. Eleven were judged acceptable for use. The four undesirable flavors came from buckwheat, fall flower, heartsease and horsemint. Orange and yellow sweet clover honeys produced the best-liked flavors.

The aroma of honey bread while it is toasting is exceptionally appetizing, Johnson said, as heat amplifies the aroma of the honey. This pleasing effect is one of the important selling points for honey, as a portion of nearly every loaf of bread sold is toasted.

The American Bee federation and the Research and Marketing administration of the USDA are sponsoring the project to stimulate the use of honey by the baking industry, thus increasing the demand for honey and providing a new taste for the consumer. A fund of \$10,000 a year goes to the Milling department for research in the flour mill and pilot bakery on the study of honey.

Ready-To-Eat Sweet

Honey has been used only in limited quantities in the past, Johnson said, but it is only natural to assume that its use in food manufacture would be desirable. It is the only natural ready-to-eat sweet in existence and has been used as a sweetening in foods for nearly 5,000 years.

Honey has not been used much by industry except in time of war when sugar has been scarce, for several probable reasons. First, variations in taste and composition of the honey from different floral sources and localities made its use risky. Complete investigations such as these at K-State can supply the baker with the neces-

(Continued on page 24)



HONEY BREAD, fresh from the oven, is examined by Dr. Byron S. Miller, left, and Prof. J. A. Johnson, of the Milling department. Professor Johnson is in charge of the research on honey as a sweetener in bread and cake for the U.S. Department of Agriculture.

Wind Tunnel Studies Show Nature's Way Is Best To

P r o t e c t Y o u r

NATURE'S WAY of providing continuous vegetative cover is the best way for protecting soil from erosion, states Dr. W. S. Chepil, soil scientist at K-State. Emergency tillage methods that roughen the surface are good, but preventing soil from blowing before it starts is best, Austin Zingg, supervisor of the wind erosion laboratory at the College, reports. The dust storms occurring this spring were largely a result of the 1952 drouth that left large areas of wheat acreage with too little cover to protect from spring winds, Zingg added.

When moisture conditions are like they were this spring, Zingg thinks the lister is probably the most effective tool to control wind erosion, but

it is severe treatment for a wheat field where at least a partial crop is expected. Four-inch chisel-point sweeps are better for bringing clods to the surface than larger sweeps or narrow chisel points. But any pointed or shovel-type implement that roughens the surface and brings up clods is satisfactory. Shovels should be placed at least two feet apart, Zingg recommends. Discs and one-ways should not be used, as they tend to pulverize the soil and aid blowing.

For preventing soil erosion by wind over a period of years, Zingg recommends grasses and legumes in rotation. He also advocates stubble mulch tillage, management of crop residues to protect the soil, wind strip cropping, and contour strip cropping.

Other good practices include field shelterbelts where they are adapted and controlling grasshoppers and other insects that destroy vegetation.

Supplement in Dry Years

Even when these practices are followed it may be necessary to supplement them with other practices in dry years, Zingg warns. It may be necessary to remove livestock during drouth periods before all vegetation is destroyed. Tillage methods also may be delayed as well as seedbed preparation until spring. Fields should never be left fallow two years straight. Farmers can plant quick-growing crops for cover where other crops fail to respond. Such crops as cane, milo, sudangrass or wheat can furnish cover for emergency periods.

These and other suggestions for preventing wind erosion are the results of work started in 1948 in K-State's wind tunnel located in the old Farm Machinery building. Both Zingg and Chepil have actively con-

FOUR DUST COLLECTORS made from vacuum cleaners are in charge of wind erosion studies from four different heights in the portable wind tunnel.



WIND OF HURRICANE proportions can be driven through this 56-foot wind tunnel located in old farm machinery hall. Removable side panels allow the scientists to place soil anywhere in the tunnel. A 31-h.p. engine drives a 3-foot fan to create the draft.

Soil

By Diane Blackburn

ducted experiments in the tunnel for several years and have taken a portable tunnel to various parts of the West to gather data on soils.

The scientists currently are studying the effects on wind erosion of physical and chemical soil properties and of plant covers, topographical features, and wind barriers (shelterbelts). An attempt also is being made to clarify the basic causes of wind erosion and to find the principles on which better control practices can be used.

See Soil Blowing

The 3-foot square and 56-foot long wind tunnel, where experiments are conducted, is made of wood and steel with glass panels along the sides. The panels make it possible for the scientists to observe, photograph, and measure what happens to soil inside the tunnel.

A simple adjustment of the fan located at one end of the tunnel will produce a gentle breeze or stronger

winds up to a small hurricane going across the soil samples placed on the bottom of the tunnel. The fan is powered by a 31-horsepower gasoline motor. Automobile wheels can be attached to the motor, making a portable tunnel unit that can be taken to the field.

The portable tunnel has been used in New Mexico, Texas, Nebraska, and Western Kansas. Zingg and Chepil plan to go to Oklahoma to make tests this spring. They make tests at experiment stations, colleges and universities, as well as individual farms. The amount of time spent in the field depends on the need and the weather conditions.

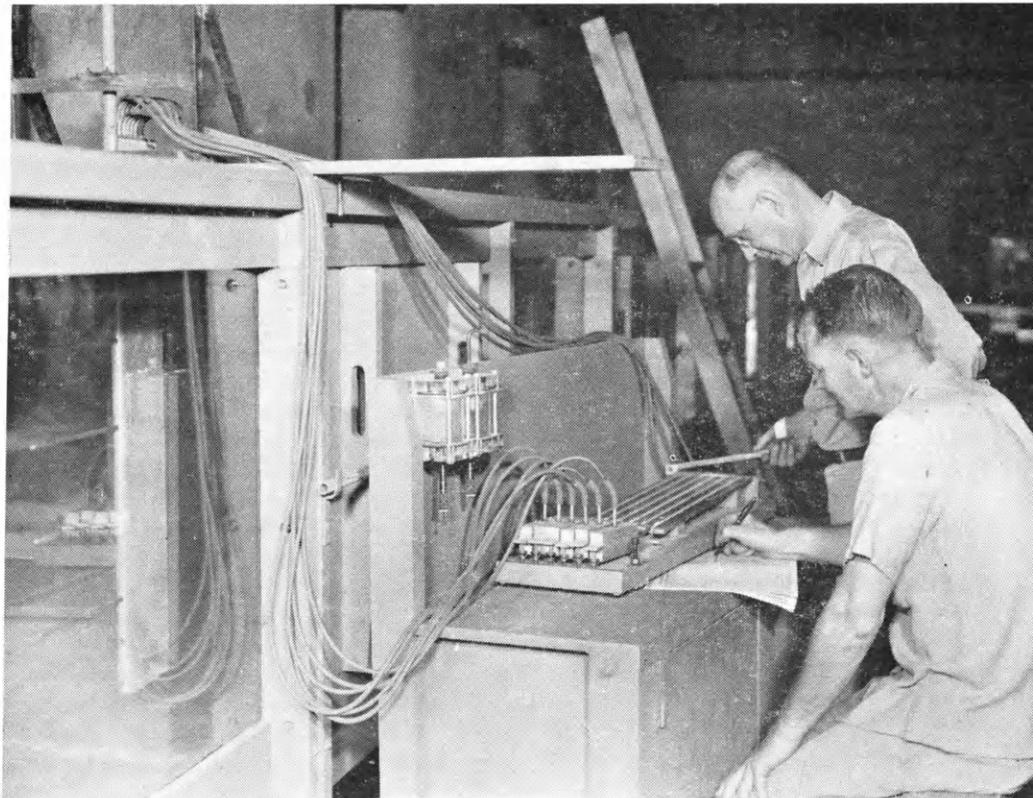
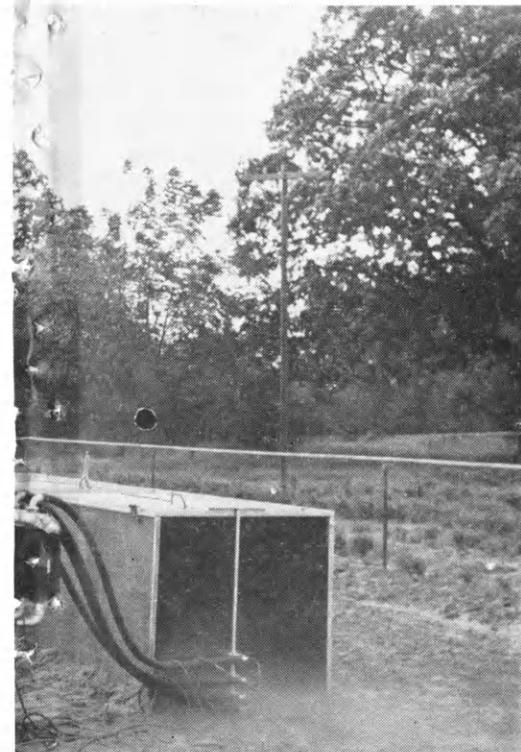
A new device for measuring wind next to shelterbelts was built this

winter. This apparatus, designed and built by N. P. Woodruff, ag engineer, has not yet been used in the field. Wind velocity at different heights and distances away from the belts can be recorded by this apparatus. It will aid in determining the effect of shelterbelts on wind velocity. Some other equipment used in connection with the tunnel includes an air elutriator for measuring resistance of soil particles to blowing and a rotary sieve. The rotary sieve, originally designed in 1943, determines the soil structure and the size of soil aggregates and particles.

"We can almost tell the amount of erosion of a soil before using the wind tunnel," Chepil said. "From the con-

(Continued on page 22)

rs are being operated here by A. W. Zingg, studies at Kansas State. Samples of dust are taken tunnel which is shown in operation in the field.



THIS ODD LOOKING piece of equipment attached to the K-State wind tunnel measures wind velocity inside the tunnel. At the left can be seen the glass panel which permits the scientists to watch the wind pick up particles of soil at various wind velocities.

Big Changes in Meat Marketing

By William Snelling

(This is the essay that won first place in the Swift Essay contest at K-State this year.—Editor.)

SEVENTY-FIVE YEARS AGO, when my grandmother went to the meat market, she no doubt said to the butcher, "What kind of meat do you have today?" She had to make her selection from what was available in the shop. Today my wife says to the butcher, "I'll have one pound of ground beef and a three-pound chuck roast." If he doesn't have what she wants, which is most unlikely, my wife goes to another market to complete her selection. And what has brought about this revolutionary change? There's a simple answer, but it's very complex in structure and detail. There has been a change in marketing methods. Here's part of that story.

In years gone by the butcher bought the animals to be slaughtered on foot from the farmer and slaughtered his supply of meat to meet the demands of his trade. This was a necessity because he had no means of refrigeration except in the cold winter months. But American ingenuity and industry have changed this for him. Now the butcher orders a certain number of hind or fore quarters of beef or whole carcasses of lamb or pork of a certain grade to be delivered every few days. Fresh meat is at the housewife's nearest grocery and at the butcher's closest slaughter house or branch house.

Some attribute these profound changes in the meat industry to

American ingenuity, and others to the great changes in marketing methods and to the competition within the industry. Certainly American ingenuity was responsible for the development of our great transportation system. Inadequate distribution has long been a curse to many peoples of the world. America solved this. She has railroads, water transportation, motor trucks, and an ever-increasing mileage of permanent roads.

Regional Production

Through this network of transportation facilities, we have more efficient distribution of surpluses to points where they are needed. This satisfactory distribution enables each section to produce to its capacity the product or products which it is best suited by nature to produce, and to exchange its surplus for the products which other sections can produce better or more economically.

The Rocky Mountain region produces the largest surplus of lambs; the broad plains sloping eastward from the Rockies produce surplus cattle; and the northern half of the Mississippi Valley states accounts for the bulk of the hog surplus. Here in this same region dairy surpluses of butter and cheese accumulate and also much of the surplus of poultry and eggs, although there are certain surplus broiler-producing areas along the east coast. A thousand to 1500 miles east of these midwestern sections of surplus production areas lie the great centers of population and consumption.

Strategically located around the country in these surplus production areas are livestock markets where producers can instantly turn their meat animals into cash. Adjacent to these markets are packing plants with their tremendous cooler and storage space. From here, refrigerator cars move the products toward the consuming centers, and finally to the retail stores, where the housewives make their purchases of fresh meat.

How does a buyer for the retail trade know how much to buy, when to buy, and at which market to buy? These questions again may be answered by American ingenuity and industry with its competition. The meat industry serves the consumers, and each company within the industry, to survive the competition, must perform a certain phase or all phases well to remain in business profitably. We have small local companies which operate in only one state or part of a state supplying local markets. Then there are the large companies doing business on a national and international scale. These companies operate plants in large cities and supply meat products to their branch houses. They operate car routes and refrigerated motor trucks, supplying meat to retailers and others in small cities. In between these two—the small and the very large—we have the medium-sized plants which operate on a similar but much smaller scale than the large companies. They confine their operations to a given area and often to a given product.

Buyers from all these businesses

compete at the various livestock markets with each other as well as with "shippers" and dealers and speculators who buy and sell on their own account. These buyers are in constant contact with other markets by telephone and telegraph and know just about what they should pay for certain grades of animals. Livestock buyers of long experience are so expert at estimating the meat yield of a live animal after giving it close scrutiny, that their judgment is seldom more than three or four per cent away from the actual amount computed after the animal has been slaughtered. One outstanding result of the competition among markets and the competition among meat packers in distributing their products is that prices for the same kind and quality of meat tend to be the same—freight, shrinkage, and other expenses considered.

After the buyer purchases an animal it is immediately taken to his company's slaughter house for the "disassembly" process. Here it is federally inspected to make sure it is fit for human consumption. The process of slaughter varies only slightly for the different animals. It is a very efficient and streamlined process.

Slaughtering Begins

In the case of beef, the animal is first knocked in the head, rendering it unconscious. The animal is then hoisted by the hind feet and hung to an overhead dressing rail, where it is expertly stuck. It is necessary for the animal to bleed properly and thoroughly before the remainder of the slaughter process begins. Skinning the animal is the next step. Then a series of skilled butchers, each performing one dissection operation, proceeds to cut up the carcass. Each of the operations is viewed by federal inspectors and any condemned animal is sent to the "tank" room where it will be used for feeds and fertilizers. Such animals are a financial loss to the packer. After being passed and stamped by the federal inspectors, the carcasses are clothed or "shrouded" in cheesecloth which has been soaked in hot water. The cloth draws out the blood from the covering of fat and leaves it an attractive creamy white. The beef is then chilled at 32 to 34 degrees Fahrenheit for 36 to 48 hours before being dis-

Trucked In . . .



TRUCK TRANSPORTATION has played an important part in the progress of the meat industry. Refrigerated trucks and trains have made possible many advancements in the meat industry and provided the housewife with fresh packaged assortments of meat.

tributed to the branch houses. The chilling process removes the animal heat and causes the meat to "set" or become firmer and adhere to the bone. Pork is cooled for only 24 hours. Approximately 75 per cent of the original live weight of a hog can be sold in the form of meat or

rendered lard, while only 55 per cent of the live weight of a steer can be sold as beef.

Large packing houses, to more efficiently utilize their refrigeration and distribution facilities, have become leading distributors of butter,

(Continued on next page)

cheese, poultry, and eggs. These are sold through the same outlets and thus result in lower unit selling costs. Some companies operate creameries for the manufacture of butter and maintain plants where poultry is fed and dressed and where eggs are collected and graded. In communities where such plants are located, the local producer has an excellent market for his farm products. These products are all attractively packaged and shipped to branch houses for distribution.

Competition Is Keen

Competition in the industry has demanded of the packer that he make some use of the wastes of slaughter in order to offer his products at competitive prices. Here American ingenuity came through again. Utilization of every possible part of the slaughtered animal has been necessary. By making better use of the non-edible products, the value of the live animal is enhanced and the relative cost of meat on the table is decreased. Chemists are constantly

searching for new ways to utilize the by-products of the industry. Little do we realize their constant endeavors but accept the products of their labors without too much thought.

Some By-Products Edible

When we think of by-products, we usually think of the non-edible products, but it is well to remember the edible ones such as the variety meats and also the canned meats, as well as lard, feet, and chitterlings in the hog. These are important but not nearly so multitudinous as the non-edible by-products. The most important of these by-products is the hide. It is utilized in many ways by the leather industry, being used principally for shoe soles and uppers, belting, athletic equipment, and other miscellaneous leather products. From the lamb skin, we also have a source of wool. Other important livestock by-products are glue, gelatin, animal feeds, fertilizers, chemicals, hair, soap oils, and the pharmaceuticals, which are now so important. These in-

clude the old standbys—insulin and liver extract—and the hormones, including the new "miracle" drug, ACTH.

Now that we have marketed our meat animal, taken it through the slaughter house and branch house, utilized our by-products, and finally brought our product to the retail market, how can we get the housewife to buy our product? We have so much money tied up in a perishable product that we must have a relatively fast turnover. To a certain extent we know that mankind is a creature of habit and will consume a certain quantity of meat but now salesmanship (marketing) abilities of each company come to the fore. Brand names become ever important because of advertising. One housewife says, "I'll have nothing but Swift's Premium Products in my kitchen;" another says the same for Armour Star; and still a third says with equal conviction, "Wilson's Corn King Bacon is the best." Brand names are associated with quality, and certain high standards must be maintained to satisfy the scrutiny of the housewife. Another factor affecting the quick turnover of a product is the attractiveness of the package and of the display as a whole. Just as advertisements in color in leading magazines attract the housewife's eye, so does an attractive display in the store sell merchandise.

This is part of the story of fresh meat on the table and how it has come about in this great country of ours. When we sit down to eat a nice steak, chop, or piece of roast, we seldom think of all services and enjoyment that are ours because of all the work behind the scenes in the meat industry of today.

A sweet old lady, always eager to help the needy, spied a particularly sad old man standing on a street corner. She walked over to him, pressed a dollar bill in his hand and said, "Chin up."

The next day, on the same street corner, the old man shuffled up to the old lady and slipped ten dollars into her hand.

"Nice pickin'," he said in a low voice. "Paid nine to one."

There was a man who loved the bees:
He always was their friend.
He loved to sit upon their hives
But they stung him in the end.

Packaged . . .

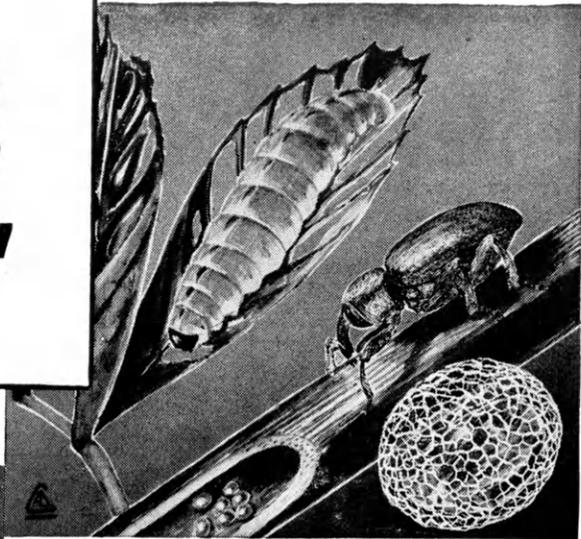


TODAY'S HOUSEWIFE has a wide variety of ready-packaged meats from which to choose at the corner grocery store. Years ago the lady of the house was forced to take whatever the meat man might have on hand that day which in most cases was very limited.

insects

YOU SHOULD KNOW

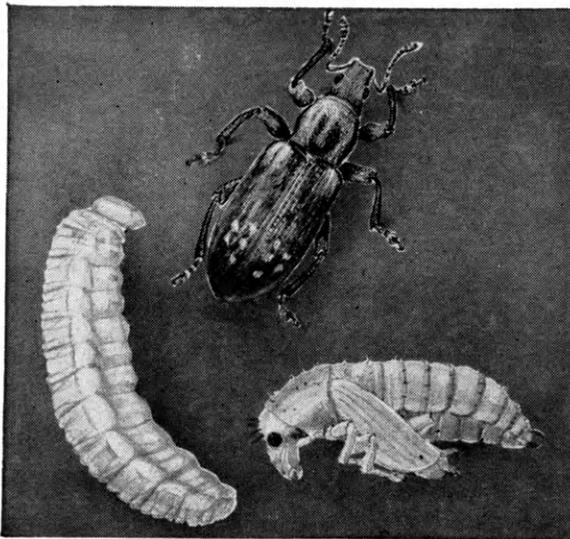
*How to Identify
These Crop Destroyers*



ALFALFA WEEVIL

Hypera postica (Gyll.)

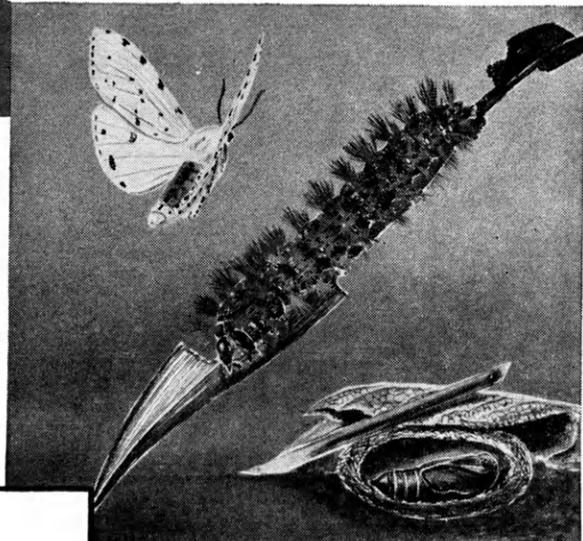
The Alfalfa weevil is one of the major insect pests of alfalfa in the United States. It causes greatest damage to the first crop. Adult females lay from 600 to 800 eggs in alfalfa stems. An imported wasp is a parasite of the larvae, but it does not destroy enough second crop weevils to prevent a large build-up of weevils the succeeding year.



SWEETCLOVER WEEVIL

Sitona cylindricollis Fahr.

Sweetclover weevils are small, slender, drab gray snout weevils. They feed on tender plant leaves and stems, eating out circular notches. Natives of Europe, these insects were discovered in Canada in 1924, and have spread at a rate of more than 100 miles a year. They now extend over most of the United States and Canada. They move in armies of a hundred or more per square foot.



SALT-MARSH CATERPILLAR

Estigmene acrea (Drury)

Mature caterpillars are either light green or dark brown. They attack alfalfa and other crops and travel in hordes. The adult female moth lays as many as 1000 pale yellow eggs from which hatch tiny dark brown caterpillars. There are three generations of pests in the southern localities, two in the Midwest, and only one in New England. In the South, the third generation causes the greatest damage.

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Chit Chat

(Continued from page 4)

gestion. We might even take them, instead of pointing.

Quite a compliment to a quartet of Aggies to be selected for four special numbers on the Easter Assembly program. Every student who missed that presentation has a blind spot in his college experience that can never be matched by any other experience. It was beautiful, impressive, effective. Some two thousand students will be

better citizens of the K-State campus by reason of that splendid Easter program.

"From that day, no child ever has been named Judas."

Frequently in the morning we round the curve in front of Anderson hall not too long after 7 o'clock. Two objects are certain to be profiled in the gray dawn:

1. Harry, the officer.
2. The standard, "Stop for Pedestrians."

Student traffic across that busy thoroughfare at that early hour is heavy, very heavy; however, it can be reported, no student ever has been hit at that dangerous crossing during the early morning dawn.

Really, the dangerous student crossing on the campus is the T-crossing east of Waters Hall, from 11:50 a.m. through 1 p.m. Probably more students dodge more cars at that crossing through the noon hour, than at any other campus crossing. And these students don't have the benefit of "Stop for Pedestrians." It is surprising that someone doesn't get hit at that crossing.

When construction on the new Feed Technology structure gets under way, traffic will be even heavier at this highly congested point. Possibly someone can find an extra standard, "Stop for Pedestrians," and plant it near the center of the intersection. Perhaps this standard should read, "Stop for Pedagogos."

First student: "He was expelled from college for cheating."

Second student: "What for?"

First student: "He was caught counting his ribs in a zoology exam."

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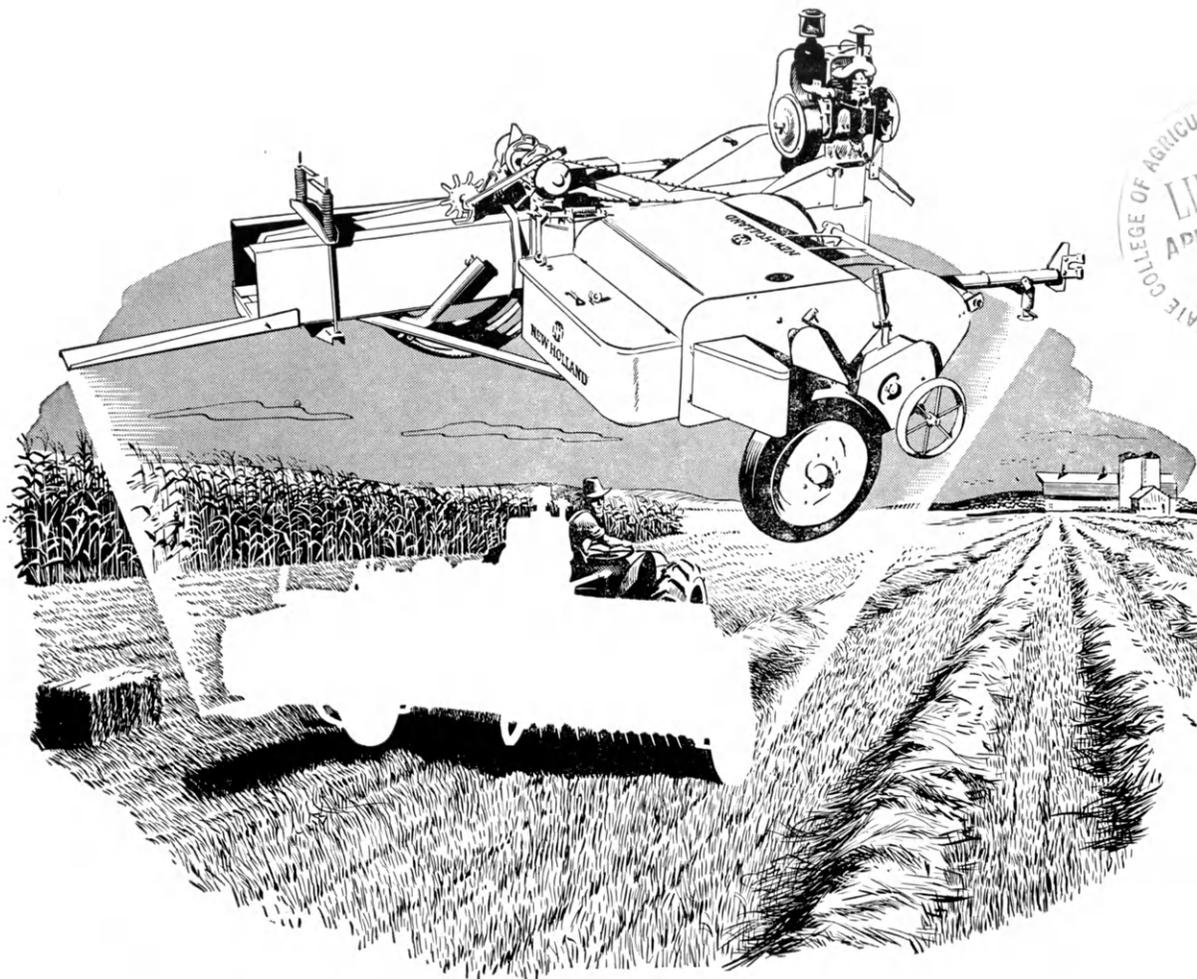
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Development of the "66" began years ago. New Holland engineers, looking ahead, saw the need not for just a small or inexpensive baler, but for a baler that would meet a special need in the growing grassland trend. It's this policy of practical farm engineering that has made New Holland "First in Grassland Farming."

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Dan Casement

(Continued from page 9)

some of them have been with him 35 years.

His high status as a breeder, feeder, and exhibitor of livestock was crowned by the hanging of his portrait in the Saddle and Sirloin rooms' famous gallery of livestock men at the Stock Yards Inn at Chicago. In 1926 he was chosen to review and appraise the grazing value of the national forests. Casement recommended that fees for grazing be related to the price of livestock on the market. This plan is now in effect in the West and is generally accepted. He also is credited with founding the American Quarter Horse Association.

Dan Casement was always actively interested in politics, having attended the Republican national convention every year. Last summer he backed General Douglas MacArthur for the presidential nomination. He ran as a candidate for the congressional nomination for the Republican party in 1924 in the old fifth district of Kansas against James C. Strong, but was not successful. This was his only venture into politics.

Right up until his death, March 7, Dan Casement attended leading stock shows and when confined to bed in his last days, began writing letters to those great men he had met during his lifetime, commending them for their efforts. This last gesture was indicative of the Dan Casement who was known for booming out his praises, but at the same time not afraid to offer his criticisms when he felt they were justified.

Born on a farm near Painesville, Ohio, on July 13, 1868, Casement came to Manhattan with his parents at the age of 10 and remained here most of his life. In 1886 he entered Princeton university, graduating in 1890 and going on to study law at Columbia.

Then in 1897 he married Olivia Thornburg (who died in 1942) and the couple went to Costa Rica where his father was building a railroad. His father and uncle have been credited, as contractors for the Union Pacific railroad, for tying together the two coasts of the United States.

Casement and his wife remained in Central America until 1903 when they returned to divide their time between Juniata farm and a ranch

Sunflower Sam Says:



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Manhattan, Kansas

which Casement acquired in western Colorado. They lived in Colorado Springs, which Casement said "was a convenient point about halfway between the Kansas farm and the Colorado ranch."

When the first World War broke out, Casement was 49 years old but that didn't stop him from volunteering for officer training. Commissioned a captain in the artillery he was put on a transport bound for Europe. Just off the coast of Ireland the transport Tuscania was torpedoed and Casement was credited with saving many of the 200 survivors.

Col. Edward N. Wentworth, chairman of the portrait committee of the Saddle and Sirloin club and director for 32 years of the International Live Stock show, said Dan Casement was "... the most fundamentally American in manner of thinking of any man I ever met and appreciated the advantages of this country and was more jealous of his freedoms than any contemporary man.

"Manhattan, the livestock industry and the nation have lost one of their most assertive and significant citizens.

Bow-legs are few and far between.

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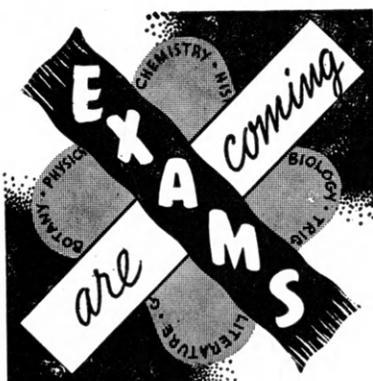
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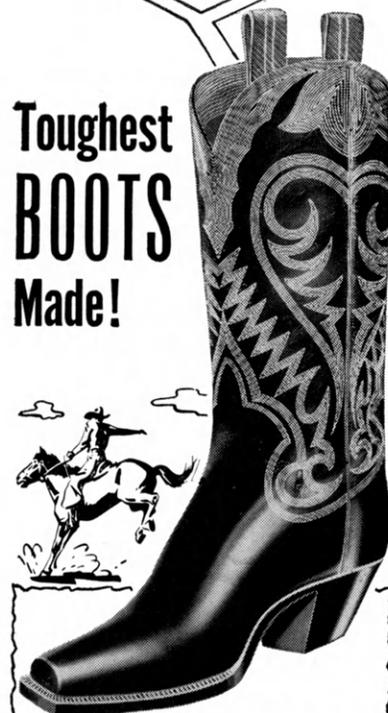
(Continued from page 13)

dition of the soil, the amount of crop residue, and the roughness of the soil surface, we can tell how much the soil will erode," he added.

To be resistant to wind erosion, soil must contain an appreciable proportion of particles over 1 millimeter in diameter. These particles are non-erodible. Particles 0.1 millimeter or smaller such as those in fine sand are most erodible.

Soil moves by a saltation process, that is, by leaps and bounds rather than moving along the earth's surface as many people believe. The velocity of wind at the surface is zero but increases rapidly near the ground and less rapidly higher up. A small particle of soil slightly above the soil surface may be kicked up by the

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wind which, when hitting the ground, will cause other particles to move up.

Dust in a field is a result of movement of grains in saltation. Dust, as such, is resistant to wind erosion. Soils must contain some coarse particles before they will erode.

Farmers are beginning to realize that nature has the best method of protecting soil from erosion, Chapil says. They are now trying to follow mother nature in her methods of protecting the soil by leaving all crop residue on the surface of the ground. Grass and other types of continuous vegetative cover prevent erosion. When these practices become more generally used, the dangers from wind erosion will be greatly decreased.

Pole-Type Houses

(Continued from page 8)

feet of siding are required. Twenty-four hundred board feet of sheeting are needed and unless insulation board is used, that also will be of 1 x 6 stock.

The floor can be made of concrete if desired, but using a dirt floor can be one of the biggest savings in construction costs. However, care should be taken to build the house where there is good drainage and light soil. The house should face south, southeast, or east to take advantage of as much sunshine as possible. Open front panels are muslin covered. A large sliding door is provided at one end so power equipment may be used in cleaning the house.

Anyone desiring further particulars may obtain blueprint, No. 72-734 for 25 cents from the Agricultural Engineering department, Division of Extension, Kansas State College, Manhattan, Kansas. A bulletin describing the new pole-type house will be available later.

Ag School Angles

(Continued from page 6)

4-H club congress in Chicago, two wrist watches, a set of luggage, and a \$300 scholarship.

"Millie" began her cattle raising career at four years of age when her father gave her a cow. Since then she has built up her herd until now it's worth \$3,000.

Dad takes care of the cattle while "Millie's" at school, but she's not neglecting her first love. She groomed and trained a dairy cow for the Little Royal.

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Honey Bread

(Continued from page 11)

sary information on the best source and quantity of honey to use. The properties of certain honeys may be especially adapted to use in specific types of bakery products. Further research can supply this information.

Another problem retarding the use of honey by today's baker is that it is shipped and stored in 5-gallon (60-pound) metal cans which require extra expense and labor if handled and emptied without waste. Honey's viscous, sticky nature makes it exceedingly hard to remove from the cans and if it has granulated or "turned to sugar," it must be heated before it can be removed.

Substituting honey for one-third of the sugar in chocolate cakes calls for one-third more cocoa in the recipe, Johnson has found. The chocolate cake tests are not complete and it is not yet known if the consumer will like the honey-chocolate flavor produced.

Presently, Professor Johnson is studying the use of honey in cookies. He has found that the amount of honey used depends on the chewy characteristics desired. Concentrations of honey equal to 65 percent of the flour in the recipe have been used in cookies successfully.

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