KANSAS STATE COLLEGE
Ag Student
DECEMBER 1958

DO CONTRACTS BEAT, "GOING FOR BROKE"?

...PAGE 12

Hearken . . . you
With your homemade worlds . . .

Hear me, as I speak
From greater heights
Than any you have conquered . . .

For,
I also occupy this atmosphere—
Thrust forth two thousand years ago
By the very Hand
That gave to you
Your genius—

Thrust forth
With a brightness
That all your man-made planets
Cannot match,
And charged with a mission
The magnitude of which
The most brilliant minds among you
Cannot grasp.

Here, from this noble height,
I dispel the darkness of this world
And point with a glowing finger
To the very Source
Of Faith, and Hope, and Charity,
Consuming in my burning heat
Each sphere of hate and fear
That men may launch.

Hearken . . . you
With your homemade worlds . . .
I also occupy this atmosphere—
Thrust forth two thousand years ago
To light your way to Peace.

Hearken . . . you
With your homemade worlds . . .

I am the Christmas Star!

JOHN DEERE · MOLINE · ILLINOIS

On the Cover

The cover this month and the accompanying story on page 12 are trying to show exactly what vertical integration or contract farming really is. We are trying to give both sides of the problem.

Farmers have one of two choices, to contract their products to a large chain of processors and distributors for a guaranteed price or to take a risk on prices, weather, and other losses.

In vertical integration one man or company owns all of the products that go into production, processing, distribution, and marketing a product. The farmer in turn gets paid for his labor according to the yield he gets from a crop or livestock.—Loren Henry.

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Kansas State College AG STUDENT

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Staff

EDITORIAL
Loren Henry Richard Vanderlip
Norman Werner

PHOTOGRAPHER
Loren Henry

CIRCULATION
Chester Peterson .....Manager
Eugene Harter .....Assistant

BUSINESS
Fred Beeler Lawrence Odgers
Don Miller Hal Ramsbottom

STAFF REPORTERS
Mary Jo Mauler Larry Greene
Jim Swiercinsky Jay Workman
Ken Hylton Ruth O'Hara

FACULTY
Lowell Brandner

—+—

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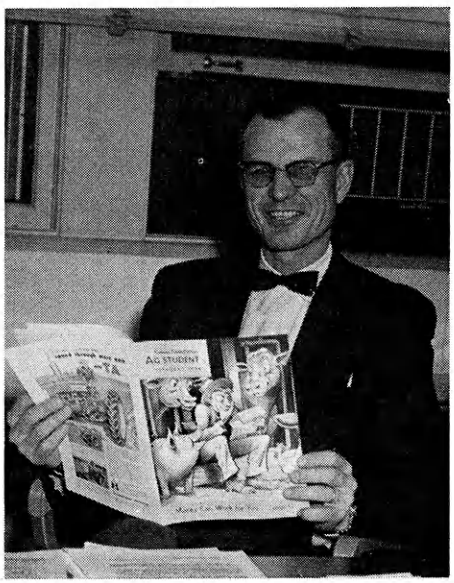
Over the Director's Desk

By C. Peairs Wilson

Director of the School of Agriculture

TO A VAST majority of the general public, the word agriculture is synonymous with farming. While farming is an important part of agriculture, it is by no means all of agriculture. It is important that this fact be recognized.

When this nation was born, 175 years ago, agriculture was more or less self-contained. More than 80 percent of the total labor force was engaged in agriculture. The farm family produced most of its own necessities with only a few items purchased or bartered for. The significant fact is that the farm family performed all the operations of production, storage, and processing of products and family supplies.



Director Wilson

Machines Change Economy

New machines led to several changes:

First, complicated tools and machines could no longer be made by the farmer in his blacksmith shop.

Second, workers in the non-farm sector of agricultural industry no longer obtained their food and clothing from the farm, but through the markets.

Third, farmers sold an increasing proportion of their farm production to obtain purchasing power to buy new tools and machines, which was the beginning of commercial agriculture as opposed to subsistence farming.

Fourth, as larger and larger quantities of farm products moved into market channels, specialized marketing, processing and distributing agencies developed. This made it possible for the farmer to become more specialized and with more time to care for livestock and crops.

Fifth, the establishment of the Department of Agriculture and Land Grant College system stimulated the application of science to agriculture.

Increase in productivity has led to economic progress, which is a frequently used, but little understood term. Economic progress is the evolutionary process through which mankind learns to produce the necessities of life with less and less labor. This frees manhours from the production of the necessities of life for the production of the comforts and luxuries of life and for leisure.

A recent study released by the Kansas State Board for Vocational Education stated that if the recent trends continue there will be a reduction of 18 percent in the number of farms from 1950 to 1960. Assuming average mortality among those farming in 1950, retirement at the age of 65, and none leaving the farm for other reasons, there will be room for only 7,000 new openings on farms by 1960. There will be 41,000 farm boys reaching the age of 20 and surviving from 1950 to 1960. This means that for every 100 boys who start farming, 500 will need to find employment elsewhere. There are a lot of assumptions in this statement; however, it is accurate enough to point out the limited opportunities in farming.

What about these 500 farm boys who cannot return to the farm? Are they aware of the limited opportunities to enter farming? Do they know of the opportunities in other fields? The processing and storing of farm products and producing farm and family supplies have been largely divorced from the farm business. What are the opportunities in these off-farm agricultural businesses?

In terms of the labor force for the United States, farming employed 8 million persons, processing and distribution 10 million, and the manufacture and sale of farm supplies 6 million. This makes twice as many job opportunities in agribusiness as in farming.

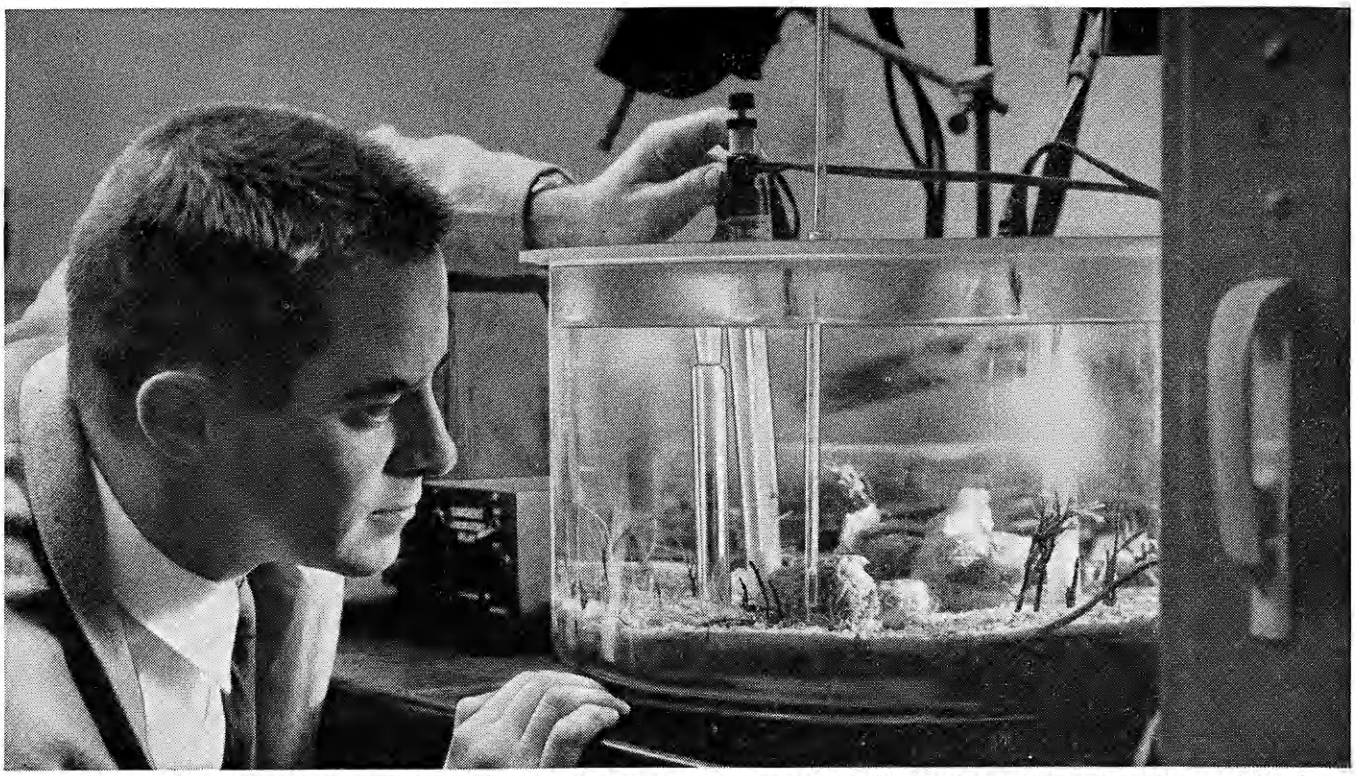
The businesses that make up the sector of agribusiness are the food and fiber processing, and farm supply industries. According to *Fortune* magazine the inventory of farm machinery alone was more than the total assets of the American steel industry and five times that of the automobile industry on January 1, 1955.

Agribusiness is suggested as a field for farm boys who cannot find farms to operate because in agribusiness they will be dealing with farm people and farm products and will have the background and experiences that their city cousins cannot possibly duplicate.

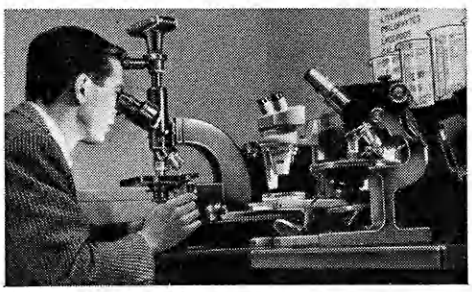
Jobs Numerous

Agribusiness jobs can be grouped into four categories: sales and public relations work; management of business enterprises; operation of equipment and processes by using knowledge of equipment and biological, chemical, and physical properties of farm products; and research to control and improve quality and develop

(Continued on page 16)



WHAT CAN A FISH BOWL TELL? The tiny plants and animals that grow in this "fish bowl" will be similar to those that grew in oceans fifty million years ago and more. The aim of this experiment is to add to man's knowledge of where to look for oil deposits. Pictured is Dr. F. G. Stehli.



HAY FEVER SUFFERERS may be interested to know that pollen is helpful—in the search for oil, that is. Here Dr. A. T. Cross studies traces of pollen in rock millions of years old to interpret underground formations. A comparatively new science, this study of ancient pollen opens previously explored areas to new examination.

THE SEARCH FOR OIL goes on in some of the most inaccessible regions in the world. And expensive, specially-built equipment like this "swamp buggy" is needed to overcome the obstacles of nature and to find more new oil every year than is taken out of the ground.

Time turned back 50 million years; Scientists seek new clues to oil!

Tiny marine plants and animals, very like those living when dinosaurs roamed the earth, are being grown today in a research laboratory.

In glass containers similar to fish bowls, scientists of Pan American Petroleum Corporation, a Standard Oil affiliate, have transplanted sand and sea water from an ocean shore line. Then, by controlling temperature, pressure and salt content, they have simulated the environment of plants and animals that grew 50 to 300 million years ago.

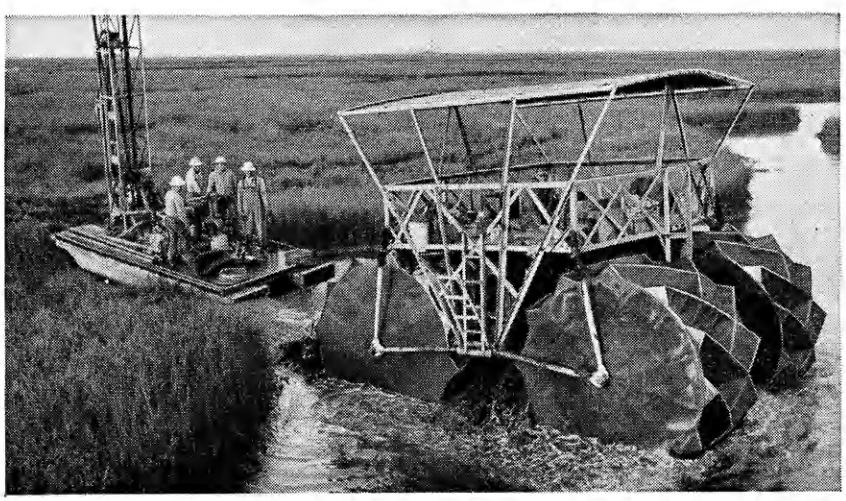
The chemical composition of the microscopic life that grows in the laboratory will offer more positive clues to the type of environment of ancient fossils; that is, whether the tiny animals lived and died in deep, shallow, or protected water.

This knowledge will help scientists to map ancient seas with greater accuracy, to pinpoint the location of prehistoric shore lines and barrier reefs where conditions were ideal for oil to form. Such knowledge will improve our ability to find oil in sufficient quantities to meet today's steadily increasing needs.

This is another example of the way research works at Standard and its affiliates to discover quicker, surer methods of finding oil, to keep the supply up and the price down.

As the result of such trail-blazing research work as the fish bowl project, America's proved underground reserves have grown larger, prices have remained reasonable, and America has been assured of an adequate supply to keep its defenses strong.

What makes a company a good citizen? One measure is a company's concern for the welfare of future generations. In our business, a "let-tomorrow-take-care-of-itself" attitude would be disastrous. Through research, we at Standard are working to make life more comfortable and secure for all—today and for the future.



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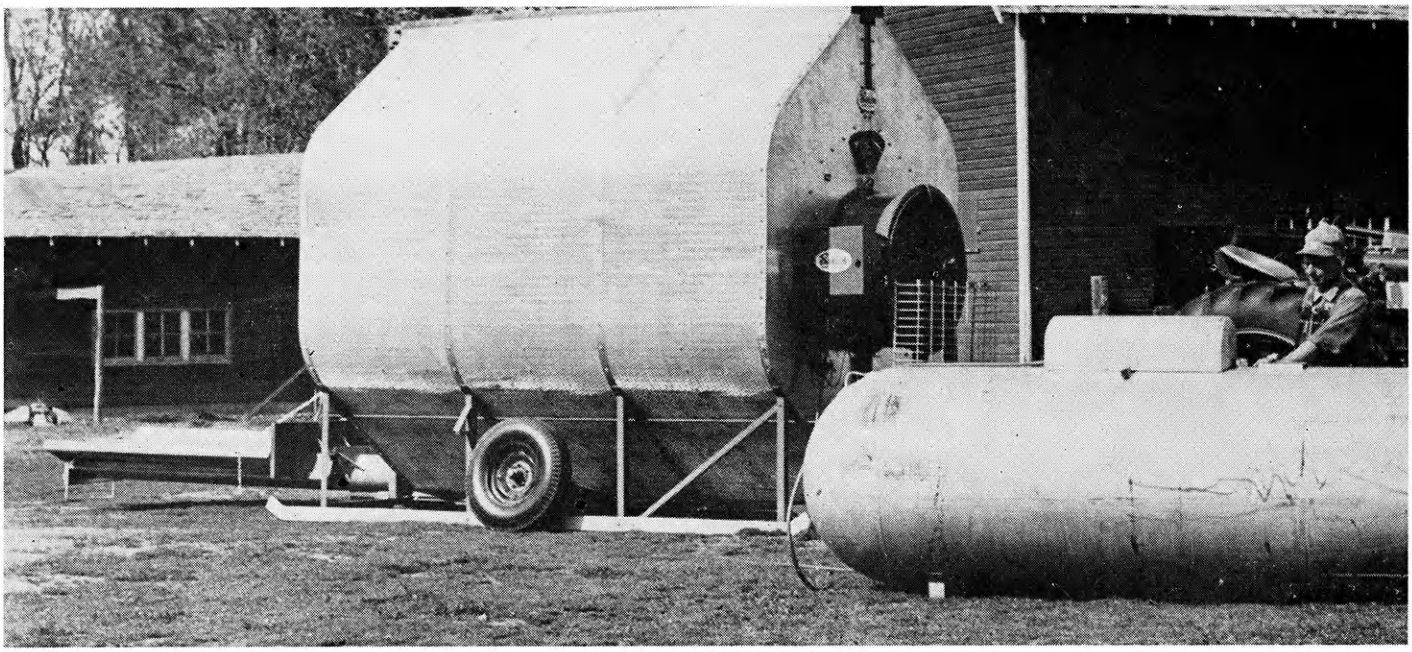


Harvest Earlier

Jilt the Weatherman with a Grain Dryer

- *Evade Shattering*
- *Prevent Lodging*
- *Avoid Heating*

by Larry Odgers

MECHANICAL drying of crops may be the answer to the ancient crop drying problem—just as machinery has been the answer to other farm production problems.

Until recent years, methods of crop drying have lagged far behind the progress of agriculture in general. Since the early beginning of agriculture, man has been learning the arts of plowing, cultivation, irrigation, fertilization, horticulture and reaping. The method of drying crops has remained much the same. A majority of crops are still dried just as they were thousands of years ago—by leaving the crop in the open for nature to do the job.

Techniques, such as shocking grain and windrowing hay, were developed through the years, leaving the farmer at the mercy of the weather. Sometimes bad weather would lengthen the drying process and spoil the crop's quality.

Drying has been the most popular and practical method of preservation. By taking most of the moisture from the crop, the growth of mold and decay bacteria is prevented. When drying is done properly, more of the crop's food value is retained and the crop can be stored safely without danger of mold and decay.

Simply stated, mechanical crop drying is done by forcing air—heated or unheated—through the grain or hay. The air absorbs moisture from the crop and carries it away. This operation usually takes place in a building or a bin, which protects the crop from the weather. However, during the past decade the "batch" grain dryer has become popular.

When mechanical drying is used, the principal advantage over nature's process of drying is in the increased profit. When the farmer takes crop

drying out of the hands of the weatherman and controls it himself he will profit because he harvests when the crop is in prime condition and peak food value. Field losses will be reduced and the crop can be put under cover sooner when mechanical drying is used. Profits will increase when the crop is dried in the field and put on the market before the price drops, or the grain may be dried and held in storage until the price raises.

The farmer will profit with a dryer because the crop will be protected from mold and vermin sooner. Crops can be harvested and fields cleared for the next farming operation without waiting and wondering if the crop will be dry in time.

Climate Wrong for Sorghums

Since Kansas wheat acreages have been cut, oats, corn, and grain sorghums have become increasingly popular. However, the climate is not especially adapted to harvesting these crops, thus the batch dryer is becoming popular with Kansas grain farmers.

Manufacturers are now turning out practical dryers for farms of moderate size as well as for country elevators and large farms. It seems logical that farm-size dryers will increase in popularity, since elevators probably will not be able to handle the drying requirements of the entire community.

Types of Dryers

If you go shopping for a grain dryer, here are some pointers to keep in mind.

There are three kinds of drying systems. One is a powered fan which will either draw or push natural air through ear corn or grain. The second has a fan which uses some supplemental heat from a furnace to gather moisture in the grain and hasten the drying process. The third employs heated air and high-speed fans to batch-dry shelled corn or grain sorghums. Sometimes this same drying unit can be used in drying hay or other materials.

The portable batch dryer can be fired with either gas or fuel oil. LP-gas is considered cleaner and safer if the exhaust from the flame is driven through the grain being dried. Some burners cut in and out frequently to maintain an even temperature. Others increase or reduce the size of the flame. It is important that the heat be evenly distributed throughout the column of air so there will be no hot and cold spots in the grain. The scorching of grain which has led to discounting in the market is due largely to uneven drying.

Most drying experts suggest that sorghum grain for commercial processing should be dried at 140 degrees F. or below. Sorghum grains that are to be used as seed should never be dried with a temperature above 110 degrees.

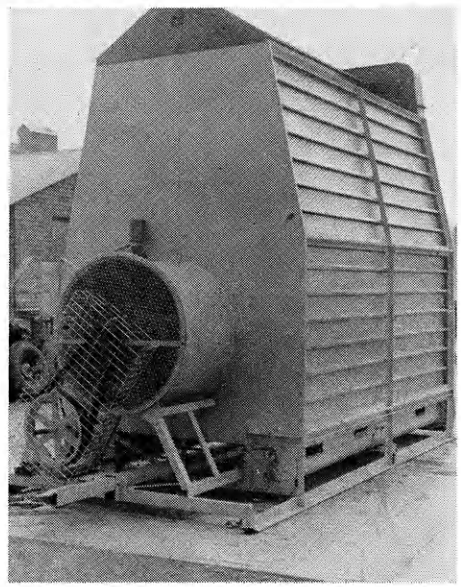
Fit Dryer to Needs

Each individual must figure out the size of dryer he will need, decide if he will want to do custom drying, and decide the type of power he will want to use in operating the dryer fan. After having made these decisions he can proceed to find the specific make of dryer he will want to buy.

It is important that a dryer be convenient for loading and unloading, that it have a set of reliable automatic controls, and that the fan be efficient and noiseless.

The recirculating dryers are designed to keep the grain flowing out the bottom, elevating to the top, sprinkling back on top of the batch. This process is calibrated to have the grain make about four complete cycles before completely dry.

Uniform drying is gained by recirculating dryers, but grain moving costs are higher.



Recirculating More Economical

Manufacturers of the recirculating dryer argue that you get more economical drying, the grain is dried more uniformly because of constant moving of the grain. Recirculating gives faster drying due to lower static pressure encountered by the drying air stream, and a lower grain temperature is used.

The builders of non-recirculating dryers counter by saying the moving of grain four times uses more power, requires more expensive grain-conveying equipment, wears out the grain by breaking off germs, wears out the equipment four times faster, and wastes heat by cooling and reheating.

The dryers we have been talking about are portable, and differ only in details, refinement, and minor design differences. Most of these are either two- or four-wheel trailers on which is mounted a double-walled bin. The perforated steel walls are about 15 to 19 inches apart, holding a blanket of grain around a chamber fed hot air by a fan.

Amount of Power Varies

On the larger size grain dryers, the fan is driven by the power take-off of a two- to four-plow tractor. On the smaller ones an electric motor handles the fan. The tractor-powered machines depend on the tractor battery to power their automatic controls which are either 6- or 12-volt electrical systems.

A drying unit could not be expected to be entirely automatic; therefore, a moisture tester is almost a necessity for the farmer who is going to operate a dryer. The average moisture tester costs about $100 and will operate on either electricity or a dry cell battery. A moisture tester will save operating costs by giving more accurate drying. Without a tester the dryer could be run too long, taking out too much moisture and adding expense to the drying costs.

It must be pointed out that each dryer is designed to operate according to the manufacturer's specifications. Unless the operator regulates the machine according to specifications he cannot expect to get the most effective drying results.

African Theory Leads to

New Prevention

—Fistulated Twins

—Artificial Rumen

WHEN in Rome, do as the Romans do!"

Actually, in practice this is what modern farmers the world over have been doing so far as bloat control is concerned. Records from the Roman Empire dating back to 62 A.D. indicate that then, as now, no sure-fire bloat preventative was available. While Roman legions were out conquering other civilizations, the man at home was trying to defeat bloat.

Bloat is an excessive accumulation of gas in the first two stomach compartments of a ruminant. It's this trapped gas that causes the distention so familiar to cattlemen. Cud-chewing animals are aided in their digestion by myriad numbers of microorganisms that cause fermentation of the food as it is processed. Gas is formed by the fermentation and is a natural by-product of digestion. When an animal can release this gas all is well, but when eructation or belching is hindered, bloat results.

Expensive Inability

Annually, this inability to belch costs agriculture over $40,000,000. Although not as awesome a figure as the national debt, it still hits the farmer hard in his pocketbook. When very severe, bloat will cause the death of a cow, but all animals that bloat will not die. A recent study in Wisconsin shows that of all cattle that bloated, only 20 percent were lost. Of course, if one of the better cows in a herd is stricken, that 20 percent becomes very significant.

How much bloat really hurts the farmer is hard to estimate. After several cows in a herd bloat, the dairyman will lose a sizable part of his milk check until they fully recover. The stockman also has his share of worries concerning bloat. If troubled by it, his cattle may make slow weight gains and so lose the profits of a whole season. As a consequence of bloat's menace, the farmer would rather graze his cows on a poorer and less nutritive pasture than to use lush legumes that may cause bloat.

That this malady presents such a gamble is sufficient reason for a farmer to turn gray before his time. Place yourself in this position: It is a dry year and you have 40 milk cows that are rapidly eating their way out of barn and home. You can't afford low production right now because this is base month, which will influence your milk price for the coming year. And you just happen to have this field of alfalfa available, so what are you going to do? Should you starve the cows and seriously cut their milk yield or will you pasture them on the succulent legume and hope that none die? Whichever path you choose may be compared to the chances you might take in drawing to an inside straight.

Studies at various institutions have shown that the occurrence of bloat has increased in the last few decades. No definite reason for this is known. Heavy eaters are more prone to excessive gas accumulation than their more finicky herdmates, and cattle seem to bloat more than sheep. Then, too, there are two types of bloat, one of which is called free gas bloat. The other, frothy bloat, is due to the formation of gas trapped in small bubbles. Legumes usually are the cause of frothy bloat, which comprises most bloating cases.

Bloat Theories Differ

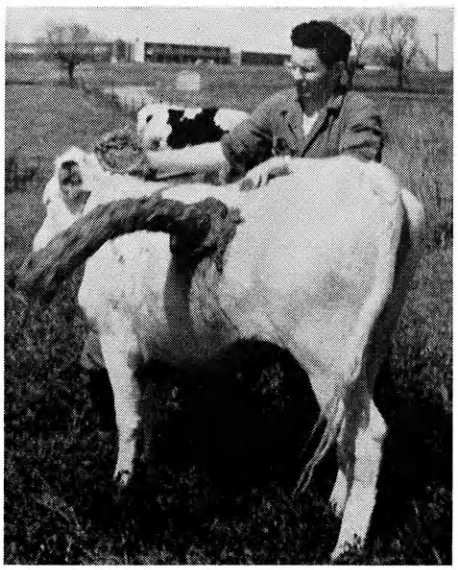
Exactly what causes bloat? Many theories as to the cause of this disorder have been advanced by both layman and scholar, yet no one idea has been proven true of all cases. Theories presented generally may be grouped under three main headings: physical causes, biochemical causes, and hereditary defects.

Leading nutritionists believe that any or all of several important theories may answer the question of cause. One of them believes that certain plants give rise to excessive gas formation, although the legumes don't always do this. However, they may cause an inability to rid the rumen of accumulated gas. Another idea is that certain lush feeds lack coarse stems and thereby have no scratch factor to stimulate belching. Some workers believe that like a few humans, some cows may be allergic to certain feeds. This allergy reaction may cause the rumen belching muscles to become paralyzed.

African Theory Tested

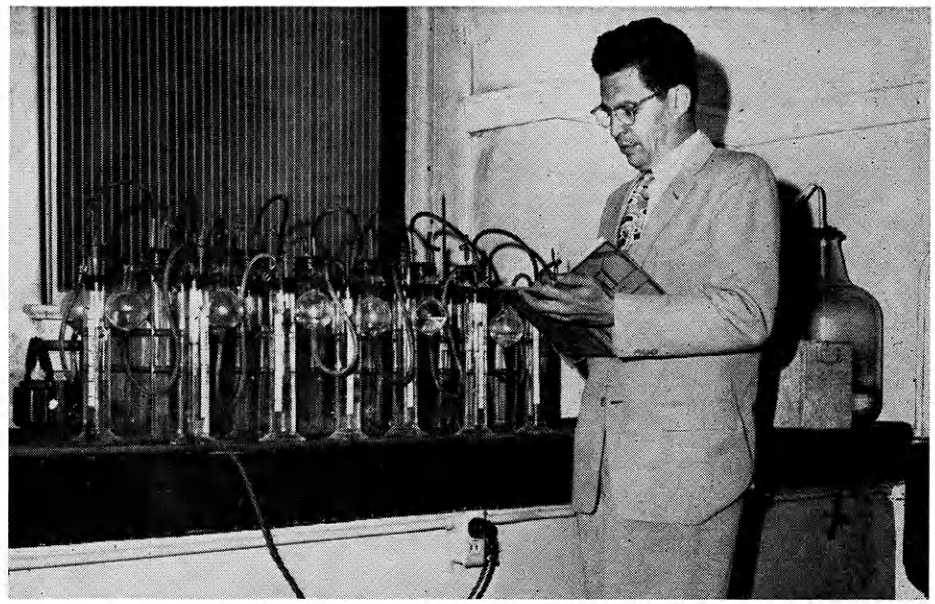
At Kansas State college, Dr. E. E. Bartley of the Dairy department is conducting research upon a yet different idea called the salivation theory. He is attempting to improve and modify a basic hypothesis originated by workers in South Africa.

Dr. Bartley uses a fistulated cow to get rumen samples of gases for experiments.



for Bloat

—*Controlled Bloating*



Dr. Bartley's artificial rumen or "test tube cow" was instrumental in finding ways to prevent bloat. He used different chemical compounds and concluded that mucin was best.

by Chester Peterson, Jr.

The South African conjecture may be summarized by stating that there is a correlation between salivation and bloat. Saliva is not produced in large enough quantities when tender grasses or legumes are harvested by the ruminant. This lack of saliva in turn tends to make the rumen contents much drier than normal. If less succulent and coarser feeds are eaten, the animal is stimulated to produce more saliva, and the resulting wetter rumen contents are less likely to produce gas. Also the animal releases this gas much more easily.

Although he insists that his research is still in the preliminary stage, Dr. Bartley has already made some important contributions to the salivation theory. Using cows from the Kansas State college dairy herd, fistulated identical twins, and a complex artificial rumen, he has found that when saliva is added to the rumen contents more gas is able to safely leave the rumen.

Dr. Bartley has discovered that mucin, a saliva constituent causing slipperiness, brings about virtually the same results as whole saliva. This fact was checked in the lab and with live animal trials.

Mucin Controlled Bloat

Using dry cows, half of which were fed a high mucin content feed, the results showed that about six untreated cows bloated to every one bloat case among the treated cows. The results weren't quite as favorable when lactating cows were used in the trial, although they were still conclusive. However, an important point to note is that when a treated cow in milk bloated, she recovered much more quickly than the untreated cows. This quick recovery is essential if peak production is to be maintained at its former level.

The real beauty of this plan lies in the fact that a feedstuff high in mucin is readily available to farmers in the form of linseed meal. This common concentrate may give protection at a cost of only four cents a day per head when fed at the rate of one pound daily. Unfortunately, the use of linseed meal presents another problem because it is a protein supplement, and an excess of protein in a ration will increase the frequency of bloat. Psyllium seed is a non-protein, high mucin content feed that could be used instead of linseed meal.

Cattle Most Troublesome

As stated before, cattle tend to be more troublesome about bloating than other ruminants because they are hungrier and have the ability to consume more feed. Also to be reckoned with is the economic fact that one cow is equal in value to many sheep. However, Dr. Bartley says he sees no reason why mucin-rich feeds could not be used successfully in sheep and goat rations too. Sheep were the first experimental animals to be used in testing the salivation theory in South Africa.

Bloat is a very complex and complicated disorder. Dr. Bartley is quick to add that there is no one single cause of bloat, because it is a "combination of angles" and, due to these many factors, there can be no one simple preventative method. He believes that his prevention procedure is 80 percent effective at best.

He illustrates this fact by saying that when 100 cows in an untreated herd graze on bloaty feeds, probably 10 head will bloat. If the cows are treated, then only two out of the 10 that are likely to bloat will, but it's very possible that those two may die. So, instead of a 10 percent loss the farmer may lose only 2 percent to bloat, but this could still cost him from $400 to $800. For this reason, the feeding of high mucin content feeds isn't a final answer to bloat control.

Foreign Research Agrees

Other workers both in this country and abroad share his belief that there are several different aspects to be treated simultaneously before bloat is controlled 100 percent.

To lay this situation right on the line, it can be said that we now have a partial control over bloat—but not a strangle-hold.

The Roman farmer of 2,000 years ago had no method for preventing bloat and so had to suffer lowered production and animal loss. Since there was no preventative he had to rely upon cures such as "pouring sour vinegar through the left nostril and putting two ounces of grease in the jaws."

Instead of trying to cure bloat by use of turpentine, drenches, insertion of stomach tubes, and "sticking," perhaps by using proper prevention the future Kansan will be able to avert bloat and its losses completely.

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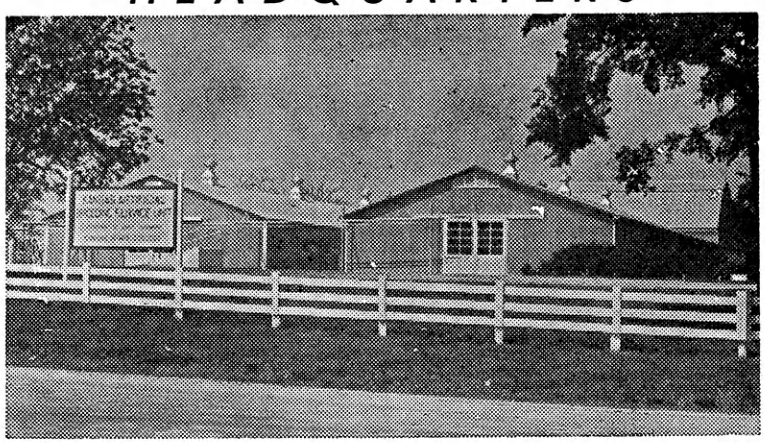

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VISITORS ALWAYS WELCOME

Hay Pellets

Revolutionize Hay Making

'Bale Bucking' on Way Out

by Ken Hylton

PROGRESSIVE agricultural engineers are working on a machine that may change the back-breaking job of putting up hay into just another "tractor seat" operation. The standard hay bale has been very effective in reducing the amount of space necessary to store hay but as most farmers and farm hands know, it takes a lot of sweat to fill a barn full of bales.

Now there's a new machine in the making that may once again revolutionize haymaking. The principle of putting up hay under pressure worked so well in the baling process that it is now being done on a larger scale, pressurewise, that is, and no strings or wires are attached. If the new idea proves successful, farmers may be able to get the hay crop into the barn without lifting a pound. Even feeding the hay could be a push-button operation.

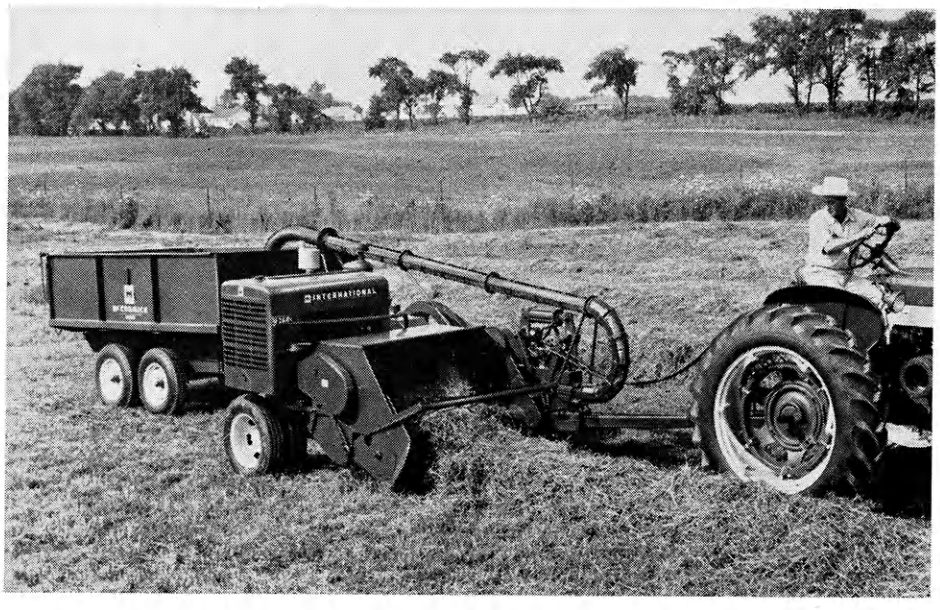
Pellets Made in Field

The new machine is an experimental hay pelletizer which will pelletize the hay in the field. The machine picks up hay from the windrow, compresses it into wafers, and delivers the wafers into a trailing wagon. The pellets can then be easily put into storage with a self-unloading wagon and an elevator. It is estimated that the pellets would require only about 40 percent of the storage space required for baled hay. They are about four inches in diameter and about two inches thick.

Labor-saving possibilities of this new machine are obvious. Many feeding tests are now being carried on to determine the increase or decrease of the feeding value of the pellets. According to Dr. D. Richardson of the K-State Animal Husbandry department, considerable testing has been done on pelleting the complete ration for sheep with excellent results.

Results of tests with cattle didn't look quite as good, he said. According to tests carried on at the University of California, the greatest improvement from pelleting occurred when poor quality hay was used. This was largely because of the poor gains shown in feeding poor quality chopped or baled hay. Poor quality pelleted hay may show nearly twice the gain obtained with the same hay fed chopped or baled.

The new in the field pelletizer, not yet on the commercial market, may be the answer to the back breaking job of lifting bales. The pellets will be easier to store and feed.



Problems Confronted

Development and perfection of the machine requires the solving of numerous problems, some of which are still being studied. Considerable power is required to develop the 6,000 pounds of pressure under which the pellets are formed. Working with pressure such as this also requires a machine with strong construction, making size and weight definite problems.

Two of the main obstacles to field pelletizing are the low moisture content, which is required before pelletizing is possible, and the leaf

(Continued on page 22)

Farmers Change from

'Go for Broke' to C

by Jay Workman

DO YOU want someone telling you what to feed your steers and when and where to market them? Do you want a guaranteed price per animal or a definite return per pound of gain? Or do you prefer to take your chances on markets and use your judgment on feed prices, buying time, selling time, and weather losses without any guarantees?

One alternative must be chosen. Vertical integration, or contract farming as it is sometimes called, offers security which the rugged individualists of yesteryear did not have in their "go for broke" farm enterprises.

Vertical integration is any arrangement which ties together various parts of an industry, so it operates as a unit from production through marketing. This includes outright ownership—mainly used in non-farm enterprises like automotive and petroleum industries—partial ownership, "package" contract arrangements, voluntary associations, and cooperatives. The main idea of contract farming is that the individual farmer-producer surrenders his right to make many, and maybe every, over-all management decision.

Integration Simplified

Suppose you are a processor. You take kabob, a crop, and make it into kalisches. Now kabob is a good catch crop if your grain sorghum is washed under and it is too late to replant. In only 40 days you can have a crop of kabob. Weather, then, plays a major role in its production.

As a processor, you would rather have a steady supply of kabob than an overproduction in years when other crops fail and no production during a good growing season.

With this in mind you make written agreements with the kabob raisers. If they will produce so many bushels of kabob, you will guarantee them a set price. Now you can promise your buyers a steady supply of kalisches. Everyone is happy: the farmer is promised a certain return for his investment; you are sure of the raw materials needed in your factory; and the merchant always has kalisches for his customers. As long as the farmer is satisfied with raising kabob this works fine.

What does integration really do? The farmer gains some security of market and/or income and may also receive credit or financing. Integrators take on added management responsibilities, gain greater control over volume, timing, and quality of production.

Equipment Utilized

It forces producers to increase the size of individual enterprises so labor-saving equipment and all resources are fully utilized. Low cost per unit of product and high output per man becomes increasingly important. Consequently, farmers tend to specialize. Competition is increased between specialized low-cost producers and farmers who are unable to make necessary adjustments. It could hurt small farmers, but they could fight integration by improving markets, building their own cooperatives, and making better use of research.

Uniform high quality pork carcasses give the customer desirable meat at a low cost.

Therefore, integration in agriculture may be regarded as a natural development. It has grown out of improvements in technology and industrialization that have brought vast consumer markets. These developments have caused this great change in the way farm products are grown and marketed.

This may sound completely new and different. It isn't. Now about 90 percent of the vegetables for canning and freezing are grown by or under contract to processors. Production of vegetable seeds and hybrid seed corn is highly integrated. Most field crop seeds, however, are not grown under contract, but cooperative seed-improvement associations frequently provide some supervision and standardization.

Contract production of sugar beets early became a universal feature of the industry. No farmer would grow sugar beets without assurance of a market outlet and terms of sale. No beet-sugar processor would be able to operate profitably without assurance of a sufficient supply of beets.

For a substantial number of cotton producers, market decisions are affected by credit extended by concerns engaged in ginning and cottonseed oil processing. In addition, farmer-owned cotton processing and marketing cooperatives represent a type of voluntary integration on the part of cotton growers. Contract farming is minor insofar as the management decisions of cotton production are concerned.

ontract for Security

Through Vertical Integration

Possibilities for contract production in major grains and oilseeds are limited mainly to minor varieties or types with special outlets. Government allotment and loan-storage programs for grains, however, have many characteristic patterns of contract farming.

Three types of vertical integration are employed in producing timber—industry ownership, industry-operator contracts, and cooperatives.

A number of business arrangements are found between dairy farmers and firms to which they sell milk. These include contracts between dairy cooperatives and their members and base-rating and similar plans. Many of these arrangements are on the borderline of contract farming. Yet, they may be the forms from which contract farming will evolve if it comes in dairying.

Hatcherymen, feed dealers, or poultry processors become integrators and may furnish feed, chicks, and capital. They may supervise production, with their fieldmen specifying what to feed and when and to whom to deliver finished product. The grower may be guaranteed a stated return per bird or pound.

Contract production has developed more in the poultry industry than in any other agricultural field. Broilers are almost entirely integrated, turkeys are partially integrated, and some contracting is taking place in egg production.

Vertical integration in beef cattle occurs chiefly in cattle feeding, and takes the form of contract or custom feeding. This practice arose from the need for financing. It is still the basis for custom feeding in the Corn Belt.

But the big growth in custom feeding is in the West, where the rapid expansion of population in the Pacific Coast states and changing preferences for more fed beef partly account for it. More important is the capability of the large commercial feedlot to mobilize the feed resources of an area.

Lambs are fed in some commercial feedlots in California, Nebraska, the Dakotas, and other areas. Several of the larger packers own some of these feedlots. Packers often contract the feeding of lambs on either a weight-gain or daily-charge basis.

Some of these arrangements were in effect before World War II. Contract buying of feeder lambs on the ranges has been practiced for some time. Lambs on the range are often sold in early summer at a price set by a firm for delivery in the early fall.

To give Jolene Sawyer, a consumer, better ham, contractors own all marketing phases.

In the old era of domestic agriculture, good harvests meant prosperity. The farmer had the goods he needed. In the new commercial agriculture, prosperity depends upon good prices and something of a crop, so that he can get the money he needs. An extra large crop has become more and more of a calamity to the producer and no particular advantage to the consumer.

World War II price supports and their postwar continuation was the longest period of guaranteed good prices the American farmer ever experienced. It made a social revolution in agricultural United States. Their spokesmen say it should continue. They say the public pays the laborer high, the manufacturer high, the banker high, and the farmer must be paid like the rest, or the glut will smash him again. He can't check the oversupply as the auto makers do.

Change to Specialized Farming

Farmers must change from diversified to specialized farming. By doing so they will become more efficient with labor and equipment. Farmers must make more and better use of all agricultural scientific research to help meet the price squeeze that may come with contract farming.

Whether it is through the futures market, agreements with private business concerns, contracts with farmer cooperatives, or some new type of operation, there will be more use of contracts to reduce the risks of farming.

But don't expect contracts to give you something for nothing. They are carefully written, and before you commit much time or money you should have a lawyer read the agreement.

C. Peairs Wilson, director of the K-State School of Agriculture, says, "There is some evidence vertical integration will develop. It is bad for the small farmer with little capital. Co-ops where the farmers control the system from farm to consumer are better, just so the farmer isn't the one who gets controlled. Power should be with the farmers as a group, not a chain store."

Modern Living Requires

The Woman's Choice

☐ Homemaker
☐ Working Girl
☐ Career Wife

by Mary Jo Mauler

YOUNG LADY—if you are planning on getting married, do you know that one chance in three you will be working sometime during your married life? In many cases, you may be working as many as 25 years during your life.

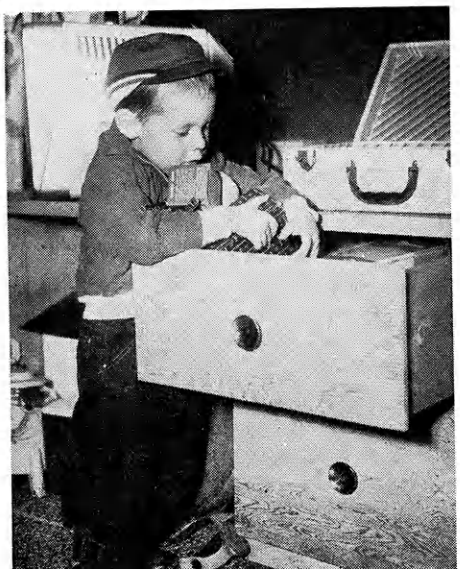
About half of you girls will be married by the time you are 20 and 90 percent of you will be married by the time you are 30. You will start working at about 17 or 18, after graduating from high school. When most of you get married, you want to keep working because you are experienced and feel that your family can use the added income. Wives often continue working so it will be possible for the man to finish his education.

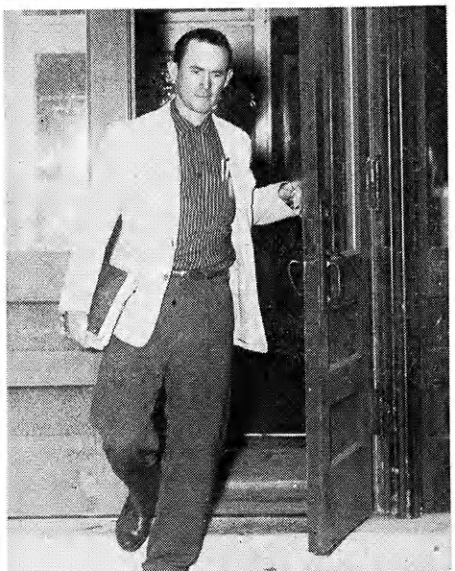
When the first baby arrives, the wife quits her job and makes home-making a full-time job until her youngest child is in school. With the improved nursery school, she can go back to work sooner. Nursery schools have personnel that are trained for this job, and she feels she can more easily go back to work.

Family relationship must be considered when you think about working outside of the home. Even when you are gone all day, a strong family relationship can be present. The

Breakfast of families where the wife works is often hurried, so the wife can get to work, the child to the baby-sitter and the husband to class.

The Cal Glenn family hustles every morning to get Charlene (left) to work, David to the baby-sitter, and Cal (right) to his class.





quality of the relationship is far more important than the quantity. In some cases, when the mother is at home all day, she and the children often become too equal, consequently when the father comes home, he is looked up to and thought to have the most authority.

Before World War II, 30 percent of all working women were wives, but presently it is 55 percent. The age of working women has increased. The total women between ages 45 and 65 have doubled in the past 10 years. Today, there are some 8 million women working who are 45 or older.

Extra Income for Luxuries

Probably the greatest reason why the wife goes back to work is that she feels the need for more income. The lady of the house can provide an average of $1200 a year supplemental income. This income can provide the family with luxuries, such as a newer car.

Another important reason why women want to work is that wives feel they are respected more if they work. All too often, people judge and are judged according to how much money they make. The wife may feel that if she isn't working, she isn't helping her family socially. Work outside the home is often more challenging than homemaking, so a wife can feel more worth while by working.

Women were more than a third of the three million students enrolled in our colleges and universities last fall. An all-time high of 1,065,000 women attended college, a rise of nearly 50 percent since 1951. Ten percent of the women students are married. A majority of the married women are attending school on a part-time basis.

Skills Require Education

The attainment of an education is important because the worker of tomorrow will need to be skilled. This group of highly educated people will increase more than one-third between 1955 and 1965. The professional group includes almost seven million, of whom close to 40 percent are women.

In the business world there will be an increase of one-fifth between 1955 and 1965 of people skilled in management. Sixteen percent of this group totaling 6½ million are women. Women now constitute more than two-thirds of our clerical workers, and over a third of the sales workers.

The growing population is going to call for more craftsmen, factory workers, and more personal and protective service employees, such as waitresses, practical nurses, and beauticians.

In connection with the working force of the future, it is important to know something of women's contributions. Statistics show that by 1965, women will provide more than one-half the additional workers expected. The education women are receiving is going to greatly influence their job-getting ability.

In 1957, there were more than 21 million women employed, two million more than during the height of World War II. The totals alone may be impressive, but most college women want to know more details about employment.

Opportunities Expanding

Are women making advances in new fields of science and technology? Women today are making advances in many fields that were once barred to them. In 1950, there were 6,500 women engineers, about nine times as many as there were in 1940; 7,500 women chemists, about four and a half times as many as in 1940; and 55,660 women accountants and auditors, some three times as many as in 1940; over 1 million women managers, officials and owners or part-time owners of business in 1958, more than twice as many as in 1940.

The American Association of University Women committee points out that a college education is not wasted even when a girl marries immediately after graduation. The higher education will be useful to her and society, because the country needs homes in which children are motivated to learn.

Women do a lot of work to serve their communities—through church or religious organizations, professional services, and educational or cultural groups. Women are also responsible for achieving good responsible governments. In 1957, 321 women were elected to State and 86 to Territorial legislatures, an increase of 23 over 1956, and a thousand percent increase over 1920, when 29 women were elected.

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Director's Desk

(Continued from page 4)

new uses for products. All four of these categories require knowledge of agriculture and agricultural products.

Not all farm boys will be interested in agriculture, as farm boys make just as good doctors, lawyers, musicians, ministers, or other non-agriculturists as does any other group. The Commission on Human Resources and Advanced Training reported in 1955 that 67 percent of professional workers' children attended college, 48 percent of white collar workers', 26 percent of skilled and unskilled laborers', and only 24 percent of farm children. Why should farm youth be less prepared, less informed than youth from the city?

If a farm boy has an opportunity to enter farming, a college education will increase his chances of being a successful farmer. If a farm boy will not have an opportunity to farm—and a large majority of them will not have that opportunity—then a college education will help him choose and prepare for a successful and satisfying career.

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Buying a Holiday Turkey?

by Ruth O'Hara

BIG turkeys, little turkeys, medium-sized turkeys—you'll see them all as you push your grocery cart past the meat counter this holiday season. While mentally squeezing your food budget to include the season's extras of fruitcakes, nuts, and candies, you may wonder, "What is the best turkey to buy for my family?"

Although fewer turkeys were raised in Kansas this year, 790,000 compared to 850,000 last year, prices compare favorably with the low turkey prices of last year, says Mildred Walker, consumer information specialist at Kansas State college.

If you're looking for economy, consider that the larger turkeys cost less per pound and have more meat per pound than the smaller birds. Given plenty of time in the oven at a low temperature the large turkeys will be just as tender and flavorful as the smaller ones, Miss Walker points out.

In choosing the size of bird for your family, consider how many persons you want to serve, how many servings for each person, and how many later meals you'll want to make of cold or made-over turkey.

Servings Available

Here are some figures to guide you in planning the number of average servings from each pound of turkey:

Ready to Cook, Pounds	Approximate Servings per Pound	Approximate Servings per Turkey
6	1.2	7
10	1.5	15
14	1.8	25
18	1.9	34
22	2.0	44

Remember that these are per serving and not per person, so you'll want to allow more turkey for seconds.

To take advantage of the lower price per pound of the larger turkeys, you can buy half or quarter frozen turkeys at most meat counters, says Harry Reed of the Kansas Poultry Improvement association. With the cut side down on the platter, the half turkey will be almost as attractive as a whole bird. In homes where Dad carves the turkey in the kitchen before Mom brings it to the table, the family won't miss the whole turkey—unless both youngsters start looking for a drumstick!

Janet Kuska of radio station KSAC buys a turkey for Christmas after studying sizes.

Turkey-by-the-part may surprise you, but this method of buying, available in many stores, may suit your needs, particularly for economical after-holiday meals. Although the price per pound of some part is more than that for a whole bird, remember there's a difference in the percentage of edible meat on the various parts.

According to University of Missouri figures, a whole large tom turkey yields 57 percent of edible cooked meat, while the breast meat yields 68 percent, the legs and thighs 62 percent, the backs and rib 45 percent, and the wings 47 percent.

Look for a bird with a broad, long, and meaty breast, and meaty legs in choosing a quality turkey, Miss Walker emphasizes. Look for a yellowish color, as this indicates streaks of fat under the skin. The fat is necessary for moist flavorful meat, and a bluish or reddish color may indicate a lack of fat under the skin. The young tender bird has a pliable skin and a flexible tip of the breast bone.

Your best guide to high quality is the grade. Of course, U.S. Grade A stamped on the turkey should indicate a plump bird of high quality. The inspection stamp is also a guide to quality, but is not to be confused with the grade stamp, explains Miss Walker, as poultry may be inspected but not graded.

Inspection of poultry by the USDA is available now, but will not become compulsory until after January 1, 1959, mentions Miss Walker.

Leave Bird in Wrapper

Keep the high quality of your turkey after you've brought it home. Gertrude Allen, extension food specialist at Kansas State college, recommends thawing the frozen bird by leaving it in the original wrapper on the refrigerator shelf for about two days before roasting.

The slow thawing helps prevent the breaking of the meat cells and consequently prevents loss of moisture, which would produce dry meat. Cooking the turkey as soon as possible after thawing is also important. Stuff the bird the day it is to be roasted, because stuffing the bird several days ahead of time can easily cause spoilage.

You'll want to keep turkey in mind when you're menu planning after the holidays, too. Turkey growers are continuing their work on breeding the convenient smaller sized turkeys. Mr. Reed points out that the 10- to 12-pound size bird is preferred by most homemakers.

Boneless breast rolls of turkey and boneless turkey steaks are new ways of processing which may be available soon at meat counters.

If you'd like a pamphlet of tips on cooking and serving turkey, send a card to The Ag Student Magazine in care of Kansas State college, Manhattan, and you will be mailed a copy.

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James Hess
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Fairlawn Swiss Farm
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AYRSHIRE

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GUERNSEY

Bertholf Dairy
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In the

Aggies' World

Quinlan Honored

PROF. L. R. Quinlan, ornamental horticulturist, will be one of two faculty men recognized and honored through the K-State lectureship program this year. Professor Quinlan has been on the staff since 1927.

He will be honored and will speak at a faculty dinner, February 24, 1959. He will also receive a $100 honorarium from the Endowment association.

The graduate faculty each year selects two members of the faculty to receive special recognition for their contributions to society.

Livestock Places at Royal

The Sheep, Swine and Beef cattle, entered in the American Royal by K-State, earned placings that include the following:

Sheep:
- 1st, 2nd, and 4th places, Suffolk fat lambs.
- 1st, 2nd, and 3rd places, Rambouillet fat lambs.
- 2nd place, crossbred fat lamb.
- 1st place, Rambouillet ewe lamb.
- 2nd place, Hampshire yearling ewe.
- 2nd place, Rambouillet yearling ewe.

Swine:
- 1st place, pen of heavy weight Durocs.
- 2nd place, pen of moderate weight Durocs.
- 2nd place, pen of lightweight Durocs.
- 4th place, Duroc get-of-sire.
- 4th place, pen of lightweight Poland Chinas.

Beef:
- Reserve Grand Champion, Angus female.
- 1st prize, junior yearling Shorthorn steer.
- 1st prize, junior calf Shorthorn steer.
- 2nd prize, junior yearling Hereford steer.
- 2nd prize, summer yearling Hereford steer.
- 1st prize, group of three Hereford steers.
- 3rd and 5th prizes, junior yearling Angus bulls.

Ag Mag to Convention

This year's Agricultural Colleges Magazine association convention at Columbia, Missouri, will be attended by 10 Ag Student staff members and one faculty adviser.

The convention is November 28 and 29. There are 15 college magazines in the association.

Those planning to attend are Fred Beeler, AgJ Fr; Loren Henry, AgJ Sr; Richard Vanderlip, TA Jr; Chester Peterson Jr., DH Sr; Karen Peterson, HEJ Jr; Larry Greene, HSp Sr; Lawrence Odgers, AgJ Sr; Don Miller, AgJ Sr; and Robert Jones, faculty adviser.

Last year's Ag Student placed first in general excellence, first in best cover contest, third in presentation of material of special interest to women, and third in popular presentation of technical material.

Tact: Making a blind date feel it's she you're sorry for.

"Ah," said the customs inspector, finding a bottle of whiskey, "I thought you said there was nothing but clothes in here. What do you call this?"

"My night cap."

Teen-age Daughter (as the radio ground out the final notes of the latest hit): "Did you ever hear anything so wonderful?"

Father: "Only once, when a truck loaded with empty milk cans hit a freight car filled with live ducks."

Beck Asked to Work for USDA

Glenn H. Beck, director of the Kansas Agricultural Experiment station, has been asked by E. T. Benson, secretary of agriculture, to become a member of the Dairy Research and Marketing Advisory committee of the USDA.

The committee makes recommendations on production and use of marketing research programs and educational activities that concern the various phases of the dairy industry.

The committee normally is composed of dairy producers, processors, and distributors, with only one representative of educational or research institutions. Beck's invitation, therefore, is to accept the responsibility of representing all educational and research institutions in the nation on this committee.

A bachelor is a college graduate who didn't have a car in his youth.

Everyone claims that it is better to be first, but did you ever stop to think that it is the last suitor that wins the girl?

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Shotgun wedding: A case of wife or death.

Patty: "Peggy swears that she's never been kissed."

Mike: "Well, that would make anyone swear."

Headline in a local newspaper—"Father of Ten Children Shot—Mistaken for Rabbit."

If all the automobiles in the world were placed end to end, some darn fool would try to pass them.

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Some of the loudest explosions have been caused by a small amount of powder on a coat lapel.—*Augusta Gazette.*

A young man staring into the mirror one morning, and noting his bloodshot eyes, decided never to go into a bar again. "That television," he muttered, "is ruining my eyes."

The farmer was trying to teach his young son not to be greedy. "Tommy," he said, "you're acting like a pig. Do you know what a pig is?"

"Sure, pop," replied the lad. "A pig is a hog's little boy."

Wholesale meat buyer: "Those hogs are pretty thin, mister. How do you keep them from running through the knotholes in the pig pen?"

Farmer: "I tie knots in their tails."

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."

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.

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

Prof: "I will not begin today's lecture until the room settles down."

Voice from the rear: "Go home and sleep it off."

An optimist is a guy who thinks his wife has given up cigarettes when he starts finding cigar butts around the house.

Puppy love is the beginning of a dog's life.

I think that I shall never see
A girl refuse a meal that's free
A girl whose hungry eyes aren't fixed
Upon a drink that's being mixed
A girl who won't forever wear
A bunch of junk to match her hair,
A girl who looks at boys all day
And figures ways to make them pay.
Girls are loved by jerks like me
'Cause who would want to kiss a tree?

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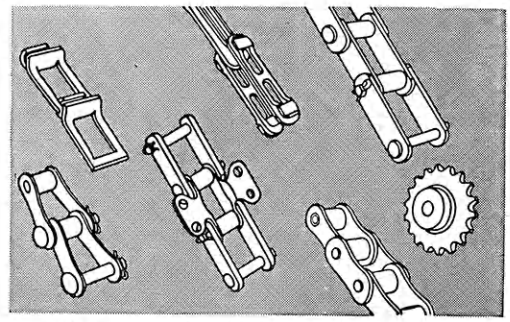

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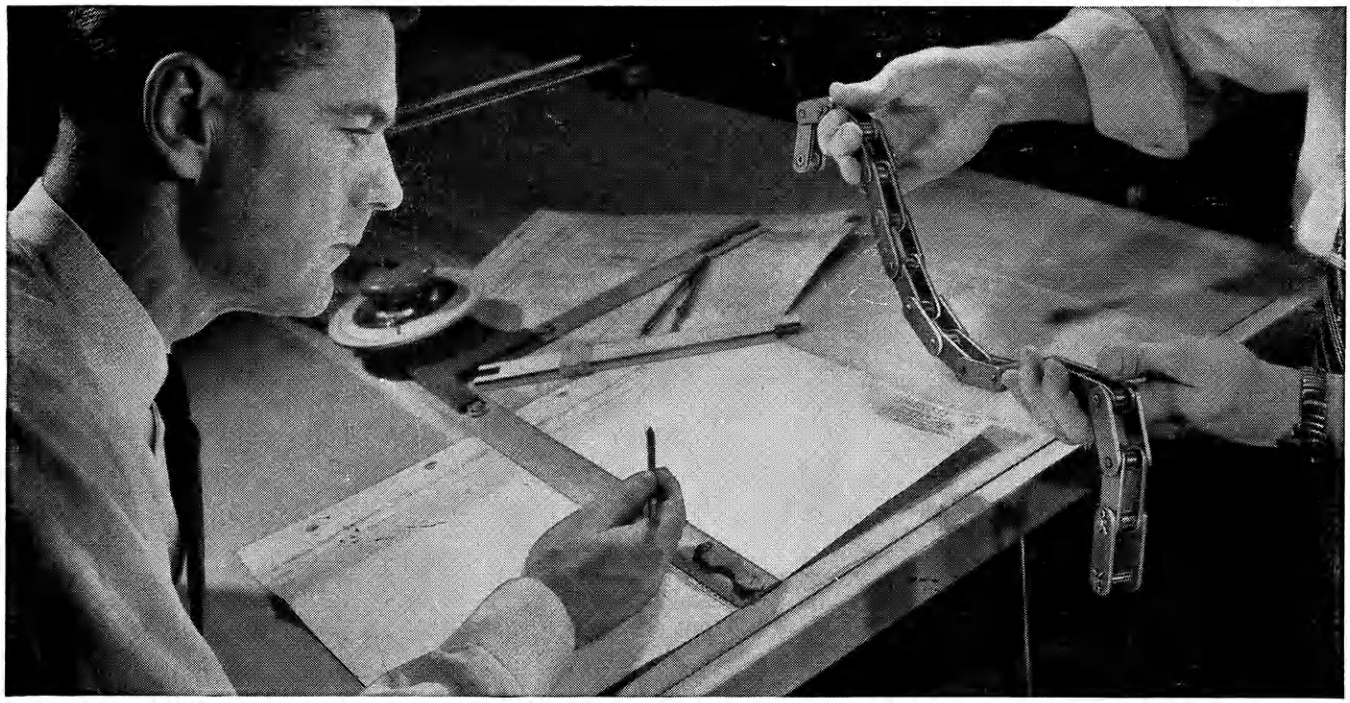

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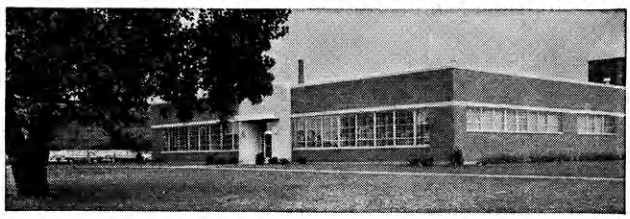
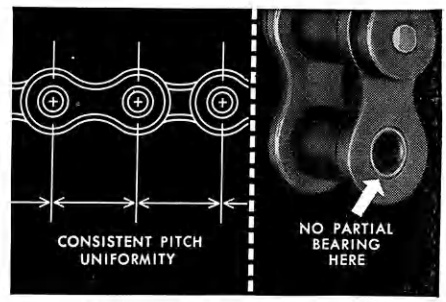


4. LABORATORY SERVICE — Every Link-Belt chain meets rigid uniformity specifications. And our laboratory, located at the world's largest plant manufacturing drive and conveyor chains, continuously seeks new ways to increase chain life.

5. BETTER DESIGN AND MANUFACTURE — Precision manufacture and close processing control assure consistent quality and unvarying pitch uniformity in every link, every time. Also, consistency of press fits adds to life of all Link-Belt roller chain. Lock-type bushings, which end a cause of stiff chain, are typical of design bonuses.



Look to the Link-Belt double-arrow >——< trademark when it's time for you to select chain . . . it's your assurance of quality backed by more than 75 years' experience in the manufacture of agricultural chain.

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CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

14,954

Hay Pellets

(Continued from page 11)

shatter losses that would result from working under such conditions. Up to this time it would appear that pellets could not be made from hay of greater than 17 percent moisture; however, information is not available on this subject from the makers of the newest machine.

Possibilities of adding other feeds to the pellets in the field are also being studied. This is done by the use of a hopper mounted on the pelletizer. Results of such experiments are not available as yet, however; this has been done with great success with stationary pelletizers.

Pelletizers Still Experimental

At present there are no operational machines for pelletizing hay in the field which are being sold on the market. So far they are strictly in the experimental stages. If the engineers are able to lick the many problems facing them at the present time, it would appear that the cost of such a revolutionary machine may be a limiting factor until volume production and sales can be obtained.

Dr. Richardson summed it up by saying, "Pelleting, from the standpoint of the total ration or just hay in the field, is still in the experimental stage. There is a lot of interest in it and I am certain that a lot of it will be done. Some of the results look promising and it will probably be used to a larger extent when the cost can be reduced."

Then there's the fellow who bred his parakeet to a tiger. He doesn't know what he's got, but when it talks, he listens.

Mother entering the room unexpectedly: "Well, I never . . ."

Daughter: "Oh, Mother— You must have!"

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COFFEE SHOP AND DINING ROOM

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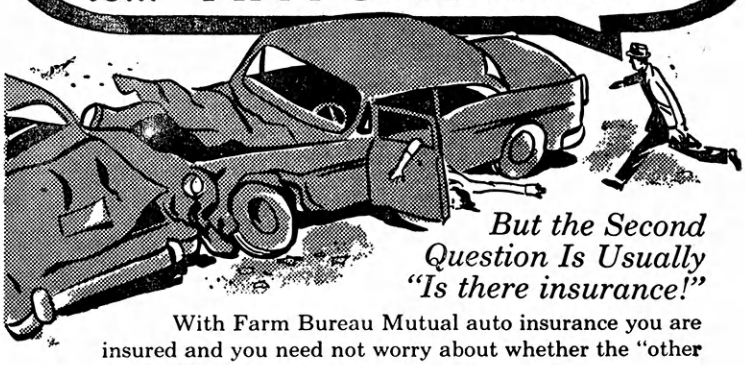
Smorgasbord on Sundays, 12 noon 'til 2 p.m.

The First Question always is... **"ANYONE HURT?"**



But the Second Question Is Usually "Is there insurance!"

With Farm Bureau Mutual auto insurance you are insured and you need not worry about whether the "other fellow" has insurance. Your Farm Bureau Mutual auto policy protects you from the uninsured motorist, gives you extended medical payments and is good wherever you go. See your local Farm Bureau Mutual agent today. Let him explain all the advantages.

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D-17 ***54 belt hp*** ***D-14*** ***35 belt hp***

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Good management, aided by the intelligent use of the most modern equipment available, is opening the door to higher income and better living for thousands of progressive farmers.

As a leading supplier of the machine tools of agriculture, Allis-Chalmers has made it possible for farmers to increase their yields while lowering labor and other operating costs, through the introduction of new machines and implements of the most advanced design.

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The Allis-Chalmers D-14 and D-17 Tractors help farmers to realize higher returns from all the *other* elements in modern farm management — such as quality seed, fertilizer, and resource conservation. They help farm families step up to better farming that brings better living.

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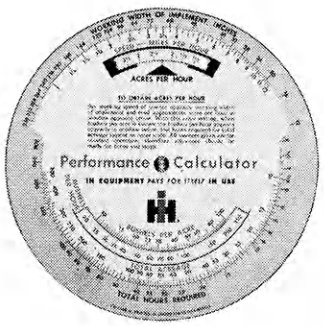
New International 340 Utility tractor equipped with new 3-point Fast-Hitch. You can get both Farmall and International 240 and 340 tractors with your choice of 2 or 3-point Fast-Hitch, and many other options.

NOW, faster 3-point hitching ...from the seat!



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Just move the dial on this pocket-size calculator to match tractor speed with implement width—then read off daily plowing, mowing, or harvesting capacity. You get the right answer fast . . . without figuring! Use this handy calculator to see how much more you can get done in a day with the greater power and *extra* job-matched speeds of new IH tractors. Get this handy calculator from your IH dealer!

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As with famous IH 2-point Fast-Hitch, you get up-and-down and side-to-side "float." Even wide implements work at uniform depth. Hinged lower draft links assure faster penetration—prevent shallow-out when crossing ridges.

You just set the handy Traction-Control lever to add up to a half ton of weight to tractor drive wheels. New Tel-A-Depth gives you easy, precise implement control.

This new 3-point Fast-Hitch—for Farmall® and International® 240 and 340 tractors—mounts most 3-point tools of other makes. For superior work, select 3-point implements from the *complete* new line of McCormick 3-point equipment. These tools fit practically all 2 and 3-plow, 3-point-hitch tractors.

Try new IH 3-point Fast-Hitch! Hitch or switch implements from the tractor seat. Do better work than ever before—even with your present 3-point tools! Check the *full* line of new McCormick 3-point implements. Just call your IH dealer for a field trial. Set a demonstration date today!

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