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MARCH 1963

Vol. 37/4

KANSAS STATE UNIVERSITY
AG STUDENT

Farm Ponds Serve Dual Purpose

page 10



Variety: the spice of life at American Oil

by Jim Koller

"When I was first interviewed by American Oil representatives I was told I'd be given a free hand in guiding a wide variety of projects. This promise has certainly been kept!"

Jim Koller, 25 years old, came to American Oil right out of the University of Wisconsin where he earned his Bachelor of Science degree in Chemical Engineering. An Evans Scholar at Wisconsin, Jim describes his job at American Oil this way: "I work on basic chemical engineering problems, specializing in reactor design and process development problems. Before a process can go commercial, it must be tested in pilot plants. That's where I come in." Jim wants to stay in the technical research area, and plans to enroll in the Illinois Institute of Technology night school for courses in advanced mathematics.

The fact that many gifted and earnest young men like Jim Koller are finding challenging careers at American Oil could have special meaning for you. American Oil offers a wide range of new research opportunities for: Chemists—analytical, electrochemical, inorganic, physical, polymer, organic, and agricultural; Engineers—chemical, mechanical, metallurgical, and plastics; Masters in Business Administration with an engineering (preferably chemical) or science background; Mathematicians; Physicists.

For complete information about interesting careers in the Research and Development Department, write: D. G. Schroeter, American Oil Company, P.O. Box 431, Whiting, Indiana.

IN ADDITION TO FAR-REACHING PROGRAMS INVOLVING FUELS, LUBRICANTS AND PETROCHEMICALS, AMERICAN OIL AND ITS AFFILIATE, AMOCO CHEMICALS, ARE ENGAGED IN SUCH DIVERSIFIED RESEARCH AND DEVELOPMENT PROJECTS AS:

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**STANDARD OIL DIVISION
AMERICAN OIL COMPANY**

KANSAS STATE UNIVERSITY AG STUDENT

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100 YEARS OF SERVICE TO KANSAS,
THE NATION AND THE WORLD

COVER: With land for outdoor recreational facilities becoming scarce, farm ponds are increasing in popularity as areas for winter and summer fun. They can be used for swimming and fishing in the summer, and ice-skating and hunting in the winter. Farm ponds can also be sources of water for the home, for livestock and irrigation.

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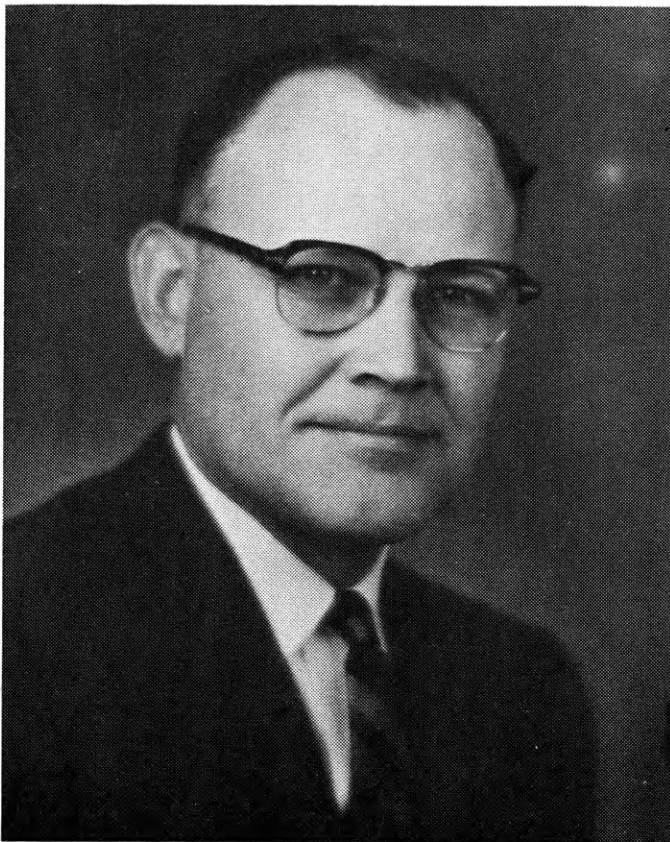
*Your
Cap and Gown
Portrait*

by

Studio Royal

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Harold E. Jones
Director of Extension

Careers As County Agents Often Overlooked

by Harold E. Jones

ONE of the most satisfying and challenging jobs in agriculture is often overlooked by ag students when the choice of a career is being considered. I am referring to the job of *County Agent*.

Few jobs in agriculture or industries related to agriculture can offer as many advantages as a career in the Cooperative Extension Service.

Academic requirements for employment as a County Agent are high. They must remain high because the nature of the work requires a high level of competency. The County Agent has one of the most respected positions in the local community. He soon finds himself filling an integral part in vital community activities.

The County Agent is a full-fledged member of the Kansas State University faculty, holding the academic rank of Instructor. At the same time, he is an employee of the United States Department of Agriculture. Finally he is an employee of the County Extension Council, an elected body of citizens who shoulder the responsibility of carrying out the local Extension program.

The County Agent is in a unique position in that he bridges the gap all the way from the national to county level. His major responsibility is that of taking the results of research to the people. He is a teacher. Approximately 15 young graduates are placed in such positions in Kansas Extension Service each year.

What does a career in the Kansas Extension Service offer the prospective employee?

1. It offers a position of importance with prestige. The County Agent is the agricultural *expert* in his county.
2. It provides a program of continuous training under the guidance of competent state and county personnel.
3. It offers a unique opportunity for graduate study leading to an advanced degree at practically no out-of-pocket cost to the employee. These opportunities include sabbatical leave and many scholarships and fellowships.
4. Salaries are comparable or better than related jobs.
5. Each agent earns one month of annual leave each year.
6. By virtue of his Federal appointment the County Agent is eligible to participate in the U.S. Civil Service retirement program. Also, he is eligible for partially paid health insurance protection.
7. The County Agent has sixty-seven subject matter specialists at Kansas State University, the entire resources of KSU and the United States Department of Agriculture at his disposal.
8. Opportunities for advancement are limited only by the agent's ability and initiative.

If you like to work with people, and have a real desire to do a public service for the people of Kansas, I can think of no greater opportunity than a career in Extension. Any member of the Extension Service Staff will be happy to counsel with you on opportunities in Extension work.

Want More Spare Time?

Practice Household Efficiency



by *Linda Kernohan*

EVER wish there were 25 hours in a day? Even if there were, some of us still wouldn't get everything done in our homes because we lack household efficiency.

Here are a few hints aimed at helping us improve our efficiency. Perhaps with practice, we could cut our housekeeping time in half and have time to do things we really want to do—instead of barely having time to get the necessary things done.

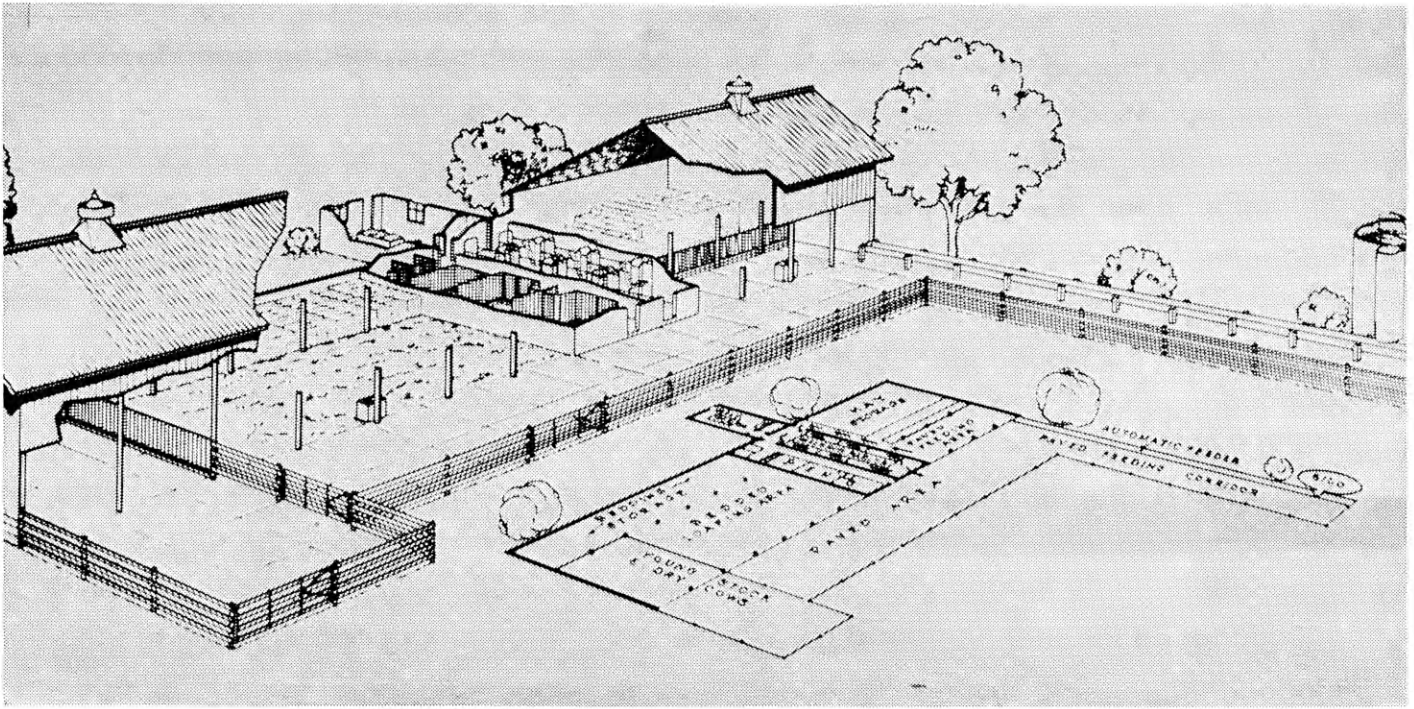
How often do you go grocery shopping? Keep a list of things you need or soon will need and do your shopping once or twice a week. This is more efficient—timewise and moneywise. Watch your newspaper for bargain days and shop early in the morning to get first choice of the weekly specials.

Is laundry sorting a major chore at your house? If it is, perhaps it's because you have an undivided laundry hamper that catches everything. New lightweight laundry carts come with three compartments—one for colored clothes, one for white ones, and one for hand washables.

Do you dust your window sills and hallway every day? This practice helps check dirt and dust at the source—before it has a chance to work its

(Continued on page 17)

Efficiency in the kitchen is achieved by washing all utensils in the dishwasher. Don't wash them by hand, too.



This diagram illustrates an efficient building arrangement for a dairy loose housing system.

Cut Dairy Operation Costs with

A Loose Housing System

by *Thayne Cozart*

IF YOU, Mr. Dairyman, are looking for a way to produce more milk, at less cost, with fewer man-hours of labor, perhaps you should take a closer look at a loose housing system for your dairy operation.

The loose housing system is a flexible arrangement of buildings and open lots, developed for efficient milking and management of dairy herds. Research by the dairy departments at Kansas State and other universities has shown that it costs less to produce a pound of milk in a loose housing system than it does in a stall housing system. Labor is reduced, cows are kept cleaner, udder trouble, stiff hocks and swollen knees are less-

ened, herd expansion is easier, and the danger of losing your herd by fire is reduced in the loose housing system.

A slight disadvantage of the system is that you are exposed to the weather more when doing outside chores than in a stall program.

A complete loose housing layout has six principal sections which you should keep in mind during planning and construction. They are (1) a milking plant, which includes a milking room, a milk house and a feed bin; (2) roughage and concentrate feeding facilities for cows and young stock; (3) storage space for hay, silage and bedding; (4) resting areas for adult and young stock; (5) maternity, hospital, calf and bull pens; and (6) an open lot. All of these facilities are necessary only in areas with cold or wet winters. Warmer,

drier climates may eliminate the need for some of them.

Have Plans Approved First

If you decide to build a loose housing system for your dairy operation, the first thing to do is consult a milk inspector for a local milk processing company to make sure that your plans will meet approval with sanitation codes and minimum equipment specifications. Taking this step will save you time and money by assuring that the job is done correctly the first time.

Choosing a site for your loose housing program is the next important step. The site should provide space for buildings, lots, driveways and turn-arounds for vehicles, and expansion. If possible, the ground should be well drained.

Most county agents or farm advisers have catalogs illustrating available plans. These men will also be able to give you an estimated cost of setting up the system.

Many Ways To Build Milking Plant

You may build your milking plant with concrete blocks, wood or metal, with concrete floors and stalls, and interior walls of washable material. Most milk plants in loose housing systems are built with elevated stalls to eliminate much of the back breaking labor involved in milking.

For larger dairy herds of 50 cows or more, a herringbone milk plant is the most efficient. A chute-type or U-type milk plant is suitable for smaller herds. Remember that the milk plant is your key to expansion. More cows can be managed by simply milking more animals in the available stalls. You can easily maintain good sanitation because the milking room is small, cows are in it only for milking, and cleaning facilities are convenient.

Separate Feeding, Resting Areas

In planning your loose housing system, keep feeding and resting areas separated. The feeding area may be located outside; however, if weather is inclement in winter, it should be under a roof. In this case, you may separate feeding and resting areas with boards or an electric fence. Construct the feeding area so you may clean it with a tractor and scoop. Store hay under a roof near the feeding area or in a mow above it. Either trench or upright silos can be used, but remember to keep feeders near by. If facilities permit, use self-feeders.

You will need 12 to 18 inches of feeder space for each mature cow if you feed roughage free choice. If you feed roughage in bunches two or three times daily, 24 to 30 inches of feeder space will be necessary.

If you can't afford to pave the entire lot, at least pave a ten-foot strip around the feed and watering areas. Also pave a strip to connect feeding and resting areas. Put a twenty-foot strip of concrete in front of the resting area, too.

This much pavement is necessary to keep cows exercising, eating and clean. In a paved lot, 100 to 120 square feet per cow is enough, whereas an area of 300 to 500 square feet

is needed on unpaved lots. Slope of the pavement should be one inch to every four feet.

Take care to provide enough roughage storage space. Locate water cups or tanks near the feeding area, but not in the resting area. One automatic cup is enough for 25 cows. Install anti-freezing devices if possible. Plan for enough lighting fixtures to insure adequate lighting for the entire feeding area.

Resting Area Should Protect Animals

The resting area should provide shelter from cold winds, snow and rain. The open front should be away from prevailing winds. Allow bedding and manure to build up in a three to four foot pack. Heat generated from the manure pack will reduce udder damage and keep cows warm. Maximum fertility of the manure is preserved in the pack, which should be removed before the fly season.

Most of the mud or manure on cows' feet will drop off onto the concrete slab in front of the resting area before the animals go in to rest. When constructing the rest area, remember to leave the front at least 10 feet high to allow for tractor manure hauling. Keep poles at least 12 feet apart to permit easy turning. All wood to be in contact with the earth or manure pack should be pressure treated with preservative.

The resting area should be nearly

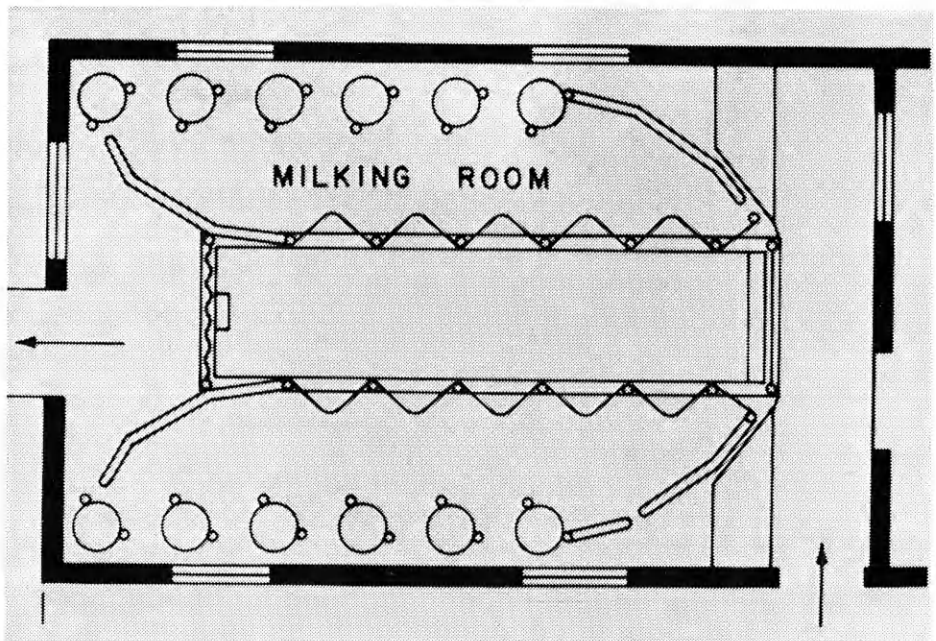
square, since space near the front does not provide good shelter. Experiment station bulletins recommend an area of 60 to 70 square feet per cow for large breeds. Bedding requirements will be affected by the length of the housing season, arrangement of buildings, space allowance per cow, climate and management. Provide sufficient space for bedding storage near the resting area.

Pens for young stock, maternity and hospital use, calves and bulls should be located near your loose housing system. Usually the calf, maternity and hospital pens are located in the resting area. Individual pens with 24 square feet of space are recommended for calves. One maternity pen for each 20 cows will be adequate. These pens should have 120 to 140 square feet of area. Construct pens with movable panels so adjustments for the manure pack can be made easily.

Costs May Vary

By now you are probably asking yourself, "How much will this loose housing system cost me?" Studies have indicated that all buildings, paved lots, equipment and an upright silo for a 25-cow herd can be built with hired labor for \$325 to \$350 per cow. This cost can be recovered in a few years in increased production, reduced labor, reduced veterinarian expenses and in overall herd thriftiness.

A herring-bone milk plant is more practical for dairy herds of fifty or more cows. Construction costs are comparable to those of other types of milk plants.



K-State Researchers Say

A Well-Managed Woodlot

Can Boost Your Income



This well-kept woodlot will soon be ready for selective cutting. Its owner will be able to harvest many more crops from it, by using proper management practices.

by James Brink

IF YOU have a woodlot on your farm, you may be able to supplement your income by managing the lot properly. A forest tree improvement project at Kansas State University, now in its third year of a five-year initiating period (time for gathering and planting seeds), indicates that Kansas farm woodlots have great potential.

Kansas ranks high in walnut veneer production, producing one and a half million board feet a year. Cooperage wood (used for barrels), post and pole industries are also important in Kansas. About \$25 million worth of logs are produced in Kansas annually.

K-State researchers are studying a few selected species of trees, trying to find superior individuals which can be propagated. The project is being carried out in conjunction with nine other states in the North Central Region, and the United States Forest Service.

Researchers in each state of the region study several species, but not

every one under regional observation. In some cases, geographic origins of species from other states in the region or elsewhere in the United States are being included. This is a long-range program because many years are needed to observe the growth of progeny and to propagate desired characteristics.

Select, Make Genetic Study

The research program consists of two integral parts. First, researchers must select superior trees, observe them and propagate from them trees with disease resistance, drought resistance, superior form and high wood quality. Second, researchers make a genetic study. The propagation of selection material can be accomplished in a relatively short time as contrasted with the genetic study.

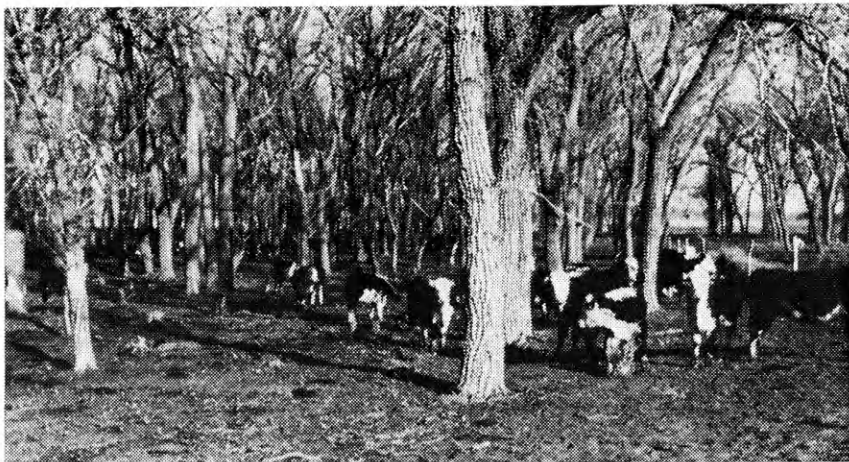
Paul Roth, research forester at Kansas State University, has initiated 20 origins of Austrian pine, 30 origins of Scotch pine and 37 origins of Red oak. He plans to initiate Ponderosa pine, Cottonwood, Black Walnut, Eastern Red cedar and White pine, too.

Regional researchers have established a five-year initiating phase for gathering seeds of species to be studied and growing them in a nursery. The men observe seedling growth and select desired characteristics. They eliminate trees that lack disease resistance, drought resistance and sufficient vigor. They also cull trees that die or deteriorate after a few years' growth.

Investigators observe a series of precautions in initiating work on a species. First, they select ten trees from one native grove, collect acorns or pine cones, and keep them separate for individual study. They send all seeds of a single species to the state working as initiator and nursery propagator. They must be of native origin and from a pure line. Progeny from desirable origins are sent from the initiating state to all cooperating states.

Strive for Maximum Value Trees

Purpose of this research is to discover and establish trees with maximum economic value. Pines are being considered as sources of saw logs, posts, poles, piling, pulp wood and Christmas trees. Red oaks are being studied as sources of timber crops and ornamental trees. Cottonwood trees



Cattle should not be allowed to graze on acres you plan to use for growing timber.

may become an important pulp wood source, since they may be grown easily and rapidly.

Kansas has approximately two million acres of land best suited for growing timber. About 1.63 million acres of land are in timber now.

Several Reasons for Low Production

Less than 10 percent of Kansas farm woodlots are managed. Overcutting, grazing and burning have depleted many timber stands. In some cases, valuable species have been eliminated. "Farmers must realize that they cannot graze cattle and grow timber on the same acres," Roth stated.

Insects and disease have taken their toll in productive timber, too. But, recent losses to Dutch Elm Disease may be a blessing in disguise for Kansas farmers with woodlots, Roth feels. The disease killed only elms and provided an excellent opportunity for regeneration of more valuable species.

Some of the management practices that you may start with are poisoning and girdling weed trees, wolf trees and cull trees (trees with fire scar, dead trees, forked trees and crooked trees). Determine the proper number of trees suitable for each acre of land, then employ a selective cutting system by taking only economically mature trees periodically. Most farmers tend to allow stands to become too thick and full of low-value species. They cut higher value trees before they are economically mature.

Plant timber on inaccessible, small or isolated acres which are too rough to facilitate growing other crops. Areas subject to flooding or with shallow topsoil are also ideal spots for timber stands.

Your time would be about the only investment you would have to make in a woodlot. You could work in the woodlot when weather becomes unfavorable for other farm work.

If well managed, timber is a renewable, non-perishable crop, which replenishes itself. Little fluctuation has occurred in timber markets and uses during the past 15 years. "A good practice is to always sell timber by bids," Roth warned. "That way, farmers are insured of getting best prices for their product."

You might double income from your woodlot by leasing it for recreational purposes. Perhaps you can use home-grown timber to make farm building improvements. On the average, you can reduce the lumber bill to about one-fifth in actual cash outlay by using products from your own woods. "Farmers often fail to realize the value of the wood they use on the farm, particularly if it has not gone through a dollar exchange," Roth remarked.

Comparable to Other Cash Crops

Christmas trees are an example of a timber specialty crop, which can compete with other cash crops. For amount of investment and time involved, it would be hard to beat timber as a supplemental cash crop.

If you want more information on how to establish and manage a woodlot, write to Kansas State University's Extension Service. Among bulletins available there are: "Logging Farm Wood Crops," USDA Farmers' Bulletin 1210; "Managing the Small Forest," USDA Farmers' Bulletin 1989; "Measuring and Marketing Farm Timber," USDA Farmers' Bulletin 1210.

Farm Ponds

Serve Dual Purpose



This pond is built correctly. Rocks in spillway and grass on dam prevent washing.

by John Wiechman

AREAS for outdoor recreation are becoming scarce in the United States. Farm land is one of the few places left for hunting, fishing and other outdoor pastimes. One of the most enjoyable recreational facilities on a farm is a pond. It can be used for swimming and fishing in the summer, and ice-skating and hunting in the winter. Many of us, however, do not realize the potential of a farm pond. Esthetic value is not the only asset of a good farm pond.

A well constructed and managed pond can be a great help to you. It can serve as a water supply for livestock and be used for limited irrigation, too. The pond is also a good water supply for the farm home.

Dr. O. W. Tiemeier, associate professor of zoology at Kansas State University, has made a study of several farm ponds in Kansas. Tiemeier said that many of the older ponds were not properly planned or constructed.

If you're thinking about building a farm pond, make careful plans before you start construction. Consider the cost first in planning and building. The earth fill will be the most expensive part of the pond. Construction costs will average about 20 cents per cubic yard of earth moved. Check with a commercial construction or earth-moving company to get more accurate cost estimates for your area. Most firms have the equipment and experience to build earth fills. Size of the pond will determine the total cost.

Take Care in Choosing Site

Choosing the proper site for your pond is very important. It should not be constructed where the soil has too much sand or gravel in it, as seepage would be hard to control. You can retard seepage by adding bentonite at the rate of 100 pounds per 100 square feet of pond bottom. You may also line the pond with polyethylene and vinyl sheets of plastic film. However, these methods are costly, and you should not need them if you correctly place your pond. A natural valley or ravine would be an ideal site.

Size of your pond will depend upon the drainage area and availability of a site. Dr. Tiemeier recommends that a pond have at least three-fourths of an acre and not more than three acres of surface. Make your pond deep enough to supply sufficient water in dry seasons. In western Kansas depth should range from 12 to 14 feet; 10 to 12 feet deep is sufficient in the eastern part of the state.

Avoid Seepage, Build Dam Properly

Be sure to properly construct the dam for your pond to avoid seepage. Remove about six inches of topsoil from the dam site. You will use this topsoil later to help establish vegetation on the spillway or top of the dam. Next, dig a trench, about the width of a tractor blade, in the center of the dam, at least four feet below any porous soil. Fill the trench with moist clay and pack it down. The fill will be more compact if you add about six inches of clay at a time. Add about 10 to 15 percent of the height of the fill to allow for settling.

You can reduce erosion on the spillway by installing a trickle tube. Place the tube low enough to keep water from running over the dam,

but high enough to maintain optimum depth. A drainage pipe, complete with a shut-off valve, connecting the pond with a tank will enable you to water your stock. This will keep cattle from trampling down the dam and pond area, which would result if they drank directly from the pond.

Remove vegetation growth from your pond. If allowed to grow, vegetation will make the pond undesirable for fishing and swimming. You may want to plant shade trees and small shrubs around the pond. These will provide cover for wildlife and shade for your picnics or other recreational activities. Keep your pond fenced off from cattle. Livestock can make an unsightly mudhole out of it in no time.

Water Clearness Dictates Species

Stocking your pond with suitable fish will give you and your family many hours of pleasure. The species of fish you stock will depend upon how clear the water is. Channel catfish will do well in muddy water, but bass and bluegill will not, as they are sight feeders. You can tell whether your pond is suitable for bass and bluegill by putting your arm into the water up to your elbow. If you cannot see your fingers, bass and bluegill will probably not do too well.

According to Dr. Tiemeier, channel catfish do well in either cloudy or clear ponds. Fishing would be better in Kansas if more channel cats were stocked. Keep carp and other rough fish out of your pond. Muddy ponds can be cleared somewhat by adding agricultural gypsum. Green vegetation will clear a pond in about 14 days, but do not let it grow too thickly.

Careful management of your pond is essential for good fish production. Be sure your pond is fished enough to keep overpopulation and stunting from occurring. Fishing is ruined quicker by underfishing than by overfishing. Ammonia compounds excreted by the fish will stunt reproduction and growth in an overcrowded pond, even if plenty of food is available.

You can reduce overpopulation by increasing the food supply. Do this by using fertilizers, or flooding food-producing land. Take care when using fertilizers; too much vegetation will decrease the oxygen content and



A poorly planned farm pond eventually turns into a stagnant puddle like this.

provide hiding places for food fish. When this happens, your fish can die of starvation or lack of oxygen.

A good farm pond is characterized by having many predators; intensive, but non-selective fishing; presence of both herbivorous and carnivorous fishes; no dominant population of any one kind or year class; and the absence of large populations of forage or rough fish such as carp, shad and bullheads.

May Stock Pond with State Fish

Fish for stocking your pond may be obtained from the Forestry, Fish and Game Commission at Pratt. You should make your request by September 1, for deliveries are made from September to December. Each district is visited only once each year. However, the Commission will not stock old ponds unless they have been drained and all fish removed.

A pond can be an asset to your land. Through good planning and management it will provide many hours of recreation and relaxation. The cost is low compared to the pleasures it will provide. No one can deny the beauty of a well-cared-for farm pond.



Prof. C. O. Johnston, who has spent many years conducting research on wheat leaf and stem rusts, writes down observations on another research project on which he is working.

Still Combating Wheat Rust

by *Mary Rendleman*
and
Lloyd Moden

NEARLY seven and a half million bushels of wheat were destroyed by rust last year! Stem rust took a toll of seven million bushels and leaf rust destroyed another 370,000 bushels.

Crops in northern Kansas were hit hardest by the rust, because weather conditions were favorable there.

Is anything being done to combat spread of wheat rust?

Yes, C. O. Johnston, Kansas State University professor of botany and plant pathology, said, "I've spent a lifetime fighting it and even now we are only a couple of jumps ahead of

the parasite, which has been a pest to growers since Biblical times."

There are three rust organisms—black stem rust, leaf rust and stripe rust. The first two occur in Kansas nearly every year, but stripe rust develops only rarely. When they occur in epidemic proportions, stem rust is more destructive than leaf rust, but the latter often causes serious losses.

What is wheat rust and where does it come from?

Wheat stem rust has an alternate host in the common barberry. In early spring, the black rust spores on old straw germinate and infect barberry plants, especially in the northern part of the United States. Spores then spread from barberry to nearby wheat. The important source of rust in Kansas is spores blown into the state from the South in late spring.

Late in May, infections may show up on your crop.

All cereal rusts have two kinds of spores in early spring. Aeciospore, one kind, does not infect your crop but does cause rust. The other kind, the red spore called urediospore, gives wheat rust its characteristic red color. These spores are parasitic on wheat tissue. They feed on materials which supply the wheat grains with starch. The lack of starch causes grains to shrivel, but seldom damages their protein content. Approximately 250 races of wheat stem rust have been discovered, but only a few are prevalent in the United States.

Leaf rust has the same general characteristics as stem rust. Spore color is nearly the same as that of stem rust, but damage is principally to the leaves. The alternate host of leaf rust is a species of *Thalictrum*, commonly

called Meadow Rue. Kansas species of Meadow Rue are resistant and play no part in the propagation of leaf rust. Spores causing leaf infections are blown into Kansas from the South, usually arriving a few days earlier than stem rust spores.

KSU National Research Center

Kansas State University is the national center for research on leaf rust. Johnston, who has been employed by USDA since 1919 to do cereal rust research, analyzes between 250 and 350 samples of leaf rust each year, to determine which of the 185 races are the most prevalent in various parts of the U.S. His recommendations help to develop wheat varieties that are resistant to those particular races of rust.

K-State is also headquarters for certain international activities. Thirty years ago, Johnston, and a few other researchers, compiled the first "International Register of Physiological Races of *Puccinia recondita*" (wheat leaf rust). Every five years, Johnston revises the pamphlet, which is published by USDA.

At present, the most practical way you can control rusts is to plant resistant varieties. This method has been in use in Kansas for many years and has met with considerable success. The variety Kanred has some

resistance to both rusts, while Kawvale, Pawnee and Ponca have high resistance to some races of leaf rust. In 1960 two new varieties, Ottawa and Kaw, were released to Kansas farmers. They were bred at K-State for resistance to both rusts and they give promise of much protection for your crop.

These wheat varieties may not always be resistant to the plague of leaf and stem rusts. In time, the damaging organisms could overcome the resistance of the wheat in some manner, as the housefly has become immune to DDT. This would be accomplished by mutation or hybridization in the fungus.

Johnston and K-State researchers are constantly working to find a variety of wheat that has rust resistance qualities and other desirable characteristics, to replace those which lose resistance. This can be accomplished by joint efforts of plant breeders, plant pathologists, entomologists and millers.

Need 12 Years To Breed a Variety

Approximately 12 years are needed to breed a variety of wheat with desirable qualities. It is often necessary to cross these with other varieties in order to find a satisfactory new wheat variety for farmers to use against the age-old fungus. Thus, modern Kan-

sas wheat varieties are very complex in nature. Ottawa, for example, has six varieties in its parentage. Wild grass relatives of wheat are even being used in crosses as sources of rust resistance.

Johnston said sulfur can protect the wheat, but it would have to be spread on the crop in large amounts and would have to be replaced immediately after every rain because it does not adhere to the plant and is readily washed off. Johnston noted that some sprays are effective, but must be applied by airplane and special equipment to achieve complete coverage. The enormous acreage of wheat in Kansas poses a very difficult problem for the control of rust by chemical means.

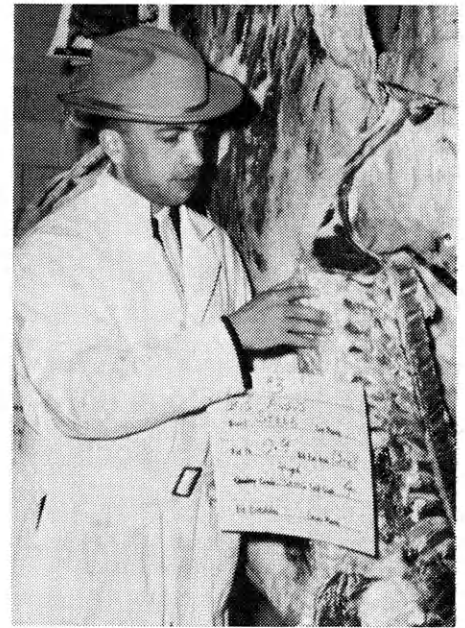
Ideal Control Not Yet Developed

According to Johnston, the ideal protection, other than a resistant variety of wheat, would be to use a chemical which could be sprayed on the crop in minute quantities. This spray would be absorbed and result in systemic resistance to the rust. The spray would have to enter the plant through its roots or leaves and spread throughout the plant. K-State and several chemical companies are working to develop this ideal spray, but the method will probably not be used on large acreages in the near future.

This shows the comparison of rust-infected wheat stems and kernels (right) with uninfected wheat (left).



Live Animals Reflect Carcass Quality



Prof. Don Kropf checks the carcass of an Angus steer for indications of high meat quality and high percent cuttability.

by Dan Bonine

BUYING the right livestock doesn't always mean buying at the lowest possible price, but it means buying the right kind of animals. Do you know what you are producing? Does your livestock have quality?

Take a close look. For example, in beef cattle, quality refers to smoothness and refinement. Look for animals which are smooth and trim, with medium bone, pliable hide and

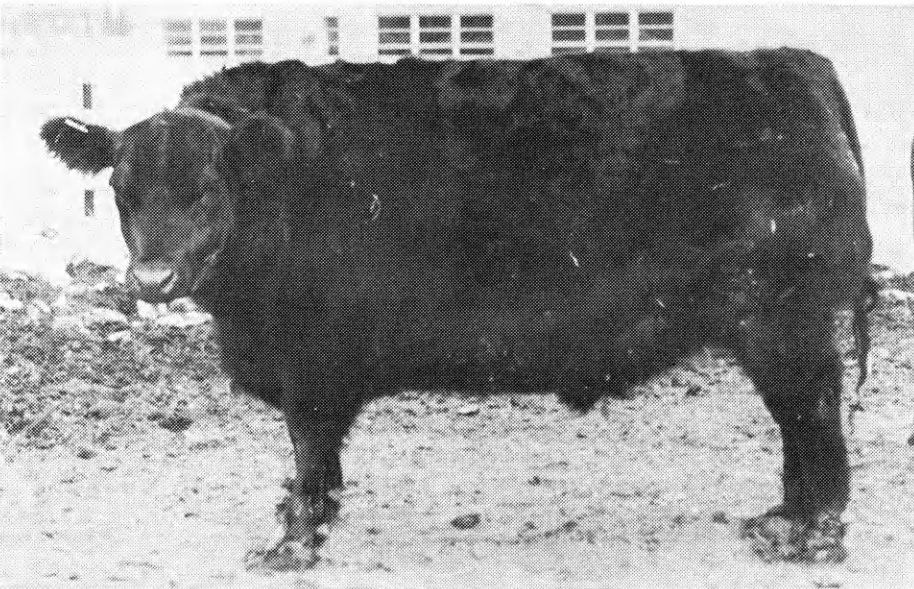
a fine, soft hair coat. The fleshing should be smooth and even. In the last 50 years, researchers and producers have been able to improve the type of livestock produced. Type combines all the characteristics that add to the beef animal's value and efficiency.

Today concentration is on improving the quality of meat animals. Look especially at the parts where we get the high-priced cuts. Ham, for example, the most expensive retail cut on a hog, should be deep and thick. It should be firm and meaty.

The ham should also be smooth, and extend well down onto the hock. Quality hogs have firm finish, smooth and free from wrinkles and flabbiness.

External fat covering is the best indication of quality meat which you can observe in evaluating the live animal. As a producer you can select and breed for quality animals to meet the consumer demand for leaner meat. Become familiar with the qualities desired by the consumer—tenderness, juiciness and flavor. Become skilled in evaluating animals by sight and handling them to check your observations. Finally, develop an attitude for quality meat. Consumer demand for leaner cuts of meat has made the producer select and breed for meat quality, animals that are more heavily fleshed and can be marketed at an earlier age, thereby reducing the fattening period.

Animals in the lot should have conformation characteristics indicating meat quality.



Ask Packing Companies for Help

Experience can be gained in evaluating your product by following your animals to market. Generally packing companies are willing to furnish carcass data on your animals, and often act as consultants to the producer. Packing companies use a dual grading system in which they place emphasis on both cuttability (percentage of lean to fat) and quality. The rib eye shows 95 per cent relationship to grade. This example illustrates the importance of obtaining

carcass information on the animals you market. Packers and producers can work together to raise superior meat-type animals.

Progeny testing, feed efficiency testing and carcass evaluation of an animal will be required to find strains that produce more tender meat. Through training and experience in analyzing carcass data, you can achieve a degree of accuracy in estimating the monetary value of meat an animal will produce. Live animal quality can't always be predicted by analyzing carcass datum from a related animal, for heritability results in differentiation. The characteristics of quality, however, are highly heritable and therefore carcass data is your best guide for improving quality of the meat you produce.

Many Elements Determine Quality

What quality elements are desired? The color of the lean should be cherry red; the meat should have a smooth, velvety texture, and be firm to the touch, and there should be an abundant amount of marbling, or intermingling of fat among the muscle fibers. Marbling is largely responsible for the aroma, juiciness and flavor of the meat we eat.

People frequently remark, "That's sure a nice-looking bunch of calves," merely because the animals are uniform in size and have good color markings. The consumer has only the color, marbling and texture of the meat as indications of quality. Americans are quality minded. You must breed and select your livestock to produce quality meat.

KSU Helps in Nation's Education

The meat industry is the nation's third largest industry. Kansas State University has a big role in that industry. The University is doing research in the fields of meat production and making the results of its research available to the producers through extension publications and University-sponsored meetings such as Livestock Feeders' Day, FFA Convention and Kansas Sheep Breeders' Day.

Kansas State University also helps future meat producers by providing students with opportunities to gain knowledge in meat production, as courses are offered in animal selection, production, nutrition, marketing and processing.



Faculty, Student News



Fifteen faculty members have been asked to serve on the Curriculum Committee for the School of Agriculture for the current year. They are:

Dr. Keith Huston, dairy science; Dr. Don Good, animal husbandry; Dr. Art Hobbs, agronomy; Dr. John McCoy, agricultural economics; Dr. Jack Fry, poultry science; Dr. Bill Carpenter, horticulture and landscape architecture; Dr. Harry Pfost, milling; Dr. Earl Hansing, plant pathology.

Dr. Willard Ruliffson, biochemistry; Dr. Hugh Thompson, entomology; Prof. Gus Fairbanks, agricultural engineering; Prof. Elbert Macy, agricultural journalism; Dr. Ray Agan, agricultural education; Dr. Curtis Trent, extension; and Dr. Erle Bartley, academic affairs.

Dr. Huston is acting chairman of the group and Assistant Dean Frank Carpenter is serving the committee as secretary.

This committee serves in an advisory capacity by studying changes proposed by staff members and suggesting alterations in curriculum.

Advisers and chairmen for Ag Science Day and the Little American Royal have been selected. Steve Robb, dairy science senior, is student chairman for activities on Ag Science Day and Dr. Ray Keen, horticulture, is faculty adviser for that event.

John Stuckey, dairy science senior, is student chairman for the Little American Royal. Dr. James Morrill, dairy science, and Prof. David Mackintosh, animal husbandry, have been appointed co-faculty advisers.

Prof. Raymond Agan, ag education, has been chosen to participate in a Carnegie Foundation project in Costa Rica.

Working through the University of Kansas, the Carnegie Foundation is sponsoring a team of educators to go to the University of Costa Rica at San Jose to deal with the higher education program there. The team hopes to help solve problems and advance that university's program.

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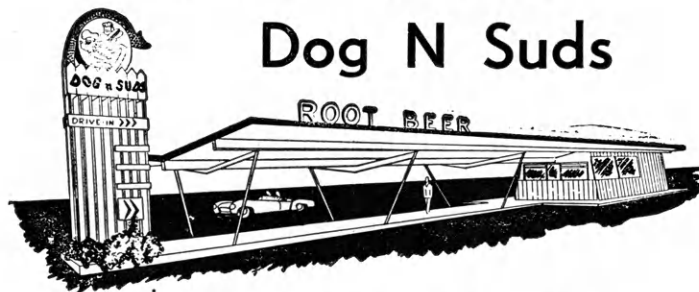
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Dairy-Poultry Building To House Most Modern Research Facilities

by Kenneth Redetzke

HOW MANY times a day do you eat poultry or dairy products? With a little thought, you will realize that you eat these products in some form at or between almost every meal. Popularity of these products has increased because of more advertising and variety.

Kansas State University is meeting this challenge of the food industry by providing more adequate instructional and research facilities for students studying in the dairy and poultry fields.

A new dairy-poultry building, now under construction, is designed with the most modern research and teaching facilities. When completed, it will be the most advanced dairy manufacturing building in the country.

Bring Departments Closer Together

The building, being constructed near the Animal Industries building, will facilitate closer union of dairy and poultry departments so they may share laboratory facilities, classrooms and libraries. The location will place the research centers closer to field projects, such as dairy barns and feedlots, broiler and laying houses.

The dairy industry in Kansas is important to the state's economy, being the third largest agricultural industry in the state and averaging well over \$100 million annually. Kansas ranks high among the states in the value of dairy products pro-

duced, yet it and Arkansas are the only states in the Midwest which do not have a separate building at their Land-Grant institutions, for instruction and research in dairy husbandry.

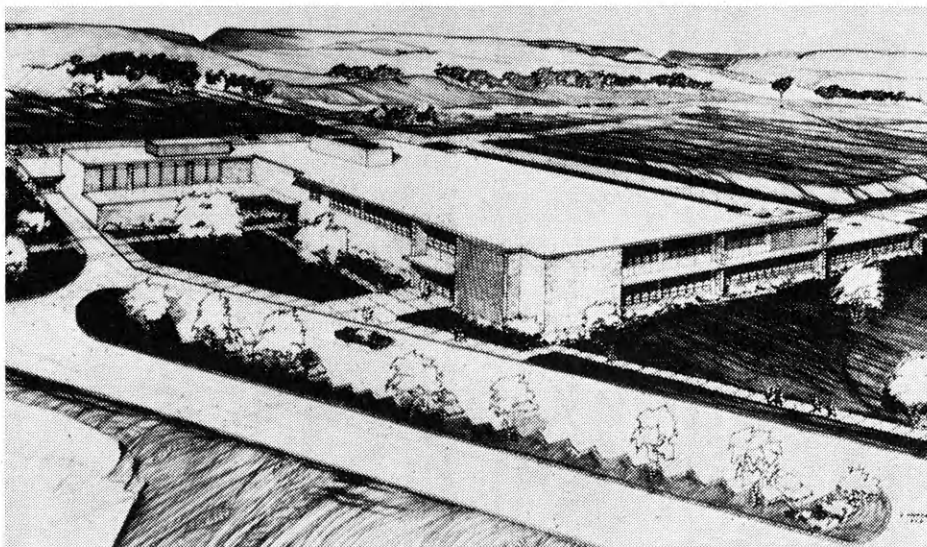
Research practices to be conducted in the new facility will range from milk testing to dairy physiology, with emphasis being placed on research of dairy products and manufacturing. The building will contain all administrative offices and graduate offices as well as equipment that is now located in Waters Hall.

The poultry science department will move all of its facilities from Waters Hall to the second floor of the new building and occupy about one-third of the 58,000 square feet of the available floor space. Need

for the new facility is urgent because Kansas is a leading producer of poultry. Poultry research will include studies on new uses for eggs, techniques of egg preservation, a search for more uses of poultry products, and investigation of poultry nutrition and breeding.

The building and equipment will aid the poultry department in training present students and attracting more students needed to fill many job opportunities existing in the poultry industry. "At present, we do not have enough students majoring in poultry science to meet the demands of the poultry industry," said Thomas Avery, professor and head of the poultry science department.

The \$1.5 million dairy-poultry building now under construction at K-State will be completed by September 1963. A large parking lot is being built near the structure.



Efficiency

(Continued from page 5)

way into your best carpets and make a major cleaning necessary.

Do you defrost your refrigerator just before you need to shop for groceries? A refrigerator that is nearly empty is naturally easier to clean than one that contains many food items that have to be taken out and put back in. Defrosting and cleaning before you go to the store leaves you with a clean, empty appliance in which to put the perishable items you buy. If you have one, a picnic cooler is a great place to put frozen and other food items that spoil quickly when not refrigerated. They won't thaw a bit in the cooler while you're defrosting the refrigerator.

Do you remove and rinse dishes immediately after a meal — even though you may not want to wash them right away? If you do, you may be cutting your dishwashing time in half. Never stack dishes on the table while clearing them, for this makes two dirty sides instead of one. Encourage each member of your family to carry his own dishes to the kitchen—and even rinse them. Dishes which have sat for a while are harder to wash than those rinsed immediately after use.

Freeze Leftovers, Save Time

Do you sometimes cook twice as much as your family will eat, freezing the leftovers for a future meal? This planned leftover system lets you cook two meals at the same time, saving you work at some future meal.

Do you try to dovetail jobs? Let the coffee perk while you fix the dessert, or bake while you mend. But, if one job takes concentration, let the other wait until some other time. For instance, the cake may burn while you figure out your income tax.

Do you line your oven broiler with aluminum foil? It's a great idea to end scrubbing.

Do you give yourself a day off? If you stay caught up with your housekeeping chores all week, why not reward yourself with a day off in which you can do anything you please. Is babysitting a problem? Switch duties with another mother one afternoon a week. Chances are a day off will send you back to your chores restored and refreshed, perhaps even more efficient.



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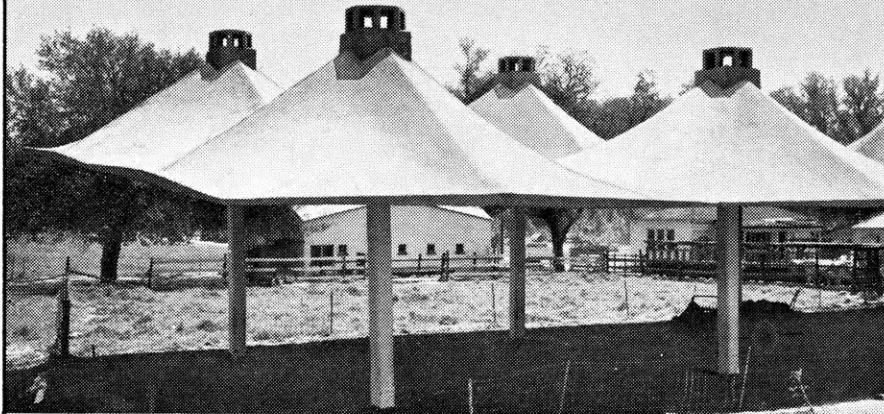
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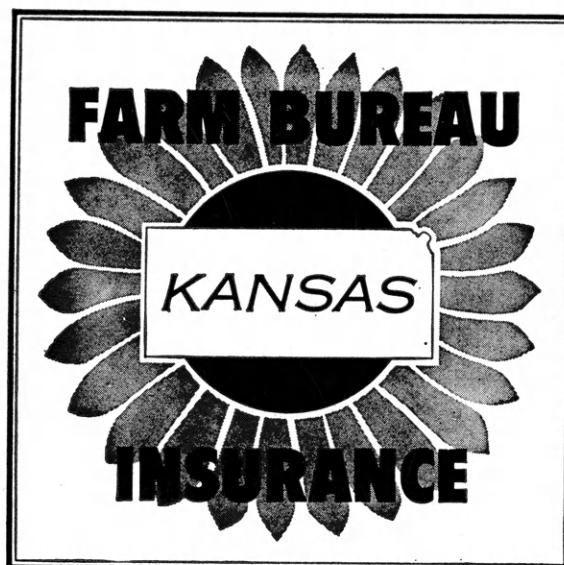
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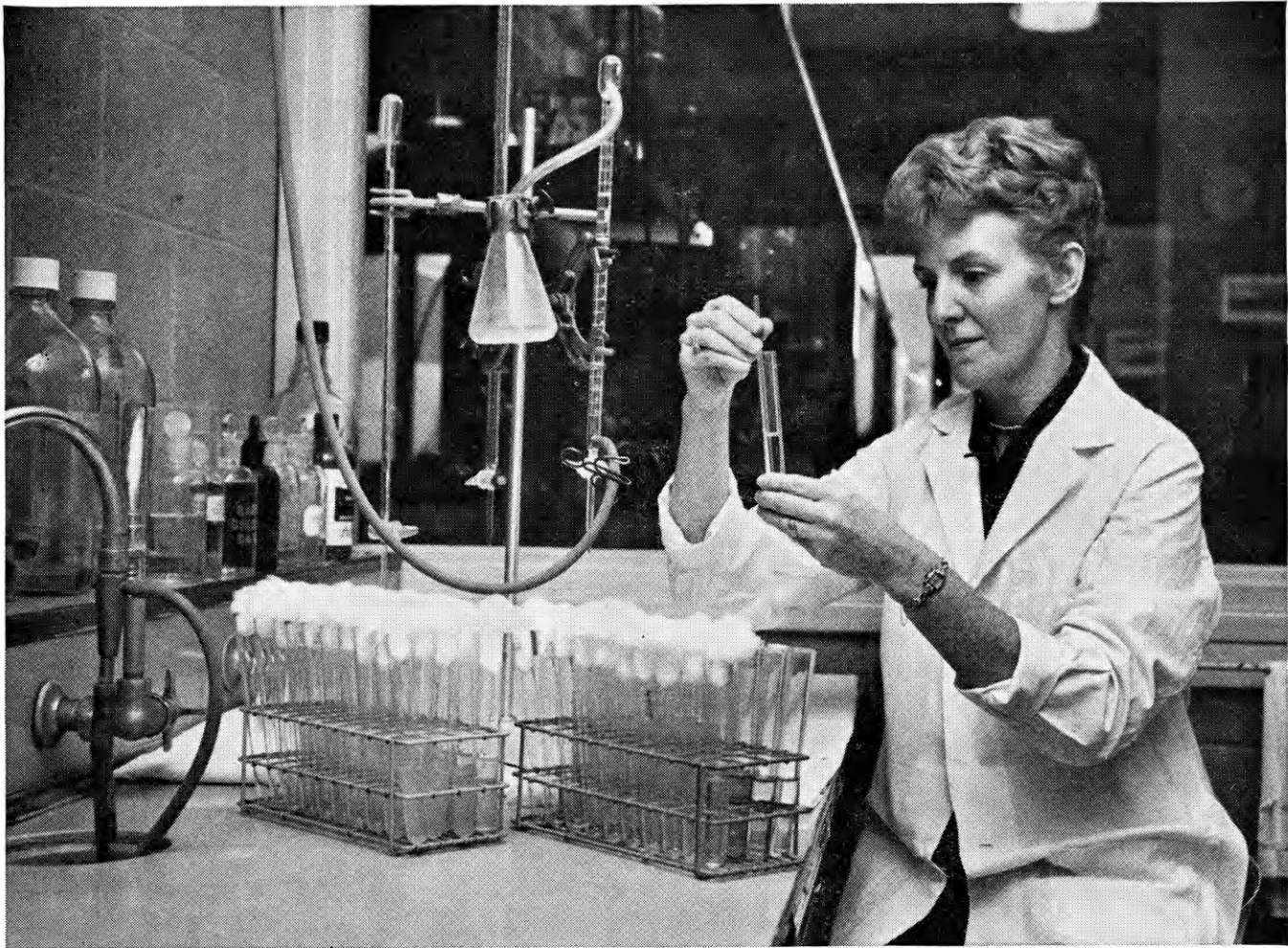
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