FEBRUARY 1964

KANSAS STATE UNIVERSITY

AG STUDENT

Call Hall Completed . . . page 8

As agriculture grows more complex, education and training become more important. MoorMan's recognizes this in several ways. One is a continuing education program on livestock feeding and management for our men who serve farmers and ranchers.

How MoorMan's encourages farm youth

As a manufacturer of livestock feed concentrates, mineral supplements and parasite-control products, MoorMan's has a big stake in the future of animal agriculture.

That future depends on *people* —on the individuals who will help produce tomorrow's meat, milk and eggs, either on the farm or ranch or in farm-related jobs.

In our business—where we call direct on farmers and ranchers—we especially recognize the importance of *individual* know-how and training. That's why we seek to encourage high individual performance and want to recognize individual jobs well-done—*outside* our company as well as in it. For example:

College Scholarships

MoorMan's annually offers scholarships to agricultural students at 13 land-grant colleges: Illinois, Iowa State, Kansas State, Kentucky, Michigan State, Minnesota, Missouri, Nebraska, Ohio State, Purdue, South Dakota State, Texas A & M and Wisconsin.

4-H Swine Awards

Since 1958, MoorMan's has sponsored the National 4-H Swine Awards Program. Medals go to county winners, all-expense Club Congress trips to state and national winners. Six national winners also receive college scholarships.

FFA Support

Also since 1958, MoorMan's annual contribution to the National FFA Foundation has helped recognize and reward outstanding Future Farmers at chapter, state and national levels.

* * *

With our part in these programs, we hope to add some measure of encouragement to farm youth who are showing individual initiative in preparing for the future.

MoorMan's*

Moorman Mfg. Co., Quincy, Illinois
*Trademark Reg. U.S. Pat. Off.

KANSAS STATE UNIVERSITY

AG STUDENT

Vol. XLII February 1964 No. 3

ON THE SECOND CENTURY OF SERVICE TO KANSAS, THE NATION AND THE WORLD

PHOTO CREDITS: Gordon Bieberle, Cover, 8, 9; Don Good, 5; Tuttle Creek Lake Association, 7; Charles Kramer, 12; Floyd Reece, 14, 15.

The Ag Student Magazine is written and edited by students interested in agricultural journalism, and is published by the Agricultural Association of Kansas State University of Agriculture and Applied Science, Manhattan, Kansas, in October, December, February, March, April, and May. Subscription rates $1.50 a year; 2 years, $2; single copies by mail, 30c, at office 20c.

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COVER: Hal Taylor, graduate student in poultry science, checks the tenderness of turkey steaks on a tenderness testing machine in the new poultry processing laboratory. This highly technical machine is representative of the new equipment in Call Hall, K-State's new dairy, poultry building.

Editor Offers Solution To Ag College Enrollment

by Thayne Cozart

IT SEEMS a disgrace to me that the College of Agriculture at K-State, while representing the most important industry in the state, should suffer from one of the smallest enrollments of any college on this campus.

Facilities and Instruction Excellent

As Dr. Duane Acker, director of resident instruction, pointed out in an article in October's Ag Student, K-State's College of Agriculture has the highest percentage of PhD instructors of any academic unit on campus. He also stated that facilities at K-State were excellent, indeed, superior to those of some universities. In view of these strengths, why does the College of Agriculture have such a small enrollment?

Could it be that the students themselves are at fault? I believe they are. The administration is not at fault because Dr. Acker and Asst. Dean Frank Carpenter regularly travel around the state encouraging students to attend K-State. Still enrollment remains static. This is too large a job for two men. The College sponsors Ag Science Day each spring in an effort to encourage high school students to make K-State's College of Agriculture their choice. This program is fine, but it just doesn't reach enough people.

Agricultural Students Could Recruit

Students in agriculture at K-State represent every county in the state. They are the key to "recruiting" more students into the College. It would require very little effort on the part of each ag student to become a "K-State ambassador" and I think most students have enough pride in the College to promote its assets.

The method I propose is simple—word of mouth promotion, followed by a helping hand. I think the following steps would garner many new students to the Ag College.

(1) Let it be known in your community that you are a student in agriculture at K-State. This could be readily done in conversations with friends during the summer or over vacations. Tell them your major and express enthusiasm in your work. (2) Since high school students are our main objective, talk to as many as possible, telling them about K-State. (3) Talk to the principal of the high school. Tell him you will supply any information about K-State and the College of Agriculture that he would like. He would probably let you speak in K-State's behalf to the senior class if you wanted to. Tell him to send any interested students to you for help if they need it. (4) Invite interested students to K-State, show them the Ag College's facilities, take them to a basketball game, introduce them to the head of the department in which their interest lies. In short, be good-will ambassadors for them. Put them at ease about the university.

Students Should Persuade Parents

The fifth step entails persuasion of prospective students' parents. Most parents, particularly in small rural communities, want their children to get a university education, but are fearful about the increased scholastic demands placed upon their children in a large school like K-State. Ag students should take every opportunity to quell these misgivings; tell these parents that the change must eventually be faced, even after two years of junior college.

The final step is promoting the College of Agriculture, even after you graduate. A good word about the College from someone with firsthand knowledge about it does more to promote a favorable image than would any organized impersonal program.

All Three Divisions

Judgers Win at Denver

by Dan Bonine

THE JUNIOR livestock team representing Kansas State University won all three divisions of the 1964 National Western Livestock Show at Denver, Colorado. The team won permanent possession of first-place trophies in both swine and beef, which means this is the third time these divisions were won by K-State. They were also the champion sheep judging team.

Individuals Place High

An individual award was given to John Rogers, Arkansas City, for high scoring individual in beef judging. Eldon Clawson, Linwood, and David Hodgson, Little River, tied for fourth in swine. Art Stoecker, Spearville, was second in judging the carload contest. Kansas State's team ranked third in that division. Fifteen teams competed.

K-State's livestock judging team is selected from students enrolled in the livestock judging course in the department of animal husbandry. In selecting livestock, a formal training in judging can increase your skill and ability in estimating the value of livestock. Individuality of an animal is one of the most important considerations in judging, but you can increase your probability of making the right selection by practicing, as the judging teams do. The performance record, carcass traits, pedigree, age, and health are also factors studied.

Dr. Don L. Good, professor of animal husbandry at K-State, tells his students, "One of the greatest values of livestock selection lies in the conviction of making your decision. This training is important in all walks of life."

Work with K-State Stock

K-State judgers compare the animals in each lot, balance the features of each animal with those features of the others, then select the one with the most of the best. Students enrolled in livestock selection at K-State work with the university's top-notch livestock. During weekends and vacations, the class visits prominent ranches and livestock farms in Kansas and surrounding states. These trips offer students experience in judging and an opportunity to become familiar with the trends of the prominent livestock producers in the country.

Livestock selection is a dynamic process. Changes in type, form, and condition occur with changing demands. Improvement of our livestock to more efficiently and effectively convert grass, grain, and hay to milk, meat, and wool has set new judging standards. You as a livestock judge can adapt to these trends and in many cases may lead the way to progressive changes.

Judging Is Skill

Complete and accurate observation is one of the most important skills to a livestock judge. Dr. Good says, "Livestock judging is a tremendously useful tool in the hands of those who know how to use it." At K-State you learn this skill.

The K-State Junior Livestock Judging team proudly displays the array of trophies they brought back from Denver. They are (from left) Coach Don Good, Eldon Clawson, John Rogers, Art Stoecker, David Hodgson, Glenn Newcomer, Loren Zabel.

Offer Play for Pay

by John Noland

AS POPULATION increases and people gain more free time, farmers can turn pleasure into profit by supplying city dwellers with outdoor recreation for their leisure hours.

A Matter of Management

Outdoor leisure activities center around water, hunting, fishing, observing fish and wildlife, enjoying scenery and the natural rural landscape. Development of rural recreation resources is largely a matter of proper use and management of land, water, plants, and wildlife. Since city people are willing to pay for the privilege of enjoying outdoor activities on private land, the intelligent farmer has a splendid chance to increase his income by creating recreation areas.

Many Possibilities

Almost any type of farm or ranch can provide outdoor recreation to paying guests. Campgrounds, ponds, picnic areas and wildlife habitat are generally possible to develop and may prove quite profitable. To the farmer near a paying market, the sale of recreation privileges may become more profitable than producing standard crops or livestock. By employing careful planning, you, the farmer, can usually provide recreation while continuing your regular farming methods. Thus you may make your farm give multiple returns financially and, at the same time, convert idle land into an entirely new business.

There are many types of recreation facilities farmers can offer. Most of them can be classed under seven headings. First, rural property may be converted into vacation farms and ranches. This category includes "farm vacations"—vacations spent on the farm—and ranch or "cowboy" activities. Lodging and meals for guests attracted to these facilities offer additional income.

Picnicking, sports areas, swimming facilities, boats, and horseback riding provide other recreational outlets.

Aquatic Facilities Good

Private fishing waters with access to boat docks, cabins and parking areas, where boats are offered for rent and bait for sale, is a third possibility facing the recreation-minded farmer.

Camping, scenery and natural recreation areas on privately-owned land are also popular. Campgrounds and trailer camps offering modern facilities and a place to purchase supplies, are often successful, especially if the area offers access to scenic attractions where wildlife can be observed either by hiking or by horseback.

Hunting and Game Preserves

Another good recreation idea is to provide hunting areas on private land. Board and lodging, equipment and supplies, as well as blinds, decoys and dogs for rent, can enhance the hunting area to the recreationist.

Shooting preserves where hunters pursue pen-raised game and are guaranteed shooting, become more popular every year. Handlers and dogs are supplied for the hunter. The preserve dresses game, stores it for the hunter, and provides him meals.

Many city people are eager to purchase building sites for cottages and summer homes; campsites and cottages can also be rented, as can access rights to lakes, streams and ponds.

Demand to Increase

The Outdoor Recreation Resources Review Commission, after a three-year study, reported in 1962 that the demand for outdoor recreation would double by 1976 and triple by the year 2000. Four major factors are noted as cause for this increase: (1) *Population,* expected to double by the year 2000; (2) *disposable income,* to quadruple; (3) *leisure time,* to increase a third; and (4) *auto travel,* to increase by four times. Expenditures for outdoor recreational trips, including vacations, are expected to increase from $9.8 billion in 1960 to $20.1 billion in 1976 and to $45.7 billion in 2000, an increase of more than 4 times in 40 years.

Undoubtedly, this increase is the result of crowded city life and the urge to enjoy the beauty of nature. It is the retention of this beauty that attracts people to the outdoors, and any farmer hoping to make a success of his recreational facilities will have to keep his land attractive and natural as well as observe other requirements.

Outcomes of rural recreation endeavors depend on many factors. The population of nearby cities, amount of traffic on roads bordering the recreation spot, and the crowds already

attracted to nearby public or private recreation areas, play a big role in the success of any recreational area.

If you feel your property has the potential for becoming a prosperous recreation area, you should decide what type of field you are personally best suited to. Examine your aptitudes, interests, and skills. If you like to meet people, you have a good basis for operating a vacation farm or resort. If you are particularly interested and informed on wildlife, you might very well turn your farm into a game preserve or act as a hunting guide for your visitors.

When considering making your property into a recreation area, you should estimate how much labor your new enterprise will take and how much labor you have at hand. How seasonal labor fits into your other work and how much outside labor would cost should also be questioned.

Estimate Before Acting

Careful estimation of costs and returns, sources of financing, legal requirements, and careful consideration of the feasibility of your plan should be made before action is taken. It helps to make a year's budget of your proposed operation. County agents and the Farmers Home Administration will help you plan your enterprise and set up the budget. The Soil Conservation Service will assist you in developing a conservation plan for physical changes and will provide information on installation costs.

Start on Small Scale

Offering recreation services for money on a small scale, and continuing farming or ranching as before, is a good way to begin a rural recreation enterprise. If demands increase, you can put more land, time, and money into the recreation plan. This gradual approach is especially sound if you are unsure of financial success in this new business.

Picnic and camping areas are popular recreational retreats for bored city dwellers.

Private campgrounds serve two types of tourists: travelers stopping overnight and vacationers looking for an enjoyable spot to camp for a few days. Scenic and nature areas attract both campers and noncampers if these areas are near the highway. Owners of such attractions, or of accommodations near them, can build a good business around their use. Cabin rentals provide a good income, as do snack bars and restaurants located near the areas. Special attractions, such as historic sites, fishing streams or nature trails, also help attract customers. A convenient location near a well-traveled highway is very important for overnight campgrounds. It also pays to advertise, especially along the road near your establishment.

A campground should be shady, nearly level or on gently sloping ground for tent or trailer sites, and should have sewage disposal facilities and suitable ground cover. Access to a body of water is advantageous. Electric outlets, showers, and laundry rooms are needed at all-night campgrounds.

To operate nature recreation areas employing natural history and nature trails, you should be well schooled in outdoor living and have an abundant knowledge of the plants and animals in your area. Skill in handling horses and in boating or fishing is also good. A friendly attitude toward strangers is very important.

Works in Mountains, Lakes

Though new to some areas, rural recreation has been working out satisfactorily to both the farmer and his guest for a long period of time in various parts of the country. The dude ranches in the Rocky Mountains and the fishing camps near the Great Lakes are prime examples. Your customers will feel they have been well rewarded for their money if they enjoy a truly satisfying service from a friendly proprietor.

When you sell, rent, or grant the use of your recreation service, you should have a contract with your customer that both you and he understand thoroughly. Make sure that the customer knows what he is provided, what he may do, and what he is to pay.

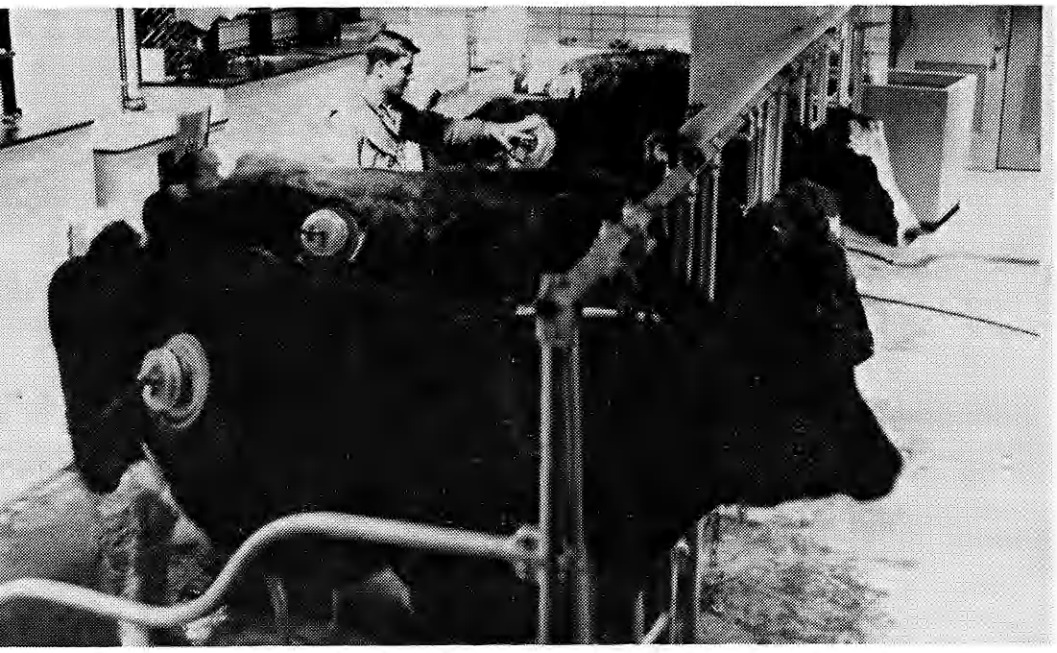
May Help Community

Your initial adoption of creating a rural recreation area may open new visits to your neighbors. Nearby landowners can join in planning recreation enterprises that will support one another to their mutual advantage. Other types of projects that stimulate business and bring new people to the community will create a better market for the recreation service you have to sell. Thus your recreation plan may make your community more profitable and a better place to live. Your attempt to help urban people enjoy the beauties of nature can turn their pleasure into your profit while you still live the outdoor, farming life you love most.

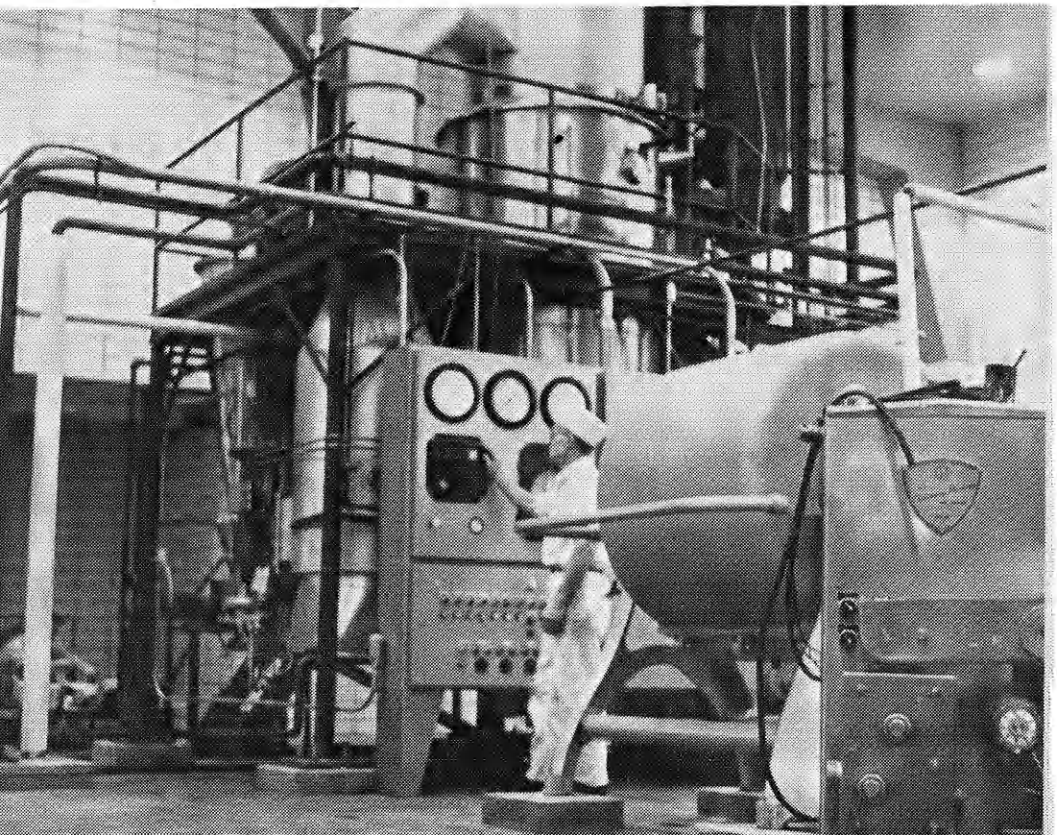
Dairy, Poultry

Call Hall Complete

Lyle Helmer, dairy science graduate student, checks on some of the dairy animals used for experiments in the new nutrition and metabolism laboratory.



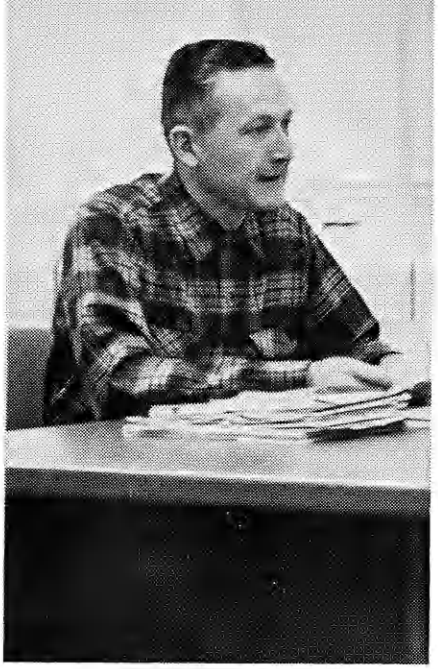
An evaporator-dryer for making powdered milk is part of the equipment in the milk plant.



Shining stainless steel pasteurizers sta

d

n rows in the new milk processing plant.



Dr. Charles Norton
Head Dairy Science Department

Dr. Tom Avery
Head Poultry Science Department

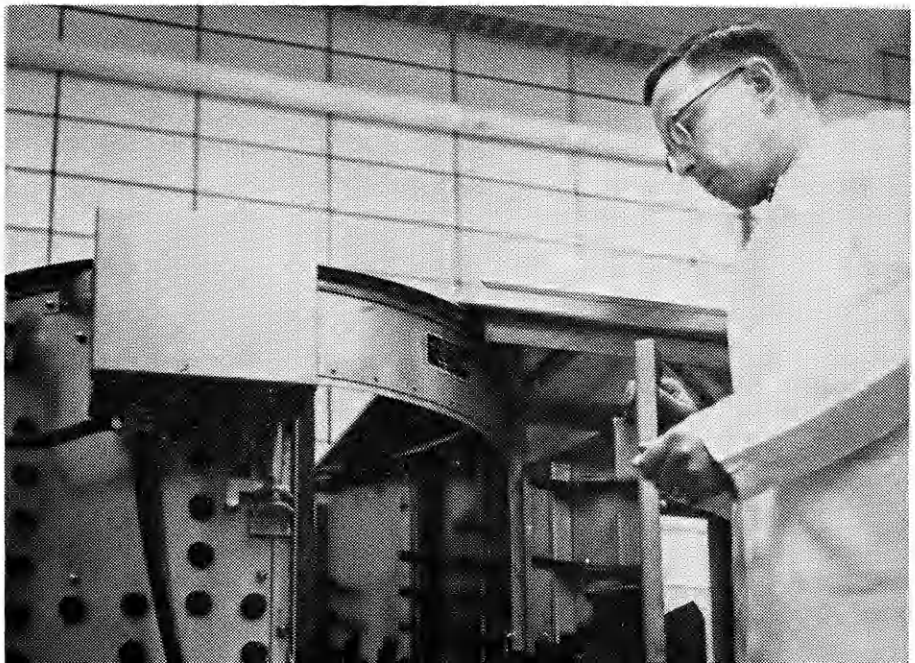
by Thayne Cozart

CALL HALL, K-State's new dairy and poultry science building, was opened late in January. Its completion is a giant step forward for the College of Agriculture. Facilities provided in the building are unparalleled in the Midwest. They include a new dairy manufacturing plant, complete with evaporator-dryer for producing powdered milk, a new dairy snack bar for students, personnel, and visitors, numerous research and teaching labs, and a nutrition-metabolism laboratory for live animals.

The poultry department boasts a stainless steel processing assembly line, a meat tenderness tester, incubation, brooder, feeding, and breeding facilities plus labs, classrooms and offices. All equipment in both departments represents the very latest designs of both industries. The new building, bedecked in K-State's traditional native limestone, spreads neatly into the space between Weber and Umberger Halls on the north end of the campus.

With such outstanding new facilities, students from throughout Kansas, the United States and the world should be attracted to K-State.

Prof. Lewis Smith demonstrates the automatic feather picker in the poultry dressing lab.



Deets Outlines Council Policies

AG COUNCIL, the governing body of the College of Agriculture, consists of a president, a vice president, a secretary, a treasurer, a representative from each departmental club, including the Agricultural Education Club, Student Governing Association representatives, an Ag Week manager, and one faculty advisor. Dr. Duane C. Acker, director of resident instruction, is the present advisor. An assistant Ag Week manager and the editor of the Kansas Agricultural Student magazine are ex-officio members without voting privilege. Other organizations representing the College of Agriculture may have a seat on Ag Council but shall be ex-officio members without voting privileges. At present there are 24 persons on the Council.

The Council's main purposes are: (1) To promote a closer relationship between the students and the faculty; (2) to correlate the activities of student agricultural organizations; and (3) to help organize and publicize functions of Ag student groups.

To accomplish these purposes each year, the Council sponsors the Ag Barnwarmer dance in the fall. The Council also is in charge of Ag Science Day in April. This day is designed for high school seniors over the state to see the various opportunities in Agriculture. It is accomplished mainly by booth displays of various clubs, exhibiting what each field offers the prospective Ag student.

The Council recently revised the constitution of the Agricultural Association as seen in this issue. We feel the changes have updated and improved our association and will help it run more smoothly.

PAUL DEETS
President, Ag Council

Revised Agricultural Association Constitution

EDITOR'S NOTE: *In the revised constitution the entire election procedure has been changed. All boldface sections are also new.*

THE AGRICULTURAL ASSOCIATION OF KANSAS STATE UNIVERSITY

Revised constitution and by-laws

RATIFIED DECEMBER 17, 1963.

PREAMBLE

We, the students of the **College** of Agriculture of Kansas State **University,** in order to further the best interest of the College of Agriculture, to unite the efforts of the students of the College of Agriculture for more effective work, to maintain and support all meritorious student activities of the College of Agriculture, and to conduct such other business as may from time to time come before the agricultural student body, do hereby organize the Agricultural Association of Kansas State University.

Article I. NAME

Section 1. The name of this organization shall be "The Agricultural Association of Kansas State **University."**

Article II. ELIGIBILITY

Section 1. Any student regularly enrolled in the College of Agriculture shall be a member of the association.

Article III. GOVERNMENT

Section 1. Officers of the Agricultural Association shall be president, vice-president, secretary, treasurer, Ag Week manager, and assistant Ag Week manager.

Section 2. There shall be an editor of the Kansas Agricultural Student who shall be selected by a majority vote of the Agricultural Council from applicants for the position; this editor is to serve a term of one year beginning on the first day of the second semester and ending with the last day of the first semester the following academic year. Said applicants must be presented to the Council not later than two weeks before the close of the first semester. The newly selected editor shall carry full responsibility, with the assistance of the retiring editor, for the publication of the Kansas Agricultural Student beginning with the subsequent March issue.

Section 3. There shall be an Agricultural council for the College of Agriculture. This council shall be composed of one elected representative of each departmental club, the president of each departmental club, including the Agricultural Education Club, the Student Governing Association representatives of the College of Agriculture, and elected president, vice-president, secretary, treasurer, and Ag Week Manager of the Agricultural Association, and one faculty adviser appointed by the Director of Resident Instruction, College of Agriculture. The Assistant Ag Week Manager and the editor of the Kansas Agricultural Student shall be ex-officio members, without voting privilege. **Other organizations representing the College of Agriculture that desire a seat on Ag Council shall be ex-officio members without voting privilege. These ex-officio clubs are: Extension, Plow and Pen, Conservation, 4-H, Collegiate FFA, Alpha Zeta, and Alpha Mu.** The elected officers of the Agricultural Association shall act as officers of the Agricultural Council.

The Council members shall be departmental majors and qualified according to the Student Governing Association constitution and by-laws.

The Agricultural Council representative shall be elected by a majority vote of the club members which he will be representing. This election shall take place at the regular election of the club officers for the fall semester.

This Council shall function as a policy-developing group concerned with intercollege affairs and relations, and agricultural student matters. Minutes of each meeting shall be filed with the Director of Resident Instruction, College of Agriculture, and a copy shall be posted on the main bulletin board of Waters Hall.

The Agricultural Council shall meet at least twice a month, or as called by the president of the Council.

Section 4. No person shall be eligible to hold office who has not been a member of the association for two semesters.

Section 5. All persons interested in running for an office in Agricultural Association will complete an application form, listing in order his preference of offices desired. The application will be submitted to the Dean's office by a specified date to be set by Agricultural Council.

Section 6. The nominating committee will select two nominees for each office of Agricultural Association from the applications submitted, or from nominations made within Agricultural Council. Anyone nominated by Agricultural Council must submit an application to the Dean's Office within three days after nomination to be considered for an office. The nominating committee shall consist of the presidents of the organizations within Agricultural Council.

The list of nominees will be published in the Kansas State Collegian two weeks prior to a Campaign Assembly, designated by Agricultural Council.

Section 7. If any applicant's name does not appear on the nominating committee's slate of officers, he must obtain a petition of 25 signatures from members of the Association. This petition must be submitted to the Dean's Office at least one week in advance of the Campaign Assembly. Any applicant, that has submitted a petition, will be entitled to all privileges afforded nominees, with the exception of having his name printed on the ballot. Space will be provided on the ballot for the applicant's name to be written.

Section 8. Each nominee shall limit his campaign speech to a one-minute presentation before the Campaign Assembly, stating his reasons for desiring the office.

The qualifications of the nominees shall be published and made available to all students at least two days prior to, and at, the Campaign Assembly.

Section 9. Students in the College of Agriculture shall vote on the nominees by secret ballot. Space on the ballot shall be provided for a write-in candidate. The election dates and locations of voting booths shall be determined by Agricultural Council. Elections will be held on dates other than the day of the Campaign Assembly.

Section 10. The newly elected officers will be announced by publication in the Kansas State Collegian and posted in Waters Hall. They shall be installed on or before May 15, and the place shall be designated by Agricultural Council.

Section 11. If any office of the Agricultural Association becomes vacant, the Agricultural Council shall choose a replacement, this choice to be ratified by a majority of the departmental clubs represented on the Agricultural Council.

Article IV. DUTIES OF OFFICERS

Section 1. It shall be the duty of the president to preside at all meetings of the association and meetings of the Agricultural Council, sign all orders and other documents of the association officially drawn by the secretary, and call special meetings of the association and the Agricultural Council.

Section 2. It shall be the duty of the vice-president to assume the duties of president in the absence of or at the request of the president.

Section 3. It shall be the duty of the secretary to keep the minutes of the meetings of the association and Agricultural Council, to post a copy of the minutes, and perform such other duties as the office of secretary may require.

Section 4. It shall be the duty of the treasurer to present financial reports and serve as treasurer of Ag Week activities and the Barnwarmer.

Section 5. The manager of Ag Week shall appoint a chairman of such committees as he may designate to assist him in promoting the event and shall call on the assistant manager to assist him in such a manner as may be necessary in the training and experience of the assistant manager.

The Assistant Ag Week Manager shall be the manager of the fall semester Agricultural student dance.

Section 6. The editor of the Kansas Agricultural Student shall appoint an associate editor and business manager.

The editor shall be responsible for editing and publishing issues of the Kansas Agricultural Student.

Section 7. It shall be the duty of the Agricultural Council to assist in promoting all divisional student activities.

Section 8. It shall be the duty of the Agricultural Council to transact the business of the association.

Article V. AMENDMENT

Section 1. This constitution may be amended by three-fourths vote of the total membership of the Agricultural Council provided that such amendment shall have been presented at the previous meeting of the Council.

Ratification shall be by a majority of the departmental clubs.

BY-LAWS

Article I

The association shall convene for special meetings at the call of the president.

Article II

In all cases not covered by this constitution and by-laws Robert's Rules of Order shall be the standard of authority.

Scientists Unfold Fungi Behavior

Dr. S. M. Pady inspects the apparatus used for collecting fungi.

by Darrell Garner

YOU MAY not know it but the air around you often has several hundred small plants in every cubic foot. This is not a believe it or not story but one verified by the work of two K-State botanical scientists, Dr. S. M. Pady and Dr. Charles L. Kramer.

These tiny plants in the air are the spores of fungi and have been the object of their research project for eight years. Their study will continue with the assistance of a recent $14,000 grant from the Public Health Service, a division of the U.S. Department of Health, Education and Welfare.

Fungi are plants lacking chlorophyll and reproducing by means of spores. Spores are comparable to seeds. They are minute plant structures which reproduce the fungi. The

spores are surrounded by walls of plant material that protects them from heat and dryness. They are cast from the fruiting bodies of the fungi to drift with the wind and find places to grow. Common fungi include mushrooms, molds, puffballs, and the enemy of the Kansas wheat farmer, wheat rust.

Identified 150 Species

Pady and Kramer have identified more than 150 species of fungi in their studies. Some fungi are saprophytes, capable of living on dead organic matter; many species cause plant and animal diseases. Rust in grain crops and some allergies in humans, resulting in hay fever like aliments, are examples of common fungi-caused diseases.

Their goal is to determine how many and what kind of fungi are present in the air at different times of the year. This research will help other researchers find remedies for fungi-caused allergies. The information of numbers, kinds, and viability of plant disease spores will also help plant pathologists fight plant diseases such as rust.

Kramer Will Present Paper

Professor Kramer will present a paper concerning the research to the International Botanical Congress in Edinburgh, Scotland, later this year. He will describe the numbers and types of fungi found and the influence of environment upon the release of spores.

The research has dealt with the variation of spores in the air each hour of the day, the seasonal variation of the number of spores in the air, the variation in number and species at different elevations, and spore viability (the per cent of live spores in the total). Future plans include further work on viability and spore numbers released from a single fungi specimen.

Seasonal Pattern Exists

So far Pady and Kramer have found that a definite seasonal pattern exists for spores. The largest numbers occur in the summer; the smallest numbers in the winter.

A close correlation to climate and spore numbers released has been shown. As temperature increases, spore count increases. It also increases under conditions of plentiful moisture and warm days.

They discovered that total spore count reaches a low in the early morning and peaks in the afternoon and early evening. In this pattern of total spore count, Cladosporium spores reached an earlier peak than Alternaria spores, which remained nearly constant throughout the day. In the total spore count Cladosporium accounted for 41%, basidiospores for 24%, yeasts for 7%, smuts for 6% and two-celled hyaline spores for 4%. Total spore count averaged about 500 per cubic foot of air. Winter-summer counts ranged from 14 to 3,000 per cubic foot.

Study Elevation Effects

Determining spore numbers at different elevations of the atmosphere is Pady and Kramer's most current fungi study. Last summer they made eight flights in a light plane to take this count. They used a machine which took known volumes of air from the atmosphere, extracted the spores, and deposited them on coated glass microscopic slides. These slides were studied under a microscope to determine the numbers and kinds of spores present at the different levels.

Study Viability

Another recent study is finding the percentage of viable or living cells in the total spore count. According to Pady and Kramer, between 40% and 50% of the spores are alive and capable of growing if they land in a favorable position. Time of day seems to have little effect on viability. Rust spores, which are somewhat lower in viability, show a decrease in live cells during the heat of the day. Considerable variation was noted in the viability of different species. Alternaria spores having a thick, heavy wall, show about 90% live cells while basidiospores with very little protection against heat and drought, show a viability of only 5% to 10%.

As the research progresses new facts will come to light. For people suffering from "hay fever" and farmers suffering economic losses from plant disease, the knowledge will prove very useful.

It

May Be

Coming!

Flame is applied directly to the row. Weeds are killed. Corn is uninjured.

Kill Weeds, Dry Grain With Flame

by Lloyd Moden

SUPPOSE it is the middle of May and the corn is three inches tall. Most farmers are cultivating their corn for the first time. You say to yourself, "Well, I guess I'll burn the weeds in my corn field today." Sound ridiculous? It may be common in a few years.

Flame cultivation has been used for weed control in cotton for almost 20 years; now K-State is conducting research with flame cultivation in corn and grain sorghum. A grant from the Kansas L-P Gas Association for research using flame for cultivation and for drying grain sorghum in the field stimulated the program.

←

The flame cultivator mounts on the tractor similar to a conventional cultivator.

The flame literally burns the weeds in the rows without harming the corn, according to Prof. Floyd N. Reece, agricultural engineer at K-State. "We have had excellent results with corn, but there is not much hope for flame cultivation of grain sorghum or soybeans because they're not more resistant to flame than the weeds," he stated.

The researchers are developing a cultivator utilizing a combination of shovels and flame burners. Results are comparable to applying a pre-emergence chemical weed killer in a band in the row. The flame burns the weeds in the row and the shovels clean them out between the rows.

Flame cultivation has several advantages over other methods of weed control. Flame leaves no residues, as some herbicides do; it cannot injure crops in nearby fields. Rains may make sprayed herbicides ineffective or leach pre-emergence chemicals down to the planted seed, which may kill it. Flame control is not affected by rain. It doesn't disturb the soil, either.

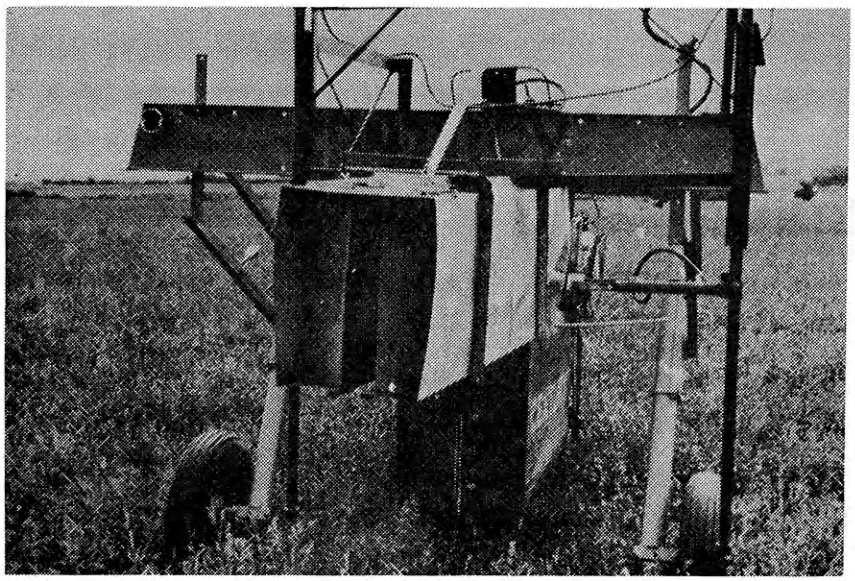
Eliminates Root Pruning

"There seems to be enough root pruning by the shovels on a regular cultivator to cause a significant difference in yield in a dry year," said Reece. Flame cultivation eliminates this loss. Fuel for flame cultivation is much cheaper than most chemicals, he continued, but the flame cultivator is considerably more expensive than a chemical applicator.

Field trials have been conducted for only two years, so positive recommendations cannot be made yet. So far, the best results occurred when the corn had three flame applications. The first cultivation was made when the corn was 2-3 inches tall; the second when it was 8-10 inches; the third, 14-20 inches. The flame burns the corn leaves off, but corn grows so fast it is not injured.

Costs from $500 to $1,000

Costs of the flame cultivator range from $500 for a two-row cultivator to $1,000 for a six-row machine. Gas per application is cheap—70-80 cents per acre. Large cultivators use liquid gas vaporized by hot water from the tractor's radiator; small ones use gas vaporized in the tank.



The hover arrangement applies the flame directly to the sorghum head, thus drying the grain in the field. This machine could save Kansans thousands of bushels during harvest.

Drying grain sorghum on the plant in the field may soon become the flamer's biggest economic contribution to farmers. Year after year grain sorghum cannot be harvested until late fall after a frost or freeze has killed the plant. K-State researchers are experimenting with flame to kill the grain sorghum plants right after the grain matures.

According to Prof. Fred C. Stickler of the agronomy department at K-State, sorghum seed has about 35 per cent moisture content at physiological maturity, but it cannot be stored safely until the moisture level is down to 13 per cent. Sorghum may be left in the field to dry, but autumn temperatures and humidity often slow the drying process. For this reason, many large-scale sorghum seed producers harvest their grain at higher moisture levels and dry it mechanically.

Hover Dries Grain

A flame treatment would kill the plants and speed up drying the grain in the field. K-State scientists have made a hover arrangement that applies flame directly to the grain sorghum head. Stickler said they had similar results when they flamed at either 2 or 4 miles per hour.

This research, too, is in its second year, so no concrete predictions can be made. "Estimated costs of the flame treatments compared with drying costs indicate that flame treatments may be economically feasible," Stickler remarked. He found the flame did not affect the seed viability, nor seedling vigor.

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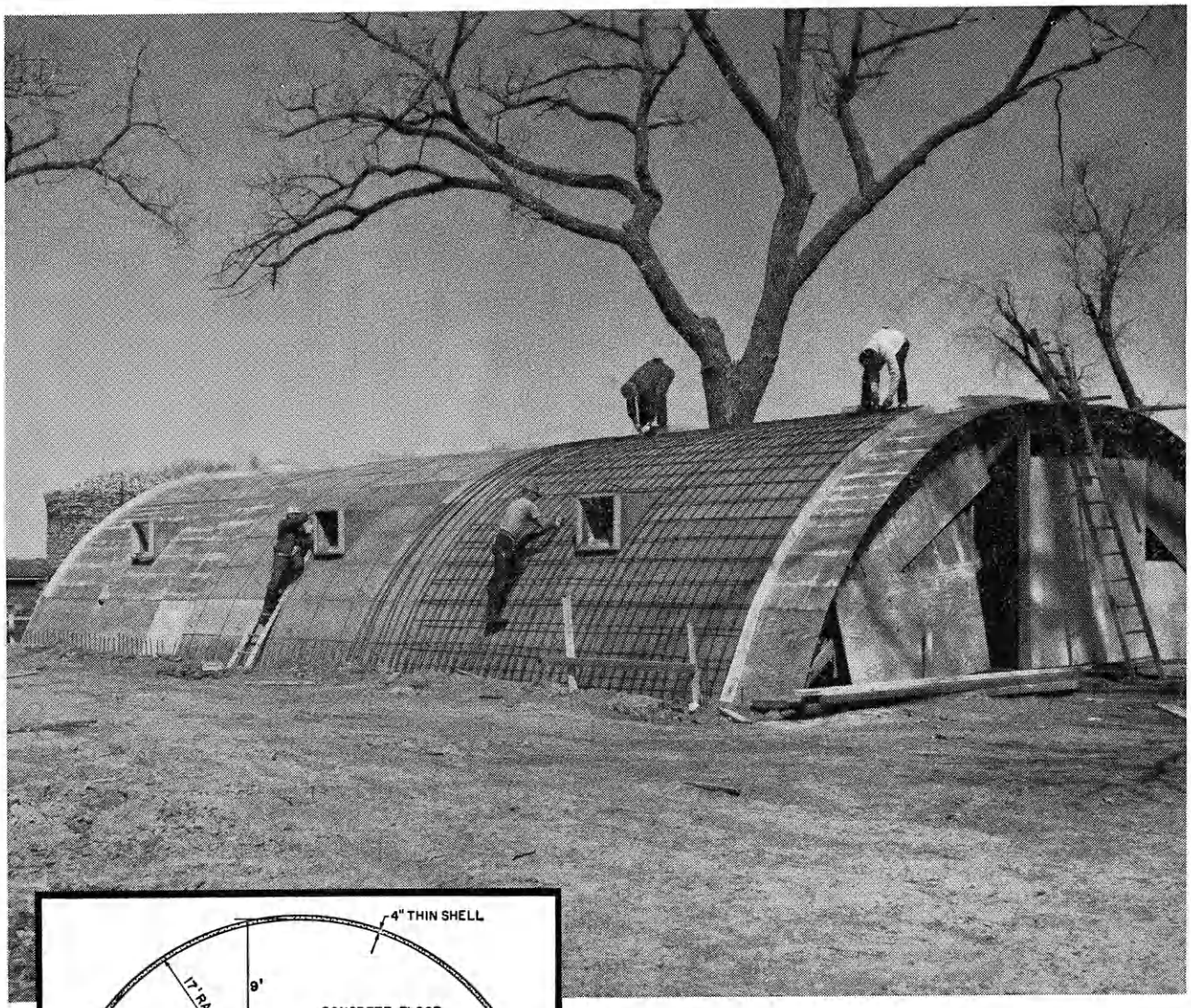

Concrete thin-shell hog house under construction shown (left to right) plywood forms, polystyrene insulation and reinforcing bars.

New low-cost hog building achieved with thin-shell concrete

One of the latest developments in the farm building field is this thin-shell hog house built recently at Cozad, Nebraska. This 32- x 60-ft. structure has a 300-head capacity, and cost just $2.50 per sq. ft. including concrete floor and slats.

The shell is only 4 inches thick—reinforced with steel and insulated with expanded polystyrene. The end panels are precast tilt-up concrete. For future expansion, they can be removed or left in place as partitions. The interior combines a concrete floor with precast concrete slats over liquid manure pits, as shown in the cross section.

Engineering design and development are today providing more and more ways in which versatile concrete helps improve modern farm operations. To be of maximum help to farmers, keep up to date on the latest concrete construction methods in your area. And watch for more of these reports on the latest advances in concrete farm structures.

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