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Clemson University

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It’s here—a new way of farming that permits cotton farmers to meet and whip the bugaboos of bad weather, limited working time, and mounting labor and fuel costs by “going 6-row” with John Deere.

Now—with the eager, aggressive power of modern John Deere Tractors and the wide, hungry span of John Deere 6-Row Equipment—cotton farmers are right in the forefront of today’s stepped-up farming pace. They can count on cutting fuel costs and working hours by as much as 1/3 and on increasing the efficiency of power and labor by as much as 50 per cent. And they are finding that it all shows up with a bigger figure on the profit side when tally is taken at the season’s end.

It’s Another John Deere First
The first in the field, the new John Deere line of 6-row equipment is a complete line which, for southland farmers, includes 6-row corn and cotton planters, 6-row bedders, and 6-row cultivators—each a part of the continued John Deere policy of “being there with the tools when they are needed”—each designed to carry on in the great tradition established in their John Deere 4-row counterparts.

Of course the big power and economy built into modern John Deere Tractors with the unmatched combination of modern features make them take naturally to 6-row farming, insure new savings in time, labor, and fuel for the farmer who “goes 6-row” with John Deere.

JoHN DeERE Tractor Power and New 6-ROW Equipment

The 684 Cotton and Corn Planter, shown here, does an accurate job of drilling or hill-dropping on flatland, on beds, or in furrows, planting six rows on every trip across the field.
AGRARIAN

PHILOSOPHY

Clemson's first college-wide open house program will be held on March 29 and 30. The School of Agriculture's part in this event will be extensive displays in the Plant and Animal Science, the Food Industry, and the Agricultural Engineering buildings. Every department will be represented by at least one display, and in most cases several exhibits are to be shown.

Personnel in the School of Agriculture have realized that the open house is a golden opportunity to show prospective students and other college visitors what the study of agriculture really is. There is a widespread misconception about agriculture and agricultural study. Many people picture agriculture as unrewarding, small-time farming, and the School of Agriculture as a type of trade school. Some of these same people can go to great lengths to prove that their beliefs are correct, but they aren't hampered by facts. Maybe I'm being a bit cynical, but the fact remains: a serious misconception does exist.

Actually, agriculture is our nation's basic industry. It is a challenging and complex science. Few prospective students realize that agriculture is a science; they also fail to realize that a college course in agriculture includes the application as well as the study of basic sciences such as chemistry, mathematics, and biology. As far as the School of Agriculture is concerned, the Open House will do much to destroy these misperceptions. Agriculture will be pictured as it is—an interesting and challenging science which deals primarily with living and growing things.

* * *

This is the final issue for the present staff, and, as has been the custom in years past is the time for us to bow out as gracefully as possible. Working on the staff has, at times, been a trying experience but in the long run a rewarding one. Rewarding, not from the standpoint of recognition, but from the sense of accomplishment that comes with seeing the finished product.

Let's let that suffice as a farewell, and look for a moment at the future

(Continued on page 12)
SERVING THE FARMERS IN NORTH AND SOUTH CAROLINA SINCE 1906

Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.  CHARLOTTE, N. C.
CERTIFIED SEED

by Thomas S. Harmon, Agron. '60

No longer must the farmer in South Carolina go to his barn early in the spring to select the seed he considers best for planting that year. Much better seed stock can now be obtained without any selection on the part of the farmer. All he needs to do is look for Blue Tag Certified Seed, and he is assured of good quality, high yielding seed. Thanks to the South Carolina Crop Improvement Association, farmers in South Carolina can purchase at a nominal cost seed of a known origin, guaranteed germination and purity, which are adapted to our climate and soils.

In 1946 the South Carolina Crop Improvement Association was formed to insure farmers of obtaining the highest quality seed and propagating materials. The Association is an agency chartered under the Corporation Law of the State of South Carolina and consistent with the 1945 Seed Improvement Act known as the Seed Certification Law. The headquarters for the Association are located at Clemson, and it is governed by a board of directors elected from and by the active membership. The board manages the association and makes any necessary changes in organization and operating procedure.

To attain the goal of furnishing high quality seed to South Carolina farmers, many steps are included in a time consuming process. Plant breeders in the Agronomy Department at Clemson, at the South Carolina Experiment Station, and employees of the USDA select individual plants for disease resistance, drought tolerance, and quality of product. Through many processes, the final product, Blue Tag Certified Seed for South Carolina farmers is produced.

To illustrate how certified seed are produced, let us take for example the Anderson variety of wheat. After outstanding individual plants are selected at the breeding stations, 1000 of the heads from plants having the most desirable characteristics are isolated to be planted. The objective at this point is not for high yields per acre, but for a rapid increase in the number of seeds. One head is planted to each row in the field. These rows will be harvested in the spring. Throughout the growing season constant checks are made to insure purity and quality. Some plots have been checked as many as 300 times. Records are kept and analyzed. Any row which is decidedly superior will be used and the remainder discarded. If no one row is superior, only the rows low in quality, if there are any, will be discarded, and the remainder will be kept as Breeders Seed. This process is used to further insure a high quality product.

The Breeders Seed are planted the following fall in 18 inch rows in a plot of about four acres. To give an idea of the increase in quantity, 50 pounds of seed were planted one year on the four acres. The resulting yield was 136 bushels. Only through proper care and cultivation was this possible. The product of this step in the process is known as Foundation Seed.

Up until this point all the work has been carried on directly by the Agronomy Department and the Seed Certification Department. However, the Foundation Seed are now contracted to farmers who are members of the South Carolina Foundation Seed Association. These growers plant and care for this wheat in the best manner and constantly remove undesirable plants which may arise as a result of mutations. Weeds and other undesirable plants are also removed. The Seed Certification Department at Clemson inspects regularly to see that the specifications of the Foundation Seed Association are being met. The first seed produced from Foundation Seed are called Registered Seed.

Mr. Bob Garrison, Head of the Seed Certification Department, inspects the operation of this seed cleaning machine located on the experimental farm at Clemson. Cleaning is the final process in the production of high quality Blue Tag Certified Seed.

Registered Seed are then sold to members of the South Carolina Crop Improvement Association, who plant them to produce Blue Tag Certified Seed. This is the seed the farmer plants for commercial production. Throughout the growing season constant checks are made to insure the quality.
54 YEARS OF SERVICE TO SOUTHERN AGRICULTURE

"The South's Foremost Seed Breeders"
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HARTSVILLE, S. C.

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Mills Located At SPARTANBURG and NEWBERRY
Another milestone in Clemson's agricultural progress has been realized with the organization of the STUDENT AGRICULTURAL COUNCIL. One of the important reasons for this council was to create a greater sense of pride and appreciation for agriculture in the minds of all students and faculty members. It is well known that the individual technical and special-interest clubs are doing a good job of stimulating interest and enthusiasm on the student's part, but the challenge of doing more through combined efforts is the council's aim. Out of the efforts of our agricultural clubs have come outstanding events like "Clemson's Little International" and South Carolina's first statewide "Rural Youngfolks Day". Among other things, THE AGRARIAN, which is the official agricultural student publication here at Clemson, has presented the achievements of each club. For all of these things we are glad, but can this agricultural council strengthen the efforts of each club? Actually, the function of this organization will be to unify and coordinate the activities of the various clubs for greater effectiveness.

The main objectives of the council shall be: 1. To serve as a sponsoring group for activities of interest to the whole School of Agriculture. 2. To serve in an advisory capacity to the Director of Agricultural Teaching and to the Dean of Agriculture concerning student problems. 3. To promote interest in agriculture among pre-college youth of this state. The council, which will be sponsoring activities of interest to everyone affiliated with agriculture, will include such events as the agricultural phase of Clemson's Open House on March 29th and 30th, 1958. In its advisory capacity, the Council will represent the agricultural students by presenting their problems and questions to the Director of Agricultural Teaching and the Dean of Agriculture. In this way the administration and faculty will be acquainted with the desires of the students. All in all, the council will strive to create a better student-teacher relationship. Then, in the interest of pre-college students, the organization will distribute guidance materials to all high schools, and in many cases agriculture students will visit in the schools. This one activity alone will serve to emphasize that agriculture is a science, and that a career in any one of the many fields of agriculture is a rewarding one. Also through the medium of radio and television, the council will present the tremendous work being done by the Clemson School of Agriculture in the realm of research and development, and especially in the training of hundreds of young men annually. These objectives will serve as a two-fold purpose by informing the public and providing the college student with new and exciting experiences.

The Council is composed of one representative from each of the technical and special-interest student clubs in the School of Agriculture. If a teaching department has no student club, the Head of that Department will designate a student to serve on the council. The representative of each club will be the President of the club. The officers and faculty advisers will be elected at the close of each academic year. The officers of the Council include a chairman, vice chairman, secretary-treasurer, reporter, and also a faculty adviser and assistant faculty adviser.

The officers who have been elected are:

Gene Stembridge —— Chairman
George Powell —— Vice Chairman
States McCarter —— Sec.-Treas.
Bruce Bates —— Reporter
Dr. W. B. Boykin —— Faculty Adv.
Dr. J. T. Lazar —— Asst Faculty Adv.

The regular meeting of the Council will be open to agricultural students and faculty.

The concept of an agriculture student council is not new—such councils are operating successfully in many colleges throughout the nation.

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A forester requires a broad education in the natural and social sciences as well as intensive training in his own special field. Entrance to a professional career depends upon such preparation. To become a successful forester a man must be able to express himself clearly and forcefully in written and spoken English, in simple mathematical language, and by means of sketches and drawings. Failure to acquire facility in expression is almost certain to be a handicap in the future. Written reports inform his superior of the work accomplished and supply the information upon which future plans are based.

Oral expression is indispensable to clear understanding and smooth relationships among people. Mathematical formulas are in almost constant use by foresters in their day-to-day jobs. Maps, graphs, pictorial charts, sketches of simple layouts for headquarters sites, recreation areas, and roads, plans for buildings, and designs for new equipment all require some facility in graphic expression.

A forester needs to understand fundamental laws. Forests are far more than land covered by trees. They involve the complete biologic, hydrologic, and edaphic complex that occupies the land. Unless a forester knows how earthworms, insects, other arthropods, fungi, and bacteria break down the forest litter and convert it into a life-supporting soil rich in humus, he lacks understanding of the key to forest productivity. Insects of both harmful and beneficial nature abound in the forest. Small mammals help in keeping insects under control but may also destroy tree seed and even girdle small trees. To manage this exceedingly complex biological community so as to harvest from it products useful to man with a minimum expenditure of money and effort is the forester’s primary concern. It requires an understanding of the interrelationships between the various plants and animals that make up the forest community.

A forester needs basic knowledge of chemistry, physics, geology, and engineering. This helps him to understand this biologic community and to survey land, lay out and build roads, and erect buildings and observation towers. It also helps him to understand the principles of telephones, radios, internal-combustion engines, and the many types of equipment that are used in developing the forest and in harvesting and processing the forestry products.

The understanding of fundamental economics and business methods, government, and simple business law are the basis for operating a forest property economically. The major purpose of forestry is to provide for human needs. This must be guided by basic economic and business principles. A forester needs to understand elements of cost and to make appraisals of timber to be offered for sale. He should be able to understand simple balance sheets and earning statements, and know how to interpret and prepare budgets. He should have broad grasp of basic economics in order to understand the way in which forestry is related to the national economy as a whole. The management of land, the harvesting of timber, and the conversion of forest products into useful commodities involve operations affecting the economic welfare of communities as well as of individuals and companies. The forester is obliged to conduct his operations in conformity with federal and state laws governing use of land and employment of labor. To be successful, he must do more than to just stay within the law. He will seek to conduct his operations so as to strengthen his community and enlist the

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The
Meat Type Hog

by W. C. Weeks, Jr.
A.H. '58

In recent years there has been a great deal of concern about the meat-type hog among swine breeders and producers. The reason for this concern was brought about by the increased production of vegetable fats, relatively low demand for lard, and by the constant demand of the housewife for lean pork. These factors have demanded of the swine industry a new concept in producing a leaner product.

Before emphasis was placed on the meat type hog, the American farmer was producing what was called the lard type hog. This was a hog that was lacking in muscling and which produced considerable excess fat. At that time this type of hog was very desirable, for there was still a good market for lard, and little concern about lean meat.

Within the last five years, the demand for lard began to decrease and the American housewife became more interested in lean pork. The meat packing industry began to see that changes must be made. So, in order to get a hog that would dress out a higher percentage of lean cuts, the packers began to pay higher prices for hogs that would yield more lean. The different swine breed associations and agricultural colleges then began to see the need for a standard type of hog that would meet the demands of the consumer and be efficient to produce. In doing so, two different standards were established to guide the hog producer into the production of the meat type hog. These standards were production Registry and Meat-Type Certification.

In order for a litter to be classified as a production registry litter, there are several requirements. First, within five days after a sow farrows, the breeder must submit to the breed association the name of the sire and dam, number of boar and gilt pigs in the litter, and the ear notch of each pig. In the Berkshire, Poland China, Chester White, and Yorkshire breeds, a gilt under 15 months of age must raise a litter of eight pigs to a 35 day weaning weight of over 152 pounds, except in the Berkshire breed, where the weaning weight must be over 144 pounds. In the Hampshire, Duroc, Landrace, and O.I.C. breeds a gilt under 15 months of age must raise a litter of eight pigs to a 56 day weaning weight of over 275 pounds. A sow must raise a litter of eight pigs to a 56 day weaning weight of over 320 pounds. In the Hampshire breed at least 50 percent of the pigs must be eligible for registration in the Hampshire Breed Association.

In order for a litter to be a certified meat type litter it must be a production registered litter, two pigs out of the litter must weigh 200 pounds at the age of or before six months.

Meat type hogs gain as rapidly or faster than average hogs. They can be produced at the same or less cost than fat type. Tests have shown that for each 1/10 inch less backfat, that it took four and one pounds less feed per 100 pounds of gain. In other words, it took 40 more pounds of feed to produce a 220 pound hog with 1.8 inches backfat compared to one with only 1.4 inches backfat. At present feed prices it would be about $1.40 cheaper to produce the leaner, meat-type hog. It is also necessary to understand that it takes two and a quarter times as much energy to produce a pound of fat than it does to produce one pound of lean meat.

Some people have thought that the solution to the problem could be found in the bacon type hog, but the producer cannot raise hogs for bacon alone. At the average wholesale

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Berkshire breeders listen to an explanation of carcass grades at a recent
Berkshire type conference which was held at Clemson.
FRESHMEN SCHOLARSHIPS

Thirteen Scholarships will be available to freshmen agriculture students in 1958-59. Scholarships are awarded on basis of the applicant’s high school record, financial need and leadership. The score made on the entrance examination required of all freshmen entering Clemson College will also be considered.

Ten of the scholarships valued at $200 each are awarded on a state-wide basis by Sears-Roebuck Foundation. Smith-Douglass awards two four-year scholarships valued at $750 each. The remaining scholarship, which is valued at $300 per year, is contributed by G. H. Singleton.

Each recipient will be awarded the most desirable scholarship his qualifications merit.

“BUSY MAN”

Dr. Olen B. Garrison became the acting head of the Clemson Horticulture Department in February. He is director of the State Agriculture Experiment Station.

In December national colleagues of the Association of Land-Grant Colleges elected Dr. Garrison to the regional agricultural committee, the most influential within the organization. Comprised of nine top administrators, the committee oversees the use of all regional research funds in the entire field of agriculture.

Dr. Garrison is rightly called the “busy man” in South Carolina agriculture today.

FORESTRY STAFF

Dr. Bingham M. Cool and Charles Minor have recently joined The Clemson Department of Forestry faculty. Dr. Cool came to Clemson from Alabama Polytechnic Institute where he was Assistant Professor of Forestry. Minor has recently completed the basic requirements for his doctorate at Duke School of Forestry.

Professor Cool was born in West Pittsburgh, Penn. He graduated from Louisiana State University, received his M.S. from Iowa State College, and his Ph.D. from Michigan State University.

Professor Minor is a native of Churdan, Iowa. He received his B.S. from Iowa State College, and his M.S. from the Duke School of Forestry.

Both men have practical experience in Southern forestry.

AGRONOMY CLUB NEWS

The Agronomy Club decided at a recent meeting to have a judging team from Clemson participate in the Regional Soil Judging Contest, which will be held at the University of Georgia in April. Soil judging will be a more advanced phase of classification than the land judging experienced in high school. Eight teams from six southeastern states plan to participate in this competition. The contest will be sponsored by the student activities section of the American Society of Agronomy.

The Agronomy recently held its annual election. Those elected to office were: Bruce Bates, President; Hugh Price, Vice President; R. H. Holstein, Secretary; Thomas S. Harmon, Jr., Treasurer; and Robert P. Rogers, Corresponding Secretary. Dr. W. B. Boykin was reelected faculty advisor.

The club held its initiation for the second semester on March 3. Club membership now totals over 20.

MILK CLINIC AND CONFERENCE

Laboratory test results of milk samples were tabulated and distributed at the Market Milk Clinic and Conference here in early February.

Milk samples were collected from plants, distribution and sales points in all areas of the state for testing by a Clemson clinic team.

Temperature when the sample is obtained, sediment, fat test, fill of container, coliform count, and flavor score were determined on each sample.

The Clemson testing team is comprised of D. M. Graham and J. T. Lazar, associate professors of dairying; C. B. Reeves, extension dairy technologist; and R. W. Henningson, assistant dairy scientist.

IFYE DELEGATE PRESENTS PROGRAM

The Clemson College 4-H Club was fortunate in having Gwen Atkinson as a guest speaker at a January meeting. Gwen has just returned from France after spending about five months as an International Farm Youth Exchange Delegate. She spoke of her experiences and showed slides of France. Gwen gave a very clear picture of the way the people live, their customs, and their agriculture. The objective of the IFYE program is to promote peace and better world understanding through youth exchange.
HORTICULTURE DELEGEE ATTEND CONVENTION

The Clemson Horticulture Department was well represented at the annual meeting of the Southern Region of the American Society of Horticultural Science. The society meets annually as a part of the Southern Agricultural Workers Convention. The meetings were held this year in Little Rock, Arkansas, on February 3, 4, and 5.

The local Horticulture Club, which is a member of the collegiate branch of the A.S.H.S., was represented by F. B. Ashley, James Blackwell, Marcus Howard, and Gene Stembridge. The teaching and research staffs were represented by Dr. Roy Ogle, Mr. H. A. Sefick, and Mr. L. O. Van Blaricom, all of whom presented technical papers. Ashley and Blackwell also presented papers at the collegiate branch meetings.

Delegates from six land-grant colleges in the South attended the collegiate meetings. A Clemson delegate, Marcus Howard, was elected Secretary of the Southern Region Collegiate Branch. Finances for Clemson collegiate delegates were made possible by various club projects.

MUSSER RETIRES

Professor A. M. Musser, Head of the Horticulture Department since 1934, retired in January from 33 years of active service at Clemson College.

A native Pennsylvanian, Prof. Musser joined Clemson in 1919 as assistant extension horticulturist after serving as county agent in Clarendon County. In 1921 he became associate horticulturist of the South Carolina Experiment Station and in 1934 was elevated to department head. Professor Musser is a graduate of the University of Florida, and also studied at Penn State and Michigan State College.

His contributions in the peach development of South Carolina are held high in review. He is credited with most of the changes in styles for pruning peach trees, which encouraged growth of large trees and resulted in larger yields. He fostered a program in peach variety testing and maintained a constant interest in the processing of peaches. In other fields, he conducted important variety studies in fruits, nuts, and vegetables.


Prof. Musser was honored in January by returning ex-students, associates and friends at a Clemson House dinner. He was presented with several gifts, and a book of letters from friends.

ENTOMOLOGY CLUB RESUMES ACTIVITIES

The Department of Entomology and Zoology announces that after a lapse of several years as a student club, the Clemson Entomology Club has resumed its activities as a functioning campus organization.

Membership is open to graduate and undergraduate majors in entomology or zoology and those non-majors interested in these fields. The club has been in the past, and will continue to be a regularly chartered student organization.

Provisional officers, until the first elections are held by the group, are John T. King, chairman, and Dr. Edwin W. King, acting faculty advisor.

DAIRY CLUB INSTALLS MILK VENDING MACHINE

The Dairy Club is rendering a service to students and employees at the Plant and Animal Science Building by operating a milk and candy vending machine. Prior to this installation, no facilities were available to the students for refreshments in this area. The students have found that a cold bottle of milk between classes and during laboratory breaks is very refreshing. This machine will enable the Dairy Club members to obtain valuable experience in this new field of milk merchandizing.

FORESTRY DEPARTMENT PROGRESSES

Clemson College’s four-year forestry curriculum, established in September, is spurring new interest in forestry careers for South Carolina youth.

The new program provides in-state college training for the first time in the increasingly scientific field. Clemson converted from two-year pre-forestry courses this fall. Previously South Carolina students were forced outside the state to complete forestry work.

The initial effect on high school graduates is measured by Clemson’s fall enrollment figures. Forty-four incoming freshmen enrolled, swelling the total of forestry majors to 75.
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South Carolina

CLEMSON
SOUTH CAROLINA
Dr. John Millard Rush, Associate Professor of Bacteriology, is widely known on the Clemson Campus. Dr. Rush is a native of Lafayette, Indiana, where he grew up on a farm. After receiving his A.B. degree from Indiana University in 1928, he taught in the secondary schools of Illinois from 1929 to 1939. During this time he had received his M.S. degree at Illinois University in 1935. Dr. Rush then joined the Department of Biological Science at Purdue University where he taught General Biology and Bacteriology. While teaching at Purdue University, he worked on his Ph.D. degree which he received in 1947. During the war years, Dr. Rush helped train Navy technicians at Purdue University in the V-8 Program.

Since coming to Clemson, Dr. Rush has taught various Bacteriology courses. His interest is mainly taxonomy, and at present he is engaged in a taxonomic study of the Genus Achromobacter. He has come in contact with such public problems as water analysis, milk analysis and industry contamination problems.

Dr. Rush is a member of a Clemson College Committee working with the South Carolina Sewage Works Association in the preparation of a correspondence course for sewage and water works operators.

William Clayton Bowen, Associate Professor of Vocational Agricultural Education, is a well known figure in the School of Agriculture. Professor Bowen is a native of Pickens County. He received his B.S. degree from Clemson College in 1932. He did graduate work at Colorado State University, and he received his M.S. degree in 1940. Professor Bowen served four years with the U.S. Army, part of which was served in the Pacific during World War II. He is now a Lt. Colonel in the Army Reserves.

Professor Bowen does part-time work with the V.A.E. students at Clemson, and he devotes his other time to the training of vocational agriculture teachers in South Carolina. He has given aid in the preparation of teaching material used by agriculture teachers in the state.

When he was but 19 years of age, Professor Bowen began teaching in a small mountain school. Then he taught vocational agriculture at Pickens. Later, he taught at Central and served as assistant teacher in the V.A.E. Dept. at Clemson at the same time. He became a full-time Assistant Professor in 1937.

Professor Bowen has served as President of the Clemson Lions Club. He is a member of Alpha Tau Alpha, Gamma Sigma Delta, Alpha Zeta, and other organizations.
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AGRARIAN PHILOSOPHY
(Continued from page 1)

of the Agrarian. Our magazine’s purpose is twofold: to disseminate information, and to create and develop interest in agriculture. The decreased enrollment in the School of Agriculture obligates the staff to publish somewhat more than just an acceptable magazine. It must be interesting and understandable to prospective as well as present students. To be perfectly immodest, I believe that the present staff has made progress in this direction, but there’s still plenty of room for improvement. Rapid improvements could be made if more students would give their magazine more interest and support—not just cheers for the joke page, but enough interest in the purpose of the Agrarian to motivate them to offer their services as staff members.

A new staff will be in charge of the publication of the next issue. Give them your support—and watch the Agrarian grow!

—G. E. S.

THE AGRARIAN
Antibiotics

Better Poultry Nutrition

by Charlie Toal, Poultry '59

A year's egg production per hen is increased (basket on left) when antibiotics are fed. The basket on the right contains the eggs produced per hen in a flock which received no antibiotics.

One of the most spectacular developments in nutrition in recent years was the discovery that antibiotics have growth-stimulating properties when fed to chickens, turkeys, and swine. Few nutritional discoveries have been so quickly and universally applied to feeding practice.

Antibiotics are produced by the fermentation industry through the controlled growth of specific molds, yeasts, or bacteria. Such antibiotics as penicillin, aureomycin, terramycin, bacitracin, and streptomycin are available in suitable dilute pre-mixes for supplementing poultry rations. Combinations of several antibiotics in feeds do not seem to be more beneficial than when each was used alone.

Most investigators believe that the antibiotics exert their nutritional effect through changing the types and numbers of intestinal microorganisms. This might be accomplished by several means. One would be by suppression of inhibitory or "toxin-producing" microorganisms, or by the stimulation of microorganisms which manufacture known or unidentified vitamins which can subsequently be used by the host animal. Another method would be by the suppression of microorganisms which compete with the host animal for certain essential food nutrients. A final method would be by the suppression of "disease" by eliminating pathogenic organisms from the intestinal tract. No single hypothesis seems to serve all cases, and it is not unlikely that several mechanisms may operate in various situations.

Feeding antibiotics will, under certain conditions, increase the rate of growth, improve the efficiency of feed, decrease mortality, shorten the feeding time to broiler weight, and improve coloring and feathering. Antibiotics may also make the flock develop more uniformly. An antibiotic feed supplement tends to increase appetite and feed consumption. It may also stimulate the pituitary gland, so that more growth hormone is produced. Possibly, an antibiotic supplement may increase the efficiency of the utilization of certain vitamins. Also, certain studies indicate that an antibiotic feed supplement may increase the assimilation of calcium. A change in bacterial population of the digestive tract might increase or decrease requirements for various nutrients since different species of bacteria differ in the extent to which they synthesize and utilize these nutrients.

It has been found that antibiotics added to laying rations do not necessarily improve fertility, egg weight, shell thickness, hatchability, the quality of the hatched chick, or egg production; however, in tests at several experiment stations, results in higher egg production have been recorded. In recent work at Clemson, antibiotics added to the ration of pullets naturally infected with chronic respiratory disease substantially increased egg production. The antibiotics used were aureomycin, penicillin, and terramycin. Mortality was decreased, and body weight was increased in these same tests.

In certain experiments chicks kept under normal growing conditions have responded much less, or not at all, to an antibiotic supplement. However, the growth stimulation on similar rations had been marked in preceding broods. It is believed that this difference was due to a reduction of harmful bacteria brought by the continued use of an antibiotic supplement in the preceding years. It is concluded by most workers that bacteria must be present in the environment or the feed for antibiotics to show their greatest effect.

Antibiotics are standard additions to certain commercial poultry feeds, especially starting, growing, and broiler feeds. While their effect apparently depends on a certain degree of contamination in the environment, these substances should not be con-

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THIRTEEN
SEED CERTIFICATION

(Continued from page 3)

highest quality product. Any farmer, 4-H Club member, F.F.A. member, or any other person who is interested in making certified seed a part of his program may produce them, provided he meets the standards of the South Carolina Crop Improvement Association.

Many people may ask, "Why all this trouble to obtain seed? I can grow my own seed and save money." The cost of planting may be lower with the use of home-grown seed, but statistics have shown that the profits per acre will also be much lower than if the grower had used certified seed. Just as it is necessary to maintain good breeding lines in livestock, it is also necessary to maintain good lines of breeding in plants.

By tracing this process step by step, it is seen that five years are required to produce Blue Tag Certified Seed. However, the Blue Tag seed which are sold to farmers for commercial purposes are of the highest quality. With proper care these seed will insure increased yields on South Carolina farms.

One other class of seed may be grown for production as certified seed and are the first increase from the Blue Tag Seed. Green Tag Seed are ineligible for recertification but can be used by the commercial producer with as much success as Blue Tag seed.

The growth of seed certification in South Carolina has been quite rapid in recent years. In 1952, 14 different crops were listed as having certified producers. In 1956, 22 different crops were listed as having certified producers. The number of annual inspections has also risen continuously. However, there has been no increase in acreage planted to the production of certified crops. The factor probably accounting for this is the acreage controls on such crops as cotton.

A new variety of watermelons, the Garrisonian, and a new variety of cantaloupes, the Edisto, are two of the latest introductions through the seed certification program. A new variety of rye is still in the experimental stages. Other crops which have been recommended by the South Carolina Experiment Station are also available.

The South Carolina Crop Improvement Association is a member of the International Crop Improvement Association. It is noteworthy that the standards in South Carolina are higher than the minimum of the International Association.

Persons who are interested in the details of certified seed production should write to the South Carolina Crop Improvement Association, Clemson Agricultural College, Clemson, S. C.

FORESTER TRAINING

(Continued from page 6)

good will of citizens and government officials. By setting objectives acceptable to all men of good will and making these understood by all, he can help strengthen human cooperation in productive enterprise and free government.

Finally, a forester must understand how to live and work with people. Forestry is to a large extent a public activity and almost every forester must deal with timberland owners, timber dealers, employees, customers, and the citizen. Each forester should know something about administration, including the selection and training of personnel, the enlistment of public support for essential forestry measures, and how to draw forth collective opinion on community problems so as to enlist whole-hearted cooperation in their solution.

He should be aware of civic responsibilities and learn to live a happy and useful life.

The foregoing may be summed up by saying that a forester should have a good general education in the broad meaning of this term. It is especially important that he understand and deal effectively with himself, his fellowmen, the society of which he is a part, and the physical universe in which he lives. He is thereby prepared to live a productive life in harmony with his associates and environment.

MEAT-TYPE HOG

(Continued from page 7)

price at Chicago during 1956, packers received 40.2 cents per pound for trimmed hams while the price for bellies was 20.9 cents per pound. When a so-called bacon breed develops larger hams, shoulders, and loins along with bacon then it becomes a meat type hog.

In order for the farmer to produce meat type hogs, he must carefully select the boars and gilts to be used as his breeding stock. He should select hogs that are long bodied, trim about the head and jowl, firmly fleshed and which have a great deal of natural muscling. Other desirable characteristics are an even arch of back, length in the side, a moderate amount of thickness over the loin, and large, bulging hams. He should also select for breed type and sex character, and should strive to produce large litters that are ready for market in five to six months. Once the breeder has acquired these standards, he can be reasonably sure that he is well on the way to producing meat type hogs. He should remember, however, that only through constant selection and proper management can he be reasonably sure of top production of the right type of hog.

AG. COUNCIL

(Continued from page 5)

Their activities aren't all work and no play, either, for many sponsor such social projects as dances, agricultural school days, and picnics. How strong the student agricultural council at Clemson will be depends entirely on student support. The students will determine the nature and success of its activities.
Here it is!
BIG FARMING
built for you

Powerful New
DYNAMIC D-17

Big Farming! More acres per day! The Big New Dynamic D-17 plows a strip nearly six feet wide.

Yes, it's all-new — with convenience features never heard of before in big tractors. It will let you do more work — with less effort — and with a lower investment.

The new D-17 can really cover the acres with NEW BIG TOOLS... 5-bottom plow, 15-foot tandem disc, 24-run grain drill, or a line of field cultivators to match.

Here's a big farm tractor with a new feel of authority. You'll like its commanding all-new POWER-CRATER engine — its new comfort with center-ride seat, roomy platform, convenient new controls and instruments.

The new Power Director (The Big Stick) lets you select the right working speed without clutching or affecting PTO speed. The automatic TRACTION BOOSTER system provides the extra traction to get you through those tough places.

You'll want to see and try this all-new big Allis-Chalmers D-17, gasoline or diesel. Stop in at your Allis-Chalmers dealer.

ALLIS-CHALMERS, FARM EQUIPMENT DIVISION, MILWAUKEE 1, WISCONSIN
TALL CORN

Overheard in an incubator: "Last one out is a rotten egg."

Mary had a little lamb
The lamb had halitosis
And every place that Mary went
The people held their noses.

I think the Mormon prophet was
A very funny man.
I wonder how his wives enjoyed
His prophet-sharing plan.

The FBI agent in a western state
was hot on the trail of a fugitive.
When word came that he was heading
for a small Iowa town, the G-man
called the local sheriff.

"You send me a pitcher of that guy
and I'll git him good," the sheriff
promised. That night the government
agent mailed the sheriff not
one, but a dozen pictures of the man—
profiles, full face, standing, sitting,
and in various costumes. Within 24
hours, he received an electrifying
phone call:

"We got 11 of those crooks locked
up already," the sheriff boasted,
"and I guarantee to jug the last one
before morning."

Then there was the geologist who
had the hobby of collecting stones
and keeping them in his bathroom.
He had rocks in his head.

Looking down at the sick man the
doctor decided to tell him the truth:

"Doctor—I feel I should tell you
that you are a very sick man. I'm
sure that you want to know the
facts. Now—is there anyone you
would like to see?

Bending down toward his patient
the doctor heard him feebly answer:
Patient—Yes.
Doctor—Who is it?
Patient (in a stronger tone)—Another
doctor.

"Not guilty of bigamy," said the
judge. "You may go home."

Thanks, judge. Which one?"

Moe: "Do you know what the man
said when his cat got run over by a
steam roller?"

Joe: "No."

Moe: "He didn't say anything—he
just stood there with a long puss."

A young lover was reeling out a
heavy line to impress the beautiful
girl.

"Those soft lovely hands," he
whispered.

"Your warm lips. And those beau-
tiful eyes . . . Where did you get
those eyes?"

She answered, "They came with
my head."

It was 3 a.m. when he staggered
home after a glorious evening. In a
few minutes a series of unearthly
squawks howled out of the radio. His
wife looked into the room and dis-
covered him frantically twisting the
dial back and forth.

"For heaven's sake," she exclam-
ed. "What in the devil are you doing."

"G'way, g'way! Don't bother me,"
he yelled. "Some poor devil's locked
in the safe and I've forgot the com-
bination."

"What good would that do?" snorted
Jimmy. "You can't hit the side
of a barn."

A sad tale is told of the glass-
blower who was suddenly gripped
by an attack of hiccups. He turned
out one thousand percolator caps be-
fore help came.

"Mommy, what's a vampire?"

"Shut up and drink your blood."

A frantic mother rushed into a
doctor's office, dragging a five-year-
old boy by the hand. "Doctor," she
panted, "is this child capable of per-
forming an appendectomy?"

"Of course not!" replied the start-
led medic.

"See!" screamed the mother to the
boy. "Now you march right out of
here and put it back."

"This is the third operating table
this month, Dr. Polunger. You must
learn not to cut so deeply."

Her lips quivered as they approa-
ched mine. My whole frame trembled
as I looked into her eyes. Her body
shook with intensity and our lips
met, and my chin quivered and my
body shuddered as I held her to me.

Moral: Never kiss with the engine
running.

ANTIBIOTICS

(Continued from page 13)

Considered substitutes for proper san-
itization. The amounts of antibiotics
fed for growth stimulation are only
a small fraction of the levels used for
the treatment of disease. Low level
feeding of antibiotics as practiced
today consists of adding two to ten
grams per ton of feed.

Recent studies at Clemson with
layers have shown that adding 50
grams of either aureomycin or terram-
ycin per ton of feed was an eco-
nomical and sound practice. Feeding
100 or more grams of antibiotics
per ton of feed is generally referred
to as a therapeutic level. This is
generally practiced with birds that
are affected with disease.

There are yet to be evaluated
thousands of chemicals and drugs
which may effect in some way the
microorganisms in the intestines and
thus improve nutrition of poultry. It
is expected that there will be much
active research in this field in the
future.
YOU SAVE "LOST HAY" 3 WAYS
with ALL-NEW McCormick® No. 46 baler

In a leading grassland state, 43.2 per cent of all hay lost between field and feed bunk can be charged to weather damage and baling waste. Now, with new low-cost McCormick No. 46 hay baler, farmers can save much of this "lost hay." It's simple as 1, 2, 3:

1. **Extra-capacity beats bad weather.** Owners report the No. 46 bales as much as 13 tons an hour to outdo everything in its class! Now, more of every crop can be choice feed relished by livestock.

2. **Timely baling** and gentlest handling yet save more vitamin and protein-rich leaves for feeding, to cut meat and milk costs.

3. **Surest-tie ever developed** saves needless loose-bale waste. Rough handling won't bulge or buckle these fully-packed bales!

Get more hay-saving facts, FREE! Write for more information about the capacity "champ" of the low-cost balers . . . or see this new McCormick No. 46 baler at your local IH dealer. He'll welcome you!
WINSTON is the big brand on this range, ma'am — for filter and for flavor!

Once folks discover Winston, they just can't keep the news under their Stetsons! They go for the flavor because it's so clean and fresh — from a bright, clear blend of superb tobaccos. They like Winston's exclusive pure-white filter, with the smart cork-smooth tip. And, they like to share a good thing when they find it! You try 'em. Then you'll know why Winston is now way out ahead of the other filter cigarettes.

Smoke WINSTON America's best-selling, best-tasting filter cigarette!