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THE COVER: Clemson's Farm and Home Week annually draws thousands of South Carolina Farmers and their wives to observe the latest in modern farming and homemaking practices and laborsaving devices.

IN THIS ISSUE

Guest Editorial .......................................................... Page 3
Keep Up the Fight ..................................................... Page 4
The Drought in South Carolina ................................... Page 5
Clemson's Agricultural Building Program ..................... Page 6
Coastal Bermuda in South Carolina .............................. Page 7
Liquid Nitrogen ....................................................... Page 8
Between the Furrows ................................................ Page 10
I Dare You .............................................................. Page 13
The Men Who Guide Us ............................................. Page 14

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AGRARIAN
PHILOSOPHY

By Bennie Wiggins
Associate Editor

You know, I once knew a young lady who was quite a number. To go with her flaming red hair, she had a temper which burned almost as brightly, and, believe it or not, her name was Hazel. Our sympathy goes to the hundreds of citizens whose homes were destroyed or badly damaged. It is hard for us, who have not lived through such an experience, to comprehend such damage as was done to the coastal region of South Carolina and other Atlantic States. We, who are in school at the present, are not old enough to know the fury of the tornado of the '20's and have not seen such a storm during our lifetime.

You cannot evaluate the damage in dollars and cents, because money cannot buy the tradition, memories, and feelings which were lost as Hazel hit with all her fury. We sincerely wish for those people who were hurt and for all other South Carolinians, that another Hazel will be a long, long time coming and that the next time we will be better prepared.

THIS ISSUE:

This is the first issue of the school year 1954-55. We hope you will enjoy reading the articles as much as we have enjoyed writing them and publishing the magazine. It has been a grand experience, one of which, we hope to enjoy for the remainder of the year. We would like to call your attention to one new feature this year and that is the introduction of the Agricultural professors at Clemson. They are all fine people to work with, so we thought we would introduce them to you, the public. In coming issues we hope to present to you all of the teachers in the Agricultural Department.

BE THANKFUL:

Take time right now and look about you and let your mind wander. Is there anything that you can think of that you should not be THANKFUL to ALMIGHTY GOD. Really, be thankful for what you have during this THANKSGIVING SEASON.
Two familiar old faces always welcome you back to the campus.

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SOUTH CAROLINA
Guest Editorial

“Salesmanship in Today’s Economy”

DR. M. D. FARRAR
Dean of School of Agriculture

In our present day economy the successful business concern is not necessarily the one that produces goods of the greatest quantity or quality; instead, it is the company that manages to get their product into the hands of the greatest number of satisfied customers. Advertising has become big business and the art of selling one of the most sought for abilities. A good salesman needs much knowledge of produce, of books, of people, of management, and of margins. The failure to sell means loss of profits or of the business itself.

Farming is no longer an isolated, independent or simple way of living and of earning a livelihood because farmers are inter-dependent, also, on all businesses that provide equipment, chemicals, etc. It is a highly competitive business that requires extensive training, and a continuing education in trends, marketing, and operation.

The farmer must be a salesman in the truest sense, if he is to succeed, and the wise college student should select courses in speech, journalism, and economics as well as basic courses in agriculture. He must advertise his products by word, deed, and quality product. He must be alert to trends in foods, breeds, equipment, and marketing. Necessarily, he must produce both in quantity and quality, but must also help to create new uses for agricultural products. He must make endless experimentation with varied crops or livestock to most successfully meet the market demands. Just as a salesman, he must “deliver the goods.” The final test of good selling is in the margin of profit. To show a profit, in spite of weather, fluctuating prices, government restrictions, and changing demands, will require all the training, judgement, and skill equal to any executive in any line of business. Farming is the oldest business, yet it has become revolutionized into one of the most challenging through new demands and the opening of new uses for old products. The salesman is measured by his satisfied customers and to that ideal is all farm produce routed.

The Farmer must be a good consumer, a good producer, good executive; but in the final analysis, his success is measured by his ability as a salesman.

NOVEMBER 1954
Keep Up the Fight and Keep Insects Down

By Jack C. Langston, Ent ’56

Many cotton farmers of the state are now destroying cotton stalks as soon as their cotton has been harvested. These wise individuals are keeping up the fight against insects right on through the winter.

Destroying cotton stalks is a very effective and economical means of controlling both insects and diseases. This early destruction reduces the number of boll weevils that live through the winter by destroying their food supply and forcing them into a starvation period and into earlier hibernation. Weevils thus weakened stand little chance of living through the winter. The longer the period of time between stalk destruction and the first frost, the greater will be the kill during the winter. Few weevils survive when stalks are killed a month before frost. The early destruction of the breeding places will mean that there will not be a young generation of weevils to go into hibernation.

Destroying cotton stalks early will not only aid in the control of insect pests but will also aid in the control of several cotton diseases such as ascochyta blight, anthracnose, and angular leaf spot. Exposure of the plant roots to sunlight reduces nematode infestations. For most effective control of the fungus diseases the crop residue must be thoroughly rotted before planting time. The stalks may be destroyed by plowing them under, by cutting them with a mowing machine or a bush cutter, or by turning cattle on the cotton fields to graze. In destroying these stalks, many weeds and grass are destroyed too. This means fewer weeds and grass “go to seed” in the field, as the seeds are prevented from ripening.

Highest quality lint is obtained. Early harvest, necessary for early stalk destruction, gives higher grades of lint, and consequently higher prices, because of reduced weather damage. Green cotton stalks shredded or plowed under early is a good soil-improvement practice. It adds organic matter, conditions the soil, and increases the water-holding capacity of the soil. The stalk residue problem is reduced. Chopped-up material will decay faster and insect-hibernation quarters are reduced. Seedbed preparation and cultivation operations with mechanical equipment are made easier the following year. The land is also prepared for winter cover and soil-building crops.

After a bollworm matures, it drops off the plant onto the ground and burrows in to spend the winter. It emerges the next spring as a moth, ready to lay eggs to produce more bollworms. By plowing up cotton stalks, you also bring these worms closer to the surface where they will be exposed to the cold, thus, lessening their chances for winter survival.

This past summer I made cotton insect surveys, working particularly with the boll weevil and the bollworm. It has been my experience to find boll weevil infestation highest near ditches, tobacco barns, trash piles, wood piles, uncultivated fields, and, of course at the edge of woods. You will note that all of these places afford the boll weevil excellent protection during the winter. By cleaning up trash and wood piles, plowing under the weed infested uncultivated fields, and cleaning out ditches, we destroy the boll weevil’s quarters. Burning off these ditches and fields is not recommended. Cleaning up these can be done after the harvest when there is more spare time.

The dry season we have had this year has been hard on the insects, too. If we take advantage of this and keep up the fight through the winter, we will have fewer insects to fight next year. Fighting our in- (continued on page 12)
Worst in History

The Drought in South Carolina

By Elbridge J. Wright, Jr.
Agronomy '56

In recorded history of the state of South Carolina it would be hard to find a year that brought with it a drought of the kind that this state and neighboring states have suffered this year. The drought has not been spotted but has affected all counties of the state on about the same basis. The effects of this drought upon the people of this state will have much more significance to the farmers and other people as winter comes on and the empty barns and bins become a stark reality.

The severeness of this drought has several causes, each of which is partially responsible for this disaster which has stricken the farmers and many other people of the state.

One factor that increased the severity of the drought is the fact that we have had three dry years preceding this one. The water table had already been lowered by these dry years, and with the onslaught of the monster drought of this year the water table fell still lower until now in many places wells have had to be deepened in order to keep them in use. In many places in the state, the water table has dropped so low that many of the trees have shed their leaves a month earlier than usual, and in some cases there have been trees that have died as a direct result of the drought.

Combined with a low water table, we have had a large number of days of excessive temperatures. On many of the days this summer the temperature has reached the 100° F. mark and above. This excessive heat has sapped much of the moisture from the soil and in some cases the heat has directly damaged many crops.

The most direct factor that has increased the severity of the drought has been the decided lack of rainfall during 1954. In many of the counties in the state, there is a deficiency of from 12 to 15 inches of rainfall for this year. This deficiency has largely occurred at the worst possible season of the year, from April through August. During these months most crops have to have a large supply of water, or production will be cut drastically. Of course, when this rainfall did not occur, the effects on the crops of South Carolina has been devastating.

Crop production for the year 1954 will probably be the lowest in recent years. Some crops have been hit harder than others, but nearly all crops have been damaged to a large extent.

The total 1954 crop production for South Carolina is expected to be 19% below final out-turn last year and 21% below average for the ten years 1943-52.

The volume of fall harvested crops will be even lower—31% less than last year and 38% below average.

Spring harvests were the only bright spots in the picture. There was a 5% increase in small grains over last year and a 32% above average crop for the ten year average.

Probably the two hardest hit crops in South Carolina this year have been corn and truck crops. Where these crops received no irrigation, they have, with a few exceptions, been an almost complete failure. The corn crop is expected to be about 50% less than a normal crop. This would be the smallest corn crop in South Carolina since 1901.

Pastures in this state have almost failed to produce any feed this summer. In many counties farmers have had to feed their livestock as though it were the middle of winter. As a result the farmers have had to use up their reserve supply of feedstuffs with no indication of their feed crops replenishing this used up reserve.

Most of the hay crop has been hit severely. The two main hay crops in South Carolina, lespedeza and cowpeas, have been cut drastically in many counties and are a complete failure in many localities. The estimated production of hay for 1954 is less than half a normal crop. There is no doubt that the farmer will find his barns shorter on hay and other feedstuffs this year since the coming of the major hay crops to South Carolina.

The tobacco crop, a major crop in South Carolina, has definitely been cut by the dry weather. The estimated production of 148,800,000 pounds of tobacco for 1954 is a good bit smaller than last years production of 172,630,000 pounds. Tobacco was not hit as hard as some crops since it matures earlier than some of the other fall harvested crops.

Cotton, the major money crop in most counties of South Carolina, has been hit harder this year by drought than in many a year. Cotton can withstand more dry weather than most crops, but it too reached the breaking point and production for this year will be down accordingly. The 1954 cotton crop is expected to be from 450,000 to 480,000 standard bales harvested from 858,000 acres compared with a crop of 690,000 bales harvested from 1,175,000 acres in 1953.

This drastic cut in crop production for South Carolina will have a definite and drastic effect on the farmers and other people of South Carolina. Even with good years in the future, it will take time to overcome the effects of this major drought.

Did this drought have to occur? Of course we can not make it rain when we want to, but we do have other
(continued on page 20)
Clemson’s Agricultural Building Program

D. B. Anthony, Poultry '56

Clemson’s dream of a new agricultural center is rapidly becoming a reality. Anyone who has not been to the old horticultural grounds recently is in for a big surprise when he sees what has happened there. The old greenhouses are gone, the hill has been leveled down, and on it stands a steel and concrete giant which covers almost an acre and a half of ground! This giant is the partially completed Plant and Animal Science Building, part of the first phase of the agricultural building program of Clemson College. This program also includes a Food Industries Building, located to the side of the Plant and Animal Science Building, the ten new greenhouses located behind these buildings, and the addition of an agricultural auditorium to the Clemson House.

The Plant and Animal Science Building, designed by the architectural firm of Lyles, Bissett, Carlisle and Wolff of Columbia, S. C., is a completely air conditioned unit consisting of two floors and a basement. The building will contain 175,000 square feet or four acres of floor space. The first and second floors will have offices around the outer perimeter of the building. On the first floor will be the offices of the departments of dairy, poultry, horticulture, and forestry. The departments which are to be on the second floor are animal husbandry, food technology, seed certification, agronomy, fertilizer inspection and analysis, and the soil testing laboratory. Besides the offices around the perimeter of the building, there are the classrooms, student laboratories and research laboratories in the center. These will be divided into groups with halls running between them. Generally the classrooms with accompanying laboratories will be on the west side of the building with the research laboratories on the east side. There will be 15 regular classrooms seating from 25 to 150 persons. Also, there will be an auditorium which will seat 250. It will be on the front of the building immediately to the right of the entrance. All lighting in the classrooms and laboratories will be of an artificial indirect type since there are no windows opening to the outside.

About one-fourth of the basement will be used for a publication department and a photographic section. There will be a four-room mailing and reproduction section where all bulletins and other material will be kept. An additional mailing room will serve as a sort of agricultural department post office. Another part of the basement will be used for storage. The rest of it will be left unfinished for the present.

The photo section will contain about 20 rooms. Among these rooms there will be two rooms for radio and television. This means that live radio and TV shows may be put on. There will be several dark rooms, one of which will be specially equipped for handling movie and television film processing. The others will be for processing ordinary film, printing, enlarging, slide production, and storage. There will be facilities for every type of photography except color photography.

There is a covered walkway which leads from the dairy department in the Animal Science Building to the dairy laboratories which are in a 308 by 176 foot building known as the Food Industry Building. This building designed by the architectural firm of Hopkins, Baker and Gill of Florence, has approximately 50,000 square feet, 1.1 acres of floor space and is costing $896,000. It will contain the processing plants for the dairy, horticulture, animal husbandry, and poultry departments.

The horticulture pilot plant will be on the end facing the Agricultural Engineering Building and to the rear of the building. It will contain facilities for any type of canning and processing. The animal husbandry facilities for slaughtering and meat processing are on the same end, but toward the front of the building. A section across the rear of the building has been allocated to the poultry department. This will contain a complete plant for dressing poultry. In the center of the building, there are numerous refrigeration rooms. These will be kept at various temperatures depending upon their contents. These rooms will be used by all departments, except the dairy department which has its own refrigeration facilities. The dairy department will occupy the end of the building which is nearest to the Plant and Animal Science Building. Here all dairy products will be processed and sold. Also in the front of this building is a large demonstration-lecture room. This room has a folding partition in it which can be moved back to make an auditorium seating 500.

In front of these two buildings is to be a large square. When completed it will be planted in grass and shrubbery with walks leading to the doors of the buildings. There will be a spray pool in front of the Food Industry Building which will serve to cool the refrigeration units. The road which now goes past the Agricultural Engineering Building will be converted into a walkway leading to this square.

To the side and rear of the Food Industry Building are the green-
Withstands Droughts Well

Coastal Bermuda in South Carolina

By Reuel McLeod, Jr., A.H. '55

From the Atlantic Ocean to the foot of the Blue Ridge Mountains, farmers and cattlemen are planting Coastal Bermuda. A modern Rip Van Winkle, awakening after 20 years of sleep would most certainly shake his head and repeat again and again the simple question, “Why?” Back of his question would be a lifetime of fighting Bermuda grass, a battle that had relegated it to the position of public enemy No. 1 on most cotton farms by 1933. At that time only the cattlemen were conscious of its value as a pasture plant. Rarely did they plant it, for they could usually meet their feed requirements by grazing fields in which Bermuda grass had won the battle.

One might well begin his answer to Rip’s question by pointing out that Coastal Bermuda is a triple-threat grass. Common Bermuda makes good grazing but rarely grows tall enough to mow. Coastal Bermuda, however (like the triple-threat football player that can run, kick, or pass), grows tall enough to produce hay or silage in addition to supplying excellent grazing. Thus, surplus grazing can be used for either hay or silage and a year-around supply of feed can be obtained from one grass.

Important as the triple-threat character may be, there are other reasons for planting Coastal Bermuda. Much of the interest in 1954 stems from the superior drought resistance shown by this grass in 1953. Farmers throughout the state reported that Coastal Bermuda remained green and supplied grazing after Common and many other pasture grasses had turned brown. Coastal has a distinct advantage over Common in that it is deeper rooted. On loamy sand soils Coastal roots have been traced to a depth of 8 feet by mid-summer from sprigs planted in March. This characteristic accounts for the lush green growth that prevailed on the dry soil due to the drought and the naturally sandy soil in the state.

Just what makes this grass so remarkable? Coastal Bermuda is a hybrid that was developed by Dr. Glenn W. Burton, geneticist, USDA, Georgia Coastal Plain Experiment Station, Tifton, Georgia. It was produced from the crossing of tall strains of South African Bermuda, Common Bermuda, and Tift Bermuda. Compared with Common Bermuda, Coastal has several superior qualifications; namely, it makes more vegetative growth, grows later in the fall, is more cold-resistant, and is more resistant to leaf diseases and root-knot nematode. On the other hand, it will not persist as well as Common Bermuda when it is overgrazed and mistreated. It will not compete successfully with Common Bermuda when grown with Common in a closely grazed pasture sod.

The stems, stolons, and rhizomes of Coastal are larger and have much longer internodes than Common. The leaves have a characteristic green color and are much longer than those of Common. Coastal Bermuda produces very few seed heads, and those that are produced rarely contain viable seed. This lessens the danger of spreading by livestock. Experimental results at Tifton have shown that Coastal Bermuda consistently produces more beef per acre than any other grass tested.

Fertilization

Areas to be planted in Coastal Bermuda should be tested and limed in the same manner as land to be planted in other pasture grasses. Apply 600 to 800 pounds of 3-12-12 fertilizer per acre in the drill at planting time and topdress along the row with a nitrogen fertilizer when the plants start growth. When stolons are plentiful, they are sometimes broadcast, disked in and cultipacked. When this is done, 600 to 800 pounds of a 3-12-12 mixture per acre should be applied broadcast and worked into the upper portion of the topsoil before the stolons are scattered.

Established sods of Coastal Bermuda on light soils should be topdressed with 800 to 1,200 pounds of 3-12-12 fertilizer (or 6-12-12 on heavy soils) per acre annually, applied broadcast in split applications of fertilizer, especially nitrogen, are very profitable on Coastal Bermuda. Liberal fertilization increases the protein content as well as the amount and quality of the grazing or hay. Sufficient nitrogen topdressing should be used to provide the desired growth for grazing or hay. For intensive use, Coastal Bermuda sods should be topdressed during the (continued on page 18)
Ammonia -- A Liquid Fertilizer

Watt E. Smith, II, Ag. Eng. ’56

Ammonia, a very good source of nitrogen, is the cheapest fertilizer furnishing nitrogen that has ever been known. It, in the anhydrous state, furnishes 82% nitrogen plant food. Special equipment is necessary to apply ammonia, but this is not a drawback.

Chilean nitrate of soda was the first commercial source of nitrogen. Nitrogen as a by-product from coking coal followed, and since about 1900 nitrogen has been produced synthetically from the air. The cyanamid process, the nitrate process with the electric arc, and synthetic ammonia utilizing high pressure are the present methods for producing synthetic nitrogen.

Most synthetic ammonia is converted into ammonium nitrate for fertilizer uses. In the converting process ammonia is used to make nitric acid which is combined with more ammonium to produce the ammonium nitrate (NH₄NO₃). This nitrate is treated with rosin, paraffin, and clay before it is put into moisture proof paper bags. About seven per cent of the nitrogen in the beginning ammonia is lost during the converting process.

On a cost comparison basis, one ton of ammonia which has 1640 pounds of nitrogen is produced just as cheaply as one ton of ammonium nitrate which has 650 pounds of nitrogen. Comparing on a pound basis, nitrate of soda cost 18 cents; cyanamid, 15 cents; ammonium nitrate, 9.5 to 10 cents, and anhydrous ammonia, 6 to 7.3 cents. From this comparison a large experimental program on anhydrous ammonium was started in 1943 to determine its value as a supply of nitrogen for plants.

The experimental work was carried on for four years before any information was released to farmers. Throughout this period, research and tests were conducted to determine the response on corn, oats, and cotton, and to the different types of machinery for its application.

At present, the application of anhydrous ammonia, and to a small extent aqua ammonia, is practiced through the southeast. The acceptance of ammonia forms as a fertilizer is spreading.

Anhydrous ammonia, containing 82% nitrogen, has a weight of five pounds per gallon and contains 4.1 pounds of nitrogen. It is a gas at normal temperatures and pressures. At —28 degrees F, it is a liquid at standard pressure, and it will exert a pressure of 75 p.s.i. at 50 degrees F. Generally ammonia is handled in the liquid state under pressure.

Anhydrous ammonia with a small amount of water present corrodes brass very rapidly; therefore all containers must be fitted with iron or steel connections. Another precaution is not to use butane or propane gas bottles for fuel after ammonia has been in them because the propane or butane gas when burned with the ammonia in it forms hydrocyanic acid fumes which are very poisonous to humans.

Aqua ammonia has properties similar to anhydrous ammonia. It is a liquid at standard conditions containing 27 to 31 percent nitrogen. A gallon of it weighs 7.4 pounds and contains 1.85 pounds of nitrogen.

The crop responses to anhydrous and aqua ammonia have been quicker than to ammonium nitrate. When ammonia is applied to the soil it immediately goes into solution in the soil water which is an advantage over the solid forms of nitrates. The solid forms of nitrates give better results at shallow depths, but ammonia which is easily applied at depths of four to six inches is superior to the solid forms at shallow depths.

For small grains, ammonia is an excellent nitrogen source. It can be applied before and after the grain has been planted. Ammonia as a top dressing is difficult to become effective if the physical condition of the soil is poor.

Ammonia will certainly kill germinating seed if it comes in contact with them. However, ammonia applied before planting at a depth of six inches will not injure the seed in any way.

On the farm where row-crops are planted, ammonia lends itself very well as a supplier of nitrogen. Both ammonia forms are used for preplanting and side dressing applications. On row crops the following operations with ammonia were used:

1. applied on level land before planting.
2. applied on bedded land before planting.
3. applied and bedded the land in one operation,
4. applied as a side dressing.

The equipment for handling anhydrous ammonia is not complicated, but it must have certain safety devices. All tanks used have certain safety devices. All tanks used for storage must have a 250 p.s.i. rating or some means to control the temperature of the liquid inside. Necessarily, all tanks must have some pop-off valve or pressure release devices. Field transport tanks usually have 1,000 gallon capacity which is the equivalent of 4,100 pounds of nitrogen or enough to apply 40 pounds per acre to 102 acres. The equipment for applying the anhydrous ammonia with a tractor essentially is a tank, a pressure regulator, a pop-off valve, a metering device, lines to the foot, and a foot with nozzle on the back side of it. The type of foot used is narrow and long, similar to a subsoil foot.

Unfortunately, no tests have been conducted to determine the feasibility of applying anhydrous ammonia during the winter months. However, indirect sources have suggested that it should not be applied to row crops before March 1, but would probably be as good as ammonium on small grains during winter months.

In general, anhydrous ammonia is a better fertilizer if the pH factor of the soil is about 5.5 and above.

(continued on page 12)
In pioneer times the woodlot was usually an uncleared patch of virgin forest, sometimes a windbreak planted to shelter a prairie home. It furnished fire-wood, perhaps shade and poor pasture for livestock. For generations the woodlot has been too much taken for granted, or ignored.

Today the woodlot presents new challenge, new opportunity—especially to farm youth. Fenced to prevent damage due to pasturage it may be a watershed to fill a pond, a refuge for wild life. It may be selectively harvested to yield saw logs, rail ties, fence posts, or pulp wood. It may be replanted, perhaps with Christmas trees, to produce better returns in years to come. So managed, a wooded area may indeed be an endowment, begun in boyhood to mature in the fullness of manhood.

All this is a place for the energy and ingenuity of youthful enterprise. There are new applications of conservation principles, new techniques of tree culture, new methods for planting and harvesting trees. With the help of a modern tractor, and some supplementary equipment, woodlot enterprise can be both pleasant and productive. J. I. Case Co., Racine, Wis.

Master of woodlot tasks is the Case “VAC-14” low-seat tractor, shown here with half-tracks added for work in soft ground. With PTO auger to dig holes and utility carrier to haul materials it speeds the planting of young trees or the building of protective fence. The same Eagle Hitch carrier lifts and moves logs without damage to the stand. With loader and fork lift it puts logs into piles or onto trucks. The “low-seater” has adjustable tread and full under-clearance for work among trees and stumps, convenient power to pull transplanters and drive saws.
The new members are the following named men: Willis W. Crain, a dairy senior from Chester; Richard F. Elliot, an animal husbandry junior from Rimini, S. C.; Alfred H. Hudson, a dairy junior from Bluffton; James D. Martin, an agricultural engineering senior from Lyman; James A. Murphy, an agricultural engineering senior from Starr; and Chauncey D. Smith, a dairy senior from Spartanburg.

**4-H CLUB MEETS**

The Clemson College 4-H Club held its first meeting of the school year Thursday night, October 14, 1954. James R. Hill presided over the opening of the meeting.

Dr. Willis A. King, club adviser, and Mr. Leon O. Clayton, State Boys' 4-H Club Agent, gave brief talks before the election of officers was held. The new officers are: President, Douglas K. Britts; Vice President, Billy Joe Bailes; Secretary, Don B. Still; Treasurer, Howard Thomas; Reporter, Harry Jones; Corresponding Secretary, Billy Hill; and Sergeant of Arms, Graham Pritchard. Following the appointment of Social, Program, and Membership committees, the meeting was formally adjourned.

**ALUMNI NEWS**

W. Oliver Paine, Dairy '38, one of the famous football stars of the Paine family of Greenville, S. C., now owns a dairy farm at Danville, Kentucky.

J. F. Norris, Dairy '37, is Production Manager of Barbers Pure Milk Co., and White's Dairy in Birmingham, Alabama.

John Pitts, III, Agron '50, also former editor of the Agrarian, is now sales representative with the Spartan Grain and Mill Co., with headquarters at Chester, S. C. He is a veteran of both World War II and the Korean conflict. He is a distinguished military graduate of Clemson.

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**THE AGRARIAN**
A.S.A.E. NEWS

Approximately seventy students and faculty members of the American Society of Agricultural Engineers met at 5:30 p.m. on October 28 at the Y.M.C.A. Cabin far a barbecue supper and the initiation of new members. A brief but interesting talk on the history and accomplishments of the local club was given by Mr. W. N. McAdams, Associate Professor of Agricultural Engineering. Mr. G. B. Nutt, Head of the Agricultural Engineering Department and recently elected National A.S.A.E. President, commented on the work of the national organization and complimented the club for its good standing.

The local student club won second place among the larger schools in the Farm Equipment Institute's annual achievement contest last year. Sixty-four members comprise the present enrollment. Officers for this year are John D. Patrick of Clemson, President; Hoyt Hardee of Loris, Vice-President; Claude Lowry of Pembroke, N. C., Secretary and Treasurer; and David Martin of Lyman, Reporter.

E. W. Able, Dairy '32, is manager of the Shrine Mosque in Albany, Georgia.

J. A. Hudgens, Dairy '30, is an Artificial Breeding Association Technician in Sunnyvale, Washington.

J. G. Moxon, former member of the dairy staff at Clemson, is now Vice-President of Ocala Lumber Co., in Ocala, Florida.

R. W. Dickson, Dairy '29, is now the director of farm service for Lindsay Robinson Milling Co., in Roanoke, Virginia. He was formerly a member of the staff at Clemson.

J. W. Guy, Dairy '29, is an engineer with the Cellophone Division of DuPont Co., in Richmond, Va.

R. N. McClain, Dairy '29, is Agricultural Advisor and Vice-President of the Brownfield State Bank and Trust Co., of Brownfield, Texas.

R. M. Jones, Dairy '31, is V.A.E. teacher in Pendleton, S. C. He received his M.S. degree from Clemson in '33.

Dr. C. R. Swearingen, Dairy '37, is practicing veterinary medicine in Smithfield, North Carolina. He received his Doctor of Veterinary Medicine degree at Alabama Polytechnic Institute.

John Earl Wessinger, Dairy '50, is a student in the dental school at the University of Virginia at Richmond, Va.

Lt. W. A. Smithwick, Dairy '49, a jet pilot in the Air Force, is being transferred from Donaldson in Greenville to Langley Air Force in Virginia.

C. E. Cousins, Dairy '48, is now field man for Pet Dairy Products, Inc., of Columbia, S. C.

A. C. Haskell, Dairy '27, is Manager of Haskell Dairies in New Augusta, S. C. Mr. Haskell received his M.S. degree from Missouri.

J. L. King, Dairy '28, is County Agent at St. George, S. C., and now resides in Ridgeville, S. C. He is a former Herdsman for the Clemson College Dairy Department.

W. A. Hambright, Dairy '25, is Secretary-Treasurer and manager of the Spartanburg Production Credit Association in Spartanburg, S. C. He received his M.S. degree from the University of Maryland. Mr. Hambright owns a dairy farm in Blacksburg, S. C.

H. E. Branyon, Dairy '47, is the manager of the newly opened Coble Dairy Products plant in Greenville. He has been superintendent of a dairy in Bluefield, West Virginia, for the past several years.

J. D. Fuller, Dairy '42, is now District Manager for Ralston Purina Co., in Romney, West Virginia.

G. R. Hamilton, Dairy '41, is now manager of two Foremost Dairy plants in Columbia, Tennessee.
“One of the best in the South... ultra-modern...”, says

Fred L. Zink, Jr., Manager
On East Edge of Clemson, S. C. On U.S. 78, 123 & State 28

PENDLETON FERTILIZER

Issaqueena Feed
Cottonseed Products
Certified Cottonseed
Insecticides

PENDLETON OIL MILL
PENDLETON, SOUTH CAROLINA

KEEP UP THE FIGHT
(continued from page 4)

sect enemies is not the job of just a few people, it is everybody’s fight. Little benefit is derived if only a few farmers cooperate. The more farmers in the fight, the greater will be the returns for all. We averaged only one-third the number of boll weevils this year that we fought last year. This number can be reduced even more next spring by early stalk destruction and by following recommended practices.

During the winter is also an excellent time to be thinking about and planning your poisoning program for next year. Experiments have proved time and again that a well-planned and executed poisoning program is far more effective, beneficial, and economical than is the haphazard method used by so many farmers. Today, farming is a science and for it to be successful, must be operated scientifically. A well-planned poisoning program is a very important part of the science of farming. Your County Agent or an Extension Service worker will be glad to help you plan a poisoning program. This winter is also a good time to repair poisoning equipment and get it ready to start in on schedule next spring.

Remember that using high rates of complete fertilizers will not give the highest profitable returns without a complete insect control program. Insure your UNDERGROUND INVESTMENT with ABOVEGROUND PROTECTION.

For further information concerning recommended insect control practices, see your County Agent, nearest Experiment Station, or write to Clemson Agricultural College, Extension Service, Clemson, S. C.

LIQUID FERTILIZER
(continued from page 8)

The use of anhydrous ammonia as a fertilizer or otherwise is restricted by a number of patents.

The source of this article is bulletin number 451, February 1948, of the Mississippi Agricultural Experiment Station, State College, Miss.
I Dare You

N. C. Clark, Jr. A. H. ’55

Ben McDaniel, Mr. Danforth and Niles Clark

Since 1929, the Fellowship has been recognized internationally. Mr. William H. Danforth, chairman of the Board and Founder of theRalston Purina Company, and Founder of the Danforth Foundation is tremendously interested in the activities of the Fellowship, and each year he gives considerable time in helping to build the program.

Mr. William H. Danforth, a wonderful man to know, has had much success in the business world and, at the age of 83, is still active in theRalston Purina Company which he started in 1894. He first began mixing mule and horse feeds because he felt that a mixture of feeds was more nutritious and complete than either of them when fed alone. This is indicative of Mr. Danforth’s sound thinking which has gone far toward making his company what it is today. The company’s record is a good one. It began with an investment of $6,000 and now is evaluated at $164,000,000.

Mr. Danforth’s story of success is not an easy one. He was born in Eastern Missouri and had an early life filled with sickness. One of his teachers, George Warren Krall, dared him to become the healthiest boy in his class. Mr. Danforth took the dare and, as a result of exercise, good food, and will power, became one of the healthiest boys in his class and, indeed, he has outlived most of his classmates. Constant improvement in the fields of physical, mental, social and religious development is Mr. Danforth’s philosophy of life. He strongly asserts his beliefs along this line in one of his books, “I Dare You.” This book can be obtained by sending $1.25 to the “I Dare You” Committee, 835 Checkerboard Square, St. Louis 2, Missouri. The book is a very good gift to make to young boys and girls and the profits from it are given to the cause of youth.

The Danforth Junior Fellowship is a rewarding experience. The program is so planned as to make everything done by the fellows, a complete surprise. This adds greatly to the effect of the Fellowship and is quite unique. The Fellowship begins with the arrival of the fellows in St. Louis during the early part of August. The fellows immediately proceed to Washington University which is to be their home during the first two weeks of the Fellowship. Early on the morning after their arrival, the group leaves St. Louis for Gray Summit, Missouri where Purina’s 738 acre research farm is located. There, the fellows study the layout of the farm where Purina tests all its Chows before putting them on the market. At the farm, an interesting program is arranged which includes study, recreation, fellowship as well as plenty of good home-cooked food. More than 12,000 people annually visit the research farm to look over the feeding experiments and management practices that are conducted there on all kinds of commercial livestock and poultry.

After three days at the farm, the fellows return to St. Louis where they take part in a program which includes condensed lectures on nutrition, research in the nutrition field, laboratory methods used in analytical research, personnel management, establishment of a good (continued on page 16)
DR. GEORGE M. ARMSTRONG

Dr. Armstrong was born in Appleton, S. C., attended, and graduated from Clemson in 1914 with a B.S. degree. He continued his studies and received his Masters' from the University of Wisconsin in 1917. He received his Ph.D. from the Washington University in St. Louis in 1921.

Dr. Armstrong taught for three years in Washington University and then accepted a position with the South Experiment Station in Florence. After this, he began teaching at Clemson and has taught here for twenty-six years. He now teaches a course in Plant Pathology and is head of the Botany and Bacteriology Department.

Extra-curricula activities include many honors he has received. Dr. Armstrong has been listed in Who's Who in American Education, and Leader's in American Science. He is a member of Acacia Rotary Club, and the Clemson Fellowship Club. Honorary fraternities include Alpha Zeta, Sigma KI, Phi Sigma, and Phi Kappa Phi.

FOURTEEN

DR. GEORGE H. AULL

Dr. Aull was born in Pomaria, S. C., attended, and graduated from Clemson in 1919 with a B.S. degree in Agricultural Chemistry. He received his M.S. from University of Virginia in 1928 and received his Ph.D. at the University of Wisconsin in 1937.

Dr. Aull taught Vocational Agriculture for two years before coming to Clemson. Besides being Head of the Agricultural Economics and Rural Sociology Department, Dr. Aull teaches Public Finance, Land Economics, and Agricultural Policy.

JAMES H. BOND

Professor Bond was born in Haynesville, La., attended and graduated from Louisiana State University in 1948 with a B.S. degree. He received his M.S. from Louisiana State University in 1949 and has done graduate work at the University of Texas.

Professor Bond teaches General Bacteriology, Soil Microbiology and Advanced General Bacteriology and has been teaching here for the past six years. Professor Bond is Associate Professor of Bacteriology and a member of the Sage Club.

THE AGRARIAN
Selected Features from
INTERNATIONAL LIVESTOCK EXPOSITION
and National 4-H Club Congress

It's the World Series of Agriculture — don't miss it! Again this year, Allis-Chalmers presents a full hour telecast direct from Chicago, featuring highlights of the International, interviews with delegates to the National 4-H Club Congress, and other interesting features.

You can have a ringside seat at one of the world's greatest livestock shows. See it as it happens. Here are some of the main events.

★ Selection of the Grand Champion Steer by Judge A. D. Weber.
★ Judging the champion carlot of steers.
★ Interview with 4-H Club national winners, conducted by Everett "It's A Beautiful Day in Chicago" Mitchell.
★ Meat cutting and cooking demonstrations by experts of the National Livestock and Meat Board.
★ Close-ups of champion livestock and comments by famous judges.

REMEMBER THE DATE — Tuesday, November 30, 2:00 to 3:00 p.m. CST coast-to-coast on NBC television network. Check your newspaper for nearest station or ask your Allis-Chalmers dealer.
I DARE YOU

(continued from page 13)

we went on a sight-seeing tour of the city and went through the Zoo which is one of the better zoos in the country. This year something new was added when we were given choice seats to see “Cinerama,” the new type of moving picture with a curved screen and stereophonic sound. On our last night in St. Louis, we enjoyed a nice banquet in the Chase Hotel. After two weeks in St. Louis had flown by, we went together by train to Milwaukee, Wisconsin, and then by ferry steamer across Lake Michigan to Muskegon, Michigan, from where we went on to Camp Miniwanca for the next two weeks of the fellowship. Soon after arriving at Camp Miniwanca, I met Ben McDaniel who was the freshman award winner from Clemson. In addition to the Agriculture Juniors and Freshman, there were several hundred other boys from all over the United States at the Camp. They came from high schools, 4-H clubs, and F.F.A. chapters.

At Camp Miniwanca, we entered into two weeks filled with activities. We had classes in the mornings on Christian ethics, Four-Fold living.

Big Oak Ranch

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and

Registered BRAHMAS and HEREFORDS

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These folks are looking at UNI-FARMING—the farming system with a built-in future...

ISN'T IT TIME YOU GOT THE FACTS ON UNI-FARMING?

When a new way of farming can save you money and make you more money, a man just has to know more about it. Take it from the farmers, engineers, teachers who have seen the Minneapolis-Moline Uni-Farmor in action: MM Uni-Farming is the farming system of the future... ready to go right now!

These people have seen the MM Uni-Tractor mount, power, and propel Uni-Machines for harvesting grain, bean, seed, corn, and forage crops. They’ve seen how the Uni-Farmor offers matchless self-propelled operation at a big cash saving over pull-behind equipment. They’ve seen the Uni-Farmor’s speed and capacity slash days from harvest time. They’ve watched one attachment dismounted and another mounted in a matter of minutes... proving that you can actually harvest corn in the forenoon and soybeans in the afternoon of the same day... with the same basic self-propelled machine.

MINNEAPOLIS-MOLINE
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UNI-TRACTOR... your key to profits carries Uni-Machines piggy-back

Here's the MM Uni-Tractor, the entirely new and different tractor that powers and propels all Uni-Farmor machines... puts you right on top of every job. A cross-mounted V-4 engine powers the Uni-Tractor from one end, Uni-Machines from the other. Variable-speed drive lets you change ground speed without changing speed of the mounted machine; Uni-Matic hydraulic power gives you finger-tip machine control. See this Uni-Tractor, and you'll be convinced: there's no other tractor to match it!
BUILDING PROJECT
(continued from page 6)

houses. There is a Headhouse in the center with five greenhouses on each side. The Headhouse contains a soil processing section, a work room, and a general laboratory. This will serve as a classroom for advanced students. The 10 greenhouses are of clear-span type construction (has no roof support other than wall and partitions). The walls are made of a tough, durable corrugated material called transite. The benches are also made of this material.

Also included in the Agricultural Building Program is the Agricultural Auditorium which is constructed as an annex to the Clemson House. This auditorium is to serve a dual purpose. First, it will be furnished so as to serve as an auditorium for conventions to meet in those instances where the convention headquarters will be at the Clemson House. At the present time, agricultural conventions and all others must seek quarters for holding meetings at some other place on the campus. It is thought that this auditorium will be very convenient for the many agricultural conventions which are held at Clemson. Secondly, the annex will be furnished so that meals and banquets can be served. The details of design have been worked out so that the new space can be converted rapidly from one use to the other.

The second phase of the building program is still in the planning stage, and it is hoped the funds for these additional programs of construction will be available so that the Agricultural Center may be completed soon. It consists of an Agricultural Engineering Annex, and animal pathology building, a dairy research barn, and some poultry houses. The Agricultural Engineering Annex is to contain 9,000 square feet of offices and laboratories. The animal pathology building will be just off the Anderson Highway and will have 5,500 square feet for research in animal diseases and veterinary work. The dairy research barns will be in the land-use area near Fant's Grove. They will consist of one large barn of about 6,700 square feet and three smaller ones of about 3,600 square feet each. There will also be four poultry houses totaling 18,000 square feet and a small storage barn built at the present farm.

The cost of the work of the contract will be approximately $3,000,000.00 for construction purposes only. To this will be added a sum of from $350,000.00 to $550,000.00 for furnishings and equipment. Plans and specifications are now on hand for the construction of the second phase of the work on the Agricultural Program, which will call for the expenditure of about $300,000.00 in addition to the construction now under contract. All of this construction is a portion of the $10,200,000.00 construction program which has been completed or is now under construction.

I DARE YOU
(continued from page 16)

The effect of being at Camp Miniwana is tremendous and it would be difficult to attend without being changed for the better in physical, mental, social, and religious development. Why not put forth a little extra effort, Junior and Freshmen, and be eligible for these two fine privileges for self-advancement?

COASTAL BERMUDA
(continued from page 7)

growing season with 100 to 200 pounds of nitrogen per acre in split applications of 30 to 35 pounds of nitrogen per acre at each application.

Planting
Coastal Bermuda must be propagated vegetatively due to its poor seeding qualities. Although this feature has slowed its rate of distribution, it has not seriously handicapped its utilization on the farm. Farmers growing their own planting stock are finding that it costs less to establish Coastal Bermuda than to plant other pasture grasses from seed.

The farmer planning to plant Coastal Bermuda for the first time will do well to consider starting on a small scale. One or more acres planted on clean land and well cared for will, within a few months, furnish an ever-ready supply of good, fresh sprigs at very low cost. Sprigs for these nurseries will go farther if planted like sweet potatoes, i.e., pushing them into the (continued no page 20)
How IH uses POWDERED METAL to help farmers save costly grass seed

New band seeding methods enable farmers to get good stands of grasses and legumes, saving up to 30 per cent in seed. But drilling as few as five or six pounds of tiny seeds per acre calls for extremely accurate seed metering.

To improve accuracy without increasing cost of the seeds used in grass seed attachments for McCormick® grain drills, IH manufacturing research and production engineers turned to a study of powdered, or sintered metal—a relatively new metallurgical process for economically mass producing certain types of precision parts.

Extensive tests developed the correct “recipe” of powdered iron, copper, and other ingredients; the correct pressure for compressing the powder into form; and the correct temperature for bonding the metal particles in a sintering furnace.

The accompanying photographs show some of the steps by which powdered metal is transformed into grass seed drill feeds of greater precision, providing more uniform seed distribution, and minimizing seed leakage.

Here is the finished feed cup assembly with fluted metering wheel and cut-off thimble of sintered metal, with an oxide finish to resist corrosion. Forming these parts from powdered metal in precision dies results in strong feed rolls, each with concentricity uniform to within three thousandths of an inch—as compared with an average of 15 thousandths of an inch for grey iron castings.

Above, a McCormick drill equipped with the new attachment for seeding grass and legume seeds in bands, saving users up to 30 per cent in seed cost. Below, a good stand of a band-seeded grass mixture.

Many other parts of sintered metal have been adopted or are being developed through the teamwork of IH research, design, metallurgical, manufacturing, and field test engineers, working toward the common goal of improving the quality and performance of IH equipment while keeping costs at a minimum. The result is product leadership that helps farmers everywhere reduce production costs and thereby increase farm profits.

For more details write for free engineering paper, “Sintered Metal for IH Farm Equipment Parts.” There is no obligation. Send postcard with your name and address to International Harvester Co., P.O. Box 7333, Chicago 80, Illinois.

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International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors... Motor Trucks... Crawler Tractors and Power Units... Refrigerators and Freezers—General Office, Chicago 1, III.
COASTAL BERMUDA  
(continued from page 18)  
soil with a thin, forked stick and stepping on them to firm the soil around them.  

Coastal Bermuda may be planted from early spring until early fall whenever soil moisture conditions are favorable. Since moisture conditions are usually most favorable during the spring, and since sprigs planted in the spring have a longer initial growing season in which to become established, it is suggested that spring plantings be made whenever possible.  

Fresh sprigs should be planted on a well-prepared, firm seedbed in 3- to 5-foot rows and sprigged 2 to 3 feet apart in the row. About 8 to 12 bushels of planting stock are required to plant an acre. The closer the planting, the quicker a sod will be established. More stolons per acre are required when Bermuda sprigging machines are used.  

Practice shallow, clean cultivation to control grass and weeds until the Coastal runners meet between the rows. A rotary hoe is an excellent implement for this job, though ordinary sweeps are satisfactory.  

THE DROUGHT IN S. C.  
(continued from page 5)  
ways in which to hold the drought in check. In the state of South Carolina as a whole, we have very little irrigation, but it is getting a start as people see the effects of drought and realize that something must be done.  

We here in the Southeast are blessed with something like 48 inches of rainfall a year. This seems like a lot of water. It is, but much of the water that falls runs right back down the streams and into the ocean. This water just might as well never have fallen for the good it does for crops.  

Here in South Carolina we have an average of 6 droughts per year. These droughts are not like the drought that we have suffered from this summer, but they are, nevertheless droughts that can do damage to our crops.  

What are some of the ways that we can conserve this 48 inches of rainfall we get per year and prevent these six droughts?  

First, if we have cover crops, practice contour farming, etc., we can make the water stay longer on the soil and give it a chance to percolate down into the soil.  

Secondly, and apparently a must, we must find some system of storing an abundant supply of water for use in supplementary irrigation. The answer to this is apparently the construction of any water-type reservoir that is possible to construct on your farm. Some of these are dry-land ponds, ponds on small streams, and possibly someday, government sponsored lakes might well supply our need for water.  

During the dry summer of 1961, there was an irrigation experiment carried on at Clemson for the purpose of comparing yields between an irrigated plot of corn and one that was not irrigated. One plot received irrigation once during tasseling time. This plot made 72 bushels per acre while the non-irrigated plot right beside it made 16 bushels of defective corn. In 1953 the irrigated plot under the aforementioned conditions made 61 bushels per acre while the non-irrigated plot produced 27 bushels per acre. Out of the 6 years that irrigation experiments on corn have been conducted at Clemson, a decided gain has been found during 5 of those years.  

As the population of the U. S. increases each year the need for food and fiber grows by leaps and bounds. As this responsibility of increased production faces us we must find some way to stop these droughts that plague our state and the country as a whole if we are to keep our present high standard of living. This problem of the drought is ever staring us in the face and the solution must be worked out or we will continue to suffer the drastic consequences.
A Thanksgiving Soliloquy

"I've heard it said the world's a dismal place.  
But I know better...  
for I have seen the dawn, and walked in the  
splendor of a morning's sun... blinked at the brilliance  
of the dew, and beheld the gold and crimson  
of an autumn landscape.

"I've heard it said the world is sad.  
I can't agree...  
for I have heard the cheerful songs  
of feathered masters... heard the low laughter  
of the leaves, and the everlasting chuckle  
of a mountain brook.

"I've heard it said the world's a musty, sordid thing.  
It can't be true...  
for I have seen the rain... watched it bathe  
the earth, the very air... and I have seen the sky,  
newly scrubbed and spotless, blue from end to end...  
and I've watched the Winter's snow drape tree and bush,  
to look like Nature's freshly laundered linen hung to dry.

"I've even heard it said the world is evil.  
But they are wrong...  
for I have known its people... watched them die  
to save a freedom, bleed to save a life... spend of themselves  
to stem disaster, of their wealth to ease distress... and  
I have watched them live, love, and labor... watched them  
hope, dream, and pray, side by side.

"I have heard them say these things.  
But I would disagree...  
because, for every shadow, I have seen a hundred rays  
of light... for every plaintive note, I've heard a  
symphony of joy... for every pennyweight of bad, I have  
found a ton of good... good in Nature, in People,  
in the World.  
And I'm thankful I belong."
New filter cigarette!

WINSTON brings flavor back to filter smoking!

Winston tastes good—like a cigarette should!

- Winston is the new, easy-drawing filter cigarette real smokers can enjoy! Winston brings you real flavor — full, rich, tobacco flavor. Along with finer flavor, you get Winston's finer filter... it's different, it's unique, it works so effectively! Winstons are king-size, too, for extra filtering action. Try a pack of good-tasting Winstons!

WINSTON ...the easy-drawing filter cigarette!