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Long as thy science truth shall know,
Long as thine eagle harms no dove,
Long as thy law by law shall grow,
Long as thy God is God above,
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So long, dear land of all my love,
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Research Leads The Way Toward Diversified Agriculture In South Carolina

GUEST EDITORIAL --- By R. A. McGinty

For a long time diversification was a favorite topic of southern agricultural workers who emphasized its value at meetings of farmers and in bulletins and other publications. But, in spite of the constant preaching which seemed to appeal to the sinners, there were few real converts. The farmers of South Carolina and the southeast continued to put nearly all their eggs in the cotton basket.

The basic reason for this failure to diversify has come to be appreciated only within the past few years. Farmers were simply unable to produce at a profit the livestock and many of the crops recommended. Why? Mostly because the soil was too acid. Soil acidity and its disadvantages have been recognized for many years, but here in the southeast little was done about it. Cotton and tobacco could endure some acidity and still produce fair crops. As long as unlimited acreages of these crops could be planted, the farmers didn’t worry a great deal. However, when the AAA program made the production of substitutes for cotton absolutely essential, measures began to be taken to correct soil acidity and other conditions which had precluded profitable diversification. Fortunately, the South Carolina Experiment Station was able to furnish the fundamental information required to make the necessary adjustments. The research carried on during the 50 years since the station was established has been worth millions of dollars to the farmers of the state. But the investigations of the past 10 years have a particular bearing upon these recent adjustments in our system of farming.

In 1930, Dr. H. P. Cooper, Director of the Station, came to Clemson as head of the Agronomy Department and recognized at once that soil acidity was a serious problem in the state. With the help of one of the governmental agencies he organized a project under which two million soil samples were collected from the farms of the state and were tested for acidity. The results of this work showed that only 20 percent of the soils of South Carolina were suitable for the maintenance of a diversified system of farming. Another 40 percent of the soils were found to have a pH range suitable for cotton and tobacco but not for the production of nutritious legumes and other crops essential in a diversified system involving livestock. The remaining 40 percent proved to be too acid to grow even cotton economically.

The obvious remedy for this situation was, of course, lime—and lots of it. Although objections were voiced to the use of lime on the grounds that it would “ruin the land” or cause other troubles more serious than acidity, these prejudices gradually have been overcome by presenting all the facts developed through research, and lime is now being used by large numbers of farmers.

With a suitable soil reaction secured through liming, the state can proceed with the production of diversified crops and livestock if proper fertilization and good management are practiced.

South Carolina is a heavy user of chemical fertilizers, and it is important that the right kind of fertilizer materials be applied. Here again the experiment station has led the way toward more economical practices. The new fertilizer law sponsored by the station requires that all fertilizers contain not less than 16 units of plant food. This requirement has eliminated useless filler which is estimated to have cost the farmers of the state a million dollars a year.

“Minor element” deficiencies have caused increasing injury to crops as fertilizer materials have become more and more highly refined. Through the efforts of the experiment station large numbers of South Carolina farmers have learned to identify the deficiency symptoms and the remed’ies to use. Our farmers are reputed to have better knowledge of these deficiencies, and in fact of most soils problems than those in any other section of the country.

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EDITORIALS

In natural beauty the Clemson campus ranks third among our nation’s college campuses. The University of Wisconsin leads, and Cornell University ranks second. Without Mother Nature’s priceless endowments, none of these college campuses could boast their beauty. Still, without the care and ceaseless labor of many generations who loved these colleges, nature’s contributions would have been in vain.

It seems to be man’s unconquerable habit to take for granted those things which have been handed down to him with little or none of his own effort. Strange to say, many of us at Clemson fail in actions at times to show appreciation for the beautiful campus which has been passed down to us. This thoughtlessness is most noticeable in the spring when the grass buds are trying to get a start in the world. These small plants have no chance whatsoever to survive at certain small areas of the campus, because they are being continuously trampled by students. The geometric axiom, a straight line is the shortest distance between two points, is put into action; and thousands of feet heedlessly mar areas which are indispensable to the beauty of our campus. The sign, “Let no one say to your shame that all was beauty here before you came,” is unheeded, if not unread, by many of us as we march on toward the destruction of that which the sign is unsuccessfully trying to protect.

While it is true that the Clemson campus might continue to rank third in natural beauty among American colleges in spite of our present destructive campaign, it is also true that we can unthinkingly lower the rank of our beloved campus. We have men who replant barren areas of the lawn each spring, it is true; but what progress can these men make when we destroy the very fruits of their effort? This injury to Clemson’s campus is not committed intentionally; it is a product of our failure to think about what we are doing. One person’s walking across a plot of grass makes little difference; but when hundreds of boys are involved, the case is entirely different. If everyone walks on the grass at greatly used areas, most of it will die; if everyone uses the sidewalk, the grass will be green and beautiful. Let us stop taking the “short cuts” to classes. The difference is minimized to us who see the campus every day, but it is greatly magnified to those who rarely see Clemson.—E. B. C.

On December 7, 1941 the last Tucker of the night of peace on this globe was ruthlessly doused by the blue yellow pseudo-napoleons of Asia. The blackout was complete. Every continent is affected, no major country remains untouched. No longer can the war be discussed in terms of “they,” for it is now “we,” who are fighting this battle for the privilege of living as human beings.

More than in any previous war this is a battle of every man, woman and child, regardless of whoever or whenever he is. The front line trenches are in your yard and in mine.

This war is a war of production. Sixty thousand airplanes. forty thousand tanks, eight million tons of shipping. Impossible tasks? Impossible tasks to any but a few people striving to preserve all they hold dear. Impossible unless every American rolls up his sleeves and digs into his job with the spirit that justified the Alamo, avenged the Main and extracted full price for Wake, Guam and Midway.

The responsibility for production falls no heavier on any than on the already burdened shoulders of the American farmer. It is he who must produce more food, more cotton, more fats, more of every essential product. He must feed and clothe the United Nations of the World as well as support their armies in the field. He must not merely maintain production but must increase production with less fertilizer and with old machinery. His most valuable tool will be the unconquerable American will to win. Each turn of the furrow will be digging a little deeper the graves of the bloodthirsty warlords who rule the dictatorships.

When soil and sinews have been coordinated, when final victory has been won and the all clear has been sounded, the flicker that was so suddenly snuffed out will once more burst into a glorious flame of peace—a peace which we shall win. A peace which will carry assurance against the repeating of Pearl Harbor. It will be a peace of the people, for it is the people who will be the victors. Until that victory is won we must keep our sleeves up and the sweat pouring, for that is the only way we can achieve our goal.—S. K. A.
Quality Eggs Bring Higher Prices

By C. A. JAMES, III, '43

Uniform eggs packed in cartoons command best market prices

Eggs must have interior and exterior quality in order to obtain the maximum price at both wholesale and retail markets. According to the United States Department of Agriculture, there are five primary factors and three secondary factors which the producer should carefully consider before he puts his eggs on the market. The primary factors are as follows: condition of the shell, air cell, yolk, egg albumin, and germ spot. The secondary factors are the color of the shell and the size and weight of the egg.

In order to discover the condition of the contents of an egg without breaking the shell, it must be candled. Candling is the process of holding an egg in front of a sufficiently strong light so as to make the contents observable.

When purchasing eggs, the buyers first impression is made by the appearance of the shell. Eggs sold as first class should have strong shells; shells that are free from cracks, checks, abnormalities of structure, and are clean.

High quality eggs must have small, immovable air cells. These air cells should not measure more than one eighth of an inch in depth. A condition where the air cell is larger usually indicates greater age, while a movable air cell is an indication of rough handling.

When candling eggs, a yolk which is barely visible and does not move to any extent is desired. As to the color of the yolk, there is a variety of demand; however, the chief requirement is a uniformity of color within a given lot of eggs.

Egg albumin should always be free from blood clots and meat spots as such a condition will lower and often destroy the value of the eggs. Thin watery albumin is undesirable; therefore, it is imperative that the albumin be firm and clear.

Exposed to an environment of heat, fertile eggs will develop large germ spots which in turn will produce blood. Bloody eggs are inedible, and a number of such eggs will bring lower prices.

We now know the important requirements for high quality eggs; the question is how may we obtain this quality? First of all we must start with the source of the egg, the hen.

Heredity has been found to be an extremely important factor in determining egg quality. It is now known that the relative amount of thick and thin white in eggs is an inherited character.

Fowls will require the proper nutrients if they are to produce large numbers of eggs of high quality. The concentration of the yellow pigment in the yolk is primarily due to the plant pigment, xanthophyll, present in the ration. A thin shelled egg is usually due to a lack of calcium or vitamin D or both in the hen's diet.

Fertile eggs can be avoided by merely keeping all males separated from the females. The males presence in the flock does not have any favorable effect upon production.

After the quality egg is laid, the producer is solely responsible for the maintenance of this quality.

Care should be taken to provide a sufficient number of clean nests so as to prevent dirty eggs. Dirty eggs should not be put on the market as they discourage the consumer from buying. Often the farmer will wash dirty eggs. This practice should be discouraged because washed eggs when stored will not retain their freshness to the same extent as will an unwashed egg.

It is wise to gather eggs at least twice a day so as to avoid heating or freezing as the case may be. After the eggs are gathered, they should be cooled immediately and kept cool in a place of rather high humidity.

Continued on page 26
Young Proves Soundness of Using Purebred Cows

By E. P. HUGUENIN, '42

One of the best herds in the state... this herd holds as many state records as all the other herds combined.

It was twenty-four years ago that Fred H. Young, large-scale cotton grower of Florence County, launched into the dairy business when the boll weevil invaded and captured the domain of King Cotton. Many doubted the advisability of this as they did Mr. Young’s purchase of his first purebred heifer for $200.00. But it wasn’t long before this cow, Belle de Sarah, called the “Gold Cow,” came through with her first official test making a medal of merit yield of 858.10 pounds of butterfat, 16,373 pounds of milk. She made this remarkable record when eight years old in a 365 day test.

Progress from this point was rapid, for in 1925 Sensation’s Mikado’s Millie furnished Dixie’s first butterfat and milk championship by producing 850.81 pounds of butterfat, 13,303 pounds of milk as a senior two year old in 365 days. This yield won a medal of merit and silver medal. Tested again as a 7 year old, “Millie” went a step further and captured another medal of merit with a record of 953.89 pounds of butterfat, 15,884 pounds of milk in 365 days, winning the butterfat championship for her age class and testing division. These championships have never been superseded and “Millie’s” 953.89 pound butterfat record is the highest of any champion producer in South Carolina.

The proof that “Fred Young and Son” can raise medal winners as well as start out with them is brought to light by more recent achievements. Two Jersey bulls in the Young herd have qualified for silver medal awards of The American Jersey Cattle Club, national organization of Jersey cattle breeders located in New York, N. Y. The bulls, Milly’s Goddington Noble and Pioneer Coronation, were qualified for the awards on the silver medal records of three daughters each. The heifers were all bred and tested in Mr. Young’s herd.

“Milly’s Goddington Noble”

Milly’s Goddington Noble is a homebred bull out of the double medal of merit winner, Sensation’s Mikado’s Millie, who was mentioned at the first of this article. He received his silver medal award at 11 years, 8 months of age and has seven tested daughters whose records average 606.40 pounds butterfat. In addition to the three qualifying silver medals there are two gold medals in the list.

Milly Eminent Fern was the first silver medalist and the youngest, starting on test as a yearling. In spite of the fact that she was extremely young she produced 543.90 pounds of butterfat, 9,478 pounds of milk in 365 days.

The next one to climb the ladder of success was Milly Lena of Don. She yielded 568 pounds of butterfat, 10,944 pounds of milk in 305 days as a junior 4-year old.

Milly Fairy, not content with a silver medal took a gold on as well. Starting on test at 4 years, 11 months of age she produced 790.63 pounds of butterfat and 16,513 pounds of milk in a year. This record holds a state age-class championship for milk production in the 365 day testing division.

The other gold medal award was for the record of Milly Blue Violet, who produced 757.66 pounds of butterfat, 14,663 pounds milk in 365 days as a 6-year old. All of these were milked three times a day.

Pioneer Coronation

Pioneer Coronation has a silver medal sire and grandsire, and his gold and silver medal dam is a daughter of a gold and medal superior sire. The new medal bull received his award at 7 years, 5 months of age. He was bred in the herd of W. M. Anderson, Philadelphia, Pa., but has been in the Young herd since he was five months old. Of his twenty two registered progeny seventeen are heifers.

The seven tested daughters of Pioneer Coronation have an average yield of 567.91 pounds of butterfat. All made silver medal records and one won a gold medal as well.

Pioneer Noble Goldie, the first silver medal producer, yielded 780.18 pounds butterfat, 14-118 pounds milk in 365 days, and started on the Continued on page 26
Quality Food for Vigorous Health

At the present time too much emphasis cannot be placed on the importance of the right kind of food.

(Editors Note—Recent rejections by the army of large numbers of selectees because of physical deficiencies has emphasized once more the problem of human nutrition and the importance of providing every citizen of our country with the right kind of food—food for positive vigorous health. The subject of human nutrition was the topic discussed when the South Carolina State Nutrition Committee met in Columbia. Three members of the committee were participants in this broadcast. Taking part in the broadcast were: R. A. McGinty, Vice Director of the South Carolina Experiment Station, Miss Ada M. Moser, in charge of Home Economic Research, and Dr. E. J. Lease, Associate Chemist, both of the Experiment Station staff).

McInty—Mr. Sherman this question of nutrition is one which is of direct concern to everybody who eats and that of course means every one. Since it’s not long until supper time I think the subject is a timely one. Both Miss Moser and Dr. Lease are greatly interested in nutrition and both are working in that field. Miss Moser has made a survey of the diets of rural families all over the state and knows pretty well what our eating habits are. Miss Moser, I believe there is a popular conception of Southern eating which visions an abundance of all kinds of food such as fried chicken, roast pork, game, hot breads, vegetables, jellies, and so on, all against a background of fine old Southern hospitality. Is this a true picture of our food situation as we find it today?

Moser—Well, Mr. McGinty, there are some families who have such abundant diets, but unfortunately there is another less pleasant picture—that of families living largely on cornmeal, white flour, fat pork, molasses, and having very few vegetables and little or no milk, eggs, or fruits. However, by far the larger number of South Carolina families live on diets which fall between these extremely good and extremely poor ones. In our survey which you mentioned we have secured weekly food records from white and negro families in different sections of the state in such way that we have a fairly good picture of the quantities of different foods eaten the year around and whether these foods supplied enough protein, minerals, and vitamins for good health.

McInty—About these vitamins and minerals, Dr. Lease, you have been doing work on the vitamin and mineral content of food products, can you tell us what foods typical of the South are not only palatable but are also rich in vitamins and minerals?

Lease—Well, take sweet potatoes, for instance. They’re a good source of vitamin A which prevents night-blindness. They also have iron which we need to prevent anemia, and they have some vitamin C to keep us from having scurvey. Green leafy vegetables, like our turnip greens, and collards, supply not only vitamins A and C, and iron, but also calcium, which is used in building bones and good teeth. Green leafy vegetables also contain various members of the vitamin B complex such as riboflavin, nicotine acid, etc., which help prevent pellagra and other diseases.

McInty—Dr. Lease, I suggest you would tell us a little about night-blindness and its cause.

Lease—It is a term applied to a condition that makes people stumble over objects in dim light or partial darkness because they can not see under such conditions. It is caused, as I said, by a lack of vitamin A. England recognizes the extreme importance of good nutrition and we understand are enriching the diet of pilots of the Royal Air Force with high levels of vitamin A so that they can see targets and planes better at night. Thus they are applying the scientific principles that vitamin A prevents night-blindness and aids vision in dim light.

Moser—During the last war vitamin C deficiency was very common and is said to have played a big part in breaking down the morale of the German people. Today they are guarding against such a deficiency by the use of synthetic vitamin C. They haven’t yet learned how to synthesize vitamin A and must still obtain it from natural food products.

McInty—Miss Moser, a while ago Dr. Lease mentioned pellagra. Do we have much pellagra in South Carolina, and can eating the right foods keep us from getting it?

Moser—Well, we still have around 1500 cases of pellagra reported annually in South Carolina. These could be prevented by the use of certain foods, which are usually available—Continued on page 8
QUALITY FOOD FOR VIGOROUS HEALTH...

Continued from page 7

for example, milk, lean meat (especially liver), fish, peanuts, and leafy greens such as collards and turnip greens. Whenever we find cases of pellagra serious enough to be recognized, we may be sure there are many more people that have mild and undetected forms of this nutritional deficiency.

McGinty—You have spoken of the value of milk, lean meats, fish, and certain vegetable foods in making the diet better. Do you think of any other improvements we might make?

Moser—Yes, indeed. For example, lightly milled cornmeal and grits are better than those which are highly refined, because they contain more vitamins and minerals. Whole wheat flour is superior to white flour. Home-made sugar cane and sorghum syrups are better than the highly refined syrups often used, because the former contain more iron.

Lease—It seems to me we ought to mention at this point that the public is coming to realize that highly refined foods have been robbed of their best parts by the refining process. Refined food often provides little more than energy, with little or nothing for maintaining or building up the tissues of the body. Today the average American eats 115 pounds of sugar a year. Forty years ago the average American ate only about 1-8 this amount of sugar. Our white flour is also more highly refined, our rice is stripped of every trace of its bran, our grits are whiter, and so on. All these refinements and changes have got us to the point where we secure 2-3 of our calories from these highly refined products and must get practically all our vitamins and minerals out of the remaining one-third.

Moser—Yes, that's exactly the situation. We like things sweet, our cakes, bread, etc. white and mellow. The public has recognized this and is trying to correct the deficiencies of certain refined foods by direct enrichment with vitamins and minerals. The new enriched flour, for instance, which contains several vitamins and a small amount of iron, is a big improvement over ordinary white flour. For the very small difference in price, I think it would be good economy for all South Carolina people to buy this enriched flour or have their own flour enriched at the mill. Whole wheat flour, of course, doesn't need enriching.

McGinty—Dr. Lease, how is this enriched flour prepared?

Lease—By thoroughly mixing a definite quantity of the vitamins with the flour and adding a small amount of iron salts.

McGinty—Enriched flour and enriched oleomargarine will no doubt help in a practical way to improve our diet, but are there not a lot of good foods, Miss Moser, that can be produced easily in this locality?

Moser—Yes, there are sweet potatoes and green leafy vegetables already mentioned. There are also peanuts, beans, and peas, which contain vitamin B, iron, and protein, lightly milled cornmeal and grits, another source of vitamin B and iron, and home-made syrup, important for its content of iron. Our people should not suffer from dietary deficiencies if they are able to obtain in addition to the vegetables and cereals a reasonable amount of milk, eggs, and lean meat. However, the facts are that almost 1-4 of the white farm families studied and 1-2 of the negro families had diets which were definitely deficient. A large percentage of the diets could be rated as only fair. Only about one-third of the white farm family diets and one-tenth of the negro family diets could be regarded as fully satisfactory.

McGinty—In a state where nutritious food can be produced in abundance, it seems incredible to me that such a large proportion of our rural families should not have an adequate food supply all the year round. In making your study of diets, Miss Moser, did you select families who could be thought of as having a low standard of living?

Moser—No. We tried to study families that represented neither the lowest nor the highest levels, but rather the large group between these two extremes.

McGinty—Well, what is the explanation for the large proportion of deficient diets?

Moser—There are several reasons for that. We found that if farm families did not produce good supplies of milk, eggs, vegetables, fruits, and lean meat, they usually did not get an adequate supply of these valuable protective foods.

McGinty—Could they have purchased the foods they didn't produce but needed for protecting their health?

Moser—Some were not financially able to purchase the needed foods and if they did not produce them, went without. Others could have had good diets if they had known how to select the right foods. There were a considerable number of simple diets which, due to careful
Recent Trends of the Family

By C. B. FELLERS, '43

The farm family's standard of living is approaching that of the urban family.

Everywhere the family is the basic unit in the composition of society. As the most fundamental primary social group, it is the arena in which the major part of the individual's personality is formed. The family has its variations from region to region, from New England to Southern plantation and Western plain. It is only natural that variations would occur, but in essentials it is much the same. It is a genetic group bound by kinship and marital ties consisting of father, mother, and children, living together under one roof.

The farm family is a working unit as well as a living unit. The occupational environment puts all the members of the family group into close contact with each other. With this close integration the rural family remains to be more permanent than the urban family. There is a greater dispersion of rural families causing a more isolated and self-maintaining group. Today in America the rural families are producing the bulk of the future population to be consumed by the city.

Changes from the rural family of the colonial days began in the growing urban centers of the nation. More recently many of the city's influences have been diffused to the country with the result that the rural family is now undergoing decided changes. In 1880, we were a nation almost entirely rural with 26 percent of the population urban, but today the picture has decidedly changed with over one half (53 percent) of our population urban. The rural non-farm which include the sub-urban population, villages (under 2500 population), part time farmers who cultivate less than three acres, and the highway dwellers are steadily increasing. The migration from the rural sections are playing a big role in molding the traits and characteristics of our families.

The importance of the family of today is declining from that of the early American family mainly due to the industrial revolution. Institutional functions of the family and the importance of the family in the formation of character has declined. These and similar changes in the economic function of the family are reflected in the shift of occupations from the homes and the increased employment of women outside of the home. The economic functions once performed within the family group are now largely transferred to specialized agencies.

Along with the changes in functions recently have occurred important changes in family organization. According to the sixteenth census of the United States (1940) the changes in family organization may be summarized as follows: larger number of families, increasing 16.6 percent from 1930 to 1940; the size of the house-

Continued on page 23
Advantages of Crop Rotation

By R. N. Gleason, '42

There are many pathogens that remain from season to season in the soil, living on plant refuse from the previous crop, and when susceptible crops are grown year after year these pathogens accumulate to a point which makes production unprofitable. It is for this group of pathogens that rotation is important as a control measure. If unsusceptible crops are substituted these organisms may be "starved out" and their populations decreased. We should keep in mind, however, that the efficiency of rotation as a control measure for diseases depends on using clean seed, seedlings, or bulbs and following field-sanitation measures. The cereal rusts, mildews, most of the cereal smuts, and late blight of potatoes are not controlled by rotation of crops because the spores of these diseases are readily carried from infested to non-infested fields by the wind.

Fighting weeds occupies about 30 percent of all the time a farmer spends in cultivation of crops, according to experts in the United States Department of Agriculture. Crop rotation is the most economical and most effective means yet devised for keeping land free of weeds. A well arranged sequence of tillage and cropping is more easily practiced than any other known method; however, not all one-crop farms are weedy. As a rule weed problems on farms where crop rotation is practiced are not as severe as those on farms devoted for one reason or another to a single crop.

Farmers should consult their county agents or agriculture teachers as to the rotation best suited for their respective areas.

When the remaining leaves have fallen from the apple trees, they should be plowed under along with the fallen apples and other refuse. This practice will aid in the destruction of the spores of Bitter Rot and Apple Scab, which live overwinter on the leaves and refuse. In addition this will disturb the Coddling Moths, Oriental Fruit Moth, Plum Curculio, Spring Cankerworm and the Grape Rootworms in their dormant stages in the ground and bring about the destruction of many due to exposure to cold, rainy weather and their inability to return to the soil.

The practice of growing different crops successively in a certain prescribed order on the same land is known as crop rotation. Rotation of crops is based on a long-time plan and includes crops that are adapted to the environment and that fit into a profitable farming system. Good rotations favor the maintenance of soil fertility, the control of many plant diseases, and the control of weeds.

Crop rotations necessarily include legume and sod crops if the fertility of the soil is to be improved. These crops promote nitrogen-fixation and maintain the humus content of the soil. We must remember, however, that rotation of crops is one factor in maintaining soil fertility and for complete maintenance, manures and commercial fertilizers must be used in conjunction with crop rotation. The farm land is protected against erosion, the most easily recognized of the soil depleting forces, by a growing crop the entire year. Therefore, crop rotation may be used to advantage on rather steep land.

Diversification is accomplished best through crop rotation. It pays a farmer better to have several important enterprises rather than only one, thus providing against total failure. Diversification distributes the income over the year and provides a full year's work for men, machinery, and horses.
Soil Conservation Demonstrations

By C. B. Fellers, '43

These demonstrations are an effective means of presenting new methods of soil conservation to South Carolina farmers.

Terrace building is a way of bringing an eroding farm back into its own.

The practical use of a home-made lime spreader for a more profitable agriculture.

During the month of November, there were two soil conservation demonstration farm schools held in South Carolina, one in the Piedmont section and the other in the lower part of the state. The soil conservation demonstrations for the Piedmont and the lower state were held at the farms of Harry W. Shealy, Newberry County, and Ira B. Newsom, Lee County, respectively. At the two demonstrations practically every county in the state was represented. The attendance exceeded all expectations, with 1154 farmers and agricultural leaders attending the demonstration in Newberry County, and 140 attending the lower state demonstration.

The complete one-day soil conservation demonstration farm schools were sponsored by the state Extension Service, Soil Conservation Service, State Forestry Service, and State Experiment Station and all arrangements made and demonstrations outlined by the joint engineering and agronomy committees of these services. It is the thinking of these service organizations that efforts should be correlated and all demonstrations and practices carried out on a single farm here and there so that farmers can go there and see the whole picture of diversified farming and proper rotation and soil conservation practices being carried out on one unit.

As the people arrived they were divided into squads of about one hundred, instructed about the day's activities, and put in charge of a squad leader who conducted them over the entire farm, on all parts of which the most practical known means of soil conservation and improvement and land use being carried out.

Fifteen definite soil conservation and farm improvement demonstrations were under way partly finished and portions being built. These were wildlife, fire lane, interplanting pine, timber-stand improvement, small grain seeding, tree planting, pond, kudzu, new pasture development, terrace building, annual grazing crops, rotations, marketing timber, irrigation, and ditching.

Lime was needed on practically all of our soils for a more profitable agriculture, it was pointed out, and a home-made spreader was demonstrated. Commercial lime spreaders are almost unattainable now, on account of national defense work, and plans for a home-made one are being perfected here at Clemson College and can be secured thru county agents.

Legumes are the basis of economical soil building, it was shown, and inoculation was urged. The scientific laboratories have isolated the more virulent strains of bacteria that gather Continued on page 22
Nitrogen Needs and Sources

By J. B. PATE, '43

Nitrogen is essential to plants because it plays a fundamental part in the formation of proteins, which are essential to living cells. Nitrogen has received more attention than any other element in research work. The reasons for this are:

1. The amount of Nitrogen is low in average soils.
2. Plants use large amounts of Nitrogen in growth.
3. Nitrogen is very readily lost in drainage.
4. Nitrogen often becomes unavailable.
5. It produces an immediate effect on plants.
6. An over application of nitrogen may upset the nutrient level of the soil.
7. Nitrogen is expensive in form of a commercial fertilizer.

Nitrogen is absolutely essential to the maintenance of soil fertility. It is so necessary for plants and animals that all life would cease to exist without it. Nitrogen plays a major role in the development and functions of protoplasm in plant and animal structures. Growth and reproductive tissues especially require nitrogen. Nitrogen is more responsible for the rate of growth of plants than any other element.

The mineral compounds of the soil, such as calcium, magnesium, and iron compounds, originated from the decomposition of original rock material. However, the nitrogen compounds in the soil are derived from the air. The air is composed mostly of a mixture of nitrogen and oxygen of which about 80 percent of this is nitrogen. This nitrogen is inert and will not enter into combination with other elements. Plants are unable to use this nitrogen in the air. There are a few ways in which this nitrogen in the air may get to the soil. The most important way is fixation by organisms. There are two types of these organisms. The legume fixing organisms live on the roots of legumes. They get carbohydrates from the plant and in return they take the nitrogen from the air, leaving it in a form that can be used by plants. There are also certain free-living organisms which fix nitrogen. A very small amount of nitrogen in the air is fixed by electrical fixation. Also a small amount of nitrogen is present in precipitation.

The amount of nitrogen present in South Carolina soils is very low, even below the average amount in the soils of the United States. Nitrogen is returned to the soil by crop residues, green manures, farm manures, commercial fertilizers, nitrogen in precipitation, legume fixation, and free fixation. Nitrogen is lost from the soil by leaching, crop removal, erosion and denitrification. The farmer must be conscious of how easily nitrates are leached from the soil. Erosion is a serious problem for South Carolina farmers, because not only is nitrogen lost from the soil, but also other essential elements. Denitrification is the reduction of nitrates to the elemental or ammoniacal form which is lost to the air. Probably three of the best ways to increase the nitrogen content of the soil are by the growing of green manure crops, growing of legume crops, and applying farm manure. These methods are cheap and the average South Carolina farmer should be able to carry out these practices. The application of commercial fertilizer is also an excellent way to increase the nitrogen content, but it is rather expensive.

There is a general belief prevalent that nitrogen must be in the nitrate form to be used by plants; however, this is untrue. There is fairly well established evidence that nitrogen in the form of ammonia and organic compounds may be utilized by the plant.

Nitrogen in the organic matter of the soil is broken down. First the nitrogenous compounds are broken down to ammonia; a process known as ammonification. Nitrification is the process by which the ammonia is changed into nitrates then nitrates. These processes are carried on by bacteria. There are numerous factors which influence nitrification. The factors that the farmer should know about are aeration, temperature, moisture, active lime, fertilizer salts, and the nitrogen-carbon ratio.

Since nitrogen is so essential to plant growth, it is so easily lost from the soil, and is rather high as a commercial fertilizer, every man of the soil should be interested in it. The average acre of soil in South Carolina contains only 800 lbs. of nitrogen, thus the South Carolina farmer needs to be "nitrogen conscious."
Post-War Crisis in Prospect

By J. L. Schaffer, '43

The tremendous rise in production to meet the national emergency may cause one of the greatest problems that has ever faced our rural population, unless definite steps are taken immediately. At the rate of approximately two million a year, people from the farm areas of the nation are going to the big industrial centers to help build our armed forces in the emergency. These jobs are providing the people with a better livelihood than they can receive from farming. During this period of emergency, the farmers will experience greater and greater difficulty in securing labor, and they will have to mechanize their farms as much as possible in order to plant and harvest their crops. Their need for farm labor will decrease as the mechanization of farms increases.

As with all wars, we pray that some day this war will end. At the conclusion of hostilities, the army workers will no longer be needed to provide arms and machines for our forces; and they will be fired from their lucrative jobs. What will happen to these people who left farm areas to go to the cities? The cities will no longer need them when the emergency is over, and the farmers will not need them because their farm work will be done by machines instead of human labor. This situation is to be considered for the effects are far-reaching. We certainly do not want to have another post-war depression like the one that followed World War I, nor do we want to see hasty mass migration of industrial laborers back to the farm. If they return to farms either as laborers or subsistence owners, there is a likelihood of over production, and this will cause a depression of farm prices.

It is clear that the problem will have to be tackled on a national basis: communities or states will not be able to handle it by themselves. A program similar to the W. P. A. could be used to cushion the shock, but the big problem will remain. How can production be maintained at the present emergency level with the goods produced being consumed by the civilian population instead of the army? In all future long-range planning by the government, this problem must be given primary thought.

FARMERS WAKE UP AND SEE FACTS

"Mr. Smith how do you like the government terraces?"

"Well, I can't say that I like them because last year my terraces held when Mr. Morgan's new government terraces washed away and ruined his field. I think my old terraces will satisfy me since they hold most of the time."

"How long had the government terraces been constructed?"

"About six months, I think."

Mr. Smith doesn't have any confidence in the government terraces because a big rain washed over them before they were settled.

The above experience is taking place in the majority of farm communities in the South—not necessarily about terracing, but other government projects and soil conservation practices. Farmers don't realize the true facts; they jump at conclusions. Farmers investigate only one side of the problem; therefore, their picture is warped. If a practice fails once under certain conditions, that doesn't mean that the practice is useless. We must investigate the possibilities of failures and the causes of failure.

Let's not be narrow-minded, biased, or prejudice. A good motto would be "Give practices, theories and etc., a fair, honest-to-goodness trial and study before we condemn or criticize them."

In young apple orchards the overwintering nests of the Brown-tailed moth may be collected and destroyed.
They Also Serve...

A story about dogs is always appealing

By HARRIET LAURA HEFNER

These working collies have cut one certain sheep from the rest of the flock

Just about the most popular single event during the Agricultural Show at Clemson College, was the sheep handling demonstration put on by Colonel E. W. (Ted) Cook, of Animal Husbandry Division. Training collies to work has been Colonel Cook's hobby for many years. Colonel Cook is a master hand at teaching collies what to do, when to do it and how to do it in handling sheep, and just in passing let me say it is amazing what a dog can be taught to do and how useful he can be. Over and over again the question is asked, "how does he do it?" I asked it along with the rest and sought the answer from Colonel Cook himself.

To begin with, Colonel Cook loves dogs and particularly does he love his dogs, but it's better to let him tell his story in his own way which is a story that has to do specifically with collies and his everyday work at Clemson. "Of course," he says, "other breeds can be trained to work to a certain degree" but his specialty is to train Highland or Border Collies only.

In a special interview, Colonel Cook puts it this way—"Border Collies respond particularly well as the working instinct has been bred into them for hundreds of years. The Highland or working collie, as they are more commonly known, traces its ancestry back to the working strain of dogs bred in the hills of Scotland through countless generations. The open range prevails throughout the Scottish highlands. There are particularly no fences there, so a dog is indispensable in that region for herding sheep and keeping the different flocks separated." Mr. Cook's two beautiful imported collies that work with almost human intelligence, and they delight in showing their skill before the admiring crowds that gather to see them. They watch their master intently for instructions as he starts across the pasture. A low whistle, a wave of his arm and off they go to obey his command. Signals are given by various whistles or waves of the arm instead of spoken words. It is Colonel Cook's experience that "often dogs are working at great distance, too far to hear the voice, but they can hear a sharp whistle or see a motion of the arm. A peculiar but advantageous characteristic of the Border collie is that the paws of the front legs usually point outward. This aids them in stopping suddenly and turning quickly. Border collies work without barking, a most commendable trait. Quickly and silently they circle a flock, gently urging the animals to go where they are wanted. The habit of silence in dogs is greatly to be desired. A noisy or barking dog may frighten animals causing them to run in all directions.

In color, working collies are usually black with white markings, some few are jet black and in rare instances one is found tri-colored—that is, some tan is included in the marking. The head is short and broad with intelligent eyes set well apart. The body of this breed is rather slender and is covered with a heavy coat of smooth medium-length hair. There are four principle strains of collies: the Bearded, the sable and white, the black and white and the miniature or Shetland Sheep dog. Each strain has its distinct characteristics and uses. The Bearded collie is used mostly for herding cattle and is a rough, long-haired dog, blue-grey in color. The handsome long-headed sable and white collie, so numerous in this country, are bred chiefly as companions and for show purposes. These dogs should not be confused with the type we are discussing which has gained worldwide recognition through the famous sheep-dog trials in England and Scotland. The short head black and white working strain is the only collie Mr. Cook is interested in training. He likes to begin the training when the puppy is around six to eight months of age. At the beginning the puppy is allowed complete freedom of the pastures, is permitted to follow

Continued on page 18
A New Method of Treating Fence Posts

By E. M. JOHNSON, '42

As our forests disappear, posts will have to have better care if they are to serve to their best advantage.

A cheap and simple method of treating fence posts is fast becoming the cry of farmers in the state today. Under the general program of diversified farming, more livestock is a major topic. This means more pasture and better pastures. Many farmers have already learned that "King Boll Weevil" now wears the crown of "King Cotton" and are turning parts of their cotton acreage into pasture.

Work on a non-pressure method of treating Southern pine posts, using a solution of either copper sulphate or zinc chloride, is being carried on at present by members of the Experiment Station staff.

The principle of the method used was first discovered by Dr. M. Boucherie, a Frenchman, but was pushed into the background until a few years ago. In the original method the fresh cut poles were placed in the solution and the pressure head plus capillary action of the liquid forces the solution through the tree.

Not enough results have been attained to permit the leaders to offer permanent recommendations, but they have presented tentative suggestions as follows:

The trees shall be felled and cut to desired lengths at least 24 hours before treating. This allows the excessive gum to accumulate on the ends of the posts. Either earthen or wooden containers (halves of wooden barrels are recommended) are necessary as the solution reacts readily with metals. Two pounds of salts to one gallon of water will give the correct concentration if all of the crystals are dissolved.

Just before treatment, from one to two inches of the butt end of each post should be sawed off and the freshly cut end placed in the solution with the post held in a vertical position. Two quarts for each cubic foot of post to be treated will be sufficient.

The post should be removed from the solution after three days and about one inch sawed off the top end. The top end should then be placed into the same container. No more solution should be added.

During treatment posts are placed in half barrels containing a solution of copper sulfate or zinc chloride.

When all of the solution has been absorbed, the posts should be removed from the container and allowed to air-dry for at least one month before setting.

The cost of treating an average post with either salt is about five cents per post. Copper sulphate is the easier salt to obtain and work with, but it seems to be more corrosive to metal than zinc chloride. Past records have shown where both salts have been used as a wood preservative in other processes, a copper sulphate treated timber remained in a preserved state approximately five years longer than one receiving zinc chloride. At present more treating is being done in the state with zinc chloride, but work is being carried on on the corrosion of copper sulphate. In the future, if this is successful, copper sulphate may become the more widely used salt.

The extension of the process is increasing rapidly due to its adaptability to every size farmer. Southern pine is available in every county in the state. Someone has said that the trees that need to be thinned out of our forests today would many times exceed the need for fence posts in the state. The reason why fence post treatment is increasing is because the process is so simple and economical that even the small farmer can do it.
Judging Team to Chicago

The Clemson Judging Team composed of J. B. Griffith, H. H. LaMaster, G. W. Edwards, M. D. Watkins, H. L. Crouch, and Roger L. Bull attended the Annual National Livestock Judging Contest and Show in Chicago, Illinois. This group accompanied by Professor E. R. Hauser of the Animal Husbandry Department, toured through Kentucky, Wisconsin, and Illinois, where they competed with other college judging teams on all classes of livestock.

A. S. A. E. News

The student branch of the American Society of Agricultural Engineers initiated fourteen new members this semester—six seniors, two juniors, and six sophomores. The club has made Christmas cards which will be sent to all agricultural engineering alumni and also will be sent to student branches of A. S. A. E. in other states.

Experiment with Sweet Potatoes

Mr. G. H. Dunkelberg, associate agricultural engineer, and Dr. J. B. Edmund, associate horticulturist of the S. C. Experiment Station, are working on air conditioned storage compartments from which information will be obtained on the effects of variations in temperature, humidity, and air exchange on sweet potatoes in storage.

Among the faculty and the experimental staff

James M. Stepp, research specialist in rural industries in the department of agricultural economics and rural sociology, was the Alumni speaker at a homecoming dinner at his Alma Mater, Berea College, Berea, Kentucky, on November 21.

Dr. G. B. Killinger, associate soil scientist, left Dec. the first to join the experimental staff of the University of Florida where he will continue his work. Dr. Killinger from Iowa has been with the experiment station at Clemson for the past four years.

L. E. Scott of the Sand Hill Experiment Station near Columbia, S. C. is now at the University of Maryland working toward a doctor's degree.

He has been employed by the Horticulture Department in research work of peaches, grapes, asparagus, and sweet potatoes at the Sand Hill Station.

L. O. van Blaricom, in charge of the new horticulture cannery, has gone on a vacation to his home in Oregon. Mr. van Blaricom will spend a week in California, observing the canneries and the food research organizations.

Dr. G. H. Collings is now editing a new book for the Blakiston Company named, Nature and Prevention of Plant Diseases, written by Dr. S. Starr Chester, head of the department of plant pathology at the Oklahoma A&M College.

Dr. J. T. Kroulik is now assistant to Professor W. B. Aull, vice dean of the school of agriculture and professor of bacteriology. Dr. Kroulik did his undergraduate work at the University of Texas and also received his master's degree from there. He obtained his Ph.D. from Kansas State. Before coming to Clemson, Dr. Kroulik was employed by the state board of health in Texas.

Dr. H. P. Cooper has recently delivered a series of ten lectures to enlighten his staff on the physical and chemical factors involved in nutrition.

G. H. Aull and J. M. Stepp, of the department of agricultural economics and rural sociology, attended the annual meeting of the Southern Economic Association at Nashville, Tennessee, November 13-15. The meeting was devoted largely to a discussion of current aspects of the economic developments in the South.

G. H. Aull, head of the department of agricultural economics and rural sociology, was the principal speaker at a Thanksgiving dinner meeting of the Interstate Committee of the Y. M. C. A. given by Mr. Charles Cannon, at Kannapolis, N. C., on November 25. Doctor Aull used as his subject, “Some Economic Teachings of the Bible.”

Dr. W. H. Mills attended the Annual Harvest Festival at Penn Industrial School on St. Helena Island on November 28. Dr. Mills is a trustee of the school.
Alpha Zeta Active

Recently eight seniors and seven juniors were initiated in the Alpha Zeta. This brings the total number of members to twenty six, the largest in the history of the South Carolina chapter. With this large number, the chapter is in the midst of a very active year. Plans are being made to contact all alumni members of the S. C. chapter of the Alpha Zeta, and a news letter will be sent to all these old members. Coaching classes in all agricultural subjects will be held for freshmen during the week before exams. Lately, an informal “smoker” was held in the Y. M. C. A. club room.

Alumni

O. K. Pressley (Class 1929), graduate in animal husbandry, has recently been promoted from a captain to a major in the U. S. Marine Corps. Major Pressley was captain of the football team his senior year, and he was in all American center.

J. M. Dunlap (Class 1923), dairy major is owner of the Cleveland Ice Cream and Milk Products Company in Cleveland Tennessee. Mr. Dunlap is active in civic clubwork, and he is instrumental in the rotary and dairy calf club work.

Max Chapman (Class 1936), graduate in Ag. Ec. from Sandy Springs, has recently been promoted from a first lieutenant to a captain in the Marine Corps.

R. N. Davis (Class 1939), graduate in Ag. Ec., has been appointed as an assistant county agent of Aiken County. Rhett has been with the extension service at Clemson since his graduation.

New Water Plant

Four thousand feet of ten-inch cast iron pipes are being laid on the campus as part of the $140,000 filter plant system now under construction at Clemson. The new purification plant will replace a long out-dated settlement basin which now supplies Clemson's water. The present water plant was installed more than twenty years ago, when Clemson’s enrollment stood 1007 students.

Collings visits Research Center

Dr. G. H. Collings, professor of soils, recently visited U. S. D. A. Beltsville Research Center located north east of Washington, D. C. Dr. Collings said the research center covers 14,000 acres with 70 miles of undeveloped roads. Millions of dollars will be spent for improvement and necessary buildings for the project. Eventually 1600 research workers are going to be employed at the Beltsville Research Center to do agriculture research work. Dr. Collings says.

Horticulture Exhibits

For the past several weeks the horticulture department have been demonstrating different varieties of peaches canned in the new cannery at Clemson. The exhibits have been held for peach growers, agriculture teachers, and county agents in which the different varieties were actually seen and tasted.

Control of the Pecan Twig Girdler may be accomplished by picking up and burning the severed branches which contain the larvae. Disposal of the shucks will materially decrease the Hickory Shuck Girdler; and plowing under of the shucks will kill many of the adult Southern Green Stinkbugs, which cause Black Pit and Kernel Spot.

To prevent winter injury to small pecan trees avoid late cultivation; and as a final measure, burlap sacks may be wrapped about the trunks of the trees and removed in the spring. Winter injury has never been reported on trees over nine years of age.

Early preparation of garden plots will have a two-fold advantage. If the first good days of spring are spent in preparation, planting will be delayed too long and yields may suffer severely. This “cleaning up” where food plants have grown is a good supplementary control for Mexican Bean Beetles and other garden and truck crop pests.
TRAINING COLLIES TO WORK

at will and become thoroughly acquainted with its master and the animals. The first lesson deals chiefly with obedience. Mr. Cook says "Nothing can be accomplished until obedience is established. Some puppies, like some children, are more nara-headed than others and each individual requires a different technique, but with time and patience the task can be accomplished. At first, I teach the puppy to lie down when the command is given. In order to help him understand what I mean, I give the command and at the same time gently push him down. If this is practiced a few times faithfully, the dog will soon realize what is required and will be willing and eager to lie down of his own accord when the signal is given. Let him learn one command thoroughly before attempting another. Confusion will follow too many commands hastily given. Always let each lesson soak in thoroughly before attempting a new one."

"Now," Mr. Cook continues, "after the puppy has learned to obey the signal to lie down he is ready to learn to 'heel'; which means that he must always be behind the master not at the side nor the front. If a dog is permitted to wander from side to side, from back to front, etc., he will soon have the feeling that he is the leader. That's bad. Therefore, I speak firmly when there is the slightest straying from orders. The dog must know who is master. It is often necessary to put a leash on a puppy when he is first learning to 'heel'. The leash is kept loose and the puppy is not permitted to put any pressure on it. He must learn to walk with his forefeet parallel with the trainer's heel and stay there regardless of other attractions. After using the leash for several days it can be removed and the routine repeated until the lesson is perfectly learned."

"The puppy should next be taught to round up a flock of sheep. By this time his natural herding instinct (if he is the type that is really worth training) will assert itself and he will be eager to chase after the animals and get ahead of them. I begin this lesson by starting the pup from behind me thus giving him the tendency to run in a wide circle. Otherwise, if started from the front the puppy would almost certainly run too close and cut in on the sheep. As soon as he has circled to a point ahead of the flock I give him the signal to lie down. If he fails to respond, which he will probably do at first, he is brought back and tried again and again until he does obey. I let him stay down only a second or two and then give him the signal to bring the animals to me. For first lessons, I am very near the flock. More space is added each time until soon the dog can be trusted at long distances and often when the animals are completely out of sight."

"Teaching a dog to drive the flock away from the master is quite difficult. This is contrary to his natural instincts of running to the head and also to his former lesson of going ahead and bringing the animals back, consequently much patience is required at this time. A pushing-away signal is given and practiced until he grasps the real meaning and learns to stay behind the flock and urge them forward. A dog must be completely under control before this lesson is attempted, as it is one of the hardest for him to understand."

"After the dog is thoroughly familiar with each different signal and all lessons have been perfectly learned, cutting-out sheep from the rest of the flock, or 'shedding' as it is termed in Scotland may be undertaken. In order to cut-out a required number from a flock, I place the dog on the opposite side of the sheep from me then I separate the desired number from the others and walk in the space between the two bunches. The dog is now called to me and we drive one bunch away from the others. This performance is repeated until the dog understands my command to go into the flock and separate the ones wanted. Cutting-out is fascinating work for most dogs. They like it so well in fact that they usually want to do this part of the work when there really is no occasion for it."
It is a thrilling experience to see Colonel Cook working with his dogs and the college flock in the beautiful rolling pastures of Clemson, formerly the plantation home of the South’s great leader, John C. Calhoun. These marvelous dogs, with their keen eyes on their master—watching his every move, reminds one of the members of a well trained orchestra or choir, who watch their leader intently as he guides them through their measures. “This close observance,” reminds Colonel Cook, “is a most desired strong point in a dog, one which should be sought in every working collie. I want a dog that will watch me and not one that I have to watch”, is Colonel Cook’s philosophy.

THE VILLAGE IS HOLDING ITS OWN

There has been much distress due to the fact that the American village is slowly but surely declining. This fear is unnecessary because the American village is definitely holding its own.

A village is an incorporated place that has a population between 250 and 2500 people. To judge how well a village is doing, we first must see if they are maintaining their proportion of the total population and whether their average population is increasing or decreasing. Then we must find if all the villages that were incorporated by 1910 are still in the village class or have passed up into the urban class (over 2500) or declined into the hamlet class (under 250). In considering the proportion of village population to the total population, we find that the village had 8.9 percent of the total population in 1910, 8.5 percent in 1920, and 7.5 in 1930. Although this may seem as though there has been a definite decrease, we must remember that the population has increased in the whole country by a large amount and although the rural village has grown, it has not grown in the same proportion as the rest of the nation. Actually, the village population has increased 32.5 percent from 1910 to 1930. In 1910 the average village in the United States had 833 persons while in 1930 it had 1104 inhabitants. During this period, the South has doubled in village population. It had an average of 796 people to the village in 1910 while in 1930 it had an average of 1,193.

Of the villages studied, it has been found that agricultural villages have the greatest tendency to remain stable. While agricultural villages have grown since 1910, their growth has been small in comparison to villages engaged in industry, mining, and fishing.
The Farmer to the Front!

By W. S. Jackson, '43

What does the word National Defense mean to the work-a-day farmer who toils from sunrise until sunset to eke out a living from the soil? What part is the farmer to play in this National Defense program of ours? In an effort to meet the threat of other nations, we Americans can depend upon the farmers everywhere. We know that we can depend upon the men who live upon the land. It has been this way in the past, it is now, and will be the same in the future. Let us always keep before us the glories of their past records. Today, the American farmer is being called upon to play a major role in the service of our country.

As America settles down to all-out production, agriculture is again in the front lines. The farmer has to produce the “rock-bottom” for defense. As we open the throttle on our agricultural machine, we see that the farmer is confronted with a threefold task. First, he has to produce enough food to feed 130 million Americans. Second, he has to produce enough food to feed Britain, who incidentally is fighting with us. American food has been going to Britain at the rate of 250,000 tons per month. Third, he has to produce enough food to go into reserves, and stock piles to feed the impoverished people after Hitler is defeated. The question at stake now is—Can we produce enough food for ourselves, England, reserves, and maintain our price level? We have the reserves and the organization. There are no other farmers in the world who can produce like the American farmers. There are remedies against surpluses, but there is no remedy against scarcity. The U. S. is the best fed nation in the world, but we still have room for improvement. It has been said that food is the “strongest weapon of democracy.” We must produce the necessary food since it is one of the best ways to defend our democracy.

Secretary of Agriculture, Claude R. Wickard, made the following statement, “We’ve got to produce more of certain foods, because food is going to win this war and write the peace. Never before has the world been so hungry. Despite his victories, Hitler is desperate. Unless he can find food and oil in huge quantities, his conquest will become liabilities. There will be sabotage and revolt among the conquered people. And then Hitler will lose, but hunger will be stalking Europe.” This is where the American farmer will step into the picture and win the war. Intelligent planning and positive action is the “thing of the hour.” South Carolina’s 170,000 farmers have been asked to step up their agricultural production in 1942 to the greatest peak in all history, as a vital contribution in this all-out effort for democracy. This request comes directly from Secretary Wickard.
The Importance of Herd Improvement

By E. B. Collins, '43

“Cows with good bags, backs, and bellies are good milk producers.”

A herd of this type is seldom a liability.

Before man became interested in dairying, nature's cow was probably very small and much like the wild deer. Native to the grasslands and forests of the warmer sections of the world, she produced milk for only two or three months each summer—just long enough for her calf to grow large enough to take care of himself in the wilderness.

The present domesticated dairy cow is a quiet, well-dispositioned animal. She is large and needs more than grass for feed. The constituents of milk, man's most perfect food, must be present in the cow's ration in excess to the nutrients necessary for body maintenance, or she can not continue to produce large quantities of milk over a long period of time. At present cows produce milk from ten to ten and one-half months each year.

There is a reason for this drastic change in one of nature's animals. It did not happen by mere accident. Through observation, study, and experimentation man found that the physical characteristics of any animal are determined almost entirely by the characteristics of the animal's ancestors. Knowing the quality of milk as a food, man realized his need of an animal that could produce great quantities of it. Having some knowledge of genetics, he began to breed high producing cows with sires from high producing animals. The milk production per animal began to increase; and after some time, it was noticed that certain bodily characteristics were dominant among the high producers. It was found that when both sire and dam possessed a common desirable characteristic, the off-spring was superior to both sire and dam. On the other hand, if both sire and dam possessed a common undesirable characteristic, the off-spring was inferior to both sire and dam. This and other knowledge was taken into consideration, and the change in type and production of the dairy cow has become more and more remarkable.

Improvement should proceed along two lines — improvement in milk and fat production, and improvement in type. Though the animal breeder should pay more attention to type, and the utility dairymen more attention to production, neither of the phases should be ignored by either of the dairymen. Improvement in type may be brought about more quickly by the selection and use of sires which are prepotent in those characteristics which need improving. If the herd is large enough to permit culling, the elimination of those females which possess and transmit undesirable characteristics will effect a great improvement.

Continued on page 23
Wild Life Conservation in the Piedmont

By J. K. Cartee, '42

Erosion has robbed the majority of the farms in South Carolina. Too poor to produce profitable crops, the eroded areas are usually abandoned. Unless they are treated to check further erosion, these areas grow larger and rob the farmer of more of his soil. Fortunately, soil conservation and wildlife management can be effectively combined. Areas such as odd corners, eroded spots, field borders, and terrace outlet channels can be made to produce a crop of game birds, fur bearers, or other desirable types of wildlife. By healing the scars due to erosion with soil-conserving grasses, legumes, and shrubs, farmers may convert areas from costly wasteland into productive wildlife habitats.

The relation between wildlife management and soil conservation is so close that, by proper planning, the benefits of both may be achieved in the same operation.

All types of plants help check erosion, however, some are more desirable than others. Close growing crops such as the lespedeza are best. The bobwhite feeds on the seeds of lespedeza and finds cover in its luxuriant growth. A number of other plants are considered excellent in controlling erosion and equally beneficial as a source of bird food and cover.

Farmers, now, perhaps more than at any other time, appreciate the fact that increase of game depends upon improvement of the environment. This necessitates the distribution of patches of food and cover over the entire farm and the providing of a sufficient number of plants to supply wildlife needs the year round. These principles are practiced on Piedmont farms cooperating with the Soil Conservation Service.

If maximum wildlife production is to be obtained from farms, fire must be checked. The burning of crop refuse and of plant growth in fence rows and woodlands along field margins destroys conditions most favorable to wildlife and is to be discouraged.

Many field borders remain barren throughout the year because of shade, severe sheet erosion, and root competition. This is an ideal place to plant erosion-resisting crops for use by wildlife. Common and Korean lespedeza, Lespedeza sericea, and Sudan grass are used quite extensively for the treatment of field borders in the Piedmont.

Farmers in the Southeast have indicated their desire to combine wildlife development with soil conservation. It is possible by cooperation between nature lovers, sportsmen, and farmers to protect wildlife by encouraging the proper use of land and good sportsmanship in regulated hunting.

SOIL CONSERVATION DEMONSTRATION

Continued from page 11

A bird's eye view of the once eroding farm where the demonstrations were held.
RECENT TRENDS OF THE FAMILY
C. B. FELLERS, '43
Continued from 9

hold has been decreasing, the average population per occupied dwelling unit in urban places in 1940 (3.6) was significantly smaller than that in rural territory (4.0). The urban families declined more rapidly in size since 1930 (9 per cent) than the rural families (7 per cent). The average size of the family has decreased because of the decline in the birth rate and possibly because of the splitting of households.

Families are becoming more diversified largely due to the modern facilities and improved means of communication and transportation. These various outside forces are tending to tear apart the unity of the family group and depend more upon individualism. Agriculture will be the last of the great industries to be operated on the individual family unit plan.

The craving for affection and the need of rearing children have undoubtedly been fundamental factors in making the family an omnipresent and enduring social institution.

THE IMPORTANCE OF HERD IMPROVEMENT
Continued from page 21

The importance of each individual animal in the herd is little appreciated by the average dairyman, but there is nothing more important to his success or failure than his ability to recognize characteristics in conformation which tend to shorten a cow's productive life. The primary purpose of the dairy cow is the production of milk and butterfat. In order to be profitable, a cow must continue to produce large quantities of milk for a period of years. This can be realized only through the dairyman's effort to improve typical and productive characteristics within each animal of his herd.

To have high producing cows of good type is not the wealthy dairyman's hobby; it is this factor which has made him wealthy. Each individual cow in the herd must make her share of the dairyman's returns. Since body maintenance must be supplied in the ration before milk can be produced, high producers are much more economical in milk production than low producers. There is no place in a herd for cows that fall in the "liability" class. It doesn't take large sums of money to change a reasonably common herd into a herd of good quality; but at the same time, it doesn't take many "boarders" to swindle all of the dairyman's profit. A reasonable amount of basic knowledge, sound judgment, and practical experience is the key to success which many dairymen have used.

THE NATIONAL COTTON COUNCIL OF AMERICA
By J. M. COTTINGHAM, '42

In November 1938, a group of men interested in increasing the world consumption of American cotton met in Memphis to organize the National Cotton Council of America.

The council is an Industrial organization with membership made up of delegates from the fourteen cotton states. The delegates are chosen by their State organizations, which represent the producer, ginner, merchant and shipper, warehouser, cottonseed crusher, and spinner branches of the Cotton Industry.

By concerted action the Council is devoting its efforts to the promotion and expansion of the consumption of American grown cotton, cottonseed, and their products. The recent "cotton craze" in women's wearing apparel was largely generated by the advertising campaign of the Council. The Defense Program and increased purchasing power have played a large part in the current record breaking domestic consumption of cotton, but much of the credit for the increase must go to the organized work of the Cotton Council.

The Council has a policy of opposing movements of any nature which will tend to restrict or discourage the consumption of cotton, cottonseed, and their products. An illustration is the successful fight which the Council has been waging against the taxing of margarine, manufactured largely from cottonseed oil produced domestically.

The Cotton Research Foundation, the research agency of the Council, is essential to the maintenance of the Cotton Industry, because only by hard, patient, scientific work can the Industry hope to keep up with materials which compete with cotton, cottonseed, and their products.

If the cotton farmer had rather grow cotton than any other crop, if he desires to compete successfully with new products and if he wants to keep a market large enough to allow him a profitable acreage, cooperation with the Cotton Council is a channel through which he can work effectively toward these objectives.
THE AGRARIAN PRESENTS

WILLIS A. KING, Ph.D.

There is no greater proof of Clemson's greatness than by the achievements of her alumni. Many graduates at home and in every part of the country are doing an excellent job in their respective fields.

Dr. Willis A. King is an outstanding example of such an alumnus. He graduated with honors from Clemson in 1936 with a B. S. degree in Dairy Husbandry, and for his ability he received the Anderson Fellowship. He selected the University of Wisconsin for his advanced work, and here he received a research assistantship which lasted four years. In 1938 he received his M. S. degree, and in 1940 his Ph.D. degree. His advanced education was centered around nutrition, dairy husbandry, and biochemistry; however, Dr. King is proficient in other fields of chemistry and breeding.

At present, Dr. King is employed at the Dairy Research Station in Sussex, New Jersey. His work consists of research on the nutritional value of grass and legume silages. He is well qualified for this position, for his research assistantship at Wisconsin brought him in contact with investigations on grass and legume silages, inter-relationships between vitamin A and vitamin C, and the relationship of vitamin K to sweet clover poisoning.

Although Dr. King is now residing in New Jersey, he is a Southerner as he was born and reared in Due West, South Carolina. Besides, he desires to settle in the South sometime in the future. To him the South has excellent possibilities of further development in dairy farming and in beef and hog production.

When asked of his opinion of the Clemson Dairy Department, Dr. King said Clemson has an excellent staff with qualities above the average of most schools. The barns and dairy cattle are of the finest; however, Clemson does lack some of the dairy manufacturers equipment that larger colleges have. All the available equipment is put to good use.

At Clemson Dr. King was a member of the Alpha Zeta and was elected scribe of this fraternity his senior year. He entered a southern essay contest sponsored by the Gulf State Steel Corp. and won the grand prize. He was a member of the Dairy Club and 4-H Club and president of both of these organizations during his senior year. He was also a member of the Y. M. C. A. council his sophomore, junior, and senior year.

At Wisconsin Dr. King became a member of two life honorary scientific fraternities, Sigma Xi and Phi Sigma. He also joined the American Society of Animal Production.

It takes such men as Dr. King to demonstrate the fact that Clemson is one of the greatest Agricultural and Mechanical Institutions of this country. Such men show ambition, ability, stamina, and self-discipline that Clemson tries to foster within its men.

A very effective way to reduce injury to peach and apple trees by borers is to "worm" them regularly in the spring and fall. This is accomplished by removing the soil from the crown of the trees to a depth of four or five inches and with a dull knife or other suitable instrument removing the worms from their burrows.
Furrows Still Unfold Ways to New Wealth

More substantial than mere words and monuments is the main memorial created by Case to honor Leonard Andrus. A hundred years ago his new plows tapped the treasure of an inland empire. Today the Case Centennial Tractor Plow creates new wealth from buried treasure, turns trash and cover crops into the soil to restore its riches and enhance its earnings.

Hybrid corn with mammoth stalks ... inoculated legumes, old and new, rank-stemmed and tough-rooted ... tall stubble and scattered straw from the combine—these are samples of the way America's agriculture advances toward new frontiers, finds new sources of wealth, new ways to conserve its soils. The Case Centennial Plow exemplifies the way American industry serves agriculture, furnishes machines to master its new problems. Hand in hand, method and machine are youth's weapons in a world of continual change.

Essential to all these advances on farm and in factory is the American principle of free enterprise. Not plodding peasants applying a formula prescribed by remote control, but practical men free to accept or reject admonition and advice, have pushed the progress of American farming to the topmost place in the world. Free enterprise encourages the best man, the best crop, the best machine to leap ahead, showing the way for all to follow and all to profit. In this heritage of freedom lies the hope and the opportunity of youth. J. I. Case Co., Racine, Wis.

Leonard Andrus as portrayed in the Centennial pageant at Grand Detour, Illinois, in 1937, celebrating the centenary of the steel plow business he founded.

He was still in his twenties, this restless roamer from the East, when he arrived at Grand Detour and saw at last the site he had sought all the way from the Lower Lakes to the Gulf. Home and church, mill and store, all sprang up in answer to the vision and energy of young Leonard Andrus and those who followed to the settlement he started. They had staked all on the promise of the deep, black prairie land.

Despoiled of its virgin sod the soil went sullen in the second or third season, locked up its fabulous fertility by refusing to scour from wood and iron plows. Settlers started to leave their farms. Aided by another youth, a mechanic, Andrus began to make plows with moldboards of saw steel that would scour in the sticky soil. Youth found the key to Nature's treasure, founded a steel plow business which, as the Case Plow Division, celebrated its Centennial at Grand Detour in 1937. To men older, maybe wiser, the frontier was an obstacle. To youth it was opportunity.
QUALITY FOOD FOR VIGOROUS HEALTH... Continued from page 8

selection of the foods, were quite adequate, though low in cost.

McGinty—Speaking of food selection and food habits, I know that you have studied the diets of farm people in different sections of the state. Did you find any special differences in food habits in the different localities?

Moser—We did find a rather marked difference in the kinds of food used by families in the Piedmont as compared with the food used in the Coastal Plains area. In the Piedmont, typical farm diets had almost twice as much milk and half as much lean meat and fish as did low-country diets. There were other differences, with the result that Coastal Plains diets were often much lower in calcium and riboflavin than Piedmont diets.

Lease—There is reason to believe that the vegetables grown in the Coastal Plains may contain less iron than those produced in the Piedmont, with the result that there may be a great deal of iron in Coastal Plains diets than has been realized.

McGinty—Well, you folks are certainly strong for iron, and with the world situation the way it is, we need a lot of it in our systems. What about the vitamin content of these Piedmont and Coastal Plains diets?

Lease—The vitamin A and vitamin C content of diets in both sections was frequently too low, especially in late winter and early spring. Since vitamin C is not stored in the body to as great an extent as vitamin A, this seasonal vitamin C deficiency was especially serious. These deficiencies could be corrected by use of more greens, sweet potatoes, canned tomatoes, and fresh fruits.

McGinty—I hope our listeners who live in town will bear in mind that their diets as well as those of rural people are often deficient. They should try to make sure that they get the milk, fruits, vegetables, eggs, and lean meat necessary for a balanced diet. How much of these items is required in the diet, Miss Moser?

Moser—In Lee County the Bureau of Home Economics found that diets which prevented pellagra throughout the year included on the average 2 1-4 cups of milk, 3 ounces of fruit and succulent vegetables and about 3 ounces of lean meat per person daily. However, we know that people need larger quantities of these desirable foods than those mentioned if they are to enjoy positive good health.

McGinty—Well, many of our farmers are concerned that their pigs have a balanced ration and certainly we should use every effort to see that our children have one. Is there anything further you would like to say on this important subject, Miss Moser?

Moser—Good nutrition is not dependent entirely upon an adequate food intake, important as that is. Enough rest and sleep, balanced by enough of the right kind of exercise, absence of worry and fear, and other factors that would interfere with the nutritional processes going on in the body, proper care of physical defects that may hinder growth—all of these and more are involved in individual cases. But in the broadest sense an adequate food supply is the foundation of growth and development and of the maintenance of health.

YOUNG PROVES SOUNDNESS OF USING PUREBRED COWS... Continued from page 6

test as a junior 3-year old. She is a maternal sister of Mily Eminent Fern, mentioned above as the first of the qualifying daughter of the other silver medal bull.

Clara Oxford Lily, second highest silver medal producer, yielded 701.56 pounds of butterfat and 14,532 pounds of milk in 365 days, starting on test as a junior 4-year-old.

The youngest silver medal daughter completed her sire's qualifications with a yield of 523.45 pounds of butterfat, 10,268 pounds of milk in 305 days. She is Fairy Pioneer Sophie, a maternal grand daughter of Mily's Goddington Noble, for her dam is the gold and silver medal winning daughter of this bull mentioned above, Milly Fairy.

Mr. Young's cow now holds a state age-class butterfat championship and 9 state age-class milk championships, exactly half of the possible championship places in S. C.

QUALITY EGGS BRINGS HIGHER PRICES... Continued from page 5

The poultryman who desires a reliable reputation, and who wishes to obtain the highest price must grade his eggs. The weight is extremely important in determining the price of eggs, for the food value is directly proportional to the weight.

An attractive package will contain eggs of the same size, shape, and color, for the appearance of the container of eggs has an important psychological effect upon the buyer.
Where Clemson Students Come From

Where the Clemson students come from 1941 - 1942

South Carolina 1910
North Carolina 107
Georgia 108
Other States 180
Total Enrollment 2305

Compliments of

L. C. Martin Drug Company
P. S. McCollum, Owner

Official College Book and Supply Store

Clemson College * South Carolina
OUR COVER

Seventy years ago, a son of Georgia, the renowned poet, Sidney Lanier wrote these lines in his “Centennial Ode.”

“Long as thine art shall love true love,
Long as thy science truth shall know,
Long as thine eagle harms no dove,
Long as thy law by law shall grow,
Long as thy God is God above,
Thy brother every man below,
So long, dear land of all my love,
Thy name shall shine, thy fame shall glow.”

Touched as we are by the divine and patriotic spirit which emanates from these few lines, our eyes assume a different focus and our minds turn from stern material realities. We might well contemplate these eight brief lines of Sidney Lanier. Through them he sounds a philosophy for human relation and the continued progress of America. If we, the people of this nation so blessed, will pursue our daily efforts in the spirit of this message, we may look confidently to the day in which we will stand triumphant over mechanized barbarism.

—E. P. H.

‘ALMOST NATIVE’

According to an editorial in “The State” a South Carolina hostess in the course of a holiday dinner told her guests proudly that the rice that they liked so much was “almost native”, because it came from Alabama. “Almost native”, indeed! A friend had brought it as a contribution to the dinner, and also to show what is going on in Alabama where little farmers, according to reports, are adding rice to their home food crops.

To some of those present at the excellent dinner this “almost native” rice was “almost” humiliating. It should have been wholly native. South Carolina is the mother of rice culture. The crop left its native locality because of a combination of circumstances. Rice can be brought back to its native American locality, and to some small degree this being done.

It is estimated that the normal farm family in South Carolina spends from $25 to $40 a year for rice. It is also estimated that the normal family can produce its own rice on less than one acre of land; perhaps on one-third or one-half an acre.

That would be sensible farming, would it not? The saving of from $25 to $40 by the use of a few hours labor and a patch of land, is first class war-time farm policy. It is also first class peace-time policy.

—E. P. H.

A NEW DAIRY QUEEN

More than six gallons of milk a day and more than three pounds of butter a day for 305 days, produced by Majestic Vanity, a South Carolina Jersey cow, establishes a new national production record for Jerseys.

Our new champion belongs to W. M. Swindler, Columbia dairyman, who purchased her from R. D. Smith, Kinards, S. C. and grew her on his dairy farm near Columbia. Majestic Vanity is South Carolina born and bred.

The official test, under direction of H. A. Johnston, (who is incidentally a former Dairy Editor of the Agrarian,) supervisor of testing work for the Dairy Department of the South Carolina Experiment Station, shows that “Majestic Dreaming Vanity 1209971,” at the age of 3 years 10 months and 25 days, with her second calf, produced in the 305 days 16,140.6 pounds of milk and $17.96 pounds of butterfat.

In everyday language that means 1,876.8 gallons of milk and 1,022.8 pounds of butter, or an average of 6.15 gallons of milk and 3.25 pounds of butter a day.

This production, besides being a national record for Jersey Cows of her age, is a state record for all breeds in butterfat production for a three year old.

The record broken by this cow with the overpowering name had stood for 15 years. The Agrarian Salutes Mr. W. M. Swindler and Miss Vanity.

—E. P. H.
A Secret of SUCCESS

To the Rescue MODERN FARM POWER...

... Annually frees 910 million horse-hours needed for greater food production, formerly required for “horse work.”

(Hours required to care for and to grow feed for the 7.6 million horses which the tractor has displaced.)

... Has released 33 million “horse feed” acres to produce food—enough for 16 million humans defending democracy.

Figures from U.S.D.A., Bureau of Agricultural Economics

Your nation is expecting you to raise the standards of American Agriculture to new heights. A big assignment, yes, but you can do it. You’ll find a host of men already working toward this great objective. Men eager to cooperate with you. Therein lies the secret of American Agriculture’s golden future.

Allis-Chalmers stands ready to work with you as you take over the reigns of leadership. By making available power equipment that gives the family-size farm the same production economies as the “big boys,” A-C will help you to increase the income and happiness of your community. It is power equipment that encourages crop rotation, soil conservation and livestock farming. You will have help in building strong farm families... the back bone of our nation... because Allis-Chalmers machinery is designed for family farming.

OPPORTUNITY TO BE A COMMUNITY LEADER

If you have not yet decided upon the exact way in which you can serve your community to best advantage... why not investigate the opportunities in becoming the Allis-Chalmers dealer? Besides the pride and satisfaction of operating your own business... you can become a community leader by showing your farm neighbors the way to better living, better farming and more profit—with power. Send the coupon below for details.
Food---A Weapon of War

By E. P. HUGUENIN, '42

When Secretary of Agriculture Claude R. Wickard announced farm production goals for 1942, calling for the greatest agricultural production in history, he pointed out the necessity for a common effort on the part of all farmers to destroy the barbaric forces that threaten civilization and to preserve freedom in the democracies.

"We've got to produce more of certain foods," the Secretary said, "because food is going to win this war and write the peace." Never before has the world been so hungry. Despite his victories, Hitler is desperate. Unless he can find food and oil in huge quantities, his conquest will become liabilities. There will be sabotage and revolt among the conquered peoples. And then, Hitler will lose, but hunger will be stalking Europe."

When that time comes," Secretary Wickard continues, "those hungry people must be fed, and we must do our part in feeding them. We must do it for humanitarian reasons. And we must do it for practical reasons too."

While calling attention to expected food needs after the war, Secretary Wickard emphasized the necessity of increased production to meet present requirements.

"We need to help feed England," he said, "because England has become our last line of defense". If England falls, we might as well get ready to fight Hitler in an open war, because he will not be satisfied so long as there is a mighty, free country left.

"Another reason why we need to increase production of meat, eggs, milk and canned vegetables is that there is an increased demand for foodstuffs in our own country. Factories are going full blast, and factory workers have more money to spend for food and they are spending it."

"I am confident the war will be won," the Secretary concluded, "And I know Southern farmers and the entire South will do whatever is necessary to crush the Nazi threat to democracy and civilization."

This was said before the Japrats started their attempt at national hari-kari by hurling themselves at the throat of the most powerful nation in the world. There is honor among thieves, so Hitler and his blatant stooge Mussolini also jumped from the frying pan into the fire. These moves are obviously moves that were
made to bolster up what remaining moral that the "Thieving Triumvirate" could salvage from defeats on the battle, economic, and political fronts.

America did not attack. America was asleep when the first blow struck. But America is now awake, fully aware of the fact that we can't afford to lose this war. And we won't lose it! There has never been found any substitute for food. Men don't have to fight! Men do have to eat! We of all the nations in the world have an almost inexhaustable food supply, a supply with which we can feed ourselves and our friends. Food is just as much a weapon in this war as a bullet, and the lack of it is far more deadly that the lack of a bullet can possibly be.

Let us lay aside our petty differences. Let us unite and administer to Japan, Germany, and Italy a defeat that they will never forget. A defeat that will impress upon their war-like elements that we are tired—very tired of unwise minorities in these countries, who saturated with self-conceit try to impose their obnoxious will upon free peoples. We have no intention of allowing this to happen again. If we stick together it won't happen again.

PROTECT YOUR PEACH CROP

with

PAN

PEACH SPRAY

PAN contains all the necessary ingredients to assure maximum protection.

SIMPLE TO USE

PAN is used at the rate of 8 pounds to 50 gallons of water and is put up in convenient units:—Cases of 4-8 lb. bags, cases of 2-16 lb. bags and cases of 4-16 lb. bags. Leading peach growers throughout the country find PAN PEACH SPRAY the best answer to their spraying problems.

The J. W. Woolfolk, Ltd.

Manufacturers

Fort Valley Georgia
RESEARCH LEADS THE WAY TOWARD DIVERSIFIED AGRICULTURE IN SOUTH CAROLINA

continued from page three

Agricultural research in South Carolina has also been of value in overcoming the old prejudices in favor of expensive organic sources of nitrogen by showing that the important thing is to have nitrogen available at the time the plant needs it and not the source from which it comes. The station has also pointed out the advantages which would accrue to agriculture if fertilizers containing not less than 20 units of plant food were generally used. This would eliminate the filler which still finds its way into mixtures carrying only 16 units. Pasture studies have contributed much to potential livestock production which must inevitably be an important factor in any diversified system of griculture.

These and many other phases of research are being continued by the experiment station in an effort to keep the agricultural industry of South Carolina abreast of the times and enable our farmers to meet successfully the rapidly changing conditions.

Cotton stalks should be cut and plowed under along with the leaves and burs. This is a recommended cultural practice in controlling the Cotton Flea Hopper and the Boll Weevil.

The Anti-Infective Vitamin

By C. A. JAMES, III

Since the beginning of this century, scientists have slaved in their laboratories in an effort to seek new information on vitamins. Many vitamin enthusiasts have written books on the subject. This article will briefly discuss vitamin A.

If vitamin A is deficient in the diet, the mucous membranes lose their power of secreting mucus. Infection with pus formation occurs in the eyes, ears, glands at the base of the tongue, and in the sinuses. The urinary tract, genital tract, lungs, respiratory tract, and the alimentary canal are other scenes of infection.

Mucus is a viscid, slippery secretion produced by the epithelial cells of the mucous membranes of the body. These membranes line the cavities in the body which are in some way associated with the exterior of the body, the mucus functioning as a protector of these membranes against infections.

The richest source of vitamin A is found in halibut-liver and Cod-liver oils. However, the foods found in a good diet contain liberal amounts of vitamin A. Among the vegetables spinach, kale, carrots, yellow sweet potatoes, green peas, string beans, and brussels sprouts contain varying amounts of this vitamin. Bananas, cantaloupes, tomatoes, and cherries are some of the fruits which have this vitamin as part of their composition. Egg yolk and dairy products are two extremely important sources of vitamin A in the diet. The cereals, nuts, and meats with the possible exception of liver have a low vitamin A content.

From the foods mentioned, it is shown that many of them have a yellow color. This color is due to an organic pigment, carotene. Carotene is the parent or precursor of vitamin A, for it is known that vitamin A can be synthesized from carotene. In vegetable foods the vitamin A present is in direct proportion to the pigmentation.

For those who wish protection against respiratory and other tract infections, a generous supply of vitamin A will prove to be a beneficial aid. Remember the proverb, “an ounce of prevention is worth a pound of cure.”
The FARMALL on Your Farm will NOT be Called for Military Service

The handwriting is on the wall, plain for all to read. Young men working on the farm today may be off to camp tomorrow. Production of new farm machines to take their place will, in some degree, be limited by production of war machines.

But of this one thing you may be sure: the Farmall tractors, at work on farms, won't be called away for military service!

These great power-partners are available now, and they'll handle the big jobs on any farm for years to come. As each season rolls around, Farmall tractors will be in there working—with greater efficiency than any other farm power. These tractors lead all others. They excel in handling all jobs from plowing, planting and cultivating to bringing in the harvest and teaming up with other machines on year-round belt work.

That is why so many farmers are buying Farmalls now. They recognize in these tractors a constant source of aid and protection for themselves and their families. With the strength of many men a new Farmall gives added security against any winds that blow.

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Power and Equipment for All Farm Needs
BUY U. S. DEFENSE BONDS