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The Agrarian Vol. 2 No. 2

Clemson University
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Model B tractor with heavy-duty 2-disc plow turns under tough rooted cover crops at twice the speed of mules.


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The South Carolina Experiment Station

South Carolina, the birthplace of modern agricultural investigation in America, and the home of many early societies, is now served by several efficient experiment stations.

By JESSE M. BAKER, '40

It is common knowledge of every South Carolinian that this state has an illustrious historical background—that the gallant soldier, Francis Marion, and his small band of Carolinians defeated the British with pitchforks; that South Carolina was the first state to secede from the Union; that the first shot of the War Between the States was fired from Fort Sumter. However, relatively few people realize that this state is the birthplace of modern Agricultural investigation in America.

In 1669, the Lords Proprietors sent an expedition, under the command of Joseph West, to settle on Ashley River which is memorable because of the provisions made for the fostering and encouragement of Agriculture. West was instructed to stop at the Barbadoes and procure a supply of seed which were to be used by his expedition in establishing Agricultural production in the new world, and among the seed brought over on this expedition were found two of our common crop plants in South Carolina today—cotton and sugar cane. West was given orders to take special care of all materials that he brought from the Barbadoes, and that the "first efforts at culture should be experimental" to find out the soil to which each species of plant was best adapted and the season of the year most favorable for planting. From all available records, this testing garden on the Ashley appears to be the first experimental farm in America.

Later on, organizations were established in South Carolina for the purpose of bettering agriculture. The Agricultural Society of South Carolina was founded in 1785 for the purpose of "promoting and improving agriculture and other rural concerns." In a like manner the Pendleton Farmers Society was established in 1815, and today, still in operation, this society has the distinction of possessing the oldest farmers hall in the United States. On the roll of the Pendleton Farmers Society is found the name of a South Carolinian who was very instrumental in founding the present agricultural system in the United States, and who was the founder of Clemson Agricultural College. This pioneer and agricultural leader was Thomas Green Clemson. His keen interest in the improvement of agriculture is shown by the following toast which he offered at the annual dinner of the Pendleton Farmers Society in October 1843: "In the absence of Marl, permit me to propose to the Citizens of Pendleton, a more familiar acquaintance with the effects of the application of Potash, Soda, and..."
Milk, The Perfect Food For Athletes

By J. E. BLESSING, '41

IT IS TRAINING SEASON for the athletes. The coach must first plan the meals for the team. This job is not an ordinary one because what the athlete eats largely determines the time which is required for him to get in shape. The coach must consider many factors when he is selecting the food for his team. He must consider the time they are to be in training, the time they have to prepare for the first game, whether his players are over weight or under weight, and most important of all, the food value of the food and its palatability. He will also have to consider the price of food.

The athlete must supply his body with enough food to rebuild the worn out tissues, and give himself energy to carry his body through the rigors of football or basketball. This requires a large amount of food; therefore, the more concentrated the food, the better it will be for him. He is unable to practice or play his best if he is full of bulky food. To avoid this, the coach must supply the player with food that will be easily digested and also contain the essential elements and vitamins. Along with the food elements, the body requires lots of water to replace that which is lost by perspiration during practice. Science has proved that milk will supply the water, nutrients, and vitamins required. Because of this, milk is considered by the coach and the trainers as the most perfect food with which he can supply his team. This is the reason why milk is so often used as the base food for the athlete’s training table.

In considering the essentials of a well-balanced diet for the athlete, we find it necessary to provide food which contains fats and carbohydrates to produce the fuel constantly needed by the human machine. It must build, repair and replace body tissue; possess ash or minerals to construct bone and assist in various body processes; it must contain the vitamins which are indispensable to growth, strength, health and vitality; it must have fluids as regulators and carriers; and finally, the well-balanced diet should be palatable, colorful, and properly prepared. The essentials are called for in the athlete’s diet to a greater extent than in the diet of the ordinary person, because he requires a larger supply of energy and a larger quantity of those foods which will supply nourishment for the maintenance of his body tissue during the practice and playing season. According to laboratory analysis, milk contains about 87 percent water and 13 percent solids. It is from these solids that fats, carbohydrates, proteins, vitamins and minerals are received for use in the body. From one quart of milk, the body may obtain 680 calories, one fourth the total amount which the average person needs per day, and the water in the milk serves to restore the moisture expelled by perspiration during practice.

There are those who think that milk is hard to digest, but when milk is compared with other foods it is found that it digests easier than the average food, which requires two hours to digest and leave the stomach. This was the reason that many coaches did not give it to their boys before the game. This is no longer true, because they know that it is a good source of energy. It is not bulky and heavy and when drunk two to three hours before game time, will not harm the athlete.

Because of its food value and palatability, milk is the basic food on every training table. It will be given to the athletes in some form every meal including those on the day of the game. For example, while the Clemson football team was in Dallas for the Cotton Bowl game with Boston College, they had one pint of milk each meal, and were permitted to have more if they desired. The Clemson team consumed more than a quart per player per day throughout the entire season. Although the team was not given milk to drink for lunch it was used for preparing soup, which means that every meal the football team had milk in some form. It has also become a practice in high schools to give the boys milk to drink after practice, because some of the boys are from families which do not have milk, or cannot afford to buy it. Before this practice was started, many boys were not receiving the proper food for their growing bodies.

Milk, deficient in only copper and iron, is the only food produced by nature to be used solely as a food. These, however, may be easily supplemented through green vegetables and fruits. Since milk is the best food for the training table of athletes, it is reasonable to assume it must be good for everyone.
Livestock vs. The One-Crop System

By E. P. Huguenin, '42

HAVE YOU READ Secretary Wallace's Report for the Year 1939? It can be seen from his following statement that the future of cotton is far from bright: "The total returns from the 1938 cotton crop, even with the federal payments, were only half as large in relation to the national income as the average of the five years immediately prior to World War I." In 1939 farmers received an even smaller proportion of our national income. It certainly looks as if the days of our cash crop, King Cotton, are rapidly drawing to a close. What is the answer to this problem? What can the South turn to that will enable it to supplement an all too meager income? The livestock and poultry specialist have been continually hammering into our ears—"why not try that well-known trio—the hog, the cow, and the hen?" And indeed! Why not? It is our sole remaining hope.

Something has to be done and done soon about our southern soils. These soils have grown cotton and tobacco, the acid-tolerant crops, so long that they can grow little else. From tests made on over two million soil samples taken from different sections of South Carolina, it was learned that approximately 40 percent of the agricultural lands in the state are so extremely acid that they are not capable of producing a sufficient income for a satisfactory standard of living.

Another 40 percent of the land was found to be of moderate acidity which will enable cotton and tobacco to be produced profitably only after large amounts of fertilizer have been applied.

Only about 20 percent of the cultivated land was found to be of a low enough acidity to support a profitable live-at-home program. A very large part of our agricultural profits are derived from this small percent of our available land.

"It is recognized that South Carolina can no longer depend solely upon cotton and tobacco as the foundation on which to build a strong and permanent civilization. A more diversified system of agriculture is needed including a wide variety of high grade feed crops necessary in the successful production of farm animals."

From the viewpoint of each farmer, livestock farming has a great many advantages with which everyone should be familiar. Among the advantages the following are significant: (1) The control of erosion; (2) the maintenance of soil fertility; (3) the amount and distribution of labor; (4) the distribution of income; (5) the reduction of living expenses; (6) the added market possibilities. Can cotton or tobacco do any of these things? Let us see.

Cotton is one of erosions best and dearest of friends, water flowing through a field of cotton finds very little resistance since the cultivation is comparatively clean. Among the various distinctions of cotton and tobacco, returning fertility to the soil is certainly not among them. The continued on page twenty-five
Diplomacy In The Cotton Kingdom

By R. L. HEARON, '40

KING COTTON is a paisolied individual in the South these days, but he continues to reign because his domain is well suited to his rule. Though he has lost a considerable amount of his power since his ascent to the throne, producing in the calendar year 1929 only one-third of what he did in 1929, and only one-quarter of the amount earned in the record year 1919, he is, and will be, a tough individual to displace.

The king has treated his people to variable degrees of success, but he has always been harsh to the land on which he thrives. The biggest reason for this tax upon the earth is that the king, being the most important hombre in his part of the country, sits upon the largest portion of the land, and constant sitting will wear anything down.

Let's introduce Mr. Geo. Ponics, one of the king's loyal people, and the king's second in command, Duke Meatan Feedstuffs, also an important personage in this story.

In Mr. Geo. Ponics' spacious house he has a roomy parlor, which, for a balanced effect, he divides into halves, called half A and half B. Now the king and the Duke are frequent visitors to this house, and to keep the two guests from tiring of their surroundings, (and also because the king is hard on the carpet, whereas the considerate Duke is continually repairing the carpet) Mr. Geo. Ponics tries to shuttle them between half A and half B. The king should be satisfied with this arrangement, but no, he is not. Just to show his authority, he wants more than half of the living room, which causes Mr. Geo. Ponics no end of embarrassment. If our dispairing host does not shift the king from one part of the parlor to another, the carpet in the king's section will soon be bare. He cannot throw the king out on his ear because the king, even though stubborn and erratic, has proven a friend indeed. Neither can the duke be thrown out because he is closely connected with our harassed host's pocketbook. Old Geo. would certainly be a fish in troubled waters if it were not for two families whom he knows can help him. These families are the Fertilizers and the Cover Crops.

If Mr. Geo. Ponics can get these families to accompany the king wherever he goes, Geo. need never worry about his carpet getting worn, for these two families, when used properly, can prevent almost any carpet from wearing. Not only do they serve as a preventive to wearing, but their presence actually has a soothing effect upon the king, making him more productive.

Please pardon the introduction of anything so uninteresting as charts, but these will show you some of the results obtained by Mr. Geo. Ponics' strategy:

```
<table>
<thead>
<tr>
<th>Cover Crop</th>
<th>Average Gain Per Acre</th>
<th>Average Gain Per Ton</th>
<th>Average Gain Per 100 Bushels</th>
<th>Average Gain Per 1000 Bushels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gutroon Pea</td>
<td>885.1 1771 305 538 595 591 511</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noot Pea</td>
<td>938.6 2074 319 758 440 770</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foaming Pea</td>
<td>14415 2981 333 559 6219 911</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humorous Pea</td>
<td>84000 2000 283 584 3544 620</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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Data on Chart 2—Treatments on each plot
Plot 1—600 lb. 4-8-4, 100 lb. nitrate of soda.
Plot 2—600 lb. 4-8-4, 8 tons manure from dairy, 100 lb. nitrate of soda, manure placed in field 10 days to 2 weeks before planting.
Plot 3—600 lb. 4-8-4, 100 lb. nitrate of soda, cover crop of rye or vetch turned under 10 days to 2 weeks before planting.
Plot 4—600 lb. 4-8-4, 100 lb. nitrate of soda, cover crop of vetch and 8 tons of manure turned under 10 days to 2 weeks before planting.

Not only does our friend Mr. Geo. Ponics gain considerably by the use of these two families, but by shutting the king from one part of the living room to the other, and putting Duke Meatan Feedstuffs and also members of the Cover Crop family in his place, he receives considerable improvement in the king's health and the condition of the carpet.

Let me say (and Geo. Ponics said it to me) that no matter how cantankerous the king seems to be, the old boy likes this part of the country, and he's going to be hard to overthrow. So as long as he's going to be with us, let's be a power behind the throne and make him do a good job of ruling all of the Mr. Geo. Ponics. And like this particular Mr. Geo. Ponics, let's be diplomatic in our dealings with King Cotton. We can have him with us and still keep our carpet as good as new.
Civil and Political Status of the Southern Negro

History and Significance

By R. C. WANNAMAKER, '40

The "Solid" South can never obtain political justice . . . Southern policies regarding the Negro are prominent factors in maintaining this anti-partisan system . . . the South must throw off these delusions and open the door to a bi-partisan system before it can obtain a position of leadership in national affairs.

When the first Negroes were brought to South Carolina and the rest of the South, there was no such prejudice against them as afterward developed. Slaves were well taken care of, and there were few cases of bad feeling of the master for his slaves. The free Negro had the privilege of voting, of owning property, and many other privileges, originally. In the period before the War Between The States (around 1800) these free Negroes were gradually deprived of many of their privileges because the planters lived in constant fear that they (the Negroes), because of propaganda spread by various groups, would become centers of infection for insurrection. The northern states were equally drastic in dealing with free Negroes, and nearly everywhere the vote was taken from them, freedom of movement was limited, they were not permitted to testify against white people, they could not buy or sell except under certain restrictions, they were not permitted to assemble freely, and in some states they could not preach the Gospel except in the presence of at least one white man. They could not be taught to read and write, and in many northern states the chance to make a living was practically denied. All of this was brought about to counteract the propaganda spread by the organizations of the rebellion-mongers.

War Gives Birth to New Society—
Caste Modifications and Shifts in Power Made

At the close of the War Between The States a new situation arose. There were, then, four classes of society in the South. First, there were the planters, an aristocratic class who up to this time had dominated the social, civic, and political life of the section. This landed group was completely bankrupt at the end of the war. Their slaves were freed, they could hire no laborers, their tools and estates had been burned or had deteriorated terribly during the war, and they had no capital and no means of getting any. The outlook for this group was indeed black.

The second class was the poor whites. The war had helped them because they hadn't anything of value to be destroyed, and now that slaves no longer had a monopoly on labor, they could get some work. This class, in general, was resentful towards the aristocrats because of their attitude of superiority and contempt towards the less wealthy class. These people also had a feeling of animosity toward the freed men, because their own degraded status had been fixed by these Negroes during the era of slavery. This group definitely had no desire to see the Negro acquire political power.

The third class was the Negro who had been free before the war. He had always had limited civil privileges, but just prior to the war had lost most political privileges because of the fear that he would stir up insurrection. The end of the war cleared the way for him to enter into political power as leader of the newly emancipated slaves.

Lastly, there were the slaves just set free and now known as freedmen. This group was ignorant and had had, in general, only two types of training—agricultural, and the little mechanical training which was acquired about the plantation. Many of them wanted to remain on the plantations, but the majority did not want to remain, and there was nothing they could do in the towns. Hence, they became wandering homeless people, without responsibility and subject to little government control.

There was what should probably be designated as a fifth class—the Scalawags (southern men who had stayed out of the Confederacy in the hope of preferment by the Union, or for other selfish reasons) and the Carpetbaggers (men who came in from the North to grab the political offices and profit from the spoils of the Union regime). This type of man was eager to become continued on page twenty-six
The War Between The States

By E. W. Cooler, Jr., '41

MOST OF US think that the Civil War ended in 1865, but actually we have never stopped fighting one another. The hostilities have a little different aspect now, however. During the Civil War it was North against South, with the states on each side more or less united. Now it is each state for itself with little respect for the other’s laws, economic welfare, or social problems. Each is trying desperately to promote its own selfish aims, even at the expense of its neighbors, if necessary.

For instance, a Georgia merchant just across the Florida State line cannot sell eggs from the latter state, and call them fresh, no matter how fresh they really are. Of course consumers don’t want stale eggs, and consequently few Florida eggs are sold in Georgia.

An Iowa farmer started to the Chicago market with a truck load of vegetables, and had not gone very far before he was stopped by a patrolman who told him that he would have to put two green lights on the rear of his truck. He did this, but no sooner had he crossed the state line than an Illinois patrolman stopped him, saying that two green lights on the rear of his truck was a violation of the law. Besides being fined for this he was also fined for having three or four inches too long a body on the truck.

It so happens that a certain butter-producing state and an oleomargarine-producing state have a common border. The butter-producing state passed laws prohibiting the sale of oleomargarine, and the other state retaliated by passing laws to restrain the sale of butter within its borders. How much better it would have been if they had cooperated. Each is restricting the other’s commerce, thus limiting both markets, and reducing production. Consequently, both are suffering instead of profiting.

These are only a few of the examples of the incoherence of our state laws. There are many such examples. However, these are demonstrative of the fact that we have not yet come to a full realization that we are forty-eight united states, not just forty-eight states of America.

Before the Revolution each colony was directly connected with the crown of England, but few, if any, had any relations among themselves. The crown pulled the strings that made each puppet colony act, and on the stage America the puppets rubbed against and trampled each other as if dangling from one control point, London.

It is essentially the same today. Instead of the crown we have our federal government and instead of the colonies we have the states. But we have the same stage, larger now, and more puppets. Our “show” is a little more united and coherent now, but we still rub against each other, we step on our neighbors’ toes, we trample on the weak, and altogether our “show” is not going over as well as it should.

Although it is better organized than many of the other “shows” of the world, we still lack one thing—a strong bond between all of the states, a thing that is absolutely necessary for perfect union. If we had this strong bond, the federal government could still pull the strings, but instead of a few states responding to the stimulus, all of us would respond. After all, no organism can function properly without full cooperation of all of its parts.

It is the duty of every citizen to see that the federal government creates a stronger bond between the states, that it organizes their laws regarding interstate commerce to a point where goods can flow freely from all points of production to the points of consumption. In all, it is our duty to see that this union is made into something meaningful and coherent so far as we are economically and socially concerned. Until this is done, we can never expect economic adjustment to reach its maximum efficiency.
The Farmer Owns The Property

By B. W. ANDERSON, '41

"In the field of agricultural finance, mortgages and taxes are the two most prominent elements. Both are necessary, and they are here to stay. But need they be so arranged that they lead to undue hardship and therefore to soil misuse? Or is it possible to revise both mortgage and taxation methods so that they encourage better use of the land?"

—From the 1938 Yearbook of Agriculture, Soils and Men

Since the early days property has been the bases of tax revenue for local government and real estate the principal form of property. Relying on figures contained in "Tay Systems of the World", property taxes account for nearly two-thirds of all state and local tax collections in the United States, and approximately two-fifths of the total including Federal revenue. In South Carolina 50 percent of total tax collections were received from the property tax.

Property tax in form of real estate owned mostly by farmers is not only the principal source of revenue but in many states personal and intangible property have all but disappeared from the tax rolls. In South Carolina about one-fourth of all taxable property is represented by farm lands and buildings and when city and town real estate is considered the figure approaches one-half. The Bureau of Agricultural Economics, U.S.D.A., estimates that nearly two-thirds of the farmer's tax dollar is accounted for by taxes on farm real estate.

Property tax has least planning of any other tax at present time. Less than ten states have a comprehensive classified property tax system and only a few have endeavored to recognize more than one class of property. This causes inadequate property tax legislation and a maze of assessment practice and procedure. Here are some examples:

(a) The unit for assessment in South Carolina is the school district; while in Georgia, Florida, Alabama, Mississippi, North Carolina and Tennessee it is the county.

(b) Assessors are elected in Alabama, Florida, Mississippi, and Tennessee but appointed in South Carolina, Georgia and North Carolina. The appointment is by the Governor upon recommendation of the county delegation in South Carolina, and by the county commissioners in Georgia.

(c) South Carolina, Georgia and North Carolina make use of a board of assessors while Florida, Alabama, Mississippi and Tennessee are content with a single assessor.

(d) Assessors are paid a per diem in South Carolina, Georgia and North Carolina, but are paid salaries in Mississippi and Tennessee and receive a commission based upon the value of properties assessed in Alabama and Florida.

The farmer is now facing a most serious condition because he, like all other taxpayers must pay his taxes out of revenue from "rent, profit or wages". It is more difficult to assess or measure the taxpaying ability of a farm than it is of any other types of property. Farm property values depends greatly upon fertility, productivity, and prices. While on the other hand farms are subject to unusual weather conditions, insect injury and disease. Also on certain types of farms (for example timber) long periods elapse before any cash returns are realized "The continued on page twenty-one
The Appraisal of Farm Tenancy in South Carolina

GUEST EDITORIAL
By DR. B. O. WILLIAMS

Annually in South Carolina, during the last few days of the old and the first few days of the new year, a great movement of population takes place. Fathers and mothers, together with their children, put their bags and baggage in wagons and trucks and move from one farm to another. These people are, for the most part, tenant farmers. They are white tenants and colored tenants, even a slightly higher proportion of the former than of the latter.

In fact, about one in every four tenant farmers changes his residence each year. This condition is appalling, when viewed in the light of its relation to the art of successful farming. It is especially significant in its relation to the possibility of controlling soil erosion. Likewise, the condition is highly important in relation to the community institutions, to the church, to the school, to the credit agencies, and to the neighborhood life in general.

One does not need to have extensive experience in farming to realize that such a condition is not conducive to a sound and constructive system of agriculture. The fact that 47 percent of the tenant farmers of South Carolina in 1935 had been living on the farm they were then living on for only one year or for less than one year, should challenge the interest and thought of all concerned in the future of the state. In other words, of about 100,000 farm tenant families in the state in 1935, some 47,000 families had been living on the farms on which they were then living for only one year, or for less than a year. This probably represents more than a quarter of a million persons.

Research findings which I have recently tabulated in the Clemson Experiment Station indicate that tenancy seems to beget tenancy. The study was made of 1,830 farm families in eight counties. There were 515 white farm owner families in the study and 531 white farm tenant families.

The data were analyzed to see what had happened to the tenant families over three generations. Only those representatives who were employed in farming at the time of the study were included in the present analysis, since it was desired to determine the tenure status in farming. There were 368 children of the white tenants and 513 children of the white owners working in farming. We will call this group the first, or youngest generation. Similarly, there were 1,987 brothers and sisters of the white tenants and 1,830 brothers and sisters of the white owners employed in farming. Let us call this the second, or middle generation. And there were 498 fathers of the white tenants and 480 fathers of the white owners engaged in farming. This we will call the third, or oldest generation.

Here is the way in which the tenure status was distributed over the three generations from which the white tenant farmers were selected: 71 percent of the first generation (children) were tenant farmers; 72 percent of the second generation (brothers and sisters) were tenant farmers; and 44 percent of the third generation (fathers) were tenant farmers. Even the latter figure for the third and oldest generation is higher than the proportion of tenancy in the farm population of the United States as a whole. These figures show that almost three-fourths of the children of the white tenant farmers were tenants; that almost the same proportion of these children's uncles and aunts were tenants; and that almost half of their grandfathers were tenants.

By comparison the tenure status represented by the white owners in the study was distributed over the three generations as follows: 49 percent
of the first generation (children) were tenants; 19 percent of the second generation (brothers and sisters) were tenants; and 13 percent of the third generation (fathers) were tenants. This shows that a much lower proportion of the children of white owners were tenants than the children of white tenants, and that the same was true for the brothers and sisters and for the fathers. Tenancy would thus appear to be a stepping-stone to ownership of farms for the children of owner farmers, but not to any great extent for the children of tenant farmers. To emphasize this, it might be pointed out that more than a third, or 37 percent, of the children of white owners (first generation) were owners of farms; that 80 percent of the brothers and sisters (second generation) were owners; and that 87 percent of the fathers (third generation) were owners of farms. Only 10 percent of the children of white tenants (first generation) were owners; only 26 percent of the brothers and sisters (second generation) were owners; and only 56 percent of the fathers (third generation) were owners. (Some of the representatives in the various tenure classes were hired persons working on farms, but these are omitted in the present analysis. This is the reason that the totals do not always add to 100 percent.)

Thus over three generations there appears to be a strong tendency for the children of tenants to follow in the status of their fathers. And, whereas the children of owner farmers often begin their careers as tenants, there is a strong tendency for them to achieve the status of owner later on in life.

Of every three farm families in South Carolina, two are tenant families. This fact is of sufficient importance to command the consideration continued on page twenty-one.
**THE ANNUAL FARM MACHINERY DAY**

“In the spring a young man’s fancy lightly turns to thoughts of love”, so the quotation goes, and while this may be partly true with a certain group of students at Clemson, love is not the only thought it has. These students are the Agricultural Engineering majors, and it’s a simple matter to tell when spring is on the way by listening to them make plans for their annual Farm Machinery Field Day.

This event has always been a successful affair and on May first this year the Agricultural Engineering Department is making plans to put on the biggest and best demonstration yet attempted. The men in charge have learned more each year how to handle the demonstration; the farm machinery and implement companies have realized the value of advertising they receive; and the farmers have learned that they are being shown the correct and practical usage of modern farm machinery.

This year the Agricultural Engineering Department has been fortunate in acquiring 30 acres of land on the Cherry Plantation. On this land will be planted some corn so that actual cultivation may be shown, and it is hoped that some grain may be planted so that mowers and rakes may be demonstrated.

With these features added to the program, and a larger area of land on which to operate, the 1940 Farm Machinery Demonstration should surpass the successes of all previous demonstrations.

—R. L. H.

**OUR COVER PAGE**

A Pickens County, South Carolina Negro farmer paused at the end of a row to fan his brow, and was caught as such in the magic eye of a camera by an observant passerby. He appears on our cover bearing the name *Africanus Agricola*, The African Farmer. His name, however, can be used as a term to cover a large and distinct segment of the American people. He is a familiar sight in the cotton and tobacco fields from the Potomac to the Rio Grande. He has played a major role in the glamour and tragedy of the Old South, in reconstruction and in the “Agrarian Revolution” following the Civil War, and still remains as a great factor in the Rural South.

With the introduction of cotton into this country, came the Negro in increasing numbers to follow America’s greatest crop in its march to the West. By the use of his labor, there developed and prospered a great civilization, the plantation system of the South. The elimination of slavery did not destroy all the fundamental relationships between Negro farm laborers and white land owners, as the system of share cropping has perpetuated some of the most common features.

In round numbers *Africanus Agricola* totals 4,500,000 or 52 percent of the entire Negro population of the South. Consequently, this means that he must be considered in any study or program of solution of the agricultural problems of the South.

—R. L. A.

**THE AGRARIAN**

* A cutting of almost any kind of house plant can be easily rooted by splitting the stem and inserting an oat kernel in the slit. When planted in a pot of soil, the slit starts growing immediately.

**THE AGRARIAN**

* One ounce of either sulphate of ammonia or nitrate of soda dissolved in two gallons of water makes a solution which, when added to potted plants, gives them extra pep and beauty in blossoms.

**THE AGRARIAN**

* Hens have been known to lay more eggs after the inside of laying houses were whitewashed. This is accounted for by the increased amount of light.

**THE AGRARIAN**

* Tobacco horn worms should never be killed by crushing because practically every worm is the host to internal parasites which prevents the worms reaching the adult stage and lay eggs.
Clemson Royal Knight

By H. A. JOHNSON, ’40

Clemson Royal Knight 269491, the young Guernsey bull of outstanding potentialities, now in the Clemson dairy herd was sired by Saugerities Royal Sequel 159031. Knight is therefore a half brother, by the same sire, of Cathedral Rosalie, the world’s record Guernsey cow. Rosalie gained this distinction by producing 23,714 pounds of milk containing 1213 pounds of butterfat in one year. Saugerities Royal Sequel has twenty daughters whose average production is 13,520 pounds of milk per year, containing 103 pounds of butterfat.

One of these daughters had the highest record in the United States in Class BB. She was Cathedral Dorothy’s Lass 368252, with a record of 18,814 pounds of milk and 1,013 pounds of butterfat. Another placed second in Class GG with a record of 16,681 pounds of milk and 847 pounds of fat. Her name was Cathedral Jane Rilma 436664. Still another, Cathedral Rose Rilma 421823, placed third in Class F, with a record of 16,881 pounds of milk and 863 pounds of fat. The record of production for all the daughters of Saugerities Royal Sequel average 44 percent above the average of the Guernsey Breed for the same Advanced Register classes.

Saugerities Royal Oneonta was purchased in August, 1936 from Mr. H. H. Bailey of Oneonta, New York, to head the Guernsey herd at the Sandhill Branch of the South Carolina Experiment Station located at Pontiac, South Carolina. The Dairy Project at this Branch Station is operated with the cooperation of the Bureau of Dairy Industry, United States Department of Agriculture.

Saugerities Royal Sequel did not become a great breeding sire by accident. He was out of a cow, Shagbark’s Dorothy 117764, which produced 18,389 pounds of milk and 823 pounds of fat. The sire of this cow, Florham Laddie 20431, has to his credit seventy-three Advanced Register daughters and thirty-one Advanced Register sons. Saugerities Royal Sequel was sired by Langwater Holliston of Rockingham 67366, which has as his record thirty-one Advanced Register Daughters and ten Advanced Register sons. He was sired by the famous breeding bull, Langwater Holliston 23055, which is renowned because he produced fifty-four Advanced Register daughters and thirty Advanced Register sons. It was planned breeding which brought about the birth of Saugerities Royal Sequel, the great sire of Clemson Royal Knight.

The dam of Clemson Royal Knight is Appin’s Blossom 339079, which was out of Appin’s Springtime 191377, a cow with a record of 12,354 pounds of milk and 580 pounds of fat. (This record was made when she was a four-year old.) Appin’s Springtime was sired by Fern’s Raider of Appin’s 64700, a very renowned sire, having produced twenty-four Advanced Register daughters with an average production of 9,693 pounds of milk and 500 pounds of fat. He was born continued on page twenty.
Soil Conservation On The March

... Accompanying an awakening of the American people to the seriousness of our present land condition, a great movement against soil waste has been gathering momentum...

By F. E. Rogers, Jr., '41

MAN'S STRUGGLE against erosion is ageless. Since the beginning of time, races have fought it, lost, and entire civilizations have disappeared. Though for many years men have directed their ability toward the defense of the soil, if the remaining valuable acres are to be saved, conservation measures must be taken generally.

Soil deterioration is caused by three important factors or processes: leaching, crop removal, and erosion. Loss through leaching, is to a large extent dependent on the topographical features of the terrain and the climatic conditions of the region. The loss of nutrients through cropping, or the decline of soil productivity through crop removal without the return of elements used in crop production, has been considered most important. But only recently have losses through erosion been thoroughly appreciated.

Throughout the country, habit more than reason, determined the type of farming, and the successful results of experimentation had to be shown before the public became aroused to the task at hand. In carrying out a program of soil conservation, the greatest problem has been the education of the farmer. The determination of the most practical, economical, and successful methods of conservation was the work of the advocates of soil defense. Progressive farmers built terraces, but as no effort was made towards their maintenance, they often filled or broke, and were directly responsible for large soil losses.

Experience was, from necessity, again the teacher.

At early dates, contour cultivation and terracing, were advocated in the southern Piedmont, and crop rotation soon followed, but it remained for the farmers to become generally educated in the value and necessity of these practices before organized opposition to the appalling soil losses were begun. In 1932, as part of an emergency program, the Soil Conservation Service, primarily intended to be temporary, was formed in the Department of the Interior. So valuable, was its work however, that in 1935 it was transferred to and made a permanent division of the United States Department of Agriculture.

In 1937 the legislature authorized farmers to organize soil conservation districts. Since then, the following have been organized in South Carolina, and are cooperating with the Soil Conservation Service:

Upper Savannah—including Pickens, Oconee, and Anderson counties
Broad River—Spartanburg, Cherokee, and Union
Catawba River—Fairfield, Chester, Lancaster, and York
Lower Saluda—Greenwood, Newberry, and Saluda
Congaree—Richland, Lexington, and Calhoun

The following are being formed:

Savannah Valley—Edgefield
Abbeville County Soil Conservation District
Greenville County Soil Conservation District
Laurens County Soil Conservation District
When organized, the districts through their five supervisors, work out their “district program and work plan”, which is in three parts:

1. Conditions that exist in the district are set forth—climatic, geographic, economic, etc.
2. Proposal of the plan of action to be taken.
3. Description of how the plan is to be carried out and designation who is to do the work.

This plan is then submitted by the supervisors to the Secretary of Agriculture with a request for assistance in putting the program into effect in the district. Upon approval by the Secretary, and when funds are available, the Soil Conservation Service is then instructed to cooperate with the district by furnishing such assistance as they have available. This assistance may be limited to technical services such as the use of soil maps, or the disposal of a conservationist or an engineer to design a water disposal plan for the farm. Or CCC labor may be used to assist in carrying out a plan which has been agreed to by farmer and supervisor, by laying out and checking terrace lines, building and treating terrace outlet channels, preparing and seating strips for water disposal areas, assisting with improved pasture development, and planting trees. The Soil Conservation Service may make grants of planting stocks, such as kudzu crowns.

Soil conservation districts are not Soil Conservation Service districts, but are farmers’ organizations within the districts, and the Soil Conservation Service is one of the agencies assisting in carrying out district programs and work plans which supervisors have adopted. Other assisting agencies are: Extension Service, State Forestry Commission, Farm Security Administration, U. S. Forestry Service, and vocational teachers of agriculture—all working on the same plans.

Since the first district was organized in 1938, 1750 agreements have been written in South Carolina covering 299,398 acres, and prior to then the Soil Conservation Service had in projects, 1545 agreements with farmers, covering 644,435 acres, and had, in cooperation with CCC camps, 236 agreements, covering 372,141 acres. Through the 15, 1940, 5,531 agreements with farmers, covering 1,315,974 acres have been made. Now all agreements are handled through the districts instead of the Soil Conservation Service.

With the movement against soil waste gathering momentum, a concerted and intelligent effort to control and prevent erosion, together with individual and district protection of farm lands combined with the efforts of the state and government agencies directed toward preventative measures, seem to assure the economic and social betterment of the people as derived from soil conservation. By the characteristic resourcefulness which has stood the American people in such good stead, together with an awakening to the reality of the seriousness of our present land condition, the soil will be saved.
Extension Conference

Mr. D. W. Watkins, head of the State Extension Service, attended the Southeastern States Intra-Regional Extension Conference, which was held at the Alabama School of Technology, Auburn, Alabama, February 15-16.

Dean W. H. Washington presided at a meeting of all freshmen enrolled in the School of Education, Monday, February 19. The meeting, which was held in the auditorium of Long Hall, was for the purpose of introducing the various organizations of the Education School to the freshmen. G. A. Stoudemire made short talks on each division, giving their activities and purposes. Also, Mr. W. C. Bowen, Adviser of the local F.F.A. made a short talk on the purpose of the collegiate F.F.A. Approximately 60 freshmen were present.

Animal Husbandry Club

The Animal Husbandry Club is to sponsor a livestock show to be called the “Little International”, this spring. Also, the club will sponsor a judging contest for underclassmen later this year. As one means of securing funds for starting the show, the club has the agency for a well-known oat huller.

At the last meeting, the key design was completed. Programs for the remainder of the semester will consist mainly of talks by the students.

Alabama Meeting

About 45 members of the Clemson School of Agriculture attended the meeting of the Association of Southern Agricultural Workers in Birmingham, Alabama, February 7-9. A number of Clemson men were included in the various programs, and Dr. W. T. Ferrier, associate Agricultural economist, was elected chairman of the section on agricultural economics. The convention had as its theme: “The Next Step in a Balanced Agriculture for the South.”

Dairy Club

The Dairy Club members recently received their 1940 keys. Design of the key is the same as the preceding year.

One of this year’s activities is the preparation of a questionnaire which is to be sent to every Clemson dairy graduate. From the answers a directory giving present addresses and other information will be compiled, and copies will be sent to each man who answers the questionnaire.

Recently, 12 cadets of the Junior and Senior classes were admitted as Junior members of the American Dairy Science Association. This is a national organization and the requirement for admission is that the candidate be a dairy major.

Fertilizer Board Meets

Members of the South Carolina Board of Fertilizer Inspection and Analysis met here during January to attend the fertilizer inspectors’ school. An extensive program was carried out, including a trip to the fertilizer plants at Anderson, and discussions were held.

Conservationist Speaks

Dr. W. C. Lowdermilk, assistant chief of the Soil Conservation Service with headquarters at Spartanburg, was a recent speaker on the campus. His lecture was illustrated with colored slides made during a recent survey by Dr. Lowdermilk in England, France, Holland, Italy, Palestine, Phoenicia, Arabia, and other areas of ancient and modern agriculture in the Old World. Especially interesting were the scenes of the oldest experiment station in the world at Rothamsted, England, and the 550,000 acre reclamation project of the Zuider Zee in Holland.
**FURROWS**

**Recent Publications**

The South Carolina State Planning Board has issued a report on the "Fiscal System of South Carolina", by Dr. G. H. Aull, head of the department of Agricultural Economics and Rural Sociology at Clemson, and Dr. S. M. Derrick, professor of Economics of the University of South Carolina. This report contains chapters dealing with previous studies, present situation, revenue receipts, government expenditure, and the appraisal of the system.

Dr. H. P. Cooper, Dean of the School of Agriculture, has published a bulletin, "Fertilizer and Liming Practices Recommended for South Carolina".

Professor A. M. Musser, of the Horticultural Staff, presented a pamphlet entitled "Peach Trends in South Carolina", at a recent meeting of the Illinois State Horticultural Society held at the University of Illinois.

**Stewart Accepts Position**

Eugene Stewart, mid-year graduate in agricultural economics has accepted a position as superintendent of advanced registry testing with the Clemson dairy department. Stewart succeeds Earl McCurry, who has been transferred to the position of clerk of the extension service bulletin room.

**DREAM’S MIRACLE**

By T. E. GOODSON, ’40

I'm really not a crippled boy
Like they say I am,
Why I play ball and tag
As well as my friend, Sam.

I like to play baseball or tag,
Or any other game,
But since I've started dancing
I haven't felt the same.

I slipped away last night at ten,
And what a time I spent!
I'll tell you what I did
And also where I went.

There was the best and nicest dance
Where ladies were my age.
We danced and danced by music
From a band upon a stage.

I think that I could reel and glide
Until I'm bent and gray,
And maybe then a waltz or two
Would be enough each day.

I love to dip, and slide, and spin
Upon a polished floor,
To laugh, and talk a bit,
Then dance and dance some more.

If you could see me waltz one time
You'd b'lieve just what I say,
But every time I dance
I have to slip away.
More Fruit By Better Pruning

By H. C. ZERBST, '41

It is a recognized fact that different regions specialize in the growing of the crops that are best adapted to these particular regions. This is because soil and weather conditions differ widely in various part of the country, and the conditions making for maximum development in one crop often prove unsuitable for the maximum development in another. Citrus fruits will grow in sections having relatively high temperatures a large part of the year as in Florida, Texas, and California, while apples grow and produce better yields in sections having low winter temperatures and fairly high summer temperatures.

Also certain sections of our state (Sandhills and Piedmont) possess excellent climatic and soil conditions necessary for the successful production of fruit, such as peaches and bunch grapes, a fact that was recognized by the pioneers.

It was not until comparatively recent years, however, that the farmers of South Carolina engaged in commercial fruit production and it was not until after 1924 that increased commercial shipments of peaches were sent to northern markets. Since that time, the peach crop has been steadily gaining importance and at present there are around three and one-half million trees in South Carolina orchards. In order to obtain the most profitable production from these orchards, the growers should strive to carry out successful and approved practices. One of the most important orchard practices is that of training and pruning.

It is particularly important that the young trees be trained and pruned properly during the years previous to bearing full crops. Proper pruning is very essential in the development and formation of an orchard. Practically all growers practice annual pruning, but many of them do not understand the fundamental principals of this procedure. They simply prune because they have heard that it is a wise thing to do, mainly because (1) it will produce better quality fruit, (2) it will increase the size of the fruit, (3) it will make the trunks of their trees grow stockier and (4) will reduce the cost of spraying, thinning and picking by not allowing the trees to grow too high. In particular, a considerable number of them prune their young trees too severely, not realizing the great dwarfing effect of severe pruning and the delay in bearing that follows.

The leaves are the manufacturing centers of the tree and where severe pruning is practiced the potential leaf surface is naturally greatly reduced. When this is done the amount of food manufactured is decidedly decreased. The growth of the tops and roots is greatly reduced and the trees at the end of the second summer in an orchard may be very little larger than they were at the end of the first season's growth. When peach trees are pruned in this fashion a large percentage of the vegetative buds and the comparatively few fruit buds that have formed are removed. This in turn lessens the amount of growth and fruit produced because every fruit is preceded by a fruit bud and every leaf and shoot by a vegetative bud. Thus, if the total number of buds is greatly reduced, the total amount of vegetative growth and fruit produced will be inevitably decreased.

When young trees are severely pruned, what actually happens to the food manufactured by the comparatively small number of leaves such a tree produces? When the potential number of leaves on a tree is decreased it must be remem-
bered that the root system has not similarly been decreased and, consequently, more water and soil nutrients are being furnished to the remaining growing points in the top and the growth will be much more vigorous in each of these resulting shoots. From all appearances the tree is growing very vigorously, but actually this vigorous growth is taking place in too few growing points to produce an appreciable amount of wood above the amount produced the first season and which will be productive the third season. The plant food that is being manufactured by the smaller number of leaves is immediately used in the production of new branches. Such a small amount of food is left over that the tree can not grow sufficient wood cells on the trunk and main limbs to give them much increase in thickness and very little is left for promoting root growth and few if any fruit buds are formed.

On the other hand when one year old trees are lightly pruned, that is, only enough of the branches removed so as to properly thin out the tree, and the main branches cut back just a short distance to a lateral branch to keep the growth within proper bounds, a relatively small number of the leaf buds or growing points are removed. Trees pruned according to this plan will produce a much larger number of leaves early in the growing season which will manufacture food during the remainder of that period. Many more leaves and branches will be produced on such trees and the total growth bearing fruit buds at the end of the second summer will greatly exceed similar growth of trees which have been severely pruned. In addition large amounts of food will be available for increasing the thickness of the trunk and main branches and for increasing the root system. Likewise, food will be manufactured in excess of the amount needed for vegetative growth to produce a large number of fruit buds.

By practicing light pruning, speaking particularly now of peach trees, and thus taking advantage of the food manufactured by the leaves, it is possible to obtain a crop averaging two to three bushels per tree the third summer or the first year a crop is borne. This is not only possible, but actually has been done by a few growers who use good common sense in pruning their young trees. When an individual plants a large orchard it is done with the intention of making as much money as possible. It is necessary in the majority of South Carolina peach orchards to apply considerable quantities of available fertilizers. Also essential to the grower are cultivation and spray equipment as well as spray materials. All of these things require money. But if too severe pruning is practiced the crops received are quite small, the cost per bushel is quite high and the grower makes little if any profit.

* In muddy weather if hens are forced to walk through a shallow trough containing whitting, the fine white powder coats the mud on their feet and helps keep the nests clean.

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The Future of Farm Buildings

By F. E. ROGERS, JR., '41

FARMING, as other businesses, is governed by the principles of finance necessary for successful operation—minimum overhead and applied economy. Many types of agriculture are as dependent on buildings as on any other one factor, and as diversification in agriculture is being exploited and advocated as the means of restoring the southern states to their former sound economic condition, the problem of appropriately designed farm structures has necessitated serious consideration.

At present, the trend in building design seems to have been dictated by efficiency factors in the direction of “greater adaptation to a single enterprise”; diversification, however, demands a far more complex building outlay than does specialization of farm activity. The more a building is designed for one specific purpose, the harder it is to adapt the same building to some other use. When agriculture was more regionally stable, this rigidity of use was not serious, but in the last decade there have been universal changes in agricultural conditions.

Some of the factors which are demanding greater flexibility in farm plans are: new markets because of transportation developments; crop surpluses; government intervention in introducing control programs; and changes in demand because of style variations. A comparison of census statistics shows that the value of farm buildings in the South per farm is many times below that of midwestern states. This gives an idea of the magnitude of the farm structures problem facing the South, if a diversified agricultural program is to be instituted.

The general consensus of opinion seems to be that a plan of this type is essential to the progress and economic success of the southern farmer. But the question which arises is whether farm structures can be created with more “universality of design so that a building could be shifted in use”. The three major functions of any farm building are: storage, air conditioning, and provision of efficient working conditions. To combine all three may increase the cost of construction, and the design may be such that adaptation to other uses may be difficult.

The first step in studying a farm building should be the determination of its economic relationships; second, should be determination of service requirements. Climatic variations may require some transition from accepted design, and the character of the market may influence certain construction details. To combine these essential characteristics of buildings may well require the service of a structural engineer. This, then, is what agriculture needs—men who are considered authorities, conducting convincing experiments whose results will be accepted as satisfactory. In this way only will the building program be solved.

Thus it seems that the integral part of all farm enterprises, the nucleus about which farm activity is centered, the headquarters, “base of operations”—farm structures—has an unsettled future. What will the farm buildings of 1950 resemble—complex outlays with permanent rigidity of design, or simple structures with economy their keynote. Simple or complex, farm building design still remains the question mark of agriculture.

CLEMSON ROYAL KNIGHT

continued from page thirteen

January 28, 1920 and is still in service in the herd of Senator C. S. McColl of Bennettsville, South Carolina. He is thought to be the oldest active bull in the history of the Guernsey breed to be used as a breeder. Appin’s Blossom was sired by Upland’s General 79094. He has thirty-four daughters with an official record of 9,397 pounds of milk and 500 pounds of fat as an actual production average.

Appin’s Blossom has two official Advanced Register records. She produced 11,361 pounds of milk and 552 pounds of fat with her first calf. When she was five years old she produced 14,449 pounds of milk and 668 pounds of fat. In 1939, her herd record made at Clemson shows that she produced 15,761 pounds of milk and 708 pounds of fat. She was ten years and one month of age at the beginning of this unofficial record. One of her daughters, Cavalier’s General Springtime 422416, a very fine individual, has just completed a record of 8,494 pounds of milk and 432 pounds of fat.

From the above information it can be very readily noticed that scientific breeding and mating brought about the production of Clemson Royal Knight. The combined production records of Saugerities Royal Sequel and Appin’s Blossom give Clemson Royal Knight a prospect of becoming a great transmitting sire.
THE FARMER OWNS THE PROPERTY

continued from page nine

unfortunate part of this whole rotten business is that those most able to bear the brunt of these mistakes and these evidences of planless operation are the ones least likely to pay."

We find in our society one group of individuals (farmers) totally dependent upon property for a means of living actually paying taxes in excess of net incomes, and also another group with five times the income of the farmers paying relatively less than one-fifth the amount of tax.

Since visible property is still the basis for most of the taxes levied in South Carolina and visible property is about all that most possess, it can easily be seen then that the present tax systems rest heavily upon the farmer whose "ability to pay" is in no sense comparable with the assessed value of his possessions. The farmer is unlike the business man of the city who owns intangible property such as stocks, bonds, etc., which can easily be, in many cases is, kept off the tax books.

It can safely and without question be stated that high property tax has been one cause of soil depletion, soil erosion, and many farm homes mortgaged. This is true because farmers plant cash crops which are usually soil depleting, cut over their timber land which causes soil erosion, for the purpose of raising money to pay taxes.

The property tax is based on value and not income derived from property. Therefore the tax does not fluctuate and the farmer pays just as high property tax during depression years as he does during years of prosperity.

AN APPRAISAL OF FARM TENANCY
IN SOUTH CAROLINA

continued from page eleven

tion of all our people. It is probably true that the tenant families of the state are falling short by one-third in producing their living on the farm. It is perhaps not too much to say that the greatest problem facing South Carolina today is to get the farm tenant families to grow their living on the farms they operate. If they could be stimulated to produce all the milk and butter, chickens and eggs, vegetables and fruits needed for home consumption, it would indeed mark a great and glorious day for South Carolina.

The Triple A is stimulating diversification among its co-operators by the use of benefit payments for production for home consumption. The Clemson Extension Service has continuously stressed the necessity of raising the living from the soil. The Farm Security Administration is making efforts along this line, including the lending of money to tenants to purchase farms, the provision of some supervision in farm management, and experimentation in tenancy leasing arrangements.

With thirty-seven of the state's forty-six counties having more than half, and with thirty-three having more than two-thirds of the farms operated by tenants, it would seem that these developments are quite appropriate and timely. Anything that can be done to encourage and develop greater stability among the tenant farmers should be done. Anything that can be done to get these farm families to produce their living from the soil should be done. But all this will take time. It is not possible to accomplish so much in a hurry.

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The Use of Phosphate Fertilizers

BY JESSE M. BAKER, ’40

EVER SINCE the beginning, man has had a major problem in finding a means of existence. At first he got his food by hunting and fishing, but as populations increased and civilizations advanced, it became increasingly necessary for him to turn to the soil for a source of food. At first he knew very little about farming, but man soon found by repeated experiment and observation that certain practices would result in increased crop yields. Records show that as early as 500 B.C. the Celts had learned of the fertilizing value of marl, and by 200 B.C. the Greeks had learned that an increase in crop yields would result if Broadbeans were turned under the soil. Time marched on and man continued to learn more about Agriculture. In 1810 Justus von Liebig discovered that the fertilizing value of bones could be increased by treating them with sulphuric acid, so this can be thought of as the birth of the chemical fertilizer industry, although it was left for Sir John Lawes to definitely establish it on a commercial basis. The growth of the fertilizer industry has been tremendous ever since its beginning. Statistics show that the annual consumption of fertilizer by this country has increased from 80,000 tons in 1856 to 8,000,000 tons in 1937. From this it can be seen that fertilizer plays a leading role in agricultural production today, so it is now becoming increasingly important that everyone connected with agriculture have some knowledge of the common fertilizing elements and the role played by each in plant nutrition.

It has often been noted that low crop production is associated with low phosphorus content in the soil. This element is essential in both animal and plant nutrition, since it is found in every cell. The highest concentration of phosphorus in plants is found in the seed, and in animals it is found in the bones which make up the skeletal structure of the animal body. Animals raised in a section in which there is a general deficiency of soil phosphorus, often develop a disease known as rickets due to the fact that the plants grown on these soils do not contain enough phosphorus to adequately build the skeletal structure of these animals. It is, therefore, essential that the element phosphorus be given a great deal of consideration in any fertilizing program.

TOP—Rye receiving no phosphorus and potash
BOTTOM—Rye receiving complete fertilizer

In general, the phosphorus content of all of our soil is low as compared to the amounts contained of the other common soil constituents. The total content of phosphorus in the soil is often not more than one-half that of nitrogen present and one-twentith that of potassium. An equally important fact in this connection is that the majority of the soil phosphorus is unavailable for plant use because it is tied up with such insoluble substances as iron and aluminum. From this it can be gathered that the most fertile soils will soon show a decline in production because of a deficiency of phosphorus unless this supply is kept at a constant level by following good farming practices and by adding suitable fertilizing materials which contain this element.

A very common cause of phosphorus deficiency is the raising of animals or grain, and shipping them away. In either of these systems
of farming, the products sold contain large quantities of phosphorus. The cereal grains contain seventy-five percent of the phosphorus of the plant in their seed, so when these seed are marketed, large amounts of phosphorus are removed from the soil. Similarly, in a livestock farming program, thirty percent of the phosphorus content of the feed is absorbed by the animal, and then twenty percent of the phosphorus content of the manure is lost, so this leaves only fifty percent of the original amount to be returned to the soil, and often this is not returned. Another factor which contributes to the rapid exhaustion of soil phosphorus is erosion. Experimental results have shown that when corn was grown on a three and seven-tenth percent slope, more phosphorus per acre was lost by erosion in one year than is found in a seventy-five bushel crop of corn. It was also found that when a good rotation was practiced, the loss of phosphorus per acre by erosion was as much as is found in a twenty-five bushel crop of corn. Lipman and Conybear recently made studies of this problem, and they have estimated that the annual loss of phosphorus in this country by erosion is over two million tons, which is approximately equal to the amounts removed by harvested crops and by grazing combined. This data shows that the majority of phosphorus losses in the soil are caused by erosion and by cropping. It would be unwise to try to reduce the amount of phosphorus needed for plant growth because that would lower production considerably. The main problem in conserving the phosphorus supply then is to control erosion and to return all animal manures and plant residues to the soil.

Experimental evidence shows that most soils respond vigorously to applications of phosphate fertilizers. Of course different soils give different responses to phosphate fertilizers, but in general, acid clay soils, low in organic matter give the greatest responses to this fertilizing material. Often times, though, the degree of phosphorus deficiency is determined not by the soil type but by the treatment which the soil has received since it was brought under cultivation.

Phosphoric acid plays a definite role in plant nutrition. This element appears to be concerned in the production of the nucleo-proteids, and it also influences the production of seed or grain to a marked extent. Phosphoric acid tends to hasten the maturity of some crops, and often times farmers add this compound to the soil for continued on page thirty
JES’ REXALIN’—TO D. C. R.
By T. E. GOODSON, ’40

Git up niggah, what ails you?
Ain’t cha got no wuk ta do?
You ain sick, is ya man?
Ain’t cha got ta plow dis lan’?

De Cap’n’s gwine to fix you sho,
Ah ain lyin’, you done know
De boss done say he want no slack,
An’ he meant businez, das a fac’.

Ha’d haid niggah, das sho you,
Stubb’n a mule an’ tree stump too.
Git up off dem lazy bones,
An’ lawdy hush dem triflin’ moans.

Why you tak’ so long to rise?
Lie dere den, an’ roll dem eyes.
Ah done gone an’ had my say,
An’ ah’m de one’ll git de pay.

Y’all ain risin’, is ya now?
Ah ’bout thought you ain knowed how.
Uh my lawd, doan lie back down.
Dat must be some real soft groun’.

Yeh, hit is rite nice at dat,
Put you haid rite on ya hat.
Sho is nice, jus feel dat breeze,
An’ listen to dem big pine trees.

Ah spec’ ah’ll kinda res’ mahse’f,
Long anuf to git mah bre’f.
Sho feel good ta lie dis way,
Ah could almos’ spen’ de day.

Ah heared ya, niggah, ah ain deaf,
But ah ain quite yet got mah bre’f.
Go on man an’ let me be,
I’se relaxin’, can’t cha see?

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LIVESTOCK vs. THE ONE-CROP SYSTEM
continued from page five

income derived from these two crops isn't spread out over the whole year, it usually is sold soon after harvest. This large sum (it's usually very small after the fertilizer bill has been paid, the merchant also must be paid for his services during the growing season) is no incentive to save and a rickety old car is the fruit of six or eight months of back-breaking toil. When the labor problem is considered, livestock furnishes a year-around job. Cotton and tobacco and grass that grows therein waits for no man. All of this comes during a comparatively short time and there can be no waiting.

Compared with other nations we are but an infant. Yet already willful waste, neglect and soil erosion have taken an enormous and disgraceful toll. We have periodic floods. In our far western states dust storms have left too many farms a total loss and the farmer living on them nothing to look forward to but tenancy. In our own state we have farms, many of them that have been abandoned not only because they were unprofitable which in itself is a rather common occurrence in South Carolina, but because we could raise absolutely nothing on them. How can someone produce crops on a farm that is somewhere out in the Atlantic?

As expressed by the United States Department of Agriculture, "Thirty-five million acres of cultivated land have been essentially destroyed in this country by man induced erosion." This is an area as large as Pennsylvania, Connecticut, and Massachusetts combined. But the total loss of this land represents but a part of the problem. Of the 35,000,000 acres now under cultivation, about 125,000,000 have lost all or most of the productive surface soil by sheet erosion. Another 100,000,000 acres is being washed away so that in time a subsoil will be exposed that is ten times less productive than the soil which is yet available today. Faster than any peoples of the world, we have been permitting the depletion of our agriculture land."

When soil erosion control is practiced fertility is conserved. When crops are "hogged off" or grazed, less plant food is removed from the land, and when manure is returned to the soil, materials are added that might otherwise have to be purchased in the form of commercial fertilizer. It is certain that livestock production will aid in soil conservation simply because the amount of organic matter returned to the soil will be greater, and many of our worn-out fields will be planted in permanent pastures. South Carolina farmers let us rid our state of a system that is destroying our basic heritage, the soil. Let's unite for a more prosperous state. Let's rally around the "Banner of The Hog, Cow, and Hen", and watch us go places."

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"Clemson Headquarters in Greenville"
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South Carolina's Predominating Store for Men and Young Men

Picture of man getting 10 o'clock news broadcast: At 9 o'clock makes mental note to turn on radio; reads book; again thinks of radio at 10:45.

Compliments of
Clemson College Laundry
THE CIVIL AND POLITICAL STATUS
OF THE SOUTHERN NEGRO
continued from page seven

the leader of the freed slaves, and exploit their ignorance.

In spite of all the corruption and vice of the Carpetbaggers and Scalawags immediately following the war, it seemed that everything was set for a peaceful return of the states to the Union, when radical agitation was begun by a group which was bent on punishing the South and subjecting the southern whites to the rule of the Negro. This group was determined to disfranchise the whites of the South and to enfranchise the Negro. In furtherance of the views of this group, whose aversion to and lack of sympathy for the South had grown with the months, the southern states had made one fatal blunder—they had passed the “Black Laws”. The unrest in the South due to idle wandering Negroes was a sore trial, and something had to be done to govern them—so the “Black Laws” were passed. Why the southern leaders did this can be easily understood, but it can be just as easily seen that they greatly harmed their own cause, and completely tied the hands of the President (who wanted to avoid the “reconstruction” treatment of the South). The “Black Laws” gave the unite-minded faction the perfect argument for the application of its policy.

“Reconstruction”—
Greatest Evil Ever Imposed on Our Nation

No greater calamity than this could have befallen our people. It swept the northern men into bitter persecution of the South; it united the southern whites in a stubborn opposition and created in their minds a bitter feeling towards the blacks; and it put into the minds of the ignorant freedmen false hopes which they were not then capable of realizing. The North felt that the South was trying to virtually enslave the Negro again, and the South felt that the North was trying to put an ignorant class in charge of them. The policy of Congress was worked out to make the voting South as black as possible, and to exclude the leading whites, as far as possible, from the vote.

But, as R. S. Baker said, “Mankind is reconstructed not by proclamations or legislation or military occupation, but by time, growth, education, religion, thought.” So, as a result of this reconstruction policy, there was a revolt on the part of the white leaders, who possessed most of the intellectual ability in the South, and by pass-
A Social and Economic Summary of the South

By E. P. HUGUENIN, '42

Following President Roosevelt's assertion that the South is the nation's "number one economic problem," economists are now turning their attention toward the domain of King Cotton, previously made immortal by song writers, dramatists, and raconteurs of dialect jokes.

"The South comprises just over 28% of the area of the United States and just under 28% of its population," says a bulletin from the Washington, D. C. headquarters of the National Geographic Society. It is in the same latitude as Tunisia, Algeria, and Morocco and it is warmed by the same blazing sun which scorches them.

With little more than one-fourth the country's land, the South produces 93% of the nation's cotton, 90% of the tobacco, 99% of the peanuts, 80% of the rice, 95% of the grapefruit, and 100% of the sugar cane.

Have Much in Common

Much the same problems prevail throughout the five states on the Atlantic Coast south of the Potomac, the four states on the east side of the Mississippi and South of the Ohio, and the four states west of the Mississippi and tied to it through the Arkansas and Red River Valleys. These states have in common a larger proportion of rural population and negroes than the rest of the nation. In the United States, taken as a whole, 56% of the people live in towns and cities; in the South only 33% are urban dwellers with the other two-thirds still on the farm. One half of the farms of the nation are in the thirteen states of Dixie. The average Southern farm today is 196 acres. Farmers in the rest of the nation have a little over that average (averaging 205 acres each). This difference is due partly to more intensive cultivation on the part of the Southern farmers with more extensive use of fertilizers on the soil depleting crops.

The Cotton Belt is one of the most thoroughly "one crop" areas in the world. Here about 3% of the world's soil produces 60% of the world's cotton. Half the farms of the South have as their main crop, cotton; and where cotton is king nothing is allowed to challenge its supremacy. In many cases there isn't a thought given to a garden plot in which to grow vegetables. In a way, the philosophy of many Southern farmers is that of the Mexican—a drawled, "Manana" issued from a seat under a cool shade tree. As a result, the occupants of the typical cabin in the cotton belt frequently have to buy vegetables, fruit, milk, and eggs, or develop pel lagra for the lack of them. The dominance of cotton, and other factors results in very low incomes for the South. In 1929 the average Southerner received only $383.00 for the year. The farmers had a much lower average income with the minimum in South Carolina a pitiful $129.00. Inhabitants of Delaware and New York had an average income of about $1,300.00 per capita during the same period. Even with so much of the nation's earthly wealth, the South harvests only 16% of the dollars to be divided among 28% of the people. The per capita wealth is a trifle less than 60% of the United States' average.

The area has an interesting variety of cultures, including the Colonial dignity of Charleston and the low country, the French and Spanish glamour of New Orleans, the conquistador legends of Florida, Kentucky's far-famed bluegrass and Colonels, and the moss-hung bayous of Louisiana and Mississippi. Other contributions to American folk-lore are the haunting negro spirituals, the blue jazz music, and the rollicking hillbilly ditties which are Southern born and bred.

A Homogeneous Population

The South has been frequently called the most "American" section of the nation because it has the highest proportion of native population—largely of English ancestry along the coast, with the Scots in the highlands. In Florida and Texas alone does the foreign-born population exceed 2%. In Massachusetts 28% are foreign-born. Even with this, the Southern States have the lowest ratio of native white inhabitants in the United States, because of their nine million negroes, three-fourths of those in the entire country. A little over one half of Mississippi's population is negroid and slightly less than half of South Carolina's. The rest of the states have at least one negro out of every four inhabitants, with the exception of Texas, Tennessee, Kentucky, and Oklahoma. The last two mentioned have fewer than the average for the nation.
Varied Sources of Wealth

Though Agriculture is the South's biggest business, it has enormous potential wealth besides the 60 odd crops of field and orchard. From fast growing forests that have yet to be cut-over can come turpentine, pulp wood and yellow pine timber, along with various other equally valuable woods. The coast of the Southern States, which makes up half of the nation's coast line, is teeming with fish, sponges, shrimp, crabs, and oysters. Texas and Oklahoma have a substantial lead in the production of petroleum, and then with Arkansas and Louisiana, they account for approximately two-thirds of the total output of the United States. Texas has virtually a world monopoly on helium gas, and sulfur. Arkansas is the United State's foremost source of aluminum, and Oklahoma of zinc.

In Texas the manufactured products have begun to exceed the farm products, and the Southern trend toward industry grows more pronounced yearly. Cotton mills in the South operate three times as many spindles as New England factories. The South has very few tobacco factories, but what they lack in number they make up in size and the region turns out over 80 percent of the cigars and cigarettes.

It is now agreed that the South has yet to realize her great possibilities in many fields. The Dairy industry, for instance, is one that so far has received but scant attention in South Carolina, which doesn't produce nearly enough milk for its own inhabitants. The lumber industry is also in its infancy. We still import far too many eggs that could be produced in our own back yards for home consumption or as a business in itself. As the south wakes up and comes into her own, she will surprise her sister states and the rest of the world with her self-sufficiency, which is the ultimate aim of any social group.

THE CIVIL AND POLITICAL STATUS OF THE SOUTHERN NEGRO

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South. If those members of society who fall below the standards set because of ignorance, crime, or other factors, are eliminated, there is no reason to believe that the Negro would dominate in any section, and such a procedure would open the way for a progressive South; it would stimulate, once more, civil and political leadership among the whites; and it would set an incentive for educational and property progress before the Negro people of the South. Gradually, this would make for more independent thinking and disinterested inquiry in selection of political party. Some such step seems necessary if the South is to take a place of leadership in the affairs of the nation.
SOUTH CAROLINA EXPERIMENT STATION
continued from page three

Magnesia.” In 1859 Thomas Green Clemson was placed in charge of the Bureau of Agriculture with the title of “Superintendent of Agricultural Affairs”, and in this capacity he was very influential in bringing about the passage of the “Morrill Act” and the “Organic Act” of 1862, which provided for the establishment of the Land Grant Colleges and the Department of Agriculture, respectively. A few years later, 1887, the “Hatch Act”, which provided for the establishment of State Experiment Stations, was passed by the National Congress, and from this Act arose the present system of experiment stations in the United States.

The size at first of the South Carolina Experiment Station was very small. The spring of 1891 found the station with only a four acre garden under cultivation, and at the end of this year the station had only ten acres of land cleared and a fifty or sixty acre pasture, but even with this small amount of land, experiments were carried on. Some of the problems that were worked on in this first year were: “What is the earliest, hardiest, and most prolific wheat for this section; what is the relative yield of Red Rust Proof Oats from seed grown in Texas, and in South Carolina, and from seed grown on fields of different fertility; and in what proportion and amounts do cottonseed meal, dissolved bone, and nitrate of soda give greatest profits?” It can be seen that problems of this sort were very important to the farmer of that day, and they are more important to us today because of the fact that our land is gradually decreasing in fertility with a resultant reduction in crop yields. If research work was not continuously carried on in agriculture, our levels of crop production would soon fall to a point where our land would not yield even a moderate income, so this is the place where the experiment stations of the country play a big part. They are continuously working for the betterment of agriculture, and many times they save the farmer money when he doesn’t fully realize it, and they could save him even more if he would come to them with his problems. There is a local Experiment Station, in practically every section of South Carolina, and they are always ready and willing to help the farmer solve his local problems. Visit your local Experiment Station, and tell them your problems—it will pay you big dividends.

TO A HILL
By T. E. GOODSON, '40

I feel the most exotic thrill
When I have climbed a country hill
To find what treasures lie beyond,
A rug of trees, or silver pond.

I rule that world below my throne,
Each leaf, each twig I call my own.
My realm includes a field of weed,
And meadows where the cattle feed.

The forest hums and sways for me,
The brooks are filled with gossip glee.
The wind delights to feel my face,
To muss my hair, and onward race.

My vaulted ceiling, painted blue,
Rechanges clouds, and then its hue,
For evening colors rich and bright
In glory herald coming night.

The shadows stretch and start to play,
To join hands, and gently sway.
And I upon the earth's high breast
Have suckled joy, then peace and rest.

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A TREATMENT FOR EVERY MAJOR CROP
THE USE OF PHOSPHATE FERTILIZERS

continued from page twenty-three

the purpose of getting unusually early crops for marketing purposes. It has been found that phosphoric acid also has an influence on cell division, and in its absence starch will not change to sugar. This element also stimulates the development of root systems. A dark green color of the leaves of most field crops is generally a sign of phosphorus deficiency.

There are several ways by which the ever-decreasing supply of phosphorus in the soil can be replenished. A very old and also a very practical way is to turn all animal manures and plant residues directly into the soil. In the majority of cases the amount of phosphorus added in this way will not be sufficient to keep the supply in the soil at a constant level, so it then becomes necessary to add some commercial phosphate fertilizer as a supplement. There are many fertilizing materials which are commonly found on the market that carry phosphorus, but probably the most common one is superphosphate. This is a product resulting from the treatment of phosphate rock with acids. Sulphuric acid is the one most commonly used in this process since it is relatively cheap but some phosphoric acid is used. The reason the phosphate rock is treated with acids is to make the phosphorus more available for plant use. In much of this phosphate rock is found the element flourine which ties the phosphorus into an unavailable compound, and when acid is applied to this material the flourine is removed, thus making the phosphorus more available for plant use. The next most common phosphorus-carrying fertilizer found on the American market is basic slag, a by-product of the steel industry. When this material is ground fine enough that eighty percent will pass through a ten thousand-mesh sieve, good results are often obtained. The South Carolina Experiment Station recommends from four hundred to fifteen hundred pounds per acre.

As our soils are gradually decreasing in fertility each year, and as their present status of fertility is comparatively low, in the future it will be imperative that we follow good soil management practices in order to insure our economic security from the farming industry. May we ever strive toward this goal which will ultimately put our levels of crop production on a higher plain and will leave to our posterity a greater and better agriculture.
More Elements for Better Livestock

By W. S. Gaillard, '40

In our vocation of agriculture we are confronted with a vital relationship, that of the soil, plants, and animals. In the production of livestock we have to start with the basic factor which is the soil. It determines to a great extent, the analysis of plants (in minerals and nutrients). The growth and well-being of our animals, in turn, is affected by the minerals and nutrients received from the plants.

The economical production of livestock depends greatly on the production and utilization of cheap feeds containing essential elements and a high percentage of digestible nutrients. From experimental work we find that economical growth of plants cannot be made when certain elements are deficient. This is where we find the relationship of the soil, plants, and animals playing an important part. When animals are fed plants and grains grown on soils which are deficient in one or more elements, the deficiency shows up in the animal unless a supply of the deficient elements are furnished in a mineral mixture.

Why “beat around the bush?” We feed a mineral mixture to animals to take the place of elements which are deficient in feeds grown on certain soils. When a mineral mixture is fed, it corrects the deficiency in the animal, but the condition is unchanged in the soil, and in plants grown on the soil. The plants cannot make efficient growth on deficient soil, and the farmer is still in the “hole”, for after all the purpose of livestock is to market home grown feeds. If the cost of producing feeds is high, the profit from the livestock will be small; therefore, feeds must be produced economically.

Sooner or later we are going to be forced to get to the root of this mineral deficiency trouble and it all goes back to the soil. The essential elements, if not present in the soil, must be put there so the deficiency in the plants can be arrested. By doing so, the deficiency in the animals will be automatically corrected. After this condition is met, the cost of producing feeds will be less, since the essential elements are present (thereby ending the need for a mineral supplement), and the profit from the livestock will be greater.

After all we have a hold back. The elements will be absorbed by the plant when applied to the soil, the deficiency will disappear in the animal eating plants from the treated soil—provided the deficient elements are applied in the correct quantities. When applied in large quantities many elements become toxic to the soil, to plants, and to animals eating these plants.

In the future we may see a day when the farmer can have a test made of his soil from which chemists will be able to make recommendations as to what elements are needed in his soil and in what quantities. Not a recommendation from any one standpoint, but a recommendation taking into consideration the relation of the soil, plants, and animals as related to the essential elements. Certainly this appears to be the most practical way of correcting deficiencies of such elements as copper, iron, calcium, potassium, and many others.

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J. A. Postnell, Ravenel, S. C., 10-acre pasture demonstration: "Considerable improvement in the treated part when compared to the other part not treated. Thirty-five cattle grazed this ten acres until October 1st. The sod where Basic Slag was applied began to grow green immediately after the first thorough wetting of the land in late June, and remained green and vigorous until the first killing frost occurred on November 26th . . . ."

W. P. Boyleston, Blackville, S. C., August 13, 1938: "1000 pounds Basic Slag per acre was broadcast over 20 acres of pasture land in July 1937. At this time small patches of Common Lespedeza were in the pasture. These patches were struggling for existence and making little or no progress. In six weeks there could be noticed a change in the area broadcast with the Basic Slag. It was greener and there were no dead spots. On the other part of the pasture the lespedeza was dying. In August 1938 there is now a fine turf of Common Lespedeza growing in the slag part of the pasture, and in the other part of the pasture there is little or no change from last year."

The 49th Annual Report of the S. C. Experiment Station (Coast Station) says: "Observations at this station revealed the fact that on plots of carpet grass in the general pasture there remained an excellent stand of lespedeza where an application of low grade Basic Slag was made four years previously . . . ."

News Letter 4176—1938, Coop. Ext. Work, Clemson College, S. C.: "The Basic Slag pasture demonstrations are showing that excellent pastures can be established in one year . . . ."

U.S.S. Tennessee Basic Slag supplies the necessary elements to produce grasses rich in the essential minerals needed to grow strong, sturdy, big-boned animals. Animals require the same nutrients that crops require—phosphorus, magnesium, calcium, and iron. If the pasture is deficient in these essential minerals, the livestock are bound to suffer. Pastures treated with Basic Slag will support many more animals per acre than untreated pastures.

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