Farm Equipment may have to last for the duration ... learn to take good care of it!

Since it will be difficult to replace farm equipment for the duration, it's up to American farmers to take the best possible care of their tools of food production. Students can be of great help in assisting in this vital work.

By doing this, they not only help conserve critical war materials ... they help assure an uninterrupted supply of foodstuffs to our fighting forces.

Here are practical pointers which will help farmers add years to the life of their electric motors ... and make farm equipment last longer and do more work.

Lubricate correctly ... Use lubricants sparingly. Avoid over-oiling, as this may injure insulation. Do not oil bearings while motor is running. Wipe off spilled oil. Inspect oil supply regularly and keep to proper level. Check ball bearings once a year ... housing should be kept one third to one half full of special ball-bearing grease. Never use ordinary cup grease.

Keep commutators clean ... If brushes spark, commutators may be worn or dirty. Clean by gently pressing 2/0 sandpaper, attached to stick, against commutator while motor is running. This will polish commutator bars and improve brush contact. Never use emery cloth. If commutator is worn in ridges or out of round, have armature removed and commutator turned down by experienced repair man.

Avoid overloading motor ... Heat caused by excessive or continuous overload may destroy motor windings and bearings. Temporary overload will do no harm if motor is allowed to cool off during normal operation. Overload protective devices should be added if not built into motor. Motors should be carefully applied to jobs. Often the motor load may be reduced by changing pulleys.

Protect motor windings ... Dirt in windings restricts ventilation and ability of motor to cool itself. Clean the motor windings occasionally with vacuum cleaner or air hose. Proper location or shielding of motors will help keep them clean and dry. Totally enclosed motors should be used where excessive moisture, hazardous dust, or explosive vapors are present.

Pulley Selection Chart for use with Electric motors running at 1750 R. P. M.

For longer life and greater production, farm equipment should be inspected regularly and kept in the best possible condition. Knives should be kept sharp and properly adjusted. Shafts should be correctly aligned and bearings well lubricated.

Proper operating speeds are important ... for excessive speed is not only dangerous, but wastes power and may destroy the machine. This can be avoided by proper selection of pulleys, as explained in the chart above. Manufacturers' recommendations for machine and belt speeds should be carefully followed at all times.

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OUR COVER

Our cover picture was photographed by Mr. J. A. Smith, extension photographer. It shows a junior agricultural student in a bacteriology laboratory here at Clemson making an examination of a bacteriological preparation.

The slow development of the science of agriculture was due to the lack of suitable microscope.

Antony van Leeuwenhoek was the world's first great microscopist. By 1763 he had developed a microscope with a magnification of 300 diameters.

In 1844 Dolland developed the principle of the oil immersion objective. This development gave a marked increase in the magnifying power of the microscope.

In 1870 Abbe developed the sub-stage condenser. This device is a supplementary lens located beneath the stage of the microscope for the purpose of converging the rays of light from the mirror, thus giving a much better illumination than that previously had. At the present time the modern daylight microscope has a magnification of approximately 3000 diameters.

Without the microscope the important soil processes of ammonification, nitrification, and nitrogen fixation would probably have never been worked out. Nitrogen, generally speaking, is the limiting factor of crop production, and an understanding of the above processes is extremely important in agriculture.

After the development of the microscope we learned how to determine the numbers and types of microorganisms in the soil and the conditions favoring the growth of the various important physiological groups. In the last analysis the development of modern agriculture has depended as largely on the microscope as has the development of the science of medicine.

REGRETS

At present, there is an increasing possibility of the army taking over some 250 colleges in the nation's war effort. Schools in which such a system will be used have not been designated by the War Department. However, Clemson officials feel certain that Clemson will be included, as it has been ranked as a distinguished military college for many years.

In the event that Clemson is taken over by the army for special training of soldiers, it will be impossible to continue with the publication of the Agrarian. It is the retiring staff's sincerest hopes that the Agrarian may not reach a permanent ending, but that it will always find a place in the Clemson tradition.

Although we contemplate this issue as being the last one for sometime, a new staff will be appointed to continue publication in case it is deemed practical in the future.

We wish to express our gratitude to our advertisers, faculty and all others who have made the publication of the Agrarian possible.
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THE WAR AND THEN...

Guest Editorial - - - By D. W. Watkins

Discussion as to what life will be like after the war seems to be useless to many people. Nevertheless if during the first world war people everywhere had thought more about the postwar world it would not necessarily have slowed down the war activities and it might have saved the peace.

There was a plan for the peace following the first world war however not enough people in the world understood it to make it a people’s plan. They had not talked much nor thought much about anything except winning the war and holding their individual places in a world assumed to be stable henceforth. It was too late to begin discussing peace and so making it a people’s peace after the war had ended, and nations as well as organized groups within nations appropriated the peace to their selfish uses.

Most thinkers on this subject divide the period we are discussing into three parts: (1) the war, (2) immediate postwar period, and (3) postwar period after adjustment back to peace. Until the war ends much money will be in circulation constituting a pressure for goods. Just recently Leon Henderson was advising a system whereby people could buy certificates to be cashed in for semi-durable goods as soon as possible after the war. The basic idea is to relieve the present buying pressure caused by a scarcity of goods and a large circulation of cash money. Let us assume in line with the President’s expressed hope that the war will end successfully for the Allies in 1944. A recent survey by Slichter, published in the Harvard Business Review, estimates that this “deferred demand” in the United States will by the middle of 1944 amount to fully 25 billion dollars worth of goods and things, while abroad it will amount to 40 billion dollars. Some think it will take a year to supply this deferred demand and others that it will take as many years after the war as the war itself lasts. This is the period which is most dangerous from the standpoint of inflation.

Between the first world war armistice and the middle of 1920 such an inflation set the stage for bankrupting many thousands of farmers who incurred debts then that had to be paid or foreclosed later.

During the immediate postwar period the production of goods will gradually catch up with the current buying power of the population of this and other countries. When this occurs we shall pass into the third postwar period mentioned above. Then unless controls are effective there will be a business recession. Ordinarily this will be characterized first of all by a sudden drop in the prices of farm commodities. Before that time, however, farm prices, unless arbitrarily controlled, are likely to be as high as the general price level. This suggests two ideas: (1) to apply price controls to farm products and thereby keep them abnormally low during and immediately after the war which will last until a business depression equilizes the controlled price with the price based on demand; and (2) because of the many uncertainties involved the safest course for the individual farmer is usually to incur only such debts as may be paid currently and to pay off old standing debts as opportunity permits.

Will tariffs be lowered after this war? This subject needs to be carefully re-analyzed by capital and labor, not only from our standpoint as a creditor nation and as a key problem in future world peace, but also from the future self interest of all concerned.

Many postwar factors cannot be discussed here, but a few of them are worthy of mentioning. Cheaper synthetic nitrogen fertilizers will boost agriculture in this area in the third period. However cotton, now a world crop not a southern monopoly, will not pay as well as the production of some other crops on such soils as are suited to the production of these other crops. The trends to other types of farming already under way will be hastened. Mechanization of agriculture with family-sized tractors and improved equipment is bound to grow rapidly. Farm electrification of which we have had a taste will be completed and highly utilized. Home refrigerated foods will gradually replace home canned foods, and foods generally will be appreciated more for their protective and health values. Livestock and farm teams of more efficient types and varieties will come into common use. Family farming will require more operating capital. Farm people will cease to be isolated and will further develop group organization by exchanging some fancied freedom for a chance to sit at the economic table with labor and capital. Such group organization, however, both among labor and farm people should tend to fall more and more within the framework of the general welfare rather than be of a narrowly selfish type.
A Poland China Breeder

By T. C. Moss, '43

Mr. Moss says, "In raising hogs one must strive to raise the most number of pounds of pork in the shortest period of time on the least amount of feed."

Three miles northeast of Cameron, South Carolina, is located the farm of T. C. Moss. As his father before him, Mr. Moss not only advocates but practices diversified farming.

Since 1932 the Government has cut the cotton acreage considerably and thus caused thousands of acres of land in the South to be thrown out or to be used for other purposes. There seems to be no better way to utilize this land than to grow feeds to feed well bred livestock.

When the change in southern agriculture came, Mr. Moss had no trouble whatsoever of making his farm fit into the new program. Twenty-seven years ago Mr. Moss had decided that he wanted a purebred hog to market his home grown grain, and ever since he has been working to improve and better the hog in southern agriculture. He selected the Poland China breed because he thought that this breed had more possibilities of being what both the breeder and farmer wanted and needed.

Mr. Moss realized that there was no use to begin a herd without a sound foundation. He knew that "blood would tell" and that a strong individual tended to produce a strong individual. He bought his first Poland China sow from C. C. Porter, Plattsburg, Missouri. This sow was sired by Liberator and out of Harrion's Big Bob. She raised eight pigs, and it was this litter that laid the foundation of Mr. Moss's herd.

Mr. Moss believes in line breeding and the same type and same line of breeding has been constantly used in his herd.

Upon this solid foundation Mr. Moss has built up his herd of Poland Chinas to such an extent that it is considered one of the best in the South.

For a number of years his herd went on a show circuit covering ten state fairs—beginning at the Maryland State Fair, going as far west as the Kentucky State Fair, down to the Southeastern Fair at Atlanta and winding up at the State Fair in Columbia. He always won his full share of blue ribbons. An exceptional record was made by a boar, Pioneer's Best 2nd, who was made grand champion at nine out of the ten state fairs. This boar was a direct descendant of the herd's first blood line. For the past few years his showings have been exclusively on barrows. For the past two years at the Florence Fat Stock Show in Florence, South Carolina, his barrows have won most of the firsts and all championships, including both reserve and grand champions. The past year the reserve champion barrow weighed two hundred pounds on the day that he was five months old.

Mr. Moss emphasizes feeding. He grows all of his feed except the protein supplement and the constituents for the mineral mixture he feeds. His chief feeds are corn, oats, wheat, pasture, protein supplement and a mineral mixture. He has found that hulled oats is an exceptionally good feed for pigs just weaned. A balanced diet is essential.

A few years ago Mr. Moss was awarded a Master Farmer Degree. His work and constructive breeding with his herd of Poland China hogs was one large reason why he got this award. Mr. Moss has also been awarded a Certificate of Merit by Clemson College for the work he has done with hogs.

Mr. Moss advocates sanitation in the raising of hogs. Many people think that the hog is the dirtiest of all animals, but quite on the contrary, the hog is the cleanest of all animals. "Clean lots, rotation of lots, grazing, plenty of fresh water and clean farrowing pens are essential" says Mr. Moss.

In the past few years Mr. Moss's herd has been headed by such outstanding individuals as Admiration Mixer and Monarch. These boars combine the greatest bloodlines in Poland China breeding. As has been his practice in the past, Mr. Moss will again hold a bred gilt sale on the first Wednesday in February.

Mr. Moss's choicest bit of advice to the hog raiser and breeder is, "Remember the purpose of the hog is to market home grown feed and that eighty per cent of the cost of the hog is the feed he consumes. Always remember that the ultimate end of the hog is the pork barrel, so strive to raise the most number of pounds of pork in the shortest period of time on the least amount of feed."
Dehydration In The Home

Dehydration Experiments Are Now Revealing Some Of Its Practical Applications In The Home

By H. S. Cotton, '43

An experimental dehydrator designed and built for home use.

Drying is one of the oldest known methods of food preservation. There are no definite records of when it first was used, but history shows that it was used in the ancient times to some extent. Early settlers of this country dried most of their food so that they could store it away for use when fresh food was not available. Ice boxes, refrigerators, etc. were not heard of then. They could not use glass containers to can food in because they had very few glass containers and what they did have were used for other purposes. Canning in tin was not heard of at that time; so therefore, it was out of the question. Since that time, the more modern methods mentioned above have been the prevailing ones. Now that we feel a shortage of vital materials in these modern processes, such as rubber, glass, tin, zinc, etc., we are again turning to ideas of ancient times.

There are many methods of preserving perishable and semi-perishable foods. Among these are drying, canning, freezing and storing, each of which has a sub-division. Drying may be done by sun drying or evaporation by heating. Both are very effective but each has its advantages and disadvantages. Canning in glass or in tin is very effective and relatively cheap, but with the scarcity of rubber, glass, tin, and zinc, it will have to be limited to a great extent. Products in glass and tin are very convenient and are relatively easy to store and handle. Freezing is not as favorable as drying or canning because of the great amount of space and expensive equipment needed. Storing in community freezers involves a lot of excess handling of food and adds expense of carrying food to and from the freezing plant. It is also inconvenient to people that live for some distance from the plant. Other factors that determine which method is used in preserving the food depend upon the nature of the product. Asparagus should not be dried, potatoes can be kept without canning, peas should not be stored, and cabbage is not adapted to freezing. Some of these products can be preserved by two or more of these methods, so therefore, the method used is left up to the individual desires, governed by the time and equipment available and personal preferences.

After taking all of the above facts into consideration, any method of preserving food which eliminates or reduces the need for such items as are essential for other needs is worth careful consideration. The equipment needed for drying is not expensive and can be built by anyone who can use a hammer and saw, provided he does not go to the extreme in trying to get 100 per cent efficiency from the equipment.

Why do we dry our foods? First, to cut down on growth of bacteria and molds which are the two main causes of spoilage in raw food. If the water is removed, the growth of these bacteria is prevented. Drying is one of the most effective methods but must be done correctly so that a palatable and nutritious product is obtained. Best results come from exposing the food to dry air having a sufficiently high temperature as to assume fairly rapid drying, but not so high as to cook or scorch. The success of drying depends upon four things: (1) The quality of the product to be dried; (2) The protection of the product against dust and insects while drying; (3) The completeness and speed of the drying; and (4) The correct storage of the dried product. Drying should not be considered a method of utilizing inferior products. If they are not good enough to can, freeze, or use fresh, they are not good enough to dry. Food that is to be dried needs just as careful preparation as if it were to be canned or frozen. Better results are obtained when the product is brought directly from the orchard or garden, correctly prepared, and dried in the shortest possible time. Finally, we dry food to save the nutritive value and the original flavor. This can best be done by steaming the product for a few minutes before drying. Steaming also saves the soluble food material, checks the ripening process and also hastens the drying process.

Among the more common products dried, we find apples, apricots, cherries, peaches, peas, plums, figs, beans, corn, kale, pumpkin, okra, squash, parsley, celery leaves, and sage. Undoubtedly, there are other fruits and vegetables which may be dried but under the present conditions, it is doubtful whether the home maker should risk large quantities of other products as an experiment. Small trial amounts might well be dried, however, in anticipation of more extensive drying in the future.

There are two main factors involved in successful drying. These are: (1) The temperature of the Continued on next page
air surrounding the product and (2) The rate of air movement. Warm, dry air moving over the exposed surfaces of the product to be dried will absorb moisture from it. The higher the temperature of the air, the more moisture will be absorbed; and the greater the air movement, the faster the moisture will be carried away. Air at a temperature of 82 degrees will carry over twice as much moisture as 62 degree air while air at 130 degrees has over eight times the moisture carrying capacity of 62 degree air. Experiments have shown that the most successful drying usually is accomplished when the air temperature is between 120 and 160 degrees. Temperatures below 120 degrees result in slow drying and permits a certain amount of deterioration to take place before the product is dried completely. Starting temperatures over 160 degrees may cause, to some extent, “cooking” which in turn results in an inferior product. Best results are obtained in most cases by starting the drying operation at about 135 degrees and if possible, gradually increasing the heat up to 160 degrees. This is not always possible but for products which require a high finishing temperature, a few moments in the oven after they have been removed from the drier will suffice. Too much heat at the start causes excessive drying of the outside surface, thereby, retarding evaporation of moisture from the inside. This is particularly true in the case of halved fruits.

There are two main methods of drying— one by utilizing the heat from the sun and the other by the use of artificial heat. Each of these two main methods has several variations. Adequate air movement is essential in both methods. One of the main causes of unsatisfactory drying is insufficient air movement and lack of uniformity of the air flow. All types of driers must be so constructed that the air moves over or through the entire tray or trays of food, and is not short circuited through any particular part of the drier.

Probably the simplest process is to expose the product to the direct rays of the sun on a screen covered frame supported so as to encourage the flow of air through it. Cover with screen or cheese cloth to keep out dust and insects.

Effective drying can be done in this manner but it is the slowest of all methods. Success depends on several factors: first, the temperature must remain high and second, the air must be dry over a period of several days.

Heat from the sun can be utilized more effectively if trays of fruits or vegetables can be placed under glass with proper control of air circulation.

Artificial heat may be obtained for drying from the ordinary wood-coal kitchen range or even better by the use of electricity because a more even heat can be maintained and also because of continuous application of heat. This results in more rapid drying. It is also more convenient because it can be connected to any accessible convenience outlet.

Before storing dried products, they should be conditioned. This is done by placing the product into deep containers and stirring each day for eight or ten days. If food is too moist after conditioning, return to dryer.

Heat all products for 30 minutes at a temperature from 150 degrees F to 180 degrees F to protect from infestation by certain kinds of beetles and moths.

Fruits are ready to move from the drier when they are tough and leathery. Vegetables should be rigid and brittle. If in doubt as to whether material is dry enough, leave it in the drier a little longer, but at a reduced temperature. As long as the temperature is held low enough, there is not much danger of food becoming too dry.

Dried fruits and vegetables will keep for a year or longer if sealed in moisture proof containers and stored in a cool, dark, dry place. Examine the food occasionally. If there is any sign of moisture, reheat to 165 degrees and resell.

Some of the best containers include glass jars, tin cans, tin boxes, or heavy paper and cloth bags dipped in paraffin or beeswax.

Dried foods are best if containers are packed full and food used a short time after opening. For that reason, it is well to store food in small amounts.

To prepare the food for table use, soak for several hours or overnight in cold or warm water. Cook the food in the same water that it was soaked in. Simmer until tender, being careful not to boil, then prepare as described.

This information was gotten from Extension Circular 709, published by the University of Nebraska and from circular 216, published by Clemson College as prepared by the United States Department of Agriculture and from experiments made by the author.

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Westminster, S. C.
Grain Sorghums for South Carolina
A Profitable Substitute for Corn
By J. B. Pete, '43

The average yield of corn in South Carolina is very low. There is need for a crop to be used as a substitute for corn. Grain sorghums may be the answer to this need. Barley is being grown in the place of corn in some instances, but barley requires a rather fertile soil to get maximum production. The low fertility level of South Carolina soils may be a limiting factor in the growing of barley.

Grain sorghums are known as the grain crop of the dry hot Southern Great Plains region of the United States, but it may be called an ideal corn substitute crop in all dry land regions or where a successful crop of corn cannot be produced. The total amount of rainfall in this state is uncertain, and the soils have a low water holding capacity. These factors often cause unsatisfactory yields of corn. Grain sorghums are more drought and heat resistant than corn, and they are capable of producing a good yield of grain in areas where corn cannot be grown.

Sorghums are generally divided into forage and grain sorghums. If grain is desired, the true grain sorghum varieties should be selected, and forage sorghums should be chosen for the production of forage. Sometimes a combination of forage and grain is desired, and for these cases there are certain dual purpose selections which can be found to meet this need best.

In normal growth sorghums require as much water as corn. During periods of drought they go into a state of dormancy, and after rain they will resume growth. Corn does not have this ability and will fail during a drought. Sorghums also have twice as many secondary roots per unit of primary roots as corn, although the number of primary roots may be the same. They also have less leaf area exposed for the transpiration of water.

Where there is much rain, varieties of grain sorghums with an open type of head should be grown rather than those with a compact type of head. There is a tendency for the compact type of seed head to mold even rot during wet periods in late summer or fall. When the head is open or spreading, air can circulate through the head and keep it dry.

For the past five years the South Carolina Experiment Station at Clemson, South Carolina, has been conducting a variety test of some of the most promising grain sorghums. These varieties were planted at the same time and at the same rate. The

Continued on page ten
The Agrarian Presents

GEORGE HUBERT AULL, Ph. D.
A Clemson Man Who Has Gone Beyond His Line Of Duty

The main attraction when I entered the office of the head of the Clemson’s Department of Agricultural Economics and Rural Sociology was Dr. George Hubert Aull’s cheerful smile and hearty hand shake. He was completely unaware of the Agrarian’s plan to present him and he was modestly surprised when I told him.

Looking around the walls, I noticed a number of famed degrees, fraternal certificates, and other documents. The sun was pouring through the Venetian blinds, giving the whole office a sunny businesslike appearance.

The interview began, and the series of events unfolded to me, exposed the life of a man whose time has been and is that of perpetual, interesting activity.

Born in Pomaria (Newberry County), South Carolina, Hubert Aull was reared on a farm. He played hard as catcher on the high school and home town baseball teams.

For his higher education, Hubert chose Clemson. At this early stage of his career, he clearly manifested his leadership and journalistic abilities, for he became editor of the Tiger, business manager of the Agricultural Journal, advertising manager of the Taps (Annual), Y. M. C. A. editor of The Chronicle, and a member of the Y. M. C. A. Cabinet. He found time to earn some money by washing glassware for the botany department, minding babies for the faculty, writing essays for prizes, and painting advertisement signs. He once earned a new suit of clothes by merely painting some placards for a suit salesman-staying with Clemson’s local haberdashery.

World War I interrupted, and before Hubert graduated he served as an acting supply sergeant in the army. The day he was to be discharged, he happened to be AWOL, and by a peculiar combination of circumstances, he was not punished, but he was honorably discharged with an extra day’s pay. He counts this as one of his most interesting experiences.

Hubert Aull returned to Clemson and graduated in 1919 with a B. S. degree in Agriculture with a major in Agricultural Chemistry.

In the fall of 1919, Hubert went to work on his first important job at the First District A & M School in Statesboro, Georgia. He started off in a big way as teacher of agriculture, supervisor of the school farm, and commandant of students. For a little diversion, he assisted the coach with the football team.

Unknownly, Supervisor Aull bid for a prize hog while observing it in the sale ring at a Statesboro fair. It seems that the auctioneer’s assistant would crawl around the ring to get bids. Well, Aull merely winked at this auctioneer as a form of greeting, and this greeting was mistaken as a bid. Aull winked several times before discovering he had run the price up to $350.00. Luckily someone else out bid him.

In 1920 Aull returned to his native state, South Carolina, to teach mathematics, agriculture, and science at the Marion High School. The girls basketball team here needed a coach—Teacher Aull took this job over, too, besides organizing and leading a troop of Boy Scouts.

Aull again found himself at the Clemson Agricultural College in the summer of 1921. This time he was to stay permanently. He started out with the Experiment Station as Assistant Director of Research. He studied during the summers, and in 1928 he received his M. S. degree from the University of Virginia. Then, in 1933, he was made head of the Department of Agricultural Economics in addition to his job as Assistant Director of Research. In 1936 he became Head of the Department of Agricultural Economics and Rural Sociology, and retains this position today. Through continued study, he received his Ph. D. degree from the University of Wisconsin in 1937.

Except to accept the Laura Spellman Foundation social science award for research and study at

Dr. G. H. Aull, head of the Clemson Department of Agricultural Economics and Rural Sociology.
the University of Wisconsin during the year 1929-30 and occasional temporary leaves of absence for study and service to the Federal Government, Dr. Aull has remained faithfully with Clemson. He once acted as Senior Administrative Officer, Land Policy Section, for the Agricultural Adjustment Administration. Since 1939 he has been Economic Consultant to the Nation Resources Planning Board. These services have contributed to the prestige of Clemson.

Dr. Aull is active in a large number of organizations. The professional associations of which he is a member are the American Farm Economic Association, American Economic Association, American Political Science Association, American Academy of Political and Social Sciences, National Tax Association, Southern Economic Association, and the Rural Sociological Society. His outside organizations include the Masons, of which he is past master and the American Legion, of which he once served as post adjutant. He is also a former scountmaster of the local troop, Boy Scouts of America. He is now a member of the Advisory Board of the Y. M. C. A. and of the Interstate Committee of the “Y” for North and South Carolina. He is also president of the Anderson Rotary Club, director of South Carolinians, Incorporated, and a member of the Board of Trustees of Penn Normal Agricultural and Industrial School for Negroes on St. Helena Island, South Carolina. He belongs to the International Torch Club and is treasurer of the Clemson Baptist Church.

Of the Clemson College organizations, Dr. Aull is an honorary member of the Blue Key, Phi Kappa Phi, Gamma Alpha Mu, and faculty adviser for The Agrarian.

The subject of taxation is one in which Dr. Aull is most interested. He has done considerable research work on the subject, and perhaps his greatest contribution to society has been in taxation work. Governor Maybank, during his term of office, appointed Dr. Aull one of a committee of three to study and report on the fiscal system of South Carolina.

Dr. Aull is author of a number of tax studies including *Taxation and Ability to Pay, Some Inequalities in the Assessment of Farm Real Estate, and The Probable Economic Effects of a Homestead Exemption Act on Public Revenue in South Carolina*.

As a journalist, Dr. Aull has not limited himself to writing on taxation work alone but has written on land planning, agricultural programs, and farm philosophy. He is author of *A Brief History of The South Carolina Experiment Station, and Rural Land Holdings in South Carolina*. One time he wrote about South Carolina agriculture for inclusion in one of a set of agricultural encyclopedias. Incidentally, for writing this summary he received a set of these encyclopedias plus a substantial check.

Married in 1922, Dr. Aull has since become the father of one son and a daughter. His daughter, Anne, goes to the Clemson-Calhoun public schools and his son, George, is a junior at Clemson. Both are talented musicians.

Dr. Aull is keenly interested in his scrapbook in which he pastes poems, jokes, and pictures that interest him. He does not segregate his moods from one page to the other but perhaps has a conglomera-

tion of witty jokes, a bit of art, a droll sonnet, and a wistful prayer on a single page.

In his home Dr. Aull has a wood shop where he can practice his talent as an amateur cabinetmaker. He once collected stamps, but his daughter has since taken over this collection. Hiking, fishing and hunting are extremely pleasant past times to him. He purchased 25,000 acres of land for the Federal Government in 1935-36 which he thought might be used as a “hunter’s paradise” for Clemson professors. Ironically, Clemson officials now in charge decided to let the wild life live, and the land is reserved as a game sanctuary.

The way the Clemson campus is sometimes littered with refuse is a pet peeve with Dr. Aull. If the cadets would cooperate, he believes a lot could be done toward keeping the campus in a neater looking state.

Those who know Dr. Aull admire him for his wise judgements and thoughtful advice. His ability to speak interestingly and intelligently to any group large or small is another admirable trait of his. As for his journalistic ability, there is sufficient evidence from the things he has written that he is quite capable as an author.

With his devoted and incessant earnestness in all of his tasks, he has accomplished much in bringing valuable service, prestige, and honor to the state and college. For his many brilliant achievements, we are indeed proud to have him a part of Clemson and the Clemson tradition.

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**ATTAINING LEADERSHIP**

There is hardly anyone who does not admire a well developed, healthy, physical being. One does not have to have the physique of Atlas, but he should at least be healthy and have a body which will respond favorably to physical work and play. Because admiration is one of the prerequisites to leadership, it is important that a prospective leader develop himself physically. Wholesome food, ample sleep, and systematic exercising will be helpful.

“All brawn and no brain” is a commonplace statement critically made about some men, and it is often true. In order to lead others, we must have a definite knowledge and the desire for new knowledge in our respective fields of leadership. A condition where one would try his leadership abilities without sufficient mental ability and training would be similar to the proverbial “blind leading the blind.”

Our social contacts are extremely important in developing our leadership personalities. We gain new ideas and outlooks, thus enabling us to cope with problems in a satisfactory manner. In many of our social gatherings, we are often able to develop our speaking ability which is so essential in leadership. Associating with many types of people finds us better able to “get along with others.”

God shows us the way, and without His help we would be unsuccessful leaders. There are those who do not adhere to the Christian ideals and who claim to be leaders, but they are respected by only a small minority. Christ, whose name has lived through the ages, is our best example of a most successful leader; therefore, we who live a life of Love and Truth will be benefited in our efforts of leadership.
Clemson Fellowship Club Clinic

Clinic Contributes Valuable Service To Clemson

By J. L. Schaffer, '43

It had been felt by the residents of the Clemson College campus that a clinic of some sort was needed. The lack of proximity of a town of any size to treat patients made the clinic an absolute necessity. The Clemson Fellowship Club, composed of 65 members which represent all activities of the college and community, took a deep interest in this project and on January 3, 1939 opened the clinic for the first time.

The clinic is used for three purposes. It gives care to babies and prenatal cases, it is used for general disease control, and for immunizations. A different day in the week is devoted to each of these.

The clinic is open to all who desire to make use of it, and there is no charge except for syphilis control which is only ten cents per shot.

The personnel of Oconee and Pickens County Health Department furnish professional service. The medicine and supplies are furnished by the S. C. Department of Public Health, and The Fellowship Club furnishes the clinic. It pays for the upkeep and incidental expenses which are incurred.

Dr. C. E. Ballard of Pickens is in charge of the professional work of the clinic, and he is assisted by Dr. E. J. Bryson of Liberty who does most of the professional work at Clemson. Mrs. W. H. Gray of Clemson is Nurse's Aid in active charge of the clinic. She gives her services without compensation.

All persons who handle food on the college campus are checked periodically, and those free from disease are given health cards.

In the treatment of syphilis, there are two kinds used—the heavy metals which are injected into the arm and the arsenical treatment which is injected into the hip. These treatments are alternated until a negative report is found. In the heavy metals treatment, bismuth is the drug used; it is injected directly into the tissues. In the arsenical treatment, arsenic is used: the drug is injected directly into the blood stream. I observed the doctor take extreme care to see that the drug is injected into the blood stream. It is in any of the arsenic goes into the tissues an acute soreness will develop in the region of the body. Treatment is absolutely voluntary on the part of the patient. In the three years it has been operating, the clinic has accomplished the following:

1,390 persons received triple typhoid inoculations.
60 persons were vaccinated for small pox.
86 were given diphtheria inoculations.
147 given tuberculin tests.
40 given X-ray check for T. B. at Pickens.
49 Midwife clinics.
41 Pre-natal clinics.
38 Well baby clinics.
633 Blood test (over 50% positive Wasserman)
179 Health Cards issued.
3,978 Syphilis treatments given.

The man who was the moving force behind all this work is Ben E. Goodale connected with the Dairy Department at Clemson College.

Anyone may visit the clinic whenever it is open which is on Tuesday and Friday afternoon, and the first Thursday of every month.

There are many communities in the state and the nation who, at a small expense, could start a clinic like this. The time and effort would be repaid manyfold by the better health it would bring.

—THE AGRARIAN—

Grain Sorghums For South Carolina

Continued from page seven

Fertilizer treatment was the same for all varieties. A summary of the yields of these varieties during the five-year period 1937-1941 follows:

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield in Bushel Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hegari</td>
<td>47.5</td>
</tr>
<tr>
<td>Schrock (Sagrain)</td>
<td>43.5</td>
</tr>
<tr>
<td>Blackhull Kafir</td>
<td>43.3</td>
</tr>
<tr>
<td>Pink Kafir</td>
<td>39.0</td>
</tr>
</tbody>
</table>

The fertility level of the soils where these experiments were carried on is above the average South Carolina soil, and results as high as these could not always be expected.

Grain sorghums should be planted about ten days after the ordinary planting date for corn. Six to ten pounds of seed per acre should be planted in rows from three to four feet wide. About 300 pounds of a complete fertilizer per acre should be applied at time of planting. The crop ought to be given shallow cultivation during the summer.

The feeding value of grain sorghum averages about 49 per cent of that of corn. When properly supplemented with feeds rich in protein, calcium, and vitamins A and D, the grain sorghums are excellent for all classes of stock. The grain sorghums are sometimes slightly less palatable than corn. Better results are obtained if grain sorghums are ground before being fed to all stock except sheep.

Certainly grain sorghums should be given a trial by farmers who farm dry up-land soil and who need more feed for their livestock herds.

—THE AGRARIAN—

The “four freedoms” of the great democracy of 4-H Clubdom are the freedoms of head, hand, heart and health.

—THE AGRARIAN—

Make the market want your quality of product more than it wants the other producers and you have no competition.

—THE AGRARIAN—

Gentle suggestion to hog producers: Don’t share the meat with swine diseases and pests.
NEWBERRY TURKEY FARM

A Clemson Man Became Successful By Growing Turkeys

By H. L. Parr, '43

One of the South’s largest turkey breeding farms is located in Newberry County where the owner, Waldo Huffman, hatched and sold over one hundred thousand poults last season. The breeding flock consists of around 5,500 hens and toms of the broadbrested bronze strain.

Mr. Huffman attended Clemson where he majored in dairying. Upon graduation, he engaged in dairying and poultry raising on a small scale, but later he became supervisor of the Poultry Department at Thornwell Orphanage. While there he had his first experiences in raising turkeys. As the business grew and it became necessary to enlarge, Mr. Huffman decided to come to Newberry and go in the turkey business for himself on a large scale.

He began in a small way with one incubator and a flock of a thousand birds on a farm that had room for expansion. In three years time his business increased until last year he was able to sell one hundred thousand poults.

The broadbrested bronze strain of turkey originated in the Northwest in the states of Washington and Oregon, and Mr. Huffman was the first to introduce them in the South. This breed of turkey has several advantages over most of the other breeds, namely: they have bigger breasts with forty percent more meat, shorter legs and blockier bodies; they mature faster and bring a higher market price. Mr. Huffman brings in new blood each year in hatching eggs, thus keeping his breeding up and reducing the possibility of spreading disease.

Mr. Huffman begins his hatchery about February first and ends about June 15. The breeding flock is put in two large sheds where they are prepared for the laying season. During the early part of the laying season lights are turned on about 4 o’clock in the morning to lengthen the day, thus bringing the turkeys into early production. By starting the hens laying, the poults have a longer time to grow and get a start before hot weather comes, thus getting a bigger turkey.

Mr. Huffman finds that hens start laying sooner and lay more eggs than older hens. This being the case, he sells all of his old turkeys when the laying season expires and raise a young breeding flock for the coming year. By doing this, he saves a lot of feed and labor and also has a chance to clean up his breeding pens and isolate them before the next laying season.

The eggs are gathered in wire baskets which allows the air to circulate through them and then they are immediately stored in a cool cellar where they are graded and put in crates until placed in the incubators. The eggs are set so that there are two hatchings per week during the regular hatching season. Twenty-one hundred eggs are set for each setting. The poults have been sold even before the eggs are laid.

The poults Mr. Huffman keeps for himself for breeding purposes are placed in a brooder house 16 by 200 feet which has a capacity of about 3,500 poults at a time. The house contains 14 rooms, each equipped with an electric brooder, running water, wire floors, and a sun porch. They are kept in these houses for ten weeks before their feet are allowed to come in contact with the ground. Before being put out on the range, they are vaccinated for pox. The grazing on the range consists for the most part of corn and soybeans. The young turkeys are protected by range shelters until they become accustomed to remaining outside, which usually requires around ten days. Young turkeys are very susceptible to disease, so Mr. Huffman takes every precaution to keep the turkeys from being subjected to contagious diseases. The chicken is a very harmful disease carrier to turkeys, therefore, Mr. Huffman doesn’t have a chicken on his farm. The feeders and water containers are built on runners which allow them to be moved to fresh ground fairly easily.

While the birds are on the range, they are carefully watched day and night. They are changed from field to field very often to prevent disease from coming in, and Mr. Huffman says that they have a very low mortality rate. They are never put back on the same field under a year’s time.

The Huffman farm consists of a nice 135 acre farm, a hundred acres of which is in cultivation and

Continued on page sixteen
BETWEEN THE

JANUARY FARM HINTS

1. Be sure your cotton planting seed for 1943 was bled to produce staple at least one inch in length or longer. 2. Test seed for germination and plant only seed that test at least 80 percent. 3. If sufficient oats was not planted during fall to meet farm needs, plant this month, weather permitting. 4. Clean up hedge rows and wood patches between fields. 5. Spread limestone if not already done. 6. Plan for more food crops, not only for farm needs, but for a surplus to sell.

HORTICULTURAL ADVICE

1. Prepare hotbeds, and coldframes to be able to have abundance of sweet potato, cabbage, tomato, pepper, and other plants for your victory garden. 2. Plant English peas (in lower part of state) if soil is in condition. 3. Prepare land for Irish potatoes, and order certified seed. 4. Prune fruit trees and vines preparatory to spraying with oil emulsion-Bordeaux or lime-sulfur. 5. Plant fruit trees at once, if soil is in condition. 6. Terrace all new orchards before planting.

INSECTS AND DISEASES

1. Plan to treat cotton seed before planting. 2. Continue cleaning orchards to destroy fallen fruit and limbs to control disease. 3. Rotenone will control warbles in backs of cattle. 4. Do not burn woods to control insects. 5. Apply dormant spray to peach trees for San Jose scale and leaf curl. 6. Examine cattle for lice, and ask the county agent about the new dust for lice. 7. Order certified Irish potato seed.

NEW YEAR RESOLUTIONS

I will get permanent "farm relief" from building better soils. I will market more of my farm products in the form of livestock. I will manage my farm work by old Ben Franklin's shrewd advice: "Drive thy business; let not thy business drive thee." I will not gamble with yields by using poor seeds and following unintelligent fertilizing practices. I will cooperate with others wherever possible, in community progress, marketing of products or what not. I will, despite failures and calamities that may come, "trust God, seek all, nor be afraid."

ANIMAL HUSBANDRY

1. Balance corn for hogs with fish meal, skim-milk, or tankage. 2. Allow beef cattle ample cheap roughage. 3. For fall calves turn bull with cows about January 15. 4. Give idle mules free access to roughage, but cut the grain to a half ration. 5. See that all classes of livestock have shelter, with extra bedding for cold nights. 6. Make use of barley, rye and oats for hog and cattle grazing. 7. Repair the pasture fences.

DAIRYING

1. Make inventory of livestock, feed, and equipment. 2. Decide now whether you will have silage next fall and plan for its production. 3. Analyze herd records and decide where you can improve in management and feeding. 4. Repair pasture fences, clean out undergrowth, and stop washes in pastures. 5. Plan now for improving permanent pastures and for summer crops to supplement permanent pastures. 6. Start the new year right by keeping daily milk and feed records on each cow. Make January a planning month for the coming year.

POULTRY

1. Mate breeders for hatching eggs. 2. Make special breeding pen for best hens and pedigreed male to produce cockerels for next year's matings. 3. Provide breeders with green range. 4. Get ready for baby chicks. 5. Move brooder houses to new ground before starting chicks.

AGRICULTURAL ENGINEERING

1. Check over farm machinery for needed repairs and order repair parts now. 2. Arrange sheds and farm shop for better care of machinery and equipment. 3. To insure efficient operation of farm machinery, follow instruction manual recommendations of lubrication, adjustment, etc. 4. Make needed repairs and improvements on buildings, fences and gates.
FURROWS

COOPER AND COLLINGS HONORED

Dr. H. P. Cooper and Dr. Gilbert H. Collings have been selected to be in the first edition of “Biographical Encyclopedia of the World.” It includes the outstanding individuals in all countries, and corresponds to the American publication “Who’s Who in America” and the British publication “Who’s Who.” Two members of the Clemson faculty will be listed in the next edition of the “Biographical Encyclopedia.” These members of the faculty are Dean H. P. Cooper of the school of agriculture department and Dr. Gilbert H. Collings of the agronomy department. Dr. Cooper is also listed in “Who’s Who in America” along with eight other members of the Clemson faculty, and Dr. Collings is also listed in “Who’s Who in America” and in “Who’s Who in the Western Hemisphere.”

—THE AGRARIAN—

SOUTHERN AGRICULTURAL WORKERS MEET FEBRUARY 3-5

Clemson Extension Service, Experiment Station, and school of Agriculture workers will be well represented as usual at the forthcoming annual conference of the Association of Southern Agricultural Workers, which will be held in New Orleans, February 3, 4, 5, 1943.

Announcement of the date of the conferences has just been made by F. E. Miller, North Carolina Department of Agriculture, Raleigh, North Carolina, secretary-treasurer of the association. The officials and executive committee of the ASA and agricultural leaders generally feel that, in view of the complex problems of farm production now facing southern farmers, the 1943 convention of the association should be a most important one.

—THE AGRARIAN—

ALPHA TAU SENIORS HOLD COACHING CLASSES FOR FRESHMEN

Senior members of Alpha Tau Alpha, National Professional Agricultural Educational Fraternity, are holding regular coaching classes for freshmen who are behind in courses such as English, chemistry, zoology, and mathematics. The classes are held three nights a week and are well-tended. The following members are helping with the classes: Ralph Hoffman, Georgetown; C. B. Lowman, Lexington; W. S. Jackson, Manning; L. R. Cox, Moncks Corner; L. E. Pence, Tatum; and R. M. Richbourg, Camden. Other members include: C. H. Brown, Travelers Rest; W. A. Collins, Mullins; J. J. Thomas, Knoxville, Tennessee; C. S. Hughey, Greer; W. F. Minton, Lewiston, N. C.; P. E. Linder, Chapin; J. E. Herlong, Saluda; and C. B. Pence, Tatum.

DRIED EDIBLE BEANS VICTORY FOOD SPECIAL

Dried edible beans will be the National Victory Food Specials during the week of January 18-23, according to notice received here by the Clemson Extension Service from Southern Regional Administrator James H. Palmer of the Agricultural Marketing Administration.

Retail grocers, wholesalers, producer organizations, and other food trade groups in the South are being asked to make sure that sufficient supplies of dried beans are at hand locally; and all are joining in an effort to direct consumer attention to this cheap, abundant source of proteins.

Pointing out that military and Lend-Lease needs will take one-fourth of our food production in 1943, Mr. Palmer suggests that Americans at home will be patriotic to eat more beans and other foods that are plentiful so that our doughboys can really be “the best fed soldiers in the world.”

—THE AGRARIAN—

LIGHTS FOR MORE EGGS TO MEET WAR DEMANDS

Lights are one of the best means of stimulating winter egg production. Farmers are urged to increase egg production to help in the all-out war effort.

Trials have shown that the presence of light causes increased functioning of the egg-producing organs, and while the use of lights will not increase the yearly egg production of hens, they will cause hens to lay a greater number of eggs during the fall and winter months when the price of eggs is highest. It is not necessary to use bright lights, and it has been found that a 15-watt bulb to each 20-foot section of the house will give ample light. This size light does not have to be shaded. Kerosene lanterns can be used successfully for lights.

Contrary to popular belief, lights do not lower the hatchability of eggs or the strength of chicks, repeated trials having shown that neither morning nor all-night lights have any such effects.

—THE AGRARIAN—

AG. ENGINEER KILLED IN ACTION

J. E. Cottingham, Jr., was killed in New Guinea last November. He finished Clemson in April, receiving his B.S. in Agricultural Engineering. While at Clemson, J. E. Cottingham, Jr. was a member of A. S. A. E., Alpha Zeta (Junior and Senior years) and the Y. M. C. A. Council (Freshman, Sophomore Junior and Senior years).

Clemson men will not forget J. E. Cottingham, Jr., and we will see to it that he will not have died in vain.
Peanuts For Victory

Peanuts Are Pinch-Hitting For Various War Commodities
By W. H. Eaddy, '44

The importance of the peanut industry in wartime has not yet been fully realized by the American people. They must be told how peanut oil serves its purpose in the manufacture of explosives so essential in our war effort and how edible oil and peanut butter are in demand for food for our armed forces as well as for civilians. The government has recommended peanuts as an important food product for our men under arms.

A much larger acreage will be necessary in 1943 than ever before to make up for shortages in our vegetable oil supply. About three and one-half million acres of the 1943 peanut crop will be crushed for oil with a half million ton of meal as a by product. Farm animals relish good peanut meal and it is an excellent protein feed for them. This protein is probably nearer perfect for animal nutrition than any other important source of plant protein. For economical gains, hog feeders should reduce the corn and increase peanut meal up to three-fourths of the total feed. Animals receiving large proportions of peanut meal should have plenty of water and a good mineral mixture such as one made up of equal weights of charcoal, bone meal, ground limestone and salt.

Peanuts are usually very hard on land due to removal of practically all the organic material, especially when peanuts are harvested instead of being hoggred off. Best results are obtained of peanuts when rotated with other crops or rest the land two years out of three. To increase production farmers are urged to plant winter legumes. Oats make a good winter cover crop and should be planted early and well fertilized because peanuts receive little fertilizer and the succeeding crops require heavy fertilization.

A well-drained sandy loam is the type of soil that produces the best peanuts for commercial use. Dark colored soils will produce large yields but seem to discolor the hulls. Most of the peanuts grown for commercial use are confined to the coastal plain section.

Higher yields are assured if peanuts are grown on soil where a loose surface can be maintained. Heavy soils are improved by the practice of turning under green manure crops or by adding ground limestone. Peanut soil requires a large amount of organic matter. Legume crops grown in rotation are excellent for this purpose. Very unsatisfactory yields are likely to occur if peanuts are grown on poorly drained soils.

Peanuts are adaptable to a wide range of climate. It requires a growing season of about four months without frost, moderate rainfall, and a relatively high temperature.

Many varieties are available for growers to

Peanuts should be left in stacks from four to six weeks to become well cured.

COURTESY S. C. EXPERIMENT STATION

The present condition that our country exists in has created a shortage of oils and fats. These important materials are essential for production of supplies needed by our armed forces. The farmers are asked to increase their production of peanuts in 1943. The government guaranteed the farmers a price of $82.00 per ton for oil purposes in 1942 and will probably do the same this year.

In 1941 the peanut acreage amounted to 1,914,000 in the South with a production of 1,476,845,000 pounds. An acreage increase of 5,000,000 was accomplished in 1942 with a production of 2,921,950,000 pounds. The 1942 crop is expected to reach the $1,000,000,000 mark in value.

A certain amount of these peanuts were grown for the manufacture of peanut oil. After the edible trade gets its normal supply, the 1942 peanut crop will furnish three or four times that quantity to be crushed for oil.

Peanuts are used in making peanut candy, salted peanuts, shortening fats, and nitroglycerine products. Nitroglycerine is a product used to a great extent in high explosives. Approximately six tons of peanuts are used every time a battleship fires one of its 16-inch guns.
choose from. White Spanish and Improved Spanish constitute the major part of the crop grown for the markets in South Carolina. The Improved Spanish has larger pods and are more vigorous plants. The Spanish variety is easy to cultivate and produce higher yields in South Carolina soils. If peanuts are grown for commercial use most markets prefer the small white Spanish because it contains a higher oil content.

By the use of fertilizer on soil low in organic matter, peanut yields are increased. Fertilizer has little effect on nuts if the soil is naturally fertile. A complete fertilizer is used profitably if the soil is a poor sandy type. The South Carolina Experiment Station recommends a 2-12-6 fertilizer for peanuts. An application of about 400 to 500 pounds per acre is used successively by large peanut growers. To insure a good stand, peanut seed should be of high vitality. Usually seed is treated with Coresan. Care should be taken when peanuts are shelled for seed. If the skin of the kernel is broken, it will seriously effect germination.

High yields of Spanish peanuts are produced in rows 24 to 30 inches apart. Six inches in drill is commonly used. Other varieties such as the Runner and Bunch varieties require wider rows and more spacing.

The best peanut planting time is about the middle of the cotton planting season. After the rows are laid off, the fertilizer is then distributed. The planter follows along the same mark. Seed should not be covered over 1 1/2 to 2 inches.

Frequent shallow cultivations are necessary to reduce the amount of weeds. Peanuts are usually hoed once or twice. The use of light harrow is recommended when the plants are small. An implement to work the soil toward the plant is generally used during the latter period of cultivation. To prevent difficulty in harvesting, effort should be made to lay by clean.

Particular attention should be paid in harvesting peanuts. Harvesting too early or too late greatly decreases the yields. Yellowing of the leaves usually indicates maturity.

After the plants are plowed up, generally with a turn plow, it is necessary to shake the dirt off the plant and allow it to wilt before stacking around poles for curing. The top of the stack should be capped with grass or straw. Peanuts should be left in stacks from four to six weeks to become well cured.

A mechanical picker is essential when peanuts are planted on a commercial scale. When nuts are planted in small lots they may be picked by hand. Storage facilities should be provided if a farmer is going to raise peanuts as a cash crop. Peanuts should always be sold by actual weight rather than by the bushel. There is a difference between the weight of Spanish peanuts and Virginia peanuts. The former yields more oil and is urged by the government to be planted for this purpose.

Clemson’s Redevelopment Project

The Submarginal Land Surrounding Clemson College, That Was Taken Over By The Government Is Known As The “Cherry Farm”

By W. B. Camp, Jr., '44

The Cherry Farm is a part of the 20,000 acres of land surrounding the Clemson Agricultural College that was taken over in the recent government project and turned over to Clemson for redevelopment. Most of the 20,000 acres was found too steep to farm and was replanted to forest. However, the Cherry Farm, which is between 500 and 600 acres in size, is being worked as a demonstration to see if the farmable part of the project can be put on a paying basis.

The Cherry Farm is one of the old places in this part of the country. The Cherry family started it and in the beginning was a very fine farm, but because they did not have control of the surrounding area the drainage was very poor and the farm deteriorated rapidly. Now because the surrounding land is controlled by Clemson College, it is hoped that the land can be built back up and put on a paying basis.

Dr. H. P. Cooper, Dean of the School of Agriculture of the Clemson Agricultural College, is in charge of this experiment. The object is to see if this land can be used for the profitable raising of cash crops, hay, and forage. Also, finding out how to grow these crops on this land.

Some critics claim that the Cherry Farm is not sub-marginal land and therefore is not suitable for such a demonstration, but the way the land was previously handled was definite sub-marginal.

The farm is being terraced where necessary, and kudzu is being planted behind the terraces. Trashy farming is also being tried to see if it cuts down erosion.

On the farm is a complete shop and machinery shed containing trucks, tractors, road equipment, and wagons, also a small sawmill left by the government when it was turned over to Clemson College. There are two combines on the place, one for terrace land and one for bottom land.

When Dr. Cooper began work on this farm he had in mind power farming but since the outbreak of the war he has been raising mules in order to conserve machinery. There are a total of twenty Belgin mares on the farm, and from these he is raising mules. There are also a number of cows that were purchased from a Savannah dairy that are being crossed with purebred bulls and some very fine calves are being raised.

There are about 200 acres of open land in the river bottom, half of which is planted to corn the other half being in oats and hay. The corn is being hoggaged off and will be rotated with small grains and hay. A large amount of the hay is being baled and stored away for future use.

Some of the land can now pay its own way after being terraced, limed, and phosphated.
Sweet Potato Feeding for Dairy Cattle

A Discussion Of Dehydrated Sweet Potatoes As A Possible Feed For Dairy Cattle

By Jerry H. Rosenzweig, '43

The commercial introduction of the dehydrated sweet potato as part of the dairy ration is a relatively recent development, not withstanding more than two decades. Much emphasis has been placed on the sweet potato in the Southeast primarily for its nutritive value as a feed as well as a food. Furthermore, the growth of this root is fast supplanting other crops. As a feed, the dried sweet potato ranks with the best of Iowa's corn in feeding value, producing more energy in yield per acre than either corn, barley, or oats. In addition to the energy value of the sweet potato, there is a large carotene concentration, which is low in corn and other concentrates.

Sweet potatoes offer a variety of forms for livestock use. The vines make good grazing and good silage, the roots may be fed green or converted into silage, the potatoes may be dried from a succulent product into a concentrated feed. Comparative results of sweet potatoes and silage fed to Jerseys and Holsteins indicate that a 10 per cent increase of milk was obtained from the sweet potato over that of the silage, which was fed at twice the rate. In addition, 240 pounds of silage were required to equal 100 pounds of sweet potatoes.

More recently the dehydration of sweet potatoes to form a product which is not subject to spoilage, which can be ground to flour, and which can be shipped to distant places has been sought. Although the dehydration process merely consists of the removal of water, the equipment necessary to furnish this process was estimated at $25,000—or too much money to be able to render the farmer any benefit. The Alabama Agricultural Experiment Stations at Auburn, found a simple method of dehydrating the sweet potato. Their process consisted of placing sliced potatoes on an oil or asphalt surface in the sunlight from one to two days. This method was readily adopted by other state colleges and institutions and was made available to farmers for its application at very little cost. Dehydration by this method left the product completely dry and extinct from perishability.

Dehydrated sweet potatoes are now being utilized extensively as a substitute for corn and other concentrates for the purpose of supplying a greater amount of energy as well as carotene. This was formerly supplied in cod liver oil, which is now too expensive and difficult to obtain because of the war. The average amount of carotene in the dried sweet potato is 130 micrograms per gram or 217 International Units of Vitamin A, which far supercedes the amount contained in white corn.

In order to show the exact affects of the feeds on the carotene content of the milk, an experiment was held at Clemson dairy barn comparing the nutritive values of the dried sweet potato with that of white corn. In this particular experiment, two Guernsey cows were placed on a vitamin low ration which consisted of: (a) 50 per cent Cotton Seed Meal, (b) 25 per cent Wheat Bran, (c) 25 per cent White Corn, (d) Beet pulp (roughage). After seven weeks on the above mentioned ration, the milk showed very little carotene or vitamin A. The white corn was then replaced by sweet potato meal, and the milk gradually increased in vitamin A content until the feeding of the sweet potato meal was discontinued. Similar experiments conducted at the dairy barn show the beneficial affect of the dehydrated sweet potato upon the dairy calf. In one experiment it was the only source of vitamin A and was administered in skim milk; in this case the calf grew well and stored vitamin A in its liver. Throughout all experiments conducted here or elsewhere the conclusions resulted in the finding of the dehydrated sweet potato as a palatable and nutritious feed which can be substituted for any concentrate depending upon the availability of the grain, and the type of soil best suited for the crop. Corn may be best applicable where the sweet potato isn't and vice versa.

Although all preceding data highly recommend the sweet potato as a good nutritional feed, economically it would tend to cost more than the ordinary concentrate feed. Generally, the cull potatoes are used as feed for livestock; whereas, the marketable sweet potatoes are sold for human consumption, since they command a higher price per bushel.

NEWBERRY TURKEY FARM
Continued from page eleven.

is planted in grain. He also plants a mixture of oats, barley, and crimson clover for winter grazing. His summer crop consists of corn and soybeans. The birds eat the beans while the corn furnishes shade. The entire farm is operated with a John Deere tractor and there is only one mule on the farm. Mr. Huffman is a good farmer as is shown by the 4,000 bushels of grain that he produced last year.

Mr. Huffman says that he could have sold twice as many pouls as he did last year. There seems to be a bright future in store for turkey farmers and there is a real opportunity for a lot of one-crop cotton farmers to find a new source of income.
Ag--House Personalities

Dr. George M. Armstrong - - - Prof. Franklin S. Sherman

By J. H. Cannon, '44

"Doc," as he is known to all the Clemson students, was born on the outskirts of Appleton, South Carolina in 1893. One of his earliest ambitions, to be a railroad engineer, was realized at the ripe old age of eight when he was allowed to ride in the cab of a train from Appleton to Augusta, Georgia.

His first association with a public education system was in Appleton, but when he was nine years old his family moved to Barnwell. Soon after, scholarships were being offered at Clemson College on the basis of competitive examinations. "Doc" took one of these exams while in the tenth grade and passed with the highest grade in a group of sixteen boys who had already completed high school. He entered Clemson without having finished high school, and at the time, he was only sixteen years old and weighed 110 pounds. After graduating from Clemson Dr. Armstrong did graduate work at the University of Wisconsin where he received his M. A. degree, and later he received his Ph. D. from Washington University in St. Louis, Missouri.

In June 1924 he became connected with the Division of Boll Weevil Control at Florence, South Carolina. He remained there doing research work on cotton until 1928 when he returned to Clemson to take up his present work of teaching and working on the life histories and control measures for plant diseases. He is now head of the Botany Department and State Plant Pathologist for the South Carolina Crop Pest Commission.

One of Dr. Armstrong's favorite hobbies is gardening which provides both recreation for him and delicacies for the table. He also devotes much of his spare time to the members of the campus Boy Scout Troop. When the call for scrap paper was sent out by Uncle Sam, "Doc" went all out for defense and did his share by riding the back of a truck and loading paper on it. The local salvage committee, of which he is chairman, has collected many tons of paper and metal.

Mrs. Armstrong is a native of Seattle, Washington, and the joke is told that "Doc" had to go all

Continued on page twenty

If you ever hear the familiar name, "Pop," echoing through the halls of the Agricultural Building then you know that someone is speaking of Mr. Sherman. This likeable old man who is known for his ability to walk his classes on field trips was born in Fairfax County, Virginia and completed his grade and high school education there. He attended Cornell University where he received his B. S. degree. He was one of the few people ever having entered the school of entomology with his collection already made. The University of Maryland presented him with an honorary M. S. degree.

In 1900 he became associated with the Entomology Department of the North Carolina State Department of Agriculture. He remained there until 1905 when he went to Ontario Agricultural College. Here he was professor of zoology and entomology for a year and he says that this experience in a Canadian college has been invaluable to him. He returned to North Carolina in 1906 and remained until 1925 when he came to Clemson College to take up his present duties.

"Pop" is now head of the Zoology and Entomology Department and State Entomologist for the South Carolina Crop Pest Commission. He teaches one class which is taken by all the juniors in the School of Agriculture, but to those students majoring in entomology he teaches other classes in which they come to know him much better.

During the last world conflict he campaigned in North Carolina for the sale of war bonds. Though he hasn't done any active campaigning in this war, Mr. Sherman takes pride in buying his share of war bonds each month.

Mr. and Mrs. Sherman have three sons who have graduated from Clemson College. The oldest, Franklin, Jr., is the only one to major in entomology. He is now in the Sanitary Corps of the U. S. Army, and one of the other boys is a major in the army Air Corps in Africa. His only daughter was recently married to a 1942 Clemson graduate who is also in the army.

"Pop's" favorite forms of recreation are trout

Continued on page twenty
Electricity For Sweet Potato Curing And Storing

"Factors To Be Considered In The Design Of An Electric Heated Sweet Potato Curing House"
By J. K. Windell, '43

EDITOR'S NOTE: The following article is based on studies by Dr. J. B. Edwards and Prof. C. H. Dankelburg, of the South Carolina Experiment Station.

The sweet potato is the most important vegetable crop in the south. The fleshy root is a living organism and environmental conditions in the storage house must be favorable for a long storage life. We must know how it responds to certain conditions in order to effectively design sweet potato storage houses. Some of these responses have been studied by various plant physiologists, pathologists and horticulturists, and the results are most valuable.

About four or five weeks after the plants have been set in the field, some of the roots at the base of the plant thicken and become fleshy. The sugars which are manufactured by the leaves, are transported to the roots and changed to starch. In mature roots approximately 80 per cent of the carbohydrate content consists of the starch and the remainder consists of various sugars. The young roots are slender and the skin consists of a layer of living cells. This skin can withstand very little stress or strain caused by the rapidly growing potato or by mechanical injury. As the root develops, this layer is replaced by a more permanent and elastic set of tissues which retains the water and keeps out rot-producing organisms.

At harvest time this new skin is easily injured or bruised. If the potatoes are handled with gloves many bruises and injuries will be prevented. The wounds must be healed quickly if the potato is to enjoy a long storage life. If this is not done quickly, water necessary for life processes escapes and the potato shrinks badly. Under favorable conditions the potatoes lose approximately 5 to 6 per cent of their weight during the storage period. The skin of the cured potatoes will have a "velvety" feel.

While the wounds are being healed and the skin is being thickened, certain changes are taking place within the potato. Most important is the speeding up of the rate of respiration, a process which uses the sugars of the roots as a source of energy. The loss in weight is due to carbon dioxide and water.

After potatoes are cured, they must be stored until they are sold or used. At the proper storage temperature, 50 to 55° F., the respiration rate is comparatively low. Some shrinkage may occur due to evaporation of water through the skin. This evaporation can be retarded by maintaining a high humidity within the storage house, but it must not be high enough to cause condensation. A relative humidity of 80-85 per cent does not permit condensation.

Electricity, as a source of heat, is now being used in sweet potato storage houses in an attempt to provide more uniform environmental conditions. According to the South Carolina Experiment Station, any new use of electricity on the farm should meet the following requirements:

1. Do a better job.
2. Perform a task cheaper.
3. Do a job previously impractical.
4. Make the farm more self-sustaining.

Electricity, as a source of heat, in sweet potato curing houses, has been shown to meet the above requirements when properly installed and operated.

In order to do a better job of curing and storing the roots, the house must be sanitary and capable of being cleaned to eliminate rot organisms. The buildings must be well insulated with positive ventilation controls to maintain optimum temperatures. It is necessary to have a well distributed heat supply and an elimination of hot and cold spots, and a method of preventing wide fluctuations of temperature at the heat source. Thermostatically controlled heaters will take care of temperature, and the moisture supply can be controlled by applications of water to a dirt floor.

Wood and coal will produce from five to ten times as many units of heat for the same energy cost as will electricity. On the other hand, wood and coal heating plants requires considerable attendance, while no appreciable amount is required by electric heaters, especially when regulated by a thermostat. Due to this difference in basic heat cost, particular attention must be paid to the construction of the building and to the operation of the system so that heat losses may be lowered.

Walls and ceilings are usually made of several thicknesses of wood sheathing and are made tight by building paper. Lumber prices have risen about 20 per cent, particularly southern pine common, which has been used extensively in defense work throughout the nation. The elimination of windows will

Continued on next page
THE FAUNAL SURVEY
A Record Of South Carolina's Wild Life
By J. H. Cannon, '44

One of the most startling facts found in the records of the Faunal Survey is that there are only 92 known species and subspecies of mammals, commonly termed animals, in the state of South Carolina.

Fauna refers to the wild animal life of a locality or region, and by survey is meant the study of all the kinds of animals in an area, their distribution, habits, and seasonal history.

The Zoology and Entomology Department at Clemson has been compiling the information contained in the files of the Faunal Survey for 17 years. No work of this sort is ever complete because there will always be rare species of animals on which the data is incomplete and some undiscovered species on which there is no data whatsoever. By the time the records appear to be complete, some species of animals will have changed their habits. Others will have increased and spread into new localities, and some may have decreased in number enough to be near extinction. Every change in the accuracy of the information involved makes more difficult the task of collecting and compiling the data.

The Faunal Survey data is filed away under the proper heading on 5x8 cards. Each species of animal has a separate card on the front of which is recorded the localities and dates when observed or collected, name of collector, brief notes on behavior, abundance, mating habits, food habits, etc., all in condensed form. The reverse side of the card shows an outline map of South Carolina upon which is marked the localities where the species has been found.

Besides the mammals, included in the animal kingdom are birds, fishes, reptiles, amphibians, insects, and others. In all there are about 600,000 different kinds of animals named and described in all the world. A review of the information which has been compiled for South Carolina shows that there are 47 species and subspecies of snakes found in the state. Only a few of these are venomous and dangerous to human life. A subspecies is a form that varies somewhat from the typical specimens though not enough to be recognized as a separate group. The amphibians, that group which includes the salamanders or "spring lizards," the frogs, and the toads, have nearly 65 species and subspecies.

The fishes, though the data is hard to collect and is by no means complete, are estimated at approximately 400 different species. It is interesting to note that the number of fishes and birds is nearly the same. The data on the birds is nearer complete, and the estimation of their numbers is only slightly less; probably there are 350 to 375 species and subspecies.

The records show that the army of the insects is much larger than that of any other group of multicellular animals. At present there are 6,195 kinds of insects on record, which is slightly over one-half of the 12,000 that our state is estimated to have within its borders.

The Faunal Survey is a valuable, yet inexpensive asset to our state records. Through it accurate information is accumulated about South Carolina's wildlife. Though no one will ever know all the answers, this record enables the staff of the Zoology and Entomology Department to accurately answer many of the questions asked them about our wildlife.

ELECTRICITY FOR SWEET POTATO CURING AND STORING
Continued from page eighteen
lower the heat loss considerably as well as lower the cost of construction and upkeep. Electric lights can be added which will give better light at less cost.

A filled dirt floor can be built cheaper than a wooden floor and will allow humidity to be maintained much easier. Wetting down the floor about one week before curing begins and once or twice during storage will supply sufficient moisture in the house to maintain the optimum uniform relative humidity for the entire period. The loss or gain of heat through the dirt floor will be small and have little effect.

Ducts for supplying air into the building should be near the floor and directly under the heaters in order to heat the air as it enters. All doors and outside ventilators should be weather-stripped.

Sweet Potatoes may be kept in good condition by proper packing and storing. COURTESY S. C. EXTENSION SERVICE
THE POULTRYMAN'S JOB
WITH THE NATION AT WAR

By L. O. Drew, '44

EDITOR'S NOTE: The following is a condensa-
tion of the talk given October 7, 1942 by professor C.
L. Morgan, head of the Poultry Department of Clemson
College, on the radio program, "Science in Agricul-
ture," presented over station WAIM in Anderson, S. C.
These programs, a weekly feature of the School of
Agriculture and the South Carolina Experiment Sta-
tion, are conducted by Mr. R. A. McGinty, Vice Direc-
tor of the Experiment Station. This article was prepared
by L. O. Drew, of the class of 1944.

As a possible answer to the problem of where a
supply of meat can be found that will help relieve the
current meat shortage, poultrymen in the United
States are trying to increase meat and egg produc-
tion approximately 15 per cent. Secretary Wickard
has asked that 200,000,000 fryers be produced this
fall and winter to meet the shortage of other meats.
The Agricultural census reports give the number of
chicks raised in the United States for 1939 as 660,000,000 birds. To produce 200,000,000 additional
fryers means that the annual production will have to
be raised approximately one-third.

There seem to be no serious problems involved in
complying with Secretary Wickard's request, pro-
vided there is sufficient labor on the farms. The
same houses and brooding equipment used last spring
can be employed this winter. These houses and
equipment are often idle on farms at this season of
the year.

The objection has been made that the fall and
winter months are the off-season for the production of
baby chicks. This statement is quite true, and the
higher price of eggs during the fall and winter will
materially increase the cost of the chicks; but it can
be done.

Some additional fuel for brooding will be re-
quired during the winter, especially if the houses are
not well constructed or insulated. On the other
hand, chickens make more rapid growth under cooler
conditions, and parasites and disease organisms are
not as prevalent during the winter months as at oth-
er seasons.

To increase our production of fryers by 200,000,-
000 chickens to three pounds weight over a million
tons of feed is necessary. To make the figures more
easily understood, it may be stated that for each
100 chickens raised to three pounds, at least 1200
pounds of feed would be required.

Another way to increase our production of poul-
try products would be to institute a better feeding,
housing, management, disease and parasite control
program. Many small flocks of poultry are fed only
a few scraps, supplemented by whatever grain may
be found convenient. With these small flocks there
is opportunity for a marked increase in the number
of eggs produced if better feeding practices are em-
ployed. Better housing does not involve the con-
struction of elaborate houses. A house that pro-
tects primarily from wind and rain is suitable usually.
Included in better management would be getting rid
of old, unprofitable hens, culling the slow-developing
pullets, and, where available, using artificial lights,
especially with late pullets. To control diseases and
parasites the houses should be kept clean and the
bird treated to keep them from such parasites as lice
and mites. From a practical standpoint, poultry
diseases are controlled or prevented, not cured. This
means good sanitation at all times.

Death losses are probably the greatest hazard a
poultryman faces. Quality chicks from stock free
of the pullorum disease, adequate heat during early
brooding, and good sanitation are the best life in-
surance for fryers.

With the increase in cost of chicks and also of
feeds many people are doubtful as to whether or not
they can realize a fair profit from their ventures.
While costs of production vary and market prices
also vary greatly, it seems safe to say that fryer
production during the fall and winter will yield a
fair return if an increase of 20 per cent or more in
the normal price of birds can be secured. With the
prevailing prices of other meats, such increase in
poultry meat would certainly not be out of line.

—THE AGRARIAN—

Dr. George M. Armstrong

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the way out there before he was able to fool a girl
into marrying him. Dr. and Mrs. Armstrong have
two sons, one of whom entered Clemson as a fresh-
man this year.

It has been said that no one can help but like a
man who smiles all the time, and such is the case
with "Doc." His pleasing personality and friend-
liness make him one of the best liked Profs on the
campus. All of the boys who have classes under
him say that he is really tops.

—THE AGRARIAN—

Prof. Franklin S. Sherman

Continued from page seventeen

fishing and smoking his pipe. His hobbies mainly
center around one of his earliest ambitions, to be a
naturalist. He enjoys collecting insects and com-
piling records of the animal life of a region. Since he
became associated with Clemson, the college insect
collection has been built up to 250,000 specimens.
When he first came here there was scarcely any
collection at all, the fire a few years before having
destroyed it completely. At most anytime Mr.
Sherman can be found sitting behind his desk adding
information to the large set of files that contain the
records of South Carolina's animal life, the
faunal survey.
THEY have covered a lot of ground in their time, these models of a bygone year. Yet now they face the severest test of all—growing a crop that must not fail, in a year of long hours and hardship for all men and machines.

It's the old timers with shaky bearings and tired pistons that have a battle on their hands. Without new machinery to take their place, they must carry a full load alongside the younger streamliners.

Can they stand the pace? That depends on how quickly farmers act. There is still a chance for implement dealers to give all such machinery a thorough going-over. But farmers must get started immediately... order repairs in time to notify factories what will be needed.

There is a tender spot in your Allis-Chalmers dealer's heart for the old-timers he has sold. He has seen them introduce power farming in the community, pay for farms and send youngsters through school. With special pride, he is decorating them now with the Farm Commando eagle emblem... sending them out once again newly painted and "Ready to Roll!"

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COURTESY S. C. EXTENSION SERVICE
GROWING BETTER VEGETABLES
Eradiation Of Vegetables Diseases And Insect-Pests Facilitate Quality And Production
By A. S. Waldron, '44

Were it not for plant diseases and insect pests, home grown vegetables could be much more easily produced. Early precautions in controlling vegetable diseases are a large part in the determination of success or failure in growing vegetables. Better growers select ways that are available to wage a successful fight against those enemies. If everyone will understand and follow such practices a better crop can be assured.

Seed should be selected from a reliable, well-established seed company. It is very important to start with disease-free seed, as many diseases are seed borne. Be sure that all purchased seed are good, high-quality seed that have been grown under sanitary conditions. A good practice to follow is to treat certain seed with a good seed treatment material before planting.

We should pay particular attention to the way our garden plots are rotated from one location to another. Without use of this practice, our plots are apt to collect soil infestation from plant and disease producing organisms. The use of infected compost should be avoided. Best results are obtained from new clean soil in seed beds and plots. It sometimes becomes necessary to spray or dust vegetables for leaf diseases.

The following are some of the better disease-resistant varieties of vegetables used extensively in our home-grown gardens.

ASPARAGUS
Rust, the most dreaded disease of this plant at one time, is now under control by the use of resistant varieties recently developed. Mary Washington and Martha Washington are highly resistant to rust and are good popular commercial varieties. They are carried by practically all seed firms.

BEANS
Green snap beans are badly affected by a common bean mosaic which causes the leaves to become mottled with light and dark green areas. Mosaic is often spread with the seed, but it may be spread by insects. Recommended highly resistant varieties are Refugee, U. S. No. 5, Idaho Refugee, and Wisconsin Refugee.

CABBAGE
The most common disease of cabbage is Fusarium wilt, which is caused by a fungus living in the soil. Excellent varieties which are resistant to the fungus are: Jersey Queen, Marion Market, Globe, Wisconsin All-head Select, Wisconsin All-Season, and Red Hollande.

CELERY
This plant is readily affected by a disease known as "yellows." If planted on the same ground rather than being rotated occasionally. The diseased plants are stunted and have a yellowish appearance in the woody parts of the stalk. Some varieties which show resistance are: Michigan Golden, Golden Pascal, and Florida Golden.

CUCUMBER
Mosaic, which is caused by a virus, causes dwarfed leaves, stunted plants, and small fruit. A suitable large slicing cucumber which is resistant to mosaic is a variety known as Shamrock.

LETTUCE
Brown blight is a disease which affects lettuce growing in the southwest particularly. The plant becomes stunted, turns yellow, and gradually dies. Resistant varieties are necessary for use in infected fields. Some of these varieties are: Imperial C, D, and F and Imperial 847. They are also resistant to Downy Mildew, another common disease among lettuce.

MUSHMELON
Powdery mildew is a common disease that affects melons. Severe attacks kill the leaves. Powdery mildew resistant cantaloupe No. 43 is an excellent resistant variety.

POTATO
Mild mosaic causes a reduction in the vigor of plants and lowers the yield. It is recognized by dark and light green mottling of the leaves. Katahdin, Chipewa, Golden, and Houma are four varieties resistant to mosaic. Selago is another variety recently discovered.

PUMPKIN
Curly top is the most common disease among pumpkins. Cheese Group, Cushaw Group, and Big Tom are resistant varieties.

TOMATOES
Fusarium wilt is the most common tomato disease in the southern states. A fungus enters the roots from infected soils and cause this disease. Affected plants produce leaves that roll, become yellow and die. Marglobe, Pritchard, and Glovel are resistant varieties to this and black spot, another tomato disease. Riverside, Early Baltimore and Illinois Pride are resistant to both Fusarium and Verticillium wilt.

SPINACH
Mosaic blight or "yellows" causes a curling of the leaves which later become yellow and die. Virginia Savoy and Old Dominion are resistant varieties of good commercial value.

WATERMELONS
Fusarium wilt is the most dreaded disease of watermelons. The fungus that causes this disease is very difficult to get rid of once it is established in the soil. Plants affected wilt and soon die. Hawksbury, Improved Keckley Sweet No. 6, Improved Stone Mountain No. 5, Leirsburg, and Klondike- R. all offer the best solution to the wilt problem.
Farm Machine Production
Cut to ONE-FIFTH!

The War Production Board on October 20 issued the 1943 Farm Equipment Limitation Order, fixing the amount of farm machinery which can be manufactured between November 1, 1942, and October 31, 1943. As this new order drastically affects the ability of the International Harvester Company to supply machines to its farmer customers, we feel that a brief statement is necessary in order that you may plan your future operations far enough in advance to safeguard the nation against any serious interruption in the Food-for-Freedom program.

New Machines Cut to ONE-FIFTH

The purpose of the 1943 Limitation Order is to limit the entire farm equipment industry to produce for American farmers during 1943 not more than 20 per cent, or one-fifth, of the amount of new equipment that was built in 1940.

The government has further adopted the policy of concentrating this limited production for 1943, insofar as possible, with smaller manufacturers. The 1943 Limitation Order therefore provides that preference shall be given to manufacturers on the basis of their size. A group consisting of the smallest manufacturers has the smallest cut in production, a second group of small to medium-size manufacturers comes next, and the larger companies have the largest cut in production.

The result is that the 1943 Limitation Order stops production completely on the great majority of farm machines heretofore manufactured by International Harvester. On a comparatively few machines we are permitted to continue production on a severely reduced basis. It means that our company's 1943 production will fall substantially below the 20 per cent of 1940 average for the whole industry. On a tonnage basis, our company's 1943 production of new machines will be only 14 per cent of 1940, and 12 per cent of the 1941 output. Other companies similarly classed as large manufacturers will be similarly affected.

All Equipment to Be Rationed

As you have been previously advised by the United States Department of Agriculture, this small amount of new equipment will be rationed to farmers, under a rationing system established by the Department of Agriculture.

The 1943 production program was adopted by the War Production Board, in cooperation with other governmental war agencies, as a part of its plan to curtail use of steel and other critical materials so as to increase the amounts available for the production of ships, planes, and weapons of war. Only the government could decide a question of such far-reaching importance.

Harvester's Wartime Pledge

Our company, of course, is keenly aware of the shortages of manpower and equipment with which farmers in many sections of the country are contending. Much has already been done by resourceful farmers and many patriotic groups to overcome these handicaps. Governmental agencies are undertaking to deal further with the problem. We are sure that the farmers of the nation will make every effort to produce the food required in 1943.

The International Harvester Company desires to state clearly that it will cooperate earnestly with the government's 1943 Limitation Order. We pledge anew to the farmers that we shall do our utmost, within these limitations, to help them with their equipment problems in 1943.

We can be of greatest help to our farmer customers in every community by continuing to supply them with repair parts and services for the McCormick-Deering equipment on which they have relied for so many years. The 1943 Limitation Order permits production of substantially the same volume of repair parts as produced in 1942. Harvester will continue to produce repair parts up to the limitations of the order and available materials, and will do everything in its power to help the McCormick-Deering dealers maintain the best service facilities possible under wartime conditions.

Put New Life in Your Old Machines!

The owners of McCormick-Deering machines can perform a patriotic service by ordering needed parts and arranging for service to keep their existing equipment in use for the longest possible time, thereby saving steel and other materials for war manufacture. McCormick-Deering dealers will make every effort, within the restrictions imposed on them, to carry adequate stocks of repair parts and maintain service men for that purpose. This should make it possible for our customers to continue using the machines with whose design, performance, and quality they are familiar, and to maintain their farm production at the highest possible levels under the circumstances.

For your country and your peace of mind, check over your machines and tools. Make sure that you order all parts and service work in time for the job ahead!

International Harvester Company
180 North Michigan Avenue
Chicago, Illinois
CAMELS. It's fun to give Camels for Christmas because you know your gift will be so genuinely welcome—doubly welcome to those lads of yours in the service...over here—or over there. For cigarettes are their favorite gift—Camel, their favorite cigarette. Remember all your friends this Christmas with Camels.

PRINCE ALBERT. Give him Prince Albert if he smokes a pipe. Give him the big pound of P. A. that spells smoking joy far into the New Year. Whether he's at camp, at sea, or at home, he'll welcome the National Joy Smoke. For mild, cool, tasty smoking, there's no other tobacco quite like Prince Albert.