Mississippi Agricultural Experiment Station

BULLETIN NO. 120.

FARMERS' INSTITUTE BULLETIN
1907 and 1908

E. R. LLOYD.

Fig. No. 1.—Convenient Plan for Feeding Sorghum Hay.

AGRICULTURAL COLLEGE, MISS.

December, 1908.

Tucker Printing House, Jackson, Miss.
Fig. No. 2—Negro Institute in the Delta.
INTRODUCTION.

The growing interest in, and the increased demand for Farmers' Institutes throughout the State influenced the last legislature to increase the appropriation for this work from $6,000 to $10,000 for the next biennium. This has increased the efficiency of the Department so that, instead of holding all the institutes during the three summer months, as was formerly the case, the work is now distributed throughout the entire year. Since July, 1908, institutes have been called for and held every month. During the past season institutes have been held in seventy-four of the seventy-eight counties in the State.

In 1906 the total attendance at the regular institutes was 16,423, in 1907 the attendance was 14,109, and in 1908 the attendance was 36,874. The indications are that 1909 will show the largest attendance in the history of the institute work. From December, 1908, to March, 1909, five different railroads have furnished Farmers' Institute trains, without expense to the Department. This has enabled us to cover a greater territory than would have been possible under ordinary conditions. In some sections of the State the negro farmers have taken great interest in the institute work, and a few institutes have been held especially for the negro farmers.

The following table gives a list of the institute meeting, and the attendance at each, in 1906, 1907 and 1908; also the aggregate attendance by counties.
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GROWING COTTON UNDER BOLL WEEVIL CONDITIONS AS SUCCESSFULLY PRACTICED BY R. L. BENNETT, COTTON EXPERT, PARIS, TEXAS.

Briefly As To Weevil Conditions.

The number of weevils that live through the winter and appear in the spring from winter hibernating places is comparatively small and vary in different years, more some seasons and less others. A majority of these weevils appear at about the time that cotton, planted at an average date in any locality, north or south, begins to branch and set squares. The weevils then begin to lay eggs in the squares and increase very rapidly in numbers. Obviously cotton must grow and set squares faster than the weevils can increase and destroy the squares. My experience of five years of cotton growing and cotton breeding under weevil conditions, is that the weevils increase in 90 to 100 days from date of planting the cotton, say April 20th, to such numbers as to stop the cotton from further fruiting, by August 1st. When many weevils pass the winter the fruiting period is about 90 days, and when few weevils pass the winter 100 days is the fruiting period of the cotton. Of course the weevils are destroying squares during the fruiting period,

Fig. No. 3—Adult weevils; natural size below, much enlarged above.
but the cotton grower may remember that before weevils came his crop was set into bolls in 90 to 100 days from planting, also that cotton sheds squares more or less from beginning to the ending of the fruiting period, and the greatest shedding is near the close of the period, thus corresponding to the destruction of squares by the weevil. The weevils, therefore, relieve the cotton plant of the usual shedding and under proper cultivation of the cotton, to be described later, the weevil may destroy but little more than the normal shedding. Few bolls of any size are injured by weevils until the squares are finally destroyed. I undertake to make my cotton grow and fruit as rapidly as possible, so fast that the destruction of squares will hardly exceed the normal shedding. Under proper methods of growing cotton shedding is less than under improper methods.

The early spring appearance of the weevil necessitates every farmer planting not later than a normal date, that is a date favorable as to warmth and settled weather, for prompt germination and growth of the cotton. Some may plant earlier but their cotton will not grow off till the weather is warm and it is liable to become "grassy." No farmer should plant later than the normal and every farmer should plant at a date that is safe or normal to the late spring years, and should record that date and plant at that time every year, whether he has weevils or not. The date I begin planting in North Texas, is April 20th to 25th, regardless of an early spring, or the date when my neighbors may begin or finish. Later planting than a normal date lessens the 90 or 100 days of fruiting above described.

With this brief statement of the conditions imposed by the weevils, I will briefly describe my method of growing cotton, and by its practice I am certain of a large yield per acre. The principles which I observe and which are here described are applicable to all sections where rainfall is abundant.

First Principle.—Plant no more cotton than a single mule can cultivate, that is to say that can be gone over in four days, working 3 or 4 acres per day, or 12 to 16 acres per mule, depending on the liveliness of mule and driver, the character of the soil, etc. This four days allows three days per week for rain to fall and dry off. Two horse or mule cultivators on wheels, walking preferred, can go faster and go over more land in the same time. Therefore, if these are used the acreage per mule can be slightly increased.

Second Principle.—Feeding or Fertilizing the Cotton.—Rapid growth and large fruiting in 90 or 100 days on most uplands is depend-
ent on fertilizing. On my land, loam upland, where without fertilizing a half bale under proper treatment is certain, I use 200 to 250 pounds mixture of phosphoric acid and nitrogen, about two parts acid phosphate to one part cotton meal, or other substance, to furnish the nitrogen. No potash is used and only few soils need it, perhaps only some sandy soils need it for cotton growing. Cotton on some soils is not profitably benefitted by the use of either nitrogen or acid phosphate but is benefitted by cowpeas or soy beans, the former is planted between rows of corn and the latter between rows of cotton. Although on thin soils cowpeas are planted between the cotton rows and on such soils the cowpea, a variety like the Whippoorwill, does not run enough to interfere with the cotton. Wide rows are required when the legumes are grown between the cotton, about five feet. The Mississippi Experiment Station authorities say that the Delta soils are greatly benefitted by legumes.

Many soils require more fertilizing than my soil requires in order to make a bale, but usually such soils need legumes first, then fertilizer, or both, at the same time in the manner described above. I plant the fertilizer in the bed about 4 inches deep with my cotton planters before I plant the cotton seed. It could be put down before bedding when bedding is done late, but late listing or bedding is not advised.

I will state emphatically that if cotton is properly grown all soils rich or poor will yield more cotton than they do regardless of weevils and regardless of fertilizers, but good feeding increases yields and profits.

Third Principle.—Plant cotton on a bed for drainage and warmth—not too high, just good water furrow between. Lands that are wet until late spring must be drained or planted in other crops than cotton under boll weevil conditions. I form beds or "list" three and one-half feet apart on upland in the fall or early winter, with one horse to a 6 or 7 inch steel beam turn plow. Later I run out middles, which are either old cotton or corn rows, with a long pointed 16 inch sweep, which has welded to its point, a "duck bill" 2½ inches wide and 4 inches long, which cuts the tap roots of cotton and the stubble, falls back in the middle, not on the bed to interfere with seed planters. I use a curved steel beam stock and two horses to run this sweep, and I do this about ten days before planting time. The stalks, whether corn or cotton are cut with two horse revolving stalk cutter, as first operation. I rarely run a center furrow to bed on, as the old middles are soft. The cotton stalks are cut off as soon as picking is finished, whether the stalks are green or dead. On some soils the list or beds might be formed with proper plows on two horse cultivators. I cut
off the tops of the beds with a large solid sweep, at planting time, which, with running out middle as described, destroys all vegetation before planting and gives a firm bed; but no hard "core" or "hard pan" under the bed. Foul corn or other land covered with dead grass cannot be put into proper beds. Flat breaking is necessary, then beds may be formed by running a wide sweep for water furrows or drainage, and the seed planted on the bed between these furrows, I consider rebidding a useless expense, and if it is done late, just before planting it is harmful. Bed properly at first and let that be final.

**Fourth Principle.**—A firm bed, one that has been thrown up and firmed by rains, or if no rain then by a heavy roller. I bed up four to six inches deep on uplands, but such depth of breaking is not advisable on sandy or fertile bottom land; shallow breaking is better. Such soils are naturally loose enough for root growth and left as they are they hold less water and the plants grow less rank and are earlier. Almost every soil is penetrable by cotton roots when kept moist by stirring the top soil after each rain during the growing season.

A firm bed prevents the planter, if it be a one-horse planter, from going too deep, and allows shallow planting. Shallow planting, about one-half inch and less depth if soil "crusts" does not hold surplus rainwater around the seed, and the seed get warm quicker from the limited heat of the early spring sun than deep covered seed. Also, young plants are not exhausted of the food in their two seed leaves in coming through the thin covering, and therefore, are stronger and resist disease and grow off faster. Shallow planting is essential for early planting, and early planting is necessary under weevil conditions. If I could plant late I would cover depely. A perfect stand is of first importance.

Shallow planting permits planting fewer seed per acre. I plant one-third bushel of seed to the acre. More seed is necessary, one-half bushel to acre, if not planted exactly right. My seed are ginned clean so they will separate in planting and come in closer contact with the soil.

**Fifth Principle.**—Rolling or Pressing the Soil on the Seed.—I use a planter with a roller attached to and behind, as part of the planter. This prevents a one-horse planter from going too deep, and it firms the seed in contact with the soil beneath them and moisture freely enters and germination is prompt. A two-horse roller may be used. I consider a scooter to open and scooters to cover objectionable on a well prepared firm clean seed bed. They may be necessary on trashy
seed beds, and late planting, but I am careful to avoid such beds and late planting. A clean seed bed is obviously of great importance.

Sixth Principle.—Early and Rapid Fruiting Cotton.—The seed is the beginning of the crop and the quality of the seed foretells the yield. Pure highly bred seed, possessing desirable qualities, is of utmost importance. In five years of cotton breeding for early and rapid fruiting to escape boll weevil I found great difference in cotton in respect to these qualities. Early opening is not as important in escaping weevils as is early and rapid setting of squares and bolls. Hence the plant must begin to fruit near the ground for early fruiting and have short joints for rapid fruiting. I pointed out the fact that these two characters, low fruit limbs and short joints, distinguish early and rapid fruiting cotton and that they are a guide in seed selection.

Good length of staple can go with the above qualities and characters. My work in breeding long staple cotton has resulted in as early fruiting, and rapid fruiting, and opening of the bolls as the best short staple cottons.

The cotton grower should remember that pure seed of a cotton are all of one color, size and general shape, especially the color must be uniform. Likewise the plants must be uniform in all characters. An occasional plant may be found that is different from the type, but that is a natural variation.

Seventh Principle.—Chopping, Early and Shallow Cultivation.—I cultivate once or twice with small sweeps before chopping and chop only after cotton has five or more leaves, and to one plant in a hill, eighteen inches apart; but remember, I plant only a few seed, one-third bushel per acre, and my plants do not need early thinning, and so my chopping is also a half-hoeing. Whatever late hoeing may be required is a small matter. On uplands where less than three fourths bale per acre is expected, the plants should be not over 12 inches apart and three feet rows may be used.

I do not pick up and destroy the first weevil injured squares that fall, but where labor of small boys is cheap the first squares to fall could be profitably picked up and destroyed. Destroying squares that fall later is not profitable. The first squares that fall almost invariably contain young weevils.

After chopping I cultivate with wide solid sweeps, in next cultivation use 14 or 16 inch solid sweep. After that I use heel scrapes
of 18 to 24 inches, finally use 30-inch heel scrapes, run once to the middle.

I cultivate not exceeding two inches deep and as often as rain settles the soil. No oftener. This prevents vegetation and prevents evaporation of water or drying of under-soil. I continue cultivation to about two weeks before cotton begins to open, and I hope to have a bale or more to the acre.

Remarks

Plenty of corn, hay and hogs, molasses, vegetables, and cowpeas, for the farm is imperative; and the corn and hay should be grown on the moist soils, if any on the farm.

Labor can be easily taught the principles of cotton growing and of growing food supplies, and the right handling of efficient tools.

During the past five years of cotton investigation under boll weevil conditions, and of cotton breeding for early and rapid fruiting to escape boll weevils, I worked out and tested the above seven principles and I am now following them successfully in private cotton growing. If these principles are observed by others, thoroughly and efficiently, with strict regard to details, the result will be highly profitable.

The long staple cottons and Benders now grown in Mississippi, are later in opening than some of the earlier opening short staples, but as the weevil attacks but very few bolls of any size, and only the very young bolls, until after consuming the squares as fast as they are set at the latter part of the season, I recommend that Mississippi long staple cotton growers do not abandon their present varieties until it be definitely proven, after the weevil arrives in full force, that such cottons cannot be profitably grown. These long staple cottons may be as profitable to grow under the method above described as the earlier opening short staple cotton, and they should not be dis continued too quickly. Texas made such a change and regretted it. The Texas cotton growers in a boll weevil panic five years ago abandoned their varieties and imported thousands of car loads of short staple cotton seed, but after testing these short staple cottons and after receiving the information about early cotton, from the breeding investigation in my charge, the growing of these short staple importations was discontinued. It is true that Texas does not grow the staple that West Mississippi does, but the principle is the same as between lengths of staple.

The first thing for Mississippi long staple cotton growers to do under boll weevil conditions, is to change methods of growing cotton ac-
Regarding Late Planting to Avoid Damage by the Boll Weevil.

W. D. Hunter, Bureau of Entomology U. S. Depart. of Agriculture.

It seems to be the impression of the gentlemen who have recently been advocating late planting as the proper means of avoiding damage by the weevil, that their theory is new. As a matter of fact, however, the idea has been broached by many people at different times. The original advocate of the late planting theory was Mr. W. W. Wentworth who was living in Goliad, Texas, in 1895. In that year he brought the matter to the attention of the Department and wrote extensively about his theory in the press. Some years later he called a convention of cotton growers at San Antonio, where he expounded his theory at great length. Since Mr. Wentworth’s theory was first propounded, almost fourteen years have elapsed. During that time a number of persons, in regions in which the weevil has only recently made its way, have announced the same theory. It is very natural for any person to make the mistake of supposing that the weevil can be thwarted in that way. From a theoretical standpoint it seems easy. It is noticeable, however, that these advocates of late planting, as far as the writer knows, have not been practical planters. For the most part they have been either cotton buyers, cotton oil mill men, or others in business directly connected with the production of cotton but not cotton planters themselves, and consequently without means of trying their theories in a practical way. Certainly during the fourteen years of the agitation in a public way of this idea it would have taken hold somewhere. The fact is that the unanimous testimony of cotton planters in Texas who
have been forced to contend against the weevil, is that their best success has come from early planting.

Undoubtedly, long after the present advocates of late planting in Louisiana shall have been convinced, as the people of Texas have, others in new regions will arise who have conceived the same idea. The writer does not decry the open discussion of an important question like this, but believes that the advocates of late planting should back up their position with practical results and not with records from exceptional cases of forced and carefully nursed cotton before they obscure the general great importance of having the cotton crop planted early in weevil regions.

The Department of Agriculture has investigated the whole subject of late planting and has found that the theory does not work out in practice. The Department has planted cotton late purposely on different occasions to test this matter. The results have indicated to the agents of the Department, to the farmers on whose places the work has been done, and to others cognizant of the facts, that late planting in boll weevil regions is in the vast majority of instances certain to result in loss. In 1906 the Department had four late planting experiments in Texas which will be described briefly.

At Mountain Home, near Kerrville, 16 acres were planted on June 10th on land that was in cotton during the preceding season. There was no other cotton within nine miles of this tract. In November, 1905 the previous crop was practically eaten up by goats so that no green cotton was to be found during that month or during the months following. This late planted cotton grew well, but yielded practically nothing. One of the advocates of late planting in Louisiana has criticised the only published reference to this experiment in one of the Yearbooks of the Department by stating that the records concerning rainfall are not given. He concluded from general records shoping rainfall in Texas, Louisiana, and Mississippi, published by the Weather Bureau, that the rainfall in the Kerrville region was above the normal during the month of July, and that this would have been sufficient to cut down the crop. If this gentleman had looked into the records published by the Weather Bureau in the Annual Report for the Texas Section for 1906, he would have found that the July precipitation at Kerrville was more than one inch below the normal. For August the rainfall was above the normal; but the total for the whole growing season was nearly an inch below the normal. As a matter of fact, as regards rainfall, the season was not at all exceptional. It is very easy for any experienced person to tell whether growing cotton has been
injured by a superabundance of rain or by the boll weevil. Where there has been too much rainfall the plants are sappy with long joints and little fruit. The plants on the experimental tract were perfectly normal in general appearance. They were fruiting heavily, but the weevils were so numerous that they caused the squares to fall to the ground practically as soon as they were put on.

In Robertson County, Texas, during the same season, an isolated field of 2 1-3 acres was planted on June 8th. This field was within the corporate limits of the town of Calvert on the property of Mr. Seth Burnitt. There was no other cotton within three-fourths of a mile in any direction. Half of this plot was fertilized with potash compound and the whole was planted with native seed. As far as weed was concerned the growth of plants was entirely satisfactory but the weevils made their appearance early and caused such a loss of fruit that the planter considered it not worth while to have it picked. Rainfall records for 1906 at Calvert are not complete. Those from Waco, a short distance away, have been used to show the rainfall in the Calvert region. In this case there was an excess of nearly 2 inches for the month of June and nearly 3 inches for the month of July. For the growing season the excess was about 10 inches.

At Llano, in 1906, on the farm of H. K. Willborn, 6 acres of cotton was planted on June 11th, as in the other cases on land that had been in cotton during the preceding season. The Rowden variety was planted and half of the field fertilized with potash compound at the rate of 200 pounds per acre. In this case the nearest cotton was about one-half mile away. This field was practically a complete failure since it produced only 150 pounds of seed cotton per acre. The rainfall for July was .2 inch above the normal and for August 1 inch below the normal. The total for the whole season was 1.4 inch below the normal.

A fourth experiment in 1906 was performed in Mineola on the property of Mr. N. S. Sodekson. In this case 10 acres of Rowden cotton were planted on June 12th. The land was fertilized with potash compound at the rate of 400 pounds per acre. The field was isolated from other cotton by a distance of 1 1-2 mile. The weevils were found in the field before the cotton began to square and damaged it to such an extent that the yield was estimated at less than 100 pounds of seed cotton per acre. The owner calculated that the cost of gathering the scattering bolls would have been greater than the market price so that it was not picked at all. The rainfall records from Longview are used to show the conditions at Mineola in the absence of official records from the latter place. The rainfall for July was 2.4 inches
and for August 3.2 inches above the normal. The total precipitation for the growing season was six hundredths of an inch above the normal.

It will be noted that in two cases the rainfall was below the normal and in two cases above (one of these only .06 inch above). In all cases the late planted cotton was a practically complete failure. It is, therefore, evident that the rainfall could not have been an important factor.

The four localities chosen represent western, central, and eastern conditions in the state of Texas. The results show that notwithstanding the great diversity in conditions between these places the same unfortunate results followed from late planting.

In addition to this practical work conducted in such a way as to make the results clear, the Bureau of Entomology has investigated numerous reported cases of successful late planting in different seasons. In none of these cases have the facts been found to disprove the general advisability of early planting. At Alexandria, La., for instance, in 1908, there were several fields planted late which were supposed to prove the advisability of late planting. One of the writer’s agents made several trips to Alexandria through the season to study this matter. It was found that some late planted fields were yielding more than some early planted fields. In every instance, however, it was possible to find early planted fields that were yielding as much or more than the most productive late planted ones. In one case a small tract of cotton planted after potatoes that had been fertilized was found to be producing much more than the other cotton planted earlier in the immediate vicinity. It was found that exceptional circumstances surrounding this field clearly indicated that it was by no means late planting alone that accounted for the result. In addition to the fertilization given the potatoes and the fine condition of the soil the cropper believed (but was not certain) that the land had been an old cattle lot before he came on the place three years before. Moreover, it was found that rain began to fall on the late planted field before the last rows were put in. This served to start the seed immediately and give it such rapid growth as could not be expected under the less artificial and less naturally favored conditions that necessarily surround the great majority of cotton fields.

One of the best statements ever written about the boll weevil was in the report of Mr. H. C. Stringfellow, of Shreveport, La., as the result of a trip he took through Texas in 1908 at the instance of a number of planters in the Ouachita Valley. Mr. Stringfellow interviewed scores of farmers, taking special pains to talk with the men who actually
produced the cotton, that is, the ones that worked the plows and the hoes. It is violating no confidence to state that Mr. Stringfellow found that all successful farmers emphasize strongly the importance of early planting. When the subject of late planting came up last fall, Mr. Stringfellow exclaimed, "We must fight that idea; it will ruin Louisiana if it goes far."

Such are the practical work and observations upon which the Bureau of Entomology bases its conclusion that late planting is of no avail. In addition, it is very easy to show from what is known about the life history and habits of the boll weevil what are the reasons.

It has been proved beyond any doubt whatever that weevils begin to emerge from hibernation as early as March and that the last one to appear do not come out until about the first of July. This is the result of careful observations in large cages during several seasons, and also upon isolated small fields where the early appearing weevils have been removed day by day. Everything depends upon the amount of protection under which the hibernating weevils are found. If they are lightly covered they become sufficiently warmed early in the season to emerge. If they are in the deep woods or under logs or in cracks in the earth, they are not made active by the sun until much later. It is not natural for all boll weevils to emerge at one time but perfectly natural that they should not do so. What is "natural", therefore, agrees absolutely with what has been found from observations to be actually the case. It is preposterous to say that the late appearing weevils were only individuals that had appeared early and retired under rubbish in the experimental cages. The daily observations and removal of specimens precluded the possibility of more than a very small percentage of weevils at the most being missed after the emergence.

Now, these emerging weevils have considerable hardihood. They can live for some time without food. In experiments performed with hibernated weevils in the spring of 1907, at Calvert, Dallas and Victoria, Texas, it was found that without any food whatever these insects can live a surprising time. About 2,000 weevils emerging day after day were placed in separate glass cages where they were given small quantities of water, but no food. Daily observations were made to determine how many days passed before the death of these weevils. It was found that some weevils emerging in March lived for 51 days; some emerging in April, 46 days; some of May emergence, 33 days; and of June emergence, 12 days. The average life of all weevils emerging in May, without food, was over 15 days. The average longevity of those emerging in June was over 7 days. These records show that any weevil
emerging as late as May 31st could be expected to live without food until the 15th of June. If such weevils obtained a little food, such as they could from volunteer cotton, life would be prolonged far beyond that time. It is important to observe that the season of 1907 was very exceptional. The spring opened abnormally early, so that the emergence from hibernation was far ahead of the normal. In an ordinary season, as shown by the work of other years, the duration of life without food of the May weevils would have been much longer. The weevils emerging in June throw more light on the subject. As has been stated, the average longevity of all specimens emerging in that month was over 7 days, so that a weevil emerging on the 15th of June, as some did even during that remarkable season, could be expected to live until June 22nd, and others emerging on June 25th, as some did, could be expected to live without food to beyond the first of July. As was pointed out the emerging weevils were placed in small glass cages in which they could be observed constantly. Such were unnatural conditions. Unconfined individuals would, undoubtedly, have lived even longer than those referred to.

Fig. No. 4—a, newly hatched larva, or grub in young square; b, nearly full grown larva in situ; c, pupa in young boll picked from the ground. [After Howard.]
In addition to the hibernated weevils that were placed in cages without food, a large series was caged in the same way but provided with food in the form of cotton leaves and squares. There are always some volunteer plants from accidentally scattered seeds that weevils can find early in the season. Therefore the determined longevity of these fed weevils also has a bearing on late planting. The average length of life of the fed weevils that emerged in June was 37 days, of those emerging in May 55 days. Therefore, if there is any volunteer cotton growing (and such growth can hardly be prevented) many hibernated weevils will live over until after the first of August.

From these facts, it must be evident that the weevil could not be "starved out" by any practical late planting. The point may be made that it is not so much starving out that is desired as reducing the number to the extent that a crop may be produced in spite of the insects. The answer to this is the practical experience referred to above, which shows that a profitable crop cannot be made under these conditions.

The early planted crop has the advantage of being far enough along by the first of July to be fruiting with great rapidity. Up to that time the weevils develop much more slowly than in July and August. Therefore, as Mr. Wilmon Newell has pointed out, the early planted crop putting on much fruit by the first of July, has a much better chance to make cotton than a late planted crop, the fruiting period of which will be thrown coincidently with the period of the most rapid development of the weevil. Moreover, though exceptional late fields may yield well the damage by the boll worm and climatic conditions will always prevent any general success from very late planting regardless of the weevil.

Other features of life of the weevil and much additional experimental data which is open to inspection by anyone, all add strength to the recommendation of early rather than late planting that is made by the Bureau of Entomology. This brief statement covers the case necessarily in a general way. The writer will be glad to give further particulars on any specific points to interested persons.

In this connection the attention is directed to the fact that there is much disagreement in the interpretation of the Bureau's recommendation for early planting. Some persons seem to suppose that the term early planting means winter planting or very early planting. As a matter of fact, by early planting we do not mean putting the seed into the ground while there is any great danger of frost. It is better to run some risk rather than have the crop delayed. No two seasons
are exactly alike but the recommendation of the Bureau for early planting should be construed generally as what is known as moderately early planting with an inclination to take a little risk for the purpose of advancing the crop ahead of the weevil.

It may be asked what is the reason for all this talk about late planting and why reputable persons should advocate it in view of the experience of farmers throughout Texas. The advocates of late planting are not necessarily dishonest. In fact, the writer does not believe that any of them are dishonest. They are merely mistaken in their conclusions. It is admitted that instances may arise occasionally where late planted cotton yields better than early. Take the case of pampered cotton planted after potatoes or growing in a highly fertilized lot in town where everything is done to further the greatest possible production of fruit. Under such favored conditions it is possible that late planting may exceptionally show large yields. Such was the case in one of the fields that attracted attention near Alexandria in 1908. To cite such exceptional instances, however, in the face of the experience of the Texas farmers as reported by such men as Mr. H. C. Stringfellow and in the face of the practical work of the Department of Agriculture and the State Crop Pest Commission of Louisiana, is, to say the least, most unfortunate.

SOME PROBLEMS IN GROWING ALFALFA.

B. H. Strong.

The problems in growing alfalfa successfully in Mississippi are few and easily solved. I can say this from my own experience. You cannot fail to make a success in growing alfalfa, if you sow the seed on black prairies or the bottoms made from these lands. If the land is in cotton and well cultivated, simply level the rows with a good disc harrow, and sow thirty pounds of seed per acre in early spring. If the land is in corn, break it good and deep in the spring just before seeding and sow thirty pounds of seed. If the land is in Johnson grass, break it good and deep in September, cut it thoroughly with a disc, and harrow until you have a perfect seed bed. Sow this fall ploughing as soon as you have a season, and roll with a heavy roller. This will give you good results the following summer. If your land is in Bermuda, sow the seed in the Bermuda sod without breaking the land at all; that is, if the ground is level enough to run hay machinery over it. Sow this land as soon as the frost has killed the Bermuda. I would advise forty pounds of seed on Bermuda sod. If the land is
adapted to alfalfa, you can say good-bye to your Bermuda, for it will be only a short time before the alfalfa has choked it out. If you sow the alfalfa on Bermuda in the spring, it will not do so well, as it will have to contend with the growing grass. If the seeding is done in the fall after the frost has killed the grass, then the Bermuda is in a dormant condition, and the alfalfa will have a fair start. The first rains will germinate the seed, and will grow all winter. The Bermuda sod protects the young plants and holds them in the ground during the freezes, and when spring has come, the Bermuda will be left in the shade.

Now, gentlemen, that is the way I am growing it successfully. My alfalfa fields based on a rental value are paying me ten per cent, on $100.00 per acre, or paying eight per cent. on $250.00 per acre, and the tenant is getting rich. Should I go to any of you gentlemen as a representative of a foreign state and say to you that you could go away from home, invest your money in thirty-five dollar land, invest seven dollars per acre more in improvements, and that you had confidence in what I say, how long would it take you to move?
These are the conditions right at your door, and should be taken advantage of. I am buying lands as fast as I can get the other fellow to look my way and lend me the money.

The greatest result we have now obtained by growing alfalfa, and it should be pleasing to every man here who calls himself a citizen of Mississippi, is that Henry B. Gurler, the famous man of Illinois, the man who has made all Europe wonder at his accomplishments has come among us, has invested his money here, and intends to show us what can be done with Mississippi soil. Alfalfa is our phoenix; Mr. Gurler is its crowning plume.

THE VETCHES.

(Vicia Sativa and Vicia Villosa.)

JAS. T. GARDINER, AUGUSTA, GA.

The number of questions asked me, and inquiries made in the agricultural journals recently about the vetches, show a lively and commendable interest among the farmers of the South, in these valuable forage plants. As there never has been to my knowledge any article on this subject of a satisfactory nature, I will give in part my experience as a grower and dealer in this hay. If this will be of any benefit to even a few, I will not regret the time taken to write it.

The Moore farm (Augusta, Ga.), of which I am manager, was the pioneer in introducing vetch 25 years or more ago, and ever since then has continued to grow them, making a specialty of vetch hay, buying every year thousands of bales. This industry with a modest beginning of a few acres, has grown now to several thousand acres on the grass farms around Augusta, both in Georgia and South Carolina. Our farmers are now recognizing the great improvement in the soil after a few crops of vetch, to say nothing of the profit over other grasses in the crop when made into first class hay, since the price paid for vetch hay is from $2.00 to $4.00 per ton more than the Johnson grass, and other native hays.

There are 42 known and classified varieties of vetch, but for our purpose only three need be considered, namely: Vicia Angustifolia—locally called our Augusta native vetch; Vicia Sativa—sometimes know as English, and sometimes as winter vetch; and Vicia Villosa, known as hairy or sand vetch. It is impossible, however, to obtain by purchase commercially the seed of the angustifolia, and as a vetch it is fast losing out in competition with the heavier yielding (by two or three times) and more profitable sativa; we, therefore, need not consider it.
Vicia sativa is imported (as is also vicia villosa) by the United States seed trade from Russia, from which country we obtain our best seed. The states of Oregon and Washington, in the United States, are extensive growers of sativa for both hay and seed purposes, but the high trans-continental freight rates keep this north-western seed wholly out of the southern and eastern market.

This northwestern-state vetch, too, is largely mixed with wheat, which cannot be separated from the vetch by the fan mills. The hay produced from the vetches in these two northwestern states ranks high as a forage for all animals. While most of our legumes are summer legumes, vetches, on the contrary, are winter legumes. This gives them special value. Vetch legumes adding nitrogen to the soil in proportion to the crop grown and as per congenial location, add immensely to its permanent fertility, and being harvested easily enough in the spring to follow with cow peas, two crops thus of legumes can be grown on the same land in twelve months. The vetch and peas, I know, will be of more benefit to one soil than is a crop of clover grown on the ground for the same length of time in the North. In fact, if all conditions are favorable, the tonnage of hay from the vetch and pea vine crops will greatly exceed the clover; besides the feeding value is greater—indeed the net amount in dollars and cents will total more by half to two-thirds than the two clover crops. It is a common saying with us that if you make your land rich enough for a maximum crop of vetch, the vetch will keep it permanently rich enough for everything else.

The soil best suited to its growth is one well drained. A loamy one, is, of course, best though. Soil with some clay is preferred to an excess of sand. Sandy soils have produced vetch well. Land that will make the best pea crops will also make the vetch, though the first crop with one inoculation will not be nearly so much as the second crop. As a fertilizer we use 300 pounds per acre of 10 by 4 phosphate and potash as a top dresser in March.

On the Moore farm we plant 45 pounds of vicia sativa with two quarts of recleaned oats per acre—the latter to help hold the former up; putting both in with disc grain drill after going over the land two ways with disc harrow—and more if on hard sod fields, getting in the seeds about one inch deep. For the vicia villosa we use 25 pounds of seed per acre and two quarts of oats. After the seeding is all over, a careful man on horseback sows two quarts of late crimson clover (put cotton in the horse's ears to keep seeds out). If the seasons are favorable this crop in April and early May will be the most beautiful one ever seen, with its wealth of purple, pink and crimson blooms, and its many shades
of green. It is truly a delight to the eye, standing from three to four feet high—many of the stalks of the villosa I have found by measure to be nine feet long. The average of our fields is one ton per acre, though many will make twice that amount. The hay of the vicia sativa as a rule is preferred to villosa, for the reason that it does not grow in such tangled masses, and is, therefore, easier, for this reason to cure. The average farmer, therefore, from sativa will make a better grade of hay. The sativa seed, too, is about half as costly. Some growers here plant 75 or 100 bushels sativa and no villosa. I would advise, however, planting both varieties, if grown for hay, as the villosa ripens two weeks later than sativa, giving time to save one crop before the other is ripe. Both the vetches tiller or stool, the villosa running from 5 to 12 per seed and the vicia perhaps from 3 or 4 to 6.

Our Augusta vetch fields are, however, by no means all planted with oat and clover mixture, the majority of the growers, in fact, sowing alone in about the same quantities as above, depending on the native grasses, such as Canary, Johnson, and Bermuda to fill, up all the vacant spaces.

The villosa I regard as slightly hardier, withstanding cold perhaps year in and year out in all latitudes, somewhat better than the sativa. It is a much slower growth to start with, but, after the warm days of March, it makes rapid strides and soon overtakes the more steady and progressive sativa.

The time of planting in this latitude is from September to December for the sativa—villosa seeding may continue two weeks longer. We try, however, to finish our planting by November 1st.

Great care should be used in buying seed in these days of universal adulteration. Old seed that have lost their power of germination can be bought for a song and when washed and cleaned and mixed with the fresh seed, none but the foxy manipulator could tell it by looking at them. Buy of some one who is alert, and on to these tricks of the trade, who is reliable morally and financially, and you will get the best that can be had.

As a soiling of freshly green cut crop, both the sativa and villosa are used about Augusta by the dairy men. My observation is that as regards dairy cows, nothing changes milk and butter on farms in this vicinity more quickly both as regards quality and quantity of milk, than the combination crops as used here by our dairy men; from a poor flow of washed out watery milk, the vetch will give it a rich yellow cream and solid good good tasting milk. For sows with spring pigs it is equally good; you can see the little fellows actually grow.
Some dairy men plant per acre 1 bushel of beardless barley, and 1-2 bushel of one of the vetches, and 1 bushel of rye; some decrease these amounts. If planted quite early in the fall, the beardless barley part of the crop can be cut within 60 or 80 days from planting. Then in early spring the rye and vetch are cut together and this cutting can be followed by two or three similar cuttings later in the season.

If this combination, however, is sown late in the winter the three forage crops can be cut all at the same time. Vetches, too, will do well sown either with beardless barley alone or with rye. The vetches and especially the villosa furnish a wealth of blooms in the spring. During the vetch season bees will deposit about Augusta two or three times the amount of honey that they will at other seasons. The honey is white, and of especially good flavor.

As to vetch hays' feeding value, we all know the value of wheat bran as a feed; now the analysis of vetch is practically the same, as it is very rich in protein.

Referring to an earlier part of this letter, let me add that late crimson clover should always be sown on hard ground; unlike any
other plant of my acquaintance, it prefers to make its own bed, and likes that bed hard.

In the northwest sativa is pastured in large amounts by cattle from midwinter till spring; and then it is allowed to grow out for hay cutting. It is also cut green when a foot high, and, therefore, successively cut till ripening time.

Sativa and villosa do not reseed themselves here when cut for hay—the pods not being sufficiently ripe to shatter the seeds to the ground in the hay cutting. Seeds, however, when ripening on the plants and falling to the ground will reseed the ground for another year. In all of Augusta territory there is now growing wild, and increasing in amount each year (by re-seeding) just as in Japanese clover, some half dozen or more varieties of vetch.

The greatest mistake that the Southern farmer makes in his management of the soil is, when he allows his soil to remain bare of crops throughout the winter, and lets the rain wash through the soil, and rob it of fertility, that under the general condition of relying on commercial elements to restore, makes it bad yea, very bad, business, unprofitable in the extreme; when by using a winter crop of small grain with the vetch mixed with it, he would not only save the fertility already there, but with the vetch he could so increase the fertility, as far as nitrogen is concerned, that he could grow bumper crops without buying an ounce from the fertilizer company, and at the same time be adding the much needed humus to the soil.

I think that the vetch plant is destined to become the savior of of our long mismanaged soils, and that, ultimately, it will make the soils of our Sunny Southland become as fertile and productive as any on earth.

According to experiment reports the nitrogen left and stored in the soil for future crops is greater even from the vetches than from the cow peas.

A good series of crops (2 of them being legumes, and all within the 12 months) is to plant early in September vetch and beardless barley together, graze or cut the barley in the winter, cut the vetch, say in April, and then plant down cow peas for summer hay cutting. The added value to any soil of these two legumes with or without the barley, should be in the one year, $6.00 or $8.00 per acre.

I feel that it would be in a measure ungrateful in me not to publicly thank Mr. N. L. Willet, of the N. L. Willet Seed Co., (vetch importers) of this city, for their able and successful efforts in forcing in the spring of 1905, the United States Treasury Department to recognize
their mistake, and thus reverse all their former decisions as to the classification of vetches, thus allowing them to come in now, duty free. This is a saving of 30 per cent. (75c to $1.20 a bushel) to all the growers of this country and which places the vetch seed on a reasonable basis of price and within the reach of everybody.

PRODUCTION OF CHEAP PORK IN THE DELTA.

By J. W. Fox.

The biggest problem of the Mississippi farmer is how to get rich land. The real issue is not the boll weevil, nor the deep versus shallow plowing, nor varieties, nor the tariff, but it is rich versus poor land. A poor farmer can make fairly good crops on rich land, but no farmer can make big crops on poor land. The trouble is that we are farming too many acres of poor land, and the pity of it is that we are farming more acres of poorer land each year. There must be a right about face, and, in my humble opinion, there is just one straight way—and that is—use freely the cow pea, the greatest restorative crop of any agricultural section. In order to make this great restorative crop also a money crop, we must have live stock to convert it into meat, and there is no class that so perfectly "fills the bill" as the hog.

The first mile stone on our road that leads to rich land will be marked "corn and peas". This interpreted will mean a well prepared and well worked big field of corn, laid by thick in peas.

The second mile board will read "the entire field fenced hog tight". A good many Mississippi farmers will shy at this sign, but they had just as well get accustomed to it—they must pass it on the above mentioned road.

The third mile stone will say "abundant pasturage for hogs each day of the year". There will be many other mile stones, plainly marked, whose directions must be followed, but we will not attempt to travel too far down this interesting road at one trip, lest our readers tire and desert.

At the Delta Experiment Station we have a pasture rotation that furnishes grazing the year around, and, with some modification, it will be applicable to the hill section. We also have accurate data as to the number of pounds of pork, live weight, that was made from a corn and pea field, grazed by hogs after the corn was gathered. We will state briefly our experience in regard to these two propositions and also give some minor details concerning the management of the hogs.
Let it be clearly understood that we are discussing the two things that make it possible for us to compete with farmers in the Central West in raising pork; namely, our winter pasture and our peas, grown in the corn as a catch crop, primarily for a fertilizer. If we are not to utilize these advantages, we might as well continue to buy our meat from our Northern neighbors, who grow almost double the corn per acre that we do. By grazing our hogs while the Northern farmer is feeding solely on corn, and by fattening on peas grown in corn (having the field fenced to permit this) we cannot only compete in price, but we can grow cheaper pork.

We use as a pasture rotation in the Delta, the following: Dwarf Essex Rape and Red Clover sown together about September 1, six pounds of the former and ten pounds of the latter per acre; sorghum, sown about May 1 in rows, thinned and cultivated as for syrup; peas planted thick in corn just before the last working.

The rape and clover will carry the hogs from the middle of October to the latter part of July, the sorghum from the latter part of July until September. They go from the sorghum into the pea field to be fattened.

When the hogs are taken out of the clover pasture and put into the sorghum, the former can be plowed and kept well disced and harrowed until September, and re-seeded for another year.

In regard to the value of a pea field for fattening hogs, we put 57 hogs into a 17 acre corn and pea field last fall, after gathering the corn, and they gained 2,893 pounds. Figured at $0.06 per pound this amounted to $173.58, or $10.21 per acre. As a fertilizer, when followed by cotton, the pea crop is worth at least $10.00 per acre when cotton sells for $0.09 or above. This is not an estimate, but the conclusion of a careful test in 1907. These results, we think, fully justify the plea made above for cow peas and hogs to increase the fertility of our farms.

The pasture rotation, as outlined above, is for the alluvial or river bottom section, which grows Red Clover to perfection. It will, we think, be equally applicable to the prairie section. Where alfalfa is grown as a hay crop, the alfalfa field may be used as a hog pasture, provided it is not too heavily grazed.

For the hill section, we suggest that wheat and rape be sown together early in September. Wheat and vetch might also be tried. Use a beardless variety of wheat—the Fultz is good—One half of a bushel of wheat per acre will be sufficient. Do not undertake to have a pasture of this kind on poor land. Make it rich with stable manure, very rich, and prepare as you would for turnips. Be sure to break the land a month or six weeks before seeding and keep well harrowed.
MAKE TWO SEEDINGS OF SORGHUM, ONE VERY EARLY, OF AN EARLY VARIETY. THE WHEAT WILL NOT LUST AS LONG AS THE CLOVER; THEREFORE, IT WILL BE NECESSARY TO HAVE SORGHUM READY EARLY. THE SORGHUM SHOULD BE RIPE, OR NEARLY RIPE, BEFORE TURNING THE HOGS IN.

IT MUST BE DISTINCTLY UNDERSTOOD THAT WE DO NOT CLAIM THAT HOGS CAN BE RAISED ON PASTURE CROPS ALONE. SOME CORN MUST BE FED EACH DAY TO THE GROWING PIG, THE AMOUNT TO BE REGULATED BY THE FEEDER ACCORDING TO THE CONDITION OF THE HOGS.

KEEP THE HOGS FREE FROM LICE, DO NOT LET THEM SLEEP OR LIE IN DUST, AND KEEP SALT AND HARD WOOD ASHES WHERE THEY CAN GET IT AT ALL TIMES.

BREED FOR TWO LITTERS A YEAR, EARLY SPRING AND EARLY FALL. FEED THE PIGS IN A SEPARATE PEN. LOOK AFTER THE SOWS AT FarrowING TIME.

WE SUGGEST THAT MISSISSIPPI FARMERS RAISE MORE CORN AND MORE PEAS AND MORE HOGS—AND COTTON, LOTS OF COTTON.

HOW BEEF CATTLE CAN BE MADE PROFITABLE IN OUR STATE

J. M. ALDRICH.

LADIES AND GENTLEMEN, HOW TO MAKE BEEF CATTLE PROFITABLE IN MISSISSIPPI IS A QUESTION THAT HAS PROBABLY PUZZLED A GOOD MANY OF US, BUT I BELIEVE THE PROBLEM CAN BE EASILY SOLVED IF WORKED BY THE RIGHT RULE. I BELIEVE THE FIRST THING TO DO IS TO GET RID OF THE SCRUB. IT COSTS AS MUCH TO GROW A SCRUB AS IT DOES A WELL BRED BEEF ANIMAL. SOME ONE WILL ASK HOW IS THIS TO BE DONE WHEN A MAN'S MEANS ARE LIMITED, AS IT COSTS MONEY TO BUY REGISTERED CATTLE. I DON'T MEAN FOR YOU TO BUY A REGISTERED HERD, BUT I DO SAY BUY A GOOD, REGISTERED BULL (WITH EMPHASIS ON THE GOOD) FROM SOME OF THE BEEF BRED HERDS, AND DON'T BE TOO PARTICULAR ABOUT THE PRICE EVEN THOUGH YOU HAVE TO BORROW THE MONEY, AS THE BULL IS THE MOST IMPORTANT FACTOR IN YOUR HERD. MANY FARMERS OF OUR STATE WOULD NOT HESITATE TO PAY FROM $175.00 TO $250.00 FOR A GOOD SADDLE HORSE, BUT WHEN YOU ASK THEM TO PAY AS MUCH FOR A GOOD BULL, THEY THINK YOU ARE CRAZY AND TELL YOU THEY CAN BUY JUST AS GOOD LOOKING AN ANIMAL FROM A NEIGHBOR FOR $25.00 OR $50.00.

AFTER SELECTING YOUR BULL, BUY AS MANY COWS AS YOUR PASTURE WILL ACCOMMODATE ANY SEASON, SUCH COWS AS CAN BE BOUGHT IN ANY NEIGHBORHOOD IN THE STATE FOR $10.00 TO $15.00 A HEAD. MATE THEM WITH YOUR BULL, AND YOU WILL BE SURPRISED AT THE RESULTS.

THE CALVES FROM THESE COWS, IF GIVEN ATTENTION, WILL DEVELOP INTO ANIMALS OF GOOD BEEF CONFORMATION THAT WILL PAY THEIR WAY IN THE FEED PEN OR WILL BE SURE TO ATTRACT THE ATTENTION OF SOME FEED BUYER. DON'T
think for a minute that you can take these calves and half starve them and then get valuable beef animals out of them, as that is out of the question. You must manage in some way to give the calf about what he needs to eat, and this can be done in various ways. The most simple, to me, is, after the calf is ten days or two weeks old, let him run with his dam on the pasture. In this way, I will guarantee that in nine cows out of ten you will have a good calf that you can put on feed at weaning time and finish him off at a year old that he will weigh 800 pounds or more, and bring top prices on the market. Any animal sold on the market has to be fat to bring the high price. My experience after selling cattle on the market for twenty years is there is never a glut of good beef on the market. Take the market reports from our markets today, and you will find there is a difference of $4.00 per hundred weight in favor of the best beef, so try to grow the best and don’t market the animal until fat.

Fig. 7—Grade Augus Calves.

You will pardon me, I hope, if by way of illustration, I relate a little of my own experience on one of the old farms in the hill counties of North Mississippi. I think it was the fall of 1902 that I put my first crop of grade calves in the feed pen, eighteen of them, I believe, fourteen steers and four heifers. The youngest one when put in the pen was less than nine months old; the oldest, fourteen months. They had never had any feed except mothers’ milk and grass on the pasture
until put in the feed pen. These calves I fed on hulls and meal for 100 days. After about ten days, they were eating 4 pounds of cotton seed meal and 18 pounds of cotton seed hulls each. The last thirty days, they ate 5 pounds of meal with about the same quantity of hulls as before. On the market, the eighteen averaged 850 pounds; the lightest one weighing 725, the heaviest one 1,100. Of course, there is nothing remarkable about this, only it is so much better than could be done with scrub cattle under the same conditions. The steers in this lot brought 5 1-2 cents per pound, the heifers 5 cents per pound, topping the market on day of sale 50 cents per hundred over any cattle on sale in Texas or Mississippi and 81.00 per hundred over any sale for heifers. These cattle were sold on the New Orleans market. In the same load I had native three-year old steers fed 100 days, and I thought them good that were a drag on the market at 4 to 4 1-2 cents per pound. Each year since then, I have topped the market with my yearlings, the heifers always selling within from 1-4 to 1-2 a cent per pound of what the steers bring.

Another great reason I feel that it is profitable to grow beef cattle in our state is that I know of no way by which our worn lands can be so easily reclaimed as by pasturing them. Whether you sow grass on these lands or not, they are soon covered with a nutritious grass that has proved the salvation of our state, lespedeza, and after pasturing these lands three or four years, they will produce crops almost equal to virgin soil. Now, if any of you doubt this assertion, when you go home, make up your mind to try the experiment, even if on a small scale. Fence off some of your land, put some cows on it for three or four years, and I am satisfied when you cultivate that land you will be a thorough convert to cows and grass.

We have one drawback to the beef industry in the state, the fever tick; and by directing our efforts in the right direction, I believe that within a very few years we will be able to part company with the little fellow. I hope at the meeting of our next legislature that every farmer in the state will write a personal letter to his representative urging him to use every effort possible to secure an appropriation for funds to commence a fight on the tick. Our sister state, Tennessee, is making strenuous efforts to rid the state of the tick, and I expect to see by January 1, our state line the quarantine line for several of her Western counties. Many of you have probably shipped cattle to the St. Louis market and have noticed that even before leaving home your car has a placard on it, and in bold type you see these words, "Southern cattle, from prohibited district", meaning that when they reach the market
they are to be put in pens reserved for southern cattle, known as quarantine pens, meaning that these cattle have to be sold for immediate slaughter. Is it any wonder that the buyer takes advantage of these conditions and will not pay the same price per pound for these cattle as for animals of the same class in the native pens? Is it not worth our while to make up our minds that the tick must go, even though it takes five or ten years? Some of you may be skeptical enough to say this tick scare is all a fake. My cattle have had ticks all their lives. Granting this to be true, my friend, take my advice, don't buy any cattle that have no ticks on them to graze with your tick-infested cattle unless you have money to throw away, or I fear by the first of November you will have had more experience than you have cattle. You have always heard it said that "A burnt child dreads the fire". Now, I am in that class, as well as others whom I could point out in this audience, and I believe they would, if asked, indorse what I say, or rather, admit that they would have been hundreds, yes, thousands, of dollars better off had it not been for our enemy, the tick.

Now, in conclusion, I want to say that I don't believe the sun shines on a country better adapted to the growing of good beef cattle, if we will only take advantage of our condition, cheap lands that will grow a variety of nutritious grass, a climate where cattle will make their own living nine months in the year, geographically situated so that we are accessible to Northern or Southern markets. Surely Mississippians are blessed in many ways, and God grant that the time is not far distant when she will be recognized as one of the best beef producing states in the Union.

DRAINAGE.

By Van H. Manning, United States Government Survey.

I am present today with you not to impress upon you the importance of drainage, for I believe it is a fact well known and appreciated by all thinking men in this alluvial country that drainage is a necessity, but I am here to tell you what another sister community is doing and what it proposes to do.

With the advent of the boll weevil in the Mississippi Valley, the necessity of drainage and the reclamation of swamp lands, has been forced upon the planters in those localities in which this pest has appeared, and whose silent but merciless warning to those who await his coming, if not heeded in time, will cause devastation and ruin to a land whose fertility of soil has no superior. Already the scientific fiat
has gone forth to the localities to which the weevil is wending his way to prepare for him, and there is no surer way to destroy this menace to the prosperity of this magnificent and glorious Valley than by the preparation of your lands for all commercial purposes, and not to depend upon the one great commodity which will be so seriously ravaged.

The greater demand for a diversity of agricultural products is obvious in these localities, as evidenced by the activity of the weevil, and with equal force are the planters awakening to the situation by demanding a preparation of their lands to meet the conditions which, through no fault of theirs, will become devastated unless radical and prompt action is taken.

Never before has the potent fact of the necessity of drainage been so forceful to you planters, living in the bottom lands of the Mississippi, as now, and the great cry of the West, "Millions for Moisture!" is here paraphrased, moisture for the millions.

A paternal government is making fertile the barren lands of the West, and this same paternalism should be exercised over the lands which by drainage will create diversities in crops and population. Towards this end many bills have been introduced in Congress, which if enacted into law will produce an improved condition of affairs throughout the reclaimable areas of the overflowed and swamp lands.

Various states have passed laws, which are inadequate in many cases, because of the lack of unison on the part of the land owners to determine a comprehensive plan to improve the natural waterways and afford protection to lands from overflow.

A co-operative plan is a most vital point in any drainage unit, and this unit should be determined by the drainage basin to be controlled. It is obviously essential to adjust the canals and natural waterways to all the conditions which may arise, for example, the carrying capacity of the ways during the flood season, which by the shortening from tortuous courses to straight channels will increase the volume of water, thereby increasing the liability of the occurrence of floods in the land below, and the benefit to one locality might entail serious damage to another; therefore, the effect of drainage would be subversive.

The necessity for extensive topographic and hydrographic surveys covering the drainage basins and the impossibility of accomplishing drainage by individual effort is nowhere more evident than in the Upper Yazoo Delta. The area of lands subject to drainage was so vast and the natural drainage channel so complicated, the necessity of a
large comprehensive plan was conceived by Major T. G. Dabney, Chief Engineer of the Upper Yazoo Levee Board.

The drainage acts of Mississippi did not provide funds for the necessary surveys and to remedy this, and other serious defects in previous legislation, there was presented to the Mississippi Legislature an act, which was approved on March 2, 1908, creating the Tallahatchie Drainage District, comprising an area of 1,150,683 acres or about 1,800 square miles, the District now known as the Upper Yazoo Levee District. The following features of this bill are worthy of note:

The Commission may make agreement with the United States Government for making topographical surveys of such district.

The Commission is empowered to enter upon and take such lands, or parts thereof, as may be necessary for its purposes.

The Commission to require a complete survey of the entire territory.

The Engineer to fix and define bounties of all drainage units and make a map of same.

When all surveys, estimates, maps, etc., are approved, the Commission may proceed to have work completed as speedily as possible.

The Commission to pretermit work on drainage unit where petition is filed against same, unless the majority file counter petition.

The Commission to appoint three free holders to serve as a Board of Assessors for drainage district, who shall hold office contemporaneously with the Commissioners, who appoint them, and who shall assess the value of betterment of all lands in said district.

A roll of this assessment shall be furnished to the Commission, who are required to hold meetings for the purpose of hearing objections to the assessments.

The Assessors are to make assessment of town lots likewise according to betterment of drainage.

The assessments to be made once in every four years.

As main trunk drains and separate drainage units are completed and cost estimates made, the Assessors are to make two separate rolls of lands, town lots, and railroad property in each unit.

A uniform tax of 7c per acre is levied on lands in the District, collectible annually. There is a uniform betterment tax and it is levied and assessed on each and every acre of land and town lot in said District for the purpose of defraying the cost of administration, the preliminary topographical survey, and the engineering expenses of said District.

An additional tax is levied also on account of the actual benefit or increased value of the property involved, not to exceed 10 per cent. in any one year.
The Commission may reduce the acreage tax if deemed advisable, and may increase same again, but not to exceed 7c per acre.

The Tax Collectors to collect the drainage taxes at the same time as other taxes are collected, and in case of default in payment of same, lands to be sold as delinquent tax lands are now sold.

A special tax may be levied on lands in separate drainage units, not to exceed 10 per cent. in any one year of the betterment, that said lands by reason of the drainage system of such unit, over and above the betterment the same receives from said main trunk drain or drains. This tax to be applied exclusively to payment for work done in that particular drainage unit.

The Commission is authorized to issue bonds not exceeding $500,000.00 for the purpose of constructing and maintaining the main trunk drains.

These bonds are to be negotiable as promissory notes and may be sold, negotiated in any market in and out of the state at not less than their par value.

The Commission is not to make contracts for any work under this act, unless sufficient funds are in the treasury to pay the obligation in full.

Special bonds for each drainage unit may be issued in an amount, not exceeding 20 per cent. of the value of all the lands in such unit, as fixed by the assessment for State and County taxes; said bonds to be redeemable in not less than ten years after the date of their issuance.

The Commission is to set aside a certain portion of the revenues derived from taxes to be kept as a sinking fund to pay bonds and interest.

The Commission was authorized to borrow $100,000.00, or as much thereof as was necessary to enable the Chief Engineer to make the surveys as soon as possible after the enactment of this law. The Governor of the State and the President of the Commission acting under the authority of this act, entered into an agreement with the Director of the United States Geological Survey on a co-operative basis. The Tallahatchie Drainage Commission agreeing to pay two-thirds of the costs and the Director of the United States Geological Survey about one-third of the cost of the topographical survey during the fiscal year 1908-09. The total amount expended to date is about $40,000.00. About 450,000 acres have been completely surveyed to date.

Injury to any drainage works or ditches is punishable by fine and imprisonment.
Rights of any existing organization is not affected by this act, but the Drainage Commission is authorized to treat with such local organizations, and shall have power to re-imburse them for work done, or expense incurred by such local organization.

The President of the Commission is required to make a Report to the Governor of the State annually, and the Governor is authorized to appoint a committee any time to examine the books and affairs of the Commission.

If any person shall enjoin the collection of any tax provided for in this act, and shall fail to perpetuate said injunction, he shall pay, in addition to costs, double the amount of taxes enjoined.

The right to cross any public highway is conferred upon the Commission.

The Tallahatchie Drainage Commission was declared by this act to be a department of the State Government.

I am informed that the "drainage law of Louisiana provides that the Police Juries of the several Parishes may divide their Parishes into Drainage Districts, and they shall have power to appoint three Commissioners, and the Governor of the State shall appoint two Commissioners from a list of names recommended to him by the voters in the Drainage District. These Commissioners shall own real estate to the value of $1,000.00 and be electors in the District in which they are appointed."

The work of mapping the United States has been entrusted by Congress to the U. S. Geological Survey; this is the one organization, whose business it is to prepare a map or atlas of the entire country, and it is now, and has been, since its establishment in 1879, engaged continuously on this work. So far, it has surveyed about one million, fifty thousand square miles, exclusive of areas surveyed in Alaska, or more than one-third of the United States.

The maps show the topographic features of the land, such as mountains, hills, valleys, gulches, bayous, sloughs, and swamps; all bodies of water, such as lakes, marshes, streams and springs; the routes of travel, such as railroads, wagon roads and trails; political boundaries; cities, towns and permanent buildings; and the names of natural and other features. They also indicate exactly the location of permanent survey monuments and bench marks, whose positions and elevation above sea level have been determined by precise methods—monuments that are available as starting points for local surveys. The maps of areas covered by public land surveys show all township and section lines, as well as the boundaries of all land grants.
Each of these maps is printed in three colors—black for cultural features, such as boundary lines, roads, railroads, houses, towns and cities; brown for the topography, or the element of elevation, indicated by contour lines, showing the heights of all parts of the area above sea level; and blue for the water—the rivers, lakes, the sea and its bays and inlets.

These maps are used by all Departments of the United States Government. They are also used by the States in connection with the co-operative agreements of the United States Geological Survey, or with other Government Bureaus.

By State Geological, or other surveying.
By State agricultural colleges.
In good-roads investigation.
In connection with legislation involving county or town boundary lines.
In connection with legislation involving the granting of charters, rights, etc., where a physical knowledge of the country is desirable or necessary.

By Engineers, for whom maps serve the general purposes of preliminary surveys.
For location of railroads, canals, highways, trolley lines.
For providing a water supply for municipal use or for power.
In connection with problems involving land drainage or irrigation.
In connection with sewerage systems.
By miners, in prospecting for and locating mineral deposits.
By educational and scientific institutions in many ways.
As a means of information.
By land investors, through map representation of local conditions.
By travelers or tourists as guide maps.

The first essential step towards a complete reclamation of your bottom lands has been taken in the construction of the levees to protect the lands from the mighty Mississippi River.

The next step is the drainage system of a territory, which, in extent, is an empire in itself.

The matter of irrigation for such products that require more moisture than is provided by precipitation, is one of serious consideration, which in this particular locality may be designated as a co-ordinate of drainage, and the most important feature of such problem, covering a widely extended territory, is the detailed information furnished by a
topographic map; for this map will develop opportunities for simple engineering, previously unsuspected.

The peculiar physiography of the alluvial bottoms of the Mississippi Valley is interesting both to the geologist and the agriculturist. The problem of diversifying in agricultural pursuits will be met with success, for the average American citizen knows no defeat.

Apply the principle of drainage to this already glorious Valley, and your eyes will open upon a scene of rare delight.

THE MOST IMPORTANT FACTOR IN DIVERSIFICATION.

(An Address delivered at Natchez, Miss., November 25, 1905.)

By Wilmon Newell, Entomologist, Louisiana State Experiment Stations and Crop Pest Commission.

Mr. Chairman, Ladies and Gentlemen: It has been my privilege to attend Institutes in nearly every Southern State and in many sections of the country where agricultural education is supposed to have made more progress than here. I must say, however, that I have never seen in any locality, North or South, such a rapid growth in interest and progress as is manifested here in the vicinity of Natchez. Two months ago you held here the first Farmers’ Institute in your history, and today you are holding one of the largest and most successful Institutes ever held in the Southern States. To the outsider this shows a rapid development and a determination which augurs well for the future agricultural prosperity of this section of the South.

On the occasion of my last visit here I discussed with you some of the more important features of the boll weevil problem. I do not wish now to repeat what I said then, and, besides, there are other speakers present at this meeting far more competent to discuss the boll weevil than I am. I have, therefore, chosen another but closely related subject, and one which has a most important bearing upon the ultimate solution of the weevil problem. In discussing the “most important factor in diversification” permit me to reiterate the opinion I expressed from this platform two months ago, namely, that it is necessary to our future prosperity that the South retain its natural monopoly of the world’s cotton production. Also that it is necessary for the farms of the South to continue producing the staple at low cost and selling it at comparatively a low price lest countries of cheap labor be encouraged to establish the cotton growing industry themselves, and having once
established it, take from us the monopoly which we have so long enjoyed and of which we so proudly boast.

I am going to speak briefly of the cattle tick, or Texas fever tick, a creature well known to all of you. I shall try to show you how the elimination of this pest from our Southern States is necessary to our retention of that monopoly on cotton culture, how the extermination of this tick will enable us in the future to successfully combat that other pest, the boll weevil, and how the eradication of the cattle tick will make more profitable the production of other crops—how, indeed, the successful culmination of our plans to destroy the tick will cause this Southland to blossom as the rose, to become the garden spot of America, and the most prosperous agricultural country on the face of the earth.

Referring first to our natural monopoly on the production of cotton, allow me to quote that distinguished cotton planter and stock raiser, Mr. August Mayer, of Shreveport, La., who says:

"The point which I wish to make clear and bring prominently to your attention is this: That the eradication of the cattle tick is a necessity in order to maintain the future undisputed supremacy of the United States in the production of cotton.

"I will say that at the present and in the immediate future the cattle tick, as an indirect enemy to the cotton industry, exceeds in importance the muchly and justly dreaded boll weevil, and that, as an enemy to the cotton industry, the cattle tick constitutes from now on until it is eradicated from our cotton-producing states, a more important factor in our national economy than it does directly as a hindrance in the production of live stock, notwithstanding the enormity of the damage caused by it in the latter role.

"The chief industry of the the Southern United States should and must forever be the production of cotton, for more than one reason.

"First, among all known lands ours seems best suited to the growing of this one great world necessity.

"Second, it is the product which makes foreign countries yearly our debtors in the interchange of goods.

"Third, cotton, among all products of the earth brought forth directly by the soil, is the one most ideally adapted for a country's export, because by the exportation of the cotton fibre we do not rob our soil of any appreciable amount of fertility, which cannot be said of any other exported product of the soil. The sending abroad of our
surplus cotton, is, therefore, all gain. The energy of our agriculturists ought, therefore, to be persistently directed to the growing of cotton as their main crop. This should be the policy of our government. We should never permit our supremacy in this field to be put under a cloud for a moment. The fear occasioned recently by the advent of the boll weevil in our country, that the United States would in the near future, sooner or later, be incapable of furnishing what cotton the foreign spinners need, has caused greater activity in foreign lands in growing the crop which is America's greatest export, and to which is due our country's healthy bank account in those foreign countries. This fear should be dispelled once and for all, to hold what we have for all time. How can we do this? I say: "Eradicate the cattle tick."

"As will be seen, the preparation of the soil—the seed bed—before planting, is the most important factor in the successful raising of cotton. The proper preparation of the soil, its physical condition, for the reception of the seed, and thereafter the growing of the cotton plant, is very largely dependent on the humus contained in the soil. If the soil has been deprived of this vegetable substance it is very nearly sterile and valueless as a producer of crops. Fields continually planted in one crop will eventually have no humus left in them (and thus become profitless to the farmer), unless the necessary humus is regularly restored by fertilization and rotation of crops. No fertilization is equal to that brought about by the use of stable manure or that due to the feed lot. It will restore the soil better than any other fertilizer, specially if rotation of crops is practiced also. To secure, therefore, the greatest requisite to successful cotton planting, i. e., perfect preparation of soil and favorable soil conditions, we should have fertilization with stable manure. To have stable manure we must have live stock, especially cattle, to utilize to the fullest our cotton seed and the roughage produced by a soil-conserving agriculture. To have cattle we must be rid of the parasite fever tick.

"The second essential in the successful culture of cotton (in a weevil infested territory) is the proper fertility of the soil. It is quite a mooted question as yet in how far chemical fertilizers do contribute to soil improvement, especially if used alone for a long period of time. Aside from the objectionable feature of great cost, chemical fertilizers must also be objected to in that they do not restore humus, i. e., 'life' to the soil. To properly fertilize the soil so as to bring about this second most necessary feature of the successful production of cotton in the weevil infested country we must have a healthy live stock industry, consisting mainly of cattle.
“Cotton should and will forever remain our chief crop. It is the ideal crop for the South. It is the ideal crop for a country’s export. Its continued exportation will only make our country richer with every year; for, if we should send twenty million bales of cotton—pure cellulose—abroad each season, equivalent to ten thousand million pounds—or even on a still greater scale—we would not send along with it enough of our soil fertility to decrease our yield any for a thousand years to come. But our ships would return with the foreigners’ gold to the tune of one billion dollars per year—all this and much more, only,—provided, we exterminate the cattle tick.

“To maintain our cotton industry in its supremacy is but the soundest statesmanship. To keep the cotton crop at its supremacy in the United States is statesmanship equally renowned. To maintain and ever increase our cotton exports should be our government’s never-failing policy. Such aim will make us permanently the creditor nation of the world. To export cotton—cellulose—is truly a country’s ideal business with a foreign people, for there is connected with it no loss—all is gain.

“Eradicate the cattle tick!”

Most of us imagine that our rich lands need no fertilizer, and that none will ever be needed. Reflect for a moment that countless generations of humanity must yet derive their living from these same soils, and remember, too, that each year’s crop removes more plant food than is, under our present system of farming, returned to it. The final result can be but one thing, an impoverished soil, and with it an impoverished people. The fertility must be conserved, even increased, and this can be done only by a system of farming which embraces as its central feature the liberal production of live stock, particularly cattle.

The plant food—nitrogen, phosphoric acid and potash—which is in the grass and grain eaten by live stock is not converted into meat and bone, but over 80% of it is returned to the farmer in the manure. Some one has said that when the farmer sells cattle, he sells mainly what has been elaborated out of wind and water, and it is not far from true, for the potash, phosphoric acid and nitrogen which the soil needs for future crops, have been returned to it.

We have referred at length to the necessity of having stable manure and humus in our soils for the continued profitable growth of cotton. The same manure and the same humus—decaying vegetable matter—are needed in our soils for the profitable production of the truck, grain, fruit, and forage crops which will be henceforth included in the diver-
sification plans of every successful farmer. We are, therefore, brought face to face with an immutable fact: we must raise live-stock, raise it on a larger scale, and raise it successfully.

Let us see what is necessary in order to have a successful live-stock industry. Five things: good breeding stock, protection from cold, good markets, plenty of forage and feed, and protection from diseases and parasites.

First of all, we have not the best breeding stock in the world, principally for the reason that Northern-bred cattle imported into the South invariably die of Texas fever given them by the cattle tick. At the same time there are many breeders of good beef and dairy types in the South, and it is not difficult to obtain good high-grade breeding stock which is "immune" to the Texas fever.

The Northern farmer and stock raiser builds enormous barns and houses his stock for from two to five months of the year to protect them from the winter weather. Here, Nature has provided a warm winter and the stockman does not have to incur the enormous expense of building sheds and barns. In this respect we have a decided advantage over the Northern farmer.

We have not the best market in the South, nor do we receive the highest market prices for Southern cattle, no matter how perfect their condition. The reason for this lies in the existence of the so-called Federal quarantine line, which prevents the shipment of Southern cattle to the North only during the winter months, except for immediate slaughter. When your Southern cattle go north, they go in a car labelled in big letters "Southern Cattle" and when they reach the market they are unloaded into quarantine pens, again labelled "Southern Cattle". Under Uncle Sam's quarantine law they must be sold within a certain time after reaching the market, which places the shipper at the mercy of the stock-yards buyer and the cattle are not sold for what they really are worth, but for what the buyer sees fit to give. The Federal quarantine line is the Northern limit of the area occupied by the cattle tick, and it is a necessary line, else the Southern cattle going North without restriction would spread death and destruction wherever they carried ticks. The low price of Southern cattle in Northern markets, is reflected in our Southern markets and works a loss to the farmer who sells even to the butcher in his home town. When the tick is eradicated from the South there will be no quarantine line, for there will be no ticks to quarantine against, and our cattle will then sell upon their merits against all competitors.
In spite of these disagreeable considerations there remains the consoling fact that our home markets are good and there is ample demand and good prices for good cattle, ticks or no ticks. The State of Louisiana imports thousands upon thousands of dollars' worth of cattle each year to feed her people. Louisiana does not produce more than a small per centage of the beef consumed by her citizens.

When we come to consider the available food-stuffs for cattle, I venture the assertion that nowhere in the United States is forage and pasturage so abundant as here, and nowhere can hay and forage be produced at lower cost. Our lands are cheap, and besides our many native grasses, we have alfalfa, lespedeza, sorghum, Kaffir corn, crimson clover, stock beets, Indian corn, milo maize, and other crops which grow luxuriantly, and most of which will produce from two to four crops per year. Besides these, we have cotton seed meal, hulls, rice, bran, molasses and other cheap but valuable by-products which are available for feeding and fattening our cattle.

For dealing with contagious diseases of live stock, Louisiana has a State Live Stock Sanitary Board and Mississippi has a similar organization, both recently created. Neither has as yet been provided with funds sufficient to effectively fight the tick. Given all these advantages in the way of a mild climate, abundant pasturage, cheap feeds and fair markets, why is it that our cattle have not waxed fat and the farmer pocketed a handsome profit each year from his beef and dairy cattle?

Have you noticed cattle in mid-summer, belly-deep in tall luscious green grass, and yet as thin and poor as a rail, just at the season when they should be rolling in fat? Did you look a little closer and see thousands of ticks of all sizes all over each animal? Have you ever paused to reflect that each tick draws from the cow or steer at least once every twenty-four hours an amount of warm fresh blood exceeding in weight its own body? Count the ticks on the animal, then multiply that number by the amount of blood each consumes, and you will see why the grass does not make your cattle fat. How fat would you be with thousands of ticks all over you, drawing from a half pint to a pint of blood from your body each day? The fact of the matter is you have not been turning grass into beef, but rather you are utilizing the cow as a machine which turns grass into blood with which to feed and fatten ticks.

Every year thousands of cattle in Louisiana and Mississippi die suddenly and without warning, from attacks of Texas fever. Here and there are farms or premises on which there are no ticks. Cattle
raised on these tick-free areas fail to become immunized by getting
ticks upon them while they are calves and when, later in life, they
are taken to tick-infested areas, they contract Texas fever with fatal
results.

I would candidly advise every man not to engage in cattle raising
without first familiarizing himself thoroughly with the habits and life
history of the cattle tick and the relation of this pest to the Texas
fever. With this knowledge at his command he can avoid absolutely
the disastrous losses I have referred to.

We have seen how this tick has handicapped the Southern cattle
raiser at every turn, lowering the market price, preventing the im-
portation of the best breeding stock, slaying thousands of cattle by
giving them the Texas or acclimation fever and keeping all of them
from putting on flesh and making even a reasonable growth. The
tick is the mill stone about the neck of the Southern farmer. What
is to be done about it?

Fortunately there is "something doing" already, and with your
support and energetic work there will be much more "doing."

During the session of 1905-06, Congress at the earnest solicitation
of southern representatives, chief among them Congressmen Ransdell
and Watkins, of Louisiana, appropriated seventy-five thousand dollars
wherewith the U. S. Department of Agriculture should help the South-
ern States eradicate this cattle tick. During the year following no
less than fifty thousand square miles of territory adjoining the Federal
quarantine line were freed from the pest. This magnificent work was
followed by an appropriation, at the session of 1906-07 of $150,000.00
and the last Congress (1907-08) appropriated the princely sum of two
hundred and fifty thousand dollars for this work. The policy of the
U. S. Department of Agriculture in its manner of expending this money
is a wise one. For any Southern State to get a part of the benefit from
this fund that State must itself expend money in eradicating the cattle
tick. Louisiana is already in line and in co-operation with the Federal
Bureau of Animal Industry is now eradicating the cattle tick in Lincoln
and Claiborne Parishes. Already the condition of the cattle in those
parishes is greatly improved and, encouraged by the diminishing num-
bers of their worst enemies, the farmers are getting better breeding
stock and are raising more cattle. The eradication of the cattle tick is
far more important than the warfare against the boll weevil. The
tick can be exterminated for it has no wings and can move only as
carried by the cattle themselves. The boll weevil will be with us always,
but his strongest ally now is the tick, and when we shall have exter-
minated the latter then will our warfare against the weevil be a far easier one than now. If every farmer would study this matter in all its seriousness and realize what a tax he pays to this tick, the farming public would demand that Southern legislatures appropriate, not a few hundred or a few thousand dollars for tick eradication, but hundreds of thousands of dollars.

With three years of work and the expenditure of about a half million dollars the tick has been eliminated from about a hundred thousand square miles of territory. You have only to calculate the area of the Southern States and with these facts before you figure out how much it will cost, and how long it will take, to entirely and permanently rid the South of this expensive pest.

Having now heard what has been accomplished in this direction on and having heard what the Government and the several states propose to do, the question naturally suggests itself: "How are the ticks to be eradicated—how are we to destroy them on our cattle and on our farms?"

A brief knowledge of the tick and its mode of development is first necessary.

Ticks, like most other living creatures with which we are familiar, are of two sexes, male and female. It is the latter which comes most prominently to your notice as you examine an infested cow or steer. It is the females which reach such an enormous size, and, of course, it is the female which deposits the eggs. Allow me to explain right here that ticks do not "burst open and the little ticks crawl out." That is merely an old superstition which has been exploded and which you can readily disprove by putting a few full grown ticks in a glass and keeping them in a warm room for a few days. They will deposit eggs each female laying from 1,500 to 4,000. If kept long enough in a warm room, about twenty-one to thirty days, the eggs will hatch into baby ticks or seed ticks—but before they hatch you had better remove them from the house!

The same thing occurs out-of-doors. The engorged female ticks drop to the ground and lay the eggs. The eggs hatch into small ticks about the size of a small pin-head and these crawl up on the nearest blade of grass where they await the passing of some bovine animal. To this they attach themselves, find a suitable place on the animal's hide, and commence sucking blood. They grow rapidly, molting from time to time, as their skins become too small for them. The females reach maturity in from twenty-two to forty-five days after attaching
to the animal, the time being dependent upon the prevailing temperature.

Eggs and seed ticks are found always on the ground, never on the animal, while the developing males and females are found always on the animal, never on the ground.

It has been found that if all cattle be kept out of a pasture for three months in summer, or six months in winter, all the eggs will have hatched and all young ticks will have died of starvation, hence we have here a way to free any given area of the ticks themselves.

There are two practical methods of eradicating the ticks from a herd of cattle, the so-called "greasing" method and the pasture rotation method. The former method is the simplest and is reasonably certain as to results if followed persistently and periodically. The cattle are caught up every two weeks and thoroughly greased all over with crude petroleum or "Beaumont oil". This kills the majority of the ticks, and if this be repeated every two weeks no ticks will reach maturity, and in time all the living ticks in the pasture will be gathered up by the cattle and destroyed by the greasing process.

The pasture rotation method has many possible combinations and I will take your time to describe but one of them, known as the winter rotation. Let us suppose that we have three fields, one a cotton field in cultivation, and the other two pastures containing tick-infested cattle. Let us start in the month of June of this year. Before June 30th, we remove the cattle from one of the pastures (which we call No. 1) and place them with the cattle in the other pasture (No. 2). We will keep all cattle out of Pasture No. 1, and by October 1st, all ticks in it will be starved out; it will be a "tick-free" pasture. Having accomplished this much, let us turn our attention to getting the ticks off the cattle themselves. In December we take all cattle out of pasture No. 2, and place them in the cotton field. Here we leave them until the middle of February. All ticks upon them gradually mature and drop to the ground, but owing to the cool weather the eggs which are laid do not hatch and no ticks get back on the animals. By February 15th, they are free from ticks, and then we transfer them to the tick-free pasture No. 1. Thereafter they remain free of ticks until allowed to go upon ticky pastures, or until ticky cattle are placed with them. The ticks remaining in the cotton field and in pasture No. 2 are next destroyed by putting these in cultivation for a season or for keeping all cattle out of them for six months.
HOW TO MAKE TRUCK FARMING A SUCCESS.

By J. W. Day.

When a person desires to take up fruit and vegetable growing as a profession, he should acquaint himself with what would be required of him to make a success of it, and carefully weigh himself and see if he is equal to the emergency or not, as he ought to do in any other calling he might be considering. After he is fully determined to go into the fruit and vegetable growing business, as the case might be, this much determined, the next most important step will be the right location. For instance, if he should desire to be a melon grower, or a peach, or a grape, or a pear grower, he should select certain kinds of land with a sufficient altitude for these special crops. Probably the most ideal land and location would be high, dry, sandy and gravelly land with clay sub-soil. Of course, such land should have sufficient drainage. If one should choose to grow such crops as apples, berries, potatoes, tomatoes, cabbage, lettuce, beans, etc., he should select practically level land with clay sub-soil, being naturally or artificially well drained. Flat, wet soil, for any kind of truck growing, should be avoided. If there is any kind of fruit or vegetable that will do well on such soil, it is the strawberry. If the ridges are made high as the season progresses and finally laid by with deep water furrows, such land will be all right for berries, as they need plenty of moisture all along from planting time to gathering time, or nearly so. I might say there are two methods of growing strawberries in this state and in Louisiana, which I will not take up just now. To make a success of truck growing, one must be a hustler. He must be quick to learn, both by experience and observation, be a reader of all the literature he can get on the subject on the special line of work and crops he intends to grow and is growing, and above all, he must converse freely with some one near by who has had experience along this line. For instance, it would be worth $1,000.00 to you if you were a lettuce grower to know what variety to grow, what land is most suited to it, when to plant in your locality, and what fertilizer to use. It would be equally as profitable to you if you were growing a commercial onion crop to know just these four questions, to say nothing of the minor questions; and I venture to say there is always some one near by who can give you the desired information if you can pump it out of him; but, unfortunately, there are a great many people who get all they can and give as little as possible, but such people are no benefit to the country.

To say that I have made many mistakes in fruit, vegetable and truck growing from a financial standpoint is putting it mildly, but I
hope my mistakes may be of benefit to others. Probably the greatest mistake in my whole career was trying to grow too many kinds of fruit and truck at the same time and on too extensive a scale. When a person overloads himself, he does his work too hurriedly to get the best results, and, naturally, neglects to do many things he knows ought to be done for the benefit of the crop and his purse. This season I am growing 117 different kinds of crops. Some of these crops have from 25 to 35 different species. This I am doing more for a curiosity and for exhibition purposes than from a financial standpoint. A few more of the staple crops, such as corn, cotton, tomatoes, cabbage, beans, berries, etc., I am growing for profit.

Now, from what I can see, and from the signs of the times, the future for the trucker is just as bright as the past, or more so. Fruits, vegetables, and nuts, are becoming more of a necessity in our everyday diet than ever before, and the day is not far distant when there will be millions of pure vegetarians. I might cite to you the fact that fifty years ago there was not consumed in the whole United States one carload of tomatoes, now there are shipped yearly over 5,000 carloads from the South, to say nothing of home consumption. Thirty years ago not a carload of peaches found its way from the South to Northern markets. Now there are shipped yearly over 5,000 carloads to the North. The same might be said of bananas, pineapples, strawberries, melons, beans, and peas; but I deem this sufficient to show the great demand constantly growing for our stuff.

I think any young white man in the South should get him a small farm at once, even if he should have to buy it on a credit. Credit is all right, if one uses it right—it is the poor man's capital. If one uses good judgment and gets value received for what he promises to pay, he is all right; as land will always be worth more tomorrow than it is today, and if you fail after an honest effort, you are no worse off than you were before, and then you have every possible advantage. When you own a small farm and everything is neat and well tilled and cared for, you and yours will, or should, be happy. I would suggest that you take up just a few crops you fancy you would like to work at and you know the land is suited to, always having in mind the market and transportation facilities. There will always be ready sale for good to fancy products at a good price, but I am sorry to say that through ignorance, carelessness, and dishonesty on the part of the shipper, the market is almost always overloaded with a poor and worthless article put up in a deceptive way. Then, when it is possible for you to do so, you should belong to a truck growing and shipping association, and
pack your products subject to the inspection of the buyers. We would prefer to have these buyers at our end of the line, and I am proud to say it is becoming more popular every season.

Now, to sum it all up, what I think would be necessary to make a success of the trucking business both in in profit and pleasure, is about this: first, be the man for the business or let it alone; that is, you should be a hustler, you should desire to build up a profitable business and have a bank account eventually. You should impart your knowledge freely, in success or failure, to your neighbors and the press. You should not be content until you own your own land and a cozy home surrounded with fruits, vegetables, stock, poultry, and flowers. Grow what seems to suit you best and your land best and what there is a profit in. Keep the fertility of your land up by the liberal use of fertilizers and the turning under of all vegetation including weeds instead of burning it. It will pay you big to do this especially when you use commercial fertilizer in connection with it. Good preparation of the soil and through tillage are essential. Endeavor to pack an honest package and always sell at home when possible. Be honest, industrious, and wide-awake, and, my word for it, you will succeed. A man who has no tact for looking after small details around the farm should never go into the trucking business.

FARM FORESTRY FOR MISSISSIPPANIANS.

By George L. Clothier.

In a region of natural timber growth such as Mississippi, the pioneer population is likely to be wasteful of forest products and destructive of forest resources. The tree has become an object of contempt because it has been in the way of the plow. After nearly a century of relentless warfare against the forest, the people of Mississippi have succeeded in bringing less than one-third of the area of the state into cultivation, although at least two-thirds of the original merchantable timber has been removed. Among promoters and real estate agents the opinion is widely circulated that almost the entire area of the state is destined to be cultivated. If this were possible, it would not be desirable, because the country would suffer from over-production of agricultural crops and ruinous prices would result. It will probably be more than one hundred years before fifty per cent. of the area of our state will be needed for cultivation. Germany, with a population eight times as dense as ours, still finds it profitable to retain forests upon twenty-six per cent. of her area. The little German state of Saxony
realizes six dollars per acre per annum from her forest lands. Before a half century rolls around in all probability there will be a greater demand for forest products in Mississippi than now prevails in Germany. In fact, at the present rate of cutting, Mississippi virgin pine will last not longer than twenty-five years, and when we remember that the same or worse conditions of exhaustion exist in every state east of the Rocky Mountains, we can begin to realize how prices for lumber will soon rise never to fall to present levels again. The Mississippi owner of growing forest trees of useful varieties, has a better investment than government bonds or even Standard Oil securities.

The great lumber industry of the past and present, in this state, has largely been in the hands of vast corporations. This condition will probably prevail until the virgin crop has been cut. Now is the time for the small holder to begin to care for and improve his forest land, because such care promises to yield large returns. There is no question that the timber supply of Mississippi thirty years from now will have to be drawn from small land owners. The large companies are making no attempts to reproduce the forest on their cut-over lands, and if they were to reform their methods now, it would be fifty to one hundred years before their efforts would bring practical results in the shape of new trees for their mills. The fate of the large saw mills in this state is doomed to be the same as the fate of similar industries in the white pine belt of the Great Lake States; because the lumber industry in Mississippi is being operated on the same short-sighted policy. When the large holders have cut themselves out of timber, the small mills and small land owners will have their "innings", and then forestry will be more profitable than cotton growing on the richest Yazoo Delta lands. The forester is a producer of timber crops in the same sense that the farmer is a producer of field crops. In the near future, every Mississippi farmer should also be a forester, particularly if he is the owner of woodland. Why should two-thirds of the area of our state be treated as waste land, when it can be made to grow one of the most valuable forest crops in the world?

The Forestry Business Not Discreditable.

It is no discredit to any part of the state to say that a large percentage of its lands is better suited to forest crops than anything else. The information seems not to be generally public that timber, next to cotton, brings the greatest cash income into the state. Some of our people with narrow views seem to imagine that a continuation of this
great stream of money perpetually into our state would prevent the progress of civilization. Such people cannot foresee the increasing value and importance of forest products. It is almost certain that twenty years hence to say that definite types of Mississippi soils will grow longleaf pine or hickory or oak more profitably than cotton or corn will be as great a credit as to say that such lands will grow fruit to perfection. A state that can boast as varied soil types adapted to as many different crops and uses as Mississippi need not be ashamed of pine trees.

Reform of Public Sentiment Needed.

The first great change in public sentiment needed in Mississippi is for farmers to value their standing timber sufficiently to demand a price per thousand feet when it is sold. As long as prices per acre prevail, the land and not the timber is thought most of when it is placed on the market. Farmers would not think of selling a bale of cotton except by weight, yet the same individual will sell cotton by weight and standing timber by the "lump", not even taking the precaution to "estimate" it. The second great reform that is needed is to stop burning over the forest every year. The farmer should look upon his woodland as invested capital. Every time fire is allowed to run through a forest, its potential value is reduced by the destruction of the young trees, the injury of the old trees, and the impoverishment of the soil. It is strange that farmers cannot see that fire reduces the capital value of their woodlands.

Farmers need information regarding present and future values of timber. They are not aware that the best informed statisticians believe that the hardwoods of the United States will be exhausted within fifteen years. Vehicle manufacturers are now at a loss to tell where their hickory for buggy and wagon spokes will come from ten years hence. No other wood in the world can take the place of hickory for this one purpose. Mississippi probably has the largest supply of hickory yet untouched; but the spoke men are after it. When they come they will bring their old-time wasteful methods with them. They refuse to use the heart which is just as strong and just as durable as the white wood. The uninformed farmer lets the purchaser go into his woods and waste more than half the crop in the harvesting; besides, he accepts a price for the cream of his timber, which enables the manufacturers to reckon their profits by the hundred per cent. Mississippi farmers should awaken to the real worth of their birthright.
Forest Replacement.

The farmer is better able to keep his land fully stocked with young trees after the loggers than anyone else. He can fence his land and protect it from trespassers, while such precautions for lumber corporations are generally impractical. All he needs to do is to save an old-field pine tree here and there for seed to insure abundant reproduction. The loblolly pine is probably the most rapid growing species of pine in the world. It will grow on almost any kind of land and produce a saw log in less than half the time taken by longleaf. To people who have had an abundance of longleaf pine all their lives, the suggestion of sap pine for lumber does not often appeal; and yet today in Virginia and North Carolina, fortunes are being made by lumbermen in handling loblolly pine which has grown up on old fields during the past fifty years. It would be hard to estimate correctly the possible acreage value of an old field densely stocked with young pine trees approaching pole size. The farmer is better able to realize great profits on such lands than anyone else. He can attend to the replacement of the forest and protect the young growth at less expense than the large land holder. The prospects for farm forestry were never brighter in Mississippi than today.

DIVERSIFIED FARMING.

By Capt. J. F. Merry, Immigration Agent of the I. C. R. R.

Mr. Chairman, Ladies and Gentlemen: If there is one thing more than another for which I am devoutly thankful on this National Thanksgiving Day, it is that not one drop of pessimistic blood courses through my veins. With this statement you will not expect from my address any tale of woe concerning Bats and Bugs or Worms and Weevils. If I interpret correctly the signs of the times optimism is written on every legitimate industry in the country. We live in an age of marvelous opportunities and instead of nursing the blues, we should thank God for the 20th Century Agricultural, Industrial, Commercial and Educational possibilities of Mississippi and Louisiana.

If the soil and climate of Mississippi and Louisiana were only adapted to the growing of cotton, then the planters and farmers of this territory are fully justified in confining their farming operations to the growing of that one staple product. Fortunately such is not the case. There are scores of products grown in Mississippi and Louisiana that if given the same consideration and the same careful cultivation that has been given cotton for the past fifty years, would show equally
as good net returns; pay off the mortgages; restore the fertility of the soil; build new homes, barns, sheds, and fences; clear out the ditches and make farm home environments such that when the next President of the United States has occasion to appoint a commission to investigate the agricultural conditions of this country, he will have no excuse for inciting Mississippi and Louisiana among the Southern States whose farms are unsanitary and unsightly. Mississippi has an area of 29,958,- 000 acres and Louisiana has 31,180,800 acres of land, 90% of which is tillable and susceptible of making splendid farms and yet less than 25% of these lands are under cultivation. This, of itself, is an indirect arraignment of our farm methods for which I believe exclusive cotton growing is largely responsible.

For the past twenty years, from 1888 to 1907, the lowest average price of cotton in New Orleans was 7 74-100 cents per pound; the highest average was 10 79-100 cents per pound. It should and could have made a handsome profit each year but for the expense of operations which could have been obviated under an intelligent system of "Diversified Farming."

A Mississippi correspondent of the "Commercial Appeal" is responsible for the following statement: "Sixty-five per cent. of the money received for the cotton crop goes North to buy meat, mules, meal, corn, oats, and other food stuffs that are shipped to the cotton raisers of the South." I will not vouch for the correctness of this statement, nor will I even suggest that the Railroad Companies are averse to transporting these products, but I must insist that it is an awful and unwarranted tax upon the net returns from cotton, such as no single farm crop grown in the United States can stand. Cotton is one of the leading staple products of this country. For more than a half century it has been KING in this immediate territory. It is today and it will be for a hundred years to come. Your soil and climatic conditions are favorable to it; but, my friends, if we expect satisfactory net returns, we must change our present methods. We sell a bale of cotton today for $40.00. $26.00, or 65% of this amount is tribute you are paying to farmers, grain dealers, and packers of the West and you are left but $14.00 out of the $40.00 with which to pay your taxes, labor, household expenses, and your farm improvement. Is it any wonder that your environments are not all that could be desired? We have in Mississippi and Louisiana too many large and entirely too few small farms, and we have been making too little net money.

Forty years ago in the country in which I then lived and do now, we grew spring wheat to the exclusion of every other crop. The chinch
bug, as much a destroyer of wheat as the boll weevil is of cotton, came upon us, and well nigh bankrupted every farmer in that section. We hesitated to grapple with the situation, but there was nothing else to do; by experiments we soon learned that corn and some of the tame grasses under proper cultivation, would do well in Iowa; we found that dairying, stock raising, gardening, and the raising of poultry were industries vastly more profitable than the growing of spring wheat, and even before we had fairly changed from our one-crop system to diversified methods the dreaded chinch bug was gone, and our farmers can now, if so disposed, under our present crop rotation system, grow 25% more spring wheat per acre than when they were forced by this pest to the growing of other crops; to dairying, stock raising, etc. Today the farmers of that section are rich. They live in fine homes; their farms are in splendid condition and are selling at from $75.00 to $150.00 per acre. Our country banks are loaded down with farmers’ surplus money on which they pay from 3% to 4% if left with them six months or more. This forced change of farm methods in Iowa has proved a most fortunate one. It opened up our eyes to the fact that Iowa was adapted to Diversified Farming—that it was net, and not gross returns that insured prosperous farming communities. May not our Mississippi and Louisina farmers profit by our experience?

The Natchez Chamber of Commerce, in calling this Institute, had in mind the present farm conditions of Mississippi and Louisiana; and when they invited me to address you, it was with the expectation that I would give you the benefit of my experience and observations. For a quarter of a century, I have been a believer in, and an advertiser of the agricultural possibilities of the two states in whose interests we are met. From the rostrum, through the press, and in the distribution of millions of pamphlets and circulars published by the Illinois Central Railroad Company, I have not ceased to declare my honest conviction that some day Mississippi and Louisiana would rank among the best agricultural states of the Nation. I regard it as an omen for good when the farmers and business men of these states will leave their farms, their places of business, and their homes on a National Holiday to discuss questions of importance bearing upon this great subject.

From the earliest history of the United States, farming has been regarded as one of its most important industries; and yet, from a social and commercial standpoint, the tiller of the soil has not until within recent years, occupied a position among the world’s workers to which he was justly entitled. Today, throughout the United States, no man is more respected than he who successfully grows the products that
clothe and feed the world. Various agencies have contributed toward these happily changed conditions; but none, in my judgment, have done so much to advance the farmer to his present position of prominence and usefulness, as the United States Department of Agriculture; and I suggest, Mr. Chairman, that this Institute send a telegram to the Hon. James A. Wilson, Secretary of Agriculture, Washington, D. C., expressive of its appreciation of the many and varied ways in which his Department is improving the farmers' condition. Our Agricultural Colleges and Experiment Stations, auxiliaries to this great Department, are sending out men who are scientifically experimenting with every variety of farm products to determine what can be grown most successfully and profitably in different localities. Men from the Department of Agriculture are today engaged in the two states here represented, instructing farmers and planters as to the working of the boll weevil, and advising how this invasion may be partially or wholly arrested and how the loss sustained by his coming may be reduced to the minimum.

The question of "Diversified Farming", which I am to discuss at this hour, seems timely, as this suggests the profitable growing of such crops as are not relished by this pest of the cotton boll. I find myself somewhat embarrassed in discussing the question of "Diversification," before an audience, many of whom have practiced for a lifetime the one crop theory, and have little sympathy with any suggestions of a change from the old time methods. But, Mr. Chairman, as I shall present this subject, not from a theoretical but a practical standpoint, introducing witnesses whose testimony can not be impeached, I trust that none will pass judgment on the comparisons and suggestions made, until they have carefully considered them. If I were to ask this audience the question: "What crop can be grown in Mississippi and Louisiana?" The reply would be, "Everything." And yet many of your farmers go on year after year, growing only cane and cotton, and each succeeding year their farms are just a little poorer than they were the year before. Friends, did it ever occur to you that the Creator never intended that a soil capable of producing luxuriantly nearly every variety of fruits, flowers and vegetables, and nearly every known species of grass and grain, should for a hundred consecutive years be cultivated in a few crops, annually robbed of its fertility, and in many instances pauperizing the man who owns it.

Prof. Hopkins, the great soil expert, tells us that Illinois has 99 different types of soil. No doubt Mississippi and Louisiana have equally as many, and that they will grow an almost unlimited variety
of products can be easily proved. And yet it is a lamentable fact that a large percentage of the food products consumed in these two states—all of which might be produced at home—are imported from other states.

Your flour comes from Minnesota; your butter from Wisconsin; your pork and beef from Kansas City and Omaha; your alfalfa meal from Nebraska; your mules from Missouri; your horses from Kentucky; your cows from Tennessee; and your peaches and apples from Michigan and York State.

Your explanation of this is that the states above mentioned can produce these products cheaper than you can at home; and simply because you do not care to change your system of farming and diversify your crops, you have actually made yourselves believe that you can grow cotton at from eight to ten cents per pound, and pay long distance freight on these necessities rather than to produce them at home.

Mississippi and Louisiana grow very little wheat, and I think there are good and sufficient reasons for this, but the United States report for 1907, shows that the average number of bushels of winter wheat per acre in Mississippi was only eleven bushels, while the average of spring wheat in Minnesota was only thirteen bushels. A few years since, we were told that the South would always get its supply of butter from the North, as the Southern grasses, and especially those of Louisiana, would not produce milk. Today there is being shipped from Hammond, Louisiana, to New Orleans, every twenty-four hours, 2,000 gallons of milk that will test in butter fat with the milk of any creamery in Wisconsin; and any farmer in Mississippi and Louisiana with a dozen or more cows, who is not conveniently located to the city market, can by the use of a hand separator and ordinary cleanliness, manufacture butter that will demand the highest price on the market. The greatest obstacle in the growing of beef in the South is the tick. But the process of inoculation and the methods of eradicating the tick as practiced by the Department of Agriculture, will, I believe, soon overcome this obstacle. The farmers in Mississippi and Louisiana can no longer refuse to grow cattle and hogs on the flimsy excuse that they can not compete with the alfalfa and corn growing states of Nebraska and Kansas. It was Mr. B. H. Strong, of West Point, Miss., who, in competition with Nebraska, Kansas, Colorado and California, carried off the "Gold Medal Prize," at the St. Louis Exposition for the best exhibit of alfalfa. Permit me to read a couple of letters from Mr. Strong that I think will interest the farmers of Mississippi and Louisiana.
Mr. J. F. Merry,  
General Immigration Agent,  
Manchester, Iowa.

Dear Sir:—Your letter of the 21st inst. at hand. I take pleasure in giving you all the information I can in regard to alfalfa in this section.

In March 1903, through the advice and direction of Prof. Hopkins, of the University of Illinois, I prepared and planted one-half acre in alfalfa. Prof. Hopkins furnished me with one hundred pounds of inoculated soil, which I put on lower slope of plot. This half acre was ready to cut for hay by the first of July, four months growth from planting, and cut one thousand pounds of fine hay. I cut it again the 15th day of August and the middle of October, just before frost. The last cutting was light. The three cuttings the first year made two and one-half tons of hay per acre. The upper half of the plot that was not inoculated showed as healthy growth and produced as much hay as the lower edge of the slope that was inoculated.

On examination of the roots, I found them covered with tubercles, showing the land to be naturally supplied with alfalfa bacteria. I then had the soil sub-soiled and its foundations rottened limestone, analyzed. From the geological formation and chemical analysis of the soils, I found the land to be the same as the chalk lands of England and France, which are said to be the best alfalfa lands known. Our soil is abundantly supplied with lime. In March, 1904, I planted 130 acres. The hay cut from this field, July 15th, 1904, was awarded the Gold Medal at the St. Louis Exposition. I have ten acres of the 130 acres in hog pasture, which has proved very profitable.

After paying all the expenses of seeding, cutting and baling the first year, the 120 acre meadow netted me $1,075.00. From this the second year I have cut fifty acres five times, and will get the fifth cutting from all the meadow before frost. I did not have shed room sufficient this year, consequently I will lose from hay spoiling in ricks, about 100 tons. The 120 acre meadow, with all the bad weather we have had to save hay, will net me this year over $3,000.00.

Col. J. F. Merry,  
General Immigration Agent,  
Manchester, Iowa.

Dear Sir:—Your letter of August 1st, asking for results from this year’s alfalfa crop, received. We have cut all the old meadow three times, and the fourth cutting is being harvested now; yield averages one ton per acre each cutting.

This spring’s seeding has produced some wonderful results. We are harvesting it now the second time. On one meadow, sowed March 20th, this year, we got thirty inches growth by May 26th, a few days over two months from seeding. I sent samples of this growth to the Agricultural Department at Washington. They tell me that they have
no record equal to this growth on the natural soil and under natural conditions, as this was grown.

We lost some hay this year by stacking in the field without covering. Last year we had good results without covering, which caused us to be a little careless. All hay under shelter has come out in fine shape, selling for $16.00 to $18.00 per ton f. o. b., West Point.

The prospects are now good for six cuttings this year, as the seasons have been perfect, for both production and harvest. Mr. Ben Walker, a neighbor of mine, who has a 100 acre meadow, disced his field this year after the first cutting. Results were better than expected, increasing population, and in making quick growth. He harvested his fourth cutting ten days ago. His fifth cutting is now four inches high.

Good alfalfa lands are selling as high as $50.00 per acre. A meadow, well-set, sold this spring for $75.00 per acre. This was a forty acre lot. 1,940 acres, 1,500 acres of this alfalfa soil, balance cotton land, sold for $33.00 per acre.

I know men who have sold bank stock and bought land in the last few months, which is something extraordinary for Mississippi.

Hoping this is the information you desire, I beg to remain,

Respectfully yours,

(Signed) B. H. STRONG.

The following certificate is one in which every Mississippian should take pride:

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF PLANT INDUSTRY,
WASHINGTON, D. C., July 14, 1908.

This is to certify that I have seen the field of alfalfa sown by B. H. Strong, at West Point, Miss., in March, 1908. The accompanying sample is the largest growth of alfalfa for two months after seeding I have ever seen on a field without fertilizer or other special treatment.

(Signed) NICHOLAS SCHMITZ,
Alfalfa Expert.

Oct. 9th, 1908, Mr. Strong advised that he expected to send me a bale of alfalfa from the sixth cutting this season for exhibition at the National Corn Exposition to be held at Omaha December 9-19th. It may be true that the soil of Eastern Mississippi is especially adapted to the growing of alfalfa, but it is also true that this crop is being grown successfully in Louisiana and at several points in Central and Western Mississippi.

Mr. J. W. Goode, of St. Louis, writes as follows of his plantation in the Yazoo Mississippi Valley: "Of the 1,500 acres of tillable land I am now preparing to plant about 600 acres in alfalfa and as I now have a few acres which are paying me nearly $100.00 per acre per annum I think I can see enormous profit in my alfalfa which grows luxuriantly in all parts of the Yazoo Valley."
Mr. Goode should have qualified this assertion by saying that alfalfa will grow luxuriantly in the Yazoo-Mississippi Valley on lands that are thoroughly drained and under the most intelligent and careful cultivation.

In the Kentwood, Louisiana, Courier, of Oct. 30th appeared an article signed "farmer", in which the following statement was made concerning Tangipahoa Parish: "We have a population of about thirty thousand people in this parish; 29,500 buy their meat, and the other 500 raise enough to last them about three or four months of the year. The 29,500 buy it from the North and West, and yet Col. Chas. Schuler, a practical, up-to-date farmer and Commissioner of Agriculture for Louisiana, in a public address, made the following declaration: 'Hog raising can be successfully followed in Louisiana, and has been a success on my farm for thirty-two years. The common expression "that you must have a hog that can out run a nigger," is all stuff and nonsense. I cultivate about 800 acres, use altogether negro labor, and cannot remember ever having a pig or hog stolen. I raise hogs in connection with my main money crop—cotton. I usually kill from fifty to seventy-five head each year, averaging from 150 to 200 pounds net per head. I kill on the farm and sell surplus to merchants and customers in the city. I have kept dry salt meat (sides) from hogs killed in December perfectly sweet and good until the latter part of May; have kept and exhibited at country fairs hams that were eighteen months old after killing, perfectly sound and sweet. The fact is that the Louisiana hams, as cured by me, have a reputation for good quality equal to any ham made in this country. I claim that by adopting my methods, and charging the hog up with only the labor of producing the food, letting him do his own harvesting, that gross pork can be raised in this climate at not much over one-half cent per pound.'"

If the boll weevil advent into Louisiana and Mississippi drives your farmers to hog raising, which is a profitable industry in Iowa, where the cost of production is at least six times the amount quoted by Col. Schuler, then instead of lying awake nights to think up swear words you can hurl against Mr. Weevil, you should be planning for a monument to commemorate his coming.

The corn crop of the United States for 1907 was estimated at 2,707,000,000 bushels, of which Mississippi produces 42,500,000. The suggestion that Mississippi can not compete with the Western states in the growing of corn is worthy of careful analysis. Last year Holmes county, Mississippi, through the able and persistent efforts of Prof. W. H. Smith, County Superintendent of Education, a Boys' Corn Club
was organized with a membership of 250, each striving to produce the greatest yield of corn. The average yield in Mississippi last year was 17 bushels per acre; but these boys who have been instructed how to prepare the soil, had been furnished well tested seed corn and advised how and when to plant and cultivate, had the satisfaction of showing, as a result of their experiments, from 75 to 120 bushels per acre. Do I hear some one say these conditions are extraordinary. Ah! yes, they were extraordinary! These boys put their heads in the game. They proved beyond a question what I am contending for: that the soil and climate and rainfall and long season of Mississippi give her a positive advantage over the short season of the so-called corn growing states of the North and West. Would you farmers go into winter with your barns and cribs filled with corn? Follow the plain, easy, but scientific methods of those boys. Possibly some one living in the hill country and familiar with the fact that Holmes county has a large percentage of bottom lands, will insist that such yields of corn could not possibly have been produced on any other than the alluvial bottom lands of the state. Fortunately, I have several letters from gentlemen located in the so-called but mis-named "hill country" of Mississippi. Let me read a few of them. The first is from Hermanville, Mississippi, our near neighbor on the north.

Hermanville, Miss., July 18, 1908.

Capt. J. F. Merry,
Manchester, Iowa.

Dear Sir:—It affords me much pleasure to give you such information as I may possess in regard to corn growing in my section of the State. I think there is no doubt but what a reasonably good crop of corn can be grown each year with the proper preparation of the soil and cultivation of the crop, and of course proper seed selected.

My method of preparation of the land this season was as follows: I first broke the land flat, 8 inches deep, with a No. 90 two-horse Oliver chilled plow early in March, and then doubled disced same both ways, and laid rows off four feet and planting in this furrow about March 10th, and cultivating every ten days thereafter with a Planet Jr. cultivator, shallow, laying by about the first of June, using carefully selected seed of native variety (that is, corn bred in the county for some time). This corn will average fifty bushels per acre this year on clay hills without fertilizer. If at any time I can be of service to you, command me.

Thanking you for the interest you are taking in Mississippi, I am

Very truly,

(Signed) W. A. Fife.
The second and third letters are from Madison County, that claims the distinction of having located within its borders, more Northern farmers than any other County in the State.

RIDGELAND, Miss., Oct. 17, 1908.

Capt. J. F. Merry,
Manchester, Iowa.

Dear Sir,—Referring to some corn which I sent you from my place here near Ridgeland for exhibition in your car on a recent trip you made through Illinois, and which seems to have elicited some very favorable comment from Illinois farmers who visited your car, I beg to advise this corn was raised by a negro "share cropper" on my place, who is far from being a wide-awake and up-to-date farmer, but like most negroes, is more anxious to "lay by" his crop than to give sufficient cultivation. In spite of this, however, we managed to make a very fair out-turn, using no fertilizer. The crop is still in the shock and, therefore, I am unable to give accurate figures as to the yield; but I am confident he has made over 65 bushels to the acre,—perhaps possibly 75 bushels.

I planted two varieties, namely, Snowflake and Tennessee Red Cob, both of which did well. It seems to me that if a negro, with his characteristic lack of energy and intelligent cultivation can make an out-turn like this, well directed efforts by thrifty Northern farmers ought to work out some remarkable yields in the brown loam soil, which is so susceptible to proper cultivation, and responds so kindly.

There are some failures made here, of course, and in cases where new-comers are from districts where soil treatment is entirely different, but I have never seen failure with our soil where intelligence and energy combined were applied.

(Signed)

W. C. Smith.

Ridgeland, Miss., Oct. 17, 1908.

Capt. J. F. Merry,
Manchester, Iowa.

Dear Sir:—I came here from Kane County, Illinois, about ten years ago, and have grown corn, cotton, and truck crops ever since. I have practiced growing corn each year after taking off some other early crop. In this method of corn growing I get two good crops each year and the first crop usually makes more money for me than the crop of corn.

I plant corn about June 15th in drills 3 1-2 to 4 feet wide, thin to one stalk eighteen to twenty inches in row; shallow cultivate five to six times, use no fertilizer, and get an average yield of forty-five bushels per acre. By fertilizing or manuring and cultivating as often as needed, I can get a yield of about 60 bushels per acre.

I plant Mosby's Prolific and Improved June or Jones's Prolific. I am positive with my experience that a man can raise as much corn to the acre here on hill land as he can anywhere in Illinois in the Corn Belt, by scientific methods.
But few of our farmers are scientific. Madison county needs more practical Northern farmers, and while we have more of them in the brown loam district than in any other county in the State, there is a large area of farm lands here that can be bought, that are well located, at prices ranging from $10.00 to $25.00 per acre. I will say this much for Madison County: I can turn off more money on forty acres here on land that cost me about $25.00 per acre, than my brother can on his 160 acre Kane County, Illinois farm, and he is considered a good farmer. His land is worth $150.00 per acre.

There is a good chance for a poor man to get a home here if he will apply himself. Send your farmers down to Ridgeland; we will treat them well and show them what we are doing.

Very truly yours,

(Signed)

Ras Thompson.

The fourth and last letter is from a gentleman at Port Gibson whom some of you, doubtless, know:

Port Gibson, Miss., Aug. 25, 1908.

Mr. J. F. Merry,
General Immigration Agent,
Manchester, Iowa.

Dear Sir:—Answering your inquiry as to how I raise 75 bushels and over of corn to the acre in this section, I would say I find it easy and about as follows: This is the “hill country” and my land is red clay. I break up the ground about six or eight inches deep in early fall or winter. This is to prevent the ground washing and to stow moisture. Early in spring I plow shallow turning under any winter or cover crop I may have on land. I plant the best seed corn I can get, as I believe the best is none too good. I cultivate and lay by with Planet Jr. cultivator, sowing Whippoorwill peas in middles at last working. I use from twenty-five to thirty loads of stable manure to the acre, when I can get it, often I can not get as much.

No matter what the season, I have made good crops of corn for several years. Last season I made over 75 bushels per acre and this season I shall make at least 75 bushels per acre. The ground has steadily improved and my interest and pleasure in the work has likewise increased. I shall try next season for 100 bushels per acre.

Very truly,

(Signed)

J. M. Taylor.

The four gentlemen whose letters I have read are total strangers to me, but I have no reason to question their frank and interesting statements. Before leaving the corn phase of this question, which I regard as very important and furnishing a means of thwarting the base design of the boll weevil, let me quote again from a letter received from Prof. Smith, to whom we are indebted for introducing Boys’ Corn Clubs into the State of Mississippi. He says: “I was impressed with the fact that Holmes County, as well as other sections of Mississippi, has
unlimited resources as yet undeveloped; that our fields are not producing the wealth that could be brought out through a better system of cultivation and soil improvement. It has been demonstrated that our soil is capable of producing 100 bushels of corn to the acre or more, yet our average production is not 20 bushels per acre. Our land can be made to yield from one to two bales of cotton to the acre, still we make only a bale to three acres. Our country is full of possibilities. The soil is capable of producing, under our genial climate, a wonderful variety of paying crops. One man will exhibit at the State Fair this fall 127 different products from one farm. We have the best pasture and corn land, but we are bringing our horses and meat from the West.

"With these considerations you will readily see that I believe in the resources of this country, and what we most need now is to bring our people to realize that there is a bright future for agricultural Mississippi, if we can put the proper amount of skill and intelligence into the soil. So with these facts as a basis here are some definite purposes of the Corn Club work:

"1. To aid through actual experiments, the State Agricultural College in reaching the masses of the people with its work.
"2. To make farm life more attractive and farming more profitable.
"3. To make the study of agriculture in the schools practical and interesting.
"4. To make the rural environments of the child minister to his education.
"5. To enable the people to take better advantage of the public schools by making them more prosperous.
"6. To encourage soil study, soil improvement, better cultivation, seed selection, etc."

Prof. Smith, in the promulgation of this kind of gospel, is unconsciously doing his state great service. The average production of corn in Illinois last year was 36 bushels; in Iowa, 29.5 bushels; in Mississippi, 17 bushels, and in Louisiana, 17.5 bushels. Farmers of Mississippi, you should insist that your tenants and your farm help shall give the same attention to the growing of corn in 1909 that they have in past years to the growing of cotton. If they will do this, you will have from 35 to 50 bushels per acre. Mississippi last year had 2,500,000 acres in corn, which the Department of Agriculture estimated at 75c per bushel, amounting to $31,875,000.00; Illinois had 521,000 acres in corn, estimated at 44c per bushel, amounting to $150,813,000.00; Iowa had last year 9,160,000 acres in corn, valued at 43c per bushel, amounting to $116,195,000.00, and Louisiana had 1,600,000 acres in corn,
valued at 70c per bushel, amounting to $19,600,000.00. If you would get the start of the boll weevil, increase your acreage in corn 50%, and if you would make more net money in 1909 than you have averaged for the past twenty years, it can easily be done by a thorough preparation of your cotton and corn ground, planting only seed that has been carefully tested, and cultivating it in the best possible manner. I am a friend to cotton, and not at all alarmed about the boll weevil, but I must insist that other than cotton crops in Mississippi and Louisiana are possible. To secure the best results, we must fertilize retake, and diversify.

Poultry is another industry in which the farmers of the South should engage. The United States report shows that in 1905, Iowa produced poultry to the amount of $31,250,071.50; Illinois, $29,522,408.70, while Mississippi had to her credit on poultry account only $7,713,758.08, and Louisiana but $4,612,331.55. In an investigation of the poultry business along the Southern division of the Illinois Central System, I addressed a letter to Mr. T. S. Scanlan, Manager of a large poultry farm at Hammond, La., to which he replied as follows:

"We have incubator capacity for 15,000 eggs, and are installing a large machine with a capacity of 150,000, with brooder house sufficient for the out-put. In all, we have 35,000 square feet of floor space in our buildings and under construction.

"We breed exhibition, utility and fancy market poultry, also supply guaranteed fresh eggs. The breeding stock we now have consists of 5,000 chickens, 3,000 ducks, 150 geese and 1,200 pigeons, consisting of the following breeds: Barred, Buff and White Plymouth Rocks, White and Columbia Wyandottes, Rhode Island Reds, Buff Cochins, Light and Dark Brahmas, S. C. Black Minorcas, B. B. Red Game and Buff Cochin Bantams, Toulouse Geese, Pekin Ducks, Homer Pigeons, and Bronze Turkeys.

"The climate here is admirably adapted to the poultry business. The cost of building is much less than in the North, and we find open houses preferrable. While we are somewhat troubled with the roup and canker, the disease most prevalent among the poultry is sore-head. We find a ready market for all the poultry that we can raise, and at a good price. Our best season comes at a time when the markets in the North are the highest, and it affords us an opportunity to dispose of all our market poultry and eggs at a good price.

"We feel assured of the future success of the farm, and contemplate many more improvements, in order to be in a position to supply
the ever increasing demand for poultry and eggs as well as exhibition stock.

"Should you wish any other information in regard to the poultry business in this section, we shall be pleased to hear from you."

Mr. Scanlon is authority on poultry raising in Louisiana, which is certainly equally applicable to Mississippi. With shipping facilities to Northern markets, such as are afforded by the Yazoo and Mississippi Valley and the Illinois Central Railroads, every farmer in Mississippi and Louisiana should utilize the speckled hen in making her pay the taxes and table expenses of the family.

Thirty years ago not a peck of vegetables was shipped from Louisiana and Mississippi to Northern markets. This season Crystal Springs shipped from that one station no less than 1,054 car loads of vegetables, 660 of which were tomatoes. I have not a report of the results of this season’s crop, but I give you this report of last year, when the shipments amounted to but 818 car loads:

**Crystal Springs, Miss., Oct. 9, 1907.**

Mr. J. F. Merry,
General Immigration Agent,
Manchester, Iowa.

**DEAR SIR:**—Yours received, and in reply take pleasure in stating that Crystal Springs shipped from about three thousand acres the following number of cars of vegetables for the season of 1907:

<table>
<thead>
<tr>
<th>VEGETABLES</th>
<th>NUMBER</th>
<th>NET RETURNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>432</td>
<td>$297,386.69</td>
</tr>
<tr>
<td>Cabbage</td>
<td>249</td>
<td>131,139.29</td>
</tr>
<tr>
<td>Beans</td>
<td>60</td>
<td>38,274.00</td>
</tr>
<tr>
<td>Carrots</td>
<td>45</td>
<td>17,010.40</td>
</tr>
<tr>
<td>Turnips</td>
<td>16</td>
<td>4,111.00</td>
</tr>
<tr>
<td>Peas</td>
<td>10</td>
<td>5,955.00</td>
</tr>
<tr>
<td>Beets</td>
<td>5</td>
<td>1,286.00</td>
</tr>
<tr>
<td>Radishes</td>
<td>1</td>
<td>310.40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>818</strong></td>
<td><strong>$495,475.28</strong></td>
</tr>
</tbody>
</table>

An average of 8165.15 per acre. It was the best cabbage year we ever had. About an average for the other crops. Our crops of cotton and corn, as second crops after vegetables, were the best in the history of the business. Farmers in this section are in a better shape than at any time since before the war.

No grower has made any test of the onion crop in this section. Hoping the above will answer your purpose, I remain,

Yours very truly,

(Signed) R. E. Lott, Secretary.
These figures speak for themselves, and in no uncertain language. It is crop diversification in its best sense. The vegetable trade of the South is as yet in its infancy, and the experience of the Crystal Springs country shows that the substitution of the trucking industry for that of cotton will not be disadvantageous. In 1880 the soil about Crystal Springs had become so worn that out it would scarcely grow a quarter of a bale of cotton to the acre. It is said that the farmers in that vicinity actually abandoned their farms and moved to Texas; but I am pleased to state that many of them have returned, and today Crystal Springs is the shipping point of one of the most prosperous communities, not only in the South, but in the United States; and if there is a happier or more intelligent community in this, or any other, country, I do not know where it is located. Mark you, my friends, this wonderful prosperity is the legitimate result of a diversification of crops.

From three points in Copiah county the shipments of vegetables this season aggregated more than 2,000 car loads. The boll weevil has no terror for the vegetable grower. Ponchatula, Hammond, and Roseland, Louisiana, are large shippers of vegetables. Last year a gentleman at Roseland, La., formerly of Kalamazoo., Mich., and one of the most intelligent and successful growers in the United States, sold his 4.32 acres of cabbage for $4,600.00 gross, deducting all expenses he had $2,200.00 net profit from less than five acres of cabbage. This is a remarkable showing which can not be duplicated, except when cabbages are scarce and the price is very high. Cabbage is a fickle crop and for a farmer to confine himself to the growing of cabbages exclusively is even more unbusiness-like than to grow cotton to the exclusion of all other crops. The early cabbage for 1908 was unprofitable, but according to the "Inland Farmer", published at Louisville, Kentucky, the late crop is so short in the United States and prices are now so high, that cabbage will be imported from Holland and Denmark to supply the demands for that staple article of diet to be found on American as well as German tables.

The growing of Irish potatoes, both for local and Northern markets, is an industry in which the farmers of Mississippi and Louisiana may engage with a reasonable expectation of fair returns. Already one of the enterprising firms of this city is shipping Irish potatoes in car load lots and encouraging the farmers of this territory to cultivate a much larger acreage than heretofore. It is said that the boll weevil is responsible for the thousands of acres of onions that are now being profitably grown in Texas, where, a few years ago, cotton was the exclusive money crop. I am in receipt of letters from gentlemen located
in Mississippi and Louisiana, who claim that although no effort has been made to grow onions in this territory, for commercial purposes, yet they are grown on every farm for table use, and that, on account of your superior facilities, you can easily compete with Texas in the growing of the product.

On the 28th of last April I received a letter from Mr. A. M. Middleton, from Canton, Miss., who was born and raised only seven miles from where I live in Iowa. Let me quote from this letter, simply to show what the supposedly worn-out lands of Mississippi will produce under proper cultivation: “I came to Madison County four years ago; bought a four-hundred-acre plantation 4 1-2 miles south of Canton, which was so poor that one tenant had been renting the entire tract, or such part of it as he cared to work, for $50.00 per year. I immediately started a gang plow with six good horses to it, setting the plow as deep as it would go. I now have 400 acres under the plow; am raising cotton, corn, oats, cow peas, etc., and have five acres in peaches. I am also raising mules, as this, to my mind, is an ideal country for stock raising. I want to tell you what I did on one 40 acre tract last year. It had been cropped in cotton for 70 years—everything taken off, and nothing put back. I plowed it deep, sowed it to winter oats in December, 1906; in June, 1907, I harvested and threshed from this 40 acres, 1,200 bushels of oats, which I sold for 75c per bushel. I then plowed and sowed this same 40 acres to cow peas and harvested and threshed 150 bushels of peas, which I sold for $2.50 per bushel, and I sold the pea-vine hay for $15.00 per ton.”

“You figure this up, and see how it will compare with what you grow on Iowa and Illinois land worth from $100.00 to $200.00 per acre. We now have three J. I. Case threshing machines in Madison County.”

Before leaving home, I learned from his father that Arthur would sow 250 acres in oats next month. It will be a sure revelation to Mississippians, but why not sow oats? a crop that is always in demand in Mississippi at good prices. He but shows good judgment, and his farm will be an object lesson, showing one way in which to get the start of the boll weevil in 1909.

Strawberries are grown successfully throughout Mississippi and Louisiana. Some years they are very profitable, and others they simply furnish the choicest luxury for the table, and possibly enough money to pay the expense of care and picking. Every farmer in the two states mentioned can, and should, have a small strawberry patch.

In a single address it is impossible to even touch upon the various crops that can be grown successfully and profitably on Mississippi and Louisiana soil. I have introduced letters over the signatures of men
who live, and own and operate farms in your State. They state, in the most positive terms, what they are actually doing this year in the cultivation of a variety of products. These products are grown in practically the same kind of soil as that in which you are growing cotton. Their crops are issued by the same sun and watered by the same kindly rains; and what they have done as a result of diversifying their crops, you can certainly do. And if you farmers and planters of Mississippi permit the boll weevil to place mortgages upon your farms, to tax your credit at the bank, to rob your tables of their accustomed luxuries, and, perhaps, deny your family the bare necessities of life, it will not be because you are settled in a country where only one crop can be grown. No, my friends, there is nothing discouraging in the outlook if you will but get the consent of your better judgment and begin now to diversify your crops. You have in this territory scores of farms that could, in two years, be made to double their earnings in spite of the boll weevil, or any other pest, simply by changing your methods. Let me suggest also that with a few dollars judiciously expended in improving your buildings, and making your farm environments more attractive, the selling value of many of your farms would be more than doubled, and what is better than all this, I believe, would result in what your farmers desire above everything else—the keeping of your boys on the farm.

Secretary of Agriculture Wilson is an Iowa man, and one whom we all greatly love and respect. He says of the United States: "We are becoming a Nation of meat-eaters, eating more meat than ever before, while the farmers are not raising as much as formerly. This is why meat is so much higher than ever before; and it is going higher."

These words, coming from so high an authority, should stimulate every farmer to pay more attention to the raising of cattle and hogs. We want, if possible, to get out of the old ruts; not because we do not like them, but because they do not pay. We want the farmers of Mississippi and Louisiana to so rotate and diversify, and cultivate their crops, that each farmer may have a bank account, every boy a horse and carriage of his own, dedicated to the exclusive use of himself and his "best girl." We want the girls to have a piano and a parlor in which to put it, where she can invite and entertain her "best fellow." We want the South to become noted for her splendid homes, her fine horses, her comfortable barns and sheds, in which every animal on the place is protected from the storm; her fences and fields so cared for, that every passer-by will note the attractive and prosperous conditions of the new Southland.

In this enthusiastic plea for diversification crops, do not think for a moment I would have you abandon the raising of cotton. If you
have a field that has been pastured, fertilized, or cropped in legumes, until you are sure it will produce from one-half a bale to a bale of cotton per acre, you are fully justified in planting it early to cotton and take your chances with the boll weevil; but do not continue this year after year, until the productive qualities of the soil have become exhausted. Rotate your crops, no matter what the price of cotton may be.

One of the sad features in connection with the development of the Southern States since the Civil War, has been the exodus of her own people to other States. It is but natural that a few of the sons and daughters of the South should have emigrated; but I cannot understand why 200,000 Mississippians, and, perhaps, as many Louisianans, should have become citizens of other States. Certainly none of the Western and Southwestern States have the slightest advantage over Mississippi and Louisiana in the matter of climate; it is not because they furnish better and purer water than that which flows from your splendid artesian wells; it is not because they afford better local markets, for where among all the progressive States of the Union can be found four commercial centers that in their growth and commercial development excel the splendid cities of Memphis, New Orleans, Chicago, and St. Louis; it is not because they furnish better transportation facilities than Mississippi and Louisiana, for nowhere can be found better transportation accommodations than is furnished by the railroads, rivers and lakes of this particular section.

You will pardon what seems to be an immodest and selfish reference to the equipment furnished by the Illinois Central Railroad Company for the transportation of Louisiana-Mississippi perishable farm products direct to the principal markets of the East and North. This Company, as far back as 1880, saw the future diversified possibilities of these two Southern States, and, long before it was profitable, put into service its own refrigerator cars that now number over 4,000, and in order that these cars loaded with valuable perishable product, might reach Chicago, St. Louis, Omaha, Sioux City, St. Paul, and other Northern markets, with their cargoes in the best possible condition, it has constructed at convenient intervals between New Orleans and Chicago, no less than five icing stations, from which, with no expense to the shippers, these cars are re-iced as occasion may demand.

Leaving Mississippi and Louisiana for California or any other section of the United States, is not because your educational institutions have failed to keep pace with other States—North, South, East, or West; it is not because, in the onward march of civilization, you have fallen behind other States in the development of good morals and pure religion; nor is it conceivable that any family should have left these States with
the hope of finding a better citizenship, or a more hospitable people among whom to make a permanent home.

To what, then, may we attribute this great exodus that has been going on for more than forty years? It cannot be because the soil of Mississippi and Louisiana, as already shown, fails under proper cultivation to bring forth abundantly and profitably as great a variety of farm products as can be found in a like area in any section of this the greatest agricultural country on the globe; nor can it be because of the high prices of your fertile lands, for even now there are 150% to 200% less than the same quality of lands 500 miles to the North. I cannot speak authoritatively, but I am persuaded, Mr. Chairman, that a large percentage of this emigration, principally of your young men, from your splendid State, has been from the rural sections; and that one of the reasons for this may be found in the fact that your system of farming in the past, and possibly at present, is in some degree faulty. Your net profits have been too small, and your farm environments too unattractive; and because of this the boys no sooner attain their majority than they seek other fields that promise better net results. The doctor does not alway correctly diagnose his case, and I may be wrong in assuming that the going out of so much brawn and brains from Mississippi and Louisiana has been, and is now, due to agricultural conditions that may be improved. In the discussion of this question I not only want to urge diversification, but I would like, if possible, to convince the citizens of Mississippi and Louisiana that no matter how flowery may be the descriptions of other sections of our common country, none of them excel these two Southern States in everything that may make farm life desirable. I want, if possible, to convince this audience, many of whom, I trust, are farmers, that a careful study of the climate and natural conditions of this section develops the fact that the fields of Mississippi and Louisiana respond to every honest effort of plow and hoe, and should not, therefore, be robbed of their fertility from year to year, and from producing a variety of products to which they are adapted and from which there is a constant and increasing demand at remunerative prices. Let us, therefore, exonerate the soil, exonerate the climate, exonerate the water supply, the educational, religious, and social conditions from any blame in connection with this not imaginary but unfortunate and greatly to be deplored fact: that Mississippi and Louisiana have in the past populated many Western States with their splendid citizens, whom they could illly afford to spare.

And now, Mr. Chairman, lest some of the good people present may think it wholly unwarranted that a railroad man from Iowa should presume to offer any suggestions to the farmers of Mississippi and Louisiana,
I want to say that while it is true that I have been connected with the Illinois Central Railroad Company for 28 years, yet I was born and raised on a farm, and am now the happy owner of a small farm of 280 acres, stocked with Holstein cows, Duroc Jersey hogs, brood mares, and Plymouth Rock chickens, and as the place is located only three and one-half miles from Manchester, Iowa, which has been my home since 1865, there is not a week, nor scarcely a day during the summer season, when at home, that I do not visit the farm and consult with the tenant not only as to what will bring us the most money, but what is best for the farm, how its productiveness may be increased, what will make the least work for the tenant’s wife, and what can be done to make the work and all the environments, such as will stimulate the children to love instead of hate the farm.

Farming has, indeed, become a great industry throughout the United States. The Department of Agriculture is responsible for a recent statement in which is shown the increased value of farm products in the United States for the past four years; they are as follows:

In 1905 it was..................................................$6,415,000,000
In 1906 it was..................................................$6,794,000,000
In 1907 it was..................................................$7,412,000,000
In 1908 it was..................................................$8,200,000,000

Surely the farmer has no reason to complain; and yet I wonder how many tillers of this soil in the audience have ever asked themselves the question: “Why am I a farmer?” Your answers may have been about as follows:

1. I do not know enough to be anything else.
2. I am a farmer by inheritance, and I hate it.
3. It is an easy way to get a living.
4. Because I like it and can make money at it.

The first answer is a reflection upon the good common sense of the man who made it; and yet it is a common answer to the question. My friend, if you are farming because you do not know enough to do anything else, you have little heart in the business. You are satisfied to rent out your lands as best you can, allowing the tenant to grow just what he pleases; and he always pleases to grow cotton, to the exclusion of everything else. Some years you do fairly well. You make half a bale of cotton per acre, and you get possibly ten cents per pound for same; but your crop is just a little poorer than it was before the crop was grown. Then comes a poor year, and you have barely enough to live upon. You say to the faithful wife, “We will have to make
the old stove do another year;" and the proposed visit to mother, perhaps not 100 miles away, you will have to postpone. You say to the boys, we cannot have the new buggy, or a new harness, or some new and greatly needed implement on the farm, and the boy who "early gets his head into the game," says to himself, "When I get a little older I will emigrate to a country where people do not confine themselves to one crop and where they can make more than a bare living on the farm." This is exactly what they have been doing throughout Mississippi and Louisiana for the past forty years. Can you blame them? No! But who was at fault? The farmer who made himself believe that it required no brains to farm. He is one of the agencies that is driving the young men from Mississippi and Louisiana when he might by the exercise of his intelligence have been growing a diversity of crops, that would have furnished a net income, even though the boll weevil had destroyed every cotton boll weevil on the place.

The second answer to the question: "I am a farmer by inheritance." Do you know, my friends, that the greatest sin is that of ingratitude, and that when a farm, or anything else, has been handed down to us it should be our pleasure as well as our duty to see that it is transmitted to our descendants in at least as good a condition as when it came to us? Have we any of this kind of farmers in Mississippi and Louisiana? Are your buildings painted and kept in repair? Do you read a strong agricultural paper every week? Have you a thoroughbred sire at the head of your stock herd? Are you careful to test your seed corn and seed cotton in the spring so as to know before planting about what percentage of a crop to expect? Do you see that the boys are respectfully clad and furnished with at least one of the popular magazines that now cost only $1.00 per year? Do you experiment with a variety of crops which interest the boys, to see what can be grown with the greatest profit? If not, you are another recruiting officer for some section other than Mississippi and Louisiana, and if, as you say, you hate farming, my advice is to dispose of the farm as soon as you can to some man who knows the value of Mississippi and Louisiana lands.

The third answer: "It is an easy way to get a living." Well, I hope Mississippi and Louisiana have few such farmers. The man who is looking for something easy generally finds it. He is not worried in the slightest if the gate is off the hinges; if the hogs occupy a rail pen enclosure rather than a comfortable though inexpensive hog-house, he is satisfied. He is the kind of a farmer who thinks the trees plenty good enough for the chickens to roost in. It matters little to him whether the cows are milked at six A. M. and turned to pasture, or eight, nine, or ten o'clock. He regards cotton as the only easy money
crop. He thinks old dishes and worn-out furniture in the house will answer Mother's purpose. He tells the boys he has little use for the new-fangled notions about farming; that he does not believe any of the statements made by truck farmers, and that the good old easy way of working cotton and corn with one mule and a negro between the plow handles is good enough for him. Ah! he forgets that the boy has already visited a neighbor's farm, where the crops are diversified, where they grow a bale of cotton per acre, where the boys have a good horse and buggy they can call their own, where the farm house has many modern conveniences, the stock properly sheltered and some one tell him, "This is the way they farm in other states." Do you wonder he is but waiting for the day when he can say "good-bye" to the old home, and with ambition for his future that is commendable, he leaves the State of his birth.

The fourth answer: "I am a farmer because I like it and can make money at it?" That has the right ring to it. Let us visit this farmer's home. The house is not large, but it has a comfortable gallery; it is kept painted inside and out, and the sleeping rooms are large and airy; the garden is full of flowers; his barns and sheds are neatly painted where every head of stock may be, and every article of machinery is housed. In yonder pasture is a herd of cows, the milk from which is shipped daily to Natchez, Jackson, Memphis, or New Orleans. The fences are kept in repair; the barnyard fertilizer has been so distributed that the meadows and pastures and fields indicate the soil is every year becoming richer instead of poorer; yonder is an alfalfa field from which four crops have already been cut this season, just a short distance from the house is a strawberry patch of five acres that has furnished work for the children of the neighborhood during the picking season, and has increased the farmer's bank account at least $500.00; adjacent to the strawberry field is an acre of tomatoes and another of asparagus and still another of beans; and back of the barns is a cotton field formerly pastured by a herd of thirty cows. Look at it! It was planted early. The stalks are now large, vigorous, and covered with bolls. It will certainly yield one bale per acre, and will mature before the boll weevil can reach it. In yonder pasture are several colts that at the age of three will sell at from $125.00 to $200.00 each. In another pasture there 100 pigs that have grown almost exclusively upon alfalfa and Bermuda grass; and from the road may be seen a field of fifty acres of splendid corn, such as Mr. Taylor grows so successfully at Port Gibson.

It is now eventide. The men are through with the day's work. The horses and mules have all been fed and turned out to pasture.
Everybody seems happy and every condition favorable. If there should be too much rain, some of the crops might be injured. If a drought, some of them would suffer. But if the rains are frequent, the grass in the pasture will increase the flow of milk; if a drought, the cotton will be all the better for it. Whatever may be the weather, they will have plenty of something to eat, and something to spare. Now listen. The farmer says to his eldest son: “John, do you know neighbor Brown wants to sell his farm? How would you like to own it?”

“I don’t know. What is the price?”

“Forty dollars per acre.”

“Is not that too much for it?”

“I don’t think so. Brown, you know, has always been one of those farmers who persisted in growing nothing but cotton; and, of course, his farm is run down; but we could put some cows and hogs on the place, rotate the crops, put in some clover and alfalfa and soon resuscitate it.”

The boy hesitates, and then modestly says:

“Well, Father, I love Mississippi, and I enjoy farming the way you farm; and if you buy the place for me, I will soon try to have it like yours.”

Listen! That farmer was a recruiting officer—not for Texas, but for his own native State. He not only kept his boys at home, but his farm is a standing object lesson of what may be done under a system of diversified farming in Mississippi and Louisiana. But I hear some one say, “That is an exaggerated illustration.” In this you are mistaken. The two States represented in this Institute have better farms and better farmers’ homes than I have described, but I am very free to admit there are far too few of them, and because of this your States have suffered a tremendous drainage upon their population, as already stated.

My friends, we must not only keep the boys at home; but we must continue to urge that our plantations be divided and sub-divided until they can be profitably handled. We must introduce a greater variety of farm crops; we must make more net money than we have been making; and instead of spending it for another farm, we must spend it in making more comfortable and more attractive the home where Mother reigns supreme, and where, amid all the discouragements and vicissitudes of life, the light of love and hope never goes out.

As I have already stated, Mississippi and Louisiana have 40,000,000 acres of splendid land to be developed. It is an immense area, and its settlement, allowing 200 acres to each farm, means an addition to your
population of 200,000 families. Where are these families to come from? If your State press fairly represents the sentiments of your people, you want no more families whose native food is maccaroni and spaghetti, although it has been demonstrated that no nationality can produce so much cotton per acre at so little expense as they. You do not object to a limited number of families who enjoy pretzels and sauerkraut, although you insist that even they shall abandon their habits and customs of the "Faterland." And yet, notwithstanding your prejudice against foreigners, the report of last spring shows that of nearly 1,500 prisoners in the Mississippi penitentiary, only eight of them were foreigners, and not a single Italian among them.

My friends, you can have no controversy with me in any honest attempt to settle up the unoccupied lands of Mississippi and Louisiana with the best families obtainable, and I honor your judgment in wanting more of the horny-handed sons of toil from the North and Northwest; men who have had experience in diversified agriculture; men who know how and when best to sell their crops after they are grown and harvested; men who personally work early and late; who are not ashamed to grow cotton or cane, rice or ramie, corn or cantaloupe, beans or buckwheat, oats or okra, cattle or cucumbers, hogs or hens, cabbage or carrots, mutton or mules, or anything else that promises satisfactory net returns; men who are home builders and want a part in covering Mississippi and Louisiana with splendid farm homes, such as they left in Iowa, Illinois and Indiana.

For years the Illinois Central Railroad Company has been spending thousands of dollars advertising these States, and trying to send you just the kind of people you want. In this it has been successful to a limited extent.

Madison County, Miss., now claims over 500 such families. Tangipahoa Parish, La., has not less than 4,000 and Calcasieu equally as many. In nearly every county in Mississippi and every parish in Louisiana, are now located a few families as a direct and legitimate result of such persistent work. The Natchez Chamber of Commerce struck the key note in recommending small farms and a diversity of crops. I wish their example might be imitated by every business organization in Mississippi and Louisiana.

Mr. Chairman, I have no apology to offer for this long address. The subject is one that should interest every citizen, and especially those of these two commonwealths. The vast area of tillable yet non-productive acreage of land in Mississippi and Louisiana should stir within us a love of State that will find expression in immediate action toward its development.
Let me again repeat: "You must make more money on your farms than in the past. This can certainly be done by an intelligent fertilization, cultivation, diversification and rotation of your crops. The great Mississippi Valley, of which Louisiana is the natural gateway to the sea, is the granary, the corn crib, the packing house, the grand storage, the cotton shed, the sugar warehouse, and the rice store house of the world."

Within a few years the farm products of Mississippi and Louisiana may be loaded into steamers at the docks at Natchez and New Orleans, and without breaking bulk, pass through the Panama Canal to the markets of the Orient. You and I may not live to see it, but the generation to follow will see every foot of land in these two States thoroughly and scientifically drained.

Your public highways, many of which are now next to impassable in winter, will become like city boulevards, as they are in many countries in Europe. The boll weevil that is now ravishing your feelings far more than your fields, will be but a memory; and your fertile fields, now in the market at from $10.00 to $25.00 per acre, will be in demand at prices ranging from $100.00 to $200.00 per acre, as is the case in Iowa and Illinois today. These desirable conditions will be brought about as I verily believe, because you have a soil and a climate that insures the profitable cultivation of cotton and nearly every variety of food products which the markets of the world must have, because in the future a part of your autumn fields will be golden or green, instead of all white, as in the past; your farmers may not grow a less number of bales, but a less acreage of cotton and more of corn, oats, alfalfa, vegetables and fruits. The present remunerative prices for farm products, with the exception of cotton, have not been equalled in the past forty years, and have present indications, have not as yet reached the high water mark. Indeed there is everything to encourage and nothing to discourage the farmers of this territory.

In conclusion, how I covet the eloquence of a Prentiss, that I might impress upon your minds and hearts these great truths! The mother earth has been generous in the bestowment of her best gifts upon the farmers of Mississippi and Louisiana: that the natural resources and possibilities of these agricultural commonwealths are beyond computation: that your market facilities are all that could be desired, and that it is simply incredible and ludicrous to even suggest that the boll weevil, or any other pest, is going to rob you and your posterity of this goodly heritage.