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ALABAMA

Agricultural Experiment Station

OF THE

Alabama Polytechnic Institute

AUBURN

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1. Wintering Steers in Alabama.
2. Fattening Cattle on Pasture in Alabama.

BY

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*In co-operative beef work with Bureau of Animal Industry.

SUMMARY.

PART 1.

1. The cattle used in all of these tests were practically mature ones.

2. Winter rations used:

	1907-'08.	1908-'09.
Lot 1.	Range alone.	Range alone.
Lot 2.	Range plus half ration cottonseed meal and hulls.	Range plus half ration cottonseed meal and hulls.
Lot 3.	Range plus half ration peavine hay.	Range plus half ration cottonseed.
Lot 4.		Range plus half ration cheap hay.

3. In 1907-'08 each range steer (Lot 1) lost 97 pounds in weight. In 1908-'09 each range steer (Lot 1) lost 106 pounds in weight.

4. In 1907-'08 each steer in Lot 2 received 2.35 pounds of cottonseed meal and 8.5 pounds of hulls each day in addition to the range. During the winter of 1908-'09 each steer in Lot 2 received 2.41 pounds of cottonseed meal and 8.71 pounds of hulls daily. The first year each steer lost 6 pounds in weight; the second year each steer gained 3 pounds in weight.

5. In 1907-'08 each steer in Lot 3 was fed a daily ration of 8.5 pounds of good peavine hay in addition to the range; the loss in weight per steer for the winter was 9 pounds.

6. In 1908-'09 cottonseed was tried as a supplement to the range, 4.71 pounds being fed to each steer daily. The loss in weight per steer for the winter was 40 pounds.

7. In 1908-'09 cheap hay was used in Lot 4 to supplement the range, 11.8 pounds being fed to each steer daily. The winter loss per steer was 40 pounds.

8. The total cost to winter each steer in 1907-'08 was $4.70 and $3.57 in Lots 2 and 3 respectively. The total cost to winter each steer in 1908-'09 was $5.63, $3.23 and $2.06 in Lots 2, 3 and 4 respectively.

9. In 1907-'08 the fall buying price was $2.50 per hun-

dred weight. When the expense of wintering the steers was added to the fall price the spring prices were found to be $2.89, $3.17 and $3.03 per hundred weight in Lots 1, 2 and 3 respectively.

10. In 1908-'09 the fall buying price was $2.56 per hundred weight. When the expense of wintering the steers was added to the fall price, the spring prices were found to be $3.01, $3.34, $3.20 and $3.09 per hundred weight in Lots 1, 2, 3 and 4 respectively.

Part II.

1. The steers which were used in the above winter work were re-divided into lots and continued into the summer feeding work.

2. In 1908 the steers were fed for a period of 112 days on pasture. In 1909 they were fed for 154 days.

3. The summer rations were:

	1908.	1909.
Lot A	Pasture alone.	Pasture alone.
Lot B	Pasture plus cottonseed cake.	Pasture plus cottonseed cake.
Lot C	Pasture plus "Caddo" cake.	
Lot D	Pasture plus cottonseed cake.	
Lot E		Pasture plus cottonseed.

4. In 1908 the amount of feed used daily per steer, in addition to the pasture, was 3.31 pounds, 3.31 pounds and 2.76 pounds in Lots B, C and D respectively. In 1909 the daily amount of feed used per steer to supplement the pasture was 3.40 pounds and 4.49 pounds in Lots B and E respectively.

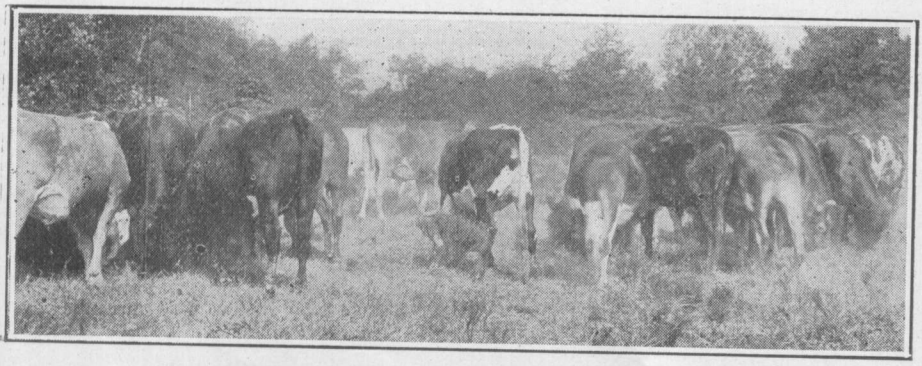
5. In 1908 the average daily gains were 1.51, 2.32, 1.84 and 1.62 pounds in Lots A, B, C and D respectively. In 1909 the average daily gains were 1.74, 1.88 and 2.06 pounds in Lots A, B and E respectively.

6. In 1908 the total cost to make one hundred pounds gain was $1.18, $2.56, $3.03 and $3.24 in Lots A, B, C and D respectively. In 1909 the total cost to make one hundred pounds of gain was $1.03, $3.21 and $2.39 in Lots A, B and E respectively.

7. In 1908 the net profits per steer were $2.86, $10.42, $6.62 and $0.43 in Lots A, B, C and D respectively. In 1909 the net profits per steer were $7.06, $6.99 and $8.39 in Lots A, B and E respectively.

8. In 1908 the steers dressed out (farm weights) 49.5 per cent, 53.8 per cent, 53.6 per cent and 52.7 per cent in Lots A, B, C and D respectively. In 1909 they dressed out (farm weights) 51.8 per cent, 54.2 per cent and 53.9 per cent in Lots A, B and E respectively.

9. These experiments are being continued at the present writing.



Some Alabama grass steers. In Experimental work in summer 1909.

1. Wintering Steers in Alabama.
2. Fattening Cattle on Pasture in Alabama.

By Dan T. Gray and W. F. Ward.

INTRODUCTION.

In Bulletin No. 150* are published the results of the information which was collected by the Alabama Experiment Station and the Bureau of Animal Industry at Washington in a three years' test to determine the cost of raising a beef calf. One point is brought out clearly in that work, namely, that if money is to be made upon beef operations, the steer must be properly finished for the market before he is offered for sale. If the steer is sold unfinished, the man who raised him is almost sure to lose money on the operation.

The question arises, then, How shall the steer, after he has been raised, or has reached the feed-lot period, be finished for the market to get the greatest possible profit out of him? The steer can be finished in one of two ways: he can be fattened during the winter months, or he can be

*Those interested in the subject of beef production can get the bulletin by writing to the Alabama Experiment Station at Auburn, or the Bureau of Animal Industry at Washington.

fattened during the summer months while the pastures are available. Since the co-operative beef work between the Alabama Experiment Station and the Bureau of Animal Industry began, some results have been published relative to winter fattening.** The present bulletin presents the results of two years' work in fattening cattle upon pasture during the summer months and selling the cattle at the end of the summer. It should be understood that this bulletin is only a report of the progress of the work, as the experiments are being continued.

DETAILS OF THE EXPERIMENTS.

Plan of the Work.

The cattle were bought in the fall, on account of the fact that they could be bought much cheaper in the fall than in the spring. In fact, they could hardly be bought at all in the spring. But they were not to be fattened until the following summer, so it became necessary to make a study of the cheapest and best methods of getting these mature steers through the winter months. So the work was divided into:

1. A study of methods of wintering mature steers,
2. Fattening these steers on pasture the following summer.

The cattle used in the winter's work were continued into the following summer's work.

Cattle Used.

The various pictures will show the kind of cattle which were used in these tests. Grade Aberdeen-Angus, Shorthorn, Hereford, and Red Polled were used. Many of them had a predominance of Jersey and scrub breeding. They were all bought of farmers in Sumter, Wilcox, Marengo, and neighboring counties, so they represented the average cattle of the western part of Alabama. They varied from two to four years in age. As will be seen later, the average weight at the beginning of the fall work was about 750 pounds each.

**See Bureau of Animal Industry Bulletin No. 103.

How the Work was Carried on.

Owing to the fact that pasture was not available upon the Experiment Station at Auburn, Alabama, the work was carried on upon the farms of Cobb and McMillian of Sumterville, Alabama, who kindly agreed to co-operate with the Alabama Experiment Station and Bureau of Animal Industry. The winter range and summer pastures were divided into lots suitable for the work. One of the authors of this bulletin, Mr. W. F. Ward, was stationed upon the farm and had personal supervision of all the experimental work.

At the end of each experiment the cattle were all shipped to the New Orleans market, where complete sale and slaughter records were secured.

Lot 1.—*End of winter* 1908. *Feed, range alone. Total winter gain of each steer,*—97 *pounds. Total cost to winter each steer,* (?).

The Winter Range.

The winter range consisted of the winter corn and cotton fields. The leaves had not been stripped from the corn stalks. Crab grass had grown up sufficiently between the rows of corn after the last cultivation, to be of some value to the cattle during the early weeks of the winter. No cane brakes were used. The cattle, except those in the range lots, were not given unlimited range; each lot was confined to a certain area. Of course, the man who has cane brakes

has an advantage in handling and feeding cattle in the winter time. Those animals which were confined in limited areas had about ten acres each upon which to graze. The outside cattle, or range lot, had an unlimited grazing area.

The winter range was available for use immediately after the cotton had all been picked.

Summer Pasture.

The summer pasture used in these experiments consisted of a mixture of sweet clover (Melilotus), Japan clover (Lespedeza), Johnson grass, crab grass, and some bermuda. The sweet clover became available for grazing about April 1, while the Japan clover was not ready until about June 15. In some sections of the country sweet clover is considered a pest, as stock will not eat it, but in the South, or at least in Alabama, all kinds of stock eat it with great relish: here they take to the sweet clover as readily as to alfalfa.

The pasture was divided into lots; the size of each lot depending upon the number of cattle grazed upon it, and as to whether the steers were to be fed a concentrated supplement or not. The object was to have an abundance of pasture for each bunch of cattle.

Method of Feeding and Handling the Cattle.

In both the winter and summer work the steers were fed but once a day. In the winter time movable feed troughs were placed out in the fields in which to feed the hulls, cottonseed meal and cottonseed, and movable hay racks were made in which to feed the hay. The racks and troughs were all made movable so that the manure would be distributed over the corn and cotton fields.

Movable feed troughs were also used during the summer feeding on pasture. No feeds were thrown upon the ground.

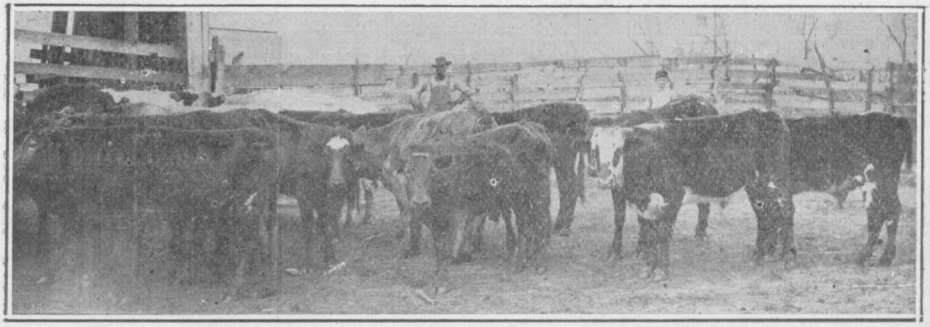
No shelter, except trees, was provided for the cattle in either the winter or summer time. They had no access to sheds. They did not suffer to any appreciable extent from the cold in the winter time or from the heat in the summer time. The summer pastures were well provided with good shade trees. When a summer shade is provided, cattle will

not suffer as much from heat in Alabama as they will in Illinois or Iowa.

While there were ticks in the pastures, the cattle were not permitted to become badly infested with them; a dipping vat was used to keep down heavy infestation. In the two years' work, during which time over 300 head of cattle were fattened, there were only four cases of Texas fever, and none of these cases was lost. In future work it is expected that the tick will be entirely eliminated.

The weight of each steer was secured at the beginning and end of each test. The total weight of each lot was secured every twenty-eight days.

When the steers were sold they had to be driven nine miles to a shipping point.



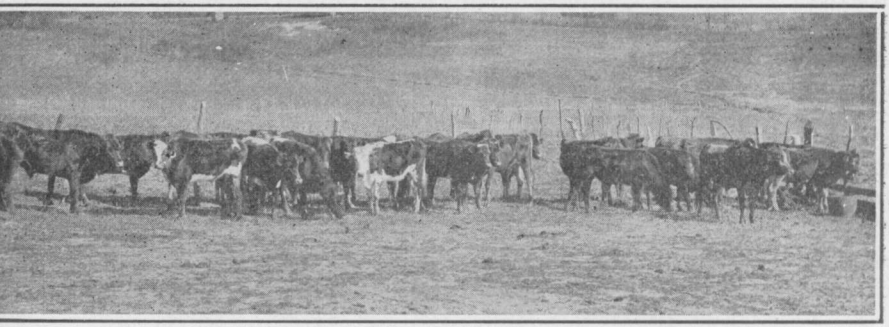
LOT 2.—*End of winter* 1908. *Feed, cottonseed hulls and cottonseed meal plus range. Total winter gain of each steer,* —6 *pounds. Total cost of wintering each steer,* $4.70.

PRICE OF FEEDS USED.

When the feeds were purchased upon the market, the market price plus the expense of hauling to the farm, was used in making up the financial statement. When the feed used was grown upon the farm an assumed market price was placed upon it. Local conditions determine to a large extent, the farm prices of feeds. Any prices that the authors might assume would not meet all conditions, but the following prices have been taken as a basis upon which to rest the financial estimates:

Cottonseed meal	$26.00 per ton
Cottonseed	14.00 per ton
"Caddo" cake	23.00 per ton
Cottonseed cake	25.00 per ton
Cottonseed hulls	6.00 per ton
Damaged hay	5.00 per ton
Cowpea hay	10.00 per ton
Pasture	.50 per month per steer

The above represents the prices of the purchased feeds laid down on the farm; the farm was fourteen miles from the railroad station. The cottonseed cake, which had been broken into nut size and sacked, was purchased from the Epes Cotton Oil Co. of Epes, Alabama. This cake can be purchased in the large cake size, just as it comes from the



LOT 3.—*End of winter* 1908. *Feed, peavine hay and range. Total winter gain of each steer,* —9 *pounds. Total cost of wintering each steer,* $3.57.

press, for about two dollars a ton cheaper than in the nut size. Some feeders find that it pays to break the cake on their own farms. The cake is the same thing as the cottonseed meal, except that it is not ground into a meal. There are several advantages in feeding cake in place of cottonseed meal—especially in summer feeding. A rain does not render the cake unpalatable; but it will often put the meal in such a condition that the cattle will not eat it. Again, no loss is incurred with the cake during windy days; cottonseed meal, when fed in the open pasture, is wasted on account of the winds. Furthermore the cake requires chewing before

being swallowed and therefore must be eaten very much slower than the meal, so when a number of steers are being fed together the greedy one has little chance to get enough cake to produce scours. In feeding cottonseed meal the greedy steer often scours on account of the fact that he can bolt the meal and get more than his share; this not only injures the steer but makes the bunch "feed out" unevenly.

The "Caddo" cake was purchased from the Caddo Cotton Oil Company of Shreveport, Louisiana. "Caddo" cake is the cake left after extracting the oil from the cottonseed by the cold process. That is, it is made up of both the cake and the hulls; or it consists of everything in the seed except the oil. These tests do not show it to be as valuable for feeding purposes as the ordinary cottonseed cake. The chemical, analysis of the "Caddo" cake fed, as reported by the State Chemist, Dr. B. B. Ross, of Auburn, was as follows:

Moisture	9.75 per cent.
Ash	4.70 per cent.
Fibre	21.18 per cent.
Protein	27.62 per cent.
Ether Extract (oil)	8.78 per cent.
Carbohydrates	27.97 per cent.

The mixed hay was a second or third class hay that could not be sold upon the market at all. It consisted of a mixture of Johnson grass, crab grass, and some alfalfa. The price placed upon it was all it was worth.

The cow pea hay was bright and of good quality.

PART I.

Wintering The Cattle.

As previously stated, the steers were bought in the fall of the year as they could then be secured cheaper than at any other date. In fact, in western Alabama where the work was done, the cattle could not be purchased in the spring at all. The object was to get these steers through the winter months as economically as possible and fatten them on pasture the following summer. Farmers are not agreed as to what is the best way to handle and feed mature steers during the winter months. Some farmers claim that the animals should be "roughed" through the winter upon a very small amount of feed in addition to the winter range; some hold that the range needs no supplementary feed at all; still others believe that the steer should be fed liberally so that he will be kept gaining all through the winter months.

The cattle used in the winter work were dehorned, tagged, and divided into lots (Three lots in the winter of 1907-'08, and four lots in the winter of 1908-'09) so that a study could be made of the amount of feed that should be fed during the winter time, and also to learn the value of some of the Southern feeds for carrying cattle through the cold months.

Gains during the Winter Months.

The winters of 1907-'08 and 1908-'09 were both mild ones. There was no weather cold enough to make the steers suffer, although, as before mentioned, there was no shelter at all, except a few trees. The following table shows the ration fed, total weights, and gains of each lot for the two winters:

TABLE 1. *Gains During Winter* 1907-'08—(84 *days.*)

Lot	No. of animals	RATION	Initial weight each steer Dec. 9	Final weight each steer March 3	Average total gain each steer	Average daily gain each steer
			Lbs.	*Lbs.*	*Lbs.*	*Lbs.*
1	26	Range alone	722.	625.	—97.	—1 15
2	29	Range plus half ration cotton-seed meal and hulls	726.	720.	— 6.	— .07
3	24	Range plus half ration peavine hay	724.	715.	— 9.	— .11

Gains During Winter 1908-'09—(98 *days*).

			Dec. 4	Mch. 12		
1	25	Range alone	705.	599 0	-106.	-1.08
2	25	Range plus half ration cotton-seed meal and hulls	705.	708.	3.	.03
3	25	Range plus half ration cotton-seed	706.	666.	—40.	—.40
4*	25	Range plus half ration cheap hay	689.	649.	—40.	—.57

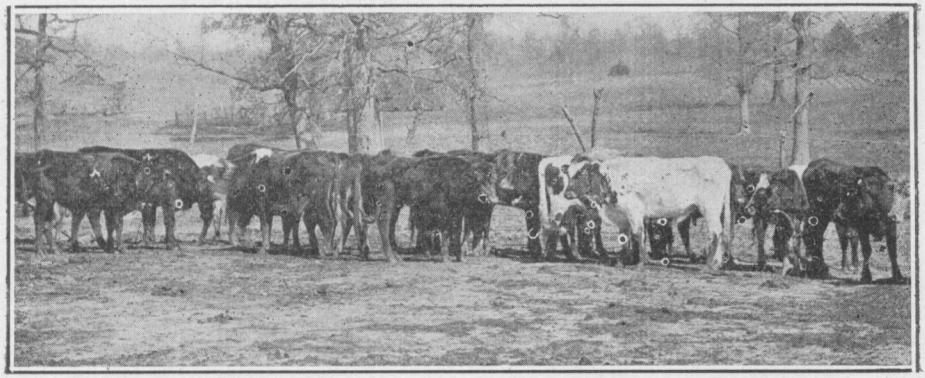
*This lot started in test January 1st, so fed only 70 days.

It was intended that the steers which received some feed in addition to the range should suffer no loss in weight during the winter months, but in some cases the loss was considerable during the latter part of the winter period when the range afforded very little grazing. The object was to give just enough feed, in addition to the range, to enable the cattle to hold their fall weight. No gains in live weight were desired. It should be remembered that these were all practically mature cattle, varying from two to four years in age.

During the first winter the experiment continued from December 9 to March 3, a period of 85 days. During this time the range cattle (Lot 1) lost 97 pounds each in live weight while the steers in Lots 2 and 3 practically held their fall weights. All of the cattle came through the winter in excellent health. While the cattle in the range

lot were thin at the end of the winter season, still they were in good condition for grazing; they evidently had not been weakened in any way. At the opening of the spring the steers in the peavine hay lot (Lot 3) seemed to be in better thrift than those in Lot 2, (the cottonseed meal and hulls lot), but they made practically the same gains in weight during the following summer. The hay used in 1907-'08 was of good quality.

During the winter of 1908-'09, the test continued from December 4th to March 12th—a period of 98 days. There were practically the same loses in live weight as the previous winter in Lots 1 and 2. In the range lot each steer lost 106



LOT 1.—*End of winter* 1909. *Feed, range alone. Total winter gain of each steer,* —106 *pounds. Total cost of wintering each steer,* (?).

pounds. The steers in Lots 3 and 4 lost rapidly in weight the last month of the test, due to the fact that the grazing on the range was not good at the end of the season; it was not intended that they should shrink in weight. Lot 4 was not started in the test until January 1, so the cattle in this lot were fed only seventy days. The hay used by Lot 4 was a very cheap hay; it was made up of a mixture of Johnson grass, crab grass, and some alfalfa, but had been damaged by rain to such an extent that it could not be sold at all.

AMOUNT OF WINTER FEEDS USED.

During the winter of 1907-'08 a comparson was made between feeding on the range alone and the same range when supplemented in one lot with a part ration of cottonseed meal and hulls, and in a third lot with a good quality of cow pea hay. The following winter (1908-'09) the same comparison was again made as regards Lots 1 and 2, while in a third lot cottonseed was used and in a fourth lot some damaged mixed hay was used to supplement the range.

TABLE 2. *Feeds used Winter* 1907-'08—(84 *days*).

Lot	No. of steers	RATION	Total amount consumed per steer		Daily amount feed consumed per steer	
			Concentrates	Roughage	Concentrates	Roughage
			Lbs.	*Lbs.*	*Lbs.*	*Lbs.*
1	26	Range alone	None	None	None	No e
2	29	Range plus half ration cotton-seed meal and hulls	197	714	2.35	8.5
3	24	Range plus half ration cow pea hay	None	714	None	8.5
		Feeds used Winter 1908-'09—(98 *days*).				
1	25	Range alone	None	None	None	None
2	25	Range plus half ration cotton-seed meal and hulls	236	854	2.41	8.71
3	25	Range plus half ration cotton-seed	462	.....	4.71	.....
4*	25	Range plus mixed hay	.....	826	.....	11.8

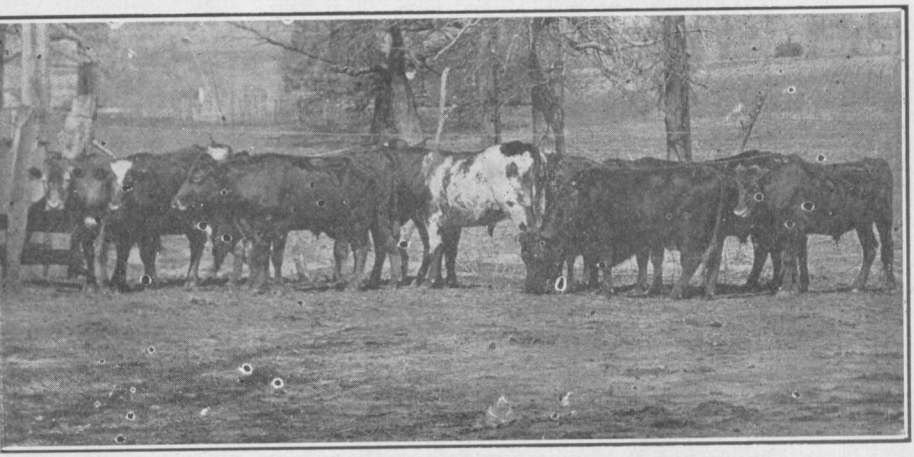
*This lot was fed only 70 days—January 1st to March 12th.

There was no way to determine how much feed was secured from the range as far as pounds were concerned. Each steer had ten acres as winter range. The steers in Lot 1, the range lot, had to be turned out upon the general range each winter about a month before the end of the test, as their range of ten acres each had become exhausted

about thirty days earlier than was the case with those lots which were receiving supplementary feeds.

During the first winter each steer in Lot 2 consumed, in addition to the range, 197 pounds of cottonseed meal and 714 pounds of hulls, while each steer the second winter ate 236 pounds of cottonseed meal and 854 pounds of hulls. In 1908-'09 the animals were fed fourteen days longer than they were in the winter of 1907-'08. Each steer's daily ration was kept a little below 2.5 pounds of cottonseed meal and 8.5 to 8.71 pounds of hulls.

During the second winter the steers in Lot 3 were carried



LOT 2.—*End of winter* 1909. *Feed, cottonseed hulls and cottonseed meal plus range. Total winter gain of each steer,* 3 *pounds. Total cost of wintering each steer,* $5.63.

through the winter on cottonseed as a supplement to the range. It was learned that 4.71 pounds of cottonseed per steer per day was not quite sufficient to keep the animals from losing weight. Each steer lost 40 pounds in weight during the winter period of 98 days.

In the first winter's work it is seen that 8.5 pounds of good peavine hay, along with the range, afforded the steers sufficient daily feed to allow them to maintain a practically uniform weight. Or, when Lots 2 and 3 (1907-'08) are compared, it is seen that 714 pounds of cowpea hay were practically equal in feeding value to 197 pounds of cotton-

seed meal plus 714 pounds of cottonseed hulls. In other words, the cowpea hay was worth $13.02 per ton for wintering mature cattle compared with cottonseed meal and hulls, when the meal is valued at $26.00 a ton and the hulls at $6.00 a ton.

During the second winter (1908-'09) each steer in the cottonseed lot (Lot 3) lost about 42 pounds more in live weight than did the animals in the cottonseed meal and hulls lot (Lot 2); but still, when cottonseed is valued at $14.00 a ton it is probably cheaper than cottonseed meal and hulls for wintering steers.

The daily expense of feeding each steer on cottonseed meal and hulls was 5.7 cents, while the daily cost of the cottonseed per steer was only 3.3 cents. While not enough cottonseed was used to prevent loss in weight, still the amount fed daily to each steer (4.71 pounds) would probably not have to be increased very much to make the steers hold their fall weights. It would require 8.2 pounds of cottonseed, at $14.00 a ton, to cost as much as the 2.41 pounds of cottonseed meal plus the 8.71 pounds of hulls which were fed to each steer daily in Lot 2.

When this test was made cottonseed cost but $14.00 a ton. Since that time they have advanced about one hundred per cent in value, so that it would now be unwise to use cottonseed as a winter feed for steers.

It should be remembered that these were mature steers, and that such steers are capable of making use of the rough waste feeds during the winter months. Cattle of this age can use feeds that would be entirely unsuited to young growing animals. In handling and feeding mature steers during the winter months the object should be to make use of all the rough feeds and unsalable hays before any high priced feeds, as cottonseed meal, are used.

Winter Gains of Steers by Months.

Every farmer has old corn and cotton fields which afford some winter feeds for the cattle. As the winter advances the range usually affords a smaller and smaller amount of feed. The following table shows the gain of the various lots from month to month. From this the reader can gather

some idea of when the heavy losses usually occur, and regulate the amount of supplementary feeds accordingly.

TABLE 3. *Gains of Steers by Months* 1907-'08—(84 *days*).

Lot	RATION	Gains 1st month, Dec. 10 to Jan. 7th	Gains 2nd month, Jan. 7 to Feb. 4th	Gains 3rd month, Feb. 4 to March 3rd	Gains 4th month
		Lbs.	*Lbs.*	*Lbs.*	*Lbs.*
1	Range alone	—4.	—38.	—55.	
2	Range plus half ration cottonseed meal and hulls	16.	—10.	—12.	
3	Range plus half ration peavine hay.	15.	—16.	— 8.	

1908-'09—(98 *days.*)

		Dec. 4 to Jan. 1st	Jan. 1 to Jan. 29	Jan. 29 to Feb. 26	Feb. 26 to Mch. 12
1	Range alone	—40.	—43.	— 7.	—16.
2	Range plus half ration cottonseed meal and hulls	18.	—12.	— 5.	2.
3	Range plus half ration cottonseed	0.	—16.	—46.	22.
4	Range plus half ration mixed hay	.....	—13.	—23.	— 4.

During each year's work those steers which received feed in addition to the range were started on a very small daily allowance. This amount was increased every few days for 28 days, when it was held uniform for the remainder of the winter. During the first winter's work the range cattle (Lot 1) practically held their initial weight during the first 28 days. As time went on and the range became shorter they lost more and more in weight. This is what should be expected. But the heaviest losses in 1908-'09 were experienced at the early part of the winter. However this winter was an unusual one. It was very rainy and muddy during the early months, so that the cattle were very uncomfortable and could not graze well. During the last of the winter very little rain fell, spring set in early

so as a matter of fact, the grasses put up early and the range cattle had some green feed during the last month in addition to the range.

As stated elsewhere, all of these cattle came through to spring in good grazing condition; they were strong and active, although the steers in the range lots (Lot 1) had fallen off in live weight about 100 pounds each.

LOR 3.—*End of winter* 1909. *Feed, cottonseed plus range. Total winter gain of each steer,* —40 *pounds. Total cost of wintering each steer,* $3.23.

FINANCIAL STATEMENT FOR WINTER WORK.

In the fall of 1907 the steers cost $2.50 per hundred weight, but the next fall, 1908, feeders had advanced some in price, making the fall price average $2.56 per hundred weight. The following spring cost was of course considerably greater than the fall price for two reasons. First, the cattle were not as heavy as they were the previous fall, and second, the cost of the winter feed had to be added to the fall price. The fall cost, plus the depreciation in live weight, plus the cost of winter feed made the steers cost around $3.00 per hundredweight in the spring. The following table, No. 4, shows the spring cost by lots. The average of these spring costs was taken as the initial cost of the steers in the summer feeding work which followed. The average cost of wintering each steer in the various lots,

together with the difference in value between fall and spring, are as follows:

TABLE 4. *Financial Statement.*

1907-'08.

Lot 1.	Range alone:		
	To 722 lbs. steer at $2.50 per hundred wt.	$18.05	
	By value of same steer in spring, 625 lbs. at $2.89 per hundredweight		$18.05
		$18.05—	$18.05
Lot 2.	Range plus cottonseed meal and hulls:		
	To 726 lbs. steer at $2.50 per hundred wt.	$18.15	
	To 714 lbs. cottonseed hulls at $6.00 per ton	2.14	
	To 194 lbs. cottonseed meal at $26.00 per ton	2.56	
	By value steer in spring 720.5 lbs. at $2.89 per hundred weight		$20.82
	By required increase in value over range steer to break even, 28c per hundredweight		2.03
		$22.85—	$22.85
Lot 3.	Range plus peavine hay:		
	To 724 lbs. steer at $2.50 per hundred wt.	$18.10	
	To 714 lbs. peavine hay at $10.00 per ton	3.57	
	By value steer in spring, 715 lbs. at $2.89 per hundred weight		$20.65
	By required increase in value over range steer to break even, 14c per hundredweight		1.02
		$21.67—	$21.67

1908-'09

Lot 1.	Range alone:		
	To 705 lbs. steer at $2.56 per hundred wt.	$18.05	
	By value same steer in spring, 599 lbs. at $3.01 per hundredweight		$18.05
		$18.05—	$18.05
Lot 2.	Range plus cottonseed meal and hulls:		
	To 705 lbs. steer at $2.56 per hundred wt.	$18.05	
	To 854 lbs. cottonseed hulls at $6.00 per ton	2.56	
	To 236 lbs. cottonseed meal at $26.00 per ton	3.07	
	By value steer in spring, 708 lbs. at $3.01 per hundredweight		$21.31
	By required increase in value over range steer to break even, 33c per hundredweight		2.37
		$23.68—	$23.68

Lot 3. Range plus cottonseed:		
To 706 lbs. steer at $2.56 per hundred wt.	$18.08	
To 462 lbs. cottonseed at $14.00 per ton .	3.23	
By value steer in spring, 666 lbs. at $3.01 per hundredweight		$20.05
By required increase in value over range steer to break even, 19c per hundredweight		1.26
	$21.31	—$21.31
Lot 4. Range plus cheap hay:		
To 703 lbs. steer at $2.56 per hundred wt.	$18.00	
To 826 lbs. waste hay at $5.00 per ton ..	2.06	
By value steer in spring, 649 lbs. at $3.01 per hundredweight		$19.53
By required increase in value over range steer to break even, 8c per hundredweight		.53
	$20.06	—$20.06

LOT 4.—*End of winter* 1909. *Feed, coarse hay plus range. Total winter gain of each steer,* —40 *pounds. Total cost of wintering each steer,* $2.06.

The total cost to winter each steer in 1907-'08 was $4.70 and $3.57 in Lots 2 and 3 respectively. The range has no price placed upon it, although the results show that it has a very great value. The total cost to winter each steer in 1908-'09 was $5.63, $3.23 and $2.06 in Lots 2, 3 and 4 respectively.

After the cost of wintering the cattle and the winter shrinkage were added to the fall buying price the spring cost was obtained. The spring costs in Lots 1, 2, and 3 in

1907-'08 were $2.89, $3.17 and $3.03 per hundred weight respectively. In 1908-'09 the spring costs were $3.01, $3.34, $3.20, and $3.09 per hundred weight in Lots 1, 2, 3, and 4 respectively.

It is seen that the cheap coarse feeds produced about as good results as the high priced feeds, and at the same time the steers were carried through the winter much more economically with the cheap than with the expensive feeds. It will always pay to make use of the coarse or cheap winter feeds for the mature steers and save the high-priced feeds for the young animals of the farm.

It is well known that the effects of feeding mature cattle through the winter months continue throughout the following grazing season. Those mature cattle which make the most gain through the winter may be expected to make the smallest gains the following summer. This has been found to be true in this work, but a detailed presentation of this point will be found in later publications.

TABLE 5. *Total Summary of Winter Work.*

	1907-'08—84 days			1908-'09—98 days			
	Lot 1 Range alone	Lot 2 Range and cottonseed meal and hulls	Lot 3 Range and peavine hay	Lot 1 Range alone	Lot 2 Range and cottonseed meal and hulls	Lot 3 Range and cottonseed	Lot 4 Range and waste hay
Average weight of steers at beginning of test	722 lbs.	726 lbs.	724 lbs.	705 lbs.	705 lbs.	706 lbs.	689 lbs
Total gain per steer for whole winter	—97. lbs	—6. lbs.	—9. lbs.	—106 lbs.	3. lbs.	—40. lbs	-40. lbs.
Average daily gain per steer	lbs. —1.15	lbs. —.07	lbs. —.11	lbs. —1.08	lbs. .03	lbs. —.4	lbs. —.57
Concentrates consumed per steer per day	.....	2.35 lbs.	.....	.....	2.41 lbs.	4.71 lbs.	.....
Roughage consumed per steer per day	.....	8.5 lbs	8.5 lbs.	.....	8.71 lbs.	.....	11.8 lbs
Average expense to winter each steer	.....	$4.70	$3.57	.....	$5.63	$3.23	$2.06
Initial, or fall cost of steers per cwt.	$2.50	$2.50	$2.50	$2.56	$2.56	$2.56	$2.56
Total cost steers per cwt in spring	$2.89	$3.17	$3.03	$3.01	$3.34	$3.20	$3.09

PART II.

Fattening Cattle on Pasture.

INTRODUCTION.

As a rule the ordinary permanent pasture in Alabama can be depended upon to furnish grazing from about April 1 to some time in October. The frosts usually kill the pastures in October. By making use of winter growing plants, such as burr clover, the grazing season can be opened about February 1 and sometimes even earlier.

A common mistake is to overstock the pastures. When this is done the grass often becomes short in August and September, and the cattle actually lose in weight instead of making a gain. The South often experiences a drought in August and September, therefore the farmer should have no more cattle on hand than can be well cared for during the grazing period.

The pastures used in this test, as stated before, were made up of several kinds of grasses. No one kind of plant was depended upon entirely. Johnson grass, Japan clover, and Melilotus were the most important grazing plants used. In addition to these some bermuda and crab grass were also found. If the pastures are to be improved each year, and the grazing season extended over as many months as possible, several plants must be made use of.

The cattle used in the summer feeding work were the same ones as had been used in the preceding winter's experimental work. When grass appeared in the spring the winter work was discontinued, the cattle redivided into lots, and the summer feeding work was begun immediately. Some steers, which had not been in the winter experiment, were added to the summer work. These extra steers had been fed nothing through the winter months except what they obtained on the open range. They were of the same quality as the steers which had been used in the winter tests.

All of these cattle had been dehorned the previous fall.

DETAILS OF THE EXPERIMENT.

Gains During the Summer Feeding.

The gains as recorded in the following table will show that the pastures used were good ones. It should be remembered, too, that as a result of feeding upon these pastures they are getting better and better as time goes on.

The following table sets forth, in a tabulated form, the total and daily gains of the steers for the summers of 1908 and 1909:

Table 6. *Total and Daily Gains During the Pasture Feeding Test.*

Lot	No. of steers	RATION	Average initial weight per steer	Average final weight per steer	Total gain per steer	Average daily gain per steer
			Lbs.	Lbs.	Lbs.	Lbs.
		1908—(112 *days*).				
A	26	Pasture alone	732	902	170	1.52
B	26	Pasture plus cottonseed cake	739	999	260	2.32
C	26	Pasture plus "Caddo" cake	738	944	206	1.84
D*	54	Pasture plus cottonseed cake	532	713	181	1.62
		1909—(154 *days*).				
A	40	Pasture alone	647	915	268	1.74
B	75	Pasture plus cottonseed cake	639	929	290	1 88
E	25	Pasture plus cottonseed	653	970	317	2.06

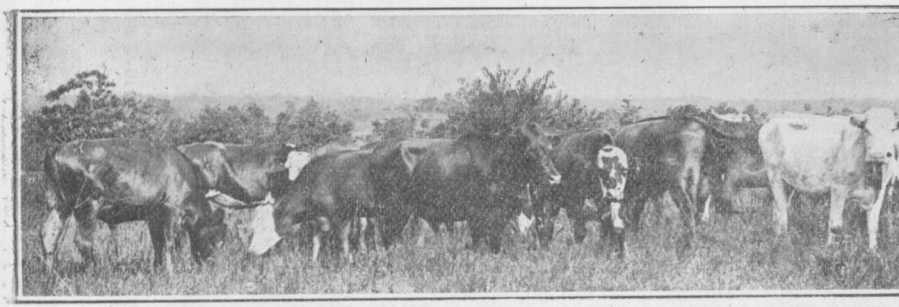
*The cattle in Lot D were not of the same grade as those in Lots A, B, and C, so really Lot D can not be compared with the other lots. Lot D was made up of a bunch of mixed cattle with no special breeding, and ranging from two to five years in age. The object in handling this bunch was to see if money could be made on such cattle. They had not been dehorned.

It is seen that, in every case, those cattle that received some supplementary feed gained more rapidly than those which received no feed but pasture. Of course, the more rapid a steer gains the quicker he can be gotten in shape for the market, and this is a very important point, as the

early fall steer does not come into competition with the fall stuff that is being brought into the market off grass.

As far as gains were concerned, the cattle did reasonably well both years. They were not grazed through the whole summer season, so the total gains, as represented in the sixth column, do not represent as great gains as can be made during a whole summer's grazing season. In 1908 they were grazed only 112 days, and in 1909 the test continued for 154 days. The best portion of the grazing season had been used however, as the cattle were sold from the first of August to the first of September.

In both years the cattle which received cottonseed cake in addition to the pasture gained more rapidly than did the



LOT A.—*End of summer* 1908. *Feed, pasture alone. Average daily gain of each steer,* 1.52 *pounds. Cost of* 100 *pounds of gain,* $1.18. *Total profit per steer,* $2.86.

pasture cattle. In 1908 the difference in favor of the cattle which had been fed was very marked, but in 1909 the difference between the two lots was not very pronounced. In 1909, Lot E the cottonseed lot, made the most satisfactory gains, it making an average daily gain of 2.08 pounds, while Lots B and A made average daily gains of 1.88 and 1.74 pounds respectively.

FEEDS CONSUMED.

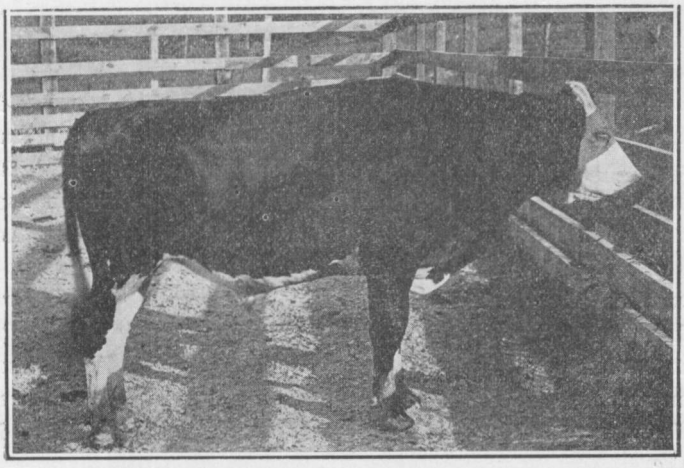
The cattle were fed but once a day; this was done each afternoon about sundown, or in the cool of the evening, in order that the steers would all come out to the feed troughs. The steers were started upon a small amount of feed, and

as they became accustomed to it the amount was gradually increased. The following tables will show that the concentrates were fed sparingly all through the tests.

The following table (table 7), shows the total amount of concentrates fed each steer for each year, the average daily feed, and the amount of concentrates required to make one hundred pounds of gain:

TABLE 7. *Feeds Consumed* 1908—(112 *days*).

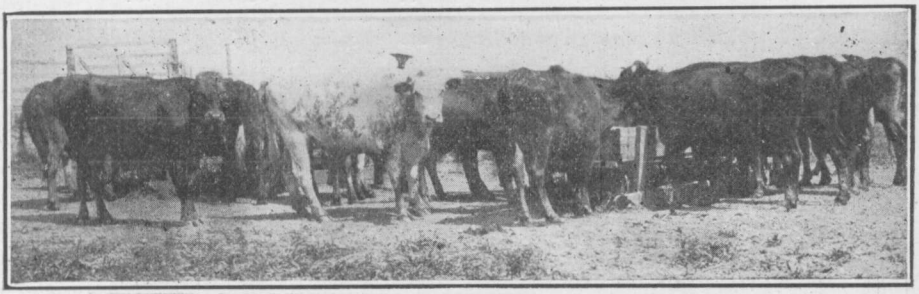
Lot	Number cattle	RATION	Total amount feed consumed per steer	Amount feed eaten per day per steer	Pounds feed to make 100 pounds gain
			Lbs.	Lbs.	Lbs.
A	26	Pasture alone	.....	.....	.....
B	26	Pasture plus cottonseed cake ..	371	3.31	143.
C	26	Pasture plus "Caddo" cake ...	371	3.31	180.
D	54	Pasture plus cottonseed cake ..	309	2.76	171.
		1909—(154 *days*).			
A	80	Pasture alone.....	.....	.....	.....
B	75	Pasture plus cottonseed cake ..	524	3.40	181
E	25	Pasture plus cotton seed	691	4.49	218



STEER OF LOT B.—*End of summer* 1908. *Feed, cottonseed cake and pasture.*

Lot A received no feed in addition to the pasture as one object was to learn whether it would pay to supplement the pasture with a concentrate. During the summer of 1908 each steer in Lot B was given daily 3.31 pounds of cottonseed cake in addition to the pasture: in 1909 each steer in this lot was fed 3.4 pounds of the cake per day in addition to the pasture. In 1908 "Caddo" cake was used in one lot so that its value as a feed could be compared to cottonseed cake. The steers in Lot D in 1908 (these were a mixed bunch of steers and cannot be compared directly to the other three lots), on account of being smaller than the ones in the other lots, were fed only 2.76 pounds of cottonseed cake per head per day. In 1909 cottonseed was fed to Lot E.

When looking at the last column it is seen that the cot-



Lot B.—*End of summer* 1908. *Feed, cottonseed cake and pasture.*
Average daily gain of each steer 2.32 *pounds.*
Cost of 100 *pounds of gain* $2.56
Total profit per steer 10.42

tonseed cake was more efficient than the "Caddo" cake for making gains. In 1908 only 143 pounds of cottonseed cake were required to make one hundred pounds gain, while 180 pounds of the "Caddo" cake were required to make the same number of pounds gain. Lot D cannot be compared to Lots B and C. It is true that the "Caddo" cake did not cost as much as did the cottonseed cake, but it will be seen later, when the cost of the feeds are taken into consideration, that the cottonseed cake was the more economical feed to use. Under the conditions of this test one pound of cottonseed cake was equal, in feeding value, to 1.28 pounds of "Caddo" cake.

During the summer of 1909 a direct comparison was made between cottonseed cake and cottonseed as feeds to be used to supplement pastures. Under the conditions of this test one pound of cake proved to be equal to 1.21 pounds of the seed. The seed proved to have an exceedingly high feeding value when used as a feed to supplement the pastures.

The steers in Lot D were a bunch of mixed scrubs varying from one to five years in age. There was very little improved blood among these cattle. They were not dehorned so they were always restless at the feed trough, as the timid ones were afraid of the steers with long sharp horns. This lot was fed as a side issue to the main experiment to determine whether a profit could be made upon this class of cattle.

LOT C.—*Middle of summer* 1908. *Feed, "Caddo" cake and pasture.*
Average daily gain of each steer 1.84 *pounds.*
Cost of 100 *pounds of gain* $3.03
Total profit per steer 6.62

There was no way, of course, to determine just how much pasture grass was consumed, except as to the area measured off for each lot. But it is interesting to note that the amount of concentrated feeds required to make 100 pounds increase in live weight was exceedingly small. This was due to at least two factors. First, the steers had a green feed to go along with the concentrated feeds. Second, the amount of concentrated feeds fed daily was held down to only a few pounds, thus requiring the steers to obtain the major part of their feed from the pasture. Where lands are cheap pasture is cheaper than the too liberal use of concentrated feeds. It is impossible, at the present time, to say whether the amounts fed in these tests were the correct

ones or not. It is hoped that some light may be thrown upon this point during the progress of the work.

Cost of Summer Gains.

It is always unsatisfactory to discuss the cost of gains as it depends largely upon the cost of the feeds, the cost of which varies greatly under different conditions. In this discussion the price placed upon the feeds is the actual market quotations plus the expense of hauling them from the depot to the farm. The hauling distance was fourteen miles. Pasture is charged at fifty cents per month per steer; this is the prevailing price placed upon pasture throughout the western part of Alabama.

Table 8. *Cost to Make* 100 *Pounds of Gain.*

1908—(112 *days*).

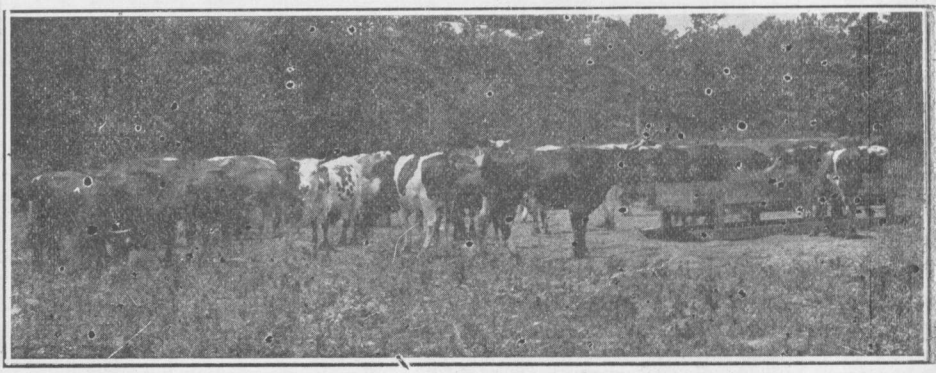
Lot	RATION	Pounds feed to make 100 pounds gain	Cost 100 lbs. gain, pasture not charged	Cost 100 lbs. gain, pasture charged *
A	Pasture alone	.....	.....	$1.18
B	Pasture plus cottonseed cake	143	$1.79	2.56
C	Pasture plus "Caddo" cake	180	2.07	3.03
D	Pasture plus cottonseed cake	171	2.14	3.24

1909—(154 *days*).

A	Pasture alone	.....	.....	$1.03
B	Pasture plus cottonseed cake	181	$2.26	3.21
E	Pasture plus cottonseed	218	1.53	2.39

*Price of feeds: Cottonseed cake ..... $25.00 per ton
"Caddo" cake ..... 23.00 per ton
Cottonseed ..... 14.00 per ton
Pasture ..... .50 per month

In every case above, the cost to make one hundred pounds increase in live weight was very low. When steers are fattened during the winter time each pound of gain is put on at a loss, as each pound put on may be expected to cost from 8 to 12 cents; and the profit is dependent upon the enhancement of the value of the steer over and above the selling value of pounds of gain made. In these tests each pound put on during the fattening period was put on at a profit, a very unusual occurrence in fattening beef cattle. These cheap finishing gains made the feeding operations comparatively safe as far as profits were concerned. As stated before, these cheap gains were due to two factors: First, the cattle had a cheap and succulent roughage;—pas-



LOT D.—*End of summer* 1908. *Feed, cottonseed cake and pasture.*
Average daily gain of each steer 1.62 *pounds.*
Cost of 100 *pounds of gain* $3.24
Total profit per steer ..... .43

ture. Second, the amount of concentrated feeds used was kept down to a comparatively small figure: from 2.76 to 3.31 pounds of cottonseed cake and 4.48 pounds of cottonseed were fed to each steer daily. At the Missouri Station (Bulletin 76) the average of the summer trials show that 814 pounds of grain were required to produce one hundred pounds of gain, while in the Alabama test only 143 to 218 pounds of concentrate were required to make the same gains. At Missouri the steers were given an approximate daily feed of 20 pounds of grain in addition to the pasture.

While the Missouri cattle were fed a much heavier grain ration than the Alabama cattle, still the records of this test show the Alabama cattle to have made almost as large daily gains as did the Missouri steers.

When Lots B and C (1908) are compared it is seen that the cottonseed cake is superior to the "Caddo" cake, as one hundred pounds of increase in weight were made at a cost of $2.56 when the cottonseed cake was used, whereas when the "Caddo" cake was fed the same gain cost $3.03. When the cottonseed cake sells at $25.00 a ton the "Caddo" cake is not worth $23.00 a ton; when cottonseed cake sells at $25.00 a ton this test shows the "Caddo" cake to be worth only $20.54 a ton.

LOT A.—*End of summer* 1909. *Feed, pasture alone.*
Average daily gain of each steer 1.74 *pounds.*
Costs of 100 *pounds of gain* $1.03
Total profit per steer 7.06

The common or mixed bunch of cattle(LotD) make a very poor showing when compared with Lots B and C, although, as will be seen later, the steers in Lot D returned a small profit.

In comparing Lots B and E (1909) it is seen that the cottonseed produced gains more cheaply than did the cottonseed cake—that is, when the cottonseed is valued at

$14.00 a ton and the cake at $25.00 a ton. When cottonseed cake is valued at $25.00 a ton this test shows the cottonseed to be worth $20.73 a ton for fattening cattle on pasture. Cottonseed had this disadvantage however: during the latter part of the feeding period they were not relished as much as the cottonseed cake, and some trouble was experienced in keeping the steers "on feed." There was no trouble from scours when the seed were fed in the above amounts.

FINANCIAL RESULTS OF SUMMER FEEDING.

Although those cattle which received pasture alone made cheaper gains than the ones which received some feeds in addition to the pasture, it must not be inferred that the grass cattle were the most profitable ones; the cost of the gains alone does not determine the final profits. While it is desirable to make the gains as cheaply as possible, still the selling price of the cattle at the end of the feeding period must also be taken into consideration before the final profit can be determind.

TABLE 9. *Financial Statment.*

1908.

Lot A. Pasture alone:		
To 26 steers, 19031 lbs. at $2.92 per cwt.	$555.71	
To pasture at 50c a month per steer ..	52.00	
To freight, commission, feed and yardage	94.12	
Total expenditures	$701.83	
By sale of 26 steers at $3.66 per cwt.		$776.29
Total profit on lot	$74.46	
Profit per steer	2.86	
Lot B. Pasture plus cottonseed cake:		
To 26 steers, 19199 lbs. at $2.92 per cwt.	$560.61	
To pasture at 50c a month per steer .	52.00	
To 9646 lbs. of cottonseed cake at $25.00 per ton	120.57	
To freight, commission, feed and yardage	94.12	
Total expenditures	$827.30	
By sale of 26 steers, 24245 lbs at $4.53 per cwt.		$1098.30
Total profits on lot	$271.00	
Profit per steer	10.42	

Lot C. Pasture plus "Caddo" cake:		
To 26 steers, 19176 lbs. at $2.92 per cwt.	$559.94	
To pasture at 50c a month per steer ..	52.00	
To 9646 lbs. of "Caddo" cake at $23.00 per ton	110.93	
To freight, commission, feed and yardage	94.12	
Total expenditures	$816.99	
By sale of 26 steers, 22740 lbs. at $4.35 per cwt.		$989.19
Total profit on lot	$172.20	
Profit per steer	6.62	
Lot D. Pasture plus cottonseed cake:		
To 54 steers, 28754 lbs. at $2.50 per cwt.	$718.85	
To pasture at 50c a month per steer ..	108.00	
To 16686 lbs. of cottonseed cake at $25.00 per ton	208.57	
To freight, commission, feed and yardage	195.48	
Total expenditures	$1230.90	
By sale of 54 steers, 36450 lbs. at $3.44 per cwt.		$1253.88
Total profit on lot	$22.98	
Profit per steer	.43	
1909.		
Lot A. Pasture alone:		
To 40 steers, 25879 lbs. at $2.95 per cwt.	$763.43	
To pasture at 50c a month per steer .	110.00	
To freight, commission, feed and yardage	144.80	
Total expenditures	$1018.23	
By sale of 40 steers, 34314 lbs. at $3.79 per cwt.		$1300.50
Total profit on lot	$282.27	
Profit per steer	7.06	
Lot B. Pasture plus cottonseed cake:		
To 75 steers, 47916 lbs. at $2.95 per cwt.	$1413.52	
To pasture at 50c a month per steer ..	206.25	
To 39025 lbs. of cottonseed cake at $25.00 per ton	491.56	
To freight, commission, feed and yardage	271.50	
Total expenditures	$2382.83	
By sale of 75 steers, 66514 lbs. at $4.37 per cwt.		$2906.66
Total profit on lot	$523.83	
Profit per steer	6.99	

Lot E. Pasture plus cottonseed:		
To 25 steers, 16328 lbs. at $2.95 per cwt.	$481.68	
To pasture at 50c a month per steer .	68.75	
To 17265 lbs. of cottonseed at $14.00 per ton	120.85	
To freight, commission, feed and yardage	90.50	
Total expenditures	$761.78	
By 25 steers, 22858 lbs. at$4.25 per cwt.		$971.46
Total profit on lot	$209.68	
Profit per steer	8.39	

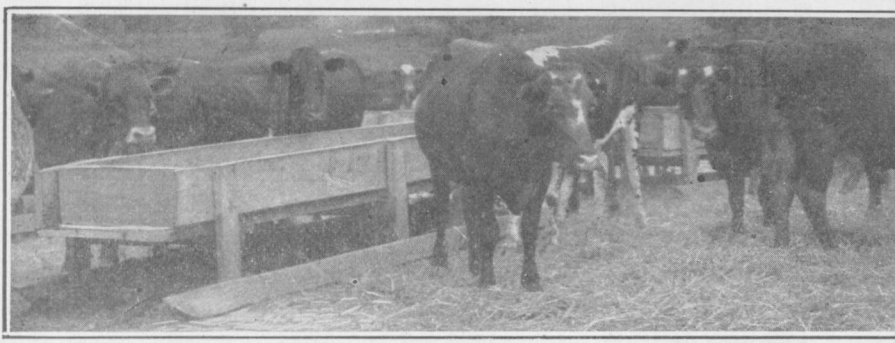
It should be noted that the total profits shown above are based on estimates after pasture rent, freight, commissions, feed and yardage are taken from the total sales.

In 1908 it cost $3.85 per head to get the steers to the New Orleans market and in 1909 the expense was $3.62 per head. These cattle were shipped from western Alabama to New Orleans, a distance of about 500 miles; many farmers in the South are not required to ship their cattle this distance.

In 1908 the greatest profits were realized upon Lot B, the lot which received cottonseed cake in addition to the pasture; in this lot a net profit of $10.42 per steer was made. Lot C, the "Caddo" fed lot, returned a net profit of $6.62 per steer. The pasture lot, Lot A, made a profit of only $2.86 per steer. It paid to feed the cattle some feed in addition to the pasture, because when they were offered for sale those steers which had been fed the concentrated feeds were in much better condition than those that received pasture only, and consequently sold for more money per hundred weight. The grass cattle sold for $3.66 per hundred weight, the cottonseed cake cattle for $4.53 per hundred weight, and the "Caddo" cattle for $4.35 per hundred weight. The above represent the New Orleans prices. It cost about 60 cents per hundred weight, including shrinkage, to ship the steers to New Orleans.

In 1909 there was not such a marked difference in favor of the lots which received feed in addition to the pasture. In fact, the pasture lot, Lot A, and the cottonseed cake lot, Lot B, made practically the same profit, the former making a net profit of $7.06 per steer and the latter a net profit of $6.99 per steer. But the cottonseed fed lot, Lot E, was decidedly more profitable than either of the other lots, it making a net profit of $8.43 per steer. The profits in every case were exceedingly satisfactory.

In 1908 it proved to be exceedingly profitable to supplement the pasture with a concentrated feed. In 1909 no extra profit was made as a result of the use of the cotton-



LOT B.—*End of summer* 1909. *Feed, cottonseed cake and pasture.*
Average daily gain of each steer 1.88 *pounds.*
Cost of 100 *pounds of gain* $3.21
Total profit per steer 6.99

seed cake, but when cottonseed was fed along with the pasture the profits were greater than when pasture was used alone. The data so far collected warrant the statement that it pays to supplement our Southern pastures with a concentrated feed when cattle are being finished for the fall market. Additional experimental work will determine what concentrated feeds can be used to the greatest advantage.

Slaughter Results.

The cattle were shipped to New Orleans for sale and slaughtered, where complete individual slaughter records were secured. The authors have presented only a part of the slaughter records in the following table; the point will be discussed more fully in a subsequent publication.

Table 10. *Slaughter Data.*

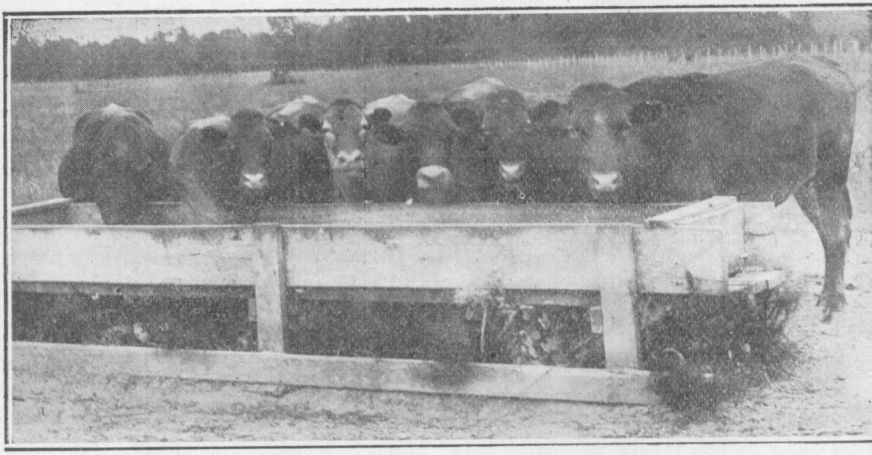
1908.

Lot	RATION	Average farm weight each steer	Average New Orleans weight each steer	Average shrinkage in shipping per steer	Per cent. dressed out by farm weights
		Lbs.	Lbs.	Lbs.	Per ct.
A	Pasture alone	902	816	86	49.5
B	Pasture plus cottonseed cake	999	932	66	53.8
C	Pasture plus "Caddo" cake	944	874	70	53.6
D	Pasture plus cottonseed cake	724	686	38	52.7
	1909.				
A	Pasture alone.....	916	859	57	51.8
B	Pasture plus cottonseed cake	941	899	42	54.2
E	Pasture plus cottonseed	1001	946	55	53.9

It is seen by the above table that the steers which were given some feed in addition to the pasture suffered less loss in live weight in transit than did the ones which had nothing to eat but pasture. In 1908 each pasture steer (Lot A) lost 86 pounds in transit, while those which had been fed some concentrated feeds lost from 38 to 70 pounds each. The common cattle, Lot D, suffered a very small shrinkage which was due, in part, to their being smaller steers than the other cattle. The cattle did not shrink as much in

1909 as in 1908, but in 1909 the grass cattle lost considerably more weight in transit than did those that had been fed.

In both years the steers which had been fed the cottonseed products dressed out several per cent higher than the grass cattle. In 1908 the grass cattle dressed out 49.5 per cent; in 1909 a similar lot dressed out 51.8 per cent. The cattle which had been given some concentrated feeds along with the pasture dressed around 54 per cent. It should be noted that the last column is based on the farm weights of the cattle. If the New Orleans live weights were taken it would raise the figures in the last column from 2 to 2.5 points in each case.



LOT E.—*End of summer* 1909. *Feed, cottonseed and pasture.*
Average daily gain of each steer 2.06 *pounds.*
Cost of 100 *pounds of gain* $2.39
Total profit per steer 8.39

TABLE 11. *Complete Summary of Summer Feeding.*

	1907-'8				1908-'9		
	Lot A Pasture alone	Lot B Pasture plus cottonseed cake	Lot C Pasture plus "Caddo" cake	Lot D Pasture plus cottonseed cake	Lot A Pasture alone	Lot B Pasture plus cottonseed cake	Lot E Pasture plus cottonseed
Average weight each steer at beginning test	732	738	738	532	647	639	653
Average daily gain per steer	1.51	2.32	1.84	1 62	1.74	1.88	2.06
Average amount concentrates consumed per steer per day	.....	3.31	3.31	2.76	.....	3.40	4.49
Average amount concentrates to make 100 pounds gain	.....	143	180	171	.....	181	218
Cost 100 pounds gain, pasture charged	$1.18	$2.56	$3.03	$3.24	$1.03	$3.21	$2.39
Initial cost of steers per 100 pounds	2.92	2.92	2.92	2.50	2.95	2.95	2.95
Selling price (N. O.) of steers per 100 pounds	3.66	4.53	4.35	3.44	3.79	4.37	4.25
Total profit per steer.	2.86	10.42	6.62	.43	7.06	6.99	8.39