Sheep Production in Mississippi

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FOURTEEN POINTS OF SHEEP PRODUCTION

1. Study sheep. Find out what others know about them. Page 2.
3. Use purebred rams and build up the flock. Page 5.
8. Protect the flock from dogs. Page 16.
9. Cull the ewe flock. Retain the good type ewes that are heavy wool and milk producers and have the habit of weaning early. Page 17.
10. Save the best ewe lambs for the breeding flock. Page 17.
13. Prepare wool for marketing and sell both wool and lambs cooperatively. Pages 20-21-22.
14. Use your County Agent, your State Extension Service, and your State Experiment Station. Page 19.

Acknowledgments are due Prof. C. J. Goodell for material left at our disposal and to Dr. C. B. Cain for aid in writing that part of the bulletin on "Sheep Ailments."
PART I

SHEEP PRODUCTION IN MISSISSIPPI

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Wool and mutton sales, to insure a profitable sheep husbandry, must equal or exceed cost of production. Wool is a world commodity where production and demand are about balanced and, consequently, increases in population, especially in the colder climates, require increased production for the maintenance of per capita consumption.

Even with mutton and lamb consumption in this country only about one-fourth that of Great Britian, the demand of these products has been sufficient to absorb all offerings at profitable prices. This low consumption is due partly to the poor quality of the product that was formerly put on the market. More recently, more attention has been given to raising and fitting a type of lamb capable of furnishing a higher quality mutton. This should result in increased consumption and a tendency towards continued profitable prices.

CYCLES OF PROSPERITY AND DEPRESSION IN SHEEP PRODUCTION

The purchasing power of sheep has been alternately high and low six times during the past fifty years, the cycle being regular in character and having a general upward trend. In the last advance, sheep rose seventy-two per cent in purchasing power, according to G. F. Warren and F. A. Pearson,1 of Cornell University, who says, "Usually the sheep cycle is much less violent, but the rise during the war, the drop after the war, and the present rise were extremely violent."

Recent prices of wool and lambs have been responsible for a general revival of interest in sheep production, few enterprises during the past few years having shown comparable returns on the investment or for the expenditure of labor. While at present the purchasing power of sheep seems to be close to the top of the cycle, there appears little reason to fear that the well managed flock will not continue profitable.

SHEEP HUSBANDRY IN MISSISSIPPI

The number of sheep in Mississippi on January 1, 1928, was given by the United States Department of Agriculture as forty-five thousand, a decline of approximately seventy-seven per cent since January 1, 1920. These sheep consist largely of natives, though in the norther part of the state, there is an increasing number of mutton flocks. Less than five hundred purebreds were listed in the last census, practically all of which belonged to the Down or mutton breeds.

There are in Mississippi two general forms of sheep husbandry. In South Mississippi, flocks are run on the range, receiving practically no attention except at the time of shearing. With low maintenance costs,

1. Farm Economics No. 31. February 6, 1926.
range men have been satisfied with the profits from wool and wether sales. In the northern part of the state, sheep are handled under fence. Wool sales have been depended upon for carrying maintenance costs, and where flocks have been well tended, the sale of early lambs has netted nice profits. In fact, under average conditions, sheep are the most profitable of all farm animals. It is not unusual for a small farm flock to return more than 100 per cent when handled properly. On the other hand, a disease or a mistake in buying or handling may cause a loss on the investment.

Under proper systems of sheep management, the lime belt area of Mississippi, with its usually mild climate and rich soil, offers exceptional advantages for the production of early lambs.

NEED FOR MORE EFFICIENT METHODS OF PRODUCTION

Notwithstanding the excellent profits from sheep where well managed, unsatisfactory returns are frequently evidenced by the dispersion of farm flocks, indicating the need for greater general efficiency in sheep production. This can and should be accomplished through more generally improved methods of breeding and management.

To be a successful sheep producer and particularly if one is to engage in the early lamb production phase, there are some practices with which one should be familiar. The beginner should familiarize himself with certain phases of the industry before he makes his original purchase; otherwise, he will be defeated before he begins. There are numerous things, of course, that can only be learned by actual experience in the business.

It is the purpose of this bulletin to outline the answers to some of the problems of sheep production in detail by successive steps in a simple, un-technical language that can be understood and followed by the beginner.

The recommendations herein are based largely on a study of sheep breeding and management at the Mississippi Experiment Station. The results of the data gained by experimentation at this station are given in Part II. Where other material has been used in an effort to enhance the value of this publication, credit is given in the text and in foot notes. A list of helpful references is also cited.

Care and Management of the Flock

BEFORE PURCHASING SHEEP

The first thing that the prospective sheep man should learn is that sheep cannot take care of themselves and that they are not “scavengers” to the extent that they will return a profit without any care and attention; however, they will consume more than ninety per cent of the plants considered as weeds and therefore are especially useful for keeping down weeds on the farm. Sheep, as well as all other domestic animals, must receive the right kind of care and attention at the proper time.

The prospective sheep producer should read up on the references cited. He should visit successful sheep producers and see and talk to them about their methods. Many things may be learned that can be used later and often it may be learned that one is not ready to begin.
EQUIPMENT NEEDED

Fences.—Too often the breeding stock is purchased and brought to the farm before preparations are made to receive it. It is well to make a study of the equipment needed before purchasing and have all of these preparations made before bringing the flock to the farm.

The first thing to be considered is the amount of land that can be devoted to the farm flock. Under average Mississippi farm conditions, a small flock could be added to the present livestock population without overstocking. If a certain acreage is to be devoted entirely to sheep production, the assignment may be made on the basis of the carrying capacity in terms of cattle. The cattle carrying capacity is usually known. Five to seven mature sheep may be grazed on the acreage usually allotted to one mature cow, depending on the king of grazing available. The ideal arrangement for sheep farming would be to have sufficient pasture acreage to have two pastures of equal size so that one pasture may be used one year and the other pasture the next. This will be a great aid in controlling the parasites to be discussed later. Temporary grazing for winter use may be utilized to a great advantage and profit.

All acreage where sheep are to be grazed should be sheep-proof. The fence would not have to be as tight as for hogs, but the better the fence, the smaller the chance for trouble with dogs. If the pasture is not near the barn, it will be necessary to build a small corral that will protect the flock from dogs. This corral may be made of net wire and barbed wire or barbed wire alone. It should be constructed so as to prevent a dog from scratching under, going through, or climbing or jumping over. It is well to set one or two strands of barbed wire at an angle and to the outside of the top strand as shown in the accompanying illustration.

![Diagram of Corral Fence](image)

*Fig. 1. A Dog-Proof Sheep Corral. (Drawing by Agricultural Engineering Department.)*

**SHEDS**

Expensive sheds are not necessary for sheep. Any kind of a shed that will afford protection from the wind and rain will be sufficient. Sheep are affected very little by cold weather as long as they are kept dry. There is usually some barn space that may be allotted to the flock. If a shed has to be constructed especially for the farm flock, the following type is recommended as being simple in construction and inexpensive.
In building a shed for sheep, one must be sure to allow for plenty of ventilation and light, as a poorly ventilated or lighted barn is worse than no barn at all. The sheep shed should be located on high ground so as to provide drainage. A place that is well drained can be kept clean and dry. As sheep suffer more from dampness than from cold, it is very important that they be kept dry.

Sufficient space should be allowed when planning the barn to provide at least twelve square feet for each mature sheep, this space to be exclusive of that required for feed troughs and storage room.

With our mild climate, an open shed facing the south, with plenty of depth to give protection from blowing rains, will fulfill these requirements. One of these sheds is shown in Figure 2. The length of this shed will be governed by the number of sheep to be kept in it. Where a closed barn is used, ventilation and light must be provided. By having windows hinged from the bottom and allowed to swing in, drafts are prevented. Doors should be wide to prevent crowding. It is much better to have one eight-foot door than two four-foot doors. All doors should be provided with hooks and fastened back when opened to prevent them from closing on sheep as they crowd through. Where sills extend across the doorway, they should be close to the ground; otherwise, sheep will have to jump them upon going through the doorway. Narrow doorways and high sills are especially dangerous to pregnant ewes.

Barns or sheds should be dog-proof, or better still, surrounded by a dog-proof fence, giving a lot where the flock may bed in dry weather. (If this is the only available lot, there should be some twenty-five square feet per ewe to supply room for exercise.)

Sheds may be conveniently divided into smaller units, catch pens, and lambing pens by the use of movable hurdles. These hurdles should be made of light material so as to be easily handled. They should be about forty inches in height, and the length to correspond to the needs for that particular barn or shed.
OTHER EQUIPMENT

When grain is to be fed, a flat-bottom trough will be required. A good trough is one that is 8 inches in width and 4 inches in depth. The trough should be of sufficient length to allow one foot of length for each sheep.

A hay rack should also be provided. Some recommend a combination trough and rack. This will cause some damage to the wool by the particles of hay dropping down into the neck wool while the sheep feed below. The trough and rack illustrated below will eliminate a greater part of this trouble.

Fig. 3. A Combination Feed Trough and Hay Rack.
(From Bureau of Animal Industry)

BREED TO SELECT

"There is no best breed of sheep." However, some of the breeds are better adapted to southern conditions than are others. It is not unwise for the beginner to start out with native Mississippi ewes and a purebred ram of one of the approved breeds. Mistakes, if made in this undertaking, would not be so costly. These native ewes have their good qualities, which, in a measure, are transmitted to their offspring and these, coupled with the mutton qualities of the well-bred ram, make an ideal combination for a farm breeding ewe.

These native ewes are cheap; they are strong and hardy; they are especially good milkers and are adapted to the locality. The original investment is not only small, but there is usually quite a saving in freight rates if these ewes can be purchased locally in preference to going out of the state to purchase the foundation flock.

By putting a purebred ram on these ewes and saving the best ewe lambs each year to add to the breeding flock to increase it in size and also to replace the native ewes as they wear out, only a very short time will elapse before a high-grade ewe flock can be established.
For early lamb production in Mississippi, it is believed that either Southdown, Hampshire, or Dorset Horns would give the best results. When Dorset Horns are crossed on native ewes, early breeding habits and other desirable qualities are gained, yet this cross is lacking in compactness and natural fleshing desired in early lambs. Therefore, then, when this cross is made, it is recommended to follow with a Southdown ram to overcome these faults.

**THE SOUTHDOWN**

The Southdown is a model of mutton type. They are short of leg, broad and strong of back, deep of body and compactly built. Due to its thick covering over back and loin, and fullness of hindquarter, the Southdown is unexcelled as a killing sheep. The head is short and broad and the face straight. The ear is short and erect and free of wool. The wool extends to, but does not meet below, the eye. The woolling should extend down to the knee and hock and that part of the face and legs that is not covered by wool and the ears should be from a steel gray to a light brown in color.

The wool of the Southdown is fine, clean and should measure for a year's growth about 2 or 2.5 inches. A purebred flock will produce on an average of 5 to 8 pounds of wool. Mature rams should weigh from 185 to 220 pounds and ewes from 135 to 150 pounds.

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**Fig. 4.** A Purebred Southdown Ram.  
(From Bureau of Animal Industry)

**THE HAMPSHIRE**

The Hampshire is a much larger breed than the Southdown, but somewhat similar in body conformation. The breed is massive and growthy
and consequently is not as short of leg and compact of body as the Southdown. The head of the Hampshire is large with a tendency toward a Roman nose. It is woolled down to a point below the eye, and the ear is large, free of wool, and is set almost horizontally to the head. The face, ears, and legs from knee and hock down, vary in color from a dark brown to almost a black. The fleece is white and should be about 2.5 inches long, although somewhat coarser than the fleece of the Southdown. A year's growth should weigh from 6 to 8 pounds. Mature rams weigh from 250 to 300 pounds, and mature ewes, 180 to 225 pounds. The Hampshire, due to its size and rapid growing quality, is especially well adapted to increasing size of native sheep, although the lambs will not finish quite so early as Southdowns.

![A Purebred Hampshire Ram](image)

**Fig. 5. A Purebred Hampshire Ram**
*(From Bureau of Animal Industry)*

**THE DORSET HORN**

The Dorset Horn, due to its early breeding qualities and prolificacy, has met with much favor as a producer of early lambs. It is between the Southdown and Hampshire in size. Mature rams should weigh approximately 275 pounds and mature ewes from 180 to 220 pounds. It does not conform quite so closely to mutton type as either the Southdown or Hampshire. The Dorset Horn is sometimes criticized for being too long of leg and shallow of body. The face, ears, and legs from knee and hock down, are bare of wool. The wool of the forehead forms a compact tuft or forehead of wool. The markings are white. The fleece should be about two and a half inches long and average about 6 pounds in weight. Both rams and ewes have horns.
SELECTION OF THE EWE

There are several points to be kept in mind in selecting the ewe flock. Only those that conform closely to the mutton type should be selected. The deep-bodied, wide-chested kind will prove to be the most hardy and thrifty. Only from this type of ewe can the early maturing mutton type of market lamb be produced.

Uniformity is a big factor that must be secured in the breeding flock. It is to be remembered that only one ram is to be selected for each unit of approximately thirty ewes. These ewes, to get the best results when mated to this single ram, should be as uniform in type and quality as the source of selection will permit.

Only thrifty, active ewes should be purchased. Avoid the ewe with a hanging head and a listless appearance. Raise the eyelid and note the color of the eye. The healthy normal eye will show a bright color with the blood vessels plainly evident.

If one is to engage in the production of purebred sheep, the yearling bred ewe is the ideal age for the foundation ewe. The purchaser of this kind of ewe probably gets more for his money than any other kind. For a grade flock, older ewes may be purchased to an advantage. Broken-mouth ewes should never be purchased by the inexperienced sheep man.

Select ewes with good udders. This may readily be determined by examination. The sound udder will be soft, pliable and free from lumps or cores.

TIME TO BUY EWES

Bred ewes, of course, will be bought in the early fall. Plenty of time should be allowed after the rams have been turned with the flock before
the selection is made so as to be sure that a bred ewe is selected. September and October are good months in which to purchase bred ewes.

Native sheep should always be bought open, as the native lamb has little comparative value. Since it is recommended that for early lamb production the rams be turned with the ewes about July first, it will be necessary to purchase them prior to this time.

**SELECTION OF THE RAM**

The flock ram is more than one-half of the flock. The mistake should not be made of selecting an inferior sire, even though he is to be used on a grade flock. The cost of one ram for each thirty ewes cannot be so much but that the purchase price will be well within the range of anybody's pocketbook. The type of ram to be selected will depend in a great degree on the type of the ewe flock. He should be selected for the purpose of building up the quality of the ewe flock as well as for correcting their defects of type. He should in every case be the growthy kind, with plenty of substance of bone, strong of constitution and of superior mutton type.

**DETERMINATION OF AGE OF SHEEP BY THE TEETH**

The age of sheep as indicated by the teeth can be determined with a fair degree of accuracy. The method is simple and should be known by every sheep man. The front or incisor teeth are found in the lower jaw.

Fig. 7. A Two-Year-Old Mouth
(From Bureau of Animal Industry)
only, and are eight in number,—four pairs. The first set are temporary and are called lamb's or milk teeth.

The middle pair of permanent teeth replace the middle pair of temporary by the time the lamb is about fourteen months of age. Note the difference in size and shape between the permanent and temporary teeth.

A two-year-old mouth will show that the two center pairs of permanent teeth have replaced the two temporary pairs. A three-year-old mouth will show three pairs of permanent teeth and one of temporary. At four years of age, all of the temporary teeth have been replaced by permanent ones. With age, the teeth usually begin to spread and begin to wear or break. The teeth usually begin to break and come out at about seven years of age. Sheep of this age have passed their period of usefulness and should not be kept unless the animal be an exceptionally good breeding animal.

**BREEDING**

*The Ram.*—The ram should be kept away from the ewe flock other than during the breeding season. Any good grazing area that will furnish plenty of good grazing and allow exercise is the best possible environment for the breeding ram. It will sometimes be necessary to feed a small amount of grain to get him in breeding condition. The ram should go into the breeding season in a strong, vigorous condition. He should not be too fat. Rams of any age may be run together. In fact, it is best to have the rams together. Ram lambs are sometimes used as breeding rams, but this is not a good practice unless the lamb has been especially well cared for and is growthy and strong for his age, and then bred only to a very limited number of ewes.

To insure a large lamb crop, not more than thirty ewes should be allowed for each mature ram. It is false economy under pasture breeding management to put too many ewes per ram. The number of ewes per ram according to age under the pasture management system is given below:

<table>
<thead>
<tr>
<th>Mature rams</th>
<th>30 to 40 ewes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yearling rams</td>
<td>20 to 25 ewes</td>
</tr>
</tbody>
</table>

*The Ewe.*—The ewe lamb that is dropped early will come in heat late in the season. It is not a good practice to breed the ewe lamb and if practiced, will result in a lack of size, uniformity, and vigor. Better results will be obtained if the ewe lamb is not bred until the second summer.

The ewe that has suckled a lamb during the spring will if on good pasture, be in good condition by the opening of the breeding season. For ewes that are a little low in condition, it is a good practice if possible to shift them to a new pasture. Under certain conditions, it will be necessary and profitable to give them a little feed.

This practice is called "flushing", and usually results in the ewes coming in heat early and causes a larger number of twin lambs to be produced. Marshall and Potts state that there is no decided advantage in the kinds of feed used in flushing, except a saving in labor and expense when pasture is used. Pasture should be used to the fullest extent, but additional grain should be given when necessary.

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Pasture breeding from a practical standpoint under southern conditions should be followed. If purebred sheep are being produced, one of two methods must be followed in order that the identity of the sire may be recorded. The two methods are hand breeding and pasture breeding by dividing the flock into as many groups as there are rams to be used.

If under the pasture breeding method the breeding date is desired, it may be obtained by letting the ram run with the ewes at night only. Each evening the brisket and chest of the ram should be painted with a mixture of lampblack and a light lubricating oil before he is turned in to the flock. Next morning the ewes that have been marked may be identified and the date recorded. These ewes should not be removed from the flock unless they are to be returned to the ram at the time their next heat period should occur. Heat periods normally occur in sheep at about 18-day intervals, the period usually lasting about three days if the ewe is not bred.

**TIME TO BREED**

The period from breeding time to lambing time is known as the gestation period and in ewes is about 147 days. The following chart may be conveniently used for determining the lambing date when the breeding date is known:

**SHEEP GESTATION TABLE**

<table>
<thead>
<tr>
<th>Date Bred:</th>
<th>Date Due to Lamb:</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1</td>
<td>November 25</td>
</tr>
<tr>
<td>July 10</td>
<td>December 4</td>
</tr>
<tr>
<td>July 20</td>
<td>December 14</td>
</tr>
<tr>
<td>July 30</td>
<td>December 24</td>
</tr>
<tr>
<td>August 1</td>
<td>December 26</td>
</tr>
<tr>
<td>August 10</td>
<td>January 4</td>
</tr>
<tr>
<td>August 20</td>
<td>January 14</td>
</tr>
<tr>
<td>August 30</td>
<td>January 24</td>
</tr>
<tr>
<td>September 1</td>
<td>January 26</td>
</tr>
<tr>
<td>September 10</td>
<td>February 4</td>
</tr>
<tr>
<td>September 20</td>
<td>February 14</td>
</tr>
<tr>
<td>September 30</td>
<td>February 24</td>
</tr>
<tr>
<td>October 1</td>
<td>February 25</td>
</tr>
<tr>
<td>October 10</td>
<td>March 6</td>
</tr>
<tr>
<td>October 20</td>
<td>March 16</td>
</tr>
<tr>
<td>October 30</td>
<td>March 26</td>
</tr>
</tbody>
</table>

Example of how to use: If a ewe is bred on July 24th, she would be due to lamb on December 14 plus 4 days, or on December 18.

In early lamb production, the breeding season should be limited to from July 1 to November 1. Late lambs are not profitable, so should be prevented by removing the rams from the flock by November first.

**FEEDING THE PREGNANT EWE**

The pregnant ewe will not require any feed other than pasture as long as the pasture is good. Pastures in this area in average years will need to be supplemented about November. The ewe should not be neglected at this time. Additional feed will be necessary to develop the growing foetus. This period, along with the suckling period, is the critical stage in a lamb’s life and the importance of this is too often overlooked. If the
pasture is away from winter quarters, it will usually be necessary to bring the flock in by December first. Good roughage should be utilized as far as possible for feeding the pregnant ewe. Legume hays, such as alfalfa, clover, etc., due to their high protein and lime content, are especially valuable for this purpose, and if available, little or no grain will be necessary.

The following rations are suggested:

RATION 1
Pasture
2 3 lb. alfalfa, clover, lespedeza, cowpea, or fine-stemmed soybean hay.

RATION 2
1/2 lb. oats,
2 3 lb. alfalfa, clover, lespedeza, cowpea, or fine-stemmed soybean hay.

RATION 3
1 2 lb. corn.
1 8 lb. cottonseed meal.
1 1/2 lb. Johnson grass or Sudan hay.

Silage is a good feed for the pregnant ewe when fed in limited amount. Two to three pounds of silage will replace one pound of hay.

TEMPORARY PASTURE

A temporary pasture is a cultivated crop used for grazing land, as the name implies, the grazing season lasts for a limited time. Temporary pastures for sheep may be classified as summer grazing and winter grazing.

Under average Mississippi conditions, permanent pastures will be more economical in the summer than will temporary grazing crops; however, when permanent pastures are limited and in rotation practices as control for parasites, summer temporary pastures fit in very nicely.

In the following table are listed the cultivated plants that may be used for grazing with the dates for planting, amount of seed to be planted, whether planted in row or broadcast, and approximate time to begin grazing. The data is for average Central Mississippi seasons, and would vary somewhat according to seasonal variations for areas north or south of Central Mississippi. The length of time that these crops may be grazed is dependent on the kind of season and the number of animals to be grazed.

<table>
<thead>
<tr>
<th>Plant</th>
<th>How Seeded</th>
<th>When to Seed</th>
<th>Amount of Seed per Acre</th>
<th>Begin Grazing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oats</td>
<td>Broadcast</td>
<td>Sept.-Oct.</td>
<td>2.5 to 3 bu.</td>
<td>January</td>
</tr>
<tr>
<td>Rye</td>
<td>Broadcast</td>
<td>Sept.-Oct.</td>
<td>2 bu.</td>
<td>December</td>
</tr>
<tr>
<td>Wheat</td>
<td>Broadcast</td>
<td>Sept.-Oct.</td>
<td>2 bu.</td>
<td>January</td>
</tr>
<tr>
<td>Rape Dwarf Essex</td>
<td>Row</td>
<td>Sept. and Feb.</td>
<td>6 to 10 lbs.</td>
<td>Nov. and May</td>
</tr>
<tr>
<td>Soybeans (Mammoth Yellow)</td>
<td>Row</td>
<td>Apr.-June</td>
<td>1/4 peck</td>
<td>July-Sept.</td>
</tr>
<tr>
<td>Sudan Grass</td>
<td>Row</td>
<td>Apr.-May</td>
<td>12 lbs.</td>
<td>June</td>
</tr>
</tbody>
</table>
At no time should these crops be grazed so heavily as to destroy the plants nor is it advisable to graze small young plants while the ground is wet.

Alfalfa, sweet clover, and lespedeza, although not strictly temporary grazing crops, may be utilized as such. These crops are more often used for hay crops, but are sometimes used for grazing in winter and early spring before hay time. Alfalfa very often causes bloat; therefore, must be grazed cautiously.

Temporary pastures are especially valuable for the pregnant ewe and are excellent for both the ewe and the lamb after the lambs are dropped. The winter pasture not only keeps the bowels open and the appetite keen, but insures plenty of exercise and will reduce the winter feed bill. Rape, oats, rye, and wheat can be sown in the fall and grazed in the winter.

**LAMING TIME**

Lambing time is a critical time in sheep production. Every lamb should be saved if it is at all possible. Only in exceptional cases will a ewe need help in delivering the lamb. It is not necessary to remain on hand at lambing time, but the barn should be visited regularly.

The best practice is to have the ewe in a lambing pen before she goes. If this is not practiced, the ewe and lamb should be separated from the flock and kept together until the lamb is strong enough to keep up with its mother. Some ewes will not accept their lambs, but this is largely prevented by the above practice. Lambs may be dropped on the pasture if the weather permits, but every precaution should be taken to insure the lambs not being dropped outside in inclement weather. The new-born lamb is very subject to chilling and this should be prevented. In the event that it happens, the lamb may often be saved by immersing him in warm water, rubbing him dry and placing beside a fire.

Weak lambs may often be saved by being assisted to suckle or being fed with a spoon a small amount of its mother’s milk. Orphan lambs may be raised on undiluted cow’s milk, or if a ewe loses a lamb, skin it and tie the pelt around the orphan and, in most cases, it will be accepted by the new mother. Orphan lambs can be taught to drink milk from a pan or pail as calves are taught to drink. The young lamb can go with the flock, but should be kept inside in bad weather.

The feed of the ewe for 2 or 3 days after lambing should be limited and the heavy milking ewe should be watched and milked when necessary to prevent her udder from spoiling.

**SHEEP RECORDS**

As soon as the lamb is weaned, it should be marked for identification. Purebred lambs are usually given a number and are tagged with a metal tag in the ear. Grade lambs should be marked and an ear-notch system will be found to be very satisfactory. Records of age, lambs produced, wool clipped, and twins produced should be made of all flocks. This is the only way to build a flock properly.

The Lovejoy system of hog marking is a very satisfactory method to use. One notch in lower rim of right ear has a value of 1, one notch in upper rim of right ear a value of -0, one notch in lower rim of left ear a value of 3 and one in the upper rim of left ear a value of 30.
For example: A lamb marked as shown would be No. 44. To make it 75, one notch should be made in the upper rim of the left ear and one in the lower rim of right. By making as many as three notches in each part of each ear, as many as 132 lambs could be marked by this system. These notches may be made small in the lamb, and when the lamb is mature, the marks will be easily visible.

FEEDING THE EWE AND LAMB IN WINTER

The ewe can be continued on the same feed as she was receiving before lambing. More feed, however, will be required.

Temporary pastures are especially valuable at this time. Constipation is very likely in both the ewe and lamb when the suckling ewe is being fed on dry feeds. The succulence of the pasture will be a big factor in preventing this trouble. Pastures also stimulate milk production and will, at the same time, insure plenty of exercise and fresh air, which cannot be secured when the ewe and lamb are confined to the barn and fed on dry feeds.

The lamb will begin to eat when about two or three weeks of age. At this time a creep should be constructed. This is a small pen with openings through which the lambs may enter, but through which the ewes cannot go. In this creep, alfalfa or clover hay and a grain ration may be placed.

Fig. 8. A System of Ear Marking.

Fig. 9. A Lamb Creep.
The lambs will consume a very small amount of grain, which should be placed in a low flat-bottom trough daily. The following rations are suggested for lambs:

1. Equal parts bran and ground oats.
2. Equal parts bran, ground oats and crushed corn.
3. Crushed corn and alfalfa hay.
4. Crushed corn, 3 parts. ground oats, 1 part; wheat bran, 1 part; and choice cottonseed meal, 2 parts.

**FEEDING SUCKLING LAMBS ON PASTURE**

Although definite conclusions have not been drawn, work at this station indicates that where lambs are weaned early and good pasture is available, feeding the suckling lamb on pasture is not profitable. Probably in the areas outside of the lime belt, a grain allowance would prove profitable. In the light of our present knowledge, it is recommended that in the case of a late lambing season, or lack of grazing, grain be given in addition so as to get the lambs on the market before the usual break occurs.

**CASTRATING AND DOCKING LAMBS**

Both of these operations are simple and necessary; therefore, should not be neglected. Both operations can be performed with least trouble to the operator and least harm to the lamb when the lamb is about two weeks of age.

In castrating, the simple precautions of having the knife and the hands of the operator clean should be taken. The testicles should be forced away from the end of the scrotum and the tip end of the scrotum cut off with a sharp knife. The testicles are then pulled out through the hole and the cord broken by holding with one hand as far up to the scrotum as possible and pulling with the other. A second method is scraping the cord off with a knife. An emasculator may be purchased and used for severing the cord. An emasculatome, an instrument for performing a bloodless operation, may be found economical for use in large flocks or by members of a club.

A good disinfectant for the wound and for cleaning the hands and knife before each operation is a 2 per cent solution of any of the coal tar disinfectants, such as Kreso and Creolin.

After castrating, the lamb should be kept quiet and watched for excessive bleeding.

Docking should be done at the same time as castration. The tail should be removed at a joint one inch from the body. It may be done with a sharp knife or by placing the tail on a smooth board or block and cutting off with a chisel. In either method, the skin should be pushed up on tail toward the body so that it will hang over the wound. Use the same disinfectant as used for castrating. If either operation is done in fly time, it will be wise to use pine tar on the wound as a fly repellant.

In many areas tetanus or "lockjaw" is very prevalent. To prevent this, lambs when docked and castrated, should be kept on pasture and out of dirty barns, and especially horse stalls. Antitoxin may be used on valuable lambs.
DOG PROTECTION

The pasture season is the open season for dog trouble with sheep. As long as the sheep are in winter quarters, or near the farmhouse, the loss from dogs is not so great. It is almost impossible under the existing conditions to pasture sheep at night and not suffer a loss by dogs. A pair of dogs may destroy half of a farm flock in one night. The sheep must either be driven into the shed, or, if the pasture is not near the barn, a dog-proof corral must be constructed as outlined under fencing and equipment. No doubt, in the future the dog menace will be lessened by proper legislation.
WEANING LAMBS

In early lamb production, the lambs should not be weaned until they are ready for market. This will mean that the early lamb be weaned about May 15 to June 1. It is a good practice to wean all lambs at this time. The ewe that yeans late and is allowed to suckle her lamb beyond early June will more than likely yean late the following year. When the lambs are not intended for the early market, they are usually weaned at 4 to 5 months of age.

Heavy milking ewes should be milked two or three days after the lambs are removed; otherwise, a caked udder will result. Many good ewes become worthless when this point is neglected. If an udder should become inflamed, it should be milked out frequently, massaged, and it may be softened by steaming with hot wet cloths.

CULLING THE EWE FLOCK

As soon as the lambs are weaned is the time for culling the flock. The ewes that did not produce a lamb the preceding year will be fat enough for the market, but the others will have to be carried until fall. However, if not culled at this time and marked, they may not be identified later. In addition to the non-breeder, the poor milker and old worn-out ewes should be culled.

SELECTING THE EWE LAMB FOR THE FLOCK

The practical way to build up the flock is to retain the best ewe lambs. In addition to the points named under the paragraph, "Selecting the Ewe", the following points should be considered in selecting the ewe lamb.

The first is the record of the wool clip of the mother. Select the lamb of a heavy shearing ewe. This is a sure way to increase the average weight of the wool clip.

Twin lambs should also be selected. It is commonly believed that a ewe born a twin will more often produce twins than one not born a twin.

The growthy, fast-growing lamb is the one that will be the early maturing lamb. This kind is usually from a good milking ewe, a characteristic which is inherent, and an effort should be made to fix it in the breeding flock.

It is important that the early yeaned lamb be selected for the breeding flock. The yeaning date is, of course, determined by the breeding date, and the habit of breeding early is a point most desired in a market flock. The early yeaned lamb will also have the advantage of size over the late lamb. The large, strong lamb is more resistant to parasitic infestation and other summer troubles.

WATER

Fresh water should be available for sheep at all times, or at least twice daily. When sheep are to be watered from troughs or tubs, these vessels should be kept clean, as a sheep is very particular in its habits.
SALT

Common salt is a necessary requirement for sheep. In fact, sheep, when self-fed salt, will consume more in proportion to their live weight than any other class of farm animal.

Under average corn-belt conditions, it has been found that fattening lambs, when allowed free access to salt, will consume approximately one-fifth of one ounce daily, and pregnant ewes in the winter season, about two-fifths of one ounce. Salt may be mixed with the feed, but it is probably better to keep it before them at all times. This fact is too often overlooked in sheep production, especially under pasture conditions. A block should be kept in the winter quarters and in the corral in summer time. It is estimated that ten cents will buy enough salt to provide for one mature sheep's requirements for one year.

SHEEP CLUBS

Shade is very necessary for sheep in the summer time, and if natural shade is not available, a brush or straw arbor can be constructed with little time and at a very small cost.

SHADE

Cooperation is the keynote in successful lamb production. The possibilities of successful early lamb production by only a man here and there are limited. A number of these limits may be removed and the profits increased by cooperation.

In the first place, a satisfactory plan of marketing cannot be made unless marketing can be accomplished in car-lots, except occasionally as in the case of a man selling to a hotel or cafe. In a cooperative lamb club, much uniformity could be gained in the products by all members using the same breed and by managing so that all lambs would be dropped at about the same time. This insures a uniform product as to age, breeding, and finish. In this manner, a far more suitable market could be found with more satisfactory prices. Freight rates would also be lowered.

The lamb club offers other possibilities in cooperation. One of these is the trading of flock rams. Very often a desirable ram cannot be used on the flock because it is being improved or enlarged by adding his daughters to the flock. If a sale cannot be made, this ram has to be sacrificed to the butcher. This would not be necessary, as more than likely another member of the club would have use for just such a ram for the same reason and a trade could be made.

In a small flock, it is necessary to clip by hand. Even in a small flock, this is laborious and also reduces the price of wool. By cooperation of the club members, a clipping machine may be purchased at a nominal cost per member. A power machine even may be found profitable in a club of sufficient size.

Cooperation may be practiced in selling wool. A premium may be obtained in selling wool if a quantity can be assembled. Pooling the wool, grading and sorting it after assembling offers great possibilities in marketing wool.
An important phase of the lamb club idea is the progress that can be made and the knowledge gained by the membership of a cooperative club. No business can be built up solidly from the ground without a thorough knowledge of that business, gained by a complete and detailed study. The lamb club offers the opportunity for such a study of the sheep industry.

The County Agent would be glad to assist in organizing such a club, and would be of assistance in obtaining information on such subjects as marketing, disease control, and wool pools.

**SHEARING SHEEP**

The time of shearing is governed by weather conditions. As a rule, shearing can be started any time after Easter Sunday. There is no advantage in waiting until hot weather to shear, even though the fleece contains more oil then. The buyer, realizing this, pays less or pays in proportion to the oil content. In fact, it is generally thought that milk is increased by early shearing. This is probably due to the flock being more comfortable in the increasingly warm weather. Shearing twice a year is very seldom practiced, as the staple is shorter and, even though there is more poundage, the price rarely justifies the extra trouble. Lambs are rarely sheared until they are yearlings. Sheep should always be dry when sheared.

**PLACE TO SHEAR**

Shearing should be done on a smooth, clean, dry plank, floor, or table. Shearing on the ground permits dirt and trash to get in the fleece, thereby lowering the sale price.

**METHOD OF SHEARING**

There are two methods of shearing sheep. One is that of tying the sheep down to a table by its neck and legs, laying it on its right side with its head to the left of the shearer. Start shearing by shearing up the left hind leg, over the side, back, belly, shoulder, and neck; then untie the head and shear the remainder of the neck and the head. Untie the forelegs and turn sheep on its left side. Tie the head in the same place as before. Complete the shearing by finishing the other side, starting with hind leg and working forward. The second method is to set the sheep on its rump, resting its back against the shearer's knees, tilting it back so that its hind legs are free from the floor to prevent struggling. The wool is taken off by shearing from the head, throat and down the belly. The wool is then removed from the neck, side and back in long, sweeping strokes. The sheep is generally turned on its side to remove the wool from over its rump. Of the two methods, the former is perhaps the easier for the beginner, but the latter is by far the quickest method. Shearing may be done with hand shears or with a sheep-shearing machine. The latter is preferable because the wool can be cut closer, giving a longer staple; there are fewer second cuts, giving uniformity to the length of staple and smoothness to the shorn sheep; the shearing is done much faster; and there is less danger of cutting the sheep. In shearing with either hand or machine shears, care should be taken to keep each fleece whole. The best way for a beginner to learn to shear is to watch some one shear who knows how and learn by practice.
CARE OF THE WOOL

After the sheep has been shorn and removed, the fleece should be spread out on the shearing table with the flesh side down. All tags (dungy locks of wool) should be removed from the fleece, which should be folded into a tight bundle by folding towards the center. The wool should then be placed in a wool box and pressed and tied into a bale.

This wool box can be made from a piece of lumber 1 x 12 x 9. Saw from this nine-foot piece two three-foot pieces and three one-foot pieces. There are attached together with small hinges, as shown in figure 12.

This wool box is operated as follows: It is laid out flat with hinges up. The strings to tie the wool into a bundle should be cut in lengths slightly more than three feet. Use only a paper twine or a glazed surface twine. Do not use binder twine. Four strings are required for each fleece. One string should be across each opposite pair of hinges. The fleece is then placed on top of the strings and center board. All outside boards are then raised and the wool is packed into a compact bale. The two one-foot boards are held in position behind nails in the three-foot boards. The long boards are held together by wires. These wires should be placed so as not to interfere with tying. The wool is then packed down by hand and tied into a square bale, and is now ready to be packed for market.

There is a standard wool sack, holding approximately 200 pounds, for this purpose. These sacks can be purchased from various wool dealers and mills. A number of wool buyers advance these sacks to growers who ship their wool to them. In packing wool, all tags, burry fleeces, black fleeces, and fleeces from dead sheep should be packed separately from the rest of
the wool. If wool is to be stored, care should be taken to store in a clean, dry place.

![Diagram of a Wool Box](image)

**MARKETING WOOL**

There are three methods of selling wool in Mississippi. First, that of selling to local buyers; second, that of shipping to commission houses or wool buyers; and third, that of pooling and selling cooperatively. The third method is by far the best and has the following advantages:

1. Wool is gathered in large enough amounts to attract a number of large buyers, thereby securing real competition in the selling.

2. The selling can be placed in the hands of a competent man who studies the wool markets and sells when wool is highest.

3. Warehouses can be built where wool can be properly stored until sold.
4. Some pools are so organized that money can be borrowed on wool
while in storage.

Individual producers and small pools must necessarily be sold to local
buyers or wool houses. There are many reliable wool houses to which
wool may be shipped and satisfactory prices received.

MARKETING LAMPS

There are three general methods of marketing. Each has its place
in the marketing scheme, therefore a choice should not be made without
careful investigation as to probable returns from each method.

An excellent way to market lambs from a small farm flock is to
sell the dressed lamb to the special trade of restaurants and hotels. This
trade requires a high grade product and naturally does not demand a very
large number of lambs. When such a market is established, a very satis-
factory price can be obtained.

Selling to local butchers and buyers, although a very general method,
is probably the least profitable to the producer. These buyers must neces-
sarily buy on a wide margin and the producer loses accordingly. This
method of selling should be resorted to only in the event that it is impos-
sible to employ one of the others.

The central market offers the best medium for a profitable disposal
of the crop of the lamb club and large breeders.

The patron of the central market should establish relationship with
a reliable commission firm and have them advise with him in regard to
the market. Although on the average, the market is higher certain days
in the week, it is well to get the advice of the commission firm as to when
and how to ship. These men are on the market and are acquainted with
it and are in a position to advise the shipper wisely. It is to their advantage
and his to obtain the highest possible price.

SHIPPING LAMBS

Be sure that the car is ordered far enough ahead that it will be
ready when the shipment is intended. The local freight agent can furnish
information on this suggestion. In ordering, specify size of car needed.
Approximately 160 eighty-pound lambs can be loaded in a single deck
forty-foot stock car. Double deck cars may be obtained when ordered a
sufficient time in advance for the company to locate one.

An estimate of the capacity of a car may be made on the basis of four
eighty-pound lambs per running foot. The minimum weight for sheep in
a forty-foot car is fourteen thousand pounds, and for a double deck car
nineteen thousand pounds. These minimum weights should be loaded if
possible.

The law requires that sheep in transit more than 28 hours must be
unloaded, watered and fed. This time may be increased to 36 hours at
the request of the shipper at time of billing.

The consignment may be made to any firm operating on the market
to which the shipment is made. In every case, the commission firm should
be notified of the probable arrival of the shipment and to whom the returns
are to be made. The commission firm will receive the shipment, superin-
tend the feeding, handle the sale, pay all freight, yardage, and selling charges, and forward the net returns to you or your bank.

COOPERATIVE SHIPMENTS

As many owners can enter a cooperative shipment as desired. The animals of each owner must be marked so as to be easily identified. The usual method of marking is to use sheep paint and paint stripes over the shoulders, back or rump.

The shipment is made in the name of one individual, but the commission firm must be informed as to the ownership of the shipment. He should be furnished with the name of each owner, the number and sex consigned by each owner, and the mark of each owner. On arrival, the sheep are separated into lots according to mark and each owner's shipment is sold separately. The charges are figured on a pound basis, each shipper pays his pro rata, and individual returns are made.

Be sure that a special sheep paint is used. Ordinary paint will not scour out and sheep painted with it are docked in price. Sheep paint may be secured from any firm handling sheep supplies.

Fig. 13. Trimming Feet.
COMMON SHEEP AILMENTS

Sheep are very subject to colds and should be protected from drafts and cold rains. A strong, hardy sheep is more resistant to disease and parasitic infestation.

Sheep are easily excited and should at all times be handled carefully and in groups if possible. When it is necessary to handle sheep for treating and shearing, they should be confined as closely as possible so as to avoid running and any other undue excitement. When necessary to catch a sheep, either catch him under the chin and force his head up or grasp him in both hind flanks. Sheep are often caught by the hind leg. This is not a safe practice with heavy sheep, particularly with pregnant ewes well advanced in the pregnant stage. Never grasp a sheep by the fleece. This very often pulls the skin away from the flesh.

TRIMMING FEET

Sheep on soft soils often become lame or awkward in movement due to excessive growth of the toes. This may be prevented by trimming the toes with a sharp knife. This is a simple operation for one man when the sheep is caught and placed on his rump with his back to the operator. The excess toe is then trimmed from the under side, but care should be taken to avoid cutting into the "quick".

SCREW WORMS

This maggot is hatched from the egg from the common blow fly. The egg is laid in a wound. The treatment is by use of chloroform. The chloroform is poured into the wound and the dead worms should be removed with as little irritation to the wound as possible. After removal of the worms, pine tar may be used as a fly repellant.

GRUB IN THE HEAD

This is a parasite in the sinuses of the head, which worked its way up through the nasal passages after being deposited in the nostrils by a fly. This condition is very painful and a symptom of a heavy infestation is a bloody discharge. Another common symptom is a lowering of the head and rubbing of the nose on the ground or forelegs.

Treatment is of practically no avail. Prevention is practical and cheap. Pine tar smeared on the nose at regular intervals has proved to be quite satisfactory as a preventive measure. The tar may be used at the regular drenching period for stomach worms.

LICE

Lice are found on the skin of sheep and cause itching and irritation. Very often in heavy infestations, patches of wool may be rubbed off in scratching. The lice may be found on the skin by a close inspection.

Any of the standard dips used according to directions will rid the sheep of lice when the sheep are dipped twice with a fourteen-day interval. Lime-sulphur dip or Black-leaf 40 have given excellent results. After the first dipping, sheep should be removed to new quarters, unless they are on pasture.
STOMACH WORMS

Stomach worms are the most serious menace to the southern sheep industry. Rotation of pastures is a big factor in stomach worm control when it is possible to practice it. Even though a control measure, it is almost impossible to prevent infestation by this method. Pasture changes should be made as often as possible. Temporary pastures may be utilized to an advantage in rotation as plowing is an aid in stomach worm control.

The most effective treatment at the present time is the bluestone (copper sulphate) treatment. The treatment should begin immediately after the lambing period and continue until frost. The flock should be drenched every fourteen days with a 1% solution of copper sulphate. The 1% solution may be made by dissolving one ounce of bluestone in one pint of warm water. After these crystals have dissolved, add sufficient water to make three quarts. This amount will drench 24 mature sheep.

The dose recommended for sheep of different weights is given below:

<table>
<thead>
<tr>
<th>Weight</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mature sheep</td>
<td>4 ounces</td>
</tr>
<tr>
<td>60-pound lambs</td>
<td>3.5 ounces</td>
</tr>
<tr>
<td>70-pound lambs</td>
<td>3 ounces</td>
</tr>
<tr>
<td>60-pound lambs</td>
<td>2.5 ounces</td>
</tr>
<tr>
<td>50-pound lambs</td>
<td>2 ounces</td>
</tr>
<tr>
<td>40-pound lambs</td>
<td>1.5 ounces</td>
</tr>
<tr>
<td>30-pound lambs</td>
<td>1 ounce</td>
</tr>
</tbody>
</table>

Lambs weighing less than 30 pounds are not treated.

For tape worms, one ounce Black Leaf 40 (nicotine sulphate) should be added to every three quarts of the 1% bluestone solution, mentioned above at every other drenching. A glass measure graduated in ounces, a glass funnel, 3 feet of rubber tubing one-fourth inch in diameter, and a brass tube 8 inches in length and one-eighth or one-quarter of an inch in diameter, and a glass or crockery (copper sulphate corrodes metal) mixing vessels is all the equipment necessary. Use blue crystals of copper sulphate and not the white.

The flock should be kept up the night before drenching without feed or water.

To drench, place sheep with its hind quarters against a fence or in a corner. The person to administer the dose stands to right of sheep, and with left hand, raises the sheep's head to a horizontal position, and with right hand, inserts the brass tube in the space between the front and jaw teeth and on top of tongue. The accurate dose is measured in glass measure by the assistant and poured into the funnel which is attached to the brass tube by the rubber tube. Be sure that the sheep has swallowed before the head is lowered. In case of strangulation, the head should be lowered immediately.

OTHER INTERNAL PARASITES

Tape worms, nodular worms, and whip worms are common internal parasites of sheep in Mississippi. The treatment for tape worms is given

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1. Treatment suggested by Dr. Cooper Curtice, Zoological Division, Bureau Animal Industry, McNeil, Miss.
above and the combined treatment for stomach worms and tape worms is usually effective against other intestinal parasites.

**BLOATING**

When sheep on dry feed are turned on green legumes, great care must be taken to prevent bloating. This is particularly true in grazing alfalfa and other clovers. More bloating occurs during wet weather or after heavy dews in the spring. It is advisable to give the sheep as much hay as they will clean up at the morning feeding, and then wait until the dew has dried off the forage before turning the flock to pasture.

**CONSTIPATION**

Constipation often occurs in mature sheep that are being fed coarse roughages in a dry lot. To prevent constipation, laxative feed, such as wheat bran, should be provided, or better still, a winter pasture. In severe cases of constipation, drench mature sheep with 2-4 ounces of Epsom salts. Lambs may be given 1 to 2 ounces of castor oil and a warm water enema.

A dose of castor oil is often sufficient to remove the irritation cause of diarrhoea in lambs.

**CATARRH AND PNEUMONIA**

Catarrh, commonly known as a "cold," is a result of exposure to dampness or cold, especially after early shearing. There is a discharge from the eyes and nose which is at first watery and later thick and stringy. Further symptoms are labored breathing, slight fever, lack of appetite, sneezing and coughing. Catarrh may followed by bronchitis or by pneumonia as a complication.

Catarrh is treated by smearing pine tar over the nostrils and providing clean, dry quarters.

Pneumonia, or inflammation of the lungs, may result from the same cause as catarrh, it may be due to localization of a general infection in the lungs, or it may be caused by carelessness in drenching or dipping when fluids are allowed to run down the windpipe.

The same general suggestions for the treatment of catarrh apply here; otherwise, treatment must be governed by the symptoms that appear.

**SORE EYES**

When sore eyes appear, either from injury or infection, drop 2 or 3 drops of 12% Argyrol solution in each eye daily until the inflammation subsides.

**FOOT ROT**

Foot rot may develop among sheep pastured or fed on wet ground. There is a severe lameness, discharge of pus from the hoof, and a bad odor about the feet.

To treat, change the flock to dry soil, clean affected feet, trim out diseased tissue, wash wounds with an antiseptic solution and dress with tar. Iodine may be used on affected parts of the foot.
PART II
SHEEP INVESTIGATIONS, MISSISSIPPI EXPERIMENT STATION, 1916-1928

This report summarizes the results of Sheep Investigations at the Mississippi Experiment Station since June 1, 1916. The results were obtained under the direction of the following:

D. J. Griswold, Station Animal Husbandman, 1919-21.
E. Barnett, Head of Animal Husbandry Department, 1921-23.
G. S. Templeton, Head of Animal Husbandry Department, 1923-28.
H. H. Leveck, Assistant in Animal Husbandry, has been in charge of sheep investigations since 1926.

Grading Up With Purebred Mutton Rams

PLAN

In the spring of 1916, the Mississippi Station planned an experiment with the object in view of studying the possibilities of developing a grade ewe flock by the use of purebred rams on native Mississippi ewes. Particular attention was to be paid to the increase in wool production and the development of a ewe flock capable of producing a lamb to suit the demands of the early lamb market in regard to type, finish and early maturity, and at the same time, retain the hardiness, milking qualities, and early yeaning habits of native ewes.

With this in view, seventy-seven two and three-year-old native ewes were purchased in South Mississippi at a cost of three dollars per head on the car. These ewes were shipped from Picayune, Mississippi, on June 2 and seventy-five of them averaged 51.1 pounds in weight on June 22, 1916.

These ewes were divided into three lots and a purebred Southdown ram was run with one lot, a purebred Shropshire ram with one lot, and a purebred Dorset ram with the remaining lot.

Two ewes died during 1916 due to a heavy infestation of internal parasites.

1917 RECORDS

A seventy-five per cent lamb crop was raised to June, 1917. The best ewe lambs from this crop were added to the flock while the remainder were sold locally.

The records of the wool clipped and the yeaning dates are not available. Five ewes died during the year, leaving sixty-eight of the original native ewes in the flock. These native ewes were divided into four approximately equal lots. Three of the lots were the same as for 1916, and a purebred Merino ram was purchased for the additional lot.

1918 RECORDS

The sixty-eight native ewes yeaned sixty-five living lambs for a season's percentage of ninety-five. The birth dates for three of the lambs:
were not recorded. Of the total number yeamed, 3 per cent came in December, 30 per cent in January, and 60 per cent in February.

The following table gives the birth weight by breeds of the lambs yeamed in the spring of 1918:

**TABLE I**

**Birth Weight of 1918 Lambs from Native Ewes**

<table>
<thead>
<tr>
<th>Breeding of Sire—</th>
<th>No. of Lambs</th>
<th>Weight at Birth (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southdown</td>
<td>15</td>
<td>6.8</td>
</tr>
<tr>
<td>Shropshire</td>
<td>16</td>
<td>7.3</td>
</tr>
<tr>
<td>Dorset Horn</td>
<td>16</td>
<td>7.1</td>
</tr>
<tr>
<td>Merino</td>
<td>15</td>
<td>6.4</td>
</tr>
</tbody>
</table>

The best ewe lambs were added to the flock and the remainder were sold in July for a price of $8.60 per head.

Three of the native ewes died during the year and the remaining sixty-five were divided into four lots and run as the year before. The grade yearling ewes were run with the rams of like breeding.

![Fig. 14. A Purebred Dorset Horn Ram.—A Native Ewe and Their Grade Lamb.](image)

**1919 RECORDS**

Including the yearling grade ewes, the flock for the yeaning season of 1919 numbered 87 head. These ewes produced an eighty-eight per cent lamb crop during this season. Eleven and five-tenths per cent came in December, sixty-eight and eight-tenths per cent in January, ten and four-tenths per cent in February, five and two-tenths per cent in March, and the remainder in April.
The following table gives the birth weight by breeds for the lambs yeaned:

**TABLE II**

Birth Weight of 1919 Lambs From Native and Grade Ewes

<table>
<thead>
<tr>
<th>Breeding of Sire —</th>
<th>Breeding of Dam —</th>
<th>No. of Lambs</th>
<th>Wt. at Birth (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southdown —</td>
<td>Native —</td>
<td>13</td>
<td>8.04</td>
</tr>
<tr>
<td>Shropshire —</td>
<td>Native —</td>
<td>14</td>
<td>9.32</td>
</tr>
<tr>
<td>Dorset Horn —</td>
<td>Native —</td>
<td>15</td>
<td>7.97</td>
</tr>
<tr>
<td>Merino —</td>
<td>Native —</td>
<td>14</td>
<td>8.39</td>
</tr>
<tr>
<td>Southdown —</td>
<td>Southdown —</td>
<td>7</td>
<td>6.88</td>
</tr>
<tr>
<td>Shropshire —</td>
<td>Shropshire —</td>
<td>6</td>
<td>7.83</td>
</tr>
<tr>
<td>Dorset Horn —</td>
<td>Dorset Horn —</td>
<td>10</td>
<td>7.90</td>
</tr>
</tbody>
</table>

It will be noted that lambs from the native ewes were larger than those from grade ewes. This is probably due to the fact that all of the native ewes were mature while the grades were yearlings.

Sixty-two of these lambs were sent to St. Louis in a cooperative shipment. They sold on the market on June 17 for 14 cents per pound and their average weight was 51.61 pounds. The cost of selling was 82 cents per lamb, leaving $6.41 net per lamb.

Shearing data was secured in 1919 and is reported in the following table:

**TABLE III**

Average Weight of Native and Grade Ewes and Average Weight of Fleece Produced—1919

<table>
<thead>
<tr>
<th>Number</th>
<th>Breeding of Ewes</th>
<th>Age</th>
<th>Avg. Wt. of Ewes Before Shearing (Lbs.)</th>
<th>Avg. Wt. of Fleece (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>Native —</td>
<td>Aged</td>
<td>65.2</td>
<td>2.52</td>
</tr>
<tr>
<td>18</td>
<td>Grade Southdown</td>
<td>1 and 2’s</td>
<td>80.3</td>
<td>5.18</td>
</tr>
<tr>
<td>12</td>
<td>Grade Shropshire</td>
<td>1 and 2’s</td>
<td>74.7</td>
<td>5.23</td>
</tr>
<tr>
<td>16</td>
<td>Grade Dorsets</td>
<td>1 and 2’s</td>
<td>83.3</td>
<td>4.64</td>
</tr>
<tr>
<td>12</td>
<td>Grade Merinos</td>
<td>1 year</td>
<td>81.5</td>
<td>6.90</td>
</tr>
</tbody>
</table>

The average weight of fleece of the grade ewes is practically double that of the natives. This table further reveals that the grade ewes from the native ewes weigh 20 to 25 per cent more. A comparison of the weight of the native ewes on this date with their weight on June 22, 1916, reveals the fact that they have increased in weight from 52.1 to 65.2, a gain of 13 pounds due probably to a higher plane of nutrition.

Two ewes died during the year and all of the remaining native ewes except eight were sold. Twenty-five of the best native ewes were sold to the Coastal Plain Experiment Station at McNeil, Mississippi.

The breeding flock for the year consisted of the eight native ewes, fifteen grade Dorset ewes, eleven grade Shropshire ewes, seventeen grade Southdown ewes, and eleven grade Merino ewes.
1920 RECORDS

Only a 77 per cent lamb crop was raised for the year 1920. The earliness of weaning was satisfactory, as 55 per cent came in January, 43 per cent in February, and the remainder in March.

TABLE IV

Birth Weight of 1920 Lambs From Native and Grade Ewes

<table>
<thead>
<tr>
<th>Breeding of Ewe—</th>
<th>No. of Lambs</th>
<th>Weight at Birth (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native</td>
<td>7</td>
<td>7.35</td>
</tr>
<tr>
<td>Grade Southdown</td>
<td>17</td>
<td>5.07</td>
</tr>
<tr>
<td>Grade Shropshire</td>
<td>12</td>
<td>5.29</td>
</tr>
<tr>
<td>Grade Dorsets</td>
<td>13</td>
<td>6.25</td>
</tr>
<tr>
<td>Grade Merinos</td>
<td>7</td>
<td>5.53</td>
</tr>
</tbody>
</table>

Fifty-one of these lambs were sold on the St. Louis market July 1. Thirty were classed as good lambs and sold for $13.00 per cwt., and averaged 61.3 pounds. Twenty-one were sold as culls for a price of $6.00 per cwt., and averaged 52 pounds in weight.

Fig. 15. Lamb from the native ewe on right sired by a purebred ram. Note the difference in wool covering.

(Coastal Plains Experiment Station, McNeil, Miss.)

The flock was sheared on May 5, 1920, and the following table gives the average weight of ewe before shearing and the average weight of fleece:
TABLE V

Average Weight of Native and Grade Ewes and Average Weight of Fleece Produced—1920

<table>
<thead>
<tr>
<th>Number of Ewes</th>
<th>Breeding of Ewes</th>
<th>Avg. Wt. of Ewes Before Shearing (Lbs.)</th>
<th>Avg. Wt. of Fleece (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Native</td>
<td></td>
<td>74.67</td>
<td>3.34</td>
</tr>
<tr>
<td>17 Grade Southdown</td>
<td></td>
<td>76.41</td>
<td>4.57</td>
</tr>
<tr>
<td>15 Grade Shropshire</td>
<td></td>
<td>78.26</td>
<td>4.45</td>
</tr>
<tr>
<td>15 Grade Dorsets</td>
<td></td>
<td>89.53</td>
<td>4.43</td>
</tr>
<tr>
<td>11 Grade Merinos</td>
<td></td>
<td>73.63</td>
<td>5.65</td>
</tr>
</tbody>
</table>

No records of the flock were kept during the years of 1921, 1922, 1923, and 1924. The grade ewes were kept as a basic flock and Southdown rams were used. In the summer of 1925, forty-six local ewes of mixed breeding were purchased and added to the flock of forty-four grade ewes and sixteen grade ewe lambs. New work was planned and carried out as outlined in the following pages.

WINTERING BREEDING EWES, 1925-26

On December 10, 1925, ninety ewes were placed on a ration of one-fourth pound of cottonseed meal, and one and three-tenths pound of Johnson grass hay. At the end of the first week the amount of meal was raised to one-third of a pound and at the end of the second week, to one-half pound. Temporary pasture was available after the ewes yeaned. The following table gives the results of the work.

TABLE VI

Winter Breeding Ewes—First Trial

Breeding of Ewes—Grade Southdown, Shropshire, Dorset and Native Ewes
Age of Ewes—Two-Year-Old to Aged Ewes

Length of Period—December 10, 1925 to March 18, 1926—94 Days

<table>
<thead>
<tr>
<th>Number of Ewes</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Initial Weight (lbs.)</td>
<td>93.7</td>
</tr>
<tr>
<td>Average Final Weight (lbs.)</td>
<td>105.8</td>
</tr>
<tr>
<td>Average Gain per Ewe (lbs.)</td>
<td>7.1</td>
</tr>
<tr>
<td>Average Daily Gain (lbs.)</td>
<td>0.075</td>
</tr>
<tr>
<td>Average Daily Ration:</td>
<td></td>
</tr>
<tr>
<td>Cottonseed Meal (lbs.)</td>
<td>0.489</td>
</tr>
<tr>
<td>Johnson Grass Hay (lbs.)</td>
<td>1.33</td>
</tr>
<tr>
<td>*Cost of Feed per Ewe</td>
<td>$1.54</td>
</tr>
</tbody>
</table>

*Cost of Cottonseed meal at $33.00 per ton and Johnson Grass Hay at $12.00 per ton.

The flock produced a 118 per cent lamb crop for the season of 1925 and 1926. The lambing season was late as only 37 per cent were yeaned prior to March 18, which was the end of the winter feeding period. As most of the ewes had not yeaned, it is indicated that this ration would
suffice for pregnant ewes, but would not suffice for suckling ewes, as is indicated by a subsequent experiment reported.

Fig. 16. Grade Lambs. First, Second, and Third Crosses.

WINTERING BREEDING EWES, 1926-27

The ewes were thin at the beginning of the 1926-27 winter feeding period. Wheat bran was added to the cottonseed meal-Johnson grass hay ration. Each ewe had green grazing immediately after weaning.

TABLE VII
Winter Breeding Ewes—Second Trial
Breeding of Ewes—Grade Southdown, Shropshire, Dorset and Native Ewes
Age of Ewes—Two-year-Old to Aged Ewes

Length of Period—December 14, 1926 to February 9, 1927—58 Days

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Ewes</td>
<td>95</td>
</tr>
<tr>
<td>Average Initial Weight (lbs.)</td>
<td>100</td>
</tr>
<tr>
<td>Average Final Weight (lbs.)</td>
<td>100.4</td>
</tr>
<tr>
<td>Average Gain per Ewe (lbs.)</td>
<td>.4</td>
</tr>
<tr>
<td>Average Daily Gain per Ewe (lbs.)</td>
<td>.007</td>
</tr>
<tr>
<td>Average Daily Ration</td>
<td></td>
</tr>
<tr>
<td>Cottonseed Meal (lbs.)</td>
<td>.78</td>
</tr>
<tr>
<td>Wheat Bran (lbs.)</td>
<td>.39</td>
</tr>
<tr>
<td>Johnson Grass Hay (lbs.)</td>
<td>1.03</td>
</tr>
</tbody>
</table>

*Cost of Feed per Ewe               | $1.13      |

* Cottonseed meal at $25.00 per ton, Wheat bran at $30.00 per ton, and Johnson grass hay at $12.00 per ton.
The ewes used in this work yeaned an 89 per cent lamb crop for the season. Seventy-seven per cent were yeaned prior to the end of the feeding period. As each ewe was turned to oat and rye pastures as soon as she yeaned, it would seem that this ration, along with a temporary grazing crop is an economical ration for wintering the breeding flock.

WINTERING BREEDING EWES, 1927-28

For the season of 1927-28, the flock was divided into three lots of 25 ewes each. Each lot received equal amounts of cottonseed meal and wheat bran. Corn was added to all lots January 8. Lot I received alfalfa hay, Lot II, Johnson grass hay, and Lot III, soybean hay in addition to grain. No pasture was available during this experiment.

TABLE VIII

Wintering Breeding Ewes—Third Trial

Breeding of Ewes—Grade Southdown, Shropshire and Native Ewes
Age of Ewes—Two-Year-Old to Aged Ewes

Length of Period—December 15, 1927 to March 2, 1928—79 Days

<table>
<thead>
<tr>
<th></th>
<th>Lot I</th>
<th>Lot II</th>
<th>Lot III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Ewes</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Average Initial Weight (lbs.)</td>
<td>108</td>
<td>108</td>
<td>108</td>
</tr>
<tr>
<td>Average Final Weight (lbs.)</td>
<td>96</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>Average Gain per Ewe (lbs.)</td>
<td>-12</td>
<td>-10</td>
<td></td>
</tr>
<tr>
<td>Average Daily Gain per Ewe (lbs.)</td>
<td>-.151</td>
<td>-.126</td>
<td></td>
</tr>
<tr>
<td>Average Daily Ration:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Corn (lbs.)</strong></td>
<td>.28</td>
<td>.28</td>
<td>.28</td>
</tr>
<tr>
<td>Cottonseed Meal (lbs.)</td>
<td>.44</td>
<td>.44</td>
<td>.44</td>
</tr>
<tr>
<td>Wheat Bran (lbs.)</td>
<td>.28</td>
<td>.28</td>
<td>.28</td>
</tr>
<tr>
<td>Alfalfa Hay (lbs.)</td>
<td>1.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson Grass Hay (lbs.)</td>
<td>1.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soybean Hay (lbs.)</td>
<td>1.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cost of Feed per Ewe</strong></td>
<td>$2.42</td>
<td>$2.28</td>
<td></td>
</tr>
</tbody>
</table>

*The Ewes in Lot II did not do well on the ration, so the lot was discontinued after 51 days of feeding, which would indicate that even though this ration was found to be satisfactory for pregnant ewes, it plus corn would not suffice for suckling ewes.

**Equal amount of corn were added on January 8 to all lots because ewes were losing weight.

***Corn was charged at $1.00 per bushel, Cottonseed meal at $40.00 per ton, Wheat bran at $38.00 per ton, Alfalfa hay at $20.00 per ton, Johnson grass hay at $12.00 per ton, Soybean hay at $13.00 per ton.

As stated, Lot II was discontinued after 51 days of feeding due to the fact that the ewes were unable to produce the milk required on such a ration. As 89 per cent of a 101 per cent lamb crop was yeaned during the feeding period, practically all ewes were suckling lambs for a greater part of the period. It will be remembered that this ration without corn was a satisfactory ration for breeding ewes prior to lambing in the first trial.

There was no noticeable difference in the condition of the ewes nor in lambs produced between the lots on alfalfa and soybean hay. The cost of wintering was slightly in favor of the soybean lot for the prices used.
STOMACH WORM CONTROL WORK

This station for the past three years has tried various methods for controlling stomach worms. A brief report of this work is given below:

During the grazing season of 1926, the flock of mature sheep and the lambs were drenched every four weeks with Lugol’s solution. Some forty per cent of the lambs were lost during the season with typical symptoms of heavy stomach worm infestation. Post-mortem examinations showed a heavy stomach worm infestation and a few tape worms. A few of the older ewes developed symptoms during the latter part of the grazing season. One was posted and showed heavy stomach worm infestation.

During the grazing season of 1927, the flock of mature sheep and the lambs were drenched every three weeks with a 1% solution of copper sulphate. *Forty lambs were posted in June by competent parasitologists and showed from medium to heavy infestation of stomach worms and tape worms. Of thirty lambs carried through the entire grazing season, five died and upon being posted, showed heavy infestation of stomach worms and a few tape worms. A few ewes developed symptoms of stomach worm infestation, but none were posted.

Since the season of 1928, the method as recommended in this bulletin has been employed with good success. The breeding flock has been kept in a strong, healthy condition and of fifty-one lambs treated and slaughtered, fifty-eight per cent were found to be entirely free of stomach worm infestation. The report on these lambs as made by parasitologists of the Zoological Division of the Bureau of Animal Industry, Washington, D.C., follows:

TABLE IX

<table>
<thead>
<tr>
<th>Intestinal Worm Report of Lambs</th>
<th>Stomach Worms</th>
<th>Whip Worms</th>
<th>Nodular Worms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of lambs examined</td>
<td>51</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>Number of lambs free of worms</td>
<td>30</td>
<td>30</td>
<td>46</td>
</tr>
<tr>
<td>Number of lambs with very light infestation</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Number of lambs with light infestation</td>
<td>19</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Number of lambs with moderate infestation</td>
<td>0</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

Twenty-six of the fifty-one lambs were free of tape worms. Nine contained one tape worm and the remainder had two, three or four tape worms.

Not a single lamb was found to have a heavy infestation of any kind of internal parasite.

* The forty lambs and the fifty-one lambs referred to are from a part of a national project “A Study of the Facts that Influence the Quality and Palatability of Meat,” conducted by the Mississippi A. & M. College and the Bureau of Animal Industry, United States Department of Agriculture cooperating.
SUMMARY

Native ewes are hardy, thrifty, good milkers, and will breed early.

The grade ewes produced by crossing purebred rams on native ewes inherit the early breeding habit of the dam.

Desirable market lambs can be produced from grade and native flocks by the use of purebred rams.

Purebred rams will sire lambs that will, when mature, produce twice as much wool as their native dams.

Pregnant ewes may be carried up until lambing time on grass hay and a small amount of cottonseed meal.

Suckling ewes require more feed than pregnant ewes and should be fed accordingly.

Temporary pastures for winter grazing are inestimable in value.

Late lambs and lambs on light pasture should receive a grain ration in order that they may be put on the high market. (Lamb prices are usually highest in May and early June).

Stomach worms and other internal parasites can be largely controlled by proper drenching.
HELPFUL REFERENCES

Most of these publications can be obtained free by request from the institution concerned.

United States Department of Agriculture, Washington, D. C.

Farmers' Bulletin No. 810 (1922): Equipment for Farm Sheep Raising.

Farmers' Bulletin No. 840 (1925): Farm Sheep Raising for Beginners.


Farmers' Bulletin No. 1324 (1923): Lamb and Mutton and Their Use in the Diet.


University of Kentucky, Lexington, Kentucky:


Circular No. 85 (1924): Docking and Castrating Lambs.

Circular No. 151 (1923): Care and Management of Ewe and Lamb.

Circular No. 153 (1923): Purebred Rams are Profitable.