

COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF OKLAHOMA

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**Sheep Management
In Oklahoma**

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Sheep Management in Oklahoma

INTRODUCTION

This circular is prepared in the hope that it may be of some assistance to the sheep farmer and the 4-H club members and vocational agriculture students. In preparing this, we have attempted to emphasize the various phases of sheep production that are of most interest to Oklahoma sheepmen, as indicated by inquiries received at this office.

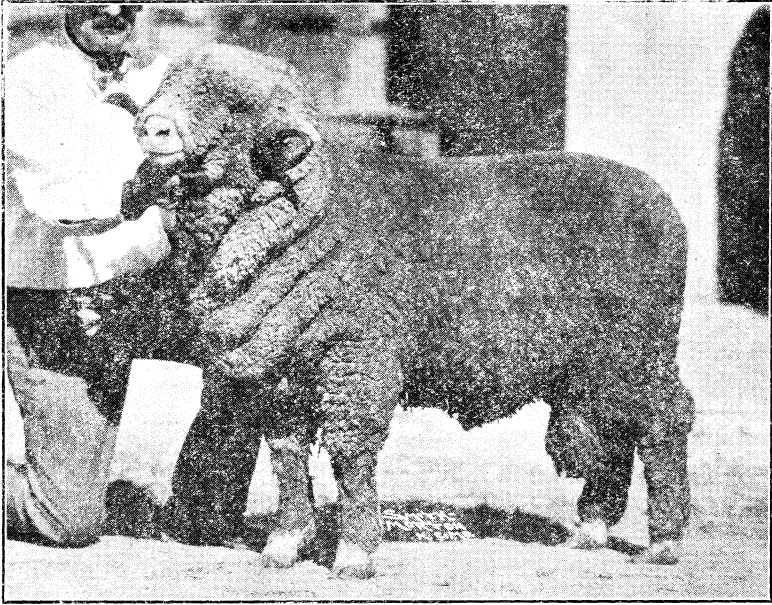
Sheep Situation. During the past several years, there has been an increased interest in sheep in Oklahoma. There are now some 150,000 head of sheep in the state compared with 80,000 several years ago. This increased number is largely due to the high prices received for wool and lambs during the past few years.

There are a great many farmers in the state who could increase their farm income by adding a small flock of sheep. Anyone who expects extremely large profits, with little effort, should be discouraged from buying sheep but those farmers who will be satisfied with an income of from 10 to 15 per cent on the investment and who are willing to put considerable effort into the enterprise will find it profitable. At the present time, lambs and wool both are cheap. Nevertheless, we feel justified in urging all sheepmen to retain their present flocks; also to encourage others to start in the sheep business. We do this because of the fact that sheep, even at the present prices, will return a desirable profit and especially is this true where the farmer keeps a small flock of 25 to 50 ewes.

There are two types of sheep and several breeds of each type. A breed is available for almost every condition. The following outline does not include all breeds, but only those that may be of most interest in Oklahoma at this time.

Types of Sheep.

MUTTON TYPE	{	Medium Wool:	WOOL TYPE	{	Rambouillet
		Southdown			Merino
		Shropshire			
		Hampshire			
		Oxford			
		Dorset			
		Long Wool:			
	{	Lincoln			
		Leicester			
		Cotswold			

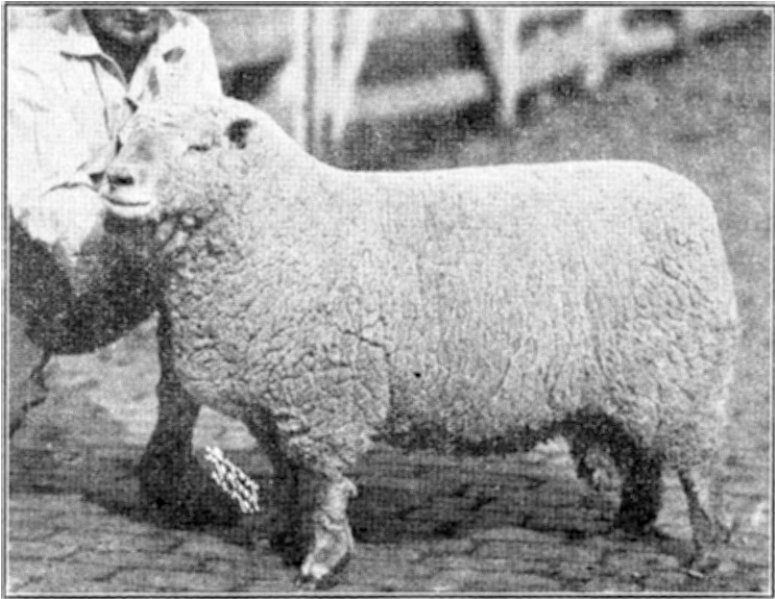
BREEDS**Rambouillet Ram—Fig. I**

The wool type of sheep has been developed for the production of large quantities of fine wool. Sheep of this type have been known to clip as high as 45 and 46 pounds of wool and on the average will produce several more pounds of wool per head than the mutton type of sheep.

In selecting for wool production, it is natural that mutton conformation should be disregarded to a certain extent. Our fine wool sheep of today have a more desirable mutton conformation than they did 20 or 30 years ago, but they still do not compare with the recognized mutton breeds in this respect.

Of the two breeds mentioned in the above outline, the Rambouillet is the most common in this section of the country and is preferred to the Merinos because it is larger and possesses more desirable mutton conformation. The grade fine wools secured from the range country, as suggested on page 9, are usually grade Rambouillets, and as suggested, when mated with a mutton ram produce a very desirable market lamb. This type of sheep is noted for its gregariousness or flocking instinct. It is also a very hardy sheep and is able to live in sections which have very scant vegetation. The Rambouillet will breed for fall or winter lambs, and for this reason are popular in the southern states and especially in Oklahoma. The pure bred Rambouillet in the college flock produces as large a percent of fall and winter lambs as the Dorset, and when these ewes can be purchased in a range country, in July or August, they are in excellent condition for producing lambs for April, May or June markets.

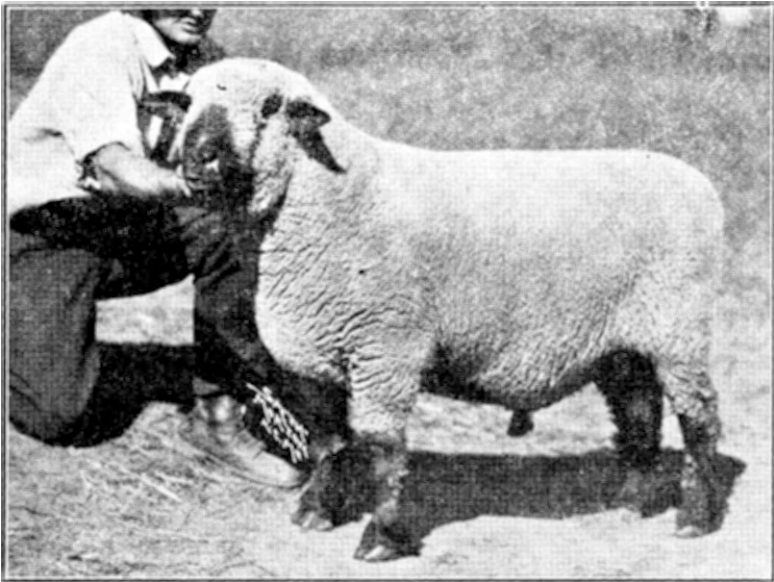
Mutton Type. The mutton type of sheep has been developed for meat production and to a certain extent, the production of wool has been a secondary consideration. In order to produce the most economical meat, it is necessary to develop sheep that are very short, compact and low-set. This type of sheep makes the most economical use of its feed and produces cuts that are demanded by the consuming public.



Southdown Ram—Fig. II

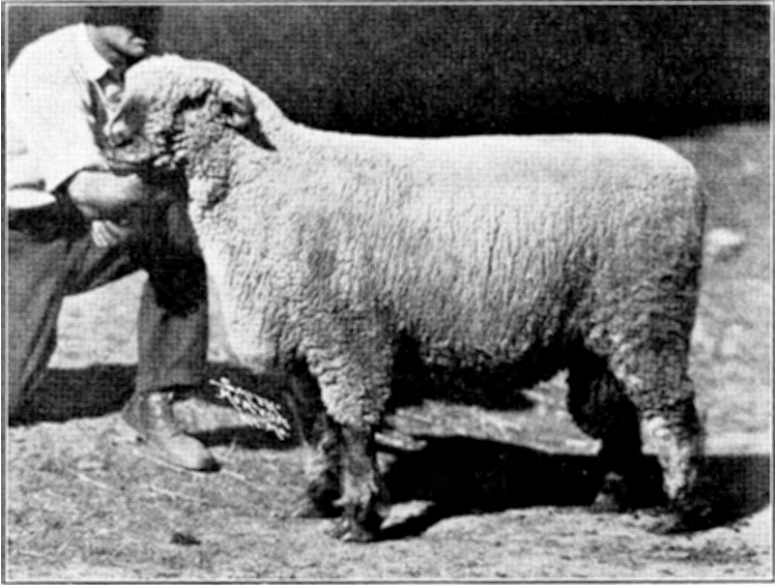
Southdown. The Southdown breed of sheep originated in England. It is the smallest of the important mutton breeds. The nose and legs should be a mouse color. Those running to a light gray or dark brown are objectionable to producers of purebred sheep. It also has the distinction of being the most perfect in mutton type or conformation. In inter-breed competition, Southdown wethers, both single and in carload lots, have won more championships than any of the other breeds. In spite of this distinction, Southdowns have not become as popular in this state as some of the other breeds. This lack of popularity can probably be attributed to their lack of size and to their light wool clip. There has been an increased interest in Southdowns in Oklahoma during the last three years, with the establishing of three or four purebred flocks. Wethers of this breed are much in demand by club and vocational boys, for exhibiting at the various fat stock shows.

Shropshires. The Shropshire is the second of the important breeds in size, being considerably larger than the Southdown and lacking somewhat in compactness, tightness of frame and general type. The Shropshire is the most popular breed in Oklahoma. There are more purebred and grade Shropshires in the state than any other breed. A shropshire ewe should shear from 8 to 10 pounds. They are very prolific and are good mothers. The extremities of the Shropshire are a dark brown or black. The most distinguishing factor about the breed is the wool covering over the face to the tip of the nose, and on the legs to the feet; they also have a very small ear.



Hampshire Ram—Fig. III

Hampshire. The Hampshire, as a breed, is larger than the Shropshire, with very dark face and legs and large dark droopy ears. The Hampshire may have wool over the face, or the face may be practically bare, there being no distinction made between these characteristics as far as judging is concerned. This is the second most numerous breed in the state and is particularly popular in the southwestern portion. This breed is used extensively for crossing with grade fine wool ewes. There is some objection to this practice by some farmers because they claim the lambs are too large for normal birth, with these small western ewes. Light-faced fine wool ewes bred to a Hampshire ram produces practically all dark-faced lambs.

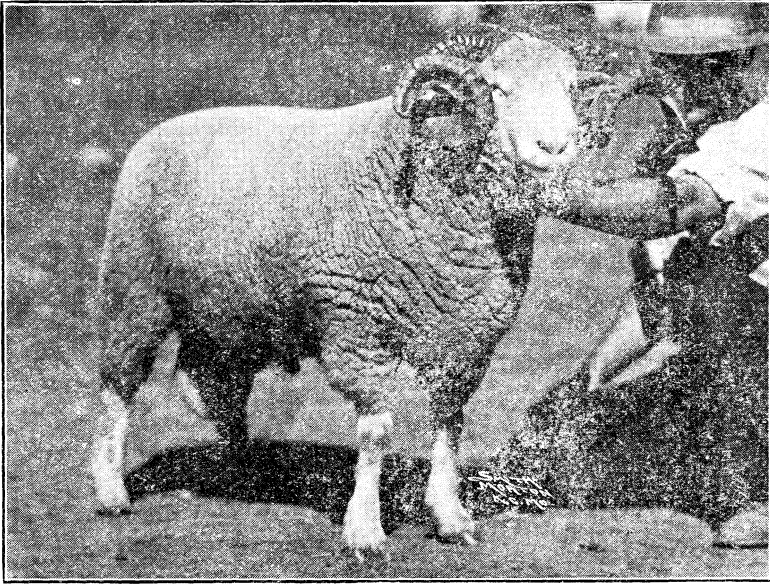


Oxford Ram—Fig. IV

Oxford. The Oxford is the largest of the medium wool sheep. It has never been popular in this section, excepting for cross-breeding. The pure-breds are very large and are objected to because of the coarseness that is usually associated with their size. The Oxford has a brown face and legs. The face is practically free of wool but the wool at the poll grows in the form of a top-knot.

Long Wools. The long wool mutton type breeds are not known in this state. They are more popular in the northern states and in Canada. They produce a very coarse wool known in the market trade as "braid" or "luster" wool. These sheep are quite large and are objected to in this section for that reason.

Dorsets. The Dorset is a medium sized breed. It is of English origin, and is easily recognized because it is the only medium wool breed with horns and white-face, present in both sexes. This breed is popular in the east and is known principally for the fact that it will breed at almost any season of the year. It is used for the production of Easter or very early spring lambs. The ewes are especially heavy milkers, very good mothers, and very prolific. They are objected to on the part of some sheep men, because they lack the desired mutton conformation found in most of the dark faced breeds and shear less wool than Oxfords, Shropshires, Hampshires or Southdowns.



Dorset Ram—Fig. V

Starting the Farm Flock. In starting the farm flock, one should consider his present farm program and the method of sheep production that he wishes to follow. On most farms, the flock of sheep can be fitted into the general farm plan, and if the flock is small, it should be so handled that there will be no interference with the general farm program. The method of starting, equipment needs, etc., will of course, differ for the man who expects to keep a flock of 25 or 50 ewes as a side line, from the man who plans to make sheep farming his major enterprise.

Some farmers will plan to market their lambs on the early spring or Easter market, others to market in the early summer, and still others, who grow the lambs through the summer and fatten them on harvested feeds in the fall, will plan to market them in January and February. If the system to be followed is decided on before the sheep are purchased, it will, undoubtedly, save time and money later.

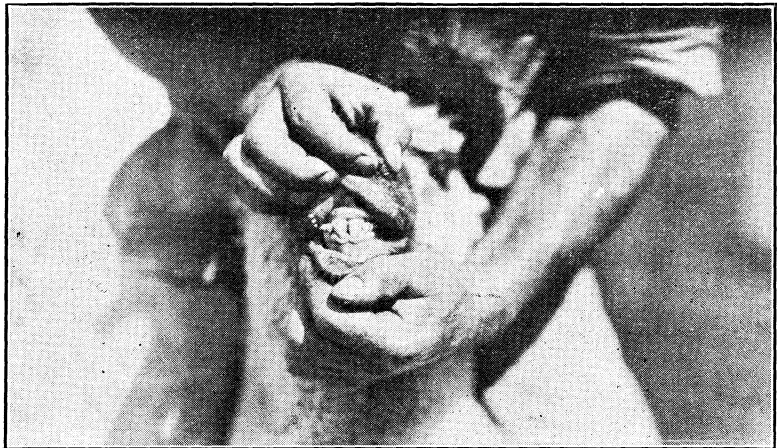
Native Ewes. There are two places where one may purchase ewes for the commercial farm flock. One is to purchase native ewes locally and the other to purchase from the central market. The native ewes in Oklahoma are all black-faced, medium wool ewes, grade Hampshire, Shropshire, or Southdowns. These breeds, of course, have been developed for mutton production and for that reason, the black-faced native ewe is a more desirable mutton ewe than the fine wools. There are two general objections advanced against native ewes. One is that they are generally more expensive than westerns, also that they are more likely to be infested with parasites, especially stomach worms. On the other hand, the farmer who plans to buy 20 or 25 ewes cannot afford to go to a central market, and the logical thing for him to do is to buy ewes from one of his neighbors when possible. He also has the added advantage of knowing

the conditions under which the ewes have been kept and something about their history. Under these conditions, one can make a more intelligent selection of the ewes.

Western Ewes. In going to the market to purchase ewes, we generally advise the purchase of grade western ewes which are grade Rambouillets or fine wools. These ewes are smaller than the native mutton ewes and much less desirable in mutton conformation. Since they are smaller, and so often are purchased by the pound, they can be bought for less money than the native ewes. We feel that the purchasing of native ewes on the central market, puts the buyer at more or less of a disadvantage because of the danger from parasites and diseases; also because the number of ewes of this kind are limited and he therefore can not practice as rigid a selection as with westerns.

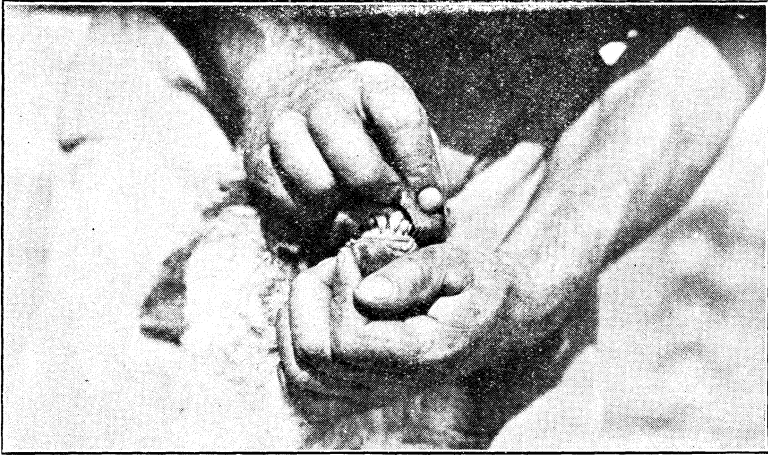


Lamb—Fig. VI

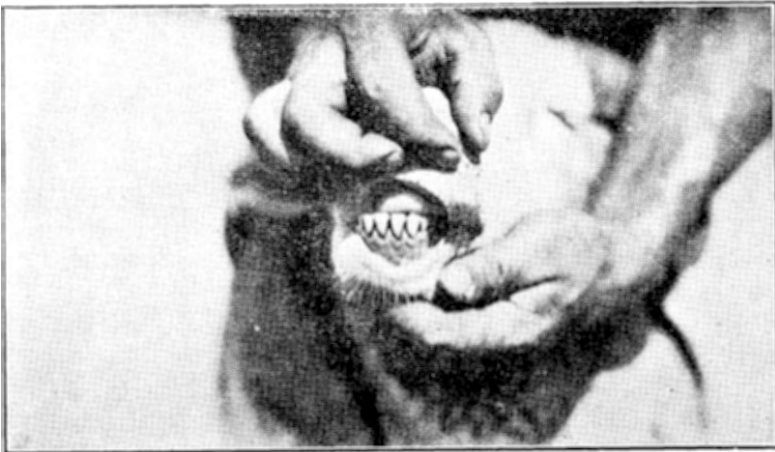


Yearling—Fig. VII

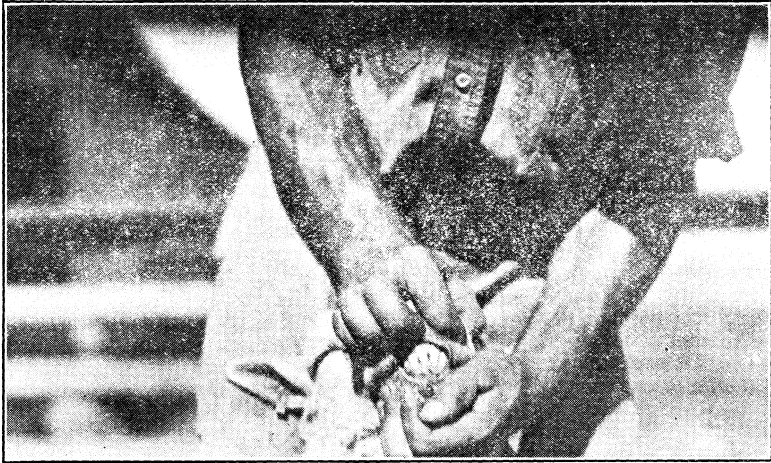
These fine wool ewes, when mated with a black-faced mutton ram, produce very desirable lambs, especially for marketing at weaning time. The older the sheep become before they are marketed, the more apparent the fine wool breeding becomes. Therefore, in purchasing these ewes, one should keep this in mind and get the lambs to market at 4 or 5 months of age if possible. In selecting these ewes either locally or on the market, one should keep in mind the soundness of udders and teeth, particularly soundness of udders. You will find quite a number of ewes going to market because they have spoiled udders and are of no value for raising lambs. Another important thing to consider is the age or teeth.



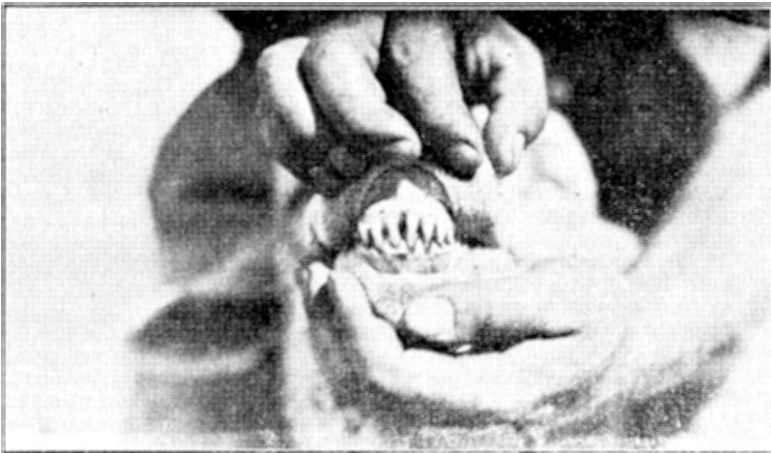
Two Years Old—Fig. VIII



Three Years Old—Fig. IX



Four Years Old—Fig. X



Five or Six Years Old—Fig. XI

Age to Buy. The beginner will probably be more successful if he buys two or three year old ewes. These ewes will have raised at least one lamb and should be better mothers than younger ones. Old broken mouthed ewes are hard to keep through the winter and the losses are heavy. After purchasing these ewes at a few dollars per head, one may find by spring that the ewes that remain have cost about as much per head as good young ewes would have cost the previous fall.

Time to Buy. The best time to secure ewes is in the fall of the year. This is the natural breeding season for sheep, also the time that the flocks

are sorted and a great number of ewes are coming to market. In attempting to purchase ewes at lambing time, one generally finds that he must pay considerably more for them; as one is buying ewes that the farmer or breeder had planned to keep in his own flock.

Breeding Season. The breeding season for sheep is in the fall of the year, with the exception of one or two breeds that have been previously discussed. All good shepherds recommend that the sheep owner practice flushing. By this, we mean, the feeding of the ewes to cause them to gain in weight. This is usually done by placing the ewes on good green pasture. This pasture may be furnished by volunteer oats, cowpeas, barley or any other green pasture available at that time of the year. If the ewes are thin when purchased, they will start gaining immediately when placed on this sort of pasture and should be in excellent condition for breeding.

Flushing the ewes is supposed to bring them in heat early and also to increase the number of twins. We have recommended, although we have no experimental proof on which to base the recommendation, that when pasture of no sort is available that the ewes be fed a light grain ration, perhaps one-half pound of oats per day. Flushing will be practiced by the man who already has his flock established and the farmer who raises late lambs will usually find that the ewes are in thin enough condition at breeding time to respond to this extra feed.

It is recommended by some flock masters that the ewes be tagged or clipped around the dock before the breeding season and that the ram be sheared on the belly or in some instances, it is recommended that the ram be completely sheared.

Hand breeding of the flock consists of sorting the ewes in heat out of the main flock and placing the ram with them for an hour in the morning.

Field breeding is where the ram is allowed to run with the flock at all times. These practices may be varied by keeping the ram away from the flock during the day and placing him with the flock at night. On the average farm, hand breeding would not be practical because of the extra time and trouble necessary. However, one ram will handle more ewes under the hand-breeding system than with field breeding. The number of ewes per ram will depend upon the age and development of the ram. It is not advisable to use a ram lamb on more than 10 or 15 ewes. A yearling or older ram that is vigorous and well developed can be depended on for 35 or 40 ewes under pasture conditions and 50 to 60 where hand mating is practiced.

It is a good practice in field breeding to mark the breast of the ram with some sort of paint, such as lamp black mixed with oil, venetian red, etc., so the bred ewes will be marked. The color of the paint should be changed every 16 to 17 days so the owner may determine the number of ewes that have been bred and come in heat again. By this simple method, one may discover before it is too late when his ram is not settling the ewes. If a large percentage of the ewes are returning, it is advisable to get another ram. This method of marking is also a good indication as to the time when the various groups of ewes will lamb in the spring, provided the date and color of paint are recorded.

When the lambs are weaned in early summer, it is a good practice to run the ewes on a poor pasture, probably permanent pasture until breeding time. If they are continued on good pasture after weaning, the ewes will become over-fat and will not settle regularly. We have in the past recommended that ewes not be bred until they are one year old. This means that when the lambs are dropped in the spring that the ewes are two years old. Some farmers in this state have practiced the breeding of early ewe lambs or they allow the ewe lambs to run with the main flock during breeding

season and breed all the ewe lambs that come in heat at that time. There has been some experimental work done by some of the northern states on this subject and the results indicate that, where the ewe lamb is well developed and will be well fed during the winter, it may be advisable to breed ewe lambs.

Under no circumstances should a farmer use anything other than a good pure bred ram.

The Missouri and Oklahoma experiment stations have both demonstrated the value of pure bred rams for the production of market lambs. In the Oklahoma test, the lambs sired by the pure bred ram returned a profit of \$1.98 more per head than lambs of similar ewes which were sired by a scrub ram. A ram for a grade flock can be purchased for \$40.00 to \$50.00 and one ram is sufficient for a flock of thirty-five or forty ewes. It can easily be seen by the above figures that a good ram will more than pay for himself the first year. We, therefore, recommend and urge the Oklahoma sheep raisers to breed their ewes to pure bred rams of any of the mutton breeds.

Wintering. When most of the ewes are bred, the ram should be removed from the flock. This should be done in October or November, whether the ewes are all bred or not, to prevent very late summer lambs. Lambs dropped in May or June are of very little value and are generally more trouble than they are worth. If all the ewes have been bred, it will be easiest to let the ram run with the ewes right up to lambing time.

Following the breeding of the ewes, the farmer should arrange that they may have the run of the fields, either wheat pasture, corn field or stubble fields of any kind. A small flock of 25 to 40 ewes should be able to find their living on the average farm until December or January. Some farmers make the mistake of allowing the ewes to become thin during the winter and this results in trouble at lambing time.

The condition of the ewe is the only safe guide for winter feeding. If the ewes are losing flesh on pasture, they should be given some additional feed.

The farmers in the wheat section of this state often find it unnecessary to feed their ewes at all during the period of pregnancy when they are able to furnish plenty of wheat pasture. This wheat pasture is usually supplemented by stalk fields, straw stacks, etc.

In late winter when the ewes can no longer secure their entire feed from the pasture, they should be fed once or twice a day, depending upon the condition of the ewes and the amount of feed left in the fields. Any suggested ration will have to be varied with the quantity of pasture.

Oats is the best single grain for pregnant ewes; especially is this true if they are on carbonaceous roughage or pasture. Corn, kafir corn, or any of the grain sorghums will make a desirable grain for ewes but must be supplemented with a protein, concentrate or hay. One-half a pound of grain per head per day should be sufficient for ewes at this time. If these ewes are receiving alfalfa hay as a roughage, they will come to lambing in excellent condition. If the roughage consists of prairie, cane, sudan or similar hay, it will be necessary to furnish the ewe some protein in the form of cottonseed meal or linseed meal.

Even though the ewes are in fair condition, it is a good idea to feed grain a month or six weeks before lambing. This will insure stronger lambs; also a greater milk flow. If the ewes have been on a heavy feed of corn or similar grain, this should be replaced by some feed such as bran just before lambing. Ewes that are over-fed on any of the carbonaceous grains may come to lambing too fat and this will usually result in fever.

The Lambing Season. The one most important season of the year for the sheep man is lambing season. If the ewes have been properly fed during

pregnancy and come to lambing season in a strong, vigorous condition, neither thin nor over-fat, one should experience very little difficulty. Care and watchfulness during this season will pay big dividends later. There are a number of difficulties that one may experience with ewes and lambs at this season of the year. A large part of these can be avoided if the shepherd is with the ewe at lambing time.

It is a good practice to place the ewes due to lamb, in a lambing pen. This lambing pen is simply a small pen, 4 or 5 feet by 5 or 6 feet, and its usefulness depends on the fact that it keeps the ewe away from the main flock and avoids trampling of the lamb. It also prevents the ewe from leaving the lamb. It is not always possible to decide which ewes are to lamb and there will be a few lambs produced in the main flock while on pasture or in the barn. This cannot be avoided but any difficulty can be avoided if the shepherd is on the job and will remove the ewe and young lamb to a separate pen shortly after birth.

The normal presentation is for the front legs and head to be presented first. Occasionally, one may find a lamb coming with both front legs back. Sometimes the feet are presented and the head is turned back. In either case of malpresentation, it is necessary to give the ewe some assistance. When both front legs are back, it is not usually necessary to get both of the legs but if the shepherd will, after thoroughly sterilizing his hand, get one front leg and pull gently outward and downward, the lamb will be delivered.

In cases where the head is turned back, it will be necessary to push the lamb back into the uterus and start the lamb with the head down on the legs in the normal manner. One should be especially careful in assisting ewes at lambing time to avoid tearing or injuring the ewe in any way; also to avoid carrying infection in on the hand. Sometimes it is advisable to flush out the ewe with a mild disinfectant when it has been necessary to assist the lamb with the hand.

Young Lamb Troubles. The beginner is often discouraged when he finds that one or two ewes in the flock refuse to claim their lambs. We sometimes find a ewe with twins that will refuse to claim one member of the pair. The refusal to claim one of the pair of lambs is usually the result of the ewe lambing with the flock or in the pasture, being followed by the stronger lamb of the pair. When the weak one is found and sufficiently revived to place back with the ewe, she no longer recognizes it as her own. Ewes refusing to claim a single lamb may do so because they have very little milk. This may be caused by the fact that the ewes are very thin and have been improperly fed. We often find that there are quite a number of yearling ewes that will refuse to claim lambs. Most of this trouble will be avoided if the ewes are in a separate pen at lambing time or are removed to a separate pen as soon as the lamb is born. Occasionally, ewes refuse to own a lamb for no apparent reason whatever.

Ewes may sometimes be induced to claim their lambs if a little of the ewe's milk is placed on the lamb's rump and on the ewe's nose, or where it is one of a pair of twins to remove the lamb that is claimed. Occasionally the holding of the ewe while the lamb nurses for a few days will be sufficient to induce the ewe to claim the lamb. There are quite a number of methods used in getting the ewe to claim a disowned lamb, such as placing a dog in the pen next to the ewe and lamb, and a number of others that are usually successful. Any of these may work in some instances and in other cases, it will be absolutely impossible to get the ewe to claim the lamb. In the latter case, it would be advisable to place the lamb with another ewe. Often times a ewe that has lost her lamb can be induced to take an orphan lamb if the skin of the dead lamb is placed on the orphan lamb. The ewe will recognize the lamb as her own, due to the odor of the skin from her own lamb. After

a day or two, this skin may be removed and the ewe will continue to claim the lamb as her own.

Quite often a ewe will take orphan lambs if some of her milk is placed on the rump of the lamb and on her nose, or if the after-birth is smeared on the body of the lamb. Other ewes will claim lambs if they are kept in a small pen with the lamb one or two days.

Growing the Lambs. Docking and Castrating. A number of the native lamb producing states have, for the past few years, been putting on a docking and castrating campaign in an attempt to get all of the farmers to trim and dock the lambs before marketing. Lambs should be docked when they are a week or ten days of age. Docking gives a lamb a better appearance so that they usually bring a higher market price. It is also more sanitary and will prevent a lot of trouble from maggots. There are a number of ways recommended for docking lambs. Docking shears or docking irons have been quite widely used in all sections of the United States. These consist of a pair of dull shears with long handles. These shears are heated to a red heat and the tail is severed—partially cut and partially burned off with the hot pincers. (Fig. XII.)

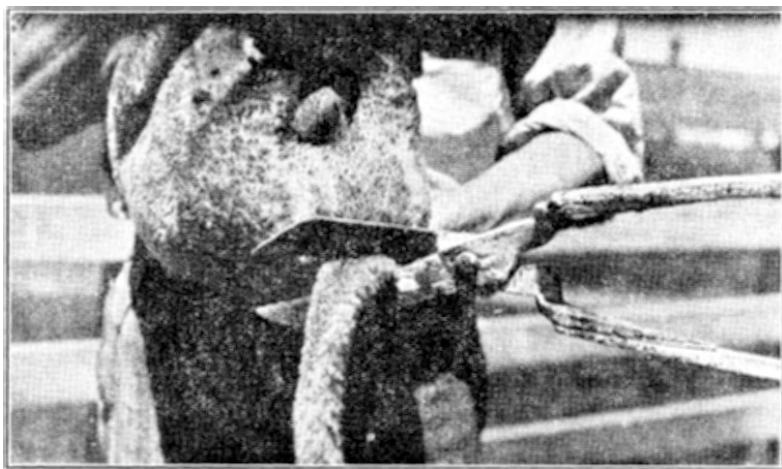


Fig. XII

All lambs should be docked about 1 to 1¼ inches from the body. Some prefer to remove the tail at the second joint. In using the docking iron, many shepherds prefer to use a board and put the tail of the lamb through a hole in an inch board and cut the tail off close to the board. This leaves docks of uniform length and has the added advantage of preventing burning the lamb with a hot iron.

The Texas station reports experimental results in docking lambs by various methods and show the quickest healing from docking with a sharp knife. In docking with this method, if there are two men, the lamb may be held by one and the tail removed by the other. (Fig. XIII.)

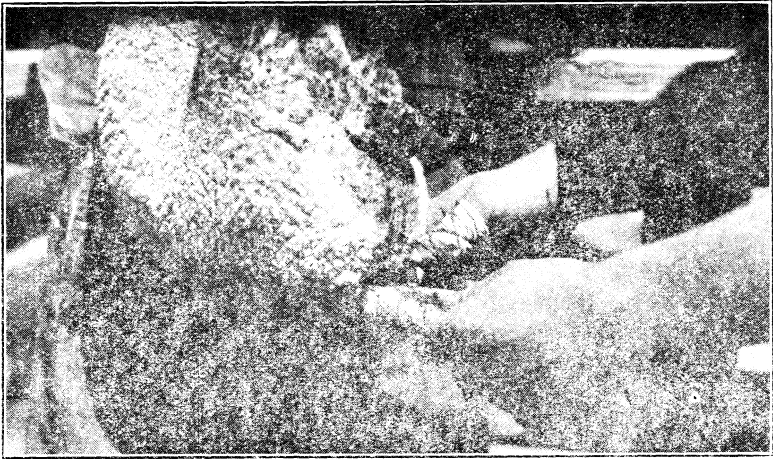


Fig. XIII

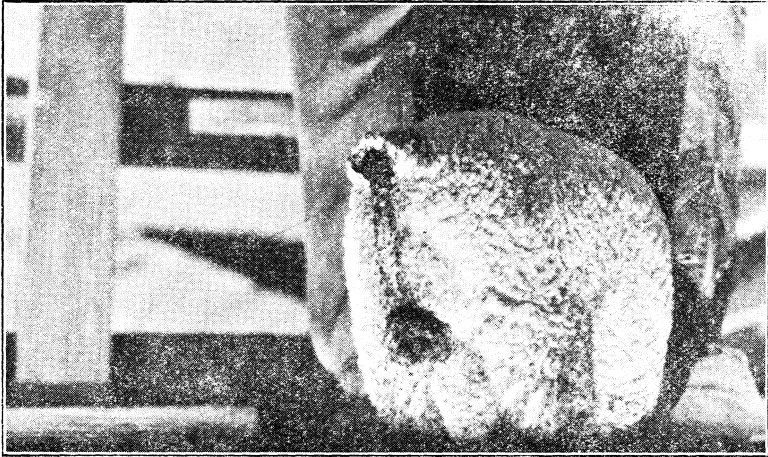
The lamb may be left on the ground, shoulders clasped between the legs of the shepherd and the tail removed by one upward motion of the knife. (Fig. XIV.)



Fig. XIV

The only objection to this method is that lambs occasionally bleed to death. This can be largely prevented if the lambs are docked early in the morning and are not exercised a great deal after docking. If this operation is done when the lambs are a week or ten days old, there is less danger of bleeding than when a month or six weeks of age. Variation of this method consists of removing the tail with a sharp knife and searing the two arteries with a hot iron. The bleeding may be prevented by tying a cord tight around the tail, up close to the body, before the tail is removed. If this cord is removed about

two hours later, there will be no bleeding and the tail should heal readily. However, if this cord is left on too long it is apt to cause a sloughing off and a very slow-healing dock.

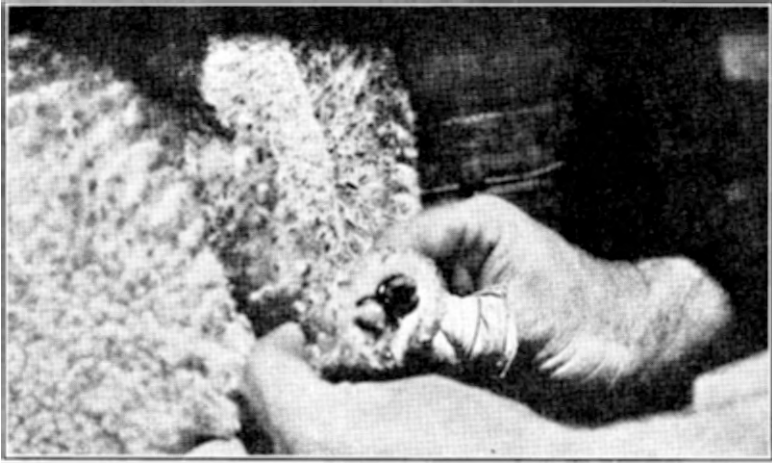


Immediately After Docking

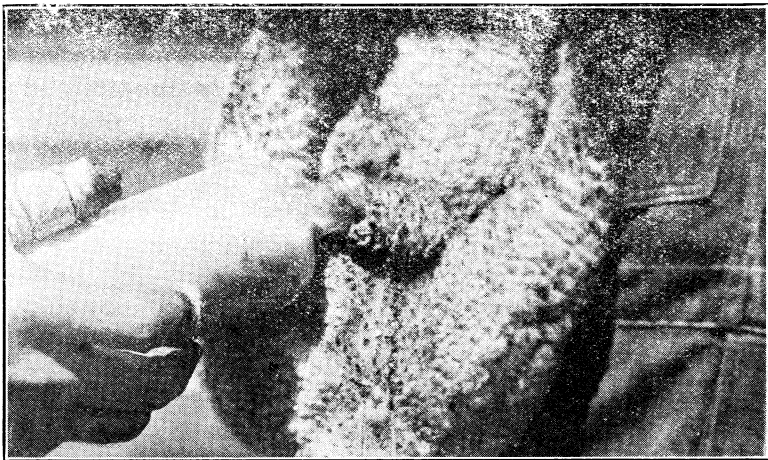
Castration. Castration should be done at the same time as docking. All grade ram lambs or purebreds, not to be used for breeding purposes, should be castrated when they are not more than two weeks old. There is no danger of bleeding in castrating lambs at this age but there is danger of infection resulting in lock-jaw and death of the lamb, so it is very necessary that all possible precautions be taken to prevent infection. This can be done by thoroughly disinfecting the knife and the hands of the operators and the scrotum of the ram with any standard disinfectant.



Removing Lower Third of Scrotum



Testicles Ready to Remove



Applying Disinfectant After Removing Testicles

In the actual operation, the lower third of the scrotum should be removed with a sharp knife and the testicles pulled out with the thumb and fore finger. It is not necessary to cut the cord of rams of this size and it is best that they simply be pulled until they break. In this way, the blood vessels in the cord are squeezed and the bleeding is largely prevented. After the testicles are removed, some disinfectant should be poured in the sac. By removing the lower third of the scrotum, perfect drainage should be assured and the lamb will recover from this operation in two or three days. Occasionally, the lower end of the scrotum scabs over and the lamb becomes stiff. All that is

necessary is to remove the scab to allow drainage and the lamb will recover. If the docking and castrating of lambs is done late in the spring, it is a good plan to smear tar around the wounds to prevent trouble from worms and maggots.

Feeding the Lambs. There are two general methods of feeding the lambs; first, through the ewe, and second, feeding the lamb directly. When the lamb is a few days old, the ewe should be placed on a full feed in order to assure maximum milk production. If green pasture is available at this time, it is the most desirable feed. Even though ewes are on pasture, it is a good idea to feed them some grain for the first few weeks. This grain can consist of oats or a mixture of bran and any of the heavier grains, such as corn, kafir corn, etc. If pasture is not available, the ewe should receive some roughage and if possible, receive a leguminous roughage, such as alfalfa or clover hay. If this is not available, they should receive $\frac{1}{4}$ to $\frac{1}{2}$ pound of cottonseed or linseed oil meal in addition to the grain ration.

The lambs will begin to eat grain when they are about ten days or two weeks old. They should be encouraged in this. The best method of starting the lamb on the grain is to construct a lamb creep. This may be no more than dividing off part of the barn or pen with upright boards, far enough apart to allow the lambs to enter but to keep the ewes out. A trough with the grain for the lambs is placed inside this enclosure. Cracked corn is a desirable grain for starting the lambs on feed. Whole oats or a mixture of grain, with bran, can be used instead. Place in this trough only about as much feed as the lambs will eat each day, as all sheep are particular about the cleanliness of their feed troughs. This is particularly true of lambs. Any of the grain that remains at the end of the day should be removed and fed to the ewes. Lambs will eat very little at first but they will consume as much as one pound of grain per head daily when they are four months of age.

Late born lambs receiving plenty of milk and running on pasture show little interest in grain placed in a creep. It is necessary to place the creep in the most frequented part of the barn or field, preferably near the shade if in the field, or near the salting ground. In the barn, it should be placed in the brightest corner. If lambs are taught to eat grain before they are placed on pasture and brought to the barn or shed every night, there will be little difficulty in continuing them on grain. However, some lambs that have been on the creep for a month or six weeks and are removed from the barn to pasture, do not take readily to the creep placed in the pasture.

The kind of grain that these lambs should receive will depend on the use to which the lambs are to be put. Lambs that are to be retained in the flock should be getting a growing ration, rather than a fattening ration. This growing ration can be composed of whole oats with a little linseed meal, or a mixture of corn, bran and linseed meal. Lambs that are to be marketed should be fed a fattening grain and in this case, the grain may be composed almost entirely of corn if the lambs are nursing their mothers and are on pasture. If they are not running on pasture, a protein supplement, cottonseed or linseed meal, should be added to the ration.

Lambs fed in this manner should weigh not less than 60 pounds at four months of age. Our recommendation for Oklahoma is that the lambs be marketed at weaning time. Lambs dropped in February or March and creep fed should go to market in June or the early part of July and should weigh from 60 to 80 pounds on the market. The late born lambs are often grown on pasture with no grain and fattened in the fall.

Creep feeding allows early marketing, thus getting the lambs to market while highest prices are being paid, and getting the lambs away from the farm before the hot summer months when stomach worm difficulties are encountered.

The weaning time for lambs will of course vary with the system followed. For the recommended Oklahoma sheep program of early lambs and early marketing, lambs should be weaned sometime in June or earlier. Lambs should be weaned at about four months of age and if they have been properly fed, should weigh not less than 70 pounds at market. In the production of market lambs, we have suggested creep feeding. We would further suggest that these lambs be marketed immediately after weaning. Lambs that go to market in June are on a market that furnishes very little competition and therefore have a favorable price. Late born lambs will probably not be weaned until July or August, and are seldom ready for market at weaning time. It is this class of native lamb going to market, in thin condition, that is responsible for disappointment on the part of the producer. These thin native lambs are also quite a factor in the low price received for all lambs during the late summer. Ewe lambs to be retained in the flock, should be selected at weaning time. These lambs should be the earliest of the ewe lambs, thrifty, well grown, with dense fleeces, and from ewes that are regular producers. If the flock is to be maintained by retaining ewe lambs, there should be enough ewe lambs saved each year to replace one-fourth of the breeding ewes. In this manner, no old, unthrifty ewes will be retained in the flock. It should be remembered that a large well grown ewe lamb is worth about as much when she is from four, to four and a half months old; as a two or three year old ewe will cost the following fall. Therefore, it is not always advisable to maintain a flock by retaining ewe lambs but rather by purchasing western ewes to replace those that are culled out.

Culling the Ewes. It is a very good plan to cull the ewe flock at weaning time and send the culled ewes to market with the lambs. In culling ewes, there are two or three things that should be kept in mind. First, all ewes that have produced no lambs or those ewes that have produced small, unthrifty lambs, should go to market, regardless of the individual appearance of the ewe. Those ewes that have thin, open fleeces, or ewes that have spoiled udder, should be culled at this time and finally the old ewes with poor teeth, even though they have been good producers, should be sold, as retaining them in the flock will necessitate special feed and care.

Summer Care. When the lambs are removed from the ewes, it is a good plan to put the ewes on rather poor pasture, in order that they may be dried up without udder difficulties. This pasture may very well be permanent grass and the ewes should be continued on a rather poor ration until breeding time. If these ewes are placed on good pasture or furnished a good ration, they will become fat during the summer and will not be in as desirable a condition for mating in the fall. The ewe lambs that are retained in the flock should be sheared in June. This is especially true with the early born ewe lambs. Lambs that are taken through the summer with their entire fleece are subject to over-heating and general unthriftiness.

The biggest problem for the Oklahoma sheep grower during the summer is stomach worm infestation. It was suggested earlier in this bulletin that one advantage of early lambs is that they are marketed before stomach worm trouble is very marked. Stomach worms will be found principally in permanent pastures. The adult worm lives in the fourth stomach of the sheep. The

eggs are laid here and are passed out and hatched in the pasture by the heat of the sun. The small worm, after passing through one or two stages in its life cycle, crawls back upon a blade of grass and gains entrance to the sheep's stomach when the grass is eaten. This brief outline of the life history of the stomach worm will emphasize the fact that the greatest trouble will be experienced during the warm months, as very few days are required for the complete life cycle during July and August, while a great many days will be necessary during the early spring months. Breaking the ground will destroy all larvae and eggs present; therefore we recommend the use of temporary pastures for sheep. Sheep that are placed on a temporary pasture in early spring and left until late fall may suffer as much from stomach worms as those on permanent pasture. However, if the sheep are changed from pasture to pasture, during the summer, the infestation will be decidedly less than is the case with a permanent pasture.

Symptoms. The stomach worm is a blood sucking parasite, which attaches itself to the stomach wall and secures its food material from the blood of the sheep. Sheep that are badly infested with stomach worms show a decided anaemic condition. The skin, instead of being pink, is white, the mucous membranes around the eye and mouth are yellow and white instead of red, as in the normal sheep. In advanced stages, there is a swelling at the throat. This, in itself, is of no importance but is simply an indication of a very advanced stage of this trouble. Stomach worms are responsible for the death of a good many lambs in Oklahoma each year and for stunting a great many more. Sheep men and farmers are apt to discount the danger of stomach worms until they have experienced severe losses. It is a good practice to drench the sheep for stomach worms. This drench will not rid the sheep of all the worms but will keep the number down sufficiently that the health and growth is not interfered with. When sheep are on permanent pasture, we recommend drenching every fourth week, starting in May or early June and continuing through the summer. The method of drenching outlined below is that worked out by Dr. John E. Guberlet, when parasitologist at Oklahoma A. and M. College:

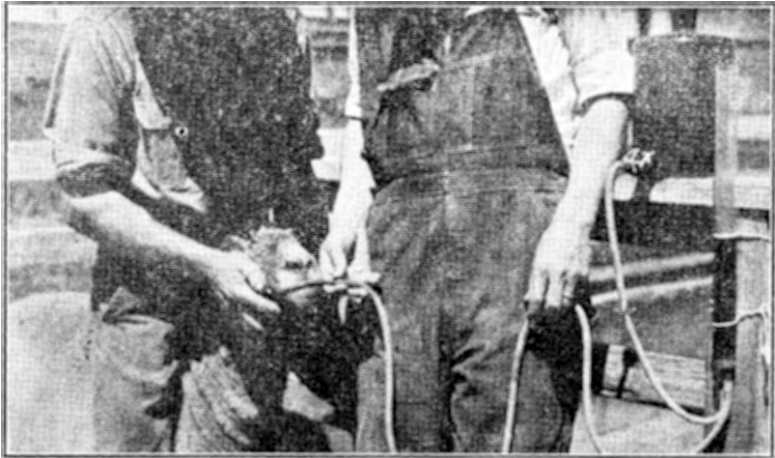


Fig. XIX—Proper Position for Drenching Sheep

Copper Sulphate—Tobacco Drench

"For treatment of small flocks dissolve one ounce of copper sulphate in a quart of boiling water, one ounce of tobacco in a quart of boiling water; cover and let stand over night. In the morning mix the two solutions and add one quart of cold water. This makes a solution of the proper strength and is enough for 25 adult sheep or 50 lambs, allowing some for waste.

"In the preparation of the solution only clear-blue crystals of copper sulphate should be used. Crystals which contain soft white patches should not be used. Any kind of tobacco may be used provided that it has not been exposed too long. Plug tobacco may be used but in that case it must be finely chopped and before it is mixed with the copper sulphate solution, it must be strained through a cloth and all of the juice pressed out. Tobacco snuff is very satisfactory as it is not necessary to strain it before mixing with the blue-stone solution.

"Great care should be taken that the solution be made the right strength. If the solution be made too strong, serious results may follow. A solution that is not strong enough will not destroy the worms. It is absolutely necessary that all materials be weighed and measured accurately in making up the solution for drenching.

"The doses to be given to lambs or sheep for either copper sulphate or copper sulphate and tobacco are the same as recommended by the United States Department of Agriculture, which are:

"For lambs under one year of age one and three-fourths ounces (50 cubic centimeters).

"For sheep past one year of age, three and one-half ounces (100 cubic centimeters).

"The treatment should be given on an empty stomach, if possible. As a rule it is best to keep all feed and water away from the animals the evening before the treatment is given and then administer the dose in the morning while they are empty. Feed and water should be kept away for at least two hours after treatment.

"It is important that the dose be administered very carefully. Carelessness may bring serious results. Care must be taken to see that the proper sized dose is given. An over-dose may cause death, while too small a dose will not produce results. Copper sulphate is poisonous, and like all medicines, is safest, and best results are obtained when in the hands of a competent veterinarian.

"It is advisable to administer two treatments, three or four days apart. The observations at this laboratory have shown that in most cases a single treatment removes most of the worms, but there are always a few animals in a flock that do not respond to treatment as readily as the rest. The second treatment should be given to get the few worms that are not removed by the first dose. The foregoing results show clearly that copper sulphate and tobacco are most effective in the removal of worms from sheep and should be used according to directions. The treatment is inexpensive and can be administered very easily with a small expenditure of time and labor.

"If sheep become constipated, a small dose (1 or 2 tablespoonfuls) of castor oil or 1-2 ounces of epsom salts in water will be sufficient for a lamb. For a mature sheep give 2 or 3 times these amounts."

Time of Shearing. The time to shear sheep in Oklahoma, of course, varies with the weather conditions and the shelter on the farm. It is best to have the sheep sheared sometime during the month of April. If the spring is well advanced and a warm barn is available, shearing in March is desirable. Most farmers and flock masters in Oklahoma practice shearing too late. When the wool is left on the ewes until May or June, there is a good deal of it shed, due to hot weather and rubbing. In addition to this, the ewes are uncomfortable and will probably not do so well by their lambs as ewes that are sheared.

Place for Shearing. It is necessary that the sheep be sheared in a clean place. A shearing floor, preferably of boards, should be provided, or in the absence of this, a canvas may be spread down.

Method of Shearing. There are two general methods of shearing sheep, the old method of hand shears and by machine. There are a few people in Oklahoma who use the hand shears. The machines are of two kinds—one that is driven by hand and the other a more expensive outfit designed for power attachment. For a small flock of sheep, a farmer will find one of the hand driven machines very satisfactory. They can be purchased for \$20.00 to \$25.00 from a number of manufacturers.

If it is not advisable to shear the sheep close to the hide, these companies furnish specially devised combs that will take the wool off evenly but leave about $\frac{1}{4}$ inch of wool as a protection for the sheep. This is an easier method than the hand shearing method and it will do a neater job of removing the wool.

Care Before Shearing. If the sheep have been on green pasture, it will be necessary to remove the dirty tags of wool from the rear end of the sheep before shearing. This wool is of practically no value and these tags will stain the fleece, and cause the farmer to take a lower price on his entire shipment. It is also desirable to remove other dirty locks of wool or parts of wool that are heavy with vegetable matter or burs.

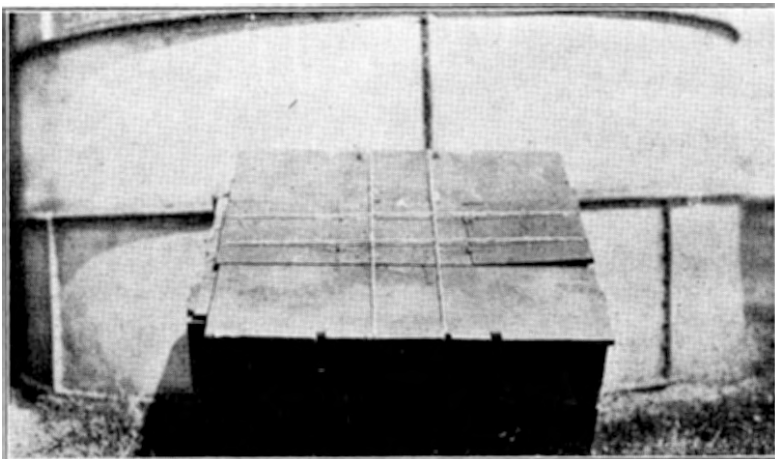


Fig. XX—Open Wool Box Properly Threaded

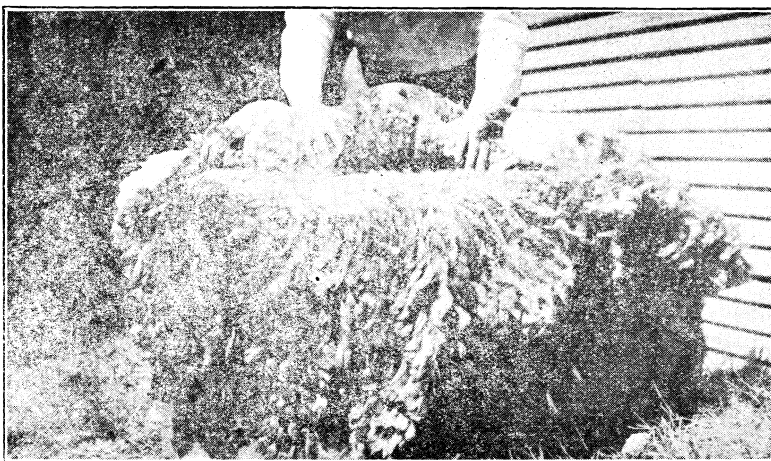


Fig. XXI—Fleece Being Placed on Box Shown in Fig. XX

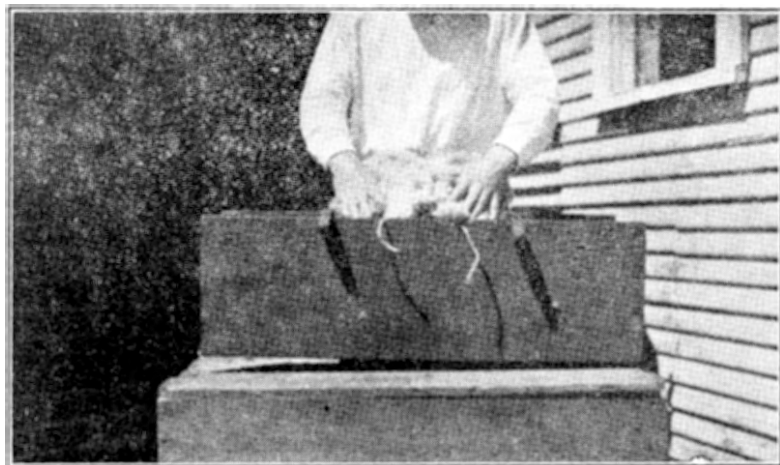


Fig. XXII—Closing Wool Box on Fleece

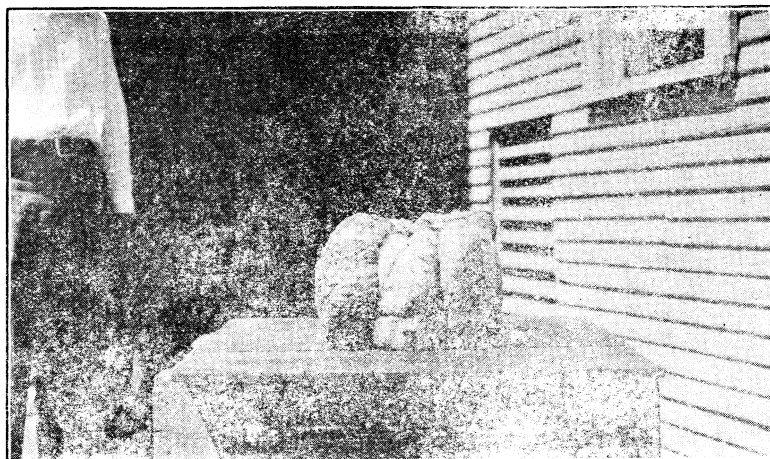


Fig. XXIII—Fleece Tied In

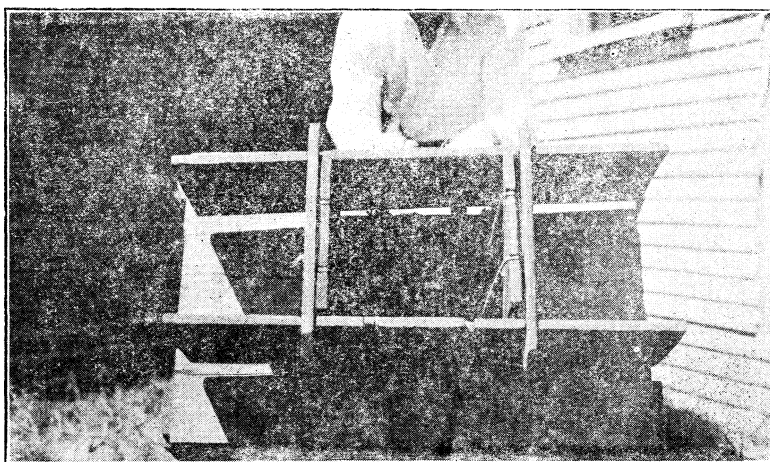


Fig. XXIV—Empty Wool Box Closed

Tying the Fleece. If the fleece has been properly removed it will be in one piece quite similar to a pelt with the exception of a few loose locks. If there are burs or excess vegetable matter around the throat, it is a good idea to remove this before tying the fleece. If the fleece is to be made into a roll, it should be placed on the floor skin side down, the edges of the fleece turned in and then rolled from the tail end to the shoulder. This method of rolling wool will leave the shoulder fleece on the outside of the roll. The wool twine should then be placed around the wool once each way and tied.

The wool box as shown in the accompanying picture is desirable in most cases because it will put the fleece in such condition that it can be packed and removed after shipping, still in one bundle. The wool box method of tying wool is objected to by a number of wool houses, mainly because the fleece is in too compact a package. It is hard to determine what is on the inside of the bundle and wool mills are quite apt to over-estimate the shrinkage because of the excessive weight of the small bundle of wool.

Kind of Twine. It is always advisable to use paper twine for tying wool. There are a number of other kinds of "wool" twine on the market, principally jute twine that has been glazed. A paper twine is preferred above all others because if particles of paper twine become mixed with the wool, it is removed in the ordinary process of scouring. If one makes use of binding twine or similar twines, pieces of the fiber break off and become mixed with the wool. These are not removed and cannot be discovered until the cloth has been made and dyed. These pieces of twine which are of vegetable character must be removed and this invariably leaves a flaw in the material.

Burry Wool. Burry wool is always worth much less on the market than clear wool for the following reasons: In the first place, there is a certain amount of weight that is bought in burry wool that is of absolutely no value; second, the only two methods of removing the burs are by hand-picking or chemical treatment. If the burs are removed by hand, the cost is high. If the burs are removed by chemical treatment, it means a certain expense and the wool that is secured is of less value and can be used in fewer kinds of material than wool that has not been so treated. If there is an excessive amount of vegetable matter of any kind present in the wool, it will be graded "burry," regardless of the fact that there are no burs present—simply because of the fact that this wool must be treated the same as burry wool.

Dipping. Sheep should be dipped each spring, immediately after shearing. This dipping will rid the sheep of ticks and lice; also will help any sores caused from shearing. Any of the standard sheep dips may be used. The college flock is dipped each spring in a creosote preparation.

Marketing Wool. There are a number of methods that may be followed in disposing of the wool clip: First, selling to the wool buyer or a produce commission house. Selling by this method, the farmer usually receives a flat rate for the wool, regardless of grade or condition, thereby penalizing the producer of good wool and placing a premium on the poorer grade wool. Second, selling through a wool commission house. These wool commission houses are located in the principal cities. The ones most available to Oklahoma producers are those in Kansas City and St. Louis. The wool marketed by this method is shipped to the commission house, usually by freight, and the commission company grades the wool and offers it for sale by grade. This is unsatisfactory in some instances because the grower has no control over the time of sale and the wool is often sold on a low market. However, it is possible to instruct the commission company to hold the wool in their warehouse and notify the grower of any bids received, allowing the grower to accept or reject bids. Third, county pool marketing. A number of plans have been tried in

Oklahoma. One is the assembling of wool at a central point, notifying wool buyers, each grower selling his own wool. Another method is the pooling of the wool and receiving sealed bids for it, according to grade. These and other methods of pooling have proved unsatisfactory because of the limited amount of wool available and hence the lack of buyers. The latest method proposed is the cooperative marketing plan, which is supported by the Federal Farm Board. Under this system Oklahoma wool passes through the hands of the Mid-West Wool Marketing Association of Kansas City, Missouri. This method is simply cooperative marketing with the original capital necessary furnished by the Federal Farm Board. Anyone interested in this particular plan can secure information from the Copunty Agricultural Agent or by writing to the Mid-West Wool Marketing Association, 140 Main St., Kansas City, Missouri.

Wool Grades. There has been an effort on the part of the United States Department of Agriculture to get the wool grading systems of the world on a uniform basis. The table below gives first, the grade that has been used in the United States; second, the class in English grade, and in the third column the breed of sheep that produces these various grades.

United States	English	Breeds
Fine	66's—80's	Merino
Fine to Fine Medium	60's—66's	Rambouillet
Half Blood	58's—60's	Southdown
Three-Eighths Blood	56's	Shropshire
Quarter Blood	48's	Hampshire
Quarter Blood	48's	Dorset
Low Quarter	44's	Oxford

Long Wool Breeds

Braid. In addition to the above, the wool is divided according to length. The shorter wool is known as clothing wool, the longer wool of the same grade is classed as combing wool. As a rule, combing wool is worth about 10% more than clothing wool. Practically all of the wool in this part of the country is purchased in the grease or pust as it is taken from the sheep. However, it is bought with the scouring percentage in mind. Wool that carries a great deal of grease or dirt will show a heavy waste when scoured and will therefore bring less in the grease than cleaner wool. Most Oklahoma wool is graded as "semi-bright." This is one grade below clear or bright and the reason for this is that there is a great deal of sand in the Oklahoma wool and this sand discolors it. The bad reputation which Oklahoma wools have on the market, I believe, could be partly overcome if the Oklahoma wools were sent to market in a better condition. This can be done easily by the following suggestions:

- 1st—Remove the dirty locks and tags.
- 2nd—Shear in a clean place.
- 3rd—Remove excessive vegetable matter.
- 4th—Tie each fleece separately and tie with paper twine.

SHEEP FEEDING

The fattening of lambs has not been an important phase of sheep production in Oklahoma. Interest in this particular phase has been increasing very rapidly in the past few years and there are now in certain sections of the state large numbers of lambs on feed each fall. The conditions in Oklahoma

vary so greatly that it is impossible to make any definite statements as to methods that will apply to the entire state. Some of our feeders have finished lambs on wheat pasture with grain and hay in addition. Others have used corn or grain sorghum fed in a dry lot or harvested by the lambs. The usual feeding period is from seventy to one hundred twenty days depending on the weight and condition of lambs when put on feed. Lambs when fed in a dry lot should gain about one third of a pound a day and they should be marketed when not heavier than eighty-five to eighty-seven pounds per head. It will usually require about four hundred pounds of grain and four hundred pounds of hay per hundred pounds gain. The grains available in Oklahoma are corn, barley, kafir, darso, and other grain sorghums. A number of experimental trials conducted by the Animal Husbandry Department of the College indicate that kafir and darso are about equal to corn for fattening lambs. Barley has proven to be about eighty-five to ninety percent as good as corn per pound.

Bulletins giving feeding results in detail will be furnished on request.

PASTURE CROPS

Alfalfa. This legume is excellent as hay for sheep because it is high in protein and minerals. This will always be recommended as pasture for sheep. However, sheep are quite subject to bloat when pasturing on alfalfa, and for this reason alfalfa is used very little as a pasture crop for sheep.

Sweet Clover. Sweet clover contains about the same food elements as alfalfa. It may be planted in the spring in oats furnishing a crop of hay after the oats are harvested, and furnishing a great deal of pasture for sheep the following year. Sweet clover will come on very early in the spring and is very desirable for the period between wheat pasture and native pasture.

Clover becomes steny and a little unpleasant unless it is grazed closely. Some sheepmen have experienced some trouble with sheep bloat on sweet clover pasture. However, this is less often than in pasturing alfalfa. If sheep are placed on sweet clover very early in the spring and accustomed to it gradually the danger of bloat may be largely overcome.

Sudan Grass. Sudan grass is a carbonaceous feed and furnishes an abundance of pasture from spring to late fall. This furnishes more summer pasture than any other crop available in this section of the state. It should be planted with a wheat drill and pastured when it reaches the height of twelve or fourteen inches. If there are not enough sheep to keep the sudan down it will furnish a very desirable hay crop, and with favorable moisture conditions the second growth will carry the flock through the summer and fall.

Rape. This is an excellent pasture crop as it has a high percentage of protein. It may be planted any time from corn planting to mid-summer. If planted early it may be depended upon to easily furnish a pasture until mid June. If there is sufficient moisture rape will continue to grow until frost. However, weather that is common here in July and August prevents rape from recovering from the first grazing, and this is responsible for the fact that rape is not more widely used for sheep pasture.

Cowpeas. This is another legume that should be more widely used for a pasture crop. Cowpeas may be planted on the field after harvesting wheat and oats and will usually furnish an abundant pasture for early fall. These

may be used at the season of the year for growing out the lambs or "flushing" the ewes. If planted early cowpeas may be pastured during the summer months. It is a good idea in choosing a variety to choose one for its foliage producing qualities rather than its seed production.

Oats. Oats may be used for fall or early winter pasture if planted on a wheat or oat stubble, or by simply discing the oat stubble and allowing the volunteer oats to grow. Oats so planted will furnish more fall pasture than can be expected from wheat, but will be destroyed with the first hard frost. Oats planted in February may be profitably used for early spring pasture.

Rye, Wheat, and Barley. These crops can all be planted in fall and under favorable conditions will furnish summer, fall and winter pasture, and will be available in the spring as early as any other pasture crop. They may be used as pasture in fall and winter and harvested for grain the next spring.

It should be possible on most farms to pick a suitable pasture rotation from the above list without changing the present farm system.

