

EWE AND LAMB CLUB

Boys' and Girls' 4-H Club Circular 20

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**COOPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS**
UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE AND THE UNITED
STATES DEPARTMENT OF AGRICULTURE COOPERATING
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Ewe and Lamb Club

The natural habit of the sheep is one of cleanliness. The true shepherd feeds from clean troughs, uses clean water-pails and beds his sheep in clean pens. This habit of cleanliness requires that whoever properly cares for it shall follow a methodical and precise program. Sheep are a good example of cooperation; they are thoroughly organized, stick together, and follow a leader. Any ambitious, energetic boy or girl can learn to care for sheep, which will be a long step forward in learning how to care for other classes of livestock.

Sheep are the only class of animals that yield two crops annually—mutton and wool. People in all walks of life have need of articles made from wool. About 35% of the income from a flock of sheep is derived from the sale of wool. Mutton and lamb when properly grown and prepared are among the most wholesome and nutritious of meats. About 65% of the income from a flock of sheep is derived from the sale of lamb and mutton.

We are told that a permanent and profitable agriculture largely depends on livestock farming. If livestock farming continues to carry on, it will do so by methods of feeding and management that tend to make livestock production profitable.

Last but not least is the development of the boy and girl by association with other boys and girls interested in and working on the same project—all working together for a common cause, the development of self, community and country. What pride there is in personal ownership, in caring for and feeding growing animals, in keeping accurate records of feed costs, gains and profits! Could anything be more important in laying the foundation of a successful life on the farm where contentment and happiness are as essential to the well being of country folk as to those of the city? It is intended that the material in this circular may assist the ewe and lamb club members in raising sheep more efficiently and economically.

BUYING THE EWES

In counties where thirty or more ewes are to be used in club work the best time to purchase them is in August or early September. Normally, breeding ewes can be most advantageously purchased at this time of year. An opportunity for a more uniform selection can be had.

The ewes can be bunched at one place during the breeding season. One ram can be used on from 30 to 50 ewes. The price of the ram can be prorated among the members.

Where fewer than thirty ewes will be wanted it is usually advisable to purchase them some time after breeding, not later than December 1.

The advisory committee should select and purchase the ewes for the members, secure a purebred ram, and see to the breeding of the ewes, when this is necessary. This committee can be of assistance to the boys and girls throughout the club year and should advise the members whenever necessary.

The advisory committee should consist of about three men. These men should be interested in boys and girls and should be experienced and successful sheep raisers.

REQUIREMENTS OF THE EWE AND LAMB CLUB

(Ewe and Lamb Club Project; Flock Project)

Object.—The object of the ewe and lamb club work is to organize boys and girls into groups to demonstrate approved practices of sheep husbandry in the production of early lambs for market; and to train the members in rural leadership.

Work Required.—*Ewe and Lamb Club.*—Each club member is required to feed and care for 3 to 5 ewes and their lambs from at least two weeks prior to lambing until the lambs have reached market weight, (March lambs should reach a market weight of about 65 pounds by June), to dock and trim the lambs when they are from ten days to two weeks old, to creep feed grain to the lambs while suckling, and to shear the ewes or have them shorn, (usually during the latter part of April or the first part of May), according to the instructions of the Missouri College of Agriculture.

Flock Project.—Each club member is required to feed and care for 6 or more ewes and their lambs. Requirements otherwise are the same as for the Ewe and Lamb club. Boys or girls with the ewe and lamb project usually work into the flock project in from two to three years.

Records Required.—Each club member is required to keep a record of the cost and amount of feed used both for the ewes and lambs, beginning at lambing time (usually in February). A statement of the cost and sale of ewes, lambs and wool, the amount of wool shorn from the ewes, and a story of the club experiences for the year shall be written in a record book provided by the Extension Service of the Missouri College of Agriculture.

Ownership Required.—Each club member is required to own 3 to 5 ewes, and to provide the necessary feed for the ewes and their lambs,

which will approximate 200 pounds of hay and 50 to 60 pounds of grain per ewe, the amount depending mainly upon climatic conditions.

Time Required.—Time necessary to feed and care for the ewes and lambs.

Time for attendance at six or more club meetings.

Time for one all-day club tour.

Time for one day at a club round-up or achievement exercise at the close of the year's work.



Fig. 2.—Winners of first prizes in their respective clubs.

Organization.—The ewe and lamb club should be organized in August. The ewes should be secured not later than September or if purchased after breeding not later than December in any case, and the work should be completed in June. (Extra good lambs may be retained for showing).

I. Organization of the Club

MEETINGS

Standard clubs are required to hold at least six regular meetings during the club year. These meetings may be held as often as the local club leader and members desire; however, the meetings usually are held once each month.

Below are subjects suggested for a number of club meetings. It may be necessary to devote two or more meetings to some of the subjects. It is suggested that these subjects be followed in the order named. Local club leaders and clubs are expected to adapt these subjects to local community conditions.

SUGGESTED MEETINGS FOR EWE AND LAMB CLUBS

I. Club Organization.—The local club leader in charge

1. Election of club officers. (These usually include a President, Vice-President, Secretary, Song and Yell Leader, and Club Reporter.)
2. Reading of the constitution and by-laws. (Club Secretary's Record Book.)
3. Distribution of the Ewe and Lamb Club circulars and record books, etc.
4. Reading of the standard 4-H Club requirements.
5. Selection of the time and place for regular club meetings.
6. Selection of a club name. (This usually includes the name of the project and the location of the club.)
7. Reading of the club project requirements. Page 4.
8. Giving an explanation of the club events for the year, including the holding of six or more meetings, the club tour, and the club round-up or show.
9. Setting club goals for the year.
10. Discussion:
 - (1) Buying the Ewes, page 3.
 - (2) Selecting the Breeding Ewes, page 10.
 - (3) Breeds of Sheep, page 11.
 - (4) Selecting the Ram, page 13.
11. Assignment of work for the next club meeting:
 - (1) Assignment of the 4-H Club pledge to be learned by all members before the next meeting. (See plans for next club meeting, page 7.)
 - (2) The bringing of all record books to the next club meeting.
 - (3) Assignment of work for the next club meeting. Assignment of topics to be used in response to roll call, as: (a) Name the

important mutton breeds of sheep. (b) Name the fine wool breeds of sheep. (c) Name the most important roughages used for sheep. (d) Name the grains that are grown on the farm which are suitable for sheep feeding. (e) Name some temporary and some permanent pastures for sheep. (f) Give a good ration for bred ewes.

II. Feed and Management of the Ewes

1. The Business Meeting.—The club president in charge.
 - (1) Meeting called to order by the president, who leads the club members in repeating the 4-H club pledge, as follows: “I pledge my *head* to clear thinking, my *heart* to greater loyalty, my *hands* to larger service, and my *health* to better living, for my club, my community, and my country.”
 - (2) Roll call by the secretary, the members responding by reporting briefly on the previously assigned topics.
 - (3) Reading of the minutes of the last meeting by the secretary which should be adopted when approved by the club.
 - (4) Unfinished business from the last meeting:
 - a. -----
 - (5) New business:
 - a. Appointment of a program committee to assist the local club leader.
 - b. Anything for the benefit of the club.
 - (6) Songs and yells, led by the song and y. ll leader.
 - (7) Adjournment for work.
2. Instructions and Demonstrations.—The local club leader in charge.
 - (1) Discussion: *Feed and Management of the Ewes*.
 - a. Fall Care, page 14.
 - b. The Breeding Season, page 14.
 - c. Winter Feed and Care, page 15.
 - d. Care During the Lambing Season, page 16.
 - (2) Instruction on keeping the record books.
 - (3) Assignment of work for the next club meeting, including the bringing of record books to the club meeting. Assignment of topics for roll call, such as: (a) Give a good ration for the ewes during the lambing period. (b) Name the most important thing to be observed in care of ewe at lambing season.

III. Lamb Management

1. The Business Meeting.—The club president in charge.
 - (1) Meeting called to order, all repeating the 4-H club pledge.
 - (2) Roll call—the members responding by reporting briefly on an assigned topic.

- (3) Reading of the minutes of the last meeting.
 - (4) Unfinished business
 - a. -----
 - (5) New business:
 - a. Appointment of a social committee.
 - (6) Songs and yells.
 - (7) Adjournment for work.
2. Instructions and Demonstrations.—The local club leader in charge.
- (1) Discussion: *Lamb Management*.
 - a. Docking and Trimming, page 17.
 - b. Creep Feeding Grain to Suckling Lambs, page 18.
 - c. Marketing the Lamb Crop, page 20.
 - (2) Examination of the record books.
 - (3) Assignment of work for next meeting, including the bringing of record books to the meeting. Assignment of topics for roll call as: (a) Give the age at which lambs should be docked and trimmed. (b) Why are docking and trimming lambs important (c) Tell what is meant by “creep feeding” lambs. (d) Suggest a ration for suckling lambs.

IV. Judging and Showing Sheep

1. The Business Meeting.—The club president in charge.
- (1) Meeting called to order, all repeating the 4-H club pledge.
 - (2) Roll call—reports on assigned topics.
 - (3) Reading of the minutes.
 - (4) Unfinished business:
 - a. Report of the social committee.
 - (5) New business:
 - a. -----
 - (6) Songs and yells.
 - (7) Adjournment for work.
2. Instructions and Demonstrations.—The local club leader in charge.
- (1) Discussion: *Judging and Showing Sheep*.
 - a. Judging Sheep, page 21.
 - b. Showing Sheep, page 22.
 - c. Preparing for Show, page 25.
 - d. Demonstrations, page 25.
 - (2) Inspection of record books.
 - (3) Announcement of plans for the club tour. The club, as a group, visits all the members of the club and some other good flocks.
 - (4) Assignment of score cards to be studied before the tour is taken, page 25.

V. The Club Tour; The Wool Crop

1. The Business Meeting (at noon).—The club president in charge.
 - (1) Meeting called to order, all repeating the 4-H club pledge.
 - (2) Roll call.
 - (3) Reading of the minutes.
 - (4) Unfinished business.
 - (5) New business.
 - a. Arrangements for the club round-up.
 - (6) Songs and yells.
 - (7) Adjournment for work.
2. Instructions and Demonstrations.—The local club leader in charge.
 - (1) Suggestions for shearing and preparing wool for market.
 - (2) Classes and Grades of Wool, page 31.
 - (3) Terms Used in the Wool Trade, page 33.
 - (4) Practice Judging.
 - (5) Assignment of work for the next meeting, including bringing the record books to the meeting. Assignment of topics for roll call, as: (a) Name the parasites that most commonly infest sheep in Missouri. (b) Name the fine wool breeds of sheep. (c) Name the medium wool breeds of sheep. (d) Name the long wool breeds of sheep.

VI. Sheep Parasites and Their Control

1. The Business Meeting.—The club president in charge.
 - (1) Meeting called to order, members repeating the 4-H club pledge.
 - (2) Roll call—all reporting on assigned topics.
 - (3) Reading the minutes of the last meeting.
 - (4) Unfinished business:
 - a. The Club Round-up.
 - (5) New business:
 - a. -----
 - (6) Songs and yells.
 - (7) Adjournment for work.
2. Instructions and Demonstrations.—The local club leader in charge.
 - (1) Discussion:
 - a. External Parasites, page 34.
 - b. Internal Parasites, page 34.
 - (2) Inspection of record books.
 - (3) Assignment of work for the next meeting, including the bringing of the record books to the meeting. Assignment of topics for roll call.

VII. The Club Round-up

1. The Club Round-up.—The local club leader in charge.
 - (1) Exhibits of sheep.
 - (2) Talk on the Ewe and Lamb Club Project work.
 - (3) Judging contest.
 - (4) Team demonstrations.
 - (5) Awards, if given.
 - (6) Collection of all record books.
 - (7) Plans for next year.
 - (8) Sales.

SELECTING THE BREEDING EWES

The inexperienced sheep raiser should begin with grade ewes of the best class available. Good, strong western or native ewes can be secured. For the most part the range ewes are of Merino breeding. First-cross stock, bred on the range and sired by rams of the "down" or long-wool breeds, are sometimes obtainable. The sheep from the range are less often infested with internal parasites than are farm sheep, and in the large shipments there is opportunity for closer selection. This class of sheep can be purchased on the livestock markets.

That ewes should be young, uniform in size and conformation, showing constitution and vigor, applies to "westerns" as well as to natives. They should be examined for age, being sure to buy for breeding purposes only ewes with good mouths, that is, young enough so that their teeth are in good enough shape to eat feed. Also select ewes with good sound udders; since ewes with bad udders seldom raise good lambs. The fleece should be dense and bright, fibers of wool, fine and strong. Fleeces from the most practical farm flocks usually grade "one-fourth blood," "three-eighths blood" or "half blood" combing. These wools range from two and one-half inches to four inches in length, and correspond to the wool produced by the "down" breeds.

On the average, under corn belt conditions, 65% of the returns from a flock of sheep are from lambs or mutton and 35% from wool. These relative percentages should always be kept in mind in selecting breeding stock.

Those that buy purebred ewes will do well to select a breed that is adapted to local conditions and whose usefulness is evident by its wide distribution in order that a ready market is available for the surplus stock. Two of the popular breeds in the corn belt are the Shropshire and Hampshire. Such ewes should be typical of the breed they represent, should be uniform in size and conformation, well grown and thrifty. A strong constitution is evidenced by a wide spring of ribs and deep full

chest. The back should be strong with a thick covering of natural flesh. A little more length of coupling is required in the ewe than in the ram. The body should stand squarely on the four legs with strong feet and pasterns. When possible the purchaser should examine the ewes personally. For further information see score card for breeding animals on page 24. Reference, Farmers' Bulletin 840, U. S. D. A.

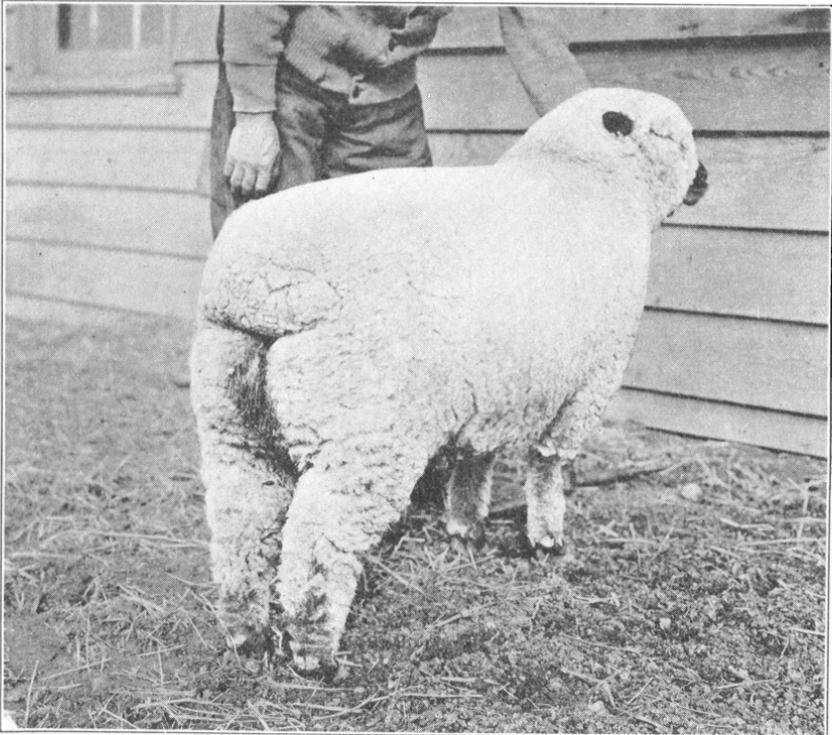


Fig. 3.—The ewe should be typical of the breed she represents, well grown and thrifty with a wide spring of rib, deep chest, thick covering of natural flesh, strong back and stand squarely on her four legs. The ewe should be more refined than the ram.

Breeds of Sheep.—According to U. S. D. A. Bulletin 576 there are thirty breeds of improved sheep that have been brought to fixed types. The better known breeds can be grouped into three classes, each class having its own general qualities.

Medium wool breeds.—Southdown, Shropshire, Hampshire, Oxford, Suffolk, Dorset, Tunis, and Cheviot. The first five breeds are referred to collectively as “down” breeds, because of the nature of the country in which they were developed. The “down” breeds have all been developed

primarily for mutton. The face and leg color of all the "down" breeds is of some shade of brown or black. The fleece occupies a middle position between the length and coarseness of the long-wools and the extreme fineness and density of the fine wools.

Long wool breeds.—Cotswold, Leicester, Lincoln and Romney Marsh. The long wool sheep are bred chiefly for mutton and are the largest of all breeds of sheep. Their fleece is coarse, long and open. They are large bodied sheep with very broad backs. As their size indicates, they have been developed for level lands where feed can be obtained without much travel.

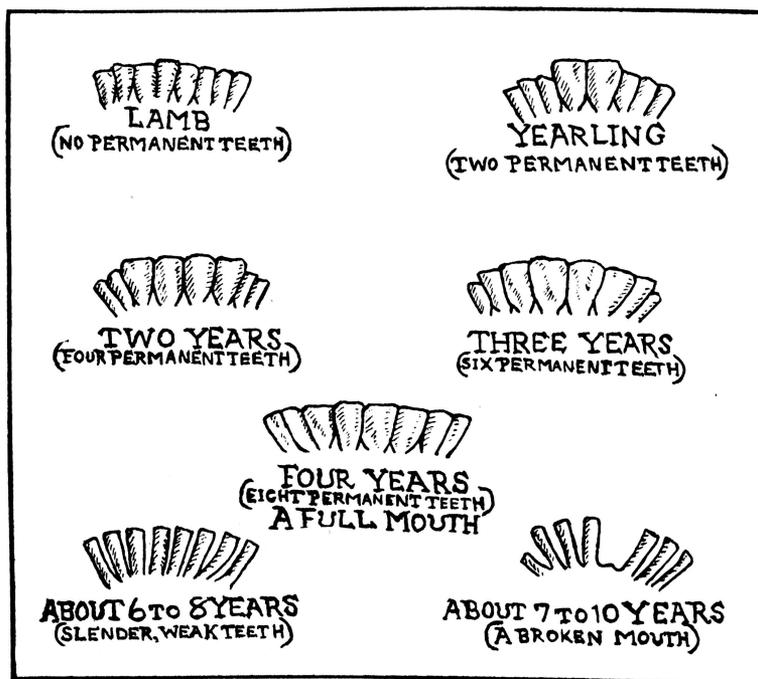


Fig. 4.—Diagram showing condition of sheep's teeth at various ages.

Fine wool breeds.—American Merino and Rambouillet. The Merinos have been developed primarily for wool production. The wool is finer than that produced by any other breed of sheep. They are divided into three types, A, B, C, according to fineness of wool and freeness from folds or wrinkles. The instinct to herd together has made this breed popular on the range.

The Rambouillet is larger than the Merino and of better mutton type. The fleece is usually longer but not quite as fine as the Merino fleece.

SELECTING THE RAM

Only purebred rams of the correct type should be used on either grade or purebred ewes. For the grade flock one should pay attention to useful points rather than fancy ones. The ram should be thick, blocky, set close to the ground, wide of back and chest, well fleshed, strong masculine head, thick, short neck, and good bone. The hind quarters should be full and deep. Such a ram will produce far better market lambs than one that is rangy, narrow, and high off the ground.

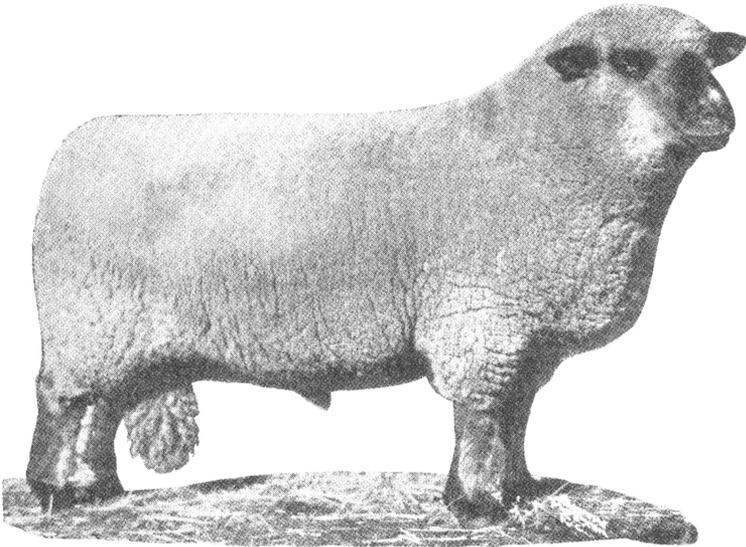


Fig. 5.—The ram should be strong, masculine, thick through the chest, deep in heart girth, thick fleshed and purebred. (Courtesy of the Colorado Agricultural College.)

The fleece is an important item in selecting the ram. It should be dense, fine, and strong, showing plenty of crimp and lustre.

In selecting a ram the breed type should not be overlooked. Before purchasing a purebred ram learn all you can about the characteristics of the breed you have chosen, and then select a ram that shows breed characteristics, type and masculinity.

If the ewes are small and fine a ram of the opposite type should be selected. If the ewes are large and coarse, select a smaller, more compact

ram. Remember that the ram is half the flock and too much care cannot be given to his selection.

Results at the Missouri Experiment Station show that good rams pay. A purebred mutton ram and a scrub ram of unknown breeding were used in the experiment. The ewes in the experiment were grade "Westerners." The experiment was conducted in 1913.

COMPARISON OF LAMBS Sired BY PUREBRED RAM WITH LAMBS Sired
BY SCRUB RAM

Lambs sired by purebred ram	Basis of comparison	Lambs sired by scrub ram
59.72 lbs. (3 mos.)	weight	56.22 lbs. (4 mos.)
\$7.35	Selling price per cwt.	\$4.50
\$4.38	Value per head	\$2.52

The lambs sired by the purebred ram were worth \$1.86 per head more than those sired by the scrub ram. On the present market when lambs are selling for \$15.00 per cwt. there would be a difference of \$3.71 per head in favor of the lambs sired by the purebred ram. Good rams pay.

II. Feed and Management of the Ewes

FALL CARE

The important things to be attended to in the fall are the selection of the ram and the culling of the ewes. Culling of the ewes is very important. Poor producers, those with spoiled udders, old ewes and ones that fail to breed in a fair season should be disposed of in order to make room for more productive animals. Mark the ewes that are unproductive as they are noticed and then when time for culling arrives it will not be necessary for guess work.

Until freezing weather the sheep can run on stubble fields, and meadows, and can clean fence rows. This will add greatly to the appearance of any farm and make use of feeds that would otherwise be wasted.

THE BREEDING SEASON

Ewes should not be bred until they are past one year old. The time at which to breed ewes will depend on the equipment, feed and experience of the owner. Where reasonably good buildings are provided, with plenty of feed, the ewes should be bred by October 1. The date of breeding should be kept as a record for future reference. If the ewes are in good condition they will need no other feed than the grass. However, if the ewes are thin and run down it is a good plan to feed some grain.

This practice is called "flushing." Flushing the ewes by either feeding grain or turning them on a green succulent pasture, such as rye or rape two or three weeks before mating begins will have a tendency to put them in the best possible physical condition. By adopting this practice the ewes will come in heat sooner and usually a larger per cent of lambs will be born. Over a period of six years the U. S. Department of Agriculture's comparisons made with flushed and unflushed lots show that an average increase of 18.7 lambs per 100 ewes was obtained as a result of flushing and that the lambs were born within a shorter lambing period.

The main thing to keep in mind in regard to the ram at breeding time is, to not let him get in a run-down condition. On the other hand, care should be taken not to get the ram too fat. Before the breeding season he should be in fair condition, given plenty of exercise, comfortable quarters when not with the ewes, and enough nutritious feed to keep him thriving. Best results will occur where the ram is allowed with the ewes only at night during the breeding season and then removed from them altogether during the day and fed some grain.

WINTER FEED AND CARE

After the first few hard freezes in the fall the ewes should be given some feed in addition to the pasture. This is a good time to start feeding a small amount of clover or alfalfa hay. Winter management has a very important relation to the returns from the flock. The feeding should be such as will produce the most vigorous lambs and keep the wool in the best condition. Ewes should gain slightly all through the period of pregnancy, from 5 to 10 pounds per head. A cheap, efficient ration is essential to success.

Rations that have given good results at the Missouri Experiment Station follow. (These rations are figured for a ewe weighing 100 pounds in fair condition.)

RATIONS BEFORE LAMBING

No. 1.	No. 2.
2 pounds clover hay	2½ pounds clover hay
2½ pounds corn silage	2 pounds corn stover

After lambing add ½ to 1½ pounds of the following grain mixture to the ration for each ewe, depending on her condition.

Corn 6 parts	} By weight
Oats or bran 3 parts	
Linseed oil meal 1 part	

A winter ration should have as its foundation a leguminous hay, either alfalfa, clover or soybean.

Comparison of an excellent and a poor ration for wintering breeding ewes. Based on 100 pounds live weight.

EXCELLENT RATION

Corn 3 parts Oats 5 parts Bran 3 parts Linseed oil meal 1 part	}	Feed at the rate of ½ pound up to lambing time, and 1 pound after lambing.
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Corn silage Clover or Alfalfa hay	}	Feed to satisfy appetite, feeding 2½-3 pounds of silage to 1 pound of hay.
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POOR RATION

Corn ½ pound Timothy hay Corn stover	}	This ration is very inferior. It lacks protein and mineral matter and is unpalatable and constipating.
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When ewes go into winter quarters in good condition and are receiving plenty of legume hay they will need little if any grain until five or six weeks before lambing time. Plenty of clean, fresh water and salt should be before the sheep at all times. (Reference, Missouri Experiment Station Bulletin 120, "Rations for Breeding Ewes.")

Exercise is very important to the health of the breeding ewes during the winter period. It does the ewes most good when they take exercise naturally on some sort of pasture, but if they are inclined not to exercise they will be greatly benefited by daily walks. A good way to induce ewes to take exercise is to scatter their dry roughage, such as corn stover, over the ground for a considerable distance. Plenty of regular exercise will decrease toxic poisoning, which causes heavy losses each year in Missouri.

The sheep should be provided with dry, well ventilated quarters, and care should be taken not to confine them too closely or have their quarters too warm. A shed open to the south on well drained ground will suffice for shelter. Such a shed should have a lambing apartment boxed off in one end for cold weather.

CARE DURING THE LAMBING SEASON

If the ewes have been properly fed and cared for during the winter, fewer difficulties will be experienced at lambing time. However, the amount of money to be made from the flock will still depend on the way

the ewes are handled during this period. The breeding date will be of great assistance at this time as it will enable one to determine the approximate lambing date. Ewes usually carry their young about 147 days.

Heavy grain feeding just before lambing is likely to cause udder trouble. The grain ration should be limited to small amounts of rather bulky grains, such as bran and oats. Just before lambing all wool and tags should be clipped short from around the udder to allow the lambs to find the teats readily. A short time before lambing the ewe becomes restless and appears sunken in front of the hips. For best results she should be removed from the other sheep and put in a separate pen. A pen five feet square is plenty large enough and can be made out of portable hurdles placed along the inside or end of the barn or shed. This will prevent the lamb from being trampled or lost from its mother and will give the ewe a chance to become acquainted with her offspring.

The first few minutes of a lamb's life are very important and the owner should be close at hand at lambing time. Experience will go a long way in teaching the sheep raiser just what is necessary to be done during this season. This is a wonderful opportunity for the development of the power of observation, which is essential to successful sheep husbandry. It is essential that the young lamb does not become chilled and usually that it nurses within the first half hour after birth. When the lamb has developed strength enough to walk and has nursed once, there will be little need of further attention unless the lamb is weak or abnormal in some way. The ewe should remain in her pen until the lamb is strong enough to follow her about. Feed the ewe sparingly for a day or two after lambing. Keep plenty of clean fresh water before her. (Reference, U. S. D. A. Farmers' Bulletin 840.)

III. Lamb Management

DOCKING AND TRIMMING

When 10 days to two weeks old, lambs should be docked. For the sake of convenience, both docking and trimming may be done at the same time. A bright clear day with the prospect of several more to follow is the best kind of weather for docking and trimming as the wounds heal faster then than when the weather is damp and cold. The operation should be conducted under sanitary conditions, using plenty of reliable disinfectant (any of the standard "coal tar" dips can be used). One man holds the lamb by gathering its four legs together, setting the lamb on its rump on a board or barrel which is about waist high, and holding the lamb tightly against his body.

In docking lambs either of two methods may be used successfully: one by cutting off with a sharp knife, the other by burning with a docking iron. The former is most generally used; however, the latter is advisable if the lambs have become over one month old. The lamb will bleed more when a knife is used, but the wound will heal more quickly than when a docking iron is used. The tail should be cut off about an inch from the body. With the fore finger and thumb of the left hand push the skin around the tail towards the body. When the tail is removed the skin will drop down and cover the end of the tail-bone; this hastens healing. It is best not to pull the tail when the cutting is done in order that the end of the bone will not be exposed when the skin regains its normal tension. For further information write the Missouri College of Agriculture Department of Animal Husbandry.

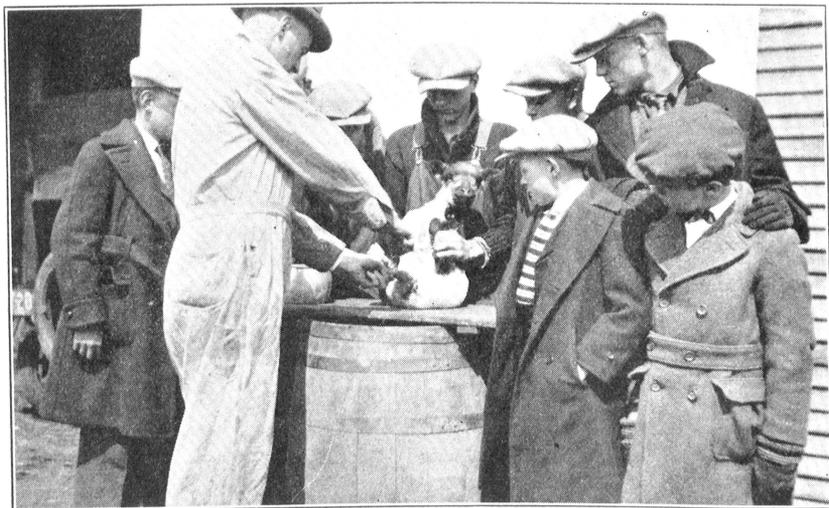


Fig. 6.—Future Missouri shepherds learning how to dock and trim lambs. (Macon County Ewe and Lamb Club members.)

CREEP FEEDING GRAIN TO SUCKLING LAMBS

The reasons for feeding grain to suckling lambs are:

1. That the finish or fatness of lambs can be materially increased by feeding grain in a creep.
2. That, on the average, lambs will be ready for market at a younger age, when prices are highest.

3. That the most economical gains are made with grain while the lamb is getting its mother's milk.
4. That the shrinkage will be less in shipping.
5. That the number of culls can be greatly reduced.
6. That a greater return on investment will be received.

As a general rule it is better to have the lambs in farm flocks come early (February or March), for then one can devote more time to them.

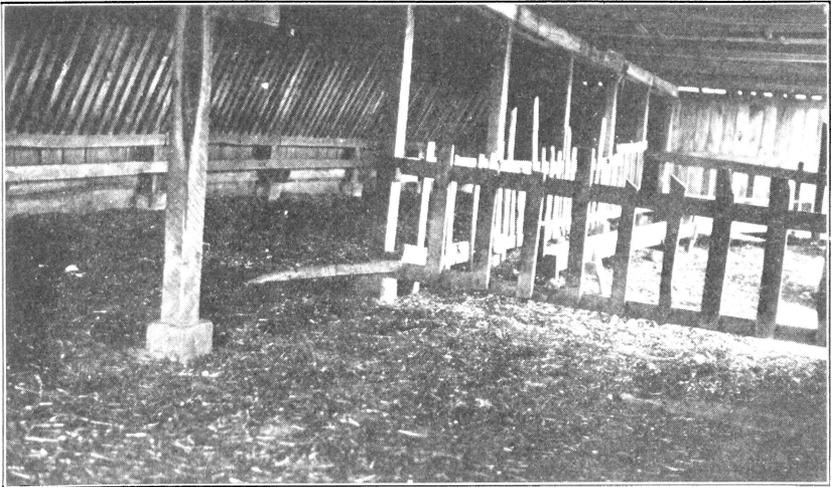


Fig. 7.—A lamb feeding creep in use on a Missouri farm.

They learn to eat grain before the grass season opens and are ready for market when they are old enough to wean, which is when they are from three to four months of age. At this time they should still have their "baby fat" and should weigh 65 to 70 pounds.

The "creep", Fig. 7, or pen, affords a place where the young lambs may eat without disturbance from the ewes. A warm, sunny place in the barn or shed is an ideal location for the creep. Inside the creep there should be troughs for grain and a small rack for hay. The troughs should be from 9 to 12 inches wide and four inches deep. A six-inch board should run the full length of the trough ten inches above the bottom and supported at each end.

All lambs produced for an early market (sold by July) should be fed liberally as soon as they will eat. Most lambs will start eating when around two weeks old and the creep should be ready by the time the ewes start lambing. Clean troughs daily and feed small amounts of grain at first. After the lambs get to eating perhaps the best plan is to feed them twice daily about what they will clean up in fifteen minutes. When

the lamb reaches two months in age it will be eating from $\frac{1}{2}$ to $\frac{3}{4}$ pounds of grain daily. Crushed or ground grain may be best for the first six weeks, then gradually change to whole grain. Lambs at the Missouri Experiment Station required from 55 to 88 pounds of grain per 100 pounds gain while suckling their mothers.

Recommended grain rations for suckling lambs are:

No. 1

Corn 2 parts	Feed crushed corn and oats until lambs are six weeks old. Feed whole grain after six weeks. This ration is ideal for producing purebred sheep where growth is essential.
Oats 2 parts	
Wheat bran 1 part	
Linseed oil meal 1 part	

No. 2

Corn 6 parts	A good ration when the supply of leguminous hay is limited. An excellent ration for fattening lambs.
Oats or bran 3 parts	
Linseed oil meal 1 part	

No. 3

Corn 6 parts	To be fed in connection with a leguminous hay.
Oats 2 parts	A fat producing ration and a very practical one.

Taking the grain away from the lambs when they are turned on grass is a very common mistake. Arrangements should be made for the continued feeding of grain to the lambs until they are marketed.

MARKETING THE LAMB CROP

Early lambs should be marketed without the loss of their "milk" or "baby" fat, and before the hot, dry summer months of July and August. Late lambs dropped in April and May in most cases will be carried through the summer and fattened in the fall. The chief reasons for marketing lambs early (before July 1) are:

1. Higher market.
2. Eliminates parasite (particularly stomach worm) infestation.
3. 47% of the lamb crop in U. S. is marketed in August, September, October, November (4 fall months); 26.1% of the lamb crop in U.S. is marketed in March, April, May and June (4 spring months).
4. Prevents loss in weight of lambs during hot dry weather in July and August.

IV. Judging and Showing Sheep

JUDGING SHEEP

The average person probably knows less about the method to follow, and the points to look for, in judging sheep than in other types of livestock. With other stock the judge can depend almost entirely upon his eye in arriving at his decision; with sheep, however, he must not only use his eye, but to verify his opinion he must handle the individual. The fleece on the sheep is very apt to cover defects which can be determined only by handling. The best judges have a natural aptitude for the work and are constantly at it, whether in the show ring, feed

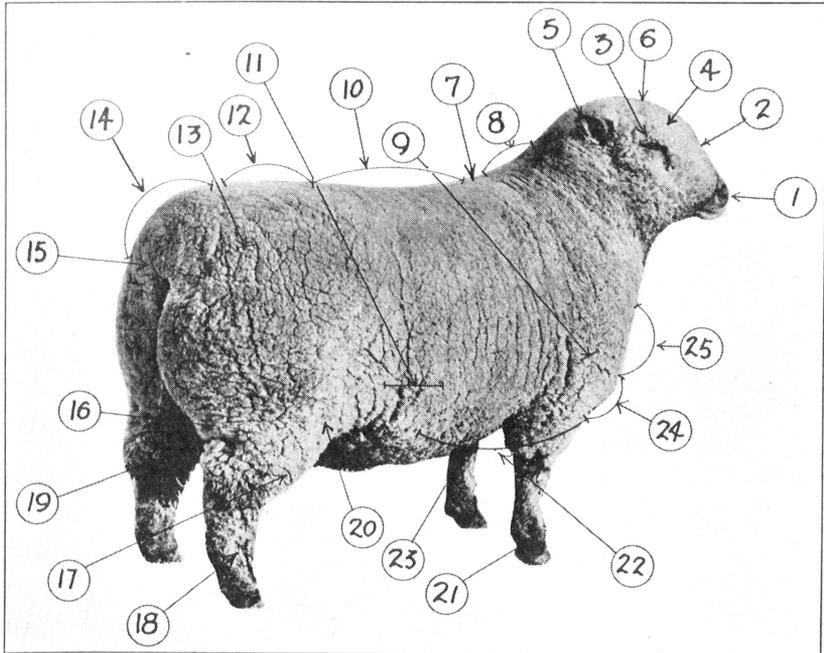


Fig. 8.—The external parts of a sheep. 1. Muzzle broad, lips thin, nostrils large. 2. Face short, features clean-cut. 3. Eyes large and clear. 4. Forehead broad. 5. Ears alert and not coarse. 6. Poll wide. 7. Top of shoulder compact. 8. Neck short, thick, blending smoothly with shoulder. 9. Shoulder thickly covered with flesh. 10. Back broad, straight, thickly and evenly covered. 11. Ribs long, well sprung, and thickly covered. 12. Loins broad, thick, and well covered. 13. Hips wide and smooth. 14. Rump long, level, and wide to dock. 15. Dock thick. 16. Twist deep and firm. 17. Thighs full, deep, and wide. 18. Legs straight, short, and bone smooth. 19. Cod or purse in wether, scrotum in ram, udder in ewe. 20. Flank full and deep. 21. Forelegs straight, short, and strong. 22. Chest deep, wide, and full. 23. Forelegs wide apart and forearm strong. 24. Brisket full and rounding in outline. 25. Breast well extended.

yard or field. It is natural for them to be always comparing points and qualities of individuals and weighing their value.

The score card is the most helpful guide that the beginner can use. A detailed description of an ideal animal is given in a systematic way and its use will help in developing a definite system of judging. In addition to the above the score card enables one to become familiar with the various parts of the animal and to learn the meaning of words and terms used in judging. It takes a good animal to score 75 points out of the 100, and a choice one to score 90 points.

After you have become thoroughly familiar with the score card you are ready for comparative judging. Instead of balancing the various points of an individual against the ideal, as with the score card, you compare the parts of two or more animals of the same kind. Always keep in mind the standard which they should approach. It is advisable to follow a definite plan or scheme and work systematically, comparing part by part, with the animals before you. The animals to be compared or judged should be numbered or lettered as 1, 2, 3, 4, etc. The beginner should write down his reasons for placing the animals. Reasons, whether written or oral, should be brief, systematic, and convincing, and given in the form of a comparison or contrast, telling why the animal placed first excels the animal placed second, etc.

Inspect the animal from a distance and note the general make-up from the front, side, and rear. Then verify your observations by going over the sheep with the hands. In doing the latter keep the fingers close together. Practice is necessary to gain the correct touch. Pounding and clawing the animal is entirely out of order; handle it gently. Follow the points as outlined on your score card. After you have handled the animal examine the fleece by parting the wool with your hands well down on the shoulder, ribs and thigh. Examine the fleece for quantity, quality, and condition. At the same time examine the skin. (Reference U. S. D. A Farmers' Bulletin 1119, "Judging Sheep".)

SHOWING SHEEP

From an educational standpoint showing sheep, as well as other types of livestock, develops the art and skill of the boy or girl, in proper selection, feeding and fitting of animals. The show ring is not intended to educate the stockman to have his animals in show yard condition at all times, but rather to educate and inspire him to select animals of superior breeding and of such individuality that he can make them attain the size, conformation, quality, and condition most desirable when the time comes to market them.

SCORE CARD FOR MUTTON SHEEP; FAT WETHERS

SCALE OF POINTS	Pos- sible Score	Points Deficient	
		Stu- dent's Score	Cor- rected
Age, estimated.....yrs., actual.....yrs.			
GENERAL APPEARANCE—26 Points			
Weight, estimated.....lbs., actual.....lbs. score according to age.....	6	-----	-----
Form, straight top line and underline, deep, broad, low, medium length, symmetrical, compact, standing squarely on legs.....	8	-----	-----
Quality, bone of firm texture, fine skin, silky hair, clearly defined features and joints, mellow touch, fleece soft, fine, pure.....	6	-----	-----
Condition, healthy, thick, even, covering of firm flesh, especially in re- gions of valuable cuts, indicating finish, light in offal.....	6	-----	-----
HEAD AND NECK—8 Points			
Muzzle, good size, lips thin; nostrils large and well apart, jaws wide....	1	-----	-----
Face, short, broad, profile straight.....	1	-----	-----
Eyes, large, full, clear, bright.....	1	-----	-----
Forehead, broad.....	1	-----	-----
Ears, well carried, fine, medium size.....	1	-----	-----
Neck, thick, short, well set, throat clean.....	3	-----	-----
FOREQUARTERS—10 Points			
Shoulder Vein, full, smooth.....	2	-----	-----
Shoulders, smoothly covered with firm flesh; compact.....	4	-----	-----
Brisket, broad, full, breast wide.....	2	-----	-----
Legs, straight, short, strong, wide apart; forearm full; shank fine; feet sound.....	2	-----	-----
BODY—25 Points			
Chest, deep, broad; girth large; foreflank full.....	4	-----	-----
Back, broad, straight, medium length, thickly, evenly and firmly fleshed	7	-----	-----
Ribs, deep, well sprung, closely set, thickly, evenly and firmly fleshed....	6	-----	-----
Loin, broad, straight, thickly, evenly and firmly fleshed.....	6	-----	-----
Flank, full, low.....	2	-----	-----
HINDQUARTERS—20 Points			
Hips, smoothly covered, proportionate width.....	3	-----	-----
Rump, long, level, width well carried back; thickly, evenly and firmly fleshed.....	5	-----	-----
Thighs, deep, wide, well fleshed.....	4	-----	-----
Twist, deep, broad, well filled.....	6	-----	-----
Legs, straight, short, strong; shank smooth, sound.....	2	-----	-----
FLEECE AND SKIN—11 Points			
Quantity of Wool, long, dense, even, well distributed over body.....	3	-----	-----
Quality of Wool, fine, soft, pure, even, crimp close and uniform.....	3	-----	-----
Condition of Wool, bright, strong, clean, yolk abundant.....	2	-----	-----
Skin, pink color, clear.....	3	-----	-----
Total.....	100	-----	-----

SCORE CARD FOR MUTTON SHEEP; BREEDING ANIMALS

SCALE OF POINTS	Pos- sible Score	Points Deficient	
		Stu- dent's Score	Cor- rected
Age, estimated.....yrs., actual.....yrs.			
GENERAL APPEARANCE—28 Points			
Weight, estimated.....lbs., actual.....lbs. score according to age.....	5		
Form, straight top line and underline; deep, broad, low, medium length, symmetrical, compact, standing squarely on legs.....	7		
Quality, bone of firm texture; fine skin, silky hair; clearly defined fea- tures and joints; mellow touch; fleece soft, fine, pure.....	6		
Condition, healthy, naturally thickly, firmly and smoothly fleshed, espe- cially in regions of valuable cuts.....	3		
Style, active, graceful carriage.....	1		
Temperament, male, aggressive but not vicious; female, quiet, docile.....	1		
Sexuality.....	5		
HEAD AND NECK—9 Points			
Muzzle, good size, lips thin, nostrils large and well apart, jaws wide.....	2		
Face, short, broad, profile straight.....	1		
Eyes, large, full, clear, bright.....	1		
Forehead, broad.....	1		
Ears, well carried, fine, medium size.....	1		
Neck, thick, short, throat clean.....	3		
FOREQUARTERS—10 Points			
Shoulder Vein, full, smooth.....	1		
Shoulders, smoothly covered with firm flesh; compact.....	4		
Brisket, broad, full, breast wide.....	2		
Legs, straight, short, strong, wide apart; forearm full, shank fine, feet sound.....	3		
BODY—22 Points			
Chest, deep, broad, girth large, foreflank full.....	5		
Back, broad, straight, medium length; thickly, evenly and firmly fleshed	5		
Ribs, deep, well sprung; closely set, thickly, evenly and firmly fleshed...	5		
Loin, broad, straight, thickly, evenly and firmly fleshed.....	5		
Flanks, medium, full, low.....	2		
HIND QUARTERS—16 Points			
Hips, smoothly covered, proportionate width.....	2		
Rump, long, level, width well carried back; thickly, evenly and firmly fleshed.....	4		
Thighs, deep, wide, well fleshed.....	3		
Twist, deep, broad, well filled.....	4		
Legs, straight, short, strong, shank smooth; feet sound.....	3		
FLEECE AND SKIN—15 Points			
Quantity of Wool, long, dense, even, well distributed over body.....	4		
Quality of Wool, fine, soft, pure, even, crimp close and uniform.....	4		
Condition of Wool, bright, strong, clean, yolk abundant.....	3		
Skin, pink color, clear.....	4		
Total.....	100		

PREPARING FOR SHOW

Preparing the sheep or lamb for show should begin at least one month before the time the animal is to be shown at community or county fairs and continued until the State Fair if the lamb is to be carried that far. The first step is trimming the fleece, or cutting off with a pair of hand sheep shears, the rough ends of the wool fibers and is known as "blocking out." Before the animal is "blocked out" the fleece should be slightly dampened. The tangled ends of the wool should be combed out with a curry comb then be separated with a wool card (see illustration page 26). Now hold the shears flat and trim off the loose ends. Next square off the dock. This brings out the blockiness of the lamb when viewed from the rear. Lambs or sheep should receive these trimmings regularly about every two weeks and just prior to taking them into the show ring. Keep the fleece as clean as possible. The feet also should be trimmed with a sharp knife or pruning shears so the sheep will stand squarely on its legs. It is usually necessary to trim the feet every six weeks. In every community there is likely to be an experienced shepherd; secure his advice and assistance. Experience is very necessary to be successful in fitting a sheep for show and is the only way to learn how to become a good showman.

A boy or girl who is really interested in his or her work will spend considerable time in training lambs before the show. Handle the lambs quietly and carefully. One of the best ways to catch the lamb is by the flank and then by placing one hand under the jaws and the other hand at the dock the animal can be led without injury. By the same method the lamb can be made to stand squarely on its legs with its head and neck in the proper position. After several handlings the lamb will quiet down and respond readily to kind treatment. Always remember that interest and pride in what you are doing will carry you a long way towards success.

DEMONSTRATIONS

So far as possible, all club members should be instructed in the regular club meetings by the demonstration method. As a usual thing one or more members of each club can begin doing useful phases of the work program before the club soon after the processes have been demonstrated by the club leader.

After two or three months of practical experience, all club members should be able to give public team demonstrations. The scope of the team demonstration usually should be limited to the essential processes of some phase of the club work of the current year on one subject. A team of two or three of the best demonstrators, according to the number need-

ed, should be selected from the membership of one club, either by mutual consent or by competition. All teams should have an opportunity to demonstrate before the local club group and the people of the home community, and the championship team should represent the local club at the county round-up.

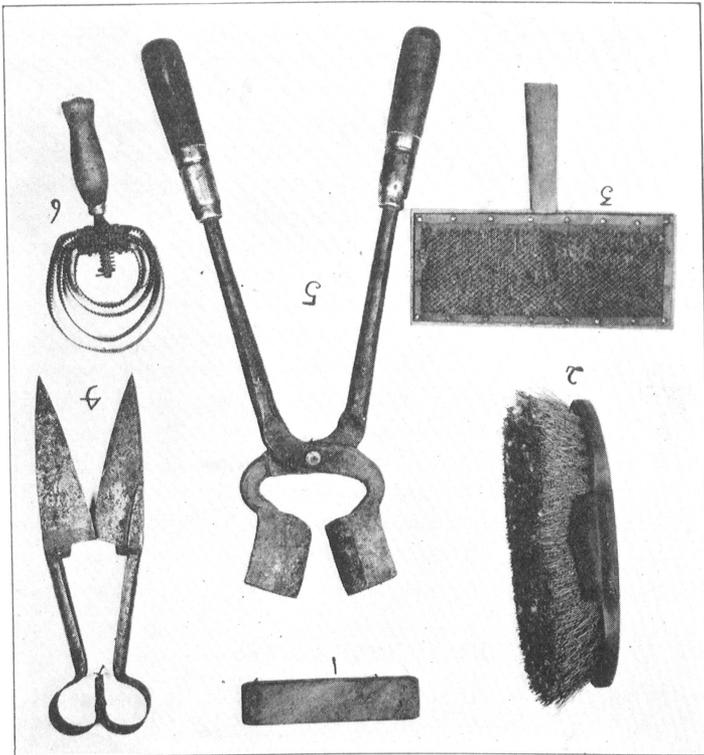


Fig. 9.—Equipment used in preparing sheep for show. (1) Whetstone, (2) Brush, (3) Wool card, (4) Sheep shears. (5) Docking Iron, (used for docking lambs), (6) Round curry-comb. In addition a pail and a sheep halter will be found to be of great assistance.

SCORE CARD FOR JUDGING DEMONSTRATION TEAMS

	Perfect Score	Actual Score
1. Subject Matter -----	30	
(1) Importance of the subject matter presented and relation to fundamental problems of home or farm.		
(2) Accuracy of statements made in oral presentation and proper methods in doing the work.		
(3) Completeness with reference to the giving of all steps necessary to clear understanding of process.		
(4) Clearness and definiteness of statements made in simple language easily understood.		
(5) Replies to practical questions. Judge's questions only should be considered in team scores. Team should give authority for subject matter presented.		
Team work -----	20	
(1) Preparation, arrangements, and use of materials. The team will be responsible for the arrangement and preparation of equipment and its use.		
(2) Organization of work, each member in so far as practical to be kept busy with a definite part so that the work and instructions given will proceed without delay, but each member of the team should be able to demonstrate the whole process.		
(3) Appearance and conduct of the team. Appearance and conduct includes the personal appearance of the members, and of the team as a whole. They should be business like, pleasant, and so far as possible, a unit in action and appearance.		
(4) The team member not actually directing the demonstration should reinforce the point at hand or at least should not detract from theme of the demonstration.		
3. Skill -----	20	
(1) Ease in procedure.		
(2) Workmanship and efficiency of manipulation.		
(3) Neatness and cleanliness in doing work.		
(4) Speed, system or dispatch.		
4. Results -----	15	
(1) Effect upon the audience, and also upon materials used in demonstration, as shown in finished product.		
(2) All processes made clear.		
5. Practicability -----	15	
(1) Value of principles given for home and community.		
(2) Actual club practices shown.		
TOTAL SCORE -----	100	

Suggestive Outline of a Fat Lamb Judging Demonstration

Team.—Three members from one club designated in this outline as “A”, “B”, and “C”.

Reference.—“Judging Sheep,” Farmers’ Bulletin 1199, U. S. Department of Agriculture.

Equipment Needed.—Two fat lambs, pen for lambs, blackboard, and pointer.

Time.—Fifteen to thirty minutes.

Procedure

A	B	C
<p><i>A speaks and demonstrates</i></p> <p>Leads in giving a club song, or pledge; gives brief history of the club; introduces teammates and self; and states what the team is going to demonstrate.</p>	<p><i>B assists</i></p> <p>Joins in giving song or pledge.</p> <p>Stands at attention while being introduced.</p>	<p><i>C assists</i></p> <p>Joins in giving song or pledge.</p> <p>Stands at attention while being introduced.</p>

Fat Lamb Judging Demonstration

<p>1. <i>A demonstrates</i> and explains how to handle a fat lamb in judging.</p> <p>(1) How to hold a lamb.</p> <p>(2) How to show a lamb.</p> <p>2. <i>A explains</i> briefly the points on the score card.</p> <p>(B will now demonstrate how to judge a fat lamb by use of the score card)</p>	<p><i>B assists</i> A in handling lamb, showing front view.</p> <p>Puts lamb in pen.</p> <p><i>B writes</i> main points of score card on board as named by A.</p>	<p><i>C assists</i> with another lamb, showing rear view.</p> <p><i>C holds</i> lamb.</p>
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(Continued on next page)

<p><i>A assists</i></p> <p>Holds lamb for B</p>	<p><i>B speaks and demonstrates</i></p> <p>3. Judging a fat lamb by use of the score card. (See page 5, Farmers' Bulletin 1199 U. S. Department of Agri.) (C will now demonstrate how to judge fat lambs by comparison.)</p>	<p><i>C assists</i></p> <p>Writes score by points as judged by B.</p>
<p><i>A assists</i></p>	<p><i>B assists</i></p>	<p><i>C speaks and demonstrates.</i> 4. Judging fat lambs by comparison. (See pp. 5-18, Farmers' Bulletin 1199 U. S. Dept. of Agri.) (A will now summarize points made in the demonstration)</p>
<p><i>A speaks</i></p> <p>5. Summarizes points made in the demonstration. (1) How to hold a fat lamb. (2) How to judge fat lambs by use of the score card. (3) How to judge fat lambs by comparison. 6. Asks for questions. 7. Thanks audience for attention. 8. May close with a club yell.</p>	<p><i>B assists</i></p> <p>Puts lamb in pen</p> <p>Stands at attention.</p> <p>Joins in giving club yell.</p>	<p><i>C assists</i></p> <p>Assists B</p> <p>Stands at attention.</p> <p>Joins in giving club yell.</p>

V. The Wool Crop

Careful attention should be given the wool product or fleece in order to materially increase the income. Sheep should be selected for their wool producing characteristics as well as for their mutton qualities. To realize a maximum return from wool the sheep must be properly fed and handled. This requires plenty of nutritious feed, and keeping the fleece free from chaff, dirt, and burrs.

SUGGESTIONS FOR SHEARING AND PREPARING WOOL FOR MARKET

To realize full value for the wool, observe the following points when shearing and preparing wool for market:

1. Shearing should be done in Missouri in the spring as soon as the weather is warm, usually the latter part of April or early May.
2. The fleeces should be absolutely dry when shorn.
3. Shear on a clean, smooth well-swept floor. Never shear on a floor strewn with chaff, straw or litter of any kind.
4. The wool should be taken off close to the skin and cut only once. A good fleece may be ruined by cutting the wool fibers up in short pieces.
5. Remove tags, filth and other foreign matter from your fleeces, and sack the tags separately from your wool. Wool manufacturers are human beings—they are apt to remember the burrs, manure, and trash they got in last year's wool when they make offers on next year's clips. Make your fleece into a neat, clean package.

After the fleece is shorn spread it out on a smooth clean floor or table flesh side down, care should be used to not tear it apart. Then fold in the ragged edges and roll or fold the fleece over into a neat bundle so that nothing will show except the white side. Pass the string directly around the middle of the fleece one way then across and around the other way. Two strings each way are usually sufficient to hold the fleece firmly together. Tie the fleece with paper twine. Binder or other rough twine should not be used.

All wool of a low merchantable value should be separated from the high quality wool. This means that burry, chaffy, dirty, cotted, black and dead fleeces should be separated from others.

Where twenty or more sheep are kept on one farm the wool should be sacked in seven or seven and one-half foot burlap bags that are about three feet in diameter. Such bags will hold 20 or 25 ordinary fleeces and are called wool sacks.

If wool is to be stored it should be taken to a clean, dry place.

Care should be taken that the sheep on one farm are as near as possible of one breed so that the quality and length of wool will be similar. This might be carried further so that farmers in one vicinity might raise wool of approximately the same grade, which would therefore be of interest to one buyer.

CLASSES AND GRADES OF WOOL

Wool is divided into two main classes and the classes are subdivided into grades. The two classes are known as combing and clothing. Combing wools are used in the manufacture of worsted goods and for this reason are selected for their strength and length of fiber. The required length of fiber is two and one-half inches or more and the strength of fiber must be uniform and even throughout the fleece. Strictly combing wool usually sells for from two to six cents per pound more than clothing wool (after the grease, dirt and foreign matter are removed). Clothing wool usually is under two and one-half inches in length and is used in the manufacture of woolens, felts and fabrics of similar type. Coarse, kempy,

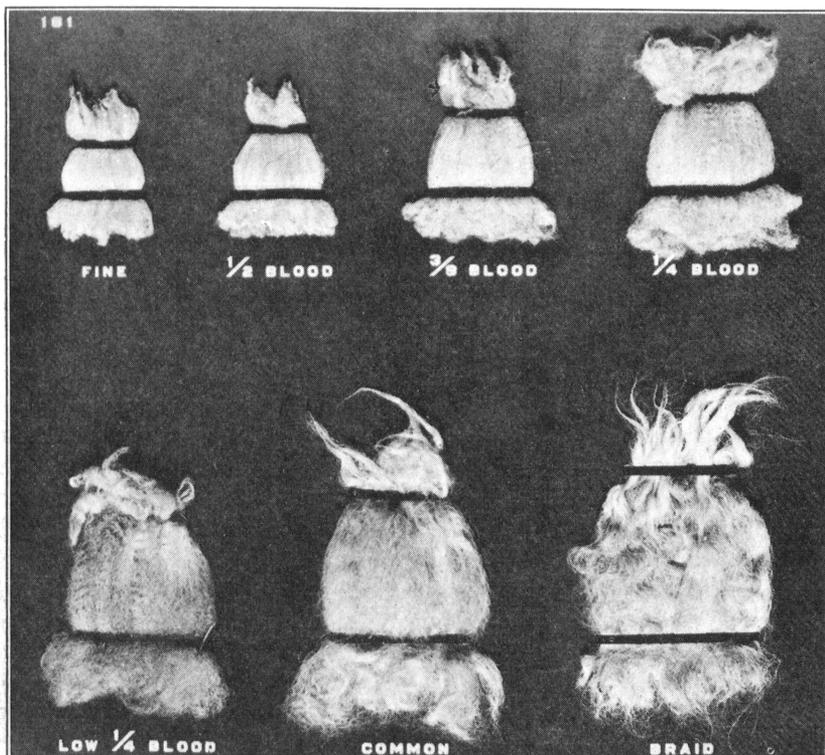


Fig. 10.—Official wool standards of the United States.

wool from poorly bred sheep is classed as carpet wool. It is not produced in regions where improved methods of breeding and feeding are followed except in very small quantities.

The two main classifications of wool, namely, combing and clothing, are sub-divided into various grades according to fineness or diameter of fiber. It is impossible to assign wool to a particular grade solely upon the basis of the breeding of the sheep. In the mutton breeds especially there are wide variations within single breeds and within flocks. The following list shows in a general way how wool from the various breeds would be likely to grade:

Breeds of Sheep*	Grade of Wool Produced
Merino and Rambouillet	Fine and fine medium, staple or clothing and a small amount of $\frac{1}{2}$ blood.
Shropshire	Mainly $\frac{3}{8}$ blood, combing or clothing, some $\frac{1}{4}$ blood
Hampshire	$\frac{3}{8}$ and $\frac{1}{4}$ blood combing or clothing.
Southdown	Half and $\frac{3}{8}$ blood (chiefly $\frac{3}{8}$ combing and clothing, largely clothing).
Dorset	$\frac{3}{8}$ and $\frac{1}{4}$ blood combing or clothing.
Oxford	$\frac{1}{4}$ and low $\frac{1}{4}$ blood combing.
Cotswold	} low $\frac{1}{4}$ blood, common and braid.
Lincoln	
Leicester	
Crossbred: Long wool on Merino or Rambouillet	
Crossbred: Shropshire or Hampshire on Merino or Rambouillet	} $\frac{1}{2}$ blood and $\frac{3}{8}$ blood combing or clothing.

The grade name of wool such as " $\frac{3}{8}$ blood" was formerly thought of as representing the percentage of fine wool blood in the sheep, which produced it. This is not now true, but rather the grade name represents the fineness or diameter of fiber. For example, the fleeces from purebred Shropshires are likely to fall into two grades, " $\frac{3}{8}$ blood" and " $\frac{1}{4}$ blood."

The following are grade names used in the wool trade and listed according to their fineness of fiber:

Fine, fine medium, $\frac{1}{2}$ blood, $\frac{3}{8}$ blood, $\frac{1}{4}$ blood, low $\frac{1}{4}$ blood, common or braid, and carpet wool.

The length and strength of fiber determines whether or not the above grades will fall into the combing or clothing class of wools.

*Bul. 206, United States Department of Agriculture.

The prices of the different grades vary to some extent, as was brought out in the wool pool sales in Linn County in 1924 and 1925.

PRICES AND GRADES OF LINN CO. MO.; WOOL POOL 1924-25

Grade	1924 Price per lb.	1925 Price
Fine strictly combing (wool)-----	42½c	42½c
Fine clothing-----	35	35
½ blood strictly combing-----	42	42
½ blood combing-----	35	36
¾ and ¼ blood strictly combing-----	42	42
¾ and ½ combing-----	41	36
Low ¼ strictly combing-----	35	37
Light burry, seedy, chaffy-----	32	33
Hard burry-----	25	30
Rejects (cotted, dead, black, gray)-----	30	32
Tags-----	8	10
Mohair-----	40	35

TERMS USED IN THE WOOL TRADE

Braid wool.—Grade name and synonym for luster wools, such as the coarse, bright wool produced by the long wool breeds of sheep.

Carding.—Consists of separating to a certain extent the wool fibers.

Carpet Wool.—Low, coarse wool used in the manufacture of carpets. There is very little produced in the U. S.

Combing.—An operation in worsted manufacture which straightens the fiber and separates the short, weak, and tangled fibers known as “noils” from the continuous strand of long parallel fibers known as top.

Condition.—Refers to the degree of oil in grease wool. It largely regulates the price. In scoured wool it is used to indicate the degree of moisture.

Cotted Fleeces.—A cotted fleece is one in which the fibers are matted or tangled. The cause may be ill health of the sheep or the absence of the proper amounts of yolk or grease in the wool.

Crimp.—The natural waviness of wool fiber. Uniformity of crimp indicates superior wool.

Delaine Wool.—Delaine wools are fine combing or worsted wool, from Ohio and vicinity, but not necessarily from the Delaine Merino.

Grease Wool.—Wool as it comes from the sheep with the grease still in it.

Kemp.—Not a dead hair, but an abnormal fiber made up entirely of horny material. It will not dye as well as the ordinary fiber and does not possess spinning qualities.

Quality.—The diameter of the wool. It largely determines the spinning quality.

Shoddy.—Wool that has been previously used for manufacturing purposes, torn apart and made ready to use again.

Skirting.—Skirting fleeces consists in removing the small pieces and the low-quality wool of the britch from the edge of the fleece.

Tags.—Large dungy locks.

Territory Wools.—Territory wools are in general those that come from the territory west of the Missouri River.

Virgin Wool.—Wool that has not previously been used in manufacturing.

Warp.—The threads that run lengthwise in cloth.

Yolk.—The fatty grease deposited upon wool fibers from oil glands.

Mohair.—A fabric made from the hair of the Angora goat.

VI. Sheep Parasites and Their Control

EXTERNAL PARASITES

The more common of the external parasites are: (1) lice, (2) ticks, and (3) sheep scab mite. Lice and ticks are fairly easy to control. The treatment for both consists of dipping the sheep in some standard sheep dip. Recommended dips are coal-tar creosote, and nicotine sulphate (Black Leaf "40"). It is usually advisable to dip at least twice within an interval of 14 to 15 days for lice and 24 to 28 days for ticks. The most logical time to dip sheep is in the spring about two weeks after shearing. Dip both the lambs and the old sheep.

Sheep-scab is more difficult to handle than lice or ticks, but can be successfully treated. Any condition which causes the sheep to bite and scratch should be investigated at once and the cause definitely learned. If you are in doubt as to the cause call your veterinarian or write the Veterinary Department, College of Agriculture, Columbia, Mo. Sheep scab is a contagious skin disease of sheep, caused by a mite. It spreads rapidly and causes losses by decreasing wool production, reducing weights, and bringing about a general condition of unthriftiness. It also causes the death of some of the affected animals. A sheep owner should never allow scab to remain in his flock, as it can be easily eradicated by proper dipping. Scab is more prevalent on the range or in the western states than it is in the corn belt. Reference, U. S. D. A. Bulletin 713 "Sheep Scab" and U. S. D. A. Bulletin 1150 "Parasites and Parasitic Diseases of Sheep."

INTERNAL PARASITES

Stomach worms are probably the worst enemy that sheep have. Dr. J. W. Connaway, Chairman of the Veterinary Department, Univer-

sity of Missouri, College of Agriculture, says in Extension Circular 87: "During August and September of each year the loss among lambs is considerable from infestation with stomach worms. Much of this loss could be prevented by prompt treatment of the flock." Begin treating lambs for stomach worms when they are about three months old where infestation is bad.

"Infestation with stomach worms affects the lamb more seriously than the older sheep. None of the mature sheep may show any serious symptoms, while a considerable number of lambs may sicken and die."

"The symptoms shown are loss of vigor, the lambs become dull, lag behind the flock, the head droops, and in some of the lambs a bagginess or swelling forms under the throats. Some may cough and nearly all show evidence of diarrhea."

"The stomach worms are found only in the fourth stomach or last compartment. They are about three-fourths of an inch long, very slender and the females have spiral markings giving them a twisted or contorted appearance. These parasites cause irritation and congestion of the stomach, and doubtless produce toxic substances which increase their harmful action."

Treatment

Caution! Be sure to drench sheep properly and give the right dosage or you will kill some of them. The indications at present are that the one per cent solution of copper sulphate or bluestone is very effective in controlling and removing stomach worms. This one per cent solution is made as follows:

"Select pure bluestone crystals, free from white powder. Pulverize the crystals and dissolve two (2) ounces of the powder in a pint of hot water, then dilute to proper strength by adding a gallon of cold water. Mix thoroughly, using only glass, crockery, or enamel ware as containers. There will be 144 ounces of the solution, which will treat about 35 grown sheep." The dosage is as follows:

Lambs 3 months old.....	three-fourths ($\frac{3}{4}$) ounces
Lambs 6 months old.....	one and one-half ($1\frac{1}{2}$) ounces
Lambs 12 months old.....	two and one-half ($2\frac{1}{2}$) ounces
Sheep (full grown).....	three and one-half ($3\frac{1}{2}$) ounces

The Dosing Outfit

(As recommended and described by Dr. E. M. Nighbert U. S. Department of Agriculture.)

"The best apparatus for dosing consists of a brass or copper nozzle six inches long, flexible rubber tubing three and one-half feet long, each three-eighths inch in diameter and an enamel-ware funnel, all fitted together. The sheep is caught in the flank backed in a corner or against a wall, straddled, held on all four feet and the measured dose is slowly

poured in the funnel, which allows the sheep to swallow in a natural way. The brass or copper nozzle is placed in the mouth between the back teeth, extending back about four inches, the nose being held about level with the eyes to prevent strangling. The dose should not be poured until the animal is quiet. To measure the dose use a four fluid-ounce glass graduate or an enamel ware dipper marked accurately for measuring the dose. The marked dipper is more convenient and practical than the graduate."

Treatment Based on Habits of Worm

"All sheep should be dosed once a month, setting the date slightly under rather than over thirty days. Dosing at this interval prevents excessive worm infestation and injury to sheep and lambs. Pregnant ewes are not dosed within two weeks of lambing. The dosing of infested lambs should be begun at about weaning time, or at three to four months of age. Fasting the flock prior to dosing is not necessary."

"Practically all untreated flocks in permanent pastures suffer more or less throughout the year from stomach worms, therefore, beginning the treatment in any month of the year is beneficial. When flocks have been treated each month from the time grass starts in the spring to December inclusive, dosing may be suspended during January, February, and March."

Summary of the Advantages of the Treatment

"(1) The one per cent copper sulphate solution is about ninety-seven per cent effective in destroying stomach worms when carefully and properly administered to sheep.

"(2) Treated flocks can use permanent pastures to full capacity throughout the year without losses or serious injury from the parasite.

"(3) Treated breeding flocks go into the winter in better condition, respond better to the feed and care received, and give more milk for the lambs.

"(4) Lambs under treatment continue to grow throughout the year, retain their milk-fat longer, and are marketed with fewer 'throw-outs' and culls.

"(5) Treated flocks grow more wool and meat, because of better health. Lambs grow to be larger animals than their dams that have been brought up without control of stomach worms."

Tapeworms

Persistent treatment for stomach worms with the one per cent solution of bluestone is very effective in the control of tape worms. This is one reason why lambs should be treated at an early age (3 months). Especially is this true when lambs are to be retained in the flock for breeding purposes.