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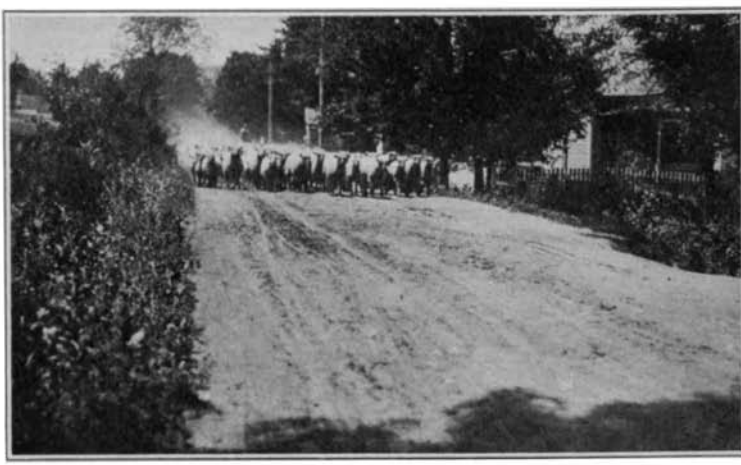
SHEEP ON THE FARM

By R. W. CLARK
Extension Specialist in Animal Husbandry



Homeward bound

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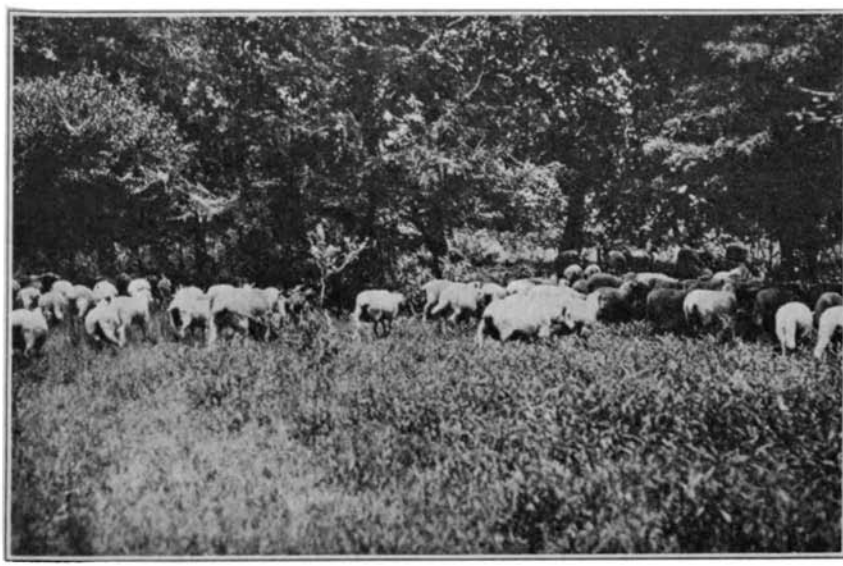
SHEEP ON THE FARM

By R. W. CLARK
Extension Specialist in Animal Husbandry

Colorado stands high among the states in the number of sheep kept and in wool production. While a great deal of land has been taken up by the homesteader, there still remain large tracts, especially well adapted for sheep grazing, that will not be taken up for a long time. The feed lots used in finishing for market are located, for the most part, in sugar factory localities. The sheep are brought long distances from all over the Northwest and Southwest and fed by the hundreds of thousands on beet tops, alfalfa hay, grain, molasses, and beet pulp. In some places corn silage and other roughage are used. Colorado, while beginning to produce a large amount of corn, buys extensively from adjoining states, altho not so heavily as in former years.

With an unsurpassed climate, this State is ideally located for sheep feeding, being adjacent to the corn fields of Nebraska and Kansas and near the markets of Denver, Omaha, Kansas City, and St. Joseph. Sheep feeding in Colorado is an established, large, and growing industry with a product recognized on all markets. Sheep breeding is carried on chiefly on the range; few sheep are



Cleaning up the weeds, brush and other waste

produced on farms. Range sheep are run on fresh reserves in the summer and are brought to the valleys and fattened or wintered in feed lots. This is a condition that has been taken advantage of chiefly by the large flock owner, tho in one or two localities the small farmers have co-operated and are now running their sheep together in the same way, pro-rating the cost according to the number of head each farmer runs. This allows the small farmer to share the cheap feed of the range during summer and to use the roughage of his farm to the best advantage during the winter. This system is one that small flock owners in the vicinity of the forest reserves should consider. Because of the lack of cheap summer range, the average farmer does not attempt to raise sheep. To keep sheep on a small farm requires special preparations which, when made, are permanent and last a long time. In the irrigated sections a pasture should be provided if possible. This is being done; heretofore it was thought impossible. Pasture and yards are absolutely necessary if labor is to be conserved and losses prevented.

ADVANTAGES OF SHEEP ON THE FARM

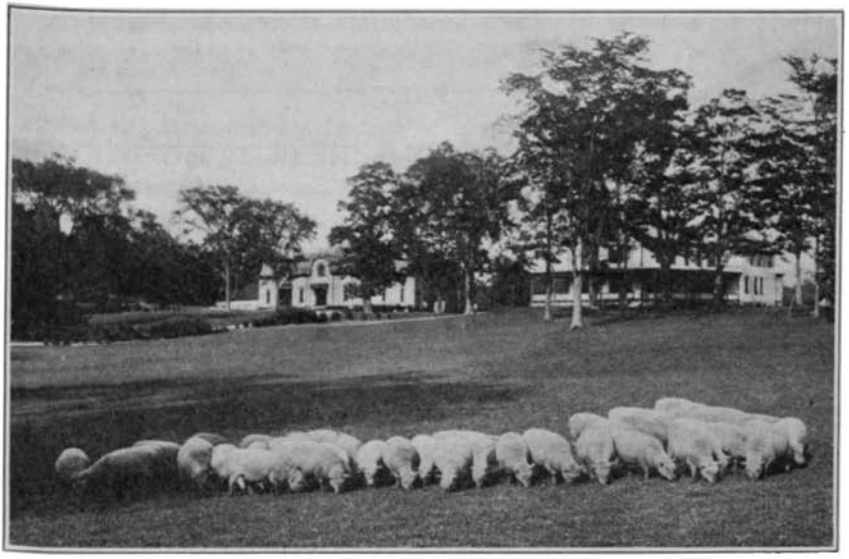
1. They give an income at all seasons. Lambs are sold in the fall, wool in the spring, and breeding stock and mutton at all seasons.

2. They keep the farm clean of weeds, and much food on the farm that otherwise would go to waste is consumed. Bean growing is becoming a very important industry in Colorado, and the waste, as reported by the farmers, is all gleaned by sheep. The sheep is the only animal in the writer's knowledge that will eat raw beans. A great deal of brush and other land now waste and idle can be cleared and utilized by sheep, they clean out the fence corners and orchards and allow few weed seeds to escape their mastication.

3. They do not require expensive buildings as do some other animals. Freedom from moisture and winds is about all the protection they need. Sheep do not require expensive machinery, either.

4. Sheep equalize the labor of the farm, requiring least in the summer when labor is scarce and high priced, and most in the winter when labor is plentiful and cheap. The successful farmer must consider the distribution of labor thruout the year. Sheep raising requires less labor than grain or beet farming.

5. Sheep are more economical producers than any other class of domestic meat animals, requiring less food for the production of a pound of gain. At the present prices of wool a ewe will



Saving labor and utilizing a lot of feed that otherwise would go to waste

more than pay for her keep with the fleece, the one, two or even three lambs that she produces being a net profit. Some farmers are getting large profits from small flocks of sheep.

6. The amount of capital required to start a flock is small compared with that required for horses or cattle. Sheep increase in numbers much more rapidly than horses or cattle.

7. The manure from sheep is worth much more per ton than manure from other classes of livestock. In the beet-growing sections of the State it is considered the chief factor in keeping up yields and making the industry profitable. Sheep manure is rich in nitrogen and potassium, and when the sheep are at pasture the manure is evenly distributed.

BARNS FOR LAMBING ONLY

Any kind of structure that will keep out moisture, protect from winds, and insure dryness under foot will suffice. It should not be warm enough to cause sweating; it should be free from drafts; and it should be well ventilated. This structure should be located, if possible, where there is good natural protection and good drainage. The ceiling should be 7 or 8 feet high and the structure so large and roomy that there will be no crowding at any time. Pens in which the ewes can be isolated during the lambing season should be provided. The structural space should be 6 square feet for a lamb, and 12 square feet for a ewe. The structure

should face the south, for young lambs thrive best in a sunny location.

SALT

Sheep should have access to salt at all times of the year. It stimulates the secretion of the digestive fluids, increases the circulation of the fluids of the body, and prevents digestive disturbances. If salt is withheld at any time, digestion is impaired and serious results will follow. Sheep crave salt and when it is given to them only once in a while they eat too much at one time. This causes excessive drinking, which disturbs digestion and causes severe scouring. For best results an abundance of salt should be provided at all times. When animals get alkali they will consume less salt. The former supplies only sodium, while the latter supplies both sodium and chlorine—two necessary elements in the formation of body juices.

WATER

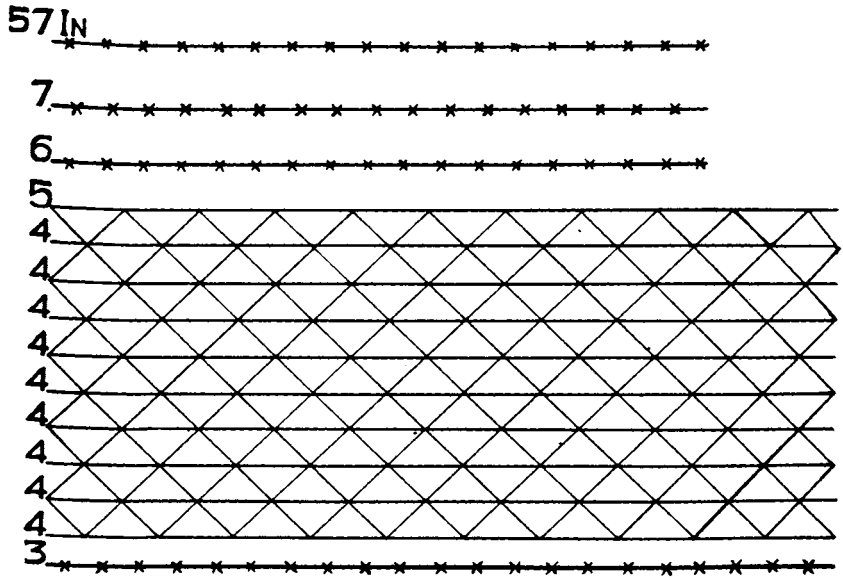
Water acts as a solvent of the building material which it carries from one part of the body to another and serves as a carrier of waste materials, particularly those excreted thru the kidneys. It cleanses the tissues, is building material for the body, and serves to regulate temperature, thru varying the degrees of evaporation from the surface of the body.

The water should be abundant and of as good quality as is possible to secure. While sheep apparently do well on snow or a scant supply of water, experiments show that for best results, they should have constant access to water. Stagnant pools are more or less infected with disease; they contain parasites and are a source of constant trouble.

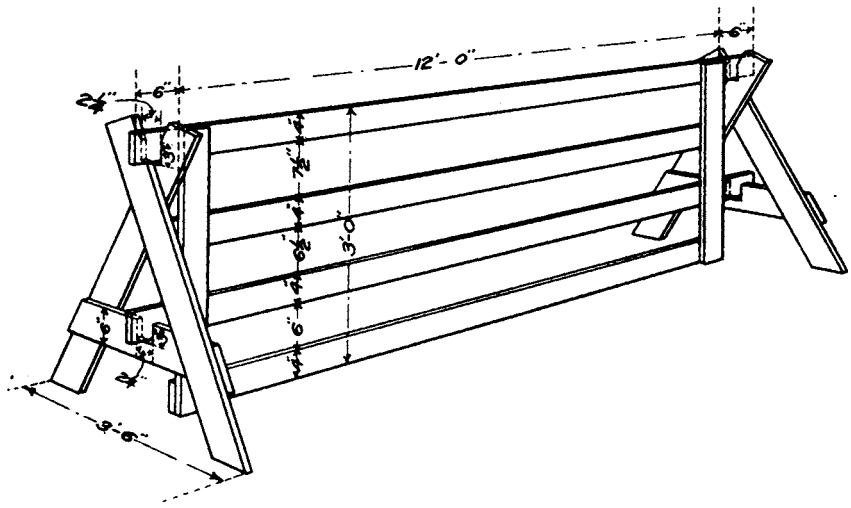
FENCES, TROUGHS AND RACKS

Woven wire makes the best enclosure. It not only restrains the sheep, but it helps to keep out dogs and other predatory animals. Sheep should not be purchased until satisfactory enclosures are constructed. When sheep are not securely enclosed, more or less of them will be lost by being killed by dogs and coyotes or by getting into alfalfa and clover fields and bloating. A dog-proof corral should be provided and the sheep securely enclosed every night, summer as well as winter. A little good, fine hay should be kept in the feed racks during the summer nights.

Temporary hurdle fences are very convenient in handling sheep. The hurdles, to be light and easily handled, should be made of 1-inch by 4-inch lumber. Four pieces to the hurdle, rightly spaced, are enough.

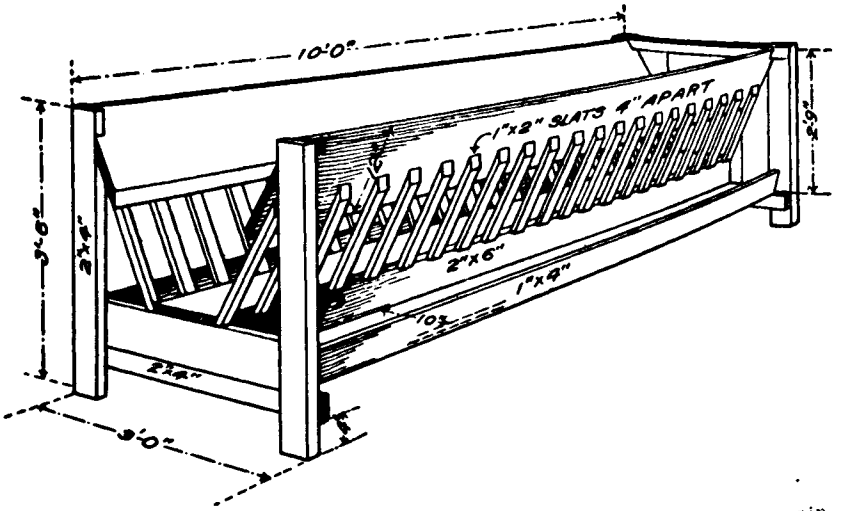


Dog proof fence



Portable fences are very useful in handling sheep

The feed troughs and hay racks should be fairly large, so constructed as not to allow waste and sufficient in number or long enough to accommodate all the sheep without crowding. The grain trough should be flat, shallow, and fairly wide, so as to cause the sheep to chew their grain thoroly. Self feeders are sometimes used but they should be introduced gradually, so as not to cause over-feeding and loss. With heavily concentrated feed they are sometimes the cause of a high death rate, but with light, chaffy feed they are permissible Best results will be secured when the attendant gives close personal attention to the feeding of grain and when the feed is adjusted to the appetite.



Hay and grain rack which may be entered by attendant when feeding grain

PASTURES

When sheep are run on the range, pastures are not needed, but for a small flock on the farm they should be provided if possible Pastures reduce labor and cost, provide exercise, and increase the profits. Animals on pasture have good natural conditions and do not require as much personal attention as when confined. Alfalfa and the clovers are not safe pastures because they cause bloat. Pastures are sometimes difficult to secure, almost invariably so when the land is not thoroly prepared and the seed not sown at the right time. In many parts of the state, especially in irrigated sections, a pasture can be secured if the land is well manured and thoroly prepared. Old, manured potato ground is good. The grass seed should be sown early in the spring with a light nurse crop. Most of the failures are caused by too late sowing. It should be sown on top of the ground and harrowed in. When

sown deeply with grain a lot of the seed will not grow. After the nurse crop is removed the land should be irrigated and regularly attended thereafter. After the grass crop is well established, a coat of manure every year or two will more than pay for its application.

The Animal Husbandry Department of the Colorado Agricultural College has tried and recommends the following mixture:

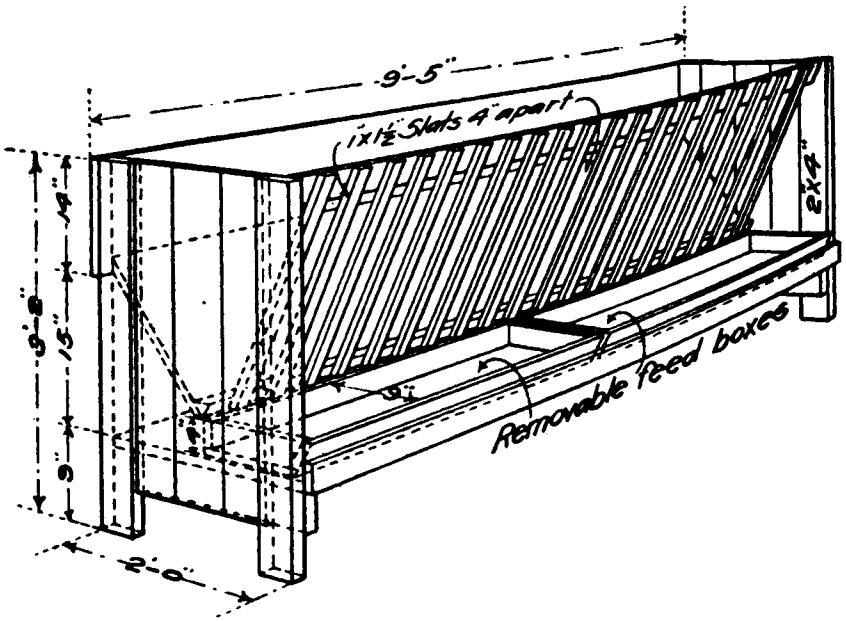
	Pounds
Orchard Grass	12
Awnless Brome	10
Tall Meadow Fescue	4
Tall Meadow Oat	4
Kentucky Blue Grass	4
Timothy	6
Alsike Clover	2
White (Dutch) Clover	4
Sainfoin or Yellow Sweet Clover	2
Chicory	2
	50

This amount is for one acre. The pasture may be cut for hay, but it should not be grazed until the close of the second year. Pastures for the dry-farming sections of the State are a more difficult problem. Brome grass is the best grass for most dry-land sections. For the most part dry-land pastures must be made of the annual crops, such as rye, sudan and oats. Sorghum makes good pasture, but when stunted or frosted it may cause the death of part or all of the animals. For this reason sorghum pasture is not recommended for either cattle or sheep. Sudan grass is closely related to sorghum, but whether or not it will kill as does sorghum has yet to be determined. Until this is done it will not be recommended. The best way to use sorghum is to make silage of it and supplement it with dry hay or pasture, or both. Sorghum is a good drought-resisting plant; it gives large yields; and make a splendid silage. Sheep have many advantages, and many of the dry-land farmers can and should have a small flock of them. Dependence, however, must be laid on the silo.

GRAINS AND MISCELLANEOUS FEEDS

Sheep thrive well on all the farm grains. Corn, oats, barley, and emmer fed singly or in combination, are well adapted to them. While rye is not so well adapted, it can be safely fed, but should be fed in combination with other grains and not too heavily. Field peas are one of the best grains in any form or combination, and when they have been grazed after ripening, as in the San Luis

Valley, they have given the best of results. There are many factory by-products on the market that can be fed to advantage. Among these are cottonseed meal, oil meal, bran, screenings, and wet and dried pulp. Dried pulp is nearly equal to corn in feeding



Combination hay and grain rack, with grain troughs so constructed that they may be pulled to back of rack and grain placed in them without entering the pen

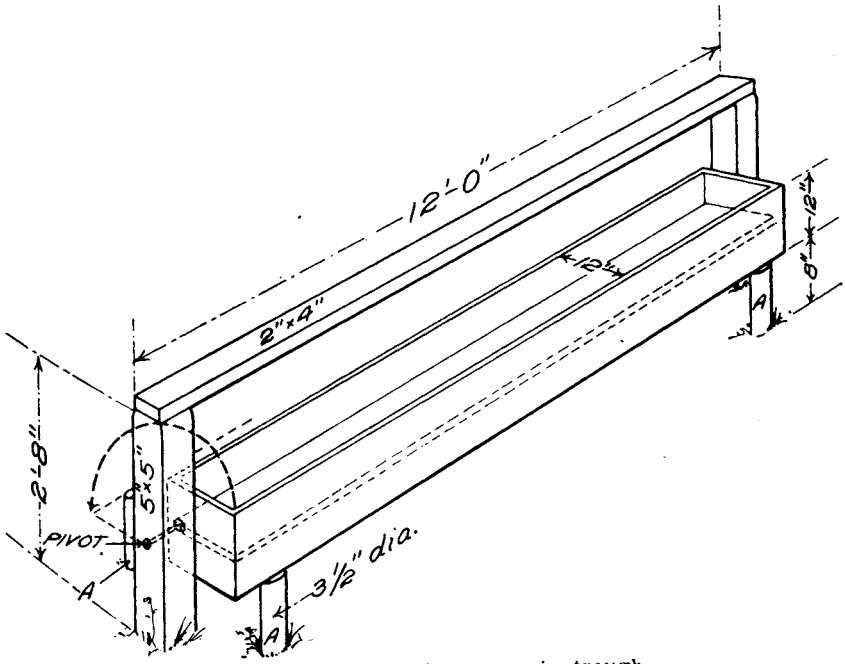
value. Sugar beet molasses, a by-product of sugar factories, contains a low percentage of digestible protein, but about 60 percent of digestible sugar. Molasses is laxative and must not be fed too heavily. Beet molasses and beet pulp are a source of cheap carbohydrate.

GRINDING GRAIN, CUTTING AND GRINDING HAY

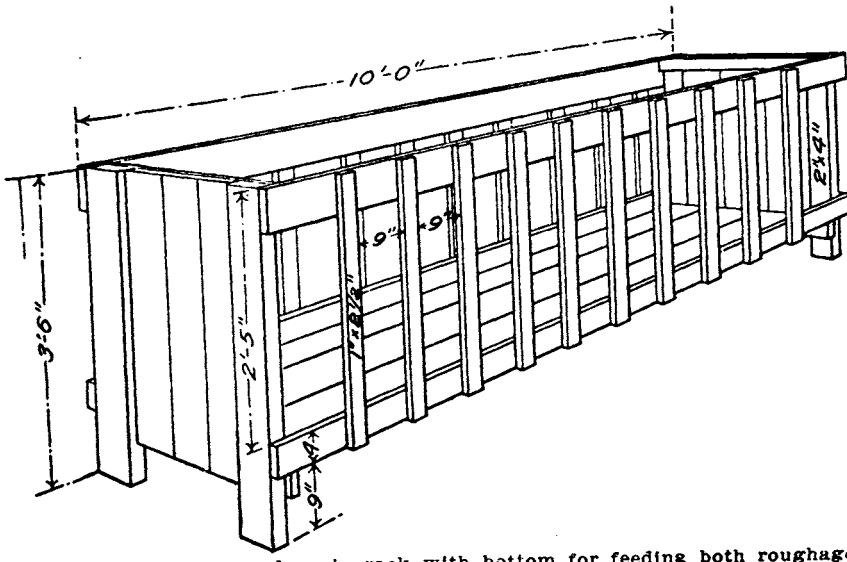
Sheep usually do not require the grain ground, but grinding will always pay when the teeth are undeveloped or in bad condition. Rye and wheat kernels and weed seeds are so small that a rather large percentage of them may escape mastication. These should be ground. Good hay does not ordinarily require cutting or grinding, but if the hay is of low quality it may pay if the cost does not exceed three or four dollars per ton.

FORAGE

Alfalfa is the best hay; alsike clover is a close second. Alfalfa should be cut when new sprouts start from the crown. If left



A reversible stationary grain trough



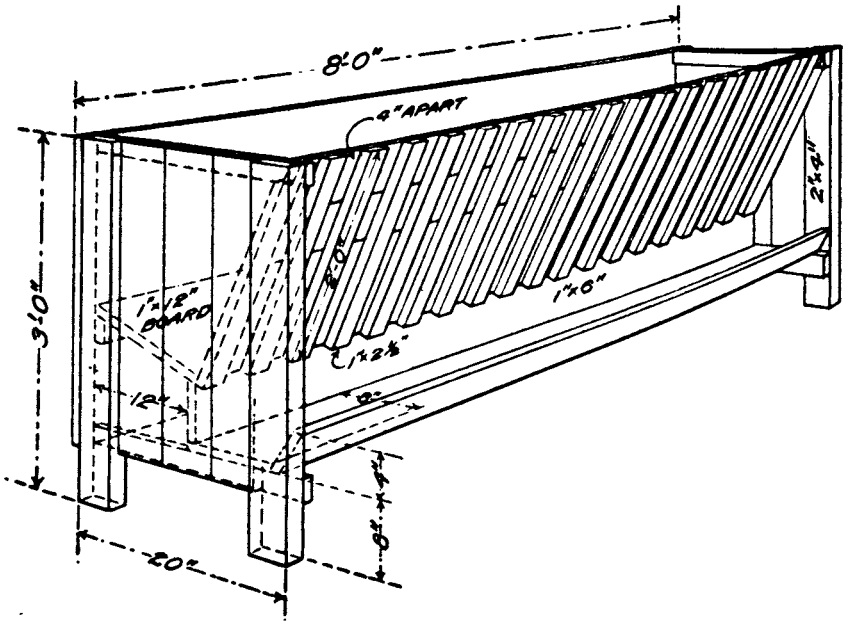
Combination hay and grain rack with bottom for feeding both roughage and grain

longer it loses in nourishment, gets woody, and is not so palatable or valuable. Sheep do best on fine-stemmed forage. They give best results when the hay is cut while the stems are fine and all the leaves are still on. Corn stover, corn fodder, timothy, or any other kind of coarse forage does not give its best results with sheep; it is better adapted to cattle.

Sweet clover, cut when a few flowers begin to show, makes an excellent quality of hay; it has about the same composition and feeding value as alfalfa. All animals at first take slowly to sweet clover hay, but when a taste for it has been acquired, they seem to relish it as much as they do alfalfa. Silage is a most valuable food for sheep, and wherever silage crops can be produced it should form a part of the ration.

In the dry-land sections of the State, or wherever corn or sorghum can be produced, the silo is indispensable. The sheep raiser on non-irrigated land should depend largely on silage. Pea-cannery waste in a good ensiled condition is also an excellent feed.

Wet beet pulp is extensively fed to sheep wtih excellent results, wherever it is produced. Of all the straws, oat and bean straws are the best, but any of them can be fed to advantage when not fed too heavily and along with other nourishing foods. Weeds, cut in the early stages of growth and well cured, have considerable food value for sheep. Beet tops are used very extensively in late

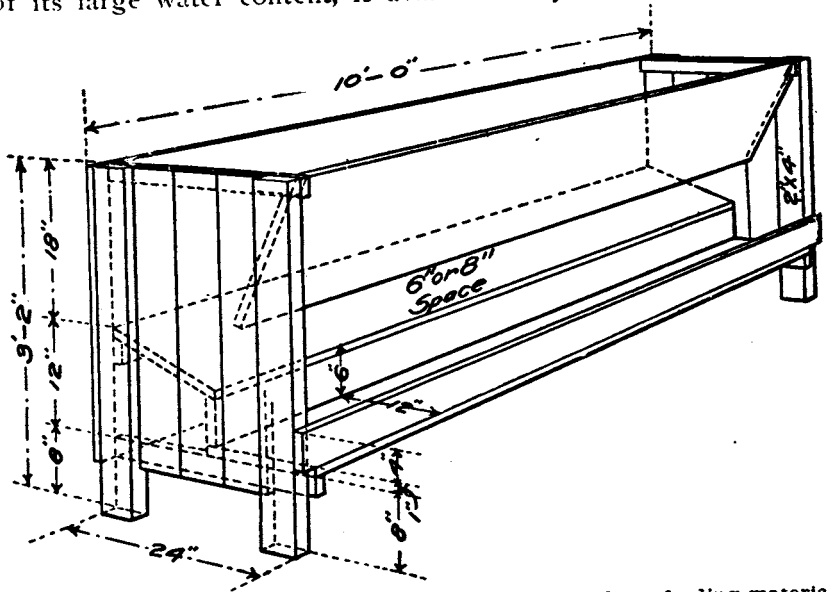


Wall hay and grain rack

fall and early winter, but for best results some hay should be fed with them. Pea and bean straw are very much the same as clover and alfalfa in composition and are eaten readily by sheep. Experiments show that bean straw compares very favorably with clover hay.

SUCCULENT FEEDS

The greatest benefit from succulent feed is to keep the bowels in good condition, tone the system, and increase the appetite. This means more economical production, larger production, smaller losses, and greater profit. Experiments show that the greatest profits in sheep feeding are obtained with silage or other succulent food. Succulent feed increases the growth, health, and vigor, three most important factors. A pasture not only provides exercise, but it helps balance the ration and gives it succulence. The following are some of the succulent feeds that may be provided: Silage, roots. beet pulp, pumpkins, squashes, cabbage, potatoes, and cannery waste. Just which of these the farmer shall procure or produce depends upon labor, soil, and climatic conditions. He must decide the matter himself. Generally speaking, corn or some kind of sorghum silage is the cheapest and most practicable. The mangel wurzel or "cow beet," as it is commonly called, is the easiest and cheapest root crop to raise; it also gives next to the largest yield, being out-yielded only by carrots. Wet beet pulp, because of its large water content, is available only to the farmers near



Combination hay and grain rack with solid front to keep feeding materials out of fleece

the sugar factory, as the cost of transportation is very heavy. About two or three pounds of succulent food per head per day should be fed with other materials in two feeds. The roots, cabbages, pumpkins, and squashes, should be put thru a slicer or a pulper and fed in troughs. Silage or other succulent feed should never constitute the whole ration.

ESTABLISHING THE FLOCK

The size of the flock will depend upon the amount of feed and barn room that the farmer can provide. It is better to have a small flock well fed, cared for, and protected than too large a one that must be neglected. To start with, a 160-acre irrigated farm should carry from 50 to 100 ewes; a non-irrigated farm of the same size should carry about one half of that number. These numbers can be increased as the farmer acquires experience and increases his facilities. The plans for a small flock should provide for a minimum amount of labor. This can often be accomplished by giving attention to arrangement, and relation of buildings, yards, pastures, water supply, and proximity to the stores of feed. One advantage of a large flock is that the wool and lambs can often be sold in carload lots to the best advantage. This disadvantage in small flocks can be overcome to a certain extent by the farmers cooperating and selling in the same way.

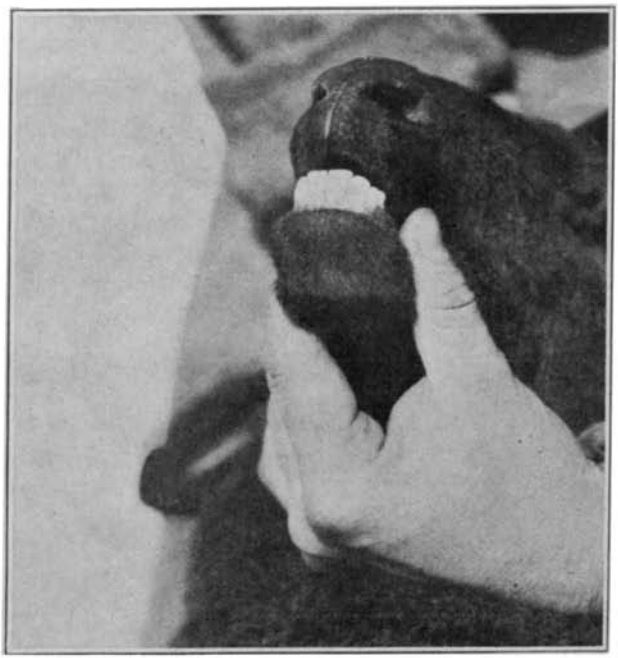
Good types for the farm

The kind of breed does not matter if the flock is to be a large one, but when the flocks are very small there will be many advantages in the farmers of a community selecting the same breed.

One important advantage is in changing rams so as to avoid in-breeding. A farmer with only a few ewes is likely to in-breed or use a poor sire rather than introduce new blood thru the purchase of a good ram. Sheep are divided into three general classes: (1) The fine wools, such as the American Merino, Delaine, and Rambouillet; (2) Medium wools, such as the Oxford, Hampshire, Shropshire, Southdown, etc.; (3) The coarse wools, such as Cotswolds, Leicester, and Lincolns.

The first class of fine wools are especially desirable when run in large numbers on the ranges in mountainous regions, as they herd well together, retain the wool well, are well protected by a close fleece, and probably do better than other breeds on coarse, more or less woody vegetation. Of the fine wools, the Rambouillet has the best mutton type and is the largest in size.

The second class, or medium wool sheep, are probably best for the non-irrigated sections of the state but do well anywhere, as they are of a distinct meat type, mature early, and furnish a higher percentage of mutton than the fine wools. They are not as large as coarse wool, for the sheep mature earlier. Some of the breeds



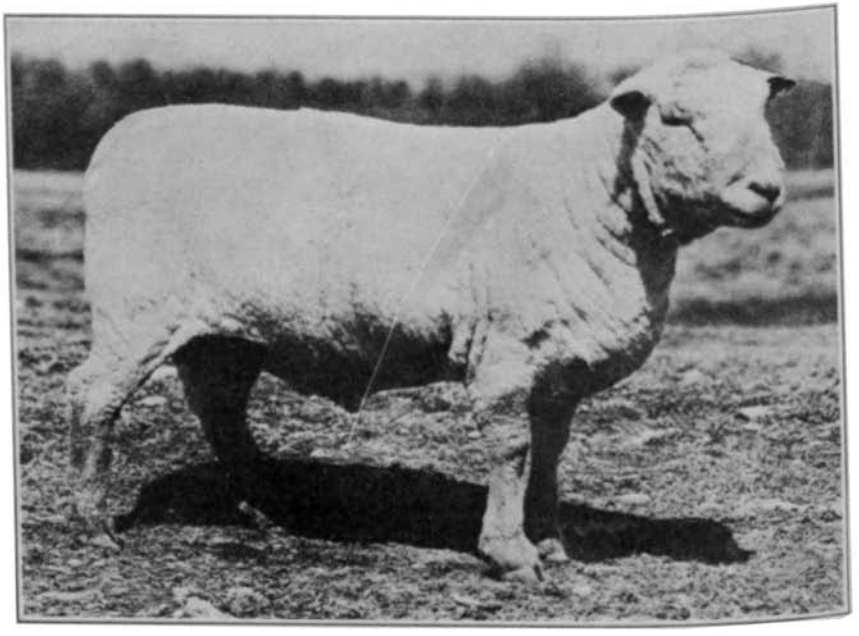
Ascertaining Age—The middle pair of teeth are replaced at one year of age, the next pair at two, the next at a little over two and the last or outer at about four years. The permanent teeth are much larger and broader than the temporary ones.

of this class are rather small, active, and well adapted to grazing where the feed is sparse.

The Southdowns are the smallest and mature very early and rapidly, but shear only about 6 to 8 pounds of wool. The Shropshire is the most popular farm sheep in America, giving a very well-balanced yield of mutton and wool, and shearing 12 to 14 pounds under farm conditions. Hampshires and Oxfords are larger than Shropshires but are a little slower in maturing. Any one of these breeds will give satisfaction. The coarse wool breeds are very large, mature slowly, give a heavy clip of wool, but do not give a satisfactory carcass for home use.

SELECTING THE RAM

The ram should be of medium size and weight, deep and wide thru the chest, that is, full around the girth, masculine, bold and active, stylish, and from one to four years of age. The fleece should be springy and cover all the parts of the body well, belly, inside of legs and arm pits, too, should be well wooled. Of all the animals of the flock he should best meet the requirements of the type and breed. It is important that he be pure bred and registered.



Good type of ram—Level back, full rump, deep and wide through the body, and full girth

SELECTING THE EWES

It is not necessary that the ewes be pure bred, but if good individuality is present, the greater the degree of improvement and the more valuable will they be. There are advantages in selecting young ewes in the fall. Less capital is required than if older ones are purchased. There is always more or less feed on the farm that can be utilized by them the first fall that otherwise would go to waste and then they can be developed in most perfect form as the purchaser may desire. When young ewes are purchased there is no danger of getting ewes with bad teeth, or spoiled udders. Even tho the ewes may be low grades, the more perfectly they conform to the requirements of the breed the more valuable will they be. The farmer should know and familiarize himself with the breed and know what to look for before he does any purchasing. The ewe should be rather long in the face with fine features, deep and long in the body, and well ribbed. A bold, active disposition is desired.

CARE OF THE BREEDING STOCK

The ram should not be allowed to run with the ewes except during the mating season. When this is allowed, the ram worries himself and the ewes, and neither does its best. The ram may be kept by himself in a lot that will afford ample exercise, where he can be cheaply but well fed and be protected from unfavorable weather conditions. The young ewes should not be bred until the second fall. Some sheep owners, thru neglect or carelessness, allow the ewes to be bred the first fall after birth. This practice causes the flock to deteriorate in size. It should not be permitted, except during the emergency of war time. The young ram may breed a few ewes the first fall but the number should be limited, not more than 10 or 15 to a strong, robust ram. When either ewe or ram is bred at too early an age a stunted condition may result. A mature ram will breed 50 or 60 ewes.

MATING

The breeding season of the ewe begins usually in September. The period of heat occurs usually every 21 days, altho individual ewes may have a shorter period. It lasts two to three days. The gestation period varies from 140 to 152 days.

To get the ewe to breed early, she should be fed liberally of succulent food such as pasture, roots, silage or other green food and a little grain. Such food tones the whole system, stimulates the genital organs and is thought by some breeders to cause a greater percentage of lambs. If the breeding is done in September the lambs will come during February. For the greater part of Colorado, that is probably the best time for them to come, if suf-

ficient shelter is provided for them and their mothers. There are several advantages in early lambs: The farmer has time to give the flock the close attention it requires; the early lambs usually make the greatest use of pasture and give the largest profits; there is no lambing at seeding time to interfere with the sowing of the crops; the ewes are suckled down, are not pregnant and less likely to be injured when sheared; the lambs are in strong demand in early fall for both feeding and breeding purposes and can be sold most readily at better prices than late lambs.

It is best to have some succulent food such as silage in case of early lambs, as it keeps the ewe's system in the best condition and has a marked effect upon the milk flow and the lamb. Such food produces the strongest, most vigorous lambs and the largest percentage of them. The ewe should be given 2 or 3 pounds of roots a day or the same amount of silage, and the lambs should be given the same as soon as they are old enough to eat. Dry feed causes more or less loss of lambs thru insufficient milk from the ewe. Sheep men will not realize the full value of their flocks until they provide silage or other succulent food for winter use.

CARE OF THE RAM

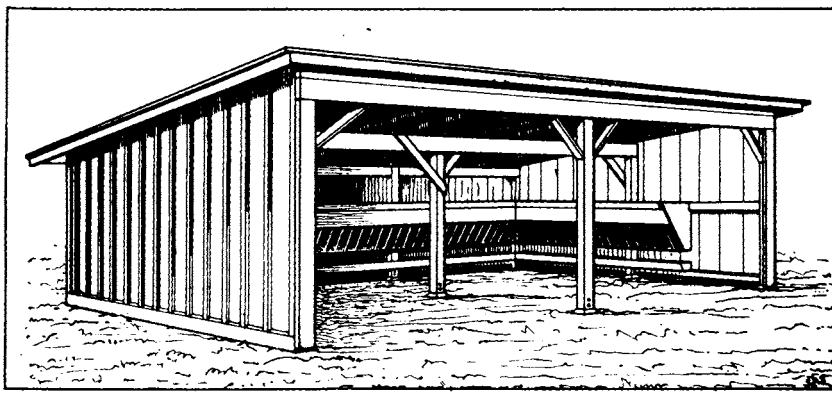
The ram should not be with the flock longer than is necessary. If he runs with the flock for two months he will have had time to breed each ewe two or three times. If he serves 40 or 50 ewes he should be turned with them only during the night and his brisket painted with colored ochre so that in breeding the ewe he will mark her. By going thru the flock every morning and noting the color markings on the ewes a record of the date of breeding can be made and the date of lambing will be known; the attendant will know when to expect the lambs and when to give closest attention. A ewe may be marked without being bred, so a close watch must be kept on the flock.

The ram should be kept in good condition. When breeding he should receive a regular daily allowance of good fine hay and a pound or two of grain. Hay made from alfalfa, sweet clover, or the common clover is preferred to prairie hay, sudan hay or any other. Silage furnishes succulence to the ration and because it is most valuable it is recommended at all times. After the breeding season is over, it is only necessary to keep the ram in medium condition. A ration of alfalfa and silage with a little variation once in awhile will suffice for this purpose.

FALL AND WINTER CARE

It is important that good care be given from weaning time until winter begins so that both lambs and ewes will go into the win-

ter in good condition. The run of the fields after the crops are gathered, and some hand feeding with it, if the grazing is short, will accomplish this. The run of the fields is very advisable as the animals secure a variety of both dry and succulent foods and plenty of exercise. This should be allowed all winter if possible. In preparing for winter, separate the ewe lambs that should not be bred from the rest of the flock. This prevents them from being bred, and allows for extra care and feed, so that they will develop into strong, robust, big ewes. Among the older ewes there may be some old feeble ones that may need special feed and attention. On account of their high protein content clover, alfalfa, or sweet clover hay are preferred to any other. Alfalfa or sweet clover to be at its best should be cut in the early stages of flowering and be well cured. Clover should be cut not later than when the last flowers appear. It is very important that the hay be fine, for the sheep cannot make the best use of coarse forage.



A good shed for both winter and summer use

Bean and pea straws contain a fairly high protein content and are very valuable as forage for sheep. Colorado is becoming a bean-growing state and the bean straw, if properly cared for and fed to sheep, has much value. Corn silage should be provided whenever corn or sorghum can be successfully grown. In the higher cold altitudes, roots or cabbages may be substituted for it, and when fed they should be sliced or pulped. Any of the farm grains are satisfactory, but preference is usually given to oats on account of it being very palatable and a pretty well balanced food. Corn and barley should be fed with some protein forage as alfalfa and sweet clover hay. Rye and wheat, as single grain foods, are not very satisfactory. For best results they should be mixed with oats or bran and then fed in limited quantities. The feeding of

wheat can be justified only when it gives a larger yield per acre than any other cereal or corn, and so is an especially economical crop to grow for feed. Grain need not be ground, except for old sheep with poor teeth. The hardiest varieties of wheat or barley are an exception to this rule.

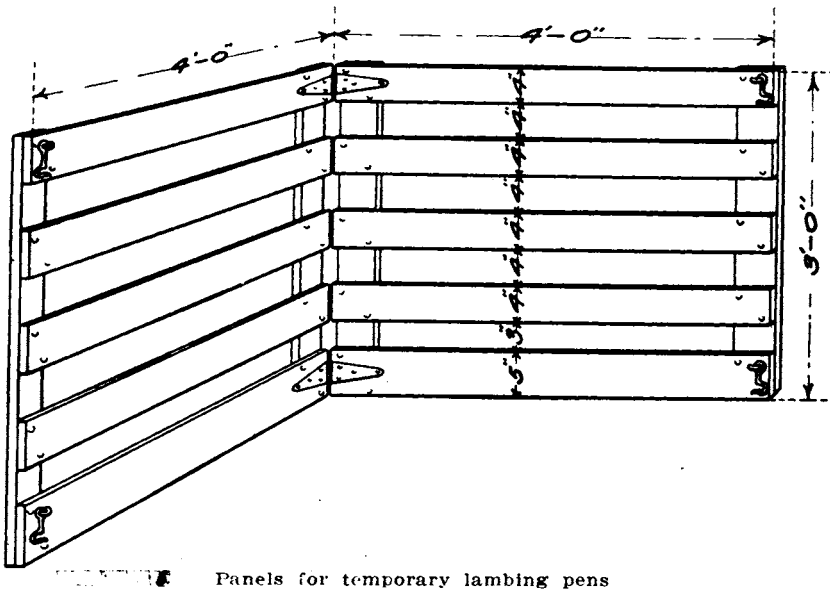
Usually when the sheep are running in the fields no grain is required, but when snow covers the ground and feed is scarce, it is well to begin feeding a little hay, silage, roots and grain. It is a bad practice to allow sheep to run to straw stacks. They eat too much straw, are not as thrifty as they should be, become more or less impacted and suffer loss. Furthermore, chaff gets in the wool and impairs its value. Some straw can be fed, but it should be fed with hay in racks or scattered thinly on clean ground. A few weeks before lambing, the ewes should receive a little grain if they are not already getting it, to start the milk flow. Ewes that are well fed and have plenty of milk are more likely to own their lambs than if under-fed. A good ration would be three parts of oats to one part of bran, giving each ewe about one-half pound a day. As previously stated, salt and good drinking water should be provided at all times.

LAMBING SEASON

This is the most critical period of the year and the percentage of lambs raised depends very largely upon the feed and care that the ewes have been given previous to this time. If the conditions have been good, lambing will be easy, and a big percentage of lambs will be saved. If the lambs are born during cold, stormy weather, close attention night and day will be necessary. A person who is not willing to lose a little sleep for his lambs better not enter the business. A warm barn and plenty of sunshine are necessary to successful lambing in cold weather.

Panel pens 4x4 feet should be provided for the ewes, as soon as they show signs of lambing. The panels are made of light lumber, are fastened together by hinges and connected with the side of the building by hooks and staples; the boards should be close enough to prevent lambs crawling thru. Two panels placed in a corner will make a suitable place for the lamb and her ewe. Another pair of panels can be set up by the side of this one and so on until the whole barn room is penned off.

Watchful care should be given the ewe. As soon as she shows signs of lambing she should be placed in one of these pens. Sometimes in case of twins or triplets when the ewe is not so confined, the first lamb born wanders away and is lost before the attendant learns of it. In a day or two after the lamb has become strong and is nursing well, and when it has become accustomed to its mother.



Panels for temporary lambing pens

they may be put with the other ewes that have lambed. The attendant should be very wide awake and give assistance to any difficult parturition. This is sometimes necessary, but not often There may be a faulty presentation, a dead lamb, or an overgrown lamb that cannot be delivered. If the attendant gives assistance at the beginning, the strength of the ewe is conserved and many ewes and lambs that otherwise would be lost will be saved. In case of a faulty presentation, get the foetus in a natural position before attempting to remove it. Dead lambs, if normal, are easily removed and the sooner the better. Over-grown lambs are sometimes successfully removed, but very often with fatal results. Where the delivery requires assistance, the attendant must be scrupulously clean, and use disinfectants effectively. The hands of the attendant should first be cleaned with soap and water and then washed in a 3-percent compound Cresol solution. The external parts of the ewe should also be disinfected in like manner, and care taken not to infect the ewe in performing the operation. Carelessness in this work is sure to cause the death of the ewe.

If the lamb is weak when born, the mucous from its nostrils should be removed, it should be rubbed dry, and assisted to nurse. A little warm milk from the mother given by hand will often revive the weak lamb and give it a start. If the lamb is chilled at birth, it can be warmed by a stove, placed in warm water or curled around a jug of hot water placed in a keg or other receptacle, and covered with a blanket to retain the heat. If the lamb is severely chilled,

immerse it, with the nose out, in water as hot as the hand can bear, and keep adding hot water to maintain this temperature. Keep the lamb in this water until the body heat and strength are started and then rub it dry and assist it to nurse. If it is unable to nurse, a few teaspoonfuls of cream, to which a little hot water has been added may be given.

Young ewes and sometimes older ones that have litle or no milk will disown their lambs. In this case the ewe should be kept in a separate pen and held or placed in a stanchion so that the lamb can nurse, after a short time she is likely to accept it. If a low milk supply is the cause of the ewe disowning her lamb, hold her until the lamb draws what milk she has, feed her such foods as oats and alfalfa, but place her lamb with another ewe or feed it by hand until her milk flow starts and proves sufficient. If cow's milk is given, it may be used straight or mixed with one part of warm water, and a little cream. This should be fed warm and in small amounts—an ounce or so every two or three hours, depending on the lamb.

Sometimes a ewe has more milk than her lamb can take. In this case, put another lamb on her or milk her out by hand once a day for a few days. In milking the ewe, do so very gently and carefully, keeping the teats well moistened with milk. Ewes are sometimes lost by rough milking or by their udders being injured. The first milk produced after lambing is intended for the young lamb. It is very important that the lamb gets this milk, for it is very nourishing and is a natural laxative. If the first milk is not used by the lamb, it should be drawn out by hand, for milk retained in the udder for a few days is likely to sicken and injure the lamb.

There are several ways suggested by sheep men to gets ewes to adopt other lambs than their own. One is to skin the dead lamb, sprinkle a little salt on the inside of its skin and fasten it onto the lamb to be adopted. Another way is to sprinkle some of the ewe's milk over the lamb and rub some of the secretion from about the udder onto the lamb. The ewes by smelling the lambs will often tho not always, adopt them.

THE NURSING EWE

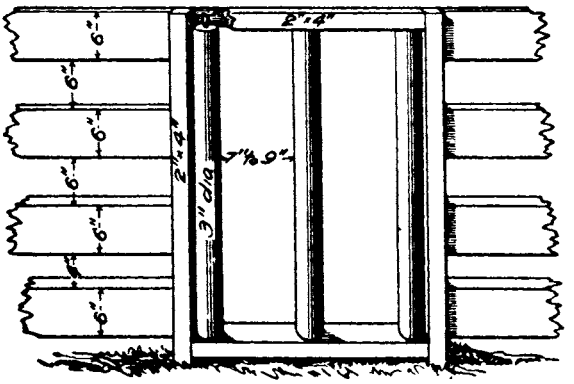
The attendant must always bear in mind that the fall and winter care given the ewes determines in a large measure the success that he will have with his flock. The milk flow of the ewe should not be stimulated too early after lambing. There is a difference in ewes in this respect and the attendant should be able to tell fairly well in advance about what kind of care the ewe should have at this time. The writer's experience has been that the fine-wool ewes are good milkers and that it is easy to stimulate too heavy a

milk flow in them before their lambs are strong enough to take it all The sharp, angular type, with large middle pieces and udders, in any breed. is usually associated with heavy milking qualities. The attendant should have some idea as to what care to give his flock just before and immediately after lambing. Excessive nourishment induces a milk flow which may cause udder trouble in the ewe, but it is far better to have a heavy milking ewe and take care of her than to have a ewe that does not give sufficient milk to raise a vigorous lamb.

All the hay that the ewe will eat can be given with safety, but grain had better be withheld. Roots or silage are most valuable at this time, as they are laxative and cooling to the sysfem. If the flock has been well cared for it is better to give no grain until the lambs can take all of the milk. Ewes should be considered in the same light as dairy cows. After the lambs are able to take all the milk that is produced, the ewes should be given from 1 to 1½ pounds of grain a day, 2 to 4 of silage or roots a day, and as much good bright hay as they will clean up twice a day. This ration should be continued until the flock is turned out to grass. A good milk flow is essential to the production of strong, vigorous, growthy lambs.

Garget, or caked udder, is not uncommon with ewes. The exact cause in all cases is not known, but many sheep men claim that a large percentage of the cases seem to appear when a change is made from light to heavy feeding of grain. Veterinary authorities claim that infection is the immediate cause of this trouble and that the contributary causes are heavy feeding, colds, chills, and lying in a damp place with the udder on the wet ground. Both agree that a good, clean, dry bed will often prevent this trouble. The first treatment is to remove the cause, if known, give a dose of 3 or 4 ounces of Epsom salts, and bathe the udder thoroly with hot water. After this, dry and massage the udder with a mixture of lard and camphor. The ewe should be well milked out and her udder massaged several times a day.

When about two weeks old, the lambs will begin to nibble at hay and grain. The more of these that they can be induced to eat, with the milk which they get, the larger and cheaper will be the gains that they will make. A creep that will exclude the older sheep should be provided so that the lambs can eat by themselves. This creep should be conveniently placed in the barn so that the lambs can have access to it night and day and during all kinds of weather. This creep may be a picket fence with the pickets 7 or 8 inches apart and high enough so that the older animals cannot jump over. Good, bright, fine, well-cured hay should be before the



Lamb creep with rollers

lambs at all times. Alfalfa is given preference, but it depends upon what can be grown. The grain ration may be chopped oats, or three parts chopped oats and one part bran. The writer's experience with all or a large proportion of bran has not been very satisfactory.

If the lambs are troubled with sore eyes or sore mouth, or if the ewes are troubled with scabs on the teats or udder, treat all except the eyes, thoroly with a 2-percent solution of common coal tar dip. For the eyes, use a saturated solution of boracic acid. See that each part is thoroly treated.

SUMMER CARE

The earliest grass of spring contains a large amount of water and a small amount of nutriment. The ewes and lambs should be kept off until considerable growth has taken place. This will allow the pasture to get a good start and more feed will be obtained thru the summer than if pastured too early. It is a good plan to keep the flock on the regular ration for a few days while accustoming it to the pasture. This is done by turning them out for a short time in the forenoon and again for a short time in the afternoon. After the flock goes to pasture, if the pasture is good, the ewes will need no hay or grain, but the lambs should receive their usual allowance of grain in their creep. They will make excellent use of the grain when it is fed with pasture. The lamb is at an age when it makes the greatest economical use of food and it is a mistake to withhold grain now and give it later. Our best sheep and the most profitable ones are always produced by feeding the lambs well.

WEANING

The age at which to wean lambs will depend upon the care they have had and their condition. If in good, vigorous condition, they may be weaned at four months, but if not, it is better to defer the weaning for another month. They should be weaned in time to give the ewes at least two months' rest in which to build up before

being bred again. When separated, both ewe and lamb can be given better care. Ram lambs that have been well cared for may begin breeding at four or five months of age; these should be separated from the ewes and kept by themselves. Before beginning to wean, change the feed of the ewes to prairie hay, oat straw, or other dry feed, reducing the amount of feed given. The idea in so doing is to reduce the milk flow and lessen the danger of udder troubles. Remove the lambs and do not let them see the ewes for several days. Keep a close watch on the ewes and if necessary milk them. Sometimes the udders become caked when the milk is not removed; this causes serious trouble. Feed the lambs more liberally on grains after weaning than before. Good hay and pasture are most important. In case pasture is not available, silage may be given. To keep the lambs in a good thriving condition, they must continue to have a great deal of sunshine and exercise.

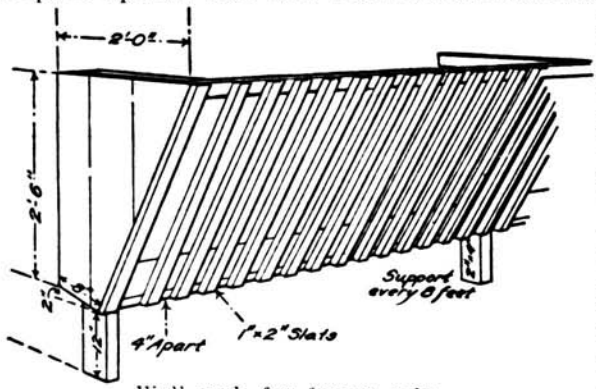
SORTING THE FLOCK

With a pure-bred flock. the rams, if of merit, should be sold for breeding purposes and the best ewes retained for enlarging or improving the flock. In case of a grade flock the ram lambs will have been castrated and will be fed for mutton. The best grade ewe lambs should be kept in the flock and mated only with good, pure-bred rams. In order to avoid in-breeding, another pure-bred ram must be installed by the time the ewe lambs reach breeding age. Lambs that are dropped in late winter should weigh at least 75 pounds by weaning time and should bring good prices. The culls should be fattened while the grazing is good and go to market early with the lambs. They can be put in condition cheaper on grass with some hand feed than entirely on dry hand feed later. The culls include ewes that are barren, those that disown their lambs, those that have bad udders or poor teeth, undesirable nursing or breeding qualities or other undesirable characteristics.

FATTENING FOR MARKET

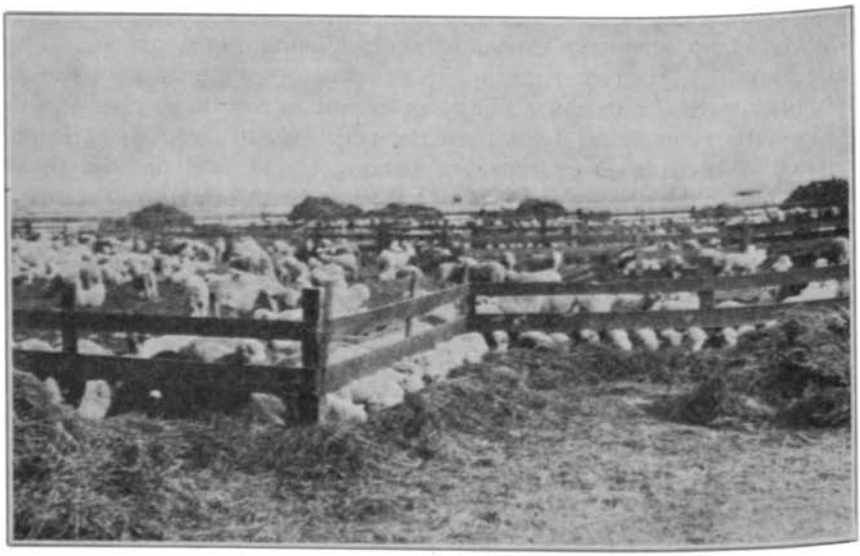
Lamb feeding is one of the most important agricultural pursuits in Colorado. These feeding operations, while confined most largely to the beet-growing areas, extend over about two-thirds of the western part of the State. With an increase in production of farm crops and feed, the outlook seems to indicate that winter lamb feeding will continue more remunerative in the future than it has in the past. Feeding stuff can be produced much more rapidly than the animals to feed; therefore, the farmer should plan to have many feeders well in advance. Young lambs weighing about 50 pounds make the best feeders. If too heavy and fleshy

they do not make good gains and if too light and thin in flesh they require special care and feed and considerable expert knowledge for best results. The lambs should be bought early enough in the fall to glean the fields after the crops are harvested. This is especially necessary if the lambs are small and thin in flesh. A little good hay should be given during the gleaning season if the grazing is not good.



Wall rack for forage only

The yards should be well drained, the location sheltered, and large feed racks provided so that there will be no crowding. There should be an abundance of good water and plenty of salt. Good alfalfa hay with silage, beet pulp or roots, make a splendid ration to start with. If grain is given, a small amount should be used at the start, not more than one-fourth of a pound a head each day; the amount should then be gradually increased until it becomes full feed.



Feed racks made of one-inch stuff. The bottom piece is 12 inches wide, the middle one 8 inches and the top one 6 inches. The neck space for the lambs is 10 inches and the upper pieces are 6 inches apart

DOCKING AND CASTRATING

Lambs in good condition should be docked (tails taken off) when they are about ten days old. The operation is simple and can be done with one stroke of the chisel. The docking should be close to the body. The bleeding may be a little heavy, but usually no injury comes from it. Pine tar applied to the stump helps to stop the bleeding, prevents infection, repels flies, and has a healing effect.

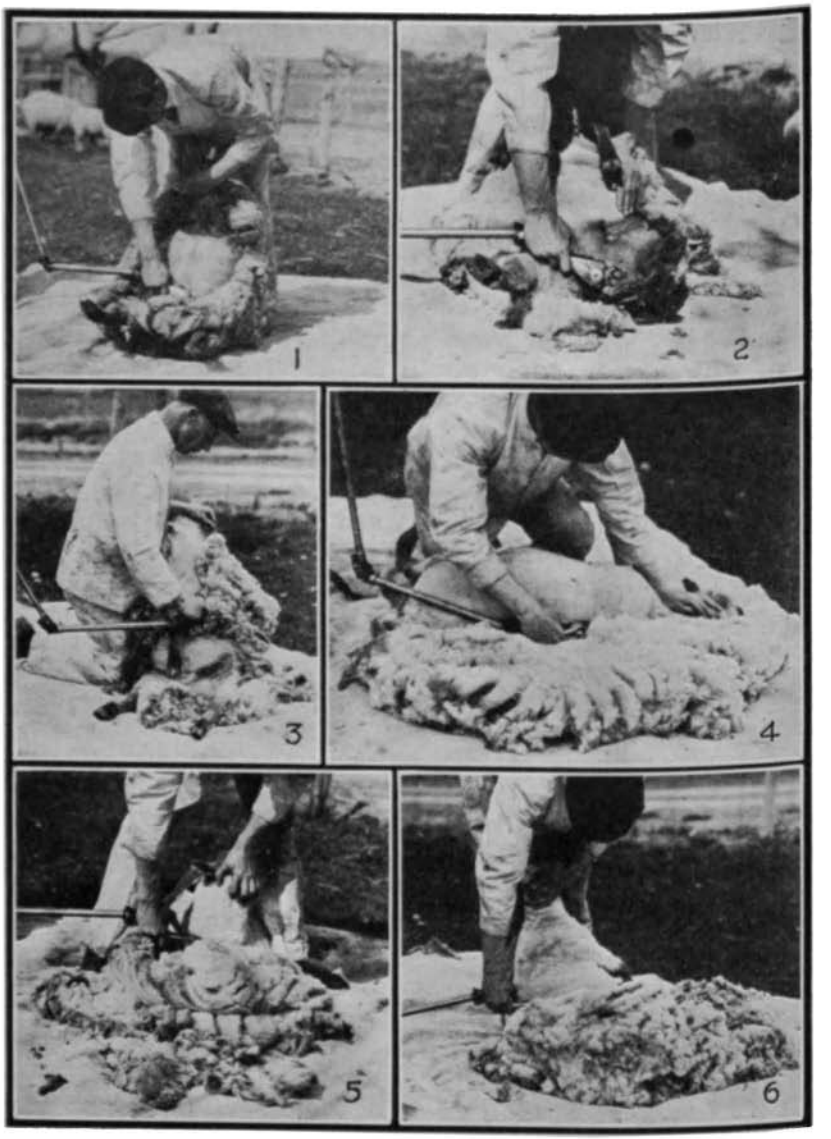
Castration should be performed at about three weeks of age. Cut off the end of the purse and pull out the testicles, sever the cords with a knife, apply a mild, efficient disinfectant, 3-percent compound Cresol solution. In large flocks the docking and castrating are usually done at the same operation, and the cords are pulled instead of being severed. Pulling is a faster operation, but the lamb recovers more slowly. When docking and castrating are done at the same time special care and protection from bad weather should be given. In small flocks it is better not to dock and castrate at the same time.

SHEARING

The shearing should be done in the spring, as soon as the weather will permit. Early shearing should not be practiced unless protection from bad weather can be given. Early shearing prevents the rubbing off of wool and causes greater thrift and growth in the sheep. If the shearer is inexperienced, he should handle the animals gently and shear them carefully until skill and experience have been acquired. It is a good practice to learn on rams or wethers, if possible. Cutting out large pieces of the skin, especially from the udder, is injurious. Many ewes have been lost from this cause. It is better to shear the ewes after lambing than before; this should be kept inmind when deciding the time to breed Whether hand shears or clippers are to be used depends upon the operator. He can do efficient or inferior work with either. After the fleece has been removed, the sheep should present a smooth, even, uniformly clipped body.

DIPPING

The sheep should be dipped as often as necessary, at least once a year. This, if efficiently done, kills all the external parasites. The two most troublesome parasites are scab-parasites and ticks. Sheep affected with scab show great uneasiness and itching. They rub themselves against posts and fences, bite their wool and scratch the parts with their feet. Beneath the wool the body is white and swollen at the point of infection. After a time the sheep will pull



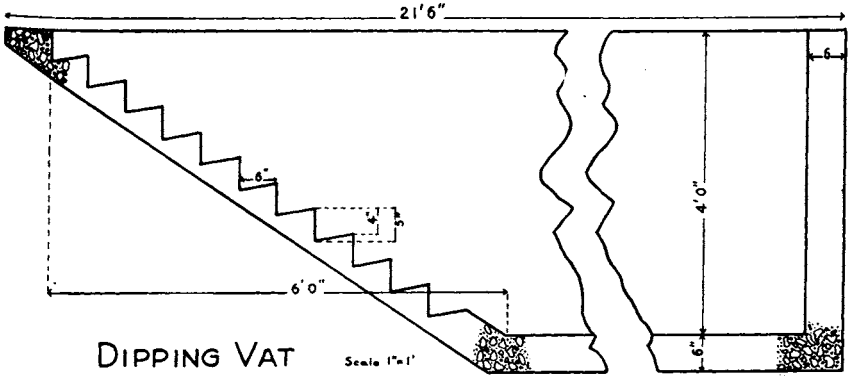
Shearing at different stages

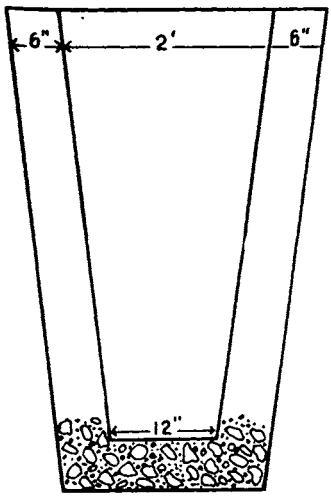
the wool from the infected part and a scab will appear. In bad cases the sheep will present a mass of mangy sores. Scab is highly contagious and subject to quarantine, but most Colorado territory is now free from it. To cure the scab the sheep must be dipped. One of the most effective dips and one generally used thruout the West is the lime and sulphur dip.

The formula is as follows:

Fresh quick-line	8 pounds
Sulphur	24 pounds
Water	100 gallons

The lime and sulphur should be carefully weighed and prepared as follows: Slake the lime to form a thick paste; sift in the flowers of sulphur and stir well. Put this mixture in a kettle with 25 or 30 gallons of water and boil at least one hour; two hours is better. Allow the chocolate mass to settle; draw off the clear liquid, and add enough water to make 100 gallons. The sediment should not be used in the dip. This dip will be rendered more effective if a decoction of tobacco is added, about 30 pounds to 100 gallons of water. Keep the temperature of the dip at 100 to 110 degrees F., and keep each sheep in the dip for not less than two minutes. During the dipping, the head should be submerged twice.





Plan for a cement dipping vat

The sheep tick is an entirely different parasite from the scab. It is about the size of a wood tick. If present, it can be seen in the wool or traveling on the body of the sheep. It bites the sheep, worries it, and causes it to do poorly. Ticks, when very numerous on the ewes will sometimes gather on the lambs to such an extent as to weaken them and cause them to die. The tick is destroyed in the same way as is the scab. For this purpose the flock should be dipped immediately after shearing and again in ten days or

pared as follows: Slake the lime to form a thick paste; sift in the flowers of sulphur and stir well. Put this mixture in a kettle with 25 of 30 gallons of water and boil for at least one hour; two hours is better. Allow the chocolate mass to settle; draw off the clear liquid, and add enough water to make 100 gallons. The sediment should not be used in the dip. This dip will be rendered more effective if a decoction of tobacco is added, about 30 pounds to 100 gallons of water. Keep the temperature of the dip at 100 degrees to 110 degrees F., and keep each sheep in the dip for not less than two weeks To dip during the fine weather of late fall or early winter is a good practice. Sheep dipped only at shearing time often becofe ticky before being sheared again.

TAGGING AND CARE OF THE FEET

Sometimes the wool on the buttock and thighs of the sheep becomes very long and a great deal of feces collects there. This should be watched and whenever necessary the wool trimmed away and the parts made clean. This condition is sometimes so bad as to cause maggots to gather and make large ugly sores on the body of the sheep. Removing the wool and disinfecting the parts well, effects a rapid recovery.

The feet of the sheep need attention. They sometimes grow out long, roll under and may cause lameness. Before this occurs they should be trimmed with a jack knife or ordinary pruning shears. Shorten the toe and level the sole by cutting off all excessive growth Sheep kept in dirty wet quarters may have foot rot. While this kind of rot is not contagious, it may be very serious. In bad cases the bones of the feet become affected, causing great lameness There will be no trouble from this cause if the sheep are kept in a clean, dry place. The feet should receive attention occasionally, trimming when necessary and the sore places regularly disinfected until healed. The feet should always be trimmed at shearing time.

BLOAT

Sheep, like cattle, bloat very readily on certain foods. Of these alfalfa and clover are the most dangerous. The symptoms are uneasiness and a bulging out of the stomach on the left side just in front of the hip bone. Death is caused by rupture of the stomach or by breathing being prevented by pressure on the lungs. To treat for bloat, put a bit in the mouth and hold the head high to induce belching. Then stand astride of the animal and press on the disturbed region with the knees The sheep may be given one-half pint of raw linseed oil to which a teaspoonful of turpentine has been added. Tapping is not successful with sheep; it nearly always causes death. To avoid bloat do not pasture green alfalfa

or clover. Fill the sheep well with dry hay before turning to pasture and then keep them there all the time. Do not remove the sheep for a few days and then return them to a luxuriant pasture in a hungry condition.

DRENCHING

In drenching sheep, care must be taken not to strangle the animal or to get medicine into its lungs. Swallowing is impossible if the head is tipped too high or too far back. The head must be held loosely enough to allow the tongue and jaws to be used freely in swallowing, yet not low or loosely enough to cause the medicine to be spilled and lost. Do not try to drench while the animal is struggling, coughing or emitting other vocal sounds. Set the sheep on its rump, and hold it between the knees, elevate the head, open the mouth with the thumb and fingers of the left hand, and gently insert the neck of the bottle with the right hand. Slowly pour the medicine down the sheep's throat, one-third or one-fourth of it at one time. Wait a minute, then give more, until all is taken. A few pauses should be made so that none of the medicine will enter the lungs and prove fatal.

CATCHING A SHEEP

Do not catch a sheep by the wool. Catch it by the flank or hind leg. After it has been caught, place one hand under its throat and the other at the tail head. It can then be easily moved without injury. In handling and caring for the sheep move about them quietly without causing excitement among them. Disturbance and worry in the flock cause the sheep to do poorly, and best results cannot be secured.

ACKNOWLEDGMENT

All illustrations in this bulletin, except the full-page cut showing the shearing of sheep, were supplied by the U. S. Department of Agriculture.