

SHEEP FEEDING AND
FARM MANAGEMENT

DOANE



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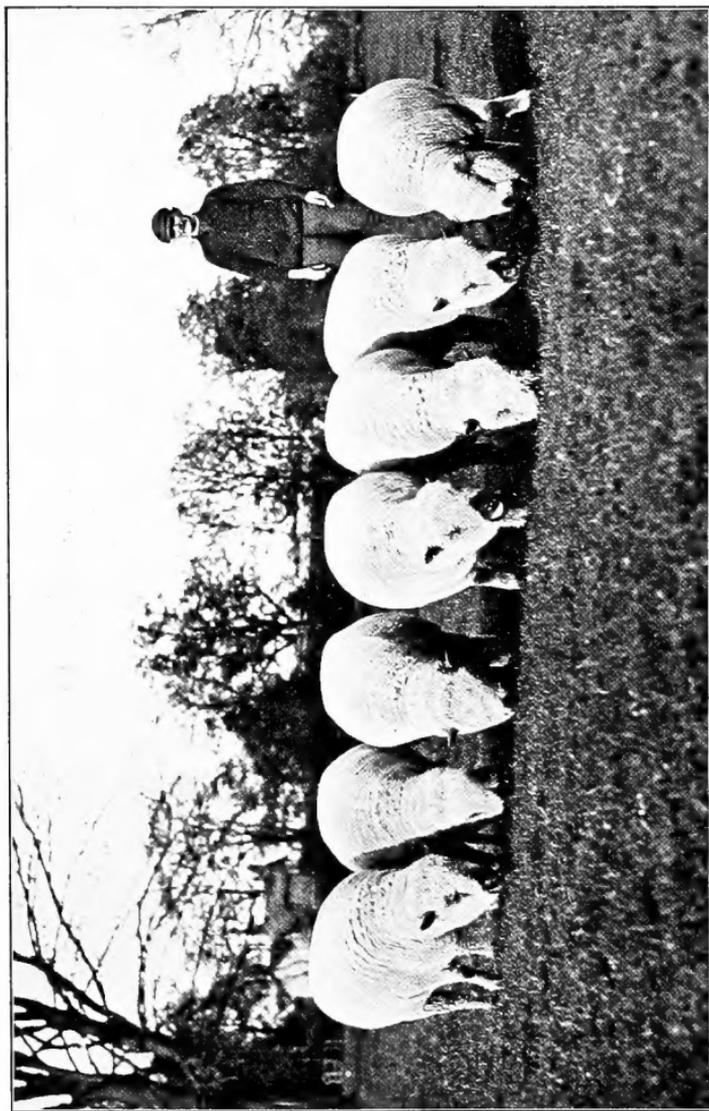
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Sheep feeding and farm management,



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A STUDY IN TYPE AND FORM FOR BOTH THE BREEDER AND FEEDER
Photograph by J. V. Henley

SHEEP FEEDING AND FARM MANAGEMENT

BY

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PREFACE

This book is the result of an original investigation carried on by the author, covering a period of about four years. It is based on farm practices as they occur in the United States, — particularly in the Middle West, — and their relation to the feeding of sheep for market.

Its purpose is to furnish to those interested in the feeding of sheep for market, whether students or farmers, the information that will enable them to carry on the necessary operations profitably.

The student desiring to inform himself regarding the most modern and profitable methods for buying, feeding, and marketing sheep, instinctively turns to the literature on the subject. Save for a few bulletins on experimental sheep feeding, he finds that the field has been practically untouched. He sees in our agricultural press frequent reports and comments that seem to point to this phase of farming as not only profitable but also sound, and advisable from the standpoint of the economical use of crops, the conservation of soil fertility, and the saving of labor. Naturally he desires a reliable and practical source of information on the subject. Hence to the student the author would commend these pages, trusting that in their study he will find the answers to his questions, and facts and plans that will aid him in his future farm operations.

Men who have watched somewhat closely the sheep-feeding industry of our country know that it is rapidly passing from the hands of the professional, the speculator, or the

feeder of fifty thousand, into the hands of the farmer who handles but a carload or two. Hundreds have fed sheep for the first time during the last two or three years, and have started with merely a little uncertain knowledge that was gleaned from a neighbor. For these it is hoped that a few words from the broad experiences of many of the most successful sheep men in the United States will prove a means by which some of the "breakers" in the sheep-feeding business may be avoided.

To both the student and the farmer it may be said that the greatest success will come only after an extended personal experience; but a clear understanding of the needs, habits, and characteristics of sheep will be found an invaluable aid to each if he wishes to get his first lessons at a reasonable price.

To those who follow these pages to the end it will be evident that there has been no effort on the part of the author to make of them a scientific treatise, but rather just a simple discussion of practical sheep-farm practices as they have been found in operation in the different sections of the United States. No one man, or no one community, is carrying on all the systems that are outlined. They have been found, here a little and there a little, one man adding a word and another affirming it, and so on to the completed and rounded whole.

To those who have so generously given their experiences, successes and failures, ideas and opinions, the author wishes to extend his most sincere thanks, for without their broad-minded and public-spirited help this work would have been impossible. It is from the farmers and those interested in their welfare, and to them and their sons and daughters in our agricultural schools and colleges it is given.

To Professor W. J. Spillman, head of the Office of Farm Management, United States Department of Agriculture, and C. Beaman Smith of the same office, Dean F. B. Mumford of the Missouri College of Agriculture, and Dean E. Davenport and Professor Herbert W. Mumford of the Illinois College of Agriculture, the author wishes to acknowledge his indebtedness, extend his most sincere thanks, and express his appreciation of their kind and invaluable criticism of the manuscript and their suggestions for its improvement. The publication of the book was made possible, to a large degree, through the kindness and generosity of these men.

All the photographs not labeled were taken by the author, and are used here by the courtesy of the Office of Farm Management, United States Department of Agriculture. Where otherwise stated, they were loaned through the kindness of J. V. Henley of Greencastle, Missouri. To both parties the author wishes to express his appreciation.

D. HOWARD DOANE

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SUCCESSFUL SHEEP HUSBANDRY DEPENDS LARGELY UPON THE SHEPHERD.
IT IS OFTEN SAID, "THE EYE OF THE MASTER FATTENS THE FLOCK"

SHEEP FEEDING AND FARM MANAGEMENT

CHAPTER I

A CLASSIFICATION AND DESCRIPTION OF NATIVE AND WESTERN MARKET SHEEP¹

An attempt to classify and describe market sheep is attended with no few difficulties. Especially does this apply to Western sheep, for there is practically nothing written, and very little known, by the average sheep man concerning them. Even our best present-day authorities seem to differ quite widely in their opinions at times. Indeed, it is hard to point out any very exact and close distinctions between the sheep from the different Western regions and states, but experienced market men seem to see and know a difference, and one glance will generally be sufficient for them to tell from what state any given band or flock has come. With a hope of correlating and putting into concrete form this rather hazy and indefinite mass of knowledge this chapter has been attempted, for Western sheep form by far the bulk of the trade in sheep circles on our markets.

The following outlines are given in as brief and simple a form as possible, and no attempt has been made to divide

¹ The term "market sheep," as used here, means all sheep, whether fat or thin, not included in the breeding classes; and the word "sheep," when used alone, refers to all ages.

the subclasses into grades or give a description of what constitutes a prime, choice, good, medium, or common sheep. The classes and subclasses named here are those recognized on all our markets, and are the ones most important for a feeder to know when buying or selling sheep.

CLASSES	SUBCLASSES
Natives	{ Lambs Yearlings Wethers Ewes Rams and cull sheep
Westerns	{ Lambs Yearlings Wethers Ewes Rams and cull sheep

NATIVE SHEEP

Two general classes of feeding sheep. All feeding sheep may be divided into two broad and general classes, natives and Westerns. By native sheep we mean those that come from the middle and eastern states. As a rule they can be distinguished by a predominance of Down¹ blood, shown in a more or less rounded and compact form, dark color of face and legs, smooth unwrinkled skin or pelt (which refers to both wool and skin), and a rather compact coating of medium wool. The first native sheep that reach the markets, the lambs, generally come in May. These early shipments and all that are marketed before the hot days of summer are eagerly sought by the killers. From this time on, however, stomach worms, flies, warm weather, and short pastures make

¹ "Down," or "Downs," refers to our breeds of sheep called Oxfords, Hampshires, Shropshires, and Southdowns.

a bad showing on the lamb crop, and judging from the small amount of flesh they carry, these late arrivals should at once be placed in the feeder classes. If they are, it is only the novice, unfortunately, that takes them out to feed, for in the majority of cases they prove unprofitable consumers of grain and roughness, and the per cent of loss generally runs quite high. In the writer's opinion there is no good reason why native sheep should continue to hold on the market the secondary place that they have to, especially when the highest honors are held by sheep that are bred, and in many cases inbred, so indiscriminately that we often hear Western men reply, in answer to a question regarding the breeding of their sheep, "Oh, I don't know; they ain't got no breeding." Also the water and feed that Western sheep often have to subsist on would be considered by Middle West farmers as starvation rations. When in such competition it seems strange indeed that those with the stock of superior breeding and feeding, according to our modern ideas, should be content to hold a secondary place. Even more strange does this seem, and greater appear the possibilities, when we are told by market men that the best native sheep that reach the market are better than the best Westerns. The only explanation seems to be found in the fact that the Western sheep average better than the natives. Western sheep men carry on their operations as a business, whereas the majority of natives are handled as a side line. If a word of prophecy may be allowed here, it will be that these conditions will not always exist and the farmer with the best advantages will assert his ability and take the lead, as he justly should. But, regardless of our wishes and prophecies, native sheep are as a rule unprofitable feeders, because most Middle West sheep farms are infested with stomach worms. The

ewes carry these worms or eggs over winter, and, while grazing the pastures in the spring, scatter through their manure the eggs, which finally hatch and infest the tender grass spots that the lambs so eagerly seek. Thus the lambs become infested, and, as the pastures get short and the days hot, the lambs become poor and emaciated, and then it is that the worms work their havoc. Indications of worms in sheep are well described by Joseph E. Wing in his book "Sheep Farming in America." He is speaking to the man who is looking for feeders on the market, and says, "Here are some natives, big enough, but their lackluster eyes and sunken wool and general air of discouragement speak, surely, of an internal revenue department held under the rule of predatory parasitic worms." By these signs they are known, and by these signs avoid them. Of course there are native sheep not infested with worms, that reach the market in good health, and in some few cases are thin enough to go to the feed yards, but the majority of healthy natives that reach the market go to the killers. There are few, if any, cases when it is wise for a beginner to start with native sheep to feed. The old experienced feeder may in some cases find it advisable to handle a bunch of them, but before attempting it he should be sure that his judgment is sound regarding a healthy sheep, and that his conditions at home will permit of their profitable feeding.

A second reason that some feeders give for avoiding even the healthy natives is because, they say, they are accustomed to good pasture and care where they are raised, — at least, as compared to the bleak, scantily grassed pastures of the West, — and when taken to a feed yard where conditions are not the best they will not thrive like a Western sheep.

NATIVE LAMBS

Native lambs purchased by the packers. In speaking of the native subclasses it may be said that the lambs that reach the markets during May, June, and July, weighing from sixty to ninety pounds, go as a rule direct to the killers, and it is these lambs that make the most money for their raisers. After July and for the next three months the late and more unfortunate ones appear. Apparently it is finishing that these lambs need, but the wise feeder passes them by.

Native lambs are classed as lambs on the market until the following crop comes in; but, when a lamb that was dropped in the spring of 1906, for instance, comes to market sheared in the spring of 1907, it is called a yearling, regardless of whether it is twelve months old or not.

NATIVE YEARLINGS

Native yearlings not the best feeders. A native yearling is just what the name implies, — a wether, as a rule, a year old and under two. Native sheep that reach the markets as yearlings are generally late lambs that were not heavy enough to go with the lamb shipment the year before, and hence were carried over the winter, sheared in the spring, fattened, and shipped out with the next crop. This practice is not widely followed, but those who do follow it should remember that to carry lambs successfully over winter they must be free from stomach worms; and it is well also to remember that a ewe which will shear about as much wool and drop a lamb besides can be kept on what it takes to make a yearling marketable.

NATIVE WETHERS

Few native wethers. A wether, in market parlance, is any castrated male two years old and over. Very few native wethers reach the market. Farmers find it more profitable to stock their farms with ewes than to keep the male lambs until they are two or three years old just for the wool.

NATIVE EWES

Cull native ewes not reliable breeders. As a rule native ewes reach the market as aged stuff, because the average Middle West farmer keeps up his flock by raising the ewe lambs; hence the females are not generally disposed of until they have served their most useful days as breeders, or become infested with worms. Native ewes seldom change hands as feeders. Some of the best of them go south for breeding flocks, to be kept for a year or two and then replaced. It is seldom advisable to start a breeding flock from this class of ewes.

NATIVE RAMS AND CULL SHEEP

Too many native cull sheep. The scrubby lambs and cull sheep are, unfortunately, quite too abundant in the native classes. The fact that large numbers of native ram lambs reach the market each year run down in flesh, coarse, and unfinished, is unpardonable. This condition is due to the neglect of the farmer and his fear of loss from castration. Ram lambs can be safely and profitably castrated, and when the farmer realizes this and puts it into practice we may then look for a reduction in this class of sheep, which is wanted by no one and is sold to reluctant bidders at their own prices.



AN EXCELLENT STUDY IN DOWNS
Photograph by J. V. Henley

WESTERN SHEEP

Western sheep come from west of the one hundredth meridian. Western sheep are those that are raised in that part of the United States that in a general way lies west of the one hundredth meridian, or the line that divides the humid and the semiarid regions of the Great Plains, running through the central portions of North and South Dakota, Nebraska, Kansas, Oklahoma, and Texas.

Old Spanish Merino the foundation of early Western flocks. It is generally supposed that the early Spanish Merino had a great deal to do with the formation of our first Western flocks. In support of this belief we can see to-day marked evidences of Merino blood in most of the Western ewes. In some states subsequent crossing with pure-bred Down or coarse-wooled rams has almost obliterated all evidences of this early blood. In others Merino sires have been used of late years and Merino characteristics predominate; while in other regions so little new blood of any kind has been introduced that, as a result, a class of sheep remains that is hard to classify with reference to any of our modern breeds.

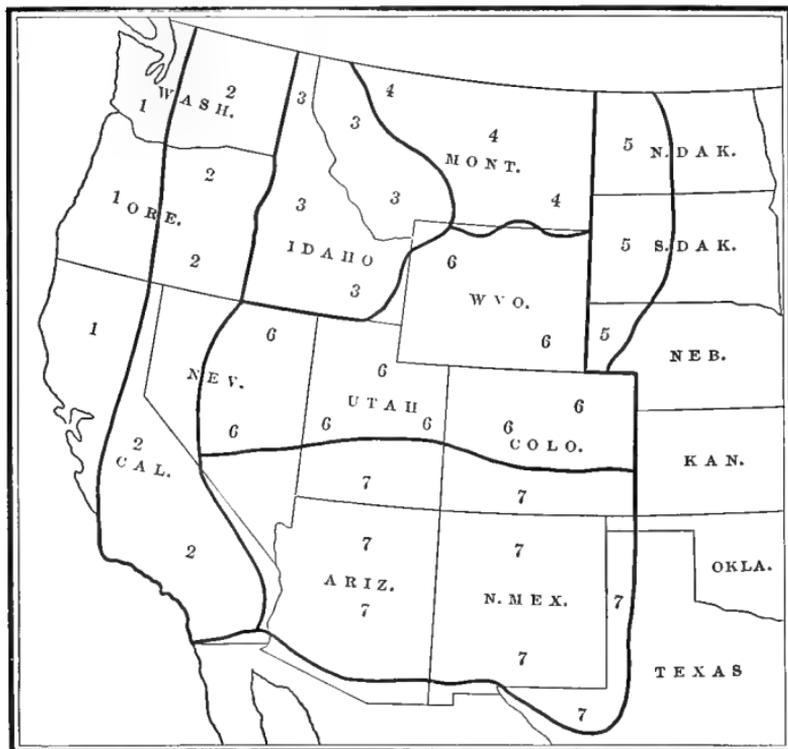
Western lambing season covers long period. Lambing season in the West extends over quite a long period, beginning in late winter in the south and not finishing until May, and in some cases until June, in the north. However, the lambs are not marketed in order of age, for some of the first to reach the market are the Idalhos. In Idaho they have a quick-maturing type of sheep, largely Downs, and this, with abundant early rains, produces an early fat lamb. The order or succession in which the sheep are marketed does not depend so much on age as on how early or late the season may be, the abundance or scarcity of grass, the

prevailing market prices for lambs and wool, the relation or margin between the two, and the amount of stock on hand.

A dry climate excellent for sheep. Western sheep are noted for their hardiness and freedom from internal parasites. Their ranges, as compared to the pastures of the Middle States, are scanty and dry, the grass is short but very nutritious, and these conditions have developed a class of sheep that are great rustlers and gain wonderfully when well cared for and fed. A dry climate is ideal for sheep, and so when they reach the Middle West and are turned into muddy fields and left exposed to the cold rains of fall and early winter, the farmer need expect nothing but ill success with them. Western sheep receive no grain while on the range, and when brought to Middle West feed yards must be taught how to eat it. This point demands great care and judgment, and will be discussed later.

Seven main Western sheep regions. As has been said, there is a great deal of difference between sheep from some of the different states, and very little between others, but market men are as wont to call Western sheep by their state names as breeders of pure-bred sheep are to speak of the different breeds by their breed names. It might be difficult to distinguish between Arizonas and Mexicans, for instance, but one glance would suffice to show a vast difference between Mexicans and Montanas. As it is quite helpful for a buyer to know the different characteristics of the sheep of different states, a brief description of each has been attempted. In so far as it is possible to group the different states or sections of states together, it has been done, and the following classifications are based on seven regions, which are shown on the map on page 10. The purpose of the map is to unify and present in a concrete way the

different Western regions. It is not intended to establish hard and fast boundary lines. Sheep of Region 1 will be known as Californians, of Region 2 as Oregons, of Region 3 as Idahos, of Region 4 as Montanas, of Region 5 as Dakotas, of Region 6 as Wyomings or Colorados, and of Region 7 as Mexicans or Arizonas. These names are applied arbitrarily.



Region 1, Californians. This region contains a variety of classes of sheep, mainly of fine-wooled¹ breeding. Lambing season extends over a good part of the year, and most of the sheep and lambs go to the city markets of the Western coast.

¹ "Fine-wooled" refers to the Merinos, Rambouillets, and others.

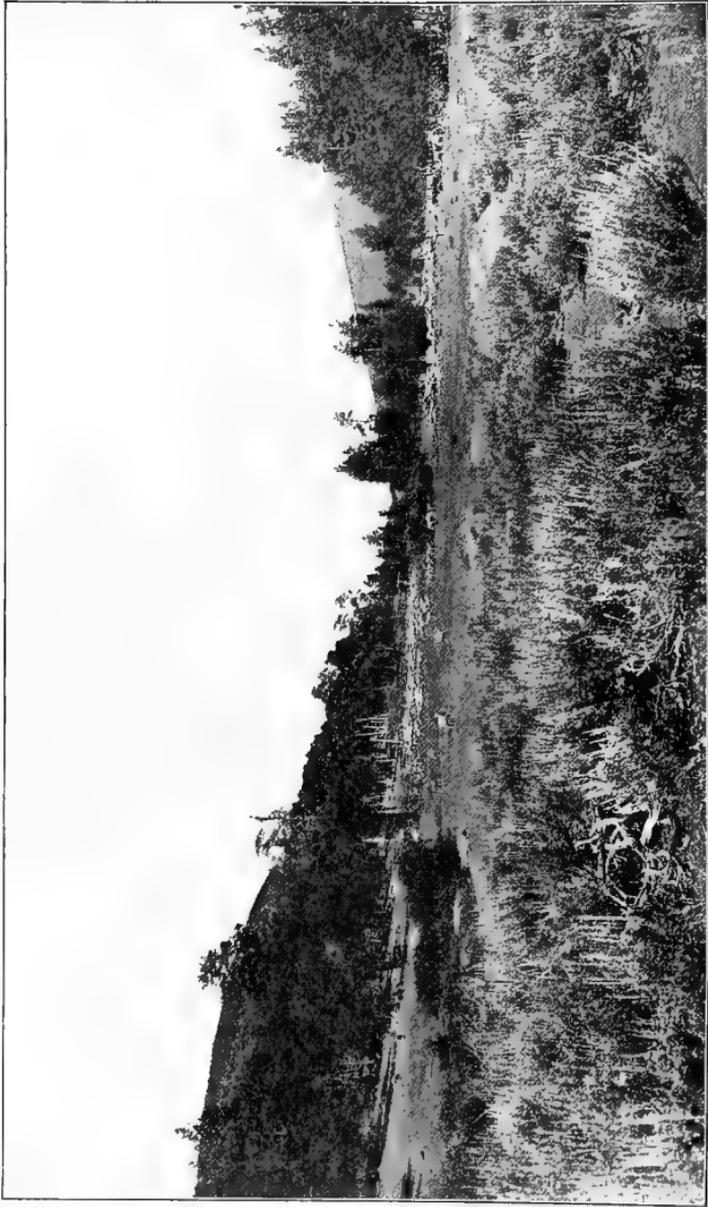
Region 2, Oregons. This region is noted for producing a uniformly high type of fine-wooled sheep. Ewes are heavy shearers and are raised for breeders, being sold as yearlings to Western flock owners. They make excellent ewes to cross with coarse-wooled¹ or Down rams. Not many of the lambs from these sheep reach our Eastern markets fat, for they are shipped so far that the heavy shrinkage makes them feeders, though exceedingly good ones, by the time they reach the East.

Region 3, Idahos. This region produces a very fine fat lamb that is the first to reach the markets, shipments beginning in July. Lambs show a high per cent of Down blood, with dark faces, quite smooth pelts, and medium bone; and they bring high prices, for they are known on the market as "high dressers." They weigh from sixty to seventy-five pounds.

Region 4, Montanas. This region produces a type of sheep showing both fine- and coarse-wooled breeding, with white faces, and in some cases quite heavy pelts and bone. They make better yearlings and wethers than lambs, for they have large frames and do not reach the market fat. They have quite a feeder demand, and are marketed from September to November. The lambs are from five to seven months old when marketed, and weigh from fifty to seventy pounds, wethers weighing from one hundred to one hundred and ten pounds.

Region 5, Dakotas. This region is going out of the sheep business, but at present produces a high-bred Down, with a black face, smooth pelt, and medium bone and wool. These sheep reach the market in October and November, but are not fat, hence go as feeders.

¹ "Coarse-wooled" refers to the Cotswolds, Lincolns, and others.



OREGON SHEEP ON THEIR NATIVE PASTURE

Region 6, Wyomings or Colorados. This region shows the greatest variety of breeding. The borders are inclined to resemble the adjoining territories. Fine-wooled, Down, and coarse-wooled rams have been used, but no inbreeding. A great many of these sheep are fed in Colorado. Lambs weigh from sixty to eighty pounds, have a medium pelt and bone, a white to dark face, and reach the market from August to September.

Region 7, Mexicans or Arizonas. This class of sheep shows the least improvement of all in breeding. In many cases they are badly inbred, and when new blood has been introduced it has generally been by fine- or coarse-wooled rams. They have a fine bone, light pelt, white face, coarse hairy wool, and are marketed from August to September, many going to the Colorado feeders. These sheep are among the best killers that reach the market, and when thin are very popular with the feeders, and when fat, with the butchers.

WESTERN LAMBS

Western lambs most numerous of all feeders. Western lambs form from seventy to eighty per cent of the trade in Western sheep. They reach the stockyards from the range at from four to eight months of age and weigh from forty-five to eighty pounds. It is the common practice for the packers to take the tops, or the fattest ones, out of almost every bunch that reaches the markets, and those that are left go to the feeders. This does not mean, necessarily, that the feeder gets the culls, but rather those that do not carry the required amount of fat for the killers. The Western grass lambs are quite well liked by the butchers, for when they reach the market they are, in most cases, well shrunk out and dress a high per cent. Western lambs are, in some

cases, classed as lambs until they are from thirteen to fourteen months old. For instance, if a feeder takes out a bunch of lambs in November or December and does not bring them back until March or April, — and in such cases they are generally shorn, — they will then be classed as shorn Western lambs though they may be fourteen months old; while on the same day a part of the same band of lambs, that was kept on the range, will reach the market shorn, and they will be called yearlings. In fact, a Western sheep that is direct from the range and has been shorn is classed as a yearling even if it is not twelve months old. Of course the teeth are the final and deciding test and the one used by the packer when buying in the yards, but it is entirely disregarded after the sheep is on the hooks. Here the test depends on whether it “breaks a lamb joint” or not, which means that if the joint which corresponds to the pastern joint of a horse breaks rough, the sheep is then classed as a lamb whether lamb or yearling, provided the yearling is not too heavy. If, however, the joint breaks smooth, as a joint in the leg of the chicken breaks, then it is called a yearling, — unless lambs are high and scarce and it seems necessary to run in some yearlings; then the joint is crimped, or made rough, by a machine that some packers make a practice of using. One who has seen both the natural lamb joint-break and the crimp cannot be fooled on the latter, for it is more even and regular than the natural rough break.

WESTERN YEARLINGS

Yearlings hardier than lambs. Perhaps the next most numerous Western subclass is the yearling wethers, generally called yearlings. This class may reach the market from the range any time of the year, but the majority are



DAKOTAS AT HOME

Evidence of Down blood is shown in the face, legs, and form

shipped during the fall months, for at this time the feeder demand is at its height. Yearlings are hardier than lambs, will stand more exposure, and will do better on second-grade feed. In the feed yard they grow but little, almost all the gain being fat. Yearlings weigh from sixty-five to one hundred pounds on the market when they are direct from the range.

WESTERN WETHERS

Wethers the hardiest of all. The heaviest Western sheep that reach the market are the wethers, weighing as much as one hundred and twenty pounds in some cases, and seldom less than ninety pounds, except in the case of the Mexicans, that sometimes drop down to the weight of an average lamb. The wethers are perhaps the most rapid gainers and heaviest consumers of feed that we have. They will do better under rough and adverse conditions than either of the other younger classes, and will consume a poorer grade and kind of feed, but it requires a little more margin to feed wethers than lambs. Among the best wethers to reach the market are the big coarse- and fine-wooled crosses from Montana. The best fat wethers fill our export trade.

WESTERN EWES

Good Western ewes better breeders than feeders. Many of the Western ewes that are shipped East have broken mouths. This term must not be taken too literally, for it simply refers to ewes with mouths that are broken of a full set of teeth. It does not necessarily mean that all the teeth are gone, although this is sometimes the case. When a ewe's teeth are gone or broken to the extent that it interferes with her

eating, she is said to have a broken mouth. Such ewes are from five to six years old and up. Under range conditions their most useful days have passed, but Middle States farmers who can furnish them ground grain, leguminous hay, and abundant pastures can keep them from two to four years, then fatten and sell them for nearly as much as they paid. During the time of ownership these ewes will have averaged about one hundred per cent of lambs, and sheared from five to eight pounds of wool each year. This book does not deal primarily with breeding sheep, but the point mentioned is worthy of every Middle States farmer's attention. From a feeder's standpoint ewes are not to be recommended, for their breeding value gives them too high a relative feeding value. On the other hand, there are some cases when a bunch of ewes can be purchased at a real bargain, and if the intending feeder has the proper kind of feed in his bins and mows, he can make money on them.

WESTERN RAMS AND CULL SHEEP

Few Western culls. Not many sheep of this class reach the market. They seldom, if ever, go out as feeders and as a whole are of very little consequence.

CHAPTER II

THE DETERMINING FACTORS IN THE SELECTION OF FEEDING SHEEP

No best class of feeders. What kind or class of sheep makes the best feeders is a question quite frequently asked, but impossible to answer. We must remember that there is no more a best feeder sheep than there is a best horse or hog. However, under specified and definite conditions this question may have at least a partial answer, and with this in mind the following suggestions concerning the characteristics of the different feeder subclasses are given, with the desire that they may prove helpful to the intending purchaser in his selection of the best feeders for his conditions. Natives are of so little importance in the feeder classes that they will not be considered in this discussion.

Duplication of climatic conditions in selection of feeders. Other things being equal, the feeder who lives in northern feeding districts — Minnesota, Wisconsin, Michigan, Illinois, Ohio, and the New England States — should feed the Western sheep that come from the northern sheep regions, namely, Idahos, Montanas, Dakotas, and perhaps the Wyomings. The central and southern feeders have the Wyomings and Mexicans to select from. The Mexicans are especially well adapted to Colorado, Nebraska, and Kansas conditions, while the Wyomings fill many yards in eastern Nebraska and Kansas, Iowa, Missouri, southern Illinois, and Ohio. This is a broad classification and only applies in a very general way.

WHEN LAMBS EXCEL AS FEEDERS

The most important points briefly stated. Lambs make more pounds of gain per pound of feed than yearlings or wethers.

The feeding period of lambs is often longer, and may be made much longer, than that of yearlings or wethers. They eat less roughness per pound of grain than any of the other subclasses.

Lambs grow, as well as fatten, while in the feed yard.

It requires much more care, attention, and a broader experience to feed lambs than older sheep, for they are often taken direct from their mothers and shipped to market, where they undergo many new and hard experiences. It is needless to say that such tender babies need the hand of experience to care for their wants. They are not the sheep for the novice.

For rough cornfield feeding they are not as well adapted as yearlings or wethers, although there are men of experience who feed them successfully in this way.

For pasturing a catch crop of rape or cowpeas out of a cornfield, where it is not intended that the sheep shall eat the grain, lambs stand first.

They require the best grade of feed served in its most tempting form. The principal roughness should always be a legume; the grain, which is in the majority of cases corn, some say should be ground, while others state that shelled is preferable, and many successful feeders use ear corn. Unquestionably there is less danger in feeding ear corn than unmixed ground corn.

Except in the drier regions of the West, lambs will require some kind of shelter during a feeding period that extends into early winter.

The necessary margin on which to feed lambs is considered to be from one dollar to two dollars per hundred-weight. With a difference of a dollar and a half between buying and selling price, and a fifty-cent freight rate, there is generally a good profit for the feeder.

For the man of experience, with good shelter (which means quarters that are dry and clean but not necessarily warm), the best quality of feed in its most tempting form, and an abundance of good water, lambs will beyond a doubt be the choice of feeders.

THE FEEDING CHARACTERISTICS OF YEARLINGS AND WETHERS

Summary of the most important points. Yearlings and wethers will finish on a shorter feed than lambs.

They will consume a greater per cent of roughness per pound of grain.

Yearlings, and particularly wethers, will handle stover, straw, nonleguminous hay, and hay of poor quality best of any of the feeding sheep. Do not infer from this statement that the above-mentioned feeds are ideal or even good sheep feeds, for they are not; but the farmer whose main object is to feed up this class of roughness will find that large, thrifty wethers will handle it much more profitably than any of the other classes.

Ear corn can be handled very satisfactorily by yearlings and wethers.

For pasturing down corn, yearlings are perhaps the best that can be obtained.

If it is necessary for the sheep to be exposed to the elements at all times, yearlings or wethers should be selected.

It is generally figured that a margin of from twenty-five cents to fifty cents more per hundredweight is needed to feed yearlings than lambs, and from twenty-five cents to seventy-five cents more per hundredweight for wethers than lambs.

For the beginner, for one who wishes to pasture down corn, for one who has poor shelter or none, and for the one who has an abundance of rough feed, let the yearlings and wethers be recommended. If it is known that the conditions are not suitable for lambs, and it is hard to decide between yearlings and wethers, let the decision be based on the market supply and relative market prices of the two. In short, lambs require the best, wethers will handle the poorest, and yearlings occupy the middle ground.

WHEN EWES ARE A GOOD INVESTMENT

Old ewes require good conditions. Mature ewes with sound mouths fit about the same conditions on a farm or in the feed lot as do the wethers. They generally consume a little more feed per pound of gain than do the wethers, and when fat sell for less ; hence a greater margin is required between buying and selling price. Ewes with broken mouths require conditions more nearly like those for lambs. Ground grain and leguminous hay should be furnished, and shelter is generally advisable. In the majority of cases Western ewes demand consideration as feeders only when they can be purchased at a real bargain.

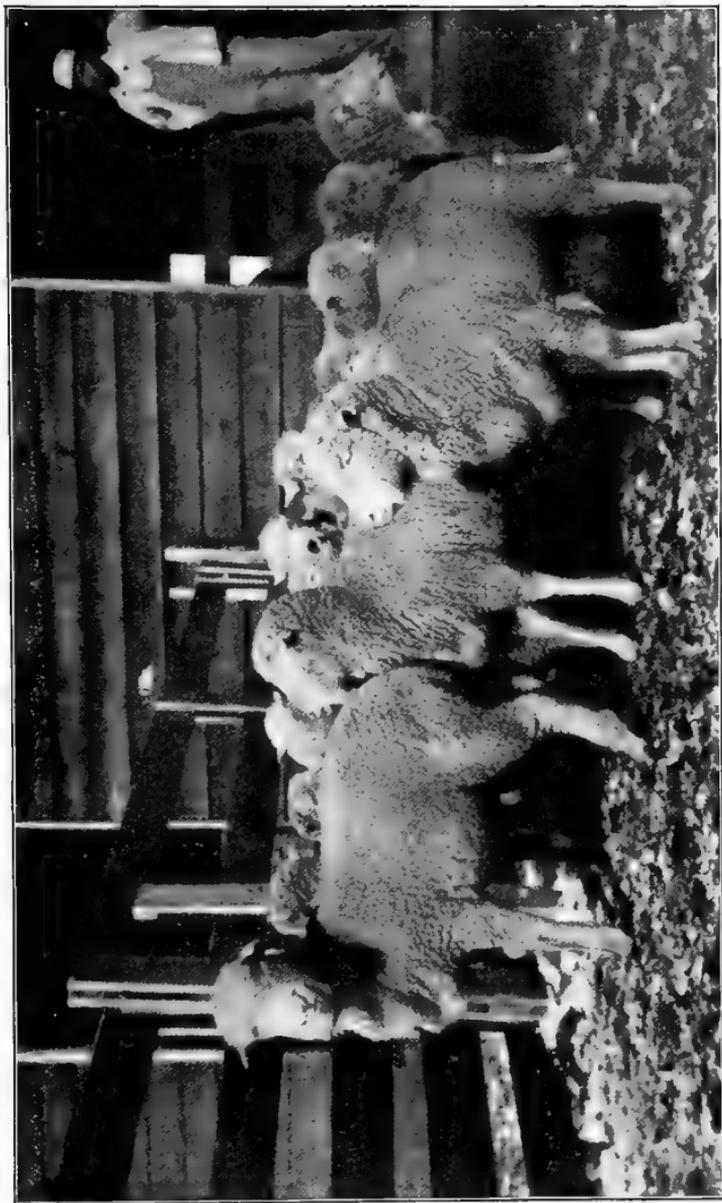
SOME RESULTS OF EXPERIMENTAL FEEDING

Some experimental facts. It is interesting to note here some of the results published by the Ohio Agricultural Experiment Station in *Bulletin No. 179*. This bulletin sets

forth the findings of a feeding experiment with Western lambs which was conducted on the farm of a practical Ohio sheep feeder during the season 1905-1906. One hundred and sixty lambs were divided into four lots of forty head each and fed in the barn in pens, allowing seven square feet per animal. Each lot received the same hay ration, which consisted of one and one-half pounds of hay per head per day, and Lot 1 received a grain ration of shelled corn, Lot 2 corn and cottonseed meal, Lot 3 corn and linseed meal, and Lot 4 corn and Dr. Hess's Stock Food.

Gains at five cents per pound. The gains made by the different lots were remarkably similar, but as the results from the shelled-corn lot have the widest application, they alone will be quoted. The experiment lasted 103 days, and the lambs made a daily gain of .298 pound per head. With corn at \$0.48 per bushel, and hay \$5.50 and \$6.00 per ton, a pound of gain cost \$0.049. Each lamb ate 2.21 bushels of corn and 155 pounds of hay, consuming 402.44 pounds of corn and 504.06 pounds of roughness per 100 pounds of gain. They shrank 4.1 pounds per hundredweight in shipping to Cleveland and dressed 53 per cent. Lot 1 produced 11,525 pounds of manure, which was worth \$29.67, or \$5.15 per ton, when figured on a commercial fertilizer basis. Of course, manure must be handled in the best possible way to possess this apparently excessive value. It was figured that the total cost of feed and bedding for Lot 1 was \$67.97; the manure value was \$29.67, leaving a difference of \$38.30. Counting grain, roughage, and bedding, it took 2251.62 pounds to produce one ton of manure.

From Ohio Bulletin No. 179. Quoting one of the most interesting phases of the bulletin, we read: "Table XV, which follows, dealing only with Lot 1 and calculated on the basis



YEARLINGS FED EXPERIMENTALLY ON CORN AND CLOVER HAY

They gained thirty-two pounds per head in ninety-eight days, but would not be market toppers on account of having too heavy pelts

of the figures quoted for food consumed and gains produced by this lot, is of very much more actual value to the sheep feeder than is the financial statement previously mentioned.

“TABLE XV. EFFECT OF VARYING VALUES OF FEEDS AND FEEDER LAMBS ON COST OF FAT LAMBS

ASSUMED VALUES OF FEEDS							
Hay per Ton	\$6.00	\$9.00	\$12.00	\$9.00	\$9.00	\$6.00	\$12.00
Corn per Busbel	.45	.45	.45	.30	.60	.30	.60
Assumed Home Price per Hundredweight paid for Feeder Lambs	Price at which Fat Lambs must sell per Hundredweight at Home to pay for Feeder Lambs and Feed used on Basis of Assumed Price						
\$3.00	\$3.546	\$3.783	\$4.020	\$3.446	\$4.121	\$3.209	\$4.357
3.50	3.890	4.127	4.363	3.789	4.464	3.553	4.701
4.00	4.234	4.470	4.707	4.133	4.808	3.896	5.044
4.50	4.577	4.814	5.050	4.476	5.151	4.240	5.388
5.00	4.921	5.157	5.394	4.820	5.495	4.583	5.731
5.50	5.264	5.501	5.737	5.163	5.838	4.927	6.075
6.00	5.608	5.844	6.081	5.507	6.182	5.270	6.418
6.50	5.951	6.188	6.424	5.850	6.525	5.614	6.762
7.00	6.295	6.531	6.768	6.194	6.869	5.957	7.105
7.50	6.638	6.875	7.111	6.537	7.212	6.301	7.449

“It should be understood at the outset that the figures presented in the table above are not applicable to all conditions. They are derived from the actual results obtained in this experiment from Lot 1, fed a grain ration of corn alone, the roughage consisting of mixed hay made up of clover, alfalfa, and blue grass. Although the figures on food consumed and gains produced apply, strictly, only to the particular instance mentioned, yet they serve a very useful

purpose, since many feeders use rations which approximate the one used in this case.

"The table shows prices at which the lambs in Lot 1 would have to sell at home to pay for the original cost of the lambs and the feed consumed during the experiment, with feeder lambs at prices ranging from \$3.00 to \$7.50 per hundredweight at home, and with hay and corn prices in the combinations given in the two top lines of the table.

"The figures underlined are those that show instances where the selling price may be less than the purchase price, under the conditions named.

"The following brief computation presents the method by which the table was prepared (feeder lambs at \$3.00 per hundredweight, hay \$6.00 per ton, corn \$0.45 per bushel):

Cost of 67.5 pounds feeder lambs at \$3.00 per hundredweight	\$2.02
Cost of food (155 pounds hay, 123.75 pounds corn) fed to produce 30.75 pounds' gain	1.46
Cost of 98.25 pounds fat lamb	3.48
Selling price per hundredweight necessary to pay for feeder lamb and food consumed	3.546
Advance per hundredweight required to prevent loss546 "

CHAPTER III

BUYING THE FEEDERS

First questions for the buyer. Perhaps the first questions that confront the buyer of feeding sheep are when, where, what, and how to buy; and in an effort to answer these questions the following suggestions are made:

WHEN THE FEEDERS SHOULD BE PURCHASED

Most feeders reach the market in the fall. By consulting the diagram on page 28 we see that the greatest numbers of sheep reach the markets during the months of August, September, October, and November. Although in some years the runs remain high during December and January, it is largely due to the returning of fat sheep from the feed yards and not to a supply from the range. Fall, then, seems the logical time to do the purchasing, for the abundant supply gives a wide range of selection; at this season, too, crops are ready to be fed and the rush of farm work has somewhat diminished. There are some exceptions to the rule, but the exceptions as well as the dates for purchase will be discussed in connection with the different systems of feeding, for the exact date of purchase is determined by the system of feeding to be followed.

WHERE THE FEEDERS MAY BE PURCHASED

The purchaser of feeder sheep may go to the ranges in the West and buy direct from the raisers, or purchase on the open market, or buy from one of the many large dealers

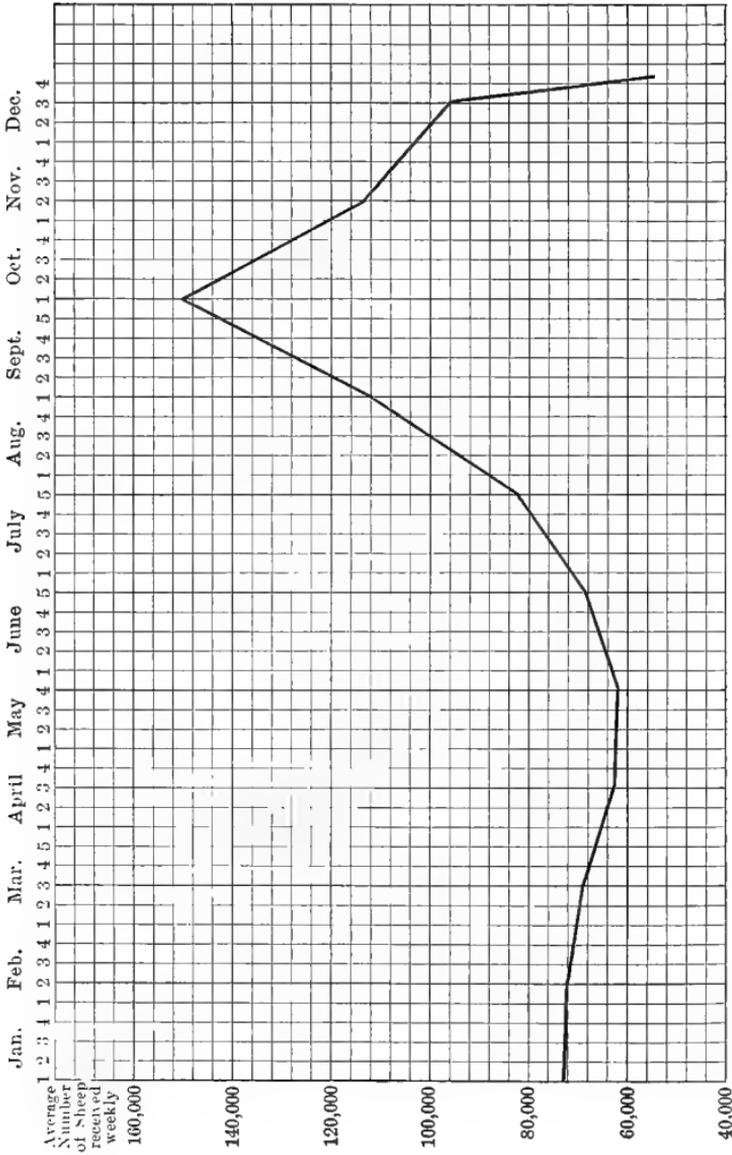
that operate in the different parts of the country. The relative points of each method will be discussed.

Buying feeding sheep on the range. The main points in favor of buying direct from the ranges are

1. The purchaser has no commission to pay.
2. He can get his feeders when he wants them.
3. Those that he buys are apt to be quite uniform, being of the same breeding and having had similar care.
4. The tops are not culled out by the packers, as they generally are if shipped to the market.
5. In some states the railroads allow those who buy sheep in the West a freight rate direct to market, with a feed-in-transit clause which permits them to unload on their farms and hold the sheep long enough to make a feed, then reload and ship to market. This is very convenient for those who are so situated that they can take advantage of it.

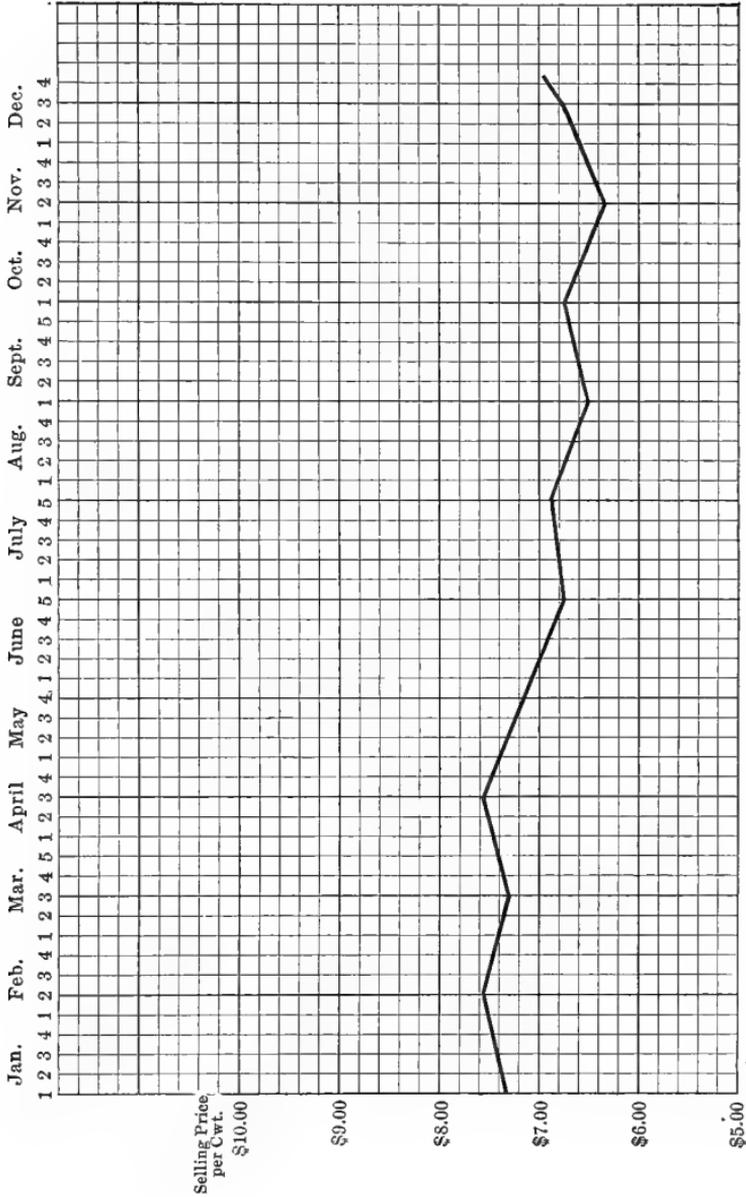
The disadvantages of going to the range for feeders — and these in the writer's opinion overbalance the advantages, especially for the one who only buys enough for his own use — are

1. Only the large feeder can afford to buy on the range; for it is seldom that a raiser will split his salable stuff, and most bands number from one thousand up.
 2. The range of selection is greatly limited, it being practically impossible for a buyer to look over Mexicans, Utahs, and Idahos, for instance, when he has to inspect each class on its home range.
 3. When on the range the buyer is at the seller's mercy, for he has to pay the seller's price or go without his sheep; the seller can be independent.
 4. One who buys on the range must be a good judge of sheep, for there he sees them in their very best condition.
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AVERAGE WEEKLY RECEIPTS OF ALL KINDS OF SHEEP AT CHICAGO, FOR THE YEARS 1906-1910

Published by *The Chicago Daily Driver's Journal*



AVERAGE WEEKLY PRICES FOR FAT LAMBS AT CHICAGO, FOR THE YEARS 1906-1910
 Published by *The Chicago Daily Drover's Journal*

Lambs are generally plump and fat, for in some of the states they are still suckling the ewes.

5. He has to estimate their weight, which must be based on an average of the little late fellows as well as the large thrifty ones.

6. He must be able to judge of the market about a week in the future, because in many instances it takes that long to get Western sheep from the range to the market.

7. He must stand all loss in shipment, which is in some cases, especially with lambs, rather heavy.

8. He runs his own risk on getting cars, and pays all feed and transit bills.

9. If his sheep happen to get caught in a storm the shrinkage is very heavy.

10. It would seem that only the experienced and very extensive buyer could profitably go to the range for his sheep, and then only because he finds it necessary to do so in order to fill his yards.

Buying on the market. The advantages to the feeder of buying his sheep on the market are

1. He has a large range of selection, which may extend over a period of several weeks; this is especially true if he is so situated that the exact date of arrival of the sheep makes little difference. Many successful feeders never go to the market to buy. They describe very accurately the class, grade, and age of feeders desired, stating maximum price they will pay and the dates on which they will be prepared to receive them. If one is assured of the responsibility of his commission firm, this method is to be recommended. Fortunately there are organizations at some of our best yards that look after the interests of buyers and sellers and protect them from dishonest and fraudulent dealers.



A FEW RAMS SELECTED FOR BREEDING PURPOSES IN THE WEST

It may be seen that these rams show little evidence of being pure bred, — a fact which keeps many Western flocks from reaching a very high standard

2. The seller of sheep has them on the market at a heavy and constant cost, and hence is often forced to sell at a sacrifice. The market buyer is prepared to take advantage of such a condition.

3. In many cases a buyer of feeders finds it an advantage to make a cut in a certain consignment. The band may be large, they may be very uneven, or there may be some very undesirable tails (poor, unfinished sheep). These assortments or cuts are very frequently allowed on the market.

4. Western sheep purchased on the market are dipped before they leave for feed yards or farms. This lessens very materially the liability of spreading disease, and is one of the greatest points in favor of market buying. In fact, if not fitted with a dipping tank at home, it is very dangerous to buy direct from the range.

5. Buyers of sheep on the market get the full advantage of all shrinkage, which is in some cases very heavy.

The disadvantage of market buying applies especially to the large feeder who handles from one thousand to fifty thousand head, and often finds it impossible to fill his yards profitably when buying in competition with the farmer who wants just a carload or two to clean up his fields and rough stuff.

Buying from the large country operator. There are men in different parts of the corn belt who feed large numbers of sheep each year, and when purchasing their own often buy a carload or two for their neighbors.

The advantages of buying sheep from these men are

1. The sheep are generally contracted during the late summer, and the purchaser knows to a fair degree of certainty the amount of feed he will have on hand, and can figure quite closely what he can afford to pay for the feeders.

2. The seller can tell him what the sheep will cost when laid down on his farm on a certain date in the fall.

3. The purchaser knows a month or so ahead just what the number, class, grade, age, approximate weight, and exact cost of his sheep will be the day he receives them.

The disadvantages of buying from the country operator are

1. Unless the men who do the buying in the West are experienced and honest there is greater danger of getting scab with this method than with market purchases.

2. When buying for future delivery one runs a risk of a turn in the market, which may be to his gain or loss. Some of the heaviest losers on sheep during the disastrous fall and winter of 1907 were men who purchased in August sheep to be delivered from September to November.

WHAT KIND OF FEEDING SHEEP TO BUY

Four points to be considered. After a feeder has decided on the class of sheep that best fits his conditions and experience, he is confronted with the task of selecting the individuals within the class. This selection should be based largely on weight, quality, form, and condition.

Weight an important factor. Weight concerns the seller more than the buyer, hence the discussion of its bearing and importance will be taken up in a succeeding chapter. The buyer considers weight only as it affects his final product. He may subtract from seventy-five or eighty the gain he wishes to make on his lambs, and this will give the proper weight at which to buy his feeders. The nearer to ideal lamb weights yearlings and wethers are marketed, the better. There is a strong tendency toward marketing lighter and lighter lambs. From 1908 to 1911, lamb weights dropped five to eight pounds.

Quality not to be overlooked. Quality holds an important place in the eyes of the experienced buyer. Indications of desirable quality are seen in a fine clean-cut head, rather small neatly set ears, fine hair about the face and on the legs, small but strong bones, and, most important of all, a lack of wrinkles and folds in the pelt. Many feeders use this last characteristic alone in determining quality. Sheep having a thick skin that hangs in folds about the neck and throat latch, and an abundant coating of oily, frequently dirty wool, are said to be heavy-pelted, and are invariably discriminated against by killers, and hence by feeders. In the late winter or early spring, however, feeders who are looking for sheep that can be clipped and short-fed prefer these heavy-pelted fellows, because they are good shearers, and the wool can be bought for from five to seven cents a pound on the sheep and sold for from twenty to thirty cents off; hence the discrimination made by the packers is generally well balanced. Packing-house buyers make their purchases on mutton qualities alone, and they know that a heavy-pelted sheep is a poorer dresser than one that is light- or thin-pelted; hence a lower bid is placed upon him.

Form not of greatest importance. Form is discriminated against only when it reaches undesirable extremes. Perhaps the two most common instances of undesirable form in feeding sheep are seen in undue legginess and a heavy paunch. Either of these might make undesirable a feeder that was otherwise satisfactory. A desirable form is one that is well balanced, fairly compact, and low down, broad rather than long, and deep and well rounded, showing especially well-developed hind quarters. The Mexican sheep have what many would call undesirable form, but they possess extremely good quality, very good balance, and are high



A CONTRAST IN TYPE IN WESTERN LAMBS

The lamb on the left is a Montana, showing Merino blood in heavy pelt, fine wool, and small size. This lamb is not as good a feeding prospect as the one on the right, a Mexican, for the packers discriminate against the heavy-pelted kind, and hence they sell for less per pound

dressers — hence market toppers. The feeder that is a good judge of quality seldom need concern himself with form.

Condition not high in best feeders. “Condition” in sheep refers to the amount of flesh they carry. Those who buy on the market seldom get sheep carrying too much flesh, for the packers select the tops, or those in the best condition, and the thinner ones are left for the feeders. On the other hand, a bunch of sheep that are very low in condition may be offered the buyer, and he may wonder if he can handle them. Such sheep demand a long feed, good grain, leguminous roughness, and very tender care at first, but in the end they may prove profitable, provided their lack of flesh is due to lack of feed and not to disease. A good feeder in a desirable condition shows thrift and some flesh, but very little fat; vigor and health, but not undue emaciation. Condition is of greatest importance to the feeder when the sheep are ready for market, and the subject is fully discussed in a later chapter.

HOW TO PURCHASE FEEDING SHEEP

Advisability of buying from a reliable commission firm. If it were possible to sum up a few of the foregoing statements for the benefit of one who wishes to begin the feeding of sheep, the following might be said. After deciding on the kind of sheep that it is desirable to feed, write to a thoroughly reliable commission firm, preferably at Omaha, St. Joseph, or Kansas City, — unless you live very near Chicago or St. Louis, or east of these markets, — and tell them as accurately as possible the kind of sheep desired, stating what price you wish to pay and when you wish to receive them. Give as much latitude as possible regarding this latter point. If you are ignorant of what constitutes a

good feeder, leave the selection of your stock to your buyer, and *do not* disregard his judgment after you have paid him for it. You can use your own judgment, eyes, and ears to good advantage in detecting signs of disease, particularly scab in Western sheep, insisting on a cut if there are some culls you do not want, and in seeing that your sheep are thoroughly and carefully dipped ; in fact, too much emphasis cannot be laid on the importance of dipping. The cars that sheep are shipped in, as well as the sheep pens about the stockyards, are not infrequently badly infected with scab. Some large feeders deem it necessary to dip their sheep again after they get them home, on account of the exposure to infection en route from the yards to the farm. There may be some question regarding the advisability of the second dipping, but there is not the slightest doubt about the necessity of the first. It rids the sheep of ticks and other external parasites that they invariably have, even though they are perfectly free from all signs of scab.

Studying the conditions at the stockyards. Another point that is of no little importance, and one that is often overlooked, may be mentioned here. Not infrequently the writer has seen instances where, out of a fine healthy bunch of sheep, from one to three per cent would die just about the time the feeder got them home. Everything indicated that the loss was due to brutal treatment in the yard, cars, and dipping pens. Let those who handle your sheep know that they belong to you and that you are on hand for the purpose of protecting them. Often your presence will be all that is necessary to keep ignorant and inhuman drivers and dippers from their brutal practices. Another way in which you can improve your time while around the yards is to talk to farmers and feeders that are there, and watch their selection

when they purchase. Do not be afraid to ask questions; note the methods followed by the men who have been in the business longest. The government sheep inspector is a man who has no financial interest in the yards, and his word can generally be relied upon as unbiased and sound.

The beginner should start slow. A double-deck car of sheep, roughly from three hundred to three hundred and fifty, is generally enough for the beginner. Do not try to fill the car to its limit when shipping out, for if you do, and your losses are not heavy (and ordinarily they should not be over three to four per cent), you will have just a few over a carload when you ship the fat ones back.

CHAPTER IV

PROFITABLE SYSTEMS FOR FEEDING SHEEP

Limitation of our discussion to the most profitable systems.

It would be impossible to give details of all the different methods of feeding sheep that are practiced in the United States. Those systems, however, that are yielding the greatest net profit, and are developed to the extent that it is practical for others to try them, will be described in such a way that the description will form directions. For the farmer, this method or plan of discussion is essential if he desires to take up the work. For the student, it reduces the ideas expressed to a definite concrete system, easily grasped and retained. A plan or discussion that carries the idea of a system is more logical and easier to remember than a number of isolated facts.

SYSTEM I. A GREEN-FEED RATION, GROWN AS A CATCH CROP IN CORN AND PASTURED DOWN

Growing cowpeas and rape in the corn. Starting on the supposition that the days of late summer and early fall find the corn fields filled with a good growth of cowpeas and rape, let us consider the purchase of feeder sheep that will handle it most profitably. This is a lamb proposition, hence, under ordinary circumstances, not to be undertaken by the beginner. The type of lamb best adapted to this system is one weighing from about fifty to fifty-five pounds and not so very thin, for the feeding period only lasts for from

sixty to ninety days and not more than from twelve to twenty pounds' gain can be made. A Wyoming or an Idaho would be a good choice, for they reach the markets rather early and are of the proper weight. Purchase them so that they will reach the farm as soon as the catch crops have made a good growth, particularly the cowpeas, which, if possible, should have set some pods. This time will vary from the last half of August to the latter part of September. It is generally figured that a good growth of cowpeas and rape will fatten from seven to ten lambs per acre, the number depending primarily on the abundance of the growth, its maturity, and the number of pounds of gain put on the lambs. Let us figure on a forty-acre cornfield fattening a double deck, about three hundred head. Half the field has cowpeas growing in it and the other half, rape; a temporary fence divides the two. The cowpeas will be ruined after the first hard frost, so they are pastured first. This point must be kept in mind when buying the lambs, for they should always be purchased early enough to consume the cowpeas before a freeze.

Starting the lambs slowly on feed. As soon as the lambs are unloaded at the home station they will appear half starved and eagerly eat every blade of green growth they can find. Let this serve as a warning and do not turn them into the fields too soon, for such a move is sure to result in a severe loss. When the sheep reach home put them on a very short pasture and leave them there about twenty-four hours, being *sure* that an abundant supply of pure clean water and some salt are available. The second day they may be turned into a better pasture, or into the field of corn and peas, being careful that they do not scatter through the corn and get in such shape that it will be impossible to



A FIELD OF CORN AND COWPEAS

In this field an acre produced sixty bushels of corn and, in addition, enough cowpeas to fatten ten lambs

drive them out after they have eaten for two or three hours. The following day increase their time in the corn about an hour, and so on during succeeding days until the fifth or seventh, when they can be turned in and left. This is one of the most important points in this method of feeding, and carelessness or rush at this time will result in loss from bloat. The observant shepherd will notice, if possible, whether there are any backward lambs that are not taking hold of the peas very well at first; for if there are, the chances are good that they will bloat after they once get a taste of them and have a chance to eat all they want. Some sheep will graze the undergrowth clean as they go; others seem to prefer to run over the whole field and pick out the choice bits first and then clean up the leavings. If they can be induced to follow the first method, it is to be preferred. Some make them graze in this way by using a series of hurdles or temporary fencing that they move forward every few days. Sheep will continue to pick and work over the growth which they grazed first if allowed to do so until it is well cleaned up, but they should not be forced to it before being allowed a fresh patch, for under these conditions they will not fatten. If possible, always have a pasture that is accessible to the cornfield, so that the sheep may go back and forth at will. During very muddy weather there is apt to be some waste of feed, but it is not advisable to shut the lambs out of the field, for it is seldom that there is other green feed available, and to take them from it entirely would be apt to result in a shrinkage, and when turned back many would bloat.

Pasturing the cowpeas first, then the rape. It is planned to have the cowpeas cleaned up about the time of the first frost, generally from thirty to forty-five days after turning

the sheep into them, but this varies greatly, depending on how good a growth there was to start with and the number of sheep per acre that grazed it. From the cowpeas the sheep are turned into the rape, and to make sure that they will begin eating it without a setback it is advisable to give them a taste of it a few hours each day before all the cowpeas are gone, or perhaps better still have a sprinkling of it in the cowpea field. If the rape has made a satisfactory growth, it will furnish abundant feed for another thirty to forty-five days, and by that time the lambs should be fat. There is another chance for loss from bloat when changing from the peas to the rape, so the lambs should be watched carefully.

Lambs not apt to eat the corn. A question that always comes up in connection with this system of feeding is, Do the lambs eat the corn or break down the stalks? If the stalks are down badly when the lambs are turned in, or if the undergrowth gets scarce, there is a liability of the lambs' eating the corn, but under ordinary conditions they do not bother it. Here it might be well to quote a northern Missouri farmer who has fed sheep by this method since 1902. This is one of the best feeds he ever made. "In 1904 I purchased three hundred and thirteen head of lambs; there were some yearlings in the bunch, weighing seventy-nine pounds in Kansas City. They ate the undergrowth, which was very good indeed, in thirty-five acres of corn, and some of the ears, but not more than twenty-five bushels. In sixty days they were back in Kansas City weighing one hundred pounds." This example should not be taken as an average, but rather as showing the possibilities of the method. This man generally uses lambs alone, and makes a longer feed, but seldom receives such good gains.

A summary of System I. As the writer considers this method of feeding sheep the most profitable that he has ever studied, and as there will undoubtedly be a number of farmers who will wish to try it, there may be added a few additional points of interest and precaution.

1. Do not overstock the undergrowth, for this is apt to cause the lambs to eat the corn; and besides, fattening sheep must have an abundance of feed in a palatable form. If given the opportunity they will eat the catch crops clean, but they cannot be profitably forced to do it.

2. If the undergrowth gives out and the lambs are not fat, they cannot generally be profitably finished on corn, for a change from green forage to grain results in a setback that cannot be regained without an abnormally long and unprofitable feed. The following instance illustrates the point. The weights given are those taken in Denver when buying, and in St. Louis or Chicago when selling. The sheep were turned into a very excellent growth of cowpeas and rape, and gained as follows:

Oct. 1-9: received 5766 yearlings, weight $87\frac{1}{2}$ lb.

Nov. 8: 30 days' feed, 750 head sold, weight $97\frac{1}{2}$ lb., gain 10 lb.

Nov. 15: 40 days' feed, 1000 head sold, weight $98\frac{1}{2}$ lb., gain 11 lb.¹

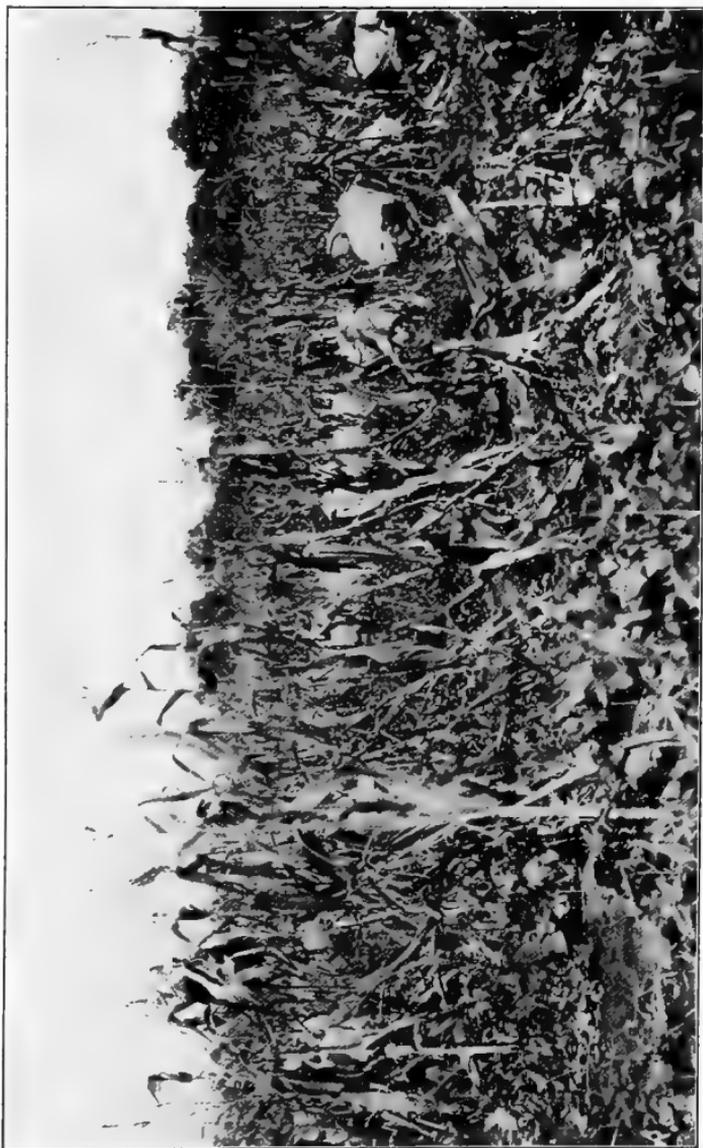
Nov. 20: 45 days' feed, 750 head sold, weight 100 lb., gain $12\frac{1}{2}$ lb.

Dec. 10: 60 days' feed, 800 head sold, weight $97\frac{1}{2}$ lb., gain 10 lb.

Dec. 20: 75 days' feed, 2000 head sold, weight 96 lb., gain $8\frac{1}{2}$ lb.

In this case the undergrowth gave out about the middle of November, and the feed from then on was mostly corn that the sheep gathered from the fields. Of course each time a shipment was made the tops were taken out, but in

¹ On November 15 there were a thousand head more that were as fat as those sold.



UNDER MOST CONDITIONS LAMBS WILL GRAZE THE UNDERGROWTH WITHOUT EATING THE CORN

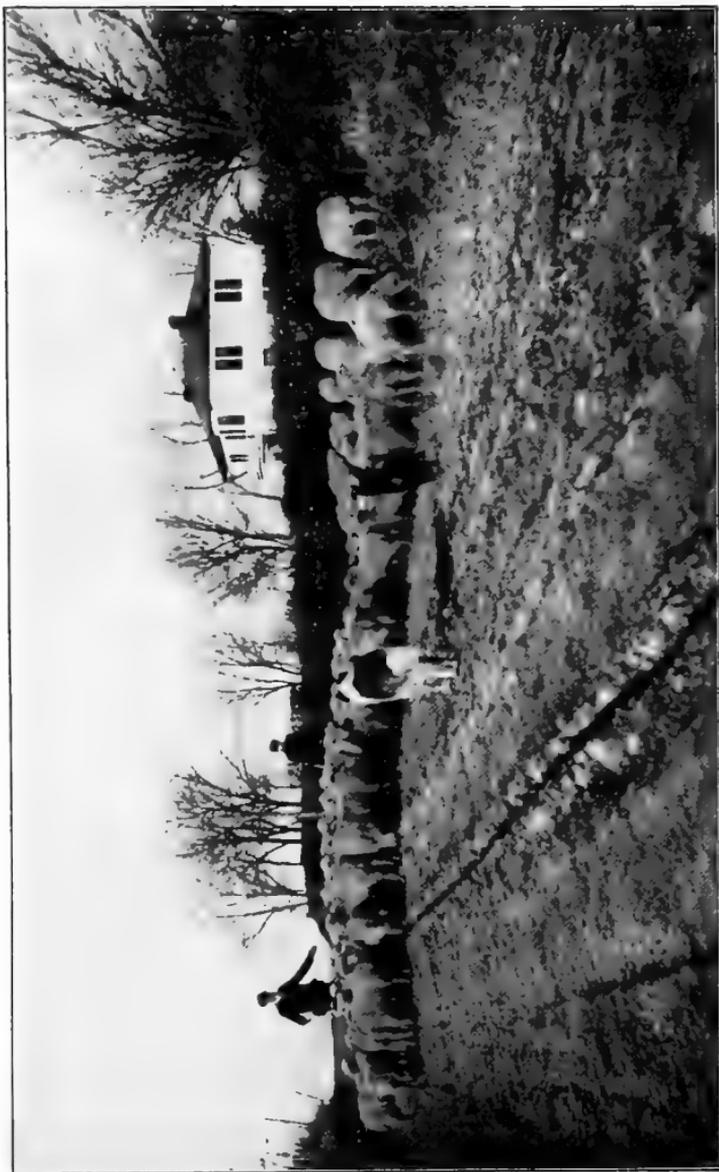
so large a band it is hardly probable that half were culls, as the weights might indicate; in fact they were not.

3. When buying, ship from the market in double decks, and if the rates are as satisfactory ship back in singles. This gives opportunity to market half the sheep as soon as fat, and there is quite a little difference in the rapidity with which those that remain fatten. The first ones are frequently ready from thirty to forty-five days before the last, and as the number is reduced at home those that remain do very much better. In reference to marketing fat sheep one large feeder said: "It is impossible for a feeder to buy, for instance, a thousand head of sheep, put them on feed at the same time, and then sell the thousand head in one shipment and make money on them. The reason for this is because some sheep fatten twice and three times as quickly as others, and when some of them get fat they should be sold regardless of the others. Sheep cannot be profitably held after they are fat."

4. The sheep should receive all the salt they want, but increases must be given gradually, for in some cases it acts as a laxative.

5. An abundance of pure water should be supplied in such a way that the sheep can reach it *without getting into the mud*, and if furnished in a trough it should be so arranged that it will be impossible for them to get into it.

6. Dogs are frequently very bothersome, the damage done in frightening and making the sheep restless often being greater than in the number killed. By having a number of good big bells on some of the sheep, dogs are sometimes kept away, as they seem to prefer to commit their depredations on the quiet, and an unusual clatter of bells will attract the attention of those about the farm.



DOGS ARE OFTEN A GREAT HELP, BUT ARE SELDOM USED IN DRIVING FAT SHEEP

7. It is sometimes necessary to yard the sheep at night on account of dogs. They should not be yarded unless it is absolutely necessary, but when kept up at night they should be turned out as early as possible in the morning, for at that time they do their best grazing.

8. Sheep fattened entirely on a green feed sell equally well on the market with grain-fed sheep, if equally fat when sold. Shrinkage is a little greater with the sheep that are fed green feeds.

SYSTEM II. PASTURING DOWN A FORAGE CROP GROWN BY ITSELF

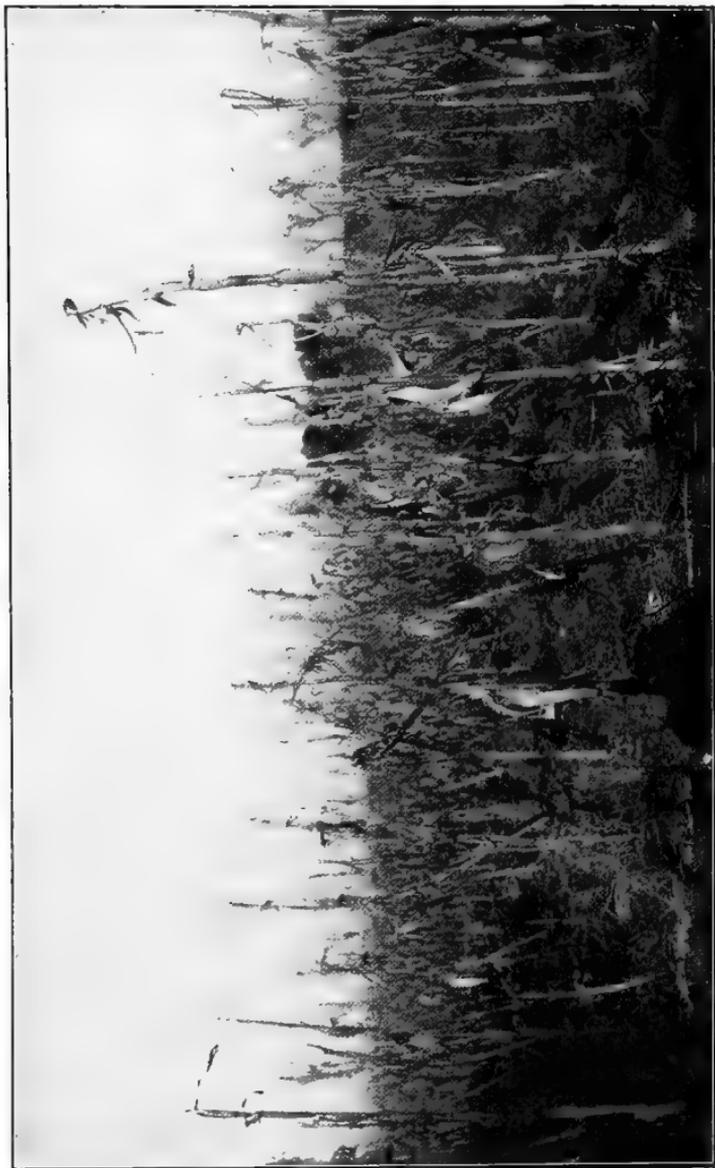
A system not widely practiced in the Middle West. In Colorado the pea-fed sheep are fattened on a crop grown by itself, the crop used being Canada field peas. Cowpeas, field peas, soy beans, and rape are the crops most commonly grown for this system. Lambs are generally used, and the feeding period is from sixty to a hundred and twenty days. The same precautions as were mentioned in System I should be observed in getting them onto feed. In fact, these precautions should always be taken, no matter what the feeding system may be. Hurdles or temporary fencing which allows the sheep to graze just a small portion each day are necessary with this method. The rate of pasturing and gains made may be based on those described in System I, but ordinarily more sheep per acre can be fattened and the gains are a little more satisfactory. Some of the reasons why Middle West farmers do not follow this method more extensively are because the weather conditions are apt to be wet and muddy during the feeding period, and the crop, cowpeas, that is best adapted to the system can be more profitably grown in the corn.

SYSTEM III. PASTURING DOWN CORN, USING A CATCH CROP, PASTURE, OR HAY FOR ROUGHNESS

Yearlings more satisfactory than lambs in corn grazing.

There are farmers who purchase their sheep in the fall, turn them into the cornfields, and in from seventy-five to one hundred and twenty days ship direct from the field to the market with a gain of from ten to fifteen pounds,—market weights both in and out. This system has many modifications that some say are essential to success, and the following account embodies the most important. In describing this method it is presupposed that the sheep are purchased for the purpose of consuming a field of corn, and it is desired to have them gather it. Either yearlings or wethers may be bought, but preferably yearlings weighing from about seventy-five to eighty pounds, or less if possible. It may be necessary to purchase Mexicans in order to get light weights, and this plan may be very satisfactory, especially after a year or two of experience with some other class. Make such arrangements that it will be convenient to have them arrive at any time from the latter part of September to the middle of November, the exact time depending on market prices, the available supply of sheep, and the condition of the cornfields. The longer the buying period may be extended, the greater the chance for being well pleased with the purchase, both in price and quality. If more than one carload is to be fed, the purchases may be made at different times whenever a bargain may be had, as it is not necessary to get them all at once. When they reach the farm give them the same course on short pasture as has been described. As soon as they have been in the cornfield for a few days an effort should be made to start them on

the grain. Break some of the stalks down, shell some of the kernels off an ear, and sprinkle a little salt on it. In other places shell the kernels from low-hanging ears and let them fall just beneath. It will not be long before the sheep are eating corn very nicely; in fact, after they once get a taste of it the danger begins, for they are then apt to overeat and founder. Use a watchful eye at this time, for some will be eating corn all right while others have not started, and when it is thought that the whole flock is safely on full feed a foundered sheep will be discovered. If after they get a good taste of corn some seem to be eating too much, — one of the first indications is seen in kernels that have been coughed up, — take them out for a little while, perhaps a quarter or half a day; but do not keep them away so long that when they are returned they will be very hungry, for they will then gorge themselves again. It is an excellent plan to have one field in which part of the corn has been shucked out, and when the sheep are turned back let them work through this scanty portion and get partly filled before they reach the best places. One large cornfield that was being very successfully grazed was arranged in this way: The portion nearest the barn, where the sheep were kept at night on account of wolves and dogs, had the best ears shucked out. Farther on the whole crop was left, and next to this there was a pasture with water in it. When the sheep left the barn lot in the morning they started in the field where they had to hunt and rustle for the corn. About noon they reached the good part, filled up, and then went on to the pasture where they got their water, drank, and lay down until about two o'clock. At that time they grazed in the pasture for an hour or so and then started back in the good part of the



HERE IT WAS PLANNED TO HAVE THE SHEEP CONSUME THE CORN AS WELL AS THE UNDERGROWTH
Note that many of the ears have been stripped of the grain and yet remain on an unbroken stalk

cornfield, but did not gorge themselves because they were pretty well filled from the morning feed and the pasture. They finished about dark in the thin picking and went to the lots for the night not uncomfortably stuffed with corn. Of course not every farm is so arranged that such a plan can be followed, but it gives a suggestion worth considering.

Not forcing the sheep to clean one field before a fresh one is given them. If practicable, divide the fields so that every ten to twenty days a new portion or a new field may be turned into. It is quite important that a fresh plot be reserved for the finishing at least. Leave the part that was pastured first accessible at all times, for the sheep will keep working back over it until it is well cleaned up; but do not force them to clean up one plot before they are given another. A common and serious mistake made by many is to think that one field must be completely cleaned out before another one is turned into. It is well to keep in mind that the sheep are being fattened and cannot be handled like stockers. Fattening sheep must have an abundance of the best.

An abundance of good roughness important for cornfield feeding. Roughness for cornfield-fed sheep is not furnished in sufficient quantities by the blades of corn and weeds, no matter how thick the weeds may be. Many farmers think that the sheep can pick enough waste stuff in the fields to give the rations a proper balance, but this is not so, and some other provision must be made. The different kinds of roughness for cornfield feeding, given in the order of their merits, may be named and described as follows:

Rape an excellent roughness for sheep. Rape can be obtained cheaper and it combines with corn more satisfactorily than any other roughness. Three to four pounds

of seed sown ahead of the last cultivation of the corn will generally make a very satisfactory growth by the time the corn is ready for the sheep in the fall. They will prefer to eat out the rape before they start on the corn, but if started on the rape slowly and taught to eat corn at the same time, they will combine the two feeds for themselves in a very satisfactory way. Rape or grass pasture is about the only succulent roughness that is practical to furnish, and the former ranks ahead of the latter. Ordinarily the rape does not last as long as the corn, and consequently some other roughness must be fed later.

An Iowa farmer, speaking of rape as a roughness for cornfield feeding, says: "About the middle of September, 1904, I turned fifteen hundred sheep, nine hundred yearlings, three hundred wethers, and three hundred ewes into a cornfield that had a very fine stand of rape in it. In one hundred days these sheep were *fat* and ready for market, and I found that they had consumed only one bushel of corn per head. This is the most corn that I ever saved with a rape crop. Without the rape a hundred days' feed for yearlings and wethers generally requires about three bushels of corn per head and from one hundred to two hundred pounds of hay."

Fall blue grass and corn an excellent combination. A blue-grass pasture or a clover and timothy meadow is the most common supplement used to furnish the roughness for cornfield feeding. If the grass has not been eaten down during the spring and summer, and if the fall growth is very good, then such a pasture will furnish sufficient and very satisfactory roughness. In fact, no piece of grass on the farm will pay better than one that is pastured by sheep in conjunction with a cornfield. Regarding the amount of

pasture that is required when handled in this way it is quite difficult to say, but in a rough way it may be figured that from six to ten hundred-pound sheep will require about the same amount of pasture as a mature beef animal.

Alfalfa to be used with care. In sections where alfalfa thrives, excellent results have been obtained by letting the sheep graze the alfalfa fields in conjunction with cornfields. In starting on the alfalfa, precautions must be taken, by beginning slowly, to guard against bloat. The alfalfa cannot be pastured too close without endangering the stand.

Good gains from leguminous hay and corn. Alfalfa or clover hay combine very well indeed with cornfield feeding. In sections where weather conditions will permit, the most satisfactory way of feeding it is to haul it to the cornfields and stack it, one load in a place. Around each stack set four sixteen-foot panels that are three or four feet high. The lower boards must be far enough apart to permit the sheep to put their heads through and eat. Two or three times a day an attendant should go to each stack and push the hay up to the panels so that the sheep can reach it. If the hay is fed in this way and the sheep harvest the corn from the field, one man can care for about five thousand head.

A nonleguminous roughness a poor feed for sheep. Prairie or timothy hay is never a satisfactory roughness for sheep. A large Kansas feeder comparing alfalfa and prairie hay says: "There were two bunches of lambs that I handled the same way in every respect except that one lot received alfalfa and the other prairie hay. On the alfalfa lot I made eight pounds of gain per head per month, while the prairie-hay lot gained five pounds per head per month." Although these results are not conclusive they show the relative value of these two kinds of hay for sheep feeding.



A BAND OF WESTERN LAMBS ON FEED ACCORDING TO SYSTEM IV; CORN IN TROUGHS AND BLUE-GRASS
PASTURE FOR ROUGHNESS

A summary of System III. The main points in cornfield feeding may be summarized as follows:

1. Yearlings and wethers will eat from one to three pounds of roughness per pound of grain under dry-lot conditions, and this amount should be available under field conditions. Of course during the early part of the season there may be an abundance of palatable feed found in fence corners, stubble fields, and the corn blades, but later there does not remain in the field much roughness that is satisfactory to a sheep; therefore it must be supplied in some other way.

2. Cornfield feeding is labor saving but is wasteful of feed. This statement does not mean that the system is wasteful from the standpoint of amount of grain not eaten or amount wasted, but rather from the fact that it takes more corn per pound of gain in the field than in the dry lot. A feeder who handles from four thousand to five thousand sheep each year, running some in the fields and feeding others in dry lots, gives these figures: "On a ninety-day feed in the field, a sheep that eats two bushels of corn gains about twenty-one pounds,¹ and in the lot this two bushels of corn will make twenty-seven pounds of gain." According to these figures it takes about twenty-eight per cent more corn for a pound of gain in the field than it does in a lot. This is explained by saying that the cornfield sheep roam about so much in getting their grain that it is impossible to secure the high finish that is generally made in the dry lot.

3. If cornfields are muddy the sheep will not clean up the grain as they go, but ordinarily will work back over it after it dries off; hence the first portions grazed should always be easily accessible.

¹ In the first case 5.33 pounds of grain made one pound of gain, and in the second case 4.14 pounds of grain made one pound of gain.



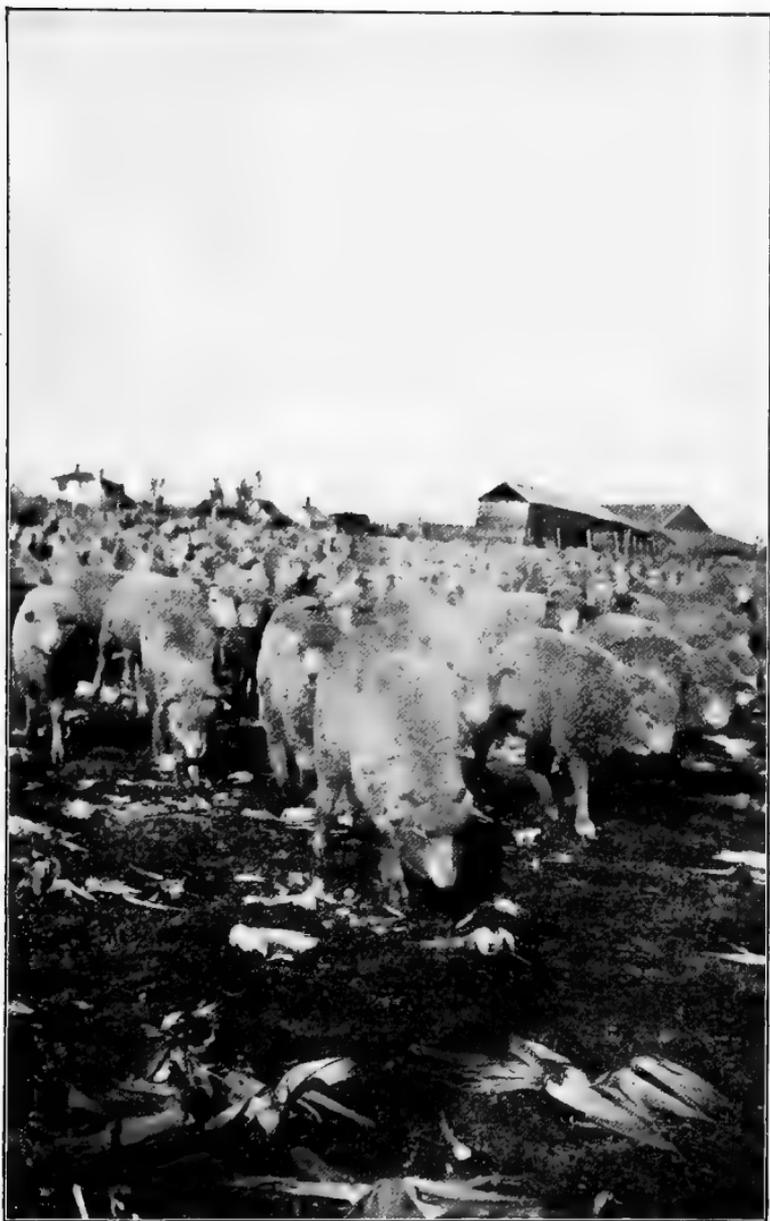
AN ORPHAN LAMB IS OFTEN THE FIRST LIVE STOCK OWNED BY THE BOY ON THE FARM

4. Many feeders say that it is much easier to get sheep onto full feed in the cornfield than in the lot. Those with whom this has proved to be the case take lots of time in getting their sheep onto feed, and supply roughness in abundance, either as hay or undergrowth. Too much emphasis cannot be laid on the necessity of taking a great deal of time to get the feeders on full feed. Many maintain that this is the most important phase of sheep feeding. After the sheep acquire a taste for the corn, and before they get on full feed, it is a good plan to let them fill on roughness each day before turning them into the cornfields. Wethers are especially apt to founder from overeating.

SYSTEM IV. FEEDING CORN ON A BLUE-GRASS PASTURE

Corn fed on blue grass saves labor. During the times of scarcity of farm labor the farmer's attention is readily attracted by any farm operation that permits a reduction of his labor forces. From this standpoint this system of sheep feeding recommends itself.

The fall growth of grass to be saved for pasture feeding. The main and fundamental requirements for feeding corn to sheep on pasture is a very excellent blue-grass sod. When the sheep — it is a yearling or wether proposition — reach the farm they are given the usual course on short pasture until well filled. Next they are turned into very good blue grass that has been saved especially for them. In about a week they can be given their first feed of shucked or snapped corn, thrown out on the sod in one of the cleanest places in the pasture. This first feed, a very small one, is generally given in the evening, and in order to start the sheep to eating the corn a few kernels may be shelled off at different places and a little salt sprinkled on them. In the



MEXICAN YEARLINGS RECEIVING CORN ON BLUE-GRASS PASTURE

morning again throw out fresh corn, regardless of whether the last is all eaten or not; but feed only a very little, for it is dangerous to let too much uneaten corn accumulate while starting. Take pains to string out each allowance over quite an area so that it will be impossible for a few greedy sheep to keep the others away and get it all themselves. From this time on feed twice a day, increasing very gradually until the sheep are on full feed, which takes from one to three weeks. Do not scatter corn twice in the same place unless compelled to do so. If it is raining or snowing during feeding time, it is probable that the sheep will not clean up the usual amount. Do not force them to eat it all before more is given, but feed at the customary time in the morning and at night, reducing the fresh allowance a little until the old is about consumed. Sheep do not like cold, wet feed, and it may appear that they are wasting a good deal, but in most cases they will return to corn that was refused when wet and clean it up fairly well when dry.

Corn thrown on the grass. It is a convenient method of feeding to go to the crib once a day, load enough corn for both feeds, drive out to the pasture, and scatter over the cleanest, driest places a long string of corn, feeding half the load in the morning and half at night. It takes from two to three bushels of corn per hundred head per feed when on full ration. Some prefer shock corn for feeding on the grass, stating that sheep do not roll the ears about as much in getting the corn off (which generally gets it dirty and makes it unpalatable) when the ears are on the stalks as they do when the shucked corn is fed. Gains from this system of feeding are not quite as satisfactory as those obtained in the cornfield, for more grain is wasted and more labor required. This method recommends itself more particularly to the

man who has an abundance of good pasture, the opportunity to purchase corn delivered to his crib, and a great deal of difficulty in getting satisfactory labor.

Corn fed in troughs. A modification of this system, and one that is more commonly practiced, is the feeding of the grain in troughs instead of throwing it on the grass. The important points in this system will be discussed when speaking of the dry-lot method, for it differs from it only in that the roughness is furnished as pasture instead of hay.

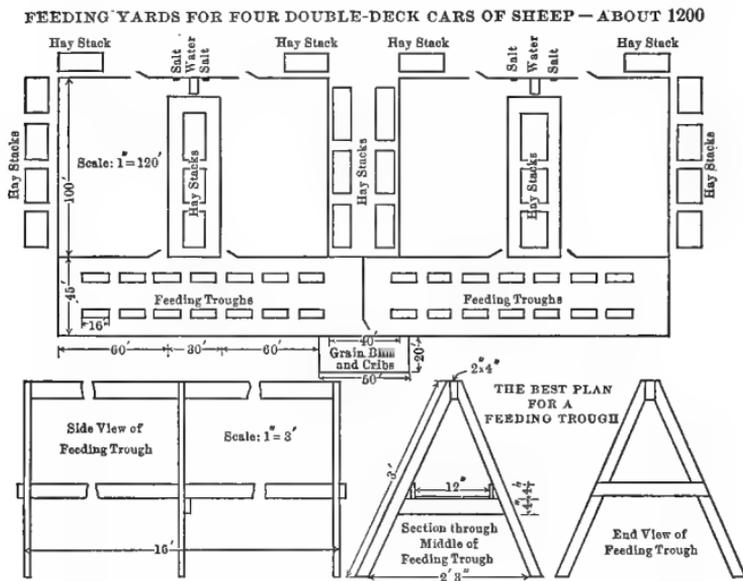
SYSTEM V. FEEDING IN THE DRY LOT, SHED, OR BARN

All methods of feeding previously discussed have dealt with a system that had to be carried on in the late summer, fall, or early winter. System V may be practiced any time from August to May.

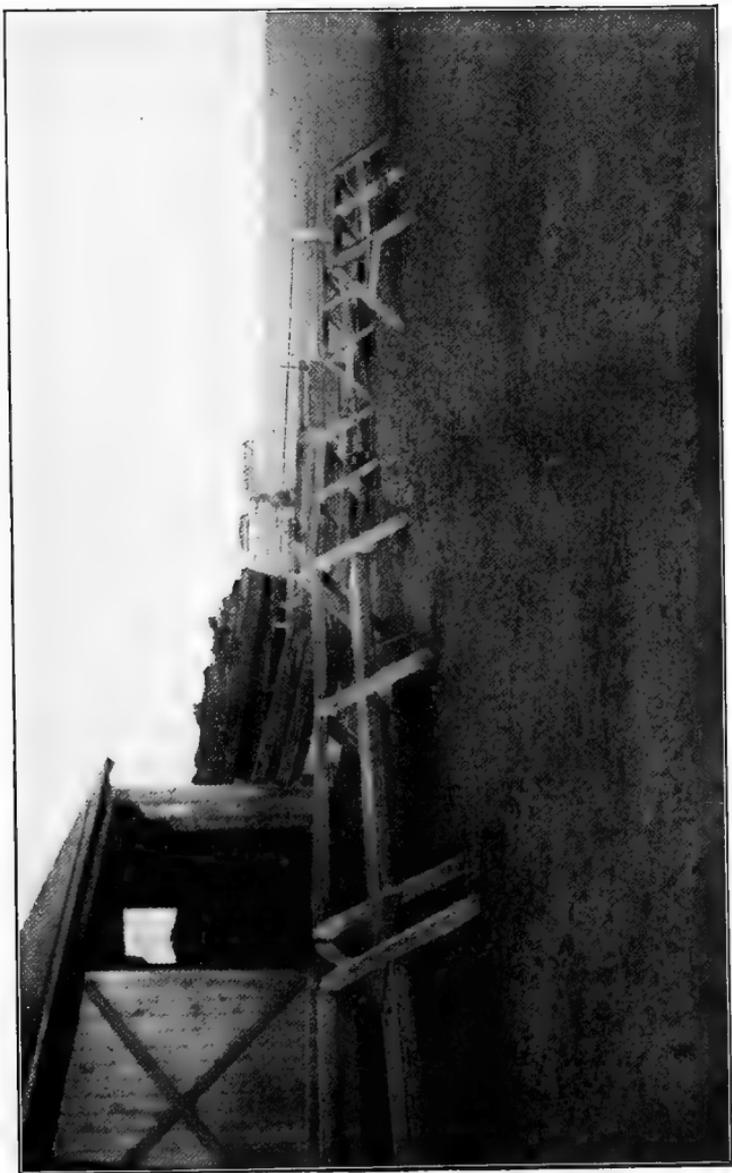
Where dry-lot feeding is practiced. The most extensive dry-lot feeding is done in Colorado and in western Kansas and Nebraska. In southern Michigan and Minnesota, and in northern Illinois and Ohio, a great many sheep are fed in barns and sheds. In sections of all these states, also in Iowa and Missouri, many feeders start their sheep in the field and finish in the lot, a practice that under many conditions can be recommended.

Dry-lot feeding inexpensive. One method that is simple, inexpensive, and that can be recommended where weather conditions are dry enough to permit it, is as follows. On page 62 is shown a plan of a feeding yard similar to one that a large feeder in Kansas has constructed. It should be built on a hillside, where first-class drainage can be obtained. Each lot will accommodate from three hundred to three hundred and twenty-five sheep. The capacity of the yard is based on hay room, each inclosure having about nine inches per animal.

Of course a sheep occupies more than nine inches of room while eating hay, but it is not necessary to furnish room for all to eat at the same time. The hay is stacked in the alleys and around the outside as indicated, and it is thrown direct from the stack to the panels. The panels are from three to three and a half feet high, with sufficient room between the



two lower boards for the sheep to put their heads through and eat. The large feeder who wishes to handle more sheep per pen than is possible by this arrangement may make the fence out of the sixteen-foot panels, setting each one at right angles to the other. This scheme doubles the hay-feeding room of a pen, but occupies little if any more area. When building a yard like the one shown here it is a good plan to make the ends of the yards and the end fences to the stack



A VIEW OF THE TROUGHS SHOWN IN THE DIAGRAM ON PAGE 62

lanes of temporary fencing, so that it will not be difficult to drive in and out with hay and manure. Water is supplied for two yards at a single trough, so constructed and protected that the sheep cannot get into it or in any way foul the water. It is very important that these troughs be kept sweet and clean. A box for salt is kept near the watering trough.

Arrangement of the feeding yard. The feeding yard is so arranged that one man can do the feeding and keep busy, for he can prepare the feed for one lot while another is eating. As outlined here, three hundred sheep eat at a time, provided fourteen sixteen-foot feeding bunks are used. This gives about sixteen inches of trough room for each sheep, while twelve are generally considered sufficient. Plans for building the troughs appear on page 62. The illustration on page 63 shows the troughs built and ready for use. From every standpoint this style of feeding bunk is the most satisfactory that the writer has ever seen. It contains the following essential points: it is hard to tip over; it has a broad, flat bottom which prevents the sheep from getting too large mouthfuls and eating too fast; sheep will not put their feet in it or stand in it; they cannot jump over it; they can eat from both sides; it is durable, light, convenient to handle, and cheap and easy to construct.

Self feeders. Corn cannot be successfully fed from self feeders unless mixed with something to lighten it, as screenings, cob, bran, or cut hay. Some of the largest feeding plants in the country use nothing but self feeders, but they are so constructed that it is necessary for a man to rake the feed down two or three times a day, and corn straight is never fed from them.

Increases in feed. Sheep that are to be yard- or barn-fed do not have to be started on pasture; in fact, it is generally

the best practice to place them at once in the feeding inclosure and start them on a light feed of roughness. The second or third day after they are filled on hay a small feed of grain may be given, and this very gradually increased to a full feed. Some very successful feeders take over three weeks to get their sheep on full feed. They increase the feed only one peck per hundred head, and each increase is tried three days before another is given. Perhaps the greatest difficulty lies in the fact that there are always a few backward sheep that have to be coaxed and pampered while the others seem to be going nicely. The increase of feed has to be based on the rate at which the most backward ones will stand it. One feeder says that a full feed is all a sheep will eat, save one handful.

Different kinds of feeds for sheep. The grain ration for dry-lot feeding is greatly varied. Beet pulp, peas, spelt, barley, oats, bran, oil meal, cottonseed meal, cotton hulls, screenings, and, last and best, corn are the principal feeds used.

Beet pulp. Beet pulp is of importance in a few regions in Colorado near the sugar factories. It is not a feed that can be shipped any great distance and fed at a profit.

Peas. Peas are a most excellent sheep feed and make a very desirable quality of mutton, but with the exception of the field-peas regions in Colorado they are not widely fed, on account of the high price they command.

The small grains. Spelt, barley, and oats are crops that can be grown in the Northwest quite successfully, and are very palatable sheep feeds. They are not as fattening as corn, but certain comparative feeding tests have shown that they have a very good feeding value. They are not the feeds for the corn-belt feeder, but deserve consideration in the regions where they are grown.

Value of concentrates. Bran, oil meal, and cottonseed products are thought by many good feeders to be necessary supplements when feeding corn, and are, without doubt, excellent feeds, — especially the first two, — but it is questionable if they can be fed with corn at a profit when good clover or alfalfa hay forms the roughness. With the non-leguminous hays they become much more necessary. The feeder who has to use timothy, prairie hay, or stover for a roughness can profitably feed oil meal — or cottonseed meal if he lives in the South and does not make too long a feed. If corn and a concentrate are fed together, the corn should be in such a form that the two can be mixed, for otherwise the sheep seem to prefer to eat up the concentrate first and then run around and look for more before they begin on the corn. This may appear as a minor point, but its value is shown by a large feeder who split a bunch of sheep, half getting corn straight and the other half receiving corn and a supplement; otherwise they were treated alike. At the end of a seventy-one day feed the corn-straight group had gained seven pounds more than the corn-and-supplement lot. The feeder's explanation for the poorer gains made by those receiving the supplement was similar to the one mentioned. He fed the concentrate with ear corn.

Screenings. A few years ago one could have said with safety that, in regard to quantity fed, screenings stood close to corn as a sheep feed. There were large feeding stations near the milling centers in Minnesota and Wisconsin, and some near Chicago, where thousands of sheep were fed annually the screenings that the big flour mills sold for three to four dollars a ton. Now most of these feeding plants are out of the business, and will probably never take it up again.

A few facts concerning screenings. A man who has been in sheep work in this country for twenty-five years, and is considered one of our best authorities on feeding and marketing sheep, is willing to go on record as follows: "What, do you ask, 'is the present condition of the sheep-feeding business?' Well, this industry is going backward fast. All of our big feeders have either gone bankrupt or gotten out of the business. We cannot get away from these facts. The sheep-feeding business is losing ground and losing it fast. Only a few years ago St. Paul fed from three hundred and fifty thousand to five hundred thousand sheep on screenings every winter; this year [1908] ten thousand will cover the number fed at this point. Winona, Minnesota, fed one hundred thousand; this year none. Wabasha, Minnesota, fifty thousand; this year five thousand. Chicago feed yards have a capacity for feeding two hundred and fifty thousand; eighty thousand were fed this year. In 1907, Colorado fed one million six hundred and sixty thousand; this year seven hundred and fifty thousand. Every big feeder from Colorado to St. Paul that stuck to it has gone broke. Why? St. Paul and Chicago points used to feed wheat screenings that were chiefly made at Minnesota and Wisconsin milling centers, that sold for three dollars and a half per ton and previous to this were dumped into the Mississippi River; now these screenings are quoted at fourteen to eighteen dollars per ton. The screenings that used to sell at three dollars and a half were good, but now they are principally dirt and chaff. A few mill owners and some brokers got control of nearly all the screenings, and they clean, reclean, mix and remix, put in a little sand, a little chaff, and some mustard seed, and then land Mr. Feeder. There is another man in the screening deal, the stock-food

manufacturer, who buys dust, chaff, oat hulls, and corn cobs, mixes molasses with it and sells it for fancy prices. Is it good? Well, maybe. The sheep business ought to be good; it is not. High-priced screenings that were worthless have ruined many a man, but the big losses have been caused by the markets going to pieces just when a great many sheep were ready and had to be marketed. It is up to the packer or butcher as to who put the big feeders out of business, for they are about all gone now. The packer says that he is losing money on sheep, and if you ask the butcher about it when you pay twenty and thirty cents a pound for lamb chops, he will tell you that it is the packer's fault; so there you are. I believe the butcher is most to blame, and I think he would sell more mutton and make more money if he sold at a smaller price per pound. One thing that is sure is the fact that at the time of year when the best lambs are marketed they sell the lowest. At any rate, it is a *sure thing that no one should feed sheep except the farmer who has his own feed*. The speculator has done it for the last twenty years but he cannot do it any more."

Corn is king. Corn is the standard grain for fattening sheep, and when combined with leguminous hay makes as satisfactory gains and produces as good a quality of mutton as can be desired.

Successful feeders differ widely in their opinion as to the best form in which to feed corn to sheep. Some say they would not have their corn shelled or ground for their sheep if it could be done for nothing, while others feed it shelled, and some feed it ground. The principle which governs this question is one that has to do with rapidity of eating. Sheep are inclined to gulp their grain too fast, so a good feeder tries to supply the grain in a form that will prevent this.



CRUSHING EAR CORN FOR SHEEP

The cob is broken to about pea size, and the grain just cracked. When corn is fed in this form the small pieces of cob prevent the sheep from eating the grain too rapidly

Ear corn. Undoubtedly ear corn is satisfactory for wethers, yearlings, ewes with good mouths, and, in some cases, lambs. Some grind the ear, cob and all, to a size that just breaks the kernels of corn and leaves the pieces of cob about the size of a pea. In order to get the corn without eating the cob the sheep have to eat slowly. Others grind corn and cob very fine, and although this meal can be eaten rapidly, it is so lightened with the cob that unsatisfactory results seldom follow. This is one of the most expensive forms in which to feed corn. Shelled corn from the hand of an experienced and skillful feeder is generally fed with safety. If it can be fed with cut hay it is very satisfactory. Corn meal, unless fed with screenings, cut hay, or some other feed to lighten it, is perhaps the most undesirable form of all.

Frequency of feeding. Some feeders say that twice a day is often enough to feed grain. An observant and intelligent Kansas feeder gives his experience on the subject as follows: "Two carloads of Mexican lambs, weighing forty-five pounds, were split into two lots and treated alike except in regard to the number of times a day they were fed corn. Each group received all the alfalfa hay they could eat and seven and one-half bushels of shelled corn per day. One lot was grained twice a day, and the other, three. At the end of a seventy-day feed those that were fed twice a day weighed sixty-three and a half pounds, the others seventy and a half pounds. Now I feed three times a day."

The proportion of grain to roughness. It is hard to state with any degree of satisfaction just the proper proportions and amounts of hay and grain that should be fed to fattening sheep. The average¹ of all the experimental data on

¹ These figures are from data compiled by C. G. Starr, an advanced student in the University of Missouri, 1906.

feeding sheep shows that it takes three hundred and fifty-four pounds of grain and five hundred and fourteen pounds of roughness to make one hundred pounds of gain. On either side of the average we find variations from six hundred and seven pounds of corn and three hundred and eighty-seven pounds of alfalfa to two hundred and twenty-nine pounds of corn and nine hundred and ninety-nine pounds of alfalfa to make one hundred pounds of gain. Also, one hundred and seventy pounds of corn and blue-grass or rape pasture have made one hundred pounds of gain. The rate of gain is from one fifth to one half of a pound per head per day.

These experimental figures show a very great variation, but their accuracy is borne out in practice. One large Illinois feeder says, "When my lambs are on full feed, I give three and one-half pounds of grain and one fourth of a pound of clover hay per head per day." This man feeds a low grade of screenings and corn meal. Another says, "I take a great deal of pains to feed all the hay I can, and I fatten my lambs on seven tenths of a pound of corn and two pounds of alfalfa hay per day." This is equivalent to two hundred and eighty pounds of corn and eight hundred pounds of hay per one hundred pounds of gain. The following statement is from a neighbor to the second man quoted: "I try to make my hay go as far as possible by cutting it and mixing it with the grain. I feed one pound of corn and one and one-fourth pounds of hay per head per day." This is equivalent to four hundred pounds of corn and five hundred pounds of hay per one hundred pounds of gain.

Adaptability of sheep under varying conditions. These figures should present no little encouragement to the sheep feeder, for they show the wonderful adaptability that sheep

have of profitably consuming feed in greatly varying proportions. This, then, solves the problem for the farmer who finds it wise to grow a large proportion of clover every year, but does not like to sell it from his farm; and equally well can the big corn raiser feed out his corn to a bunch of sheep, although he has to reduce the roughness fed to a minimum. Undoubtedly some of the cheapest and most rapid gains are made with a grain and pasture combination. If a field of rape, late clover, or fall blue grass is available to sheep that are on corn, some very satisfactory results may be expected.

Short feeding. A phase of System V, inasmuch as it is a barn-feeding proposition, that is practiced in southern Michigan, Wisconsin, and Ohio, depends on the failure of the original shipper to put his sheep on the market in a finished condition. Some of the feeders in the states mentioned keep a constant watch at the stockyards for sheep that have just been "warmed up" in a cornfield or shipped so far that the heavy shrink takes them out of the fat classes. When such lots are found these men, who often have to compete with the packers for their purchases, take the sheep out to their barns to be short-fed.

Sheep-feeding barns. These sheep-feeding barns are generally built to accommodate from one to a dozen carloads of sheep. The hayracks may be used as partitions between the pens. Almost any arrangement of racks that allows the sheep to eat without pulling the hay out is satisfactory, for in this way waste is reduced to a minimum. If self feeders are not used, feeding troughs may be placed in separate feeding pens or in the alleyway, and the sheep turned from their hay quarters to them at each feed. Water can be supplied at a trough built between two pens. From five to seven square feet of space should be allowed per animal. No pains can

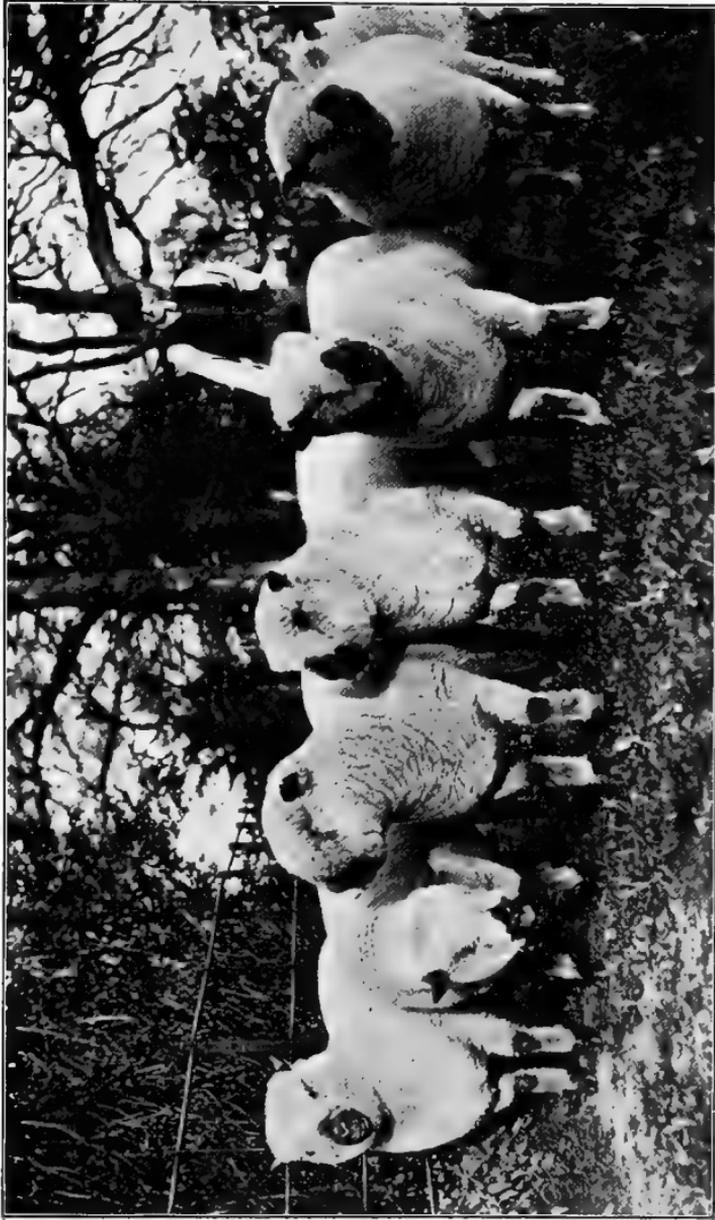


INTERIOR OF ONE OF THE LARGE BARNs AT A SHEEP-FEEDING STATION ADJACENT TO CHICAGO. Each pen, as shown on either side of the central alleyway, holds about one carload of sheep, allowing six square feet per animal. Note the open windows, which provide ventilation, — an essential to a good sheep barn

well be spared to get perfect *ventilation* in a sheep barn, as it is *absolutely essential to success*.

Effect of shearing. Nearly all the sheep that go to feed yards in late winter or early spring are sheared before being returned. It is a well-known fact among shepherds that much more rapid gains can be made on sheep after they are sheared than before. Sheep that have previously been doing poorly will frequently take on a new start and gain most excellently after their wool is clipped. The men who do early-spring feeding seldom have very much margin on their sheep, but, on account of their rapid gains and, in many cases, heavy clip of wool, it is not necessary.

The difference in price between shorn and unshorn sheep varies from fifty cents to one dollar, depending in most cases on the price of wool and the season of the year. Unshorn sheep during hot weather are not liked by the buyers, for they claim the sweating of the sheep makes the mutton soft. The profits from clipping very light shearers are sometimes questionable. If a feeder intends to feed from fall until spring, he should handle the light-wooled classes in the fall and the heavier-wooled ones in the spring. Some years there is relatively a great difference between woolled and clipped sheep, in favor of the clipped, and when such conditions exist, the feeder should take advantage of it. If it is impracticable to do the shearing at home, the sheep may be billed to one of the feeding yards near the markets, where they will be clipped and fed until the owner sees fit to market them. It is generally advisable to hold sheep a week or two after being clipped, in order that they may take on a fill and their wool grow a little, which rounds out their forms and gives them a more pleasing and symmetrical appearance on the market.



POSING. FROM THEIR PICTURES WE MAY STUDY SHEEP CHARACTER

Photograph by J. V. Henley

Feeding stations important factors. A phase of the sheep business that will probably become more important as the feeding of sheep goes from the hands of the professional to those of the unskilled farmer, is the feeding stations, that run a "sheep hotel for hungry boarders," so to speak. On nearly all the main lines of the railroads running into our large markets, particularly Chicago, there are feeding stations where those who have to ship sheep long distances, or farmers who have been unable to obtain that market topping finish, may stop and have the finishing touches added. These stations do all their feeding in large barns, and are prepared to handle almost any number from a single deck (one hundred and twenty-five) up to a good many thousand head. Charges for feed and care are made at the rate of so much per ton for the feed consumed, generally about two dollars' advance over market prices for hay and grain. For example, one large station had the following rates published from October to December, 1908, for transient feeds; a feed for from seventy to ninety days was two dollars less per ton of feed:

Screenings	\$18.00 per ton
Clover, timothy, or mixed hay	14.00 per ton
Alfalfa	19.00 per ton
Cracked or whole corn	32.00 per ton
Bedding	10.00 per ton
Oats75 per bu.

This rate included all charges, as loading, salt, water, and care.

CHAPTER V

GROWING THE FEED FOR FATTENING SHEEP

In a discussion of the farm management of feeder sheep it would seem that the production of the crops used would be as important a phase of the work as the purchase of the feeders or the methods of feeding. From this standpoint, and with a desire of presenting the subject as it confronts the farmer, this chapter is written.

GROWING THE CROPS FOR SYSTEM I, OR THE PASTURING OF A CATCH CROP GROWN IN CORN

Planting cowpeas in corn. It is presupposed that the reader has a general and satisfactory understanding of the best methods of growing corn, hence its culture will be discussed here only as it concerns the catch crop. When following Feeding System I, one half of the cornfields that are to be pastured should be sown to cowpeas and one half to rape. There are three accepted ways of planting cowpeas in corn. The first, considered as by far the best by men who have tried all three, is to plant the peas at the same time the corn is planted. When this method is followed it is essential to delay the corn planting until the ground has become warm in the spring, — in the latitude of north Missouri from the middle of May to the tenth of June. The peas may be put in with a cowpea attachment to the corn planter, this method giving a uniform stand of both corn and

peas. They should be planted at the rate of about fifteen to twenty pounds per acre, but, as the size of the peas varies so greatly, a better rule for the correct proportion of peas to corn is, to every kernel of corn plant one pea and a half. The varieties that have proved to be the most successful with this method of planting are the Black, Red Ripper, Clay, and Whippoorwill.

The second method of planting cowpeas in corn, and the one that is probably most widely recommended, is to drill from two to three rows of peas between the corn rows at the time of laying by the corn. This is usually done with a one-horse grain drill, the drilling taking the place of the last cultivation. About twenty to thirty pounds of seed per acre is generally sufficient. More than three rows of peas makes such a heavy growth that no pods will form; in fact there are fewer pods matured with this method, owing to lateness of planting, the shade of the corn, and frequently lack of moisture, than when the peas are planted according to the first method. The early-maturing varieties and those that are less inclined to vine, such as New Era or Extra Early Black Eye, should be planted at laying-by time.

The third method is mentioned not as a recommendation but on account of its being so widely practiced. It simply consists of broadcasting the peas ahead of the last cultivation, at the rate of from thirty to forty-five pounds per acre. This method is surest of failure during unfavorable years because a good many of the peas are not covered, and those that do start are generally so shallow-rooted that a series of dry days is apt to kill the young plants. The main point in favor of broadcasting the peas is its rapidity of sowing. It is customary for a man to ride a horse up and down about every third or fourth row and either scatter



COWPEAS NOT ONLY FURNISH CHEAP AND EXCELLENT LAMB FEED BUT ALSO AID MATERIALLY IN IMPROVING SOIL TEXTURE AND FERTILITY

the peas by hand or use a seeder that can be carried on his shoulder; a more even distribution can be obtained with the latter method. The same varieties should be sown when broadcasting as when drilling.

A practical farmer's experience. A northeast Missouri farmer, who plants cowpeas in three hundred and twenty acres of his corn, states: "I have tried putting peas in corn at planting time, drilling them in at laying-by time, and broadcasting at laying-by time, and I find that those planted with the corn are incomparably better at all times of the year than those planted in the other ways; drilling at laying-by time is much better than broadcasting. On July 30 one year I made a very careful examination of my cornfields to see what effect the peas were having on the corn, for I had an agreement with my renters that I would make good any decrease in the yield of corn that was caused by the peas. The results of my observations and the conclusion to which they have led are as follows: first, peas that were put in at corn-planting time had made vines seven and eight feet long; second, in September I pulled up a vine that had thirty-seven well-matured pods on it; third, I had one forty-acre field of corn that did not have peas in it, and it was the only corn on my farm that fired. All during the driest part of the year the soil remained moist where the cowpeas were, but became quite dry in the forty-acre field; fourth, the best corn and the heaviest growth of peas were invariably growing together; fifth, from the standpoint of the corn alone I believe it is advisable to plant cowpeas in it, and I do so whether I have any way of pasturing them or not." The planting of the corn and cowpeas at the same time, with a pea attachment to the planter, is undoubtedly the best method known at present.

Other ways of utilizing the cowpeas. The words of this extensive farmer sum up and state very clearly the opinions and results obtained by others all over the country. Many say they are confident that the corn is benefited enough by the presence of the cowpeas to pay to plant them even though the vines are not pastured by any kind of stock. Cowpeas are seldom, if ever, harvested by themselves when sown in the corn, so it is hard to estimate what the yield would be. In some cases in the South enough of the pods are gathered by hand to furnish the seed for the succeeding year's crop, but this is hardly practicable on a commercial scale. A very feasible and profitable practice is to cut the corn with the pea vines twined about it before the vines are killed by frost. Let the cowpeas and corn cure in the shock, and you then have some of the most palatable and valuable stover that can be obtained, and it is relished by all classes of stock.

Broadcasting rape. The part of the cornfield that is to be planted to rape should be sown at laying-by time. It is customary to broadcast the rape ahead of the last cultivation, using from three to four pounds per acre; however, one would be more certain of a stand if the seed were drilled instead of broadcasted. Ordinarily the rape does not make a very heavy growth until the corn has passed the height of its growing season, but from then until cold weather it does remarkably well. The rape makes its best growth in the fence corners and at the ends of the corn rows, where it receives more sunshine than is possible in the dense portions of the corn. Here it serves a very useful purpose in taking the place of the weeds. It may also be sown along the fence rows in the cornfields where the cowpeas were planted, and in this way the sheep that graze down the cowpeas will have

a chance to get started on the rape before they leave the peas, thus making the change from the peas to the rape less abrupt. The Dwarf Essex is the variety that is commonly used.

The value of rape from the practical standpoint. Concerning the views of practical farmers on the use and benefits of rape the following may be quoted. A north Missouri farmer says: "I sow three pounds of rapeseed in all my corn every year just to keep the ground from washing during the fall. I consider that it pays from this standpoint alone." An Iowa farmer remarks: "I have sown rape in my corn for many years and during favorable seasons it has averaged knee-high all over the field. From the standpoint of the corn alone I consider the rape beneficial, for I never had corn fire with rape in it and it prevents the ground from washing in the fall. As for the rape affecting the yield of the corn I cannot say, except that my system of corn, rape, and sheep has increased the yield of my corn in six years from an average of forty to sixty bushels per acre." These statements are representative of many others that might be given, all acclaiming its value and none stating that it ever affected either soil or main crop in any but a satisfactory way.

Returns from catch crops. Now that suggestions have been outlined for the growing of catch crops, we may justly ask what returns may be expected from their proper use. The cowpeas and rape should not be sown together, for the growth that starts from this mixture is too heavy to mature and hence neither do well. Sow the rape on the richest soil. The cowpeas should be utilized first, for they are killed by frost; then the rape may be turned onto and pastured until late fall or early winter. A good growth of one-half acre of cowpeas and one-half acre of rape will put from fifteen to twenty pounds of gain on from six to ten Western lambs in

from seventy to one hundred days. This amount of gain will in most cases fatten them. These results are obtained on the undergrowth alone, for the lambs will not eat the corn under ordinary conditions unless forced or taught to do it.

GROWING THE CROPS FOR SYSTEM II, OR THE PASTURING OF A FORAGE CROP GROWN BY ITSELF

Crops grown alone. Crops that are commonly grown by themselves, to be pastured down while green by fattening sheep, and in some cases by hogs, are rape, cowpeas, field peas, and, in the South, peanuts. The latter are essentially a hog crop, so their growth and use will not be discussed here.

Rape. It is a common and useful practice to sow rapeseed in grain when it is from two to four inches high, or with the spring grain crop. In either case it is broadcasted at the rate of from three to four pounds per acre and lightly harrowed. When the main crop is removed the rape comes on, and during favorable years makes a very excellent growth. In preparing the ground for a crop of rape great pains should be taken to make a very fine seed bed. Rapeseed is quite small, and if sown on lumpy, ill-prepared ground a large amount of it may never grow. Too much emphasis cannot be laid on the good results attending a well-made seed bed and the great possibility of a failure if the seed is planted on carelessly prepared ground. Rape may be sown from early spring to July. The common practice is to broadcast it and drag it in, but a very much better yield can be obtained by drilling it in rows with a small garden drill, using from three to four pounds per acre. The rows should be far enough apart to permit of cultivation, and each time the rape is pastured down the stock should be turned off and the cultivator started. If the

pasturing has not been too close and rains are at all favorable, the rape will make a new growth; and by thus caring for it a green pasture will be made available from spring until late fall, for this crop is not injured by frost.

Rape when grown alone. If the rape is pastured when it is the only crop occupying the ground, hurdles or some kind of temporary fencing should be used to keep the stock from running over the whole field, for in this way they waste no small amount. Trials at the University of Wisconsin show that an acre of rape has a feeding value equivalent to a ton and a quarter of grain when fed in conjunction with grain, and other tests show that a good growth will pasture from five to twelve lambs for from three to four months. Yields as high as fifty tons of the green crop per acre have been reported, but twenty to thirty tons is ordinarily considered a good yield. When turning any kind of stock on rape it must be done slowly, for there is more or less danger from bloat. This caution applies to all green crops that grow luxuriantly and in such a form that stock can eat large amounts in a short time.

Pasturing of crops sometimes an injury. On certain types of soil pasturing of crops during wet weather may tend to pack and thus injure it. It is a difficult matter, however, to prevent this when the stock is once on a full feed of the ration, for if they are removed, there is danger of founder when they are returned. It is generally the soils that are low in humus that most readily pack, but as the pasturing of crops increases the humus we see that a continuation of the practice that causes the trouble will ultimately cure it.

Utilization of cowpeas when grown alone. Detailed methods of growing cowpeas cannot well be given here, for such a discussion would occupy a publication by itself; in fact nearly

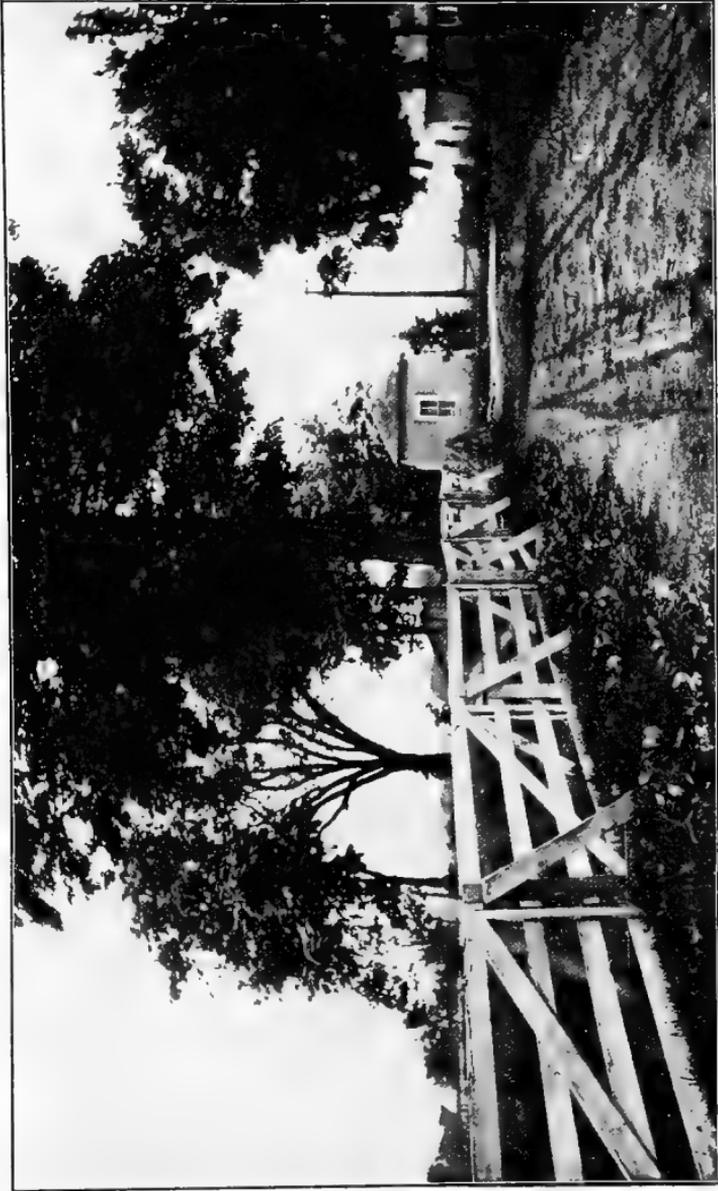


RAPE FURNISHES A CHEAP AND EFFICIENT ROUGHNESS WHEN FED IN CONJUNCTION WITH CORN

every state, as well as the Department of Agriculture, has publications on the subject. These suggestions are made on the supposition that the reader has a general understanding of the habits and needs of the plant, and wishes to know how it may be utilized as a forage crop.

Legumes. Cowpeas are an excellent crop for a sheep or hog pasture. They are a legume rich in protein, furnishing both grain and forage. They mature in from sixty to a hundred and twenty days, and can thus follow an early-maturing grain in many sections of the country. There is no crop that will show as marked beneficial results to the soil in so short a time as cowpeas, especially when turned under or pastured down. The growing of cowpeas on a compact, heavy soil generally improves the physical condition most remarkably, making it light, friable, and easily worked.

Ways of planting cowpeas. There are a number of ways in which cowpeas may be planted, but from all standpoints except labor the following methods should be followed. As soon as the ground becomes warm in the spring and the weather is well settled, — from the middle to the latter part of May in the latitude of central Missouri, — drill on a well-prepared seed bed from twenty to sixty pounds of seed per acre. If a grain drill is used, from forty-five to sixty pounds will be needed, which will plant them so close that they cannot be cultivated, and not very many pods will form. Where a fairly good proportion of seed and forage is desired, either drill with a corn planter, in rows of regulation width, about twenty pounds per acre, or double-row with a planter from thirty to forty-five pounds of seed per acre. In either case it will be necessary to cultivate them, but ordinarily they do not need attention until most of the corn cultivating is over.



SIXTEEN-FOOT WOODEN HURDLES, EASILY MADE AND MOVED

Their use is advisable when following System II

Use of hurdles in pasturing. The peas are ready to turn onto as soon as the first pods are well formed, but a better guide is to start pasturing them sufficiently early so that they will be consumed before frost. It is advisable to use hurdles or temporary fencing in order to keep the stock from roaming over the whole field. These hurdles may be moved forward every few days as the stock grazes down the new portions. Do not force fattening sheep to graze one portion clean before they are given a fresh allowance, for they will clean up each portion by working back over it day by day, but they must be allowed to do so from choice and not from compulsion. An acre of peas properly handled should make from fifteen to twenty pounds of gain on from ten to fifteen lambs, or about two hundred to two hundred and fifty pounds of mutton per acre. Hog raisers that pasture down peas say that an acre will feed five hogs forty-five to sixty days, making from one to two pounds of gain per day, depending on the age of the hog, or from two hundred and fifty to three hundred pounds of pork per acre. Some of the best varieties of cowpeas for sheep pasturing, and those that are also adapted to the middle latitudes, are the Blacks, Red Ripper, Groit, Whippoorwill, and New Era. The last named matures very early.

Soy beans. The day will come when the growth of soy beans will be greatly extended, for it is a most excellent legume for producing large amounts of highly nitrogenous seed. As a forage crop for hogs it will undoubtedly rank above cowpeas wherever it will make an equally successful growth. It thrives better in the northern latitudes, while cowpeas are a southern plant. Stock farmers should give more attention to the matter of home production of protein, and the soy bean is the plant that will solve the problem

where it will yield from fifteen to twenty bushels of seed per acre.

Field peas. Field peas, frequently called Canada peas, are adapted to the more northern latitudes in the corn belt and to the cool regions of the West. In the San Luis valley in Colorado, pea-fed lambs reach the height of perfection. This region has marketed for some time what is known as the Colorado pea-fed lamb, which as a class comes as near topping the market as any lamb that is sold.

The cultural methods necessary for the growth of field peas are similar to those employed with cowpeas except that they should be planted earlier. They are a legume and thus tend to build up the nitrogen content of the soil. They yield in seed from twenty to thirty bushels per acre, and it is figured that an acre supporting a good growth of peas will fatten from ten to fifteen lambs, making from two hundred and fifty to three hundred pounds of mutton. Methods of pasturing and handling the sheep are not unlike those used in the feeding of cowpeas, and general directions for one serve very well for the other.

GROWING THE CROPS FOR SYSTEM III, OR THE PASTURING DOWN OF CORN WITH HAY OR GREEN FEED FOR ROUGHNESS

How to secure roughness. When sheep are run in the cornfield for the purpose of pasturing out the grain it is essential to furnish some roughness other than what they can gather from the corn blades and weeds. Under these conditions roughness is generally supplied in the form of rape or cowpeas sown in the corn, alfalfa or blue-grass pasture, or hay fed in racks in the field. Directions for

sowing cowpeas and rape in the corn are given earlier in this chapter.

Western sheep in cornfields. When it is intended to have the sheep utilize the corn and forage during the same period, it is essential to start them on corn as soon as possible, for otherwise they will pasture out the undergrowth before they start on the grain. Wethers, yearlings, and in some cases a well-matured class of lambs are best adapted to cornfield grazing. They should be started slowly and given a taste of corn as soon as practicable. If they take to the corn too rapidly, it is best to leave them in the fields only a short time each day, the time being increased gradually until they are on full feed, when they can be given free access to the fields and they will then gather for themselves the proper balance between corn and forage; provided, of course, there is a sufficiency of both. Rape is more satisfactory than cowpeas when used in this way, for it is available as a feed over a much longer period.

Amount of corn necessary to fatten a sheep. It is generally estimated that it takes from two to four bushels of corn to fatten a sheep in a cornfield, the latter amount being required for a wether, but a farmer in Iowa says: "I fattened fifteen hundred sheep, yearlings and wethers, in a cornfield that contained a good growth of rape, sown at laying-by time at the rate of two and one-half pounds per acre, and they ate only about fifteen hundred bushels of corn. I consider that the rape saved at least two bushels of corn per head."

A catch crop as a saving of corn. A central Missouri farmer has the following to say about a bunch of Mexican yearlings: "One thousand four hundred and ninety-two yearlings reached my farm the middle of November weighing

seventy-four pounds. In fifty-three days they were in St. Louis weighing eighty-seven pounds, selling on a margin of one dollar and seventy-five cents. They ate the corn out of a thirty-acre field, which yielded fifty bushels per acre, and had rape sown in ten acres of it; they also



THE HEAD OF A YEARLING RAM

Showing type, strength, and masculinity, — important characteristics for a successful sire. (Photograph by J. V. Henley)

had access to a small meadow.” From this we can see that these sheep made thirteen pounds of gain on one bushel of corn and the roughness in a small meadow and ten acres of rape in the corn. These examples show the value of furnishing roughness to cornfield-fed sheep in the form of rape.

Alfalfa profitably utilized. Alfalfa is a crop that requires very particular cultural methods, and in this brief discussion it does not seem advisable to give detailed directions for its growth and care. Suffice to say that it may be sown either in the spring or fall, seeding at the rate of sixteen pounds per acre on a very finely prepared seedbed. The soil must be sweet and well drained and contain a fairly good supply of humus. It is not wise to remove the hay or to use the first year's growth for pasture. It is generally supposed that alfalfa pasture will cause bloat in cattle and sheep. This idea is true if stock is allowed free access to the crop when it is green and succulent, and is not accustomed to a full feed of the pasture very gradually. If allowed to, sheep will eat alfalfa down to the crowns and do it permanent injury.

A Kansas farmer who feeds extensively says: "I use the late growth of alfalfa for sheep pasture and never have any bad results. I use extreme care in turning sheep on, leaving them only a short time at first and increasing very slowly. I have neighbors who have had bad results with pasturing alfalfa, but I think it is due to carelessness in turning on. Alfalfa pasture, in conjunction with cornfield feeding, gives me the best results I ever get. I fill my sheep on hay when I first get them home, then gradually work them onto a full allowance of pasture, and from this to the cornfield. The corn and alfalfa fields are so arranged that the sheep have free access to both when on full feed. I never get bad results with this method when I make the different changes slowly."

Blue grass and corn. It is a very common practice to use a blue-grass pasture for roughness in conjunction with cornfield feeding of sheep. This practice is wholly commendable, and results are generally satisfactory provided there is an



SHEEP LIKE A VARIETY OF FEEDS

These lambs were on a full feed of corn and blue grass, but ate generously from this stack of clover and timothy hay

abundance of grass. Pastures that are not to be used in this way should have the entire fall growth left for the sheep, and in some cases the spring growth as well. It is claimed by many that horses and cattle should be pastured with sheep, for it is said that the large animals eat the coarser grasses and leave the young and tender for the sheep. When blue-grass pastures furnish the roughness for cornfield feeding, the sheep should be given free access to the pastures at all times. In some cases old meadows will be quite as satisfactory as blue grass.

What has been said here in reference to pastures applies equally well to the handling of pastures in conjunction with Feeding System IV, where corn is fed on blue grass.

When hay is to be fed. It is a common mistake among beginners to think that the sheep can gather all the roughness they need, as well as the grain, from the ordinary cornfield. If it seems impracticable to balance the ration with roughness in any of the ways previously mentioned in this chapter, then hay must be supplied. Alfalfa or clover is first choice at all times and almost essential with lambs. Older sheep can handle cane, prairie, or timothy hay, but these feeds should not be used unless no better are available. From one to one and one-half pounds of roughness per pound of grain is about the proportion in which sheep consume feed.

Instead of giving the theoretical benefits to the land from pasturing down corn, let us see what those who have had some experience with the practice say.

Results following cornfield feeding of sheep. An Iowa farmer reports: "I have pastured down the corn in one of my fields for three years, and this year the yield is sixty-seven bushels per acre, which is a good deal above my old



A CARLOAD OF LAMBS WHICH WERE PURCHASED FOR SIX DOLLARS AND FORTY CENTS AND SOLD FOR SIX DOLLARS AND THIRTY-FIVE CENTS PER HUNDREDWEIGHT
They were fattened in this field of corn and cowpeas, and, notwithstanding the adverse market conditions, made over fifty dollars net

average." Another says: "I bought this farm six years ago and my practice has been to pasture down most of my corn each year with sheep. My first yields were about forty bushels per acre; now I average from fifty to sixty. My neighbors still get about the same yields that I used to."

A Kansas farmer says: "I have cornfields where I have pastured down my corn with sheep for eight years. When I started this practice I received from thirty-five to forty bushels of corn per acre, and now my average on the same land runs from sixty-five to eighty-five. The fields that have not been pasture still yield around forty bushels per acre. One of the poorest farms in our neighborhood has been made one of the most productive by pasturing down corn with sheep."

A Missouri farmer gives his experience as follows: "Part of my farm is very old, and I have one field that I know has been cropped for thirty-five years. At no time previous to five years ago, when I started pasturing my corn down with sheep, could I get more than thirty-five bushels of corn per acre on this land, but since that time I have harvested sixty-five bushels per acre from it. I have had yields increased from five to ten bushels per acre in a single year following the pasturing down of corn with sheep." One who has used catch crops, corn, and sheep for a number of years says: "I settled on this farm, one hundred and sixty acres of it, in 1892, paying seventeen dollars and fifty cents per acre, a price that my neighbors thought exorbitant. The first crops that I planted did not grow high enough to cut with a binder, so I thought my first step was to improve the soil; consequently I seeded down my fields and fed cattle on them. In 1902 I tried another crop, corn, in which I broadcasted

ahead of the last cultivation, cowpeas and rape. In the fall I bought Western lambs and fattened them in the fields. Ever since that time I have been continuing the practice, and I believe it is largely responsible for what I have at present. There are now three hundred and sixty acres in my farm, worth fifty dollars per acre. On fields that



BOYS AND LAMBS A GOOD COMBINATION

The children can fill an important place in the raising of orphan lambs

once produced little more than nothing I have since raised from sixty to ninety bushels of corn that was good enough to win at the state corn show, and the annual production of my farm amounts to about five thousand dollars."

Pasturing of crops a fundamental practice. The foregoing statements tell in as convincing a way as possible what some of the actual results from grazing down corn have been. Many other farmers have testified in as strong terms as those

quoted regarding the remarkable results following these methods. It is quite universally conceded by leading agricultural men of to-day that the systematic pasturing of crops is steadily increasing among our most progressive farmers. There is no one farm practice that strikes as directly at the very heart of the solution of two of our most important farm problems as does this practice. It at once relieves the *farm-labor* situation and looks surely to the *maintaining of soil fertility*. It goes farther; it supplies what has been so aptly called the soil key, humus. Some soil chemists tell us that soil fertility can be kept up by the use of commercial fertilizers, and the humus supply maintained by turning under green crops. Dean F. B. Mumford, of the Missouri Agricultural College, has said, "I consider it an economic crime to plow under crops to maintain soil humus and fertility." His point is well taken, for, when crops are properly pastured, the needs of the soil are amply considered, and in most cases there is realized, in addition, a direct financial return. The principles at the base of the system are sound; the practice is profitable, it is permanent, it builds for posterity, and it gives promise of a profitable agriculture for our boys and girls.

CHAPTER VI

MARKETING THE FAT SHEEP

We have thus far given our attention to the purchase and feeding of the sheep. We have found that success does not depend upon any one point, but upon the doing of many essentials in the best, most careful, and painstaking way. We now come to a phase of the work that, as a rule, few know little about. The marketing of fat sheep is of no less importance than the finishing of them, so it is well that we weigh carefully the words of those who have done much in solving these problems.

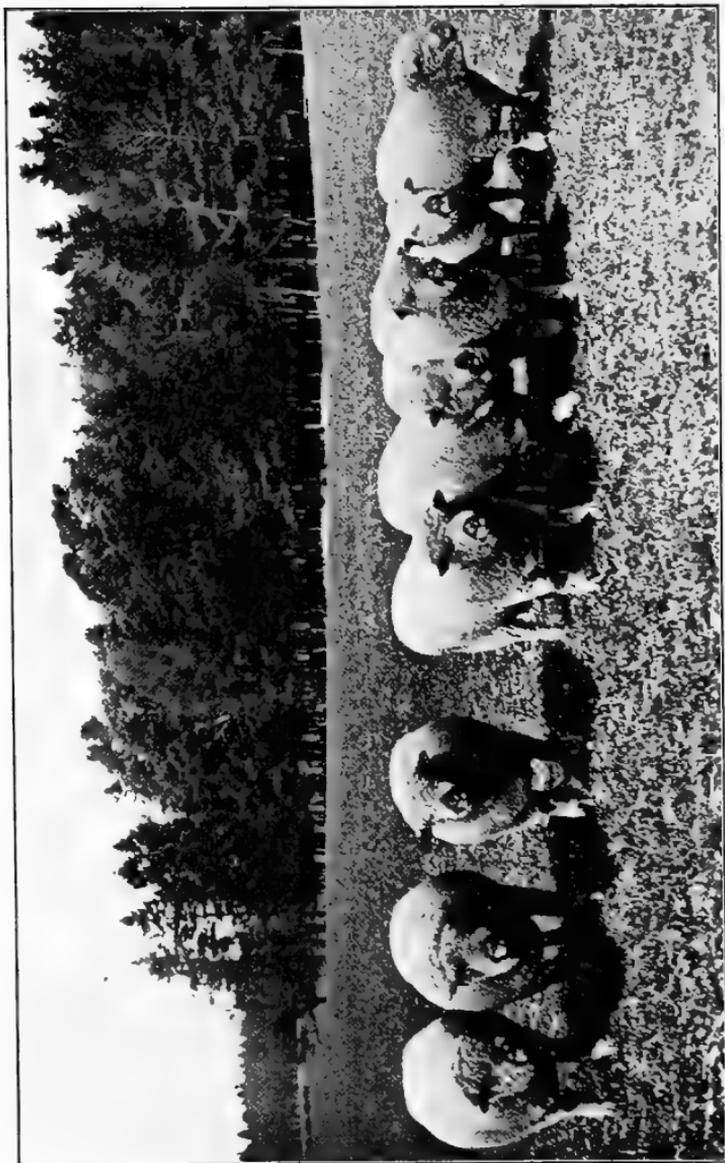
Profitable marketing. A large number of men who are in a position to answer the question, What are some of the most common mistakes made by inexperienced sheep feeders, have told me that one of the most common mistakes is the failure to market the sheep *fat*. The truth of this statement is only too apparent to those who are in a position to observe; but it would be folly to contend that every fed sheep that goes to market in a condition that will permit another feed, is marketed by the first feeder at a loss, for this is not always the case. Many Middle West farmers buy their sheep early in the fall, run them in the stubble fields, in the cornfields, and on the aftermath of their meadows, make from five to twelve pounds of gain in about sixty days, and then ship to market with from twenty-five to fifty cents per head profit. Such a farmer figures that his sheep have consumed nothing but waste, and all that he receives for them over the actual cash outlay is

clear profit, so he is content to market them "just warmed up," and to let some other feeder add the finish. Both parties to such a deal make money and both are satisfied. However, if there is still a margin of profit on the sheep when the first feeder lets them go, — especially one large enough to justify all the necessary freight bills and the buying and selling commissions, — why cannot the first man do the finishing? He may answer: I do not know how to finish sheep. I have no shelter for late fall and winter feeding, and it is essential in my part of the country. I feed cattle and hogs with the corn I grow and do not have enough for both. All very good reasons, but can we not answer: If feeding and finishing sheep is a profitable business, cannot the one who grows the feed well afford to learn the art? We learn by doing. If the buyer of half-finished sheep finds it profitable to build large barns in which to feed, cannot the Middle West farmer do it with equal profit? The experience of thousands of successful feeders would indicate that he can. If sheep will produce on a given amount of hay and grain more pounds of gain than will cattle, — and it is a proved fact that they will, — and the feeding margin averages about the same for sheep as for cattle, why not feed the corn to sheep instead of to cattle? Cattle are seldom fed without hogs to follow, and from the latter the profit most generally comes. No one ever heard a sheep feeder say that the only money he made from feeding sheep came from hogs; for it is not necessary to look to another animal for the profits on the grain that sheep consume.

The foregoing applies to the man who markets half-finished sheep, knows it, and still argues that he cannot afford to do otherwise. For the one who wishes to make the profits of both the starter and the finisher, and for the

one who does not wish to acknowledge, by turning the task over to some one else, his inability to complete a task that he has begun, another word may be added.

Ways of determining condition. Unquestionably it is difficult for a person not used to handling sheep to tell when they are fat. It is probable that the same person would have no trouble at all in picking out a finished hog or steer, but the degree of fatness of a sheep cannot be told by sight alone, for a coating of wool is between what can be seen and what really exists. The market buyers seem to satisfy themselves, regarding the finish of a sheep, by close observation and by placing the hands on the sheep's back just over the loin. A sharp and prominent backbone will not be favored by the killers' bids. In determining whether sheep are fat enough to ship or not, observe some of the following points: Note the wool along the backbone; in a fat sheep it does not split or part, but lies compact, as it does on the sides. The general form should appear well-rounded and symmetrical, without any prominent projections about the hips or shoulders. With the palm of the hand feel along the backbone, beginning at the shoulder and passing to the tail head or dock. As the hand rests on the sheep's back move it from side to side, which will aid in feeling the amount of flesh over the tops of the ribs. Width and thickness of loin can be determined next, and then one passage of the hand on the side over the ribs and a grasp of the leg will generally be sufficient to give a pretty good idea of the amount of flesh a sheep carries. Of course it would be impossible to handle each individual in a large band in this way, but a few that are representative of the flock can be carefully examined and a pretty good idea of the whole band will be obtained. As one becomes more



Photograph by J. V. Henley

IDEALS FOR THE FEEDER

Such backs as these sheep possess may well form the ideal for the feeder to keep in mind

expert less handling is necessary. If possible, handle some real fat sheep sometime and retain the impression received from them in mind and fingers, and then the comparisons may be made when the occasion arrives.

The proper weight for fat lambs. If there is an ideal weight for finished lambs, except hothouse lambs, that weight is between seventy-five and eighty pounds, and the nearer the feeder brings his fat lambs to this weight, the nearer he will come to topping the market. If they weigh a little less than this they will generally sell better than equally fat ones that run much over it. When buying feeder lambs in the fall, figure on the length of feed and the pounds of gain that you wish to make, subtract the pounds of gain from seventy-five or eighty, and let the remaining figure be your guide in selecting the weight of your feeders.

Weight of yearlings. The nearer a fat yearling comes to the ideal lamb weight, the nearer the top of the market he will sell. It is not always possible to buy yearlings light enough to finish at seventy-five to eighty pounds, but it may be remembered that they will be better sellers if they reach the market fat at a weight less, rather than more, than eighty-five pounds; for, as has been explained, a light yearling has a chance of becoming a lamb after he reaches the hooks of some of the packers.

Wethers. Wethers seldom if ever compete with lambs, so condition is more important than final weight in this class. The best and heaviest wethers fill the export trade, and weigh from a hundred and ten to a hundred and twenty-five pounds. A *very* fat wether will outsell a fat one, but it is questionable if the difference in price will repay the cost of the extra finish. This, however, depends somewhat on such varying factors as cost of feed, shipping rates, and market prices.

Suggestions for shipping sheep. When the sheep are ready for market it is to the seller's advantage to have them present as good an appearance as possible. If more than one carload has been fed, select those of uniform weight, flesh, and general form for each shipment. All tags should be clipped from around the tail, and the wool should be free from burs or mud. In handling the sheep about the farm, on the way to the cars, and while loading, take plenty of time and try to prevent anything that will frighten or worry them. Any one who handles feeding sheep can well afford to train a leader, for a well-trained lead sheep will do more to reduce shrinks and facilitate the handling of the feeders about the yards, scales, and cars than a good sheep dog or an extra man. If difficulty is experienced in driving a large number of sheep to and from the farm, it can generally be made easier by cutting out a small bunch and driving them ahead, and then the larger band will follow without any trouble.

Do not load cars too heavily; but, on the other hand, fill each one full enough to prevent the sheep from being seriously bumped or jammed about by the jerking of the train. There is little excuse for a heavy death loss on moderately long shipments in properly loaded cars.

Shrinkage during transportation. Shrinkage on fat sheep during transportation from the farm to market runs from four to eight pounds. A bad rain or snow storm, unusual delays, long shipments, poor watering facilities, and very fat sheep all tend to increase the amount of shrinkage, and in cases where two or more of these factors are combined it is possible that the pounds of shrinkage will be more than the amount mentioned. On the other hand a very short shipping distance under very good conditions may result in



A BUNCH OF FAT YEARLINGS JUST BEFORE BEING LOADED TO BE SHIPPED TO MARKET
They were recently clipped and hence show quite plainly a fairly well-finished form

less than four pounds of shrinkage. One thing that makes Western grass sheep so popular with the killers is the fact that they are well shrunk out when they reach the markets and dress a high per cent.

The sheep buyer. If possible, accompany your sheep to market and know before you start what they will have cost you when laid down ready for sale. This gives an intelligent and sound basis on which to accept or reject bids. It is a good plan to keep in touch with your commission firm and heed their advice as far as possible in regard to the exact time of shipments and other suggestions they may make. The feeder who thinks he can temporarily "fix" his sheep, or claim for them something they are not, and fool the old experienced buyers on our large markets, is sadly mistaken. Every sheep buyer for the packers has the records of his purchases (exact weight, per cent dressed, quality of mutton, and any other details that might be of value) sent to him each day. He studies and compares these records until he knows better than the feeder the real value of every load on which he bids. Such an experience, extended over a good many years, prepares a man to meet pretty severe competition; and the feeder who thinks, for instance, that the burs in his sheep are there to his advantage (for he may argue, "They weigh just that much more and burs do not hurt the mutton") will do well to remember that the man who bids on them has, in all probability, bought thousands of burry sheep and knows to a nicety what actual deduction must be made, and, after surveying the conditions, also figures about how much extra he can deduct on the mere fact that the sheep are burry at all. This same principle works when he finds a few taggy culls or heavy-pelted sheep mixed with an otherwise good shipment. When a buyer demands a cut before

on the market with three hundred eighty-five-pound lambs, totaling twenty-five thousand five hundred pounds, and are offered a flat bid of seven cents, which you refuse. Then comes a bid of eight cents for the one hundred tops and six and a quarter cents for the ends. If the tops weigh nine thousand pounds, they bring seven hundred and twenty dollars, the others one thousand and thirty-one dollars and twenty-five cents, or a total of one thousand seven hundred and fifty-one dollars, and you may be sure that the buyer has figured, before he makes the offer, that if you accept he will be in the neighborhood of thirty dollars to the good. Even six and three-quarter cents for the ends and eight for the tops is better from the buyer's standpoint than seven and a quarter flat, and it is only forty-eight dollars and seventy-five cents more than the original seven-cent bid.

Points to watch while on the market. Another point that sometimes confronts a man while on the market occurs as follows: He arrives a little late in the day with one thousand head of lambs. Bidders are not very active, and he thinks he can afford to hold over until the next day rather than take the bid offered. Every buyer that enters his pens has to feel his sheep, walk among them, and stir them up; and in some cases the same buyer makes three or four visits, the last one or two being made in the afternoon while the owner is uptown, and each time it seems necessary to thoroughly arouse every sheep. The next morning prices are no better and the feeder feels satisfied with the original bid. If all the careful examining of the day before and the extra time in the pens has caused only half a pound of shrinkage per head, it amounts to five hundred pounds on

the whole band, enough at seven cents a pound to pay the buyer for his trouble.

Experience necessary for successful marketing. These little points are mentioned simply to put the feeder on his guard and to set him thinking. Do not imagine from this that all the market buyers employ questionable means in purchasing sheep, but do think and realize that you are dealing with a class of men who, in all probability, know more about buying sheep on the market than you do about selling, and the chances are that any means of deception you may try will react to your own harm. There are tricks in every trade, and market circles are not without their share.

CHAPTER VII

RAISING LAMBS FOR AN EARLY MARKET

Hints to the sheep raiser. This book is intended primarily for the feeder of sheep, and not for the raiser or breeder; but there is a phase of flock management that is of so much importance to the corn-belt farmer that it seems to be worthy of a place here. It is not a new idea, for it is practiced in rather a desultory way in many places; but the following suggestions, which are based on successful practices, are given for the betterment of the sheep-breeding interests in the Middle West. That there is need for such information is well known; in fact the sentiments of many breeders may be heard in the words of one of the best-informed sheep men in this country when he says: "The farmer who formerly raised lambs from native ewes now buys Western ewes, and finds that after a crop or two of lambs his Western ewes are as badly diseased as natives (eighty per cent of the native sheep are diseased). There must be something done; I believe the only thing is to sow forage crops every spring, and pasture them and not use old pastures. No class of men needs government assistance so much as native-sheep raisers. There should be something done to help them get rid of the various worm diseases. I think every sheep owner should be advised not to use the same pastures two seasons in succession."

The early-lamb business in the South. In Virginia, Tennessee, and Kentucky the systematic practice of raising lambs for an early market has reached a high development.



THE FIRST LESSON

Patience and perseverance will finally win, though the first lessons have to be forced upon the unwilling youngster

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Of course there are farmers here and there all over the Middle West that breed their ewes for early lambs, but the practice is not general or as well organized in any other section of the country as it is in the states mentioned. Let us notice the conditions, stock, and methods of these central



SOON THE LAMBS LEARN THE ADVANTAGES OF THE LITTLE EXTRAS AND EAGERLY SEEK THE WARM CONTENTS OF THE BOTTLE THE WISE SHEPHERD CARRIES

Southern farmers, and see to what extent their practices may be duplicated elsewhere.

Early pasturing possibilities. Climatic conditions in Tennessee and Kentucky are much milder than prevail throughout the greater part of the corn belt; but aside from comparatively mild winters Middle States possibilities for early-lamb raising are as favorable as those in the central South. Blue-grass and orchard-grass pastures are available

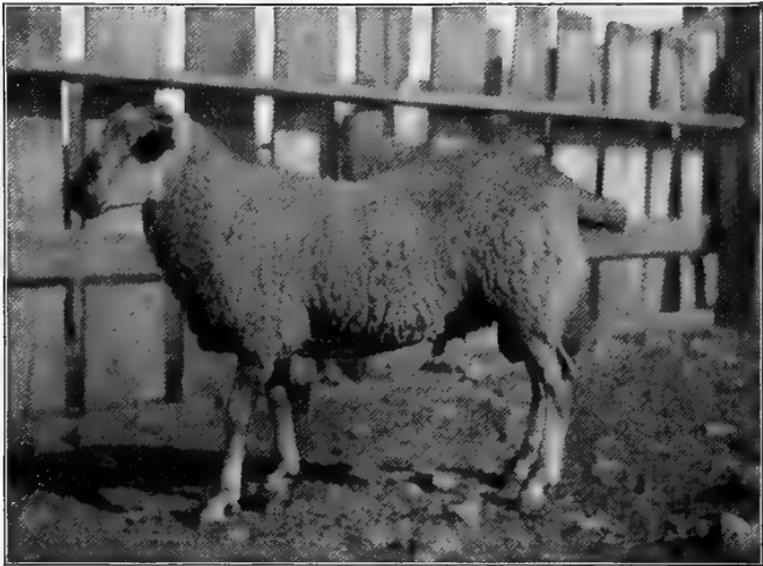
from nine to ten months of the year, and pure spring water is generally abundant. Stomach worms and scab are troublesome, and dogs are considered by most sheep men as the greatest drawback to the industry.

Inexpensive grade ewes in the South. The ewes from which the Kentucky and Tennessee lambs are raised average poorer in breeding, form, quality, condition, and wool than the grade Down ewes owned by the Middle States farmers. In the southern sections of this region most of the ewes come from the mountain district of Tennessee, or from Alabama or Georgia. They show coarse-wooled crossing, having white faces and legs and rather heavy bone, and are upstanding, with somewhat slender bodies and a scanty, inferior covering of coarse wool. Breeding ewes for the northern part of Kentucky are generally purchased at the Chicago, St. Louis, or Louisville stockyards. They are, for the most part, the grade Downs that Middle States farmers considered for some reason unprofitable and sent to market; but these Southern farmers do remarkably well with them for two or three years, at the end of which time they are fattened and returned and a new flock is purchased.

Southdown rams in the South. The great majority of the rams used in the South are Southdowns. A Southdown ram gets a lamb that will reach a weight of from sixty to seventy-five pounds sooner than a lamb of any other breed. They are noted for their ideal mutton form and quick-maturing tendencies. The lambs bred from this cross have dark faces and legs, short, low-down, compact bodies, and a medium Down wool—characteristics which make them favorites with the buyers and killers.

Handling the flocks. Let us suppose that a Tennessee or Kentucky farmer with one hundred and sixty acres of land,

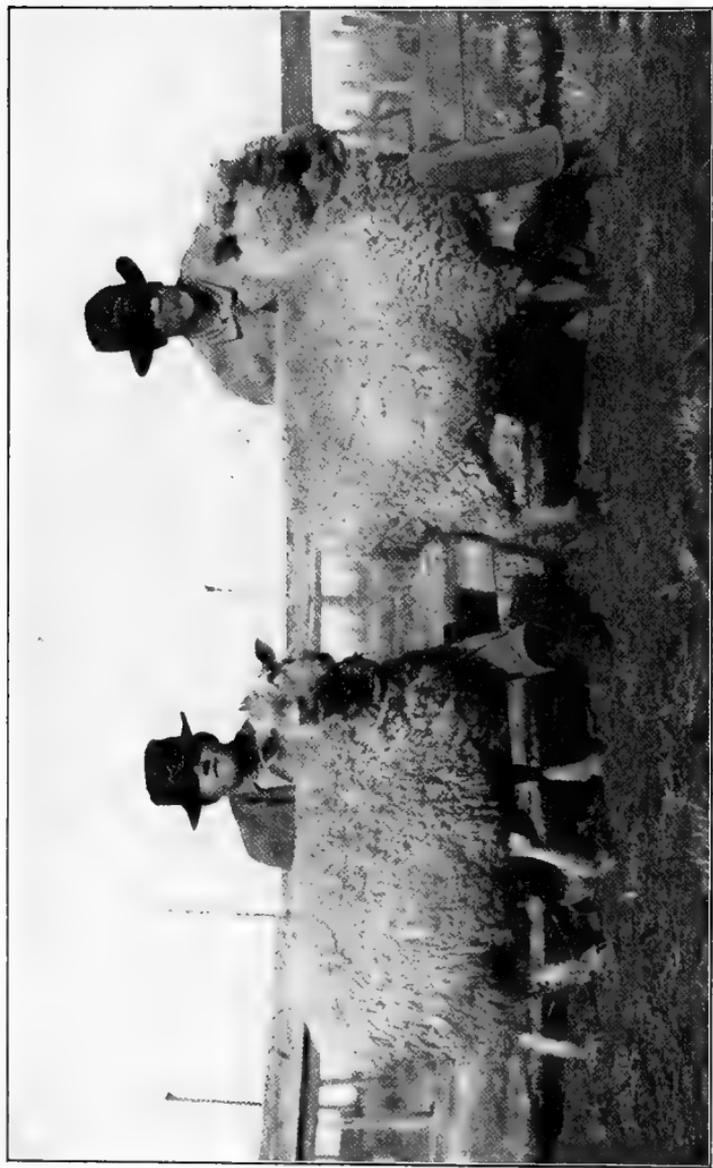
or more, has cleaned out his old flock and is ready to start a new one. During June or July he will purchase from the mountain or the Southern farmers a flock of about one hundred ewes, — it is seldom that more than one hundred and fifty ewes are kept on one farm, — paying from three dollars and fifty cents to five dollars a head for them. When he gets his sheep home he turns them into the poorest pastures



THE RAM IS HALF THE FLOCK

he has until August; then they are given the best grazing available, and the rams are turned in with them. This is called "flushing," and it is supposed to start the ewes to rutting and increase the per cent of lambs that will be dropped the next spring. The best flock managers leave the rams with the ewes about two months.

From August to January the ewes are kept on bluegrass pasture, and in a good many years it is not necessary



THE RESULTS OF ONE CROSS WITH A PURE-BRED SHROPSHIRE RAM ON A WESTERN EWE

Note the bare face and legs, light form, and coarse wool characteristics of the ewe. The seven-months-old lamb shows a deep body, compact form, and face and legs that are fairly well covered with wool

to furnish any grain during this time. However, it is safest to count on feeding the equivalent of from one to three pecks of corn per head during this time; some figure that the grain costs one dollar per head per year. Frequently no shelter is needed, but it is advisable to have an open shed to which the ewes can go on stormy days, especially



JUST A FEW HOURS OLD AND WEIGHS TWELVE POUNDS

during the lambing season. The first lambs are dropped about the first of January, and the last arrive not later than the end of March. On all days that are not too wet or snowy during lambing time the ewes should be left in the pasture.

During the early fall the best flock masters prepare a piece of ground for some winter grain, as oats, barley, wheat, or rye (the last two being the best), and by January, when

it becomes necessary to stimulate a strong flow of milk in the ewes, they are turned onto it. This is one of the chief requisites for the successful raising of early lambs, and it is one that can be duplicated by most of the farmers of the corn belt. One farmer says: "I can predict my success with



MONTH-OLD LAMBS OUT OF WESTERN EWES BY A PURE-BRED SHROPSHIRE RAM, RAISED UNDER FIELD CONDITIONS

Their weights, from left to right, were 32, 35, and 33 pounds. The first one is shown on page 115. The second and third are the most desirable market type

my lamb crop by the stand of winter wheat I have. There is nothing that makes the ewes give more milk and the lambs grow faster than wheat or rye pasture from January to the middle of March." In March, or the first part of April, the flock is turned onto orchard or blue-grass pasture and left there until the latter part of May or early in June, when the lambs are sold.



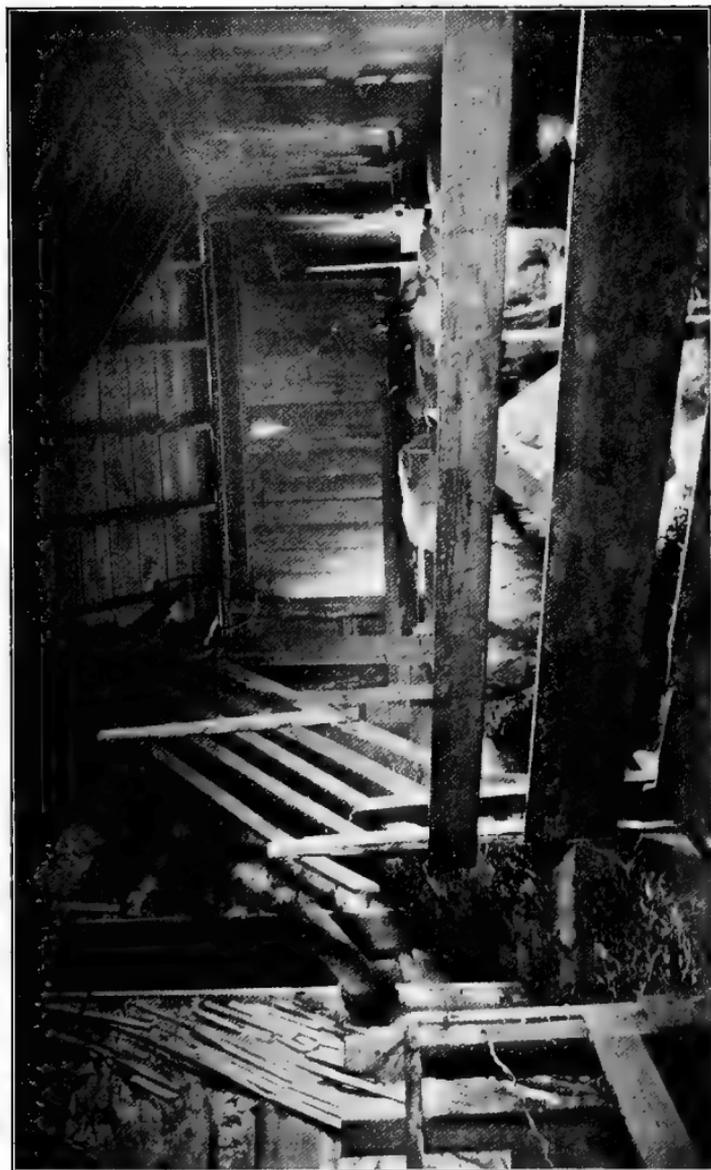
SUCCESSFUL SHEEP RAISING DOES NOT DEMAND EXPENSIVE BUILDINGS

Here a very satisfactory sheep barn has been made by building a shed on the four sides of an old log barn

It is not customary to castrate or dock the lambs that are sold before the last of June. Farmers of this region claim that a ram lamb will weigh from three to five pounds more than a ewe when five months old. If castrated, the five-months-old wether weighs just about the same as the ewe. Inasmuch as all the young stock is sold every year before the last of June, it may be said that these farmers are justified in not castrating the males, but it may be stated without question that it is unprofitable to leave them entire if they are kept until older than five months.

Selling the lambs. It seems hard for some sheep raisers to sell a well-matured grade ewe lamb that would make a fine start in grading up a flock, but when he considers that she will sell for five dollars at five months old and cannot be profitably bred until she is a yearling, he sees that he cannot afford to raise her. A mature ewe that will raise one and maybe two lambs can be purchased for less money than the lamb is worth when five months old.

In some sections the sheep owners have what they call a Lamb-and-Wool Club, which is organized for the purpose of selling sheep products. One of the most successful lamb clubs is run about as follows: There are some eighty-five members, owning near two thousand ewes. The officers consist of a president and secretary, the latter being ex-officio chairman of the executive committee, whose business it is to look after the sorting and selling of the lambs. The first Saturday in April the club has a general meeting, at which time each member tells approximately what number of lambs he will have that will weigh over fifty-five pounds on the day of shipment. In accordance with this estimate the secretary calls for sealed bids from all over the country, stating that the club will have its first delivery of fifteen



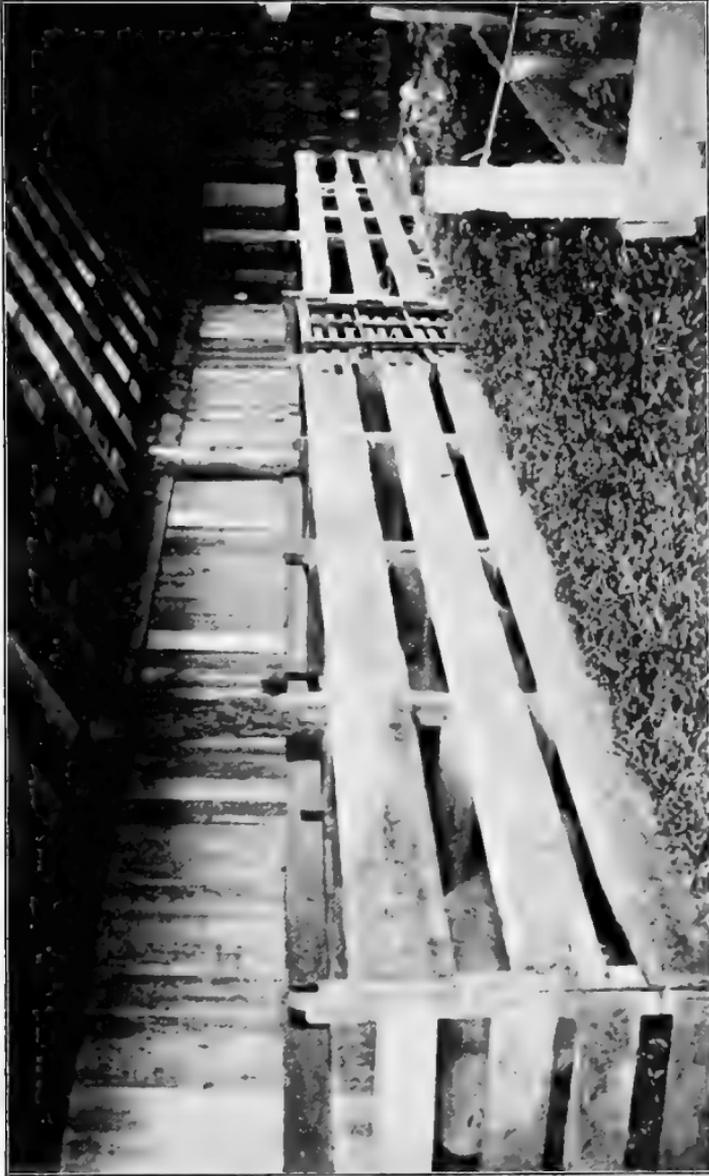
RUNWAY IN SHEEP BARN

In the interior of the barn shown on page 117 there is a runway connecting the first and second floors, which nearly doubles the housing capacity of the barn

hundred lambs ready the twenty-fifth of May, all to be of standard grade and averaging from seventy to seventy-five pounds in weight, with none lighter than fifty-five pounds. This number of lambs for sale at one place, all of a guaranteed weight and quality, brings out bids from the East, the West, and locally. Bidders know that only desirable lambs will be offered and that no trick or dishonest methods will be used by the club to deceive the buyer; for the club as a whole stands back of every sale. Such conditions very naturally call for the highest prices. The result generally is that these club lambs sell for from a cent to a cent and a half per pound higher than equally good lambs that are bargained for in small lots. In one instance, in 1909, lambs sold for five and three-quarters cents not seventy-five miles from a successful lamb club that received seven cents. Wool is sold on the same principle as are lambs. The executive committee of the club grades each lot that comes in, and places it in the first, second, or third class. The grading of the committee is based entirely on the amount of dirt, burs, and foreign matter that the wool carries, the first class being entirely free from all foreign material. The fact that from ten to fifteen thousand pounds of wool of uniform and guaranteed grades may be purchased on a single bid, attracts large buyers who would not consider wool from that community if it had to be picked up a few pounds here and there.

A summary of the early-lamb business. Let us summarize the important points of the lamb-raising systems followed by the Southern farmers, and see to what degree they may be carried out in the Middle West or corn belt.

1. The Middle West farmer can provide barns and sheds that furnish satisfactory protection for early lambs.



LAMBING PENS FOR EWES

Along one wall there is a row of single-ewe lambing pens, which may also be used for confining ewe and lamb when the ewe is not inclined to own her offspring

2. Blue-grass pastures and winter grain crops can be made available throughout a large part of the fall, winter, and early spring.

3. Stomach worms and scab can be effectually combated on well-conducted sheep farms.

4. Western ewes that are superior to the Southern ewes can be readily obtained anywhere in the corn belt.

5. If the Middle West farmer, when using a Down ram, has trouble in getting Western ewes to drop their lambs during January, February, and March, he can use a Dorset and keep the ewes that come from the Dorset cross for his breeding flock.

6. Lambs should come early and be disposed of before July.

7. If there is a possibility that not all the lambs will be sold before they are five months old, they should be docked and castrated.

8. Flocks of more than one hundred to one hundred and seventy-five should not be kept together, and pastures should be rotated and forage crops used.

9. Lamb clubs should be formed in every community where there are sheep, for the purpose of selling lambs and wool.

10. In short, provide green crops for late and early pasturing; use grade ewes and a Dorset or Down ram; breed for early lambs that are to be sold not later than the last of June; and sell and buy all sheep products through a well-organized lamb-and-wool club.

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AMERICAN SHEEP BREEDER AND WOOL GROWER.

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