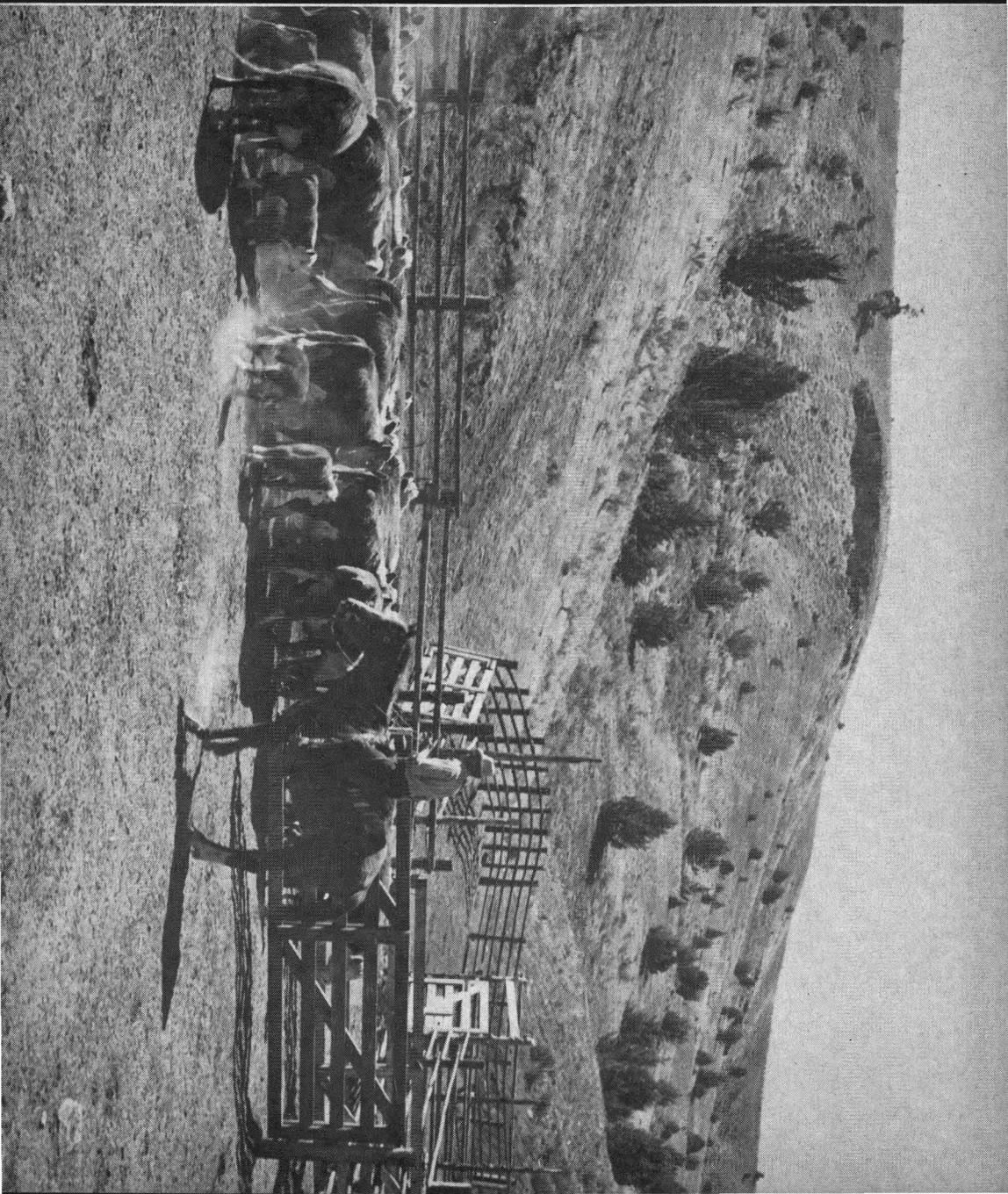


BEEF CATTLE

Equipment



BEEF CATTLE EQUIPMENT

By
Extension Specialists in Agricultural
Engineering and Animal Husbandry
OREGON STATE COLLEGE

Corrals and Chutes	3- 8
Scales	9
Head Gates	9-11
Gates	12-14
Loading Chutes	15-17
Spray Corrals	18
Hoof Trimming Stocks	19
Mangers and Feed Bunks	20-25
Molasses Feeders	25
Salt Boxes	26
Cattle Guards	26
Creep Feeders	27
Portable Shelters	28
Beef Cattle Shelters	29
Silos	30
Floor Areas and Feed Requirements	30-31

EQUIPMENT FOR RAISING CATTLE on farms need not be expensive. Well-planned corrals and other devices make handling of cattle easier, save labor, and most of all, cut shrinkage to a minimum. Good equipment is one of the best investments a cattle operator can have.

Housing need not be expensive but should be adequate enough to keep cattle from being unduly exposed to weather. Some overhead shelter is necessary in western Oregon, but windbreaks are sufficient in eastern Oregon.

As in any type of structure, there is no one plan that will fit every occasion. Many of the plans herein presented deal with principles and may be adjusted to fit local conditions. Corrals, feed bunks, and chutes should be strongly built and painted to preserve the lumber. Corrals should be built not only for convenience, but should be laid out and planned for economy and serviceability. It is desirable where possible to move cattle uphill rather than down through the chutes.

See back cover for a list of detailed plans available through the Oregon Farm Building Plan Service at Oregon State College.

CORRALS AND CHUTES

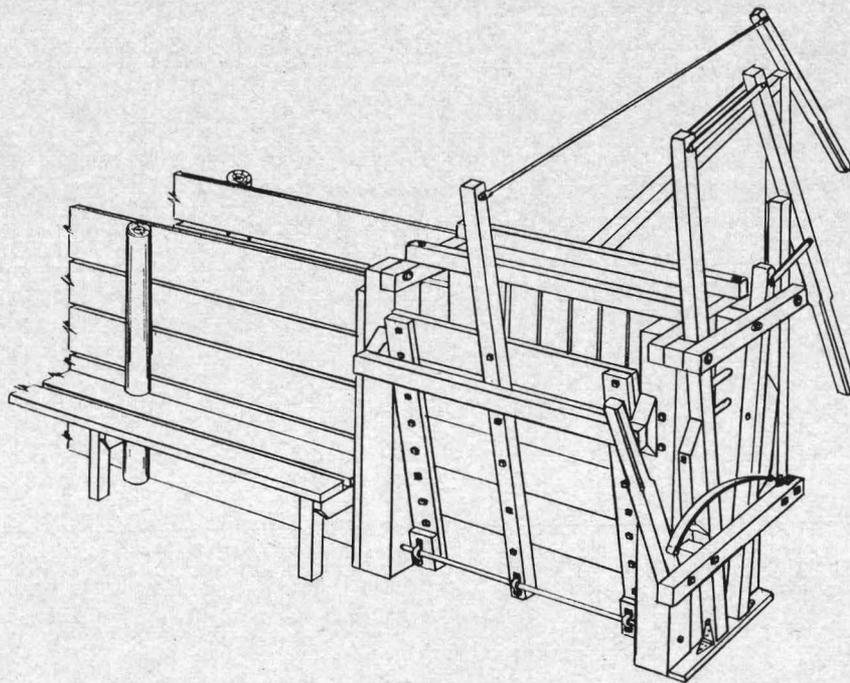
Money spent on good handling equipment is one of the best investments a livestock operator can make. There is no one plan for equipment such as corrals, scales, chutes, and other necessary or desirable equipment that will be best for all ranches. However, there are certain features and basic principles that apply to any size operation. A set of corrals should afford the facilities for these operations: branding, dehorning, loading, unloading, separating or cutting, weighing, spraying, and holding.

Drinking water should be made available if working cattle during warm weather.

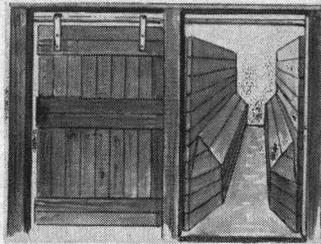
The first facility point to consider is the holding corral. It should be in a well drained location. If it is on sloping ground, remember that animals always want to go uphill. This is important in planning all the other operations. Plan to prevent all sharp protruding corners where cattle move.

Posts of decay-resistant wood set 6 feet apart and $2\frac{1}{2}$ feet in the ground will make a good strong fence. Pressure-treated posts will last about twenty-five years or more. Some on-the-farm treated posts have given excellent service. Directions for on-the-farm treatments are available from the county extension offices.

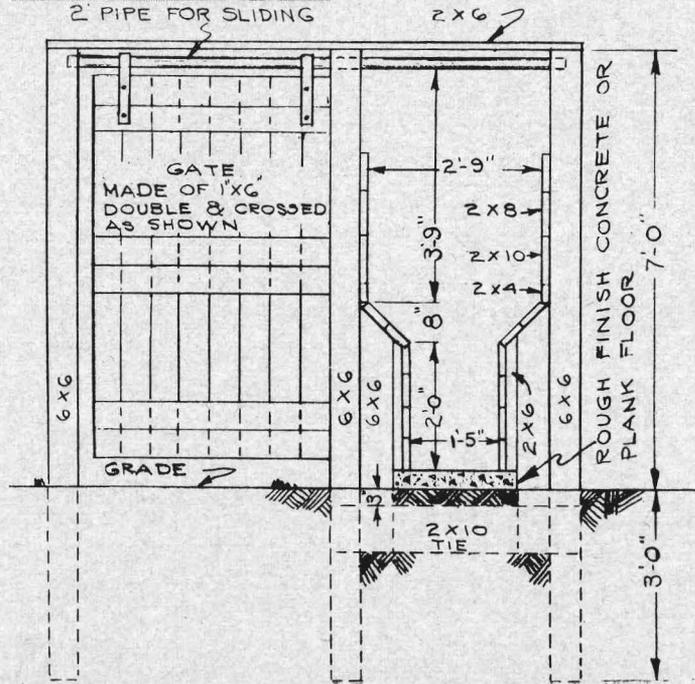
Corner posts should be set deeper and should be larger than other posts.



A "SQUEEZE" IS THE KEY PIECE of equipment for handling and inspecting cattle. The Nevada plan shown here has been used by many cattlemen and is considered one of the best designs. A number of very satisfactory all-metal prefabricated squeeze chutes are on the market. This Nevada squeeze chute plan is available through your local county extension office. The branding chute leading from the pens or yards to squeeze should be approximately 30 feet long to hold 4 or more head.



A BRANDING APPROACH CHUTE may be used for spraying as well as for a passageway for both large and small cattle. Many ranchers recommend using a plank or concrete floor covering.



Gate posts (see discussion on gates) should be of a still larger size.

Holding Corral

In the holding corral, plan for a minimum 60 to 80 square feet per animal. For some cattlemen extra space may be desirable. After the holding corrals are planned, such units as cutting, branding, dehorning chutes, spray corrals, and loading chutes may be built into the layout.

The large operator may require two or more large holding pens; small operators may require only one larger pen and a small one.

Approach Chute

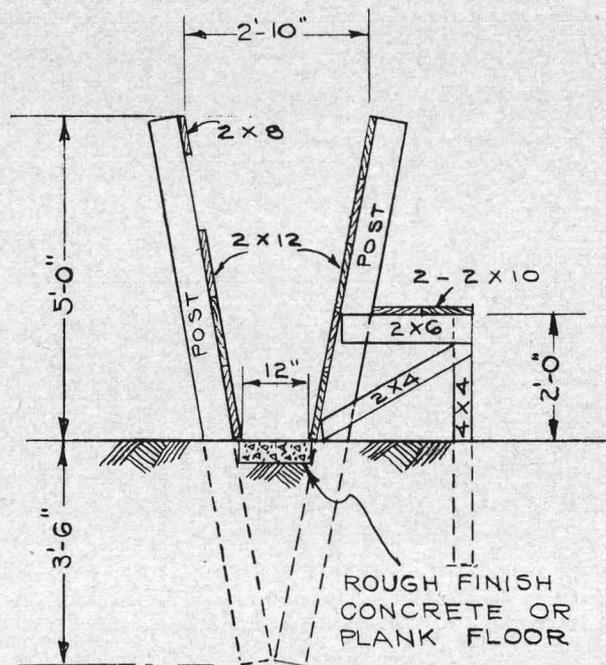
Various designs for the branding approach chutes are in use although preference seems to be in favor of the design shown at left. This type can be of a dual purpose nature. The smaller operator may use it for spraying. It is adaptable to both large and small animals. Large animals are not likely to go down in this chute. The sides should be solid. The first 24 inches of height is 17 inches wide and the remainder widening out to 33 inches as shown in the detail at left. The floor or walk should be of concrete or plank.

Cross ties in the ground will eliminate the need of ties on top which may interfere with spraying and other operations. If top cross ties are used, they should be at least $6\frac{1}{2}$ feet from the ground.

If a sloping-sided branding chute is preferred, posts can be set at an angle with dimensions as shown on opposite page.

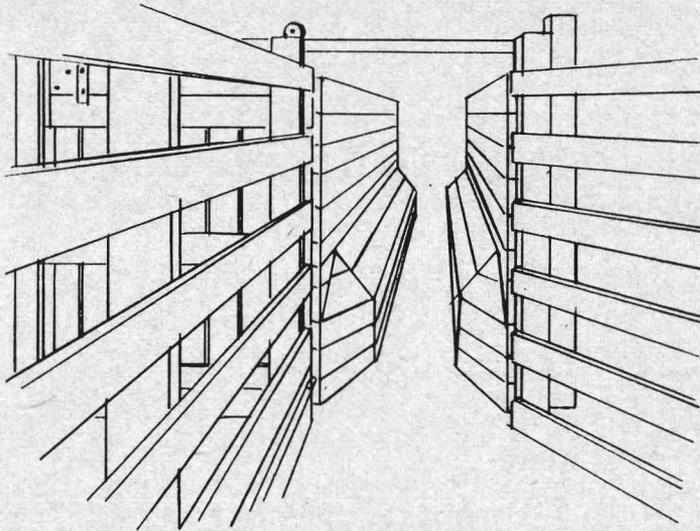
A walkway for working the cattle in the chute is placed on either side, usually on the left when facing the direction

THE SLOPING-SIDED BRANDING CHUTE shown below has certain advantages and is preferred by some cattle ranchers. It is adaptable to spraying operations. Note the foot walk shown along the right side. Ground should be surfaced to prevent cattle from sinking into the mud in rainy weather.



A GATE AT THE LEAD END OF THE BRANDING CHUTE just before it enters the squeeze is necessary. This gate may be a sliding gate like the one shown on opposite page or a swinging gate like the one shown above. Commercially made squeeze chutes have a gate as part of this equipment. Also, you should consider building a small gate into the branding chute just behind the squeeze so that your veterinarian can get into the chute conveniently without climbing.

the cattle are driven. Make it at least 18 inches wide and 26 to 28 inches high. Branding chutes should be a minimum of 5 feet high, preferably higher.



THE ENTRANCE TO THE LEAD CHUTE should be flared to do away with sharp corners. If the crowding chute is shaped like a "Y," one side of the pen should be a straight extension of the branding chute.

Working Corral

The corral plan on opposite page is designed for large operations. This plan may work like this: A herd of cattle is delivered into pen C, through the 16-foot gate, with the help of a wing fence. The cattle, or part of them, are then crowded into pen B, on through pen A, and through the chutes to the cutting gates at the center of the system.

Assume the operation to be performed is weaning. As

the cattle approach the sorting gates, the calves are cut into pen D. The rest of the cattle may be put into any of the other three pens, or if there is some reason that they need to be split more, there is a possibility of a four-way cut at these gates. The gates incidentally, are operated by one man while another drives the cattle through the chutes.

Pen A, in addition to being part of the crowding chute, may be used as a spray pen. For grub control, a number of cattle can be crowded into this pen and sprayed by operators walking on planks across the top of the pen.

If cattle are to be weighed, the 8-foot gates can be opened and the cattle driven on to the scales. After weighing, the cattle can enter the loading chute, or the squeeze chute, or can be led out into pen D, without any further operation.

Spraying for flies or wetting the entire animal can take place in the chute ahead of the squeeze.

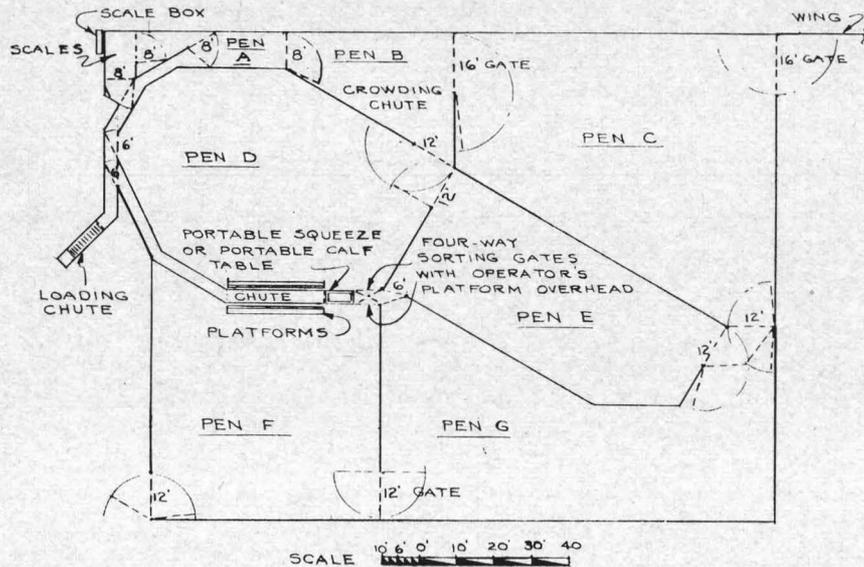
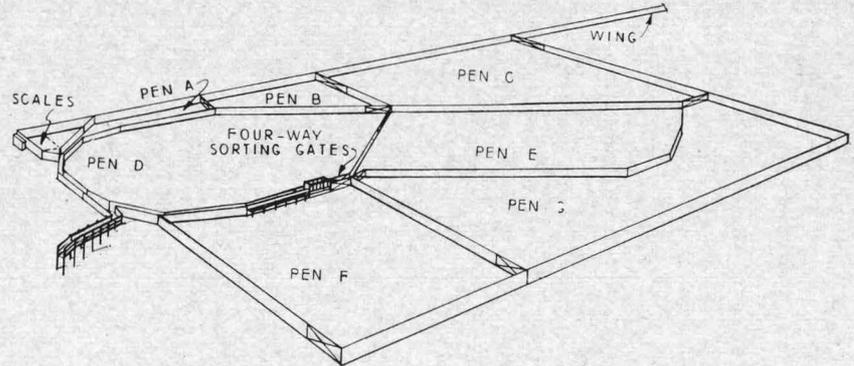
Saddle horse cutting or sorting can take place through the gates at the junction of pens B, D, and E.

The loading chute is outside of the corrals so that trucks do not have to go through several gates in order to pick up a load of cattle.

The portable squeeze chute can be moved out and the portable calf table moved in, in front of the approach chute, depending on age of cattle and operation to be performed.

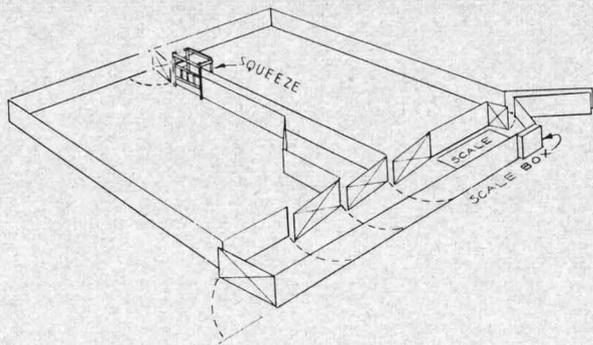
Modification or simplification of this corral plan might be as follows: for a small herd of cattle, the four-way cutting gates may not be necessary. A two-way cut, which is frequently all that is required, can very easily be made with one gate. This would be the last gate of the three in the four-way gates. It and the squeeze could be moved farther back, thus shortening the chute and reducing the number of pens.

IN BUILDING CORRALS AND CHUTES, it is advisable, wherever possible, to have the rails or poles on the side where the cattle will be crowded. This arrangement cannot always be obtained. For example, in pen D, part of the outside fence is formed by one of the chute fences. In this case, it would be best to have the poles on the inside of the chute. If the cattle are to be worked very much by saddle horses, in pen D it might be well to have poles on both sides of these posts.

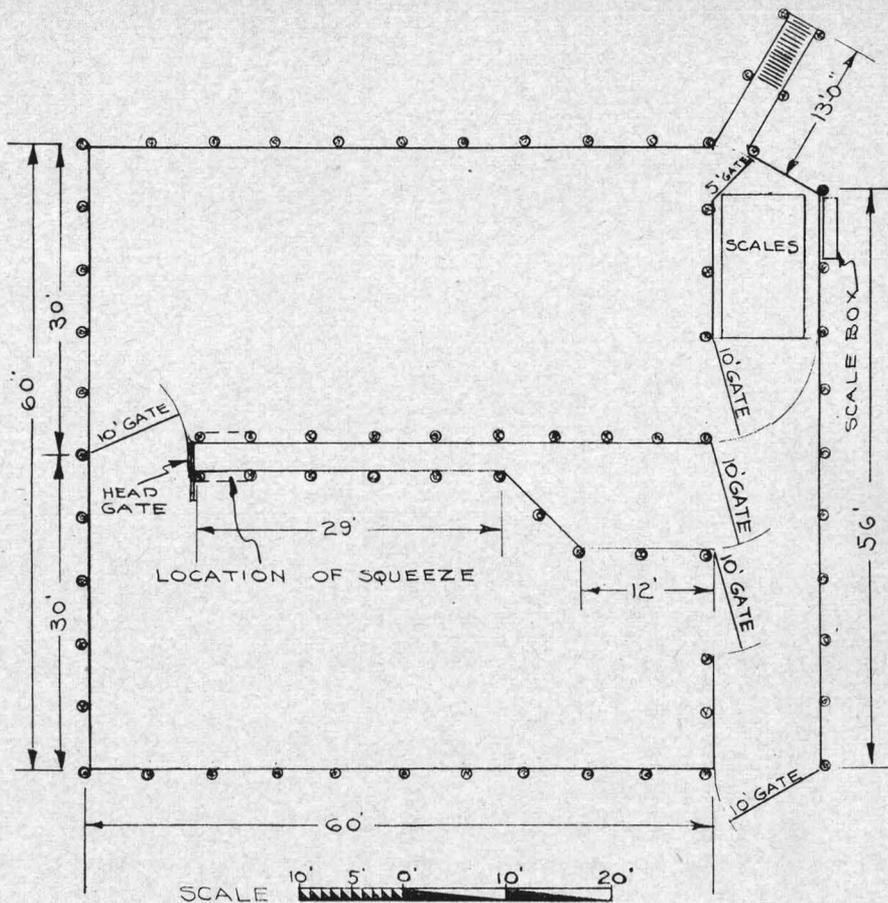


The chute leading to the squeeze for 20 to 50 feet back should be made approximately 16 inches wide inside at the bottom and 3 feet wide at the top, about 6 feet up. On these chutes, one side may be hinged at the bottom so that it can be narrowed down for young calves, and opened up for older cattle. In no place should the chutes be wider than from 2½ to 3 feet inside. All corners, in the chutes especially, should be rounded to avoid livestock injury.

Size of pens may be adjusted to size of herd. Pen C should be the first one enlarged and pen D the last.



THIS CORRAL IS DESIGNED for working a small number of cattle. It is 60 by 70 feet, and it can be enlarged to meet special requirements. In times of larger herds, additional pens may be added. All corners, in the chutes especially, should be rounded to avoid injury to livestock. Note location of scales near loading chute, upper right in drawing.



SCALES

Anyone in the livestock business needs a set of scales. They should be an integral part of every set of corrals. Not only are scales necessary in buying and selling cattle, but they are the key instrument in livestock improvement programs. The small operator may be able to get by with a set of scales on which it is possible to weigh only one animal at a time. Larger operators will need larger scales and may find many other uses for them in addition to weighing cattle.

Scales should be the pit type and the pit built of concrete. They should be carefully located and properly treated. A scale house is usually necessary to protect scales from weather.

If the scales are to be used for weighing loaded vehicles, the house needs to be high enough to supply clearance; some provision should be made for removing the scale rack. Otherwise, bolt the rack securely to the platform. Even large scales should permit accurate weighing of individual animals.

HEAD GATES

The head gate on page 10 is easy to build and works well; it is fast and costs little. This gate must be used with a side opening in the chute as the head gate itself cannot be hinged. It is bolted to the end of the chute. Some cattlemen prefer the side opening because it is a wider opening and the animal is less likely to be surprised and caught, as in a front gate. In the opinion of some operators, an animal is likely to leave faster.

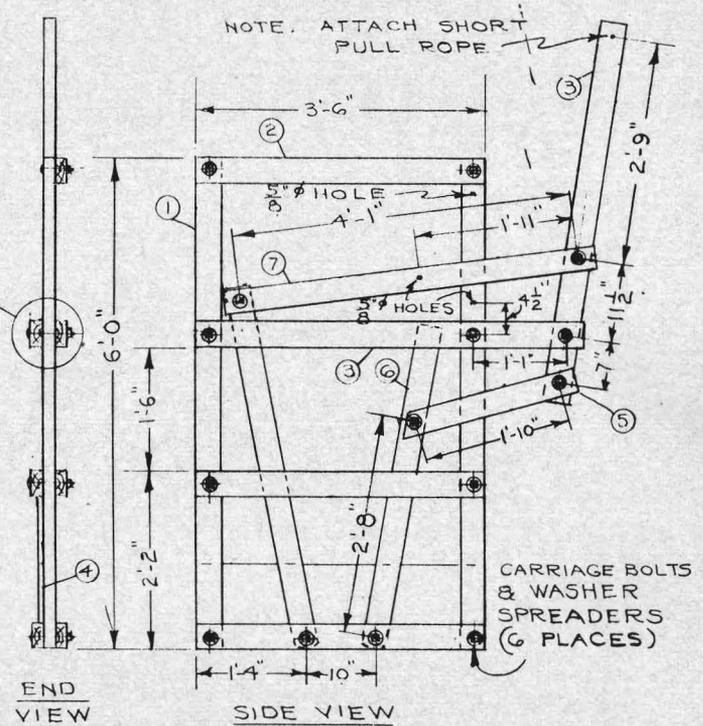
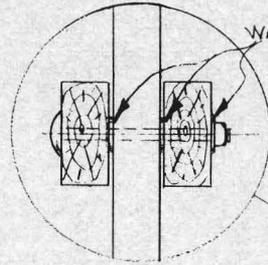
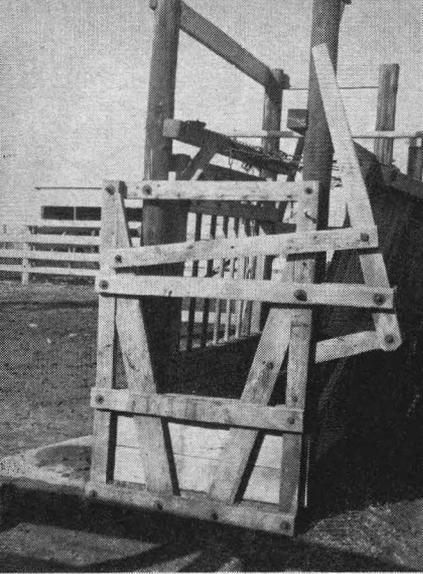
With use of a halter, a calf's head can be pulled to one side.

The gate illustrated on page 11 is excellent in the width shown for polled or dehorned cattle. For horned cattle, build it wider and swing it from a post but in line with the two end posts of the chute.

These head gates are of simple and rigid construction and are adaptable to any size herd.

A narrow chute without a squeeze but fitted with either one of the two head gates might serve for dehorning, taking blood samples, etc.

Head Gate With Side Opening Chute



BILL OF MATERIALS

Item	Quantity	Description
1	2	2 x 4 x 6'-0"
2	5	2 x 4 x 3'-6"
3	3	2 x 4 x 4'-8"
4	2	1 x 10 x 3'-6"
5	1	2 x 4 x 2'-2"
6	1	2 x 4 x 4'-0"
7	2	2 x 4 x 4'-6"

Carriage Bolts

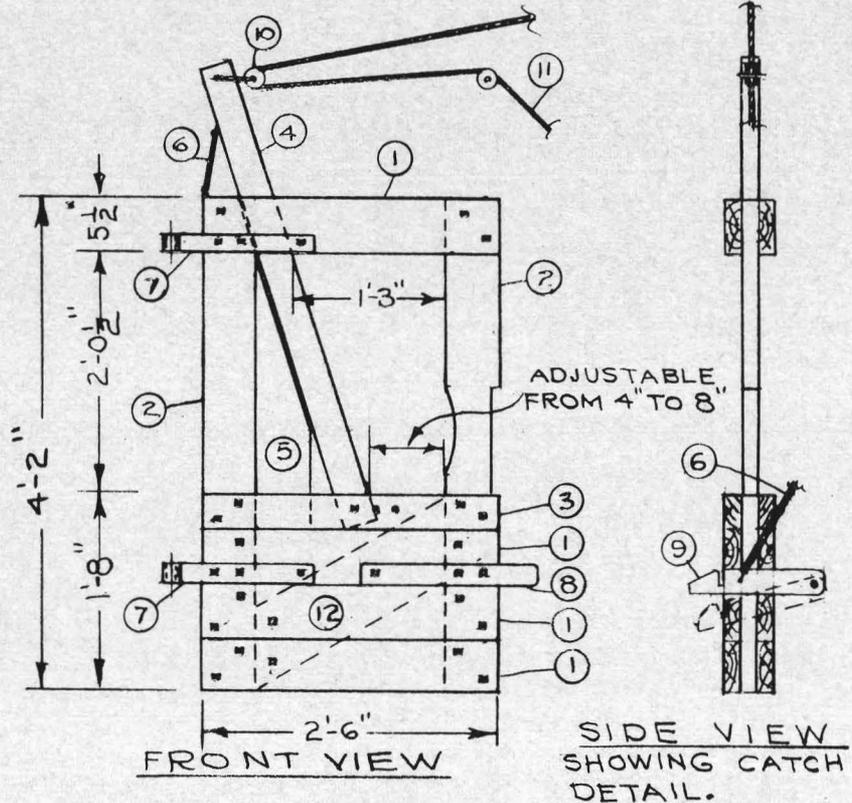
7	7/16" x 4" long
9	7/16" x 5 3/4" long
27	7/16" std. washers

THIS TYPE OF HEAD GATE must be used with a side opening. It is bolted to the end of the chute and it cannot be hinged. Cattle will leave when released thru a side opening.

Hinged Head Gate

BILL OF MATERIALS

Item	Quantity	Description
1	8	2 x 6 — 2 ft. 6 in.
2	2	2 x 6 — 4 ft. 2 in.
3	2	2 x 4 — 2 ft. 6 in.
4	1	2 x 4 — 4 ft. 0 in.
5	1	2 x 6 — 2 ft. 4 in.
6	2	Screen Door Springs
7	2	2 in. x $\frac{1}{4}$ in. Strap Hinges
8	1	2 in. x $\frac{1}{4}$ in. Strap — 1 ft. 6 in.
9	1	2 $\frac{1}{2}$ in. x $\frac{1}{4}$ in. Strap — 1 ft. 2 in. Notched as shown
10	1	Pulley Blocks
11	1	Lariat or similar size rope 15 to 20 ft.
12	1	2 x 8 — 2 ft. 2 in.
30		$\frac{3}{8}$ in. x 6 in. Carriage Bolts and Washers



HINGED TO ONE END POST of the chute, this head gate is excellent for dehorned or polled cattle. It will have to be wider than the dimensions shown if cattle being handled have horns.

GATES

Good strong gates, easily operated with positive latches, are a must for all livestock operators. Well-constructed and well-braced gates are heavy and require good hinges and posts that will support this weight. Gates should be made to open both ways if used for the passage of cattle in both directions.

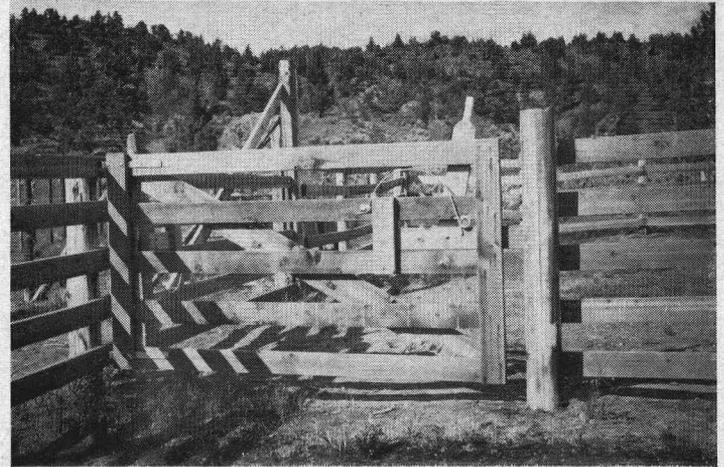
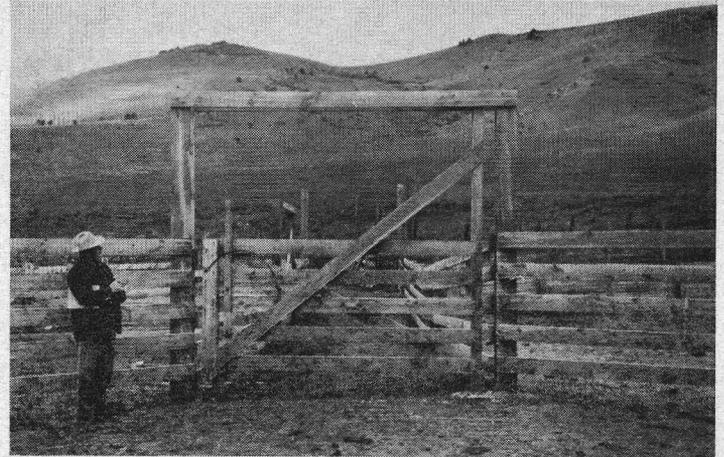
The gate post treated with wood preservative should be set in concrete or use a "deadman" as shown on page 14. The deadmen should be treated wood. Making the posts on both sides of the gate of sufficient height for clearance of all farm operated vehicles and cross bracing them is a good method of gate post construction.

An adjustable gate hinge may be desirable in some corrals where cattle are wintered to allow raising the gate above packed snow. One type is shown on page 14.

A number of good gate latches and fasteners are available. A dump rake tooth as shown in the gate plan on opposite page and a lever for opening will prevent cattle from opening the gate. These are inexpensive and easy to build.

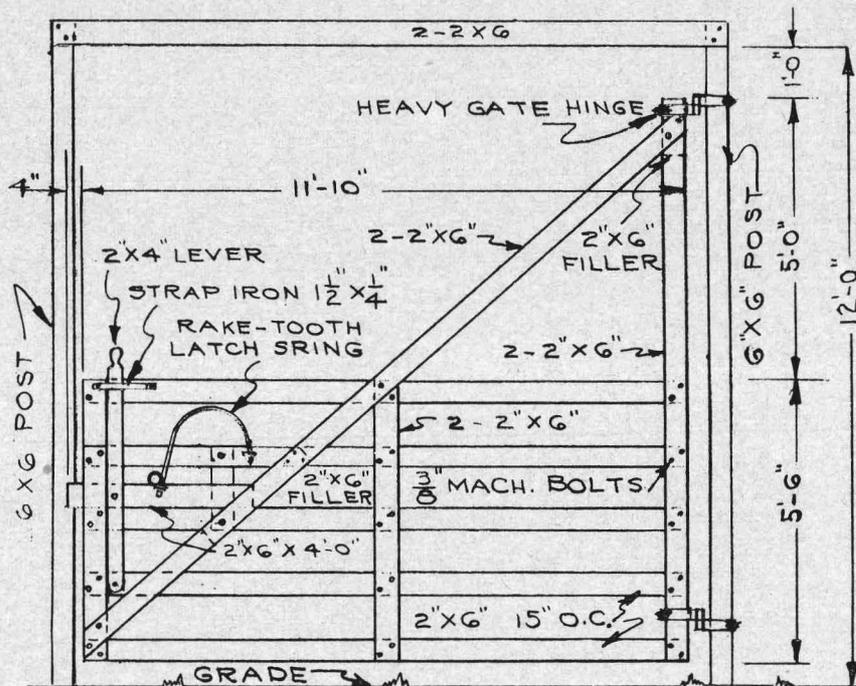
Whenever diagonal braces are used it is advisable to put a parallel brace on each side of the gate to prevent warping or the extra weight will tend to twist the gate out of line or make it lopsided.

THESE EXAMPLES OF CORRAL GATES show different types of gate posts, latches, and bracing. For stability and greater permanence posts should either be set in concrete or have "deadmen" like those on page 14 attached beneath ground.

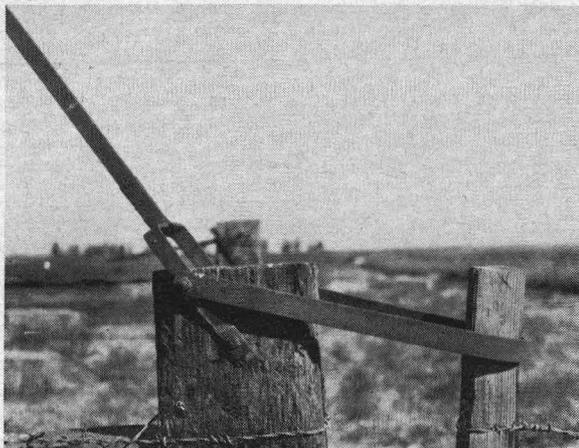


Corral Gates Require Sturdy Construction

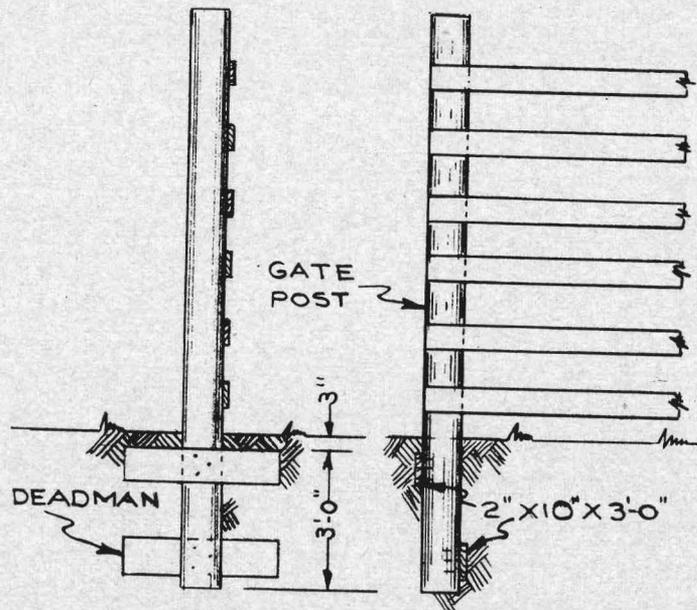
THIS 12-FOOT CORRAL GATE (right) has 6" x 6" posts on either side tall enough to clear most farm-operated vehicles. If higher vehicles are to use the gate, posts should be extended accordingly. Such a gate should be well cross braced. If "deadmen" are used beneath the ground to give the posts greater stability, they should be of treated wood. Note here and opposite page dump rake tooth used as lever for opening gate.



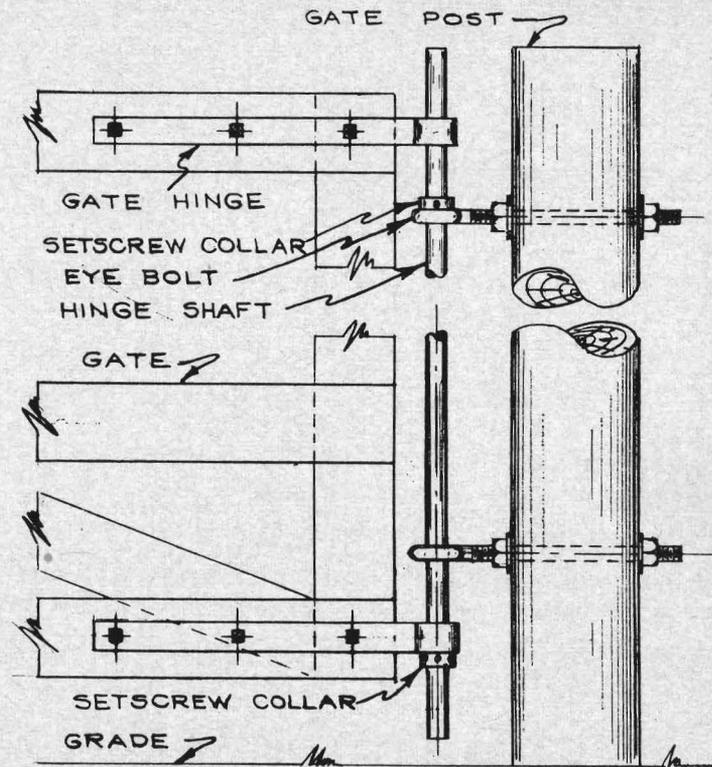
THIS GATE FASTENER (left) is easy to install and is adequate for wire gates used only occasionally. The handle pushed down tightens wire.



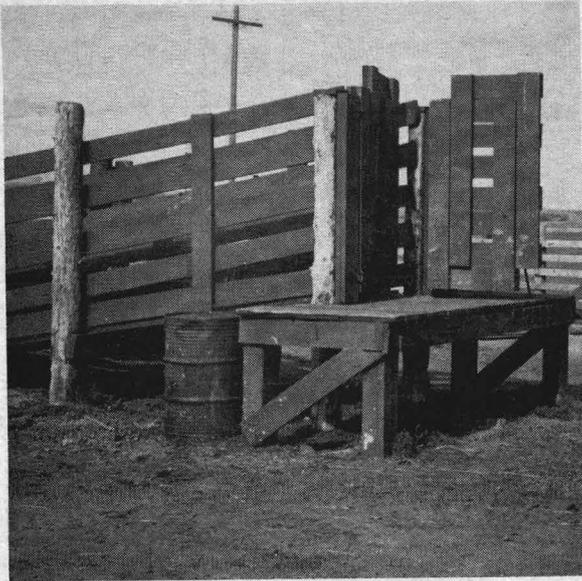
Gate Post Construction



GATE POSTS SHOULD BE TREATED with wood preservative and should either be set in concrete or should have "deadmen" nailed on to the section that goes into the ground. Two-by-tens, 3 feet long, make good material for deadmen.



AN ADJUSTABLE GATE HINGE like the one shown above permits the gate to slide upward over the top of packed snow. Such a hinge saves moving snow in areas of heavy snowfall or in spots where the snow drifts in.



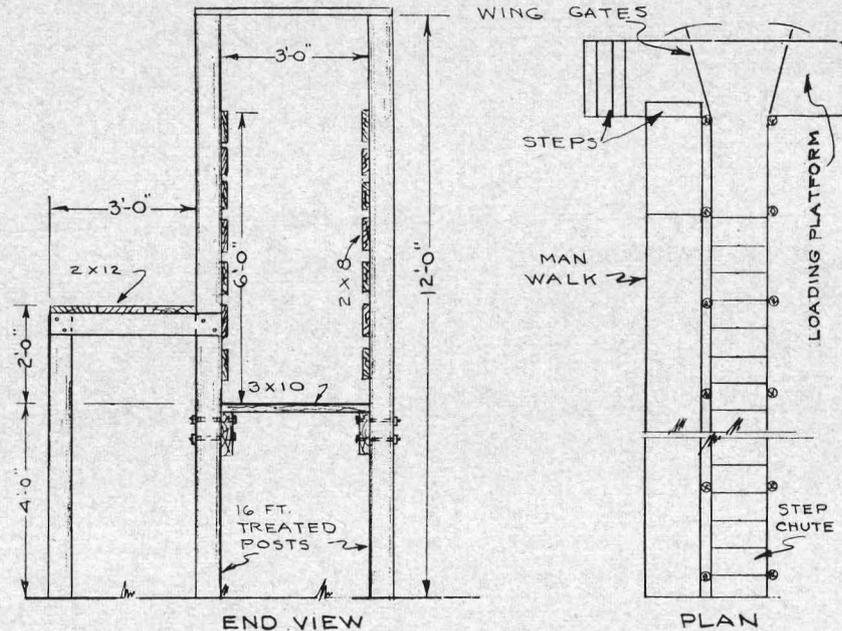
A WING GATE at the head of a loading chute.

A SECTION THROUGH THE STEP RAMP LOADING CHUTE shown on this page. A walk like the one shown on the left of the chute is desirable on each side of the chute. If a walk is built on only one side, the left side is more convenient. A common fault with most chutes is that the incline is too steep. Height of loading platform should be made to fit height of trucks most commonly loaded from it.

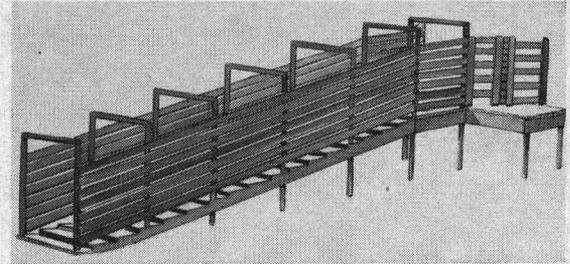
LOADING CHUTES

Locate the loading chute so that both large and small trucks and trailers can load conveniently at any time of year and so that trucks do not enter lots to get to it. This precaution is to prevent spread of disease.

The width should not be over 3 feet in the clear. The step ramp type of construction ties the posts to prevent spreading of the chute. Some cattlemen prefer solid sides because cattle load better. This is a matter of individual choice.

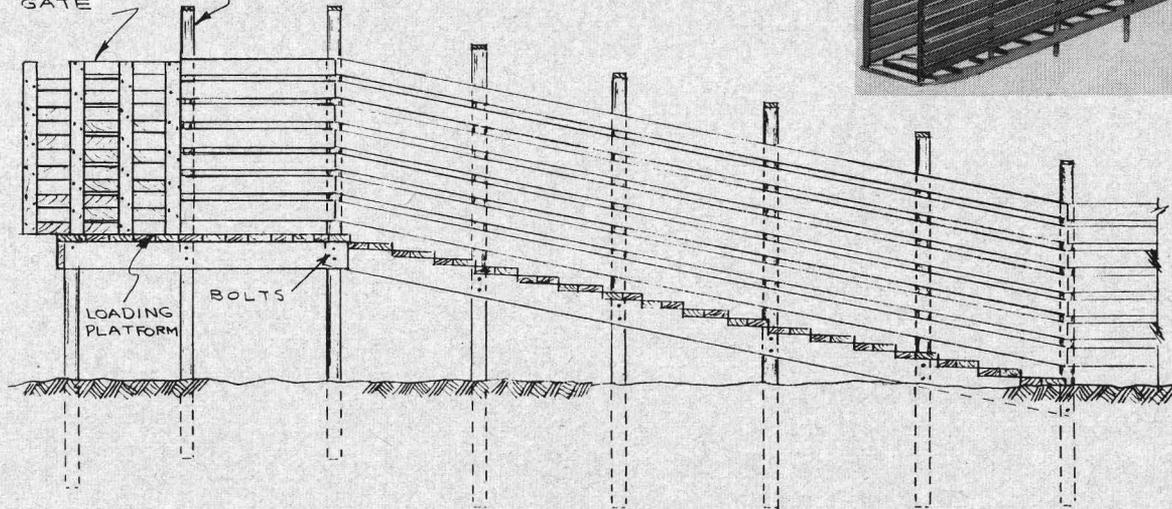


Step Ramp Loading Chute

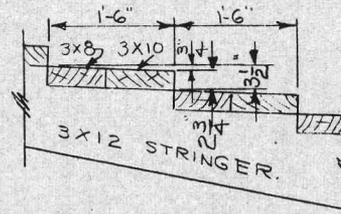


ADJUSTABLE
WING GATE

16 FT. TREATED POSTS



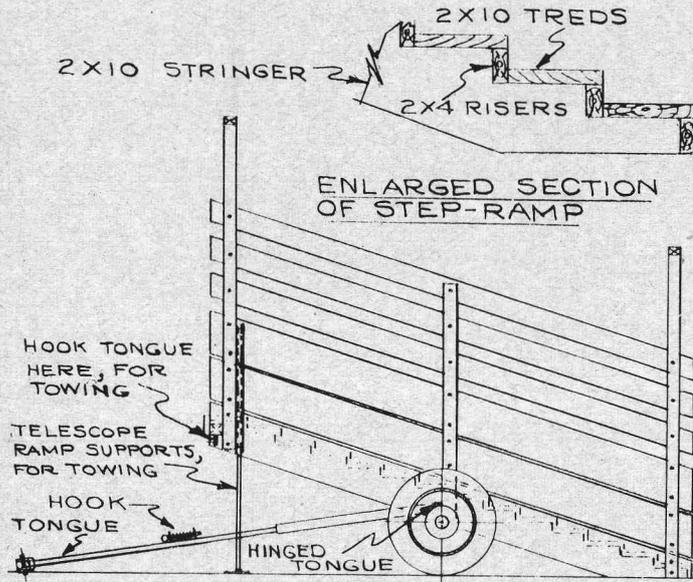
STEP LOADING CHUTE WITH LOADING
PLATFORM AND WING GATES



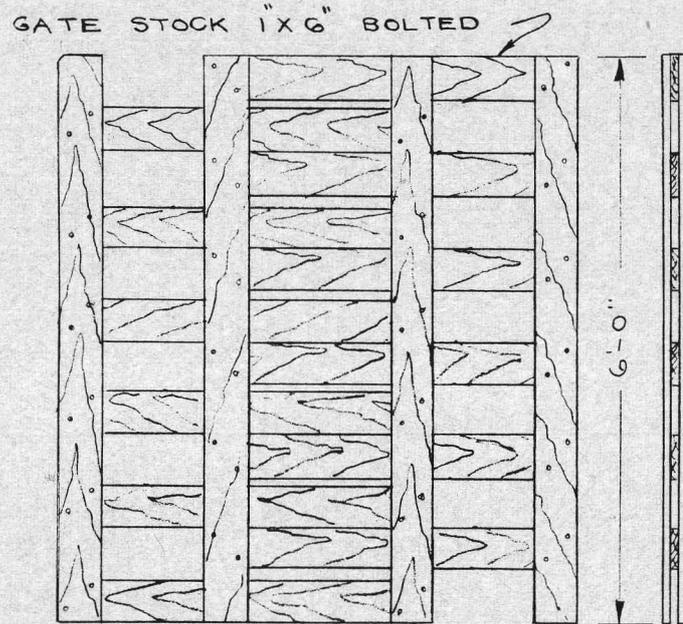
DETAIL OF STEPS

CATTLE WILL WALK UP STEP RAMP LOADING CHUTES with less slipping and consequently less injury than in the cleated inclines. For telescoping wing gate see plan on next page.

Loading Chute Construction



A PORTABLE STEP-RAMP LOADING CHUTE shown here can be moved easily from place to place to facilitate loading. It should have a towing tongue that can be unhooked and let down when cattle are using chute. The telescoping ramp supports should be sturdily constructed of strong material.



A TELESCOPING WING GATE is a desirable feature to build into the loading chute. Note how it is used in the step loading chute on the opposite page and in the chute illustrated on page 15. Various stop locks may be used to hold wing gates in position when in use; a pointed iron bar works well.

SPRAY CORRALS

A spray corral for spraying livestock to control lice, flies, grubs and ticks is a money-wise investment. Cattle may be badly infested with cattle lice any time during the year but particularly so in the fall and early winter.

To control lice, cattle must be treated from head to toe. The head, neck, brisket, and entire underline must be treated.

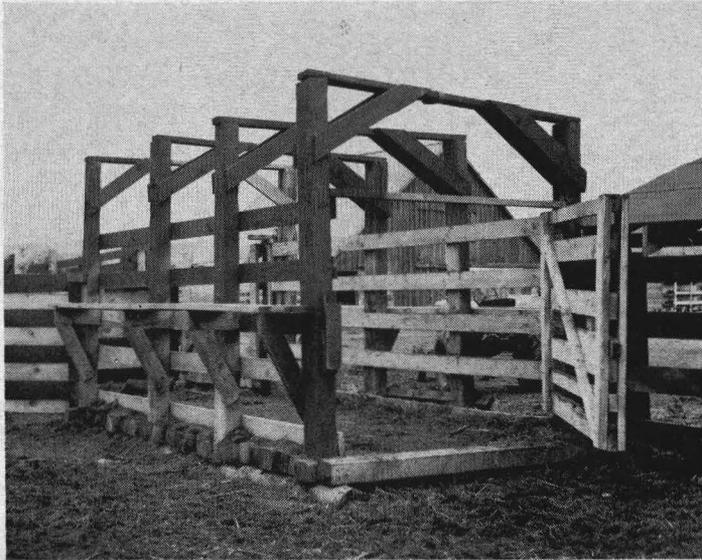
To carry on an effective program for the control of these insects it is necessary to have good equipment, including a

power sprayer which will develop up to 400 pounds pressure and a spraying corral that is from 8 to 12 feet wide and any reasonable desired length. This corral should have an entry way from the main corral so that cattle can be easily moved in for spraying. The boards should be fastened on the inside of the posts so that cattle cannot push them off and should be made of heavy timbers. A good catwalk on each side of the pen is necessary. An overhead catwalk permits operators to treat backs of cattle. Care must be observed in placing the walkways so as to keep the hose from getting entangled with the cattle.

Here is another important point that one should keep in mind: either pave or plank the floor in the spraying corral or fill it with gravel to prevent mudding up.

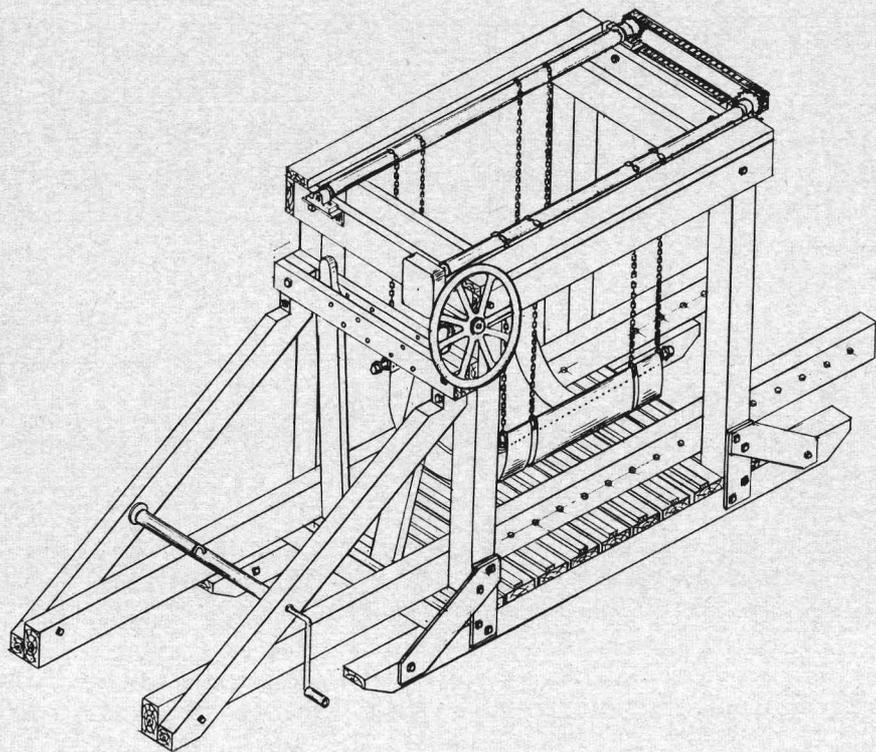
Sufficient opening or space should be provided in the lower part of the corral fence so as to be able to get at the lower parts of the body and legs.

The photograph shows a spray corral using a floor built up with old railroad ties. Note the wing entrance from the main corral.



A SPRAY CORRAL WITH WING ENTRANCE from main corral. Floor is built up with old railroad ties. Planks or concrete may also be used as flooring to keep the cattle out of the mud. Note the catwalk along the side to enable the operator to spray the backs of cattle. Openings near the bottom are wide enabling operators to spray the bellies.

HOOF TRIMMING STOCKS



A hoof trimming stock must be of rugged construction. Some breeders prefer their own variations regarding certain details. However, all stocks should have provisions to support the animal's weight so that it cannot lie down while one is working on its feet. A good hoof trimming stock should have these qualities:

- It must be strong enough to restrain any size animal.
- It should be portable.
- It must be adaptable to various size animals.
- It should be designed so that one or two men can operate it.
- It must keep chance of injuries to men and animals to a minimum.
- It should provide for a method of holding each foot for ease and quick trimming of the hoof.

A detail plan of this stock is available from Oregon State College Farm Building Plan Service.

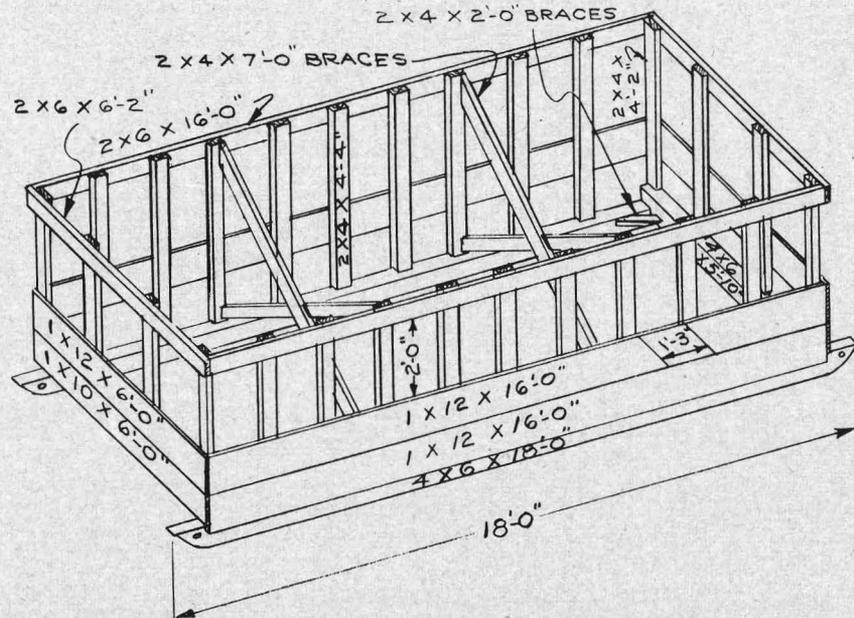
THE HOOF TRIMMING STOCK shown here is strong and portable. It can be adapted to any size of animal. Normally two men are required to operate it.

MANGERS AND FEED BUNKS

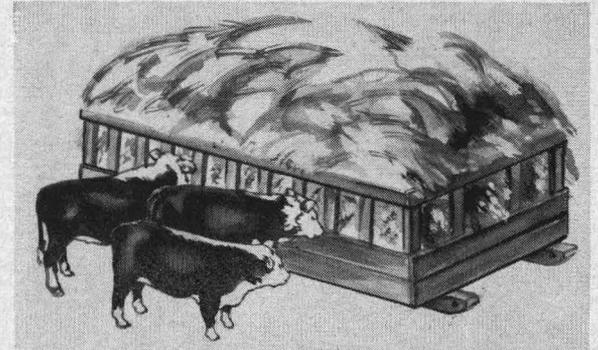
Did you ever see a contented and well-fed family of 6 or 7 when there was room for only 4 or 5 places at the dinner table? The same applies to animals. How much space should be provided at the feed bunk? It all depends on how many head are being fed. Obviously, if the feed is limited there must be enough space for all animals to feed at one time. About 20 to

24 inches are required for weaners and yearlings so that they can all eat at once. Calves do better from bunks 24 inches high.

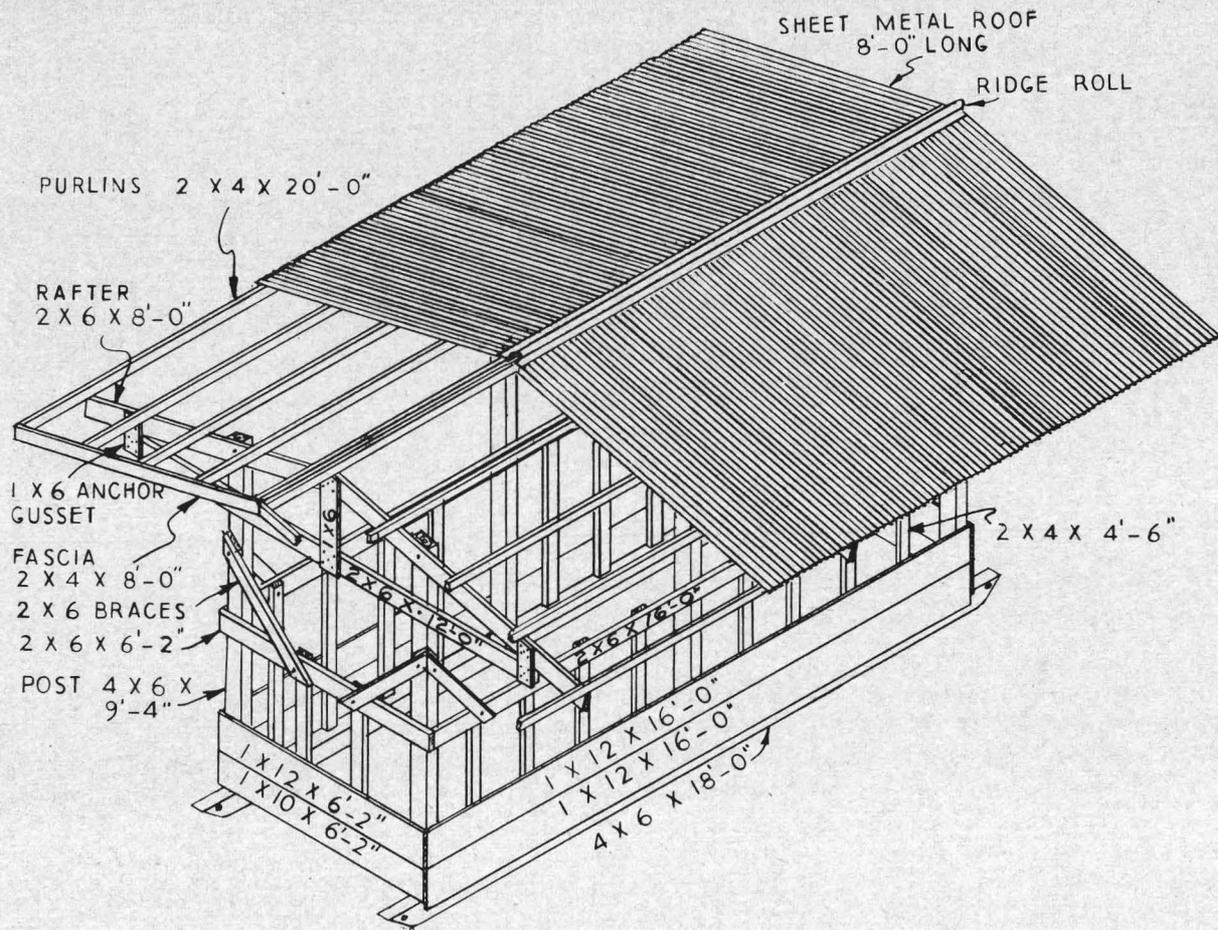
For self-feeders, use 6 to 8 inches for calves, 10 to 12 inches for yearlings, and 14 to 16 inches for steers. Some lots will do well on less space but there may be some less aggressive animals that will be crowded out. More space will be

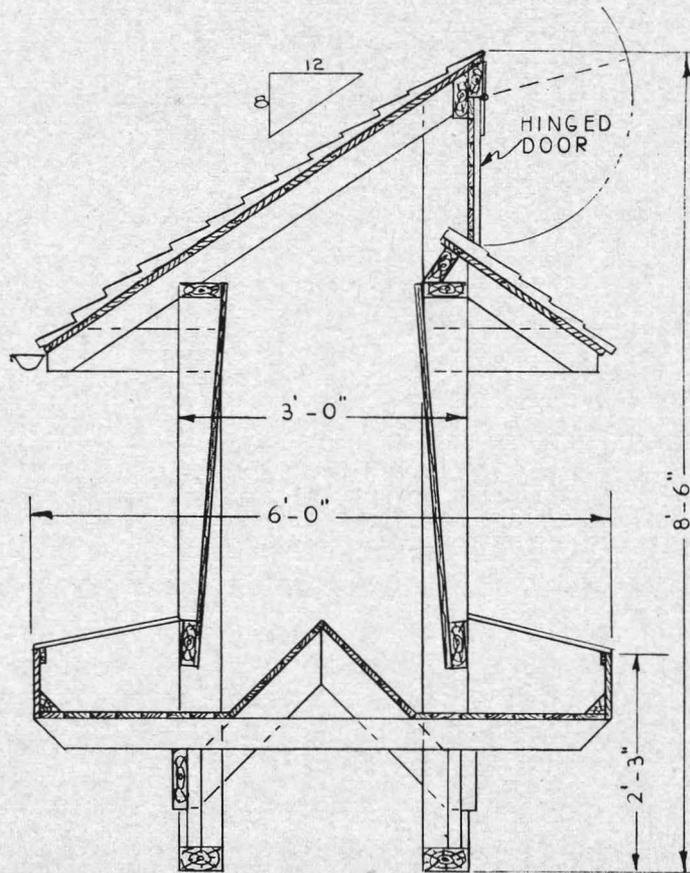


A PORTABLE HAY BUNK built on skids so that it can be moved easily. Note the dual-purpose bracing on the inside. Crossed 2 x 4's prevent the bunk from spreading when loaded with hay and also prevent it from collapsing when cattle push against it.



IN DAMP CLIMATES hay may have to be covered in out-of-doors feeders. This drawing illustrates a covered portable hay bunk designed for wetter regions. It is essentially the same as bunk on opposite page except for the roof. A floor may be desirable.





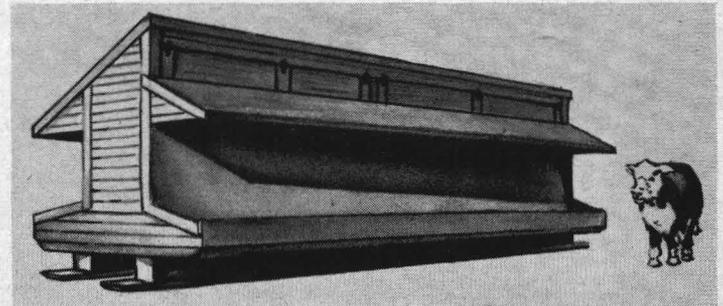
needed in pastures—or wherever cattle do much waiting or pushing for feed.

For free choice feeding, either hay or silage, allow space so that 65% to 75% of the lot can eat at one time. If both hay and silage are fed free choice, allow silage manger space for 75% of the lot and hay manger space for 25% of the lot.

Portable bunks must have plenty of weight and strength to prevent tipping from being pushed. Plenty of width is important but do not make bunk so wide that cattle cannot reach the center.

A portable bunk for feed concentrates is shown in plan on page 23. It is excellent for both open range and irrigated pastures. A portable hay bunk is shown on page 20. Less waste from feeding long hay results if the hay mangers or bunks are made not less than 3 feet wide and 24 inches deep, the bottom being about on a level with the cow's feet. Uprights along the manger will also discourage cows from pull-

◀ **A CHOPPED-HAY FEEDER designed for feeding beef cattle.**

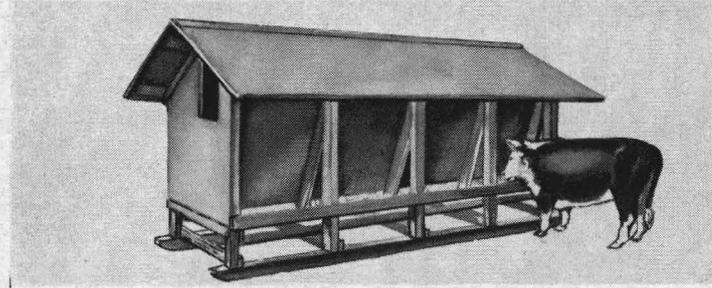


ing hay out of the manger. The plan shown on page 20 is a good bunk for long or baled hay.

The plan on page 22 is designed as a chopped-hay feeder and has been used successfully at the Union Experiment Station.

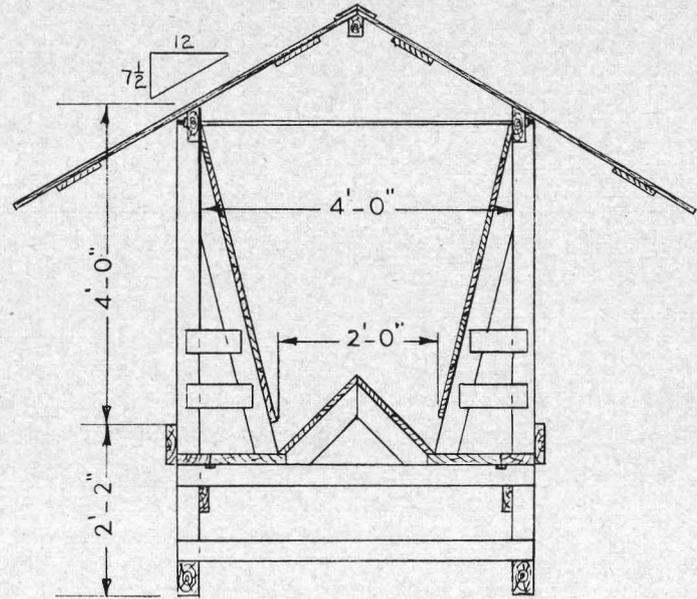
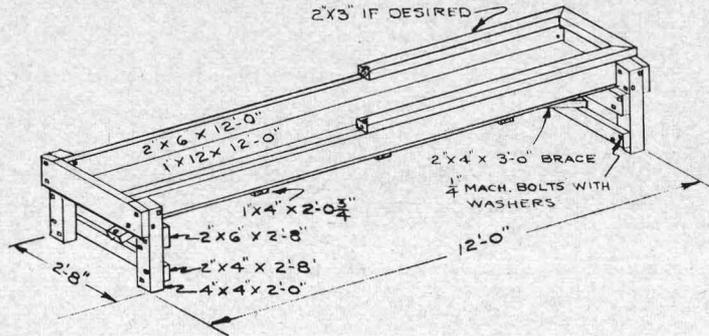
Self-feeders for feeding of concentrates with proper management are practical and save labor. The covered feeder shown on this page is suitable for feeding grain mixes. It has large capacity. Feeders of this type should allow about one foot of space per animal.

The figures on page 24 show a plan for a self-feeder developed in Harney County and used for feeding meal and



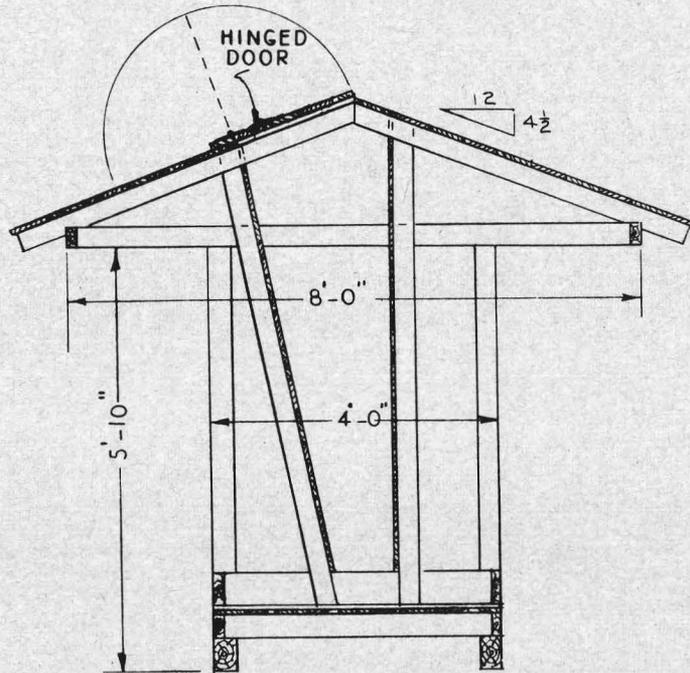
A HIGH-CAPACITY SELF-FEEDER like the one shown at the right is good for concentrates and various grain mixes.

THE PORTABLE FEED BUNK shown below is also suitable for concentrates. It can be used in irrigated pastures or on the open range and can be easily moved to new location.



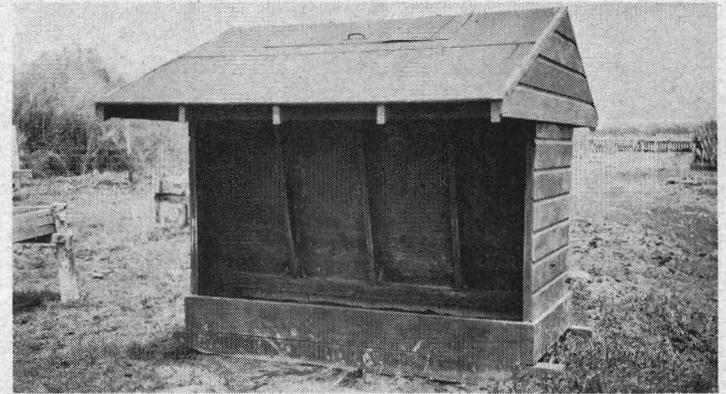
mineral supplements. Feeders of this type should allow about 6 inches per animal, and on the range should be about 1 mile apart and always near an ample supply of water.

A permanent type of silage feed manger and shelter is shown on page 25. It is ideal for feeding silage in a permanent feed lot. Silage may be fed by use of a carrier, cart, wheelbarrow, or side delivery wagon conveyor.



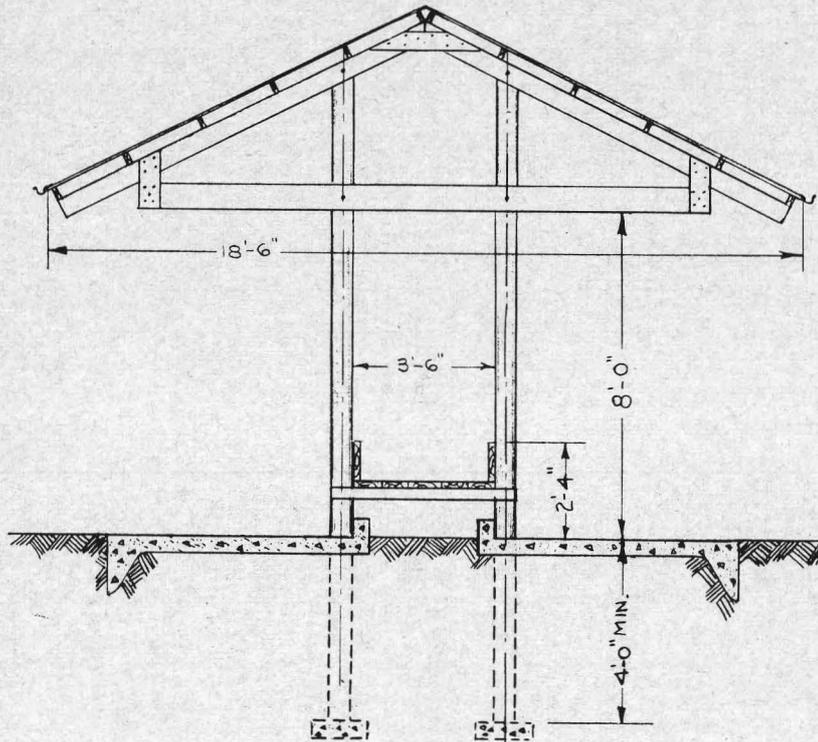
The areas where the cattle stand to eat should be paved. A layer of sawdust or shavings at least 18 inches deep placed during dry weather will keep the animals out of the mud surrounding the paved area. If this is not possible, then a paved area of about 50 square feet per animal should be added in the feed lot and exercise yard. Feeding experiments have shown that steers will gain better if kept out of the mud.

The plan on page 21 shows a portable covered hay bunk for use in wetter climates.



SELF-FEEDERS LIKE THIS ONE should be located near a plentiful supply of water, and on the range should be located about a mile apart. It is good for mineral supplements and meal, concentrates, and various other feeds.

A Covered Silage Feed Bunk



A SUBSTANTIAL, NON-PORTABLE FEED MANGER for silage or grain provides a shelter for feeding cattle on a permanent feed lot. Note paved area on both sides of manger. This type of feed bunk can be used with conveyors, track carriers, hand feed trucks, or tractor forks.

MOLASSES FEEDERS

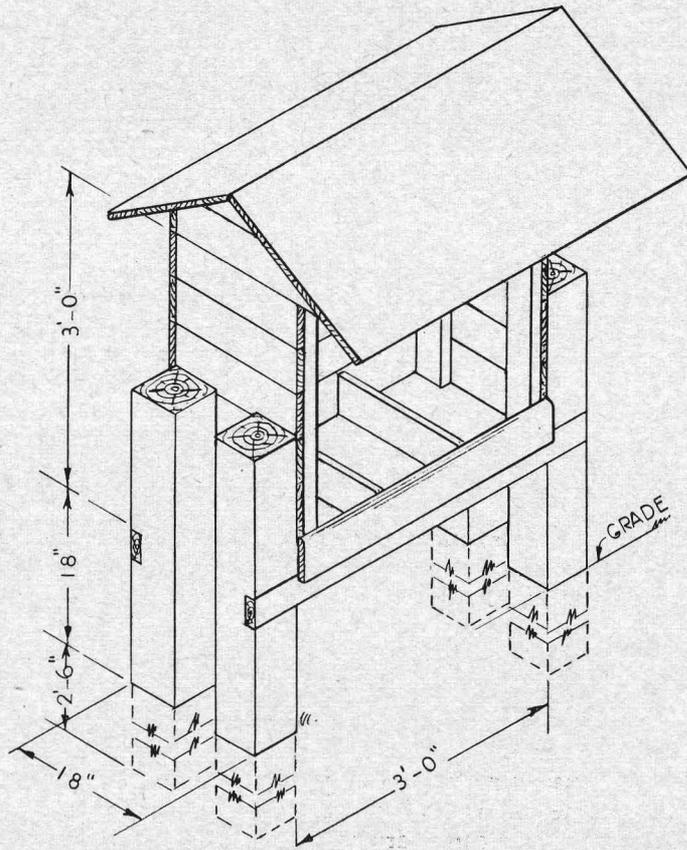
An open trough provides the best type of self-feeder for molasses. This method requires a clean trough into which molasses can be poured from storage tanks. An old hot-water tank or a 50-gallon steel drum cut lengthwise makes a good molasses feeder.

To prevent wastage of molasses by the animals feeding, it is recommended that a "float" be placed in the trough. "Floats" can be made of slats so placed as to permit the animal to lick up the molasses between the slats. Another type of "float" is one made of solid boards in which holes 2 to 2½ inches in diameter have been bored. In a wooden trough a 4-inch diameter pipe or pole, free to rotate, immersed halfway into the molasses may be used.

If large quantities of molasses are fed, it would be advisable to set up large storage tanks at the feed lot. It is possible to use float control valves. Some operators use a trough in connection with the float valve so as to maintain a thin layer of molasses about 1 inch or less in depth over the feeding portion of the trough.

If drums are used it is possible to invert these drums in a shallow tank with the open end down on the same principal as a range poultry waterer. The open bung permits the molasses to flow out and maintain its level as it is consumed. However, this method is not recommended for containers larger than 55-gallon drums.

A Covered Salt Box



SALT BOXES

Cattle should have salt available at all times. Mature beef cows will consume from 1 to 2.5 pounds of salt per month on range and pasture. It's practically impossible for cattle to get enough salt from blocks to meet their needs and desires.

Coarse ground salt is a must if the cattleman expects to take proper care of the salt requirements of his cattle. This salt should be iodized. Salt will need to be protected from the weather—especially rain and snow, or it will cake. Heavy metal boxes may be necessary where porcupines chew up wooden boxes.

Figure at left shows a covered salt box for ground salt.

CATTLE GUARDS

The widths of cattle guards vary somewhat with use. If placed in public thoroughfare, certain requirements, such as width and distance across, must be complied with. They should be strong enough to hold up to 20 tons on a single axle if they are to be used by trucks and other heavy equipment.

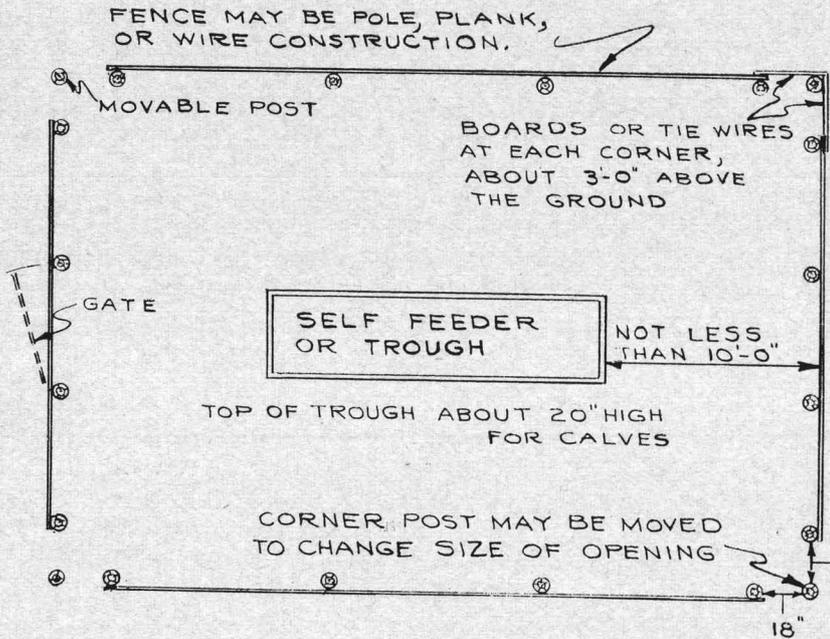
Cattle guards should never be constructed in a drainage way. It is advisable to make it possible to remove iron or wood rails or grates, whichever are used, whenever necessary for cleaning.

There should always be a gate at the side of the guard—this for livestock and heavy loads.

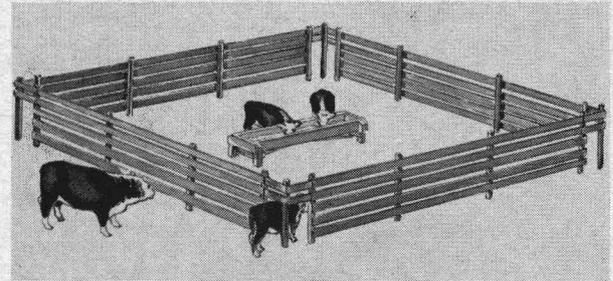
If you are building a guard on a county road, check with your county clerk to make sure your guard will meet the minimum standards for your county.

See back cover for detailed plan information.

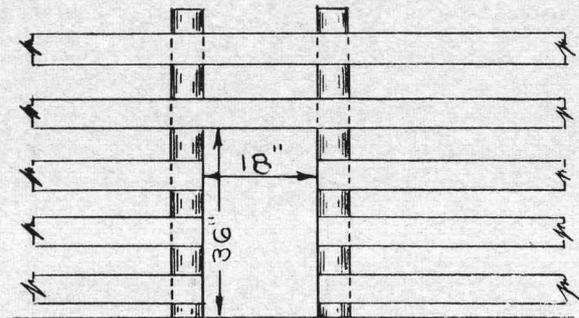
CREEP FEEDERS



There are times when it becomes necessary or profitable to creep feed calves. Calves will begin to take a little grain at 2 weeks of age. A self-feeder 10 feet long will take care of 40 to 50 calves. Not all creep feeders need protection from the weather.



CREEP FEEDERS PERMIT CALVES—without interference from full-grown cattle—to get grain as soon as they will take it. At left is plot plan; below is entrance detail; above is drawing of creep feeder in use. Adapt basic idea to local needs.

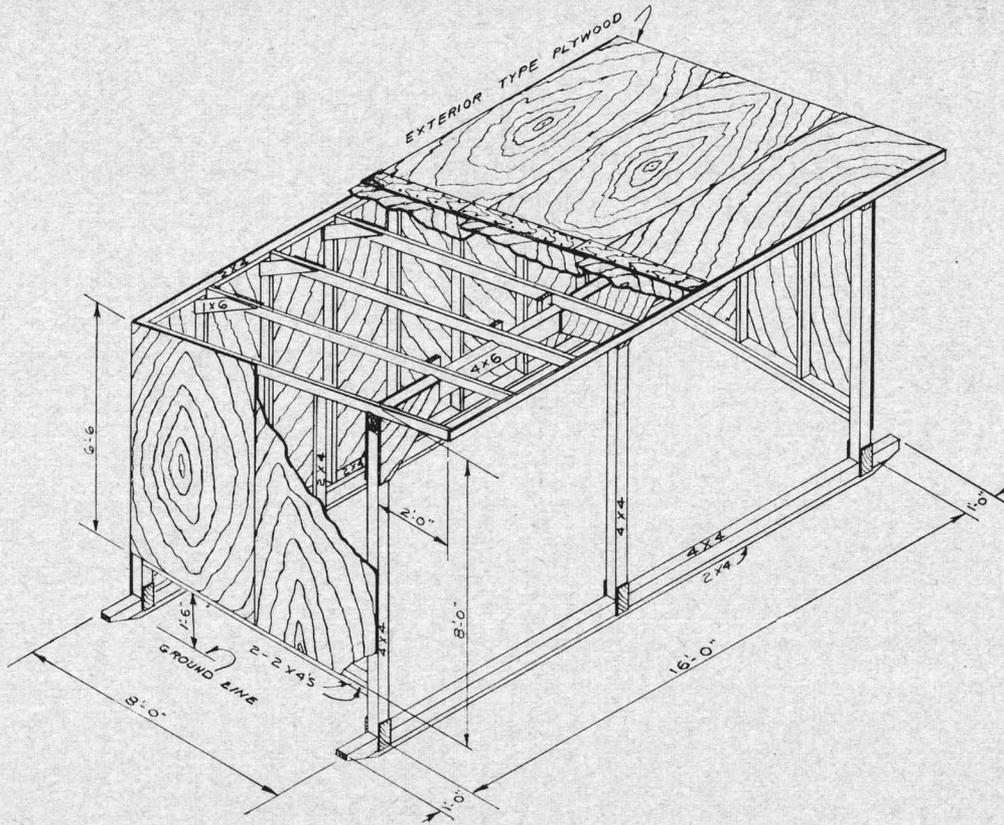


PORTABLE SHELTERS

Successful cattlemen know that it takes good feed and a lot of management to get a 90% plus calf crop. Calving dates have been shoved back to February and even earlier in some parts of the state.

This shelter was designed to meet the needs of the cattleman who practices early calving and may have need for a building for calving cows and cows and their newborn calves during inclement weather. The shelter is portable, because some operators make a practice to calve on new ground or meadows each year.

This shelter is easily adaptable for creep feeding.



A Portable Calving Shelter

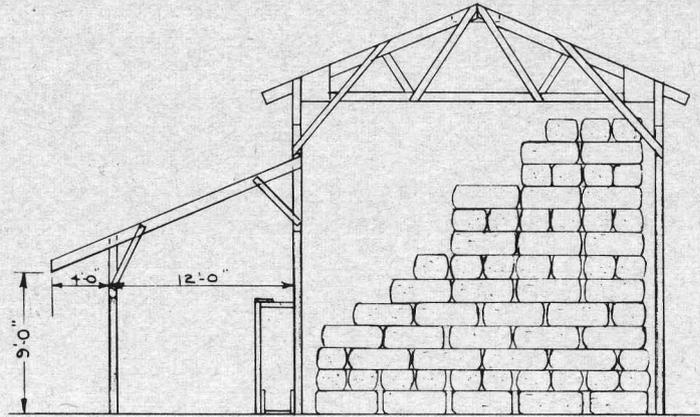
BEEF CATTLE SHELTERS

Beef cattle do not require a warm shelter but it is desirable to protect them from cold rains, snow, and wind. Feed lots should be surfaced with paving, shavings or sawdust, or coarse gravel to keep the animals out of the mud. Fine gravel may cause foot trouble.

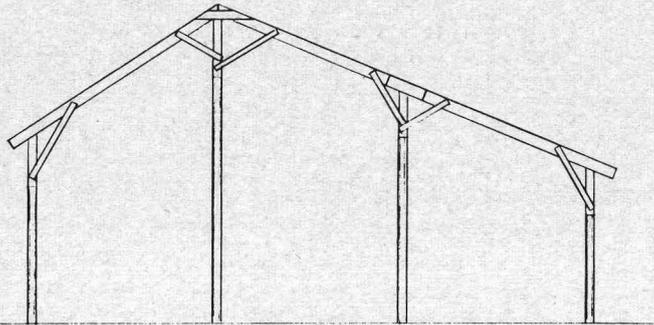
Several cross section plans are shown that can be adapted for both feed storage and a feeding area. The cross sections show pole frame type of construction.

For a winter feeding area where shelter is necessary, plan on providing space as follows:

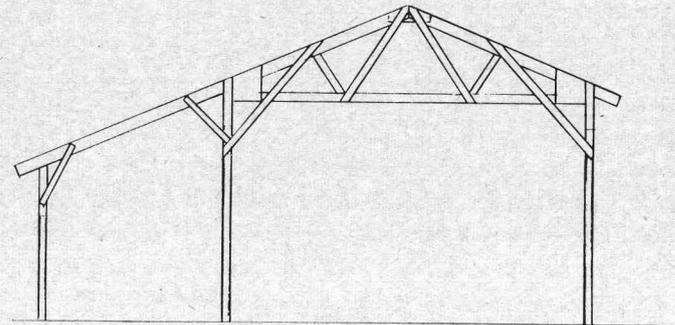
- Shelter 40 to 50 square feet per animal
- Feeding 20 square feet per animal
- Corral Space 75 to 100 square feet per animal



HAY STORAGE AND FEED SHELTER



SECTION THROUGH POLE FRAME BUILDING



SECTION THROUGH POLE FRAME BUILDING

Sheds should be designed for maximum use of power equipment. Supporting posts need to be worked around and except in wide spans trussed roofs are preferred, making a clear space for use of equipment and less danger of injury to animals. Areas along feed mangers should be paved.

A good choice of prefabricated buildings adaptable to many varied uses are available also. It is possible to obtain trusses for any span, thereby eliminating the center posts.

Oregon State College maintains a farm building plan service that has a large selection of plans that will satisfy most requirements, or with minor changes will fit most situations. See back cover for list of plans.

The figures on page 29 show cross sections of typical shelters.

SILOS

High quality grass silage with a grain supplement is being used to fatten steers and make good gains. Beef cows fed high quality grass silage will stay in good condition and in many cases will increase in weight.

It is possible to make good grass silage in upright, trench, and horizontal or above-ground silos. A few precautions are necessary to make good silage in any kind of silo. Information on silos and making silage is contained in Extension Bulletin 715, "A Homemade Wood Stave Silo"; Farmers' Bulletin 1820, "Silos—Types and Construction"; Extension Bulletin 669, "Making and Feeding Grass and Legume Silage"; and Extension Circular 552, "Making Trench and Stack Silage." These publications are available from the county extension offices.

TABLES

Feed Requirements

Animal	Condition	Period	Material	Amount
		<i>Days</i>		<i>Tons</i>
Breeding cow.....	Including calf	180	Grass Silage	5 to 6
	Silage, hay-ration		Hay Silage	$\frac{3}{4}$ 4 to 5
	Hay-ration		Hay	2 to 2 $\frac{1}{2}$
Weaners.....		180	Legume Hay	$\frac{3}{4}$ to 1

Weight and volume of stored feed and capacity of storages

Feed	Unit	Weight	Volume
		<i>Pounds</i>	<i>Cubic feet</i>
Shelled corn	Bushel	56	1.25
Ear corn	Bushel	70	2.50
Oats	Bushel	32	1.25
Wheat	Bushel	60	1.25
Barley	Bushel	48	1.25
Sacked feed	Cubic foot	40 (estimated)	
Fresh ground feed	Cubic foot	25 (estimated)	
Silage (in trench or bunker silo)	Cubic foot	30-35	
Silage (upright silo)	Cubic foot	30-50	
Silage (Loose removed from silo)	Cubic foot	18 (approximate)	
Hay (long)	Ton		500
Hay (chopped long)	Ton		250-300
Hay (baled loose)	Ton		200-220
Hay (bales tight)	Ton		80-100

Floor areas for animals with access to outside yards or pasture

Animal	Condition	Floor or Bedded area
		<i>Square feet</i>
Breeding Cow.....	With or without calf	50
Calf.....	Feeders, stockers replacement heifers	30
Yearling.....	Feeders, stockers replacement heifers	40
Fattening Stock.....	Average 750 pounds for fattening period	45
Fattening Stock.....	Average 950 pounds for fattening period	50
Cow.....	In maternity pen	120
Calf.....	2 or more in pen	20

Recommended dimensions for feeding equipment

Equipment	Conditions	Inside Width
		<i>Feet</i>
Feed bunk for grain or silage.....	{ Feed from both sides	3 to 3½
	{ Feed from one side	2½
Portable hay bunk.....	Feed from sides and ends	6
Hay manger, permanent.....	{ Feed from one side	2½
	{ Feed from two sides	3½

Floor of hay mangers or bunks should be as near ground level as practical.

Trough height for fattening mature stock 30 inches to lip, 24 inches for calves.

Trough length for mature animals 28 inches to 30 inches; 20 inches for calf.

Self-feeder trough length 9 inches per head.

For free choice of silage allow space for 65% to 75% of animals, and, hay space, when feeding silage and hay free choice, 25% to 35% of animals. If feed is not on free choice allow feed space for all animals to eat at same time.

Credits for Illustrations

California Agricultural Experiment Station : Chutes and gate fastener on pages 4, 6, 13.

Oklahoma Agricultural Experiment Station : Page 8.

Montana State College : Page 7.

American Hereford Association : Pages 10 and 11.

Oregon Agricultural Experiment Station : Pages 22, 23, 28.

DETAILED PLANS AVAILABLE

Detailed plans of the following pieces of beef cattle equipment shown in this bulletin may be obtained from the Oregon Farm Building Plan Service, Agricultural Engineering Building, Oregon State College, Corvallis, Oregon.

Page	Plan	Plan number	Price
3	Squeeze chute	6.64	\$0.60
19	Hoof trimming stock.....	8715-1	0.60
22	Chopped hay self-feeder.....	6.121	0.60
23	Self-feeder (grain)	6.12	0.60
24	Meal and mineral self-feeder.....	8711-3	0.60
26	Salt box	5655	0.60
25	Cattle feeding shelter.....	Building Plan 24	No charge
	Not illustrated		
	Cattle guard, wood construction.....	EC 456	No charge
	Cattle guard, reinforced concrete....	EC 455	No charge

Cooperative Extension work in Agriculture and Home Economics, F. E. Price, director.
Oregon State College and the United States Department of Agriculture, cooperating.
Printed and distributed in furtherance of Acts of Congress of May 8 and June 30, 1914.