

BEEF CATTLE EQUIPMENT

COOPERATIVE EXTENSION SERVICE • OREGON STATE UNIVERSITY

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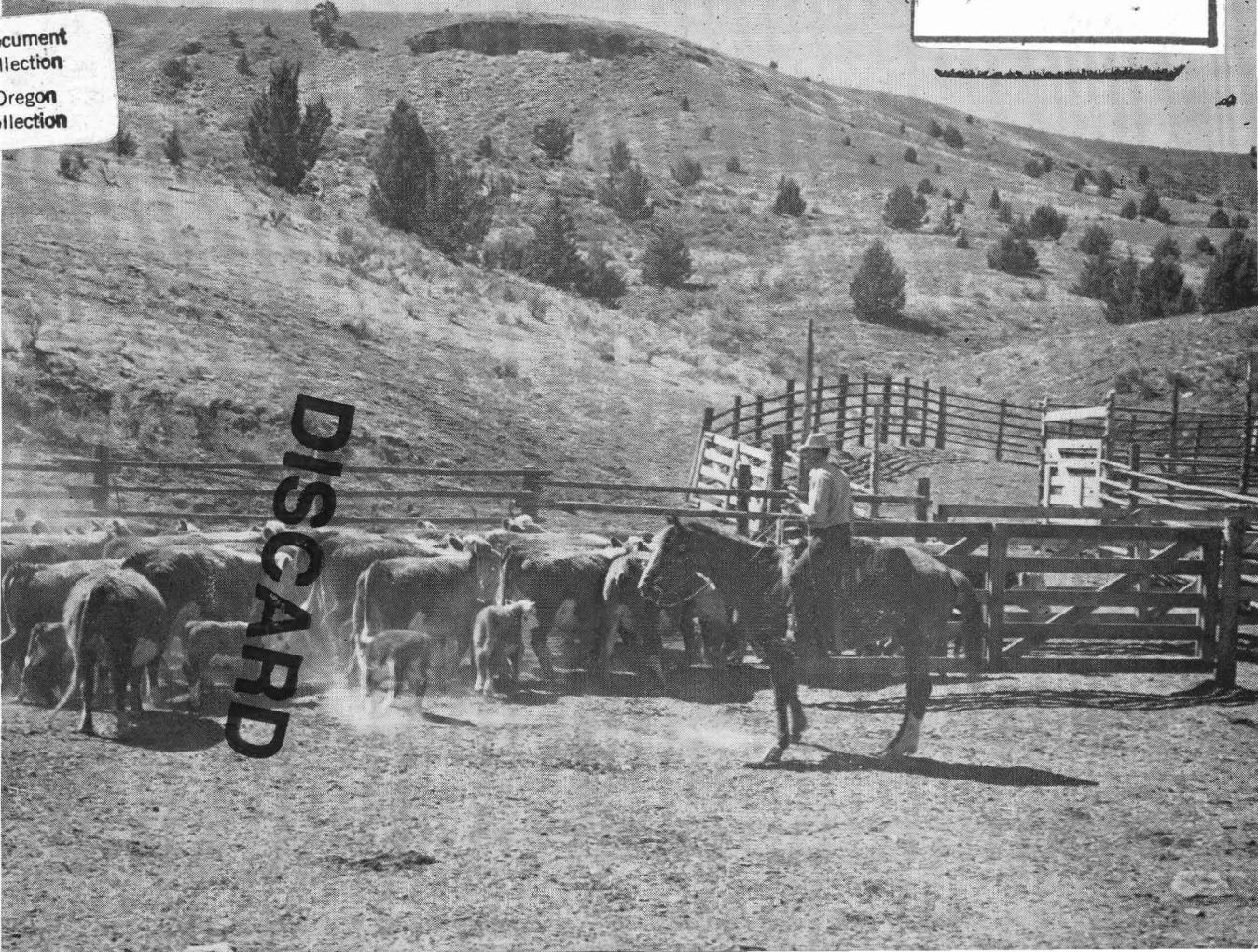
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BEEF CATTLE EQUIPMENT

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and

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OREGON STATE UNIVERSITY

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 to keep cattle from being unduly exposed to weather. Some overhead shelter is necessary in western Oregon, but wind-breaks 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 presented herein 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 for convenience, economy, and serviceability. It is desirable where possible to move cattle uphill rather than down through the chutes.

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

CORRALS AND CHUTES

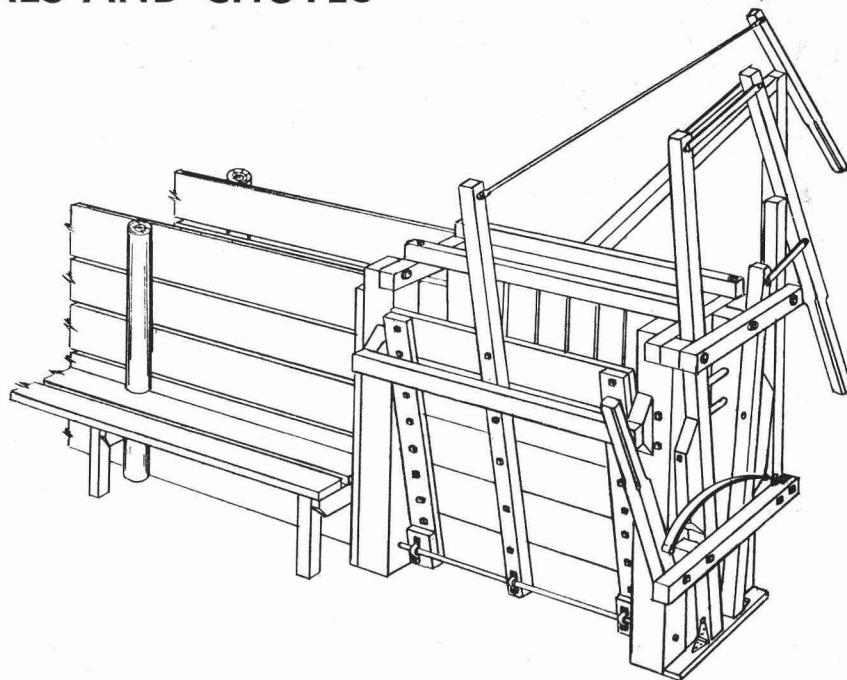
Money spent on good handling equipment is one of the best investments a livestock operator can make. There is no one plan for equipment such as corrals, scales, chutes, and other necessary or desirable items that will be best for all ranches. However, there are certain features and basic principles that apply to any size of operation.

A set of corrals should afford the facilities for these operations: branding, dehorning, loading, unloading, separating or cutting, weighing, spraying, and holding.

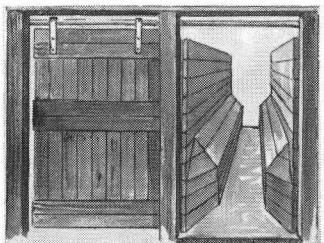
Drinking water should be made available if cattle are being worked during warm weather.

The first 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.

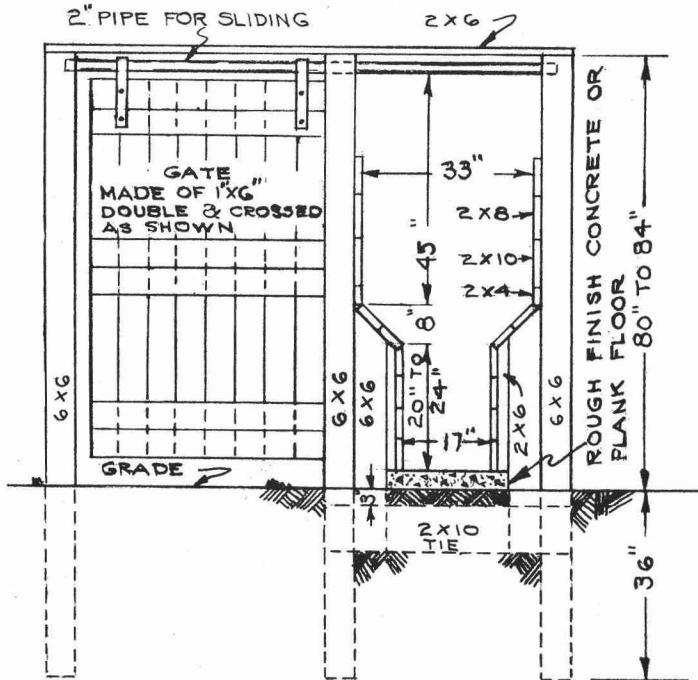
Posts of decay-resistant wood set 6 feet apart and $2\frac{1}{2}$ feet in the ground will make a good strong fence. Pressure-treated posts will last twenty-five years or more. Some on-the-farm treated posts have given excellent service. Directions for on-the-farm treatments are available from county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



A "SQUEEZE" IS THE KEY PIECE OF EQUIPMENT for handling and inspecting cattle. The Nevada plan shown here is available from your County Extension office. A number of satisfactory all-metal squeeze chutes are on the market. Some include a gate or opening at the bottom of the squeeze to allow calves to nurse while the cow is in the chute. The approach chute leading from the pens to the squeeze should be about 30 feet long to hold four or more animals.



A BRANDING APPROACH CHUTE like this may be used for spraying as well as for a passageway for both large and small cattle. Many ranchers recommend using either a plank or concrete floor cover. Start the plank about 2 inches above the concrete.



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

Holding Corral

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

Large operations may require two or more large holding pens; small operations may require only one larger pen and a small one.

Approach Chute

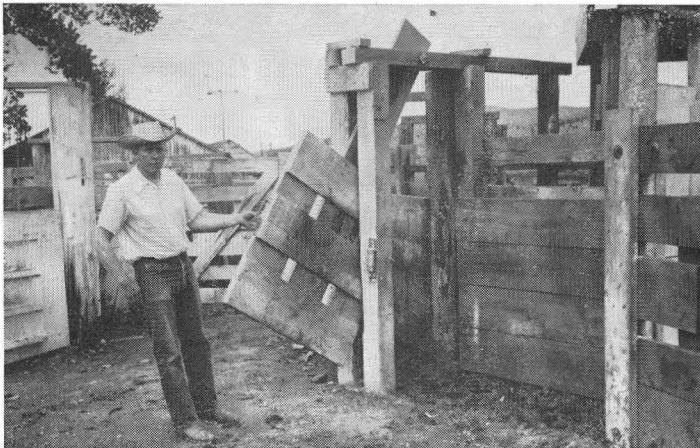
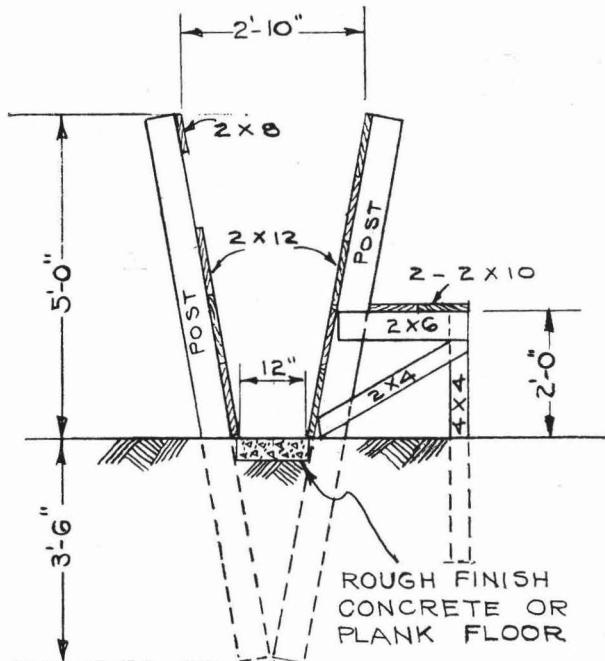
Various designs for branding approach chutes are in use, although preference seems to be in favor of the design shown at left. This type can be of a dual purpose nature. The smaller operator may use it for spraying. It is adaptable to both large and small animals. Large animals are not likely to go down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

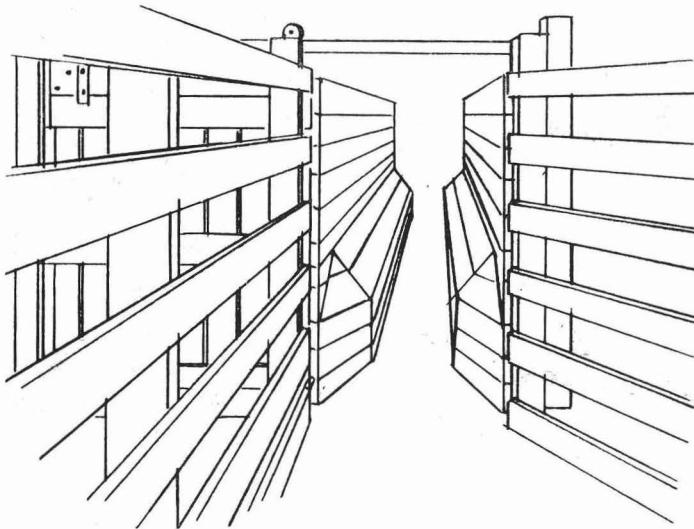
A walkway for working the cattle in the chute is placed on either side, usually on the left when facing the direction

THE SLOPING-SIDED CHUTE shown below has certain advantages and is prepared 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. For large animals, the top inside width should be increased from 2 feet, 10 inches to 3 feet or 3 feet, 4 inches. Start the plank about 2 inches above the concrete.



A GATE AT THE LEAD END OF THE APPROACH 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 approach 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 that may injure cattle. If the crowding chute is shaped something 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 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 onto 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.

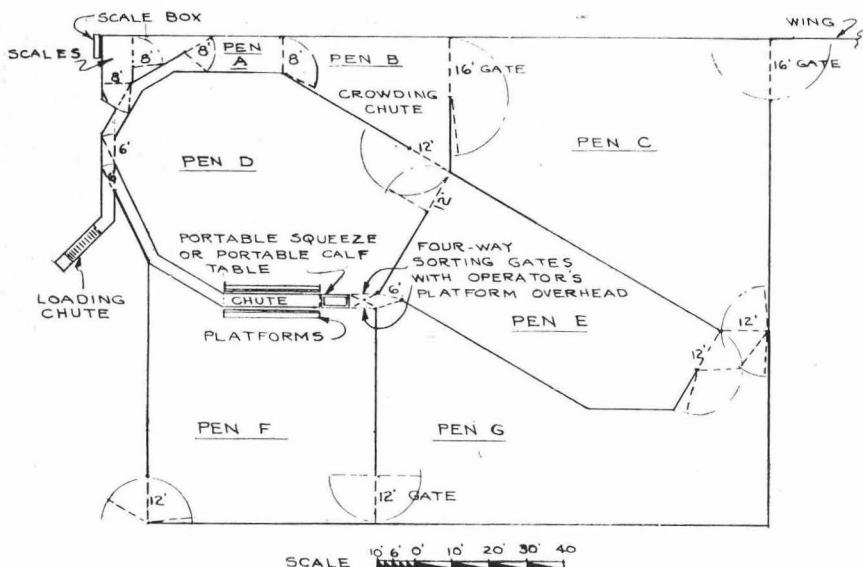
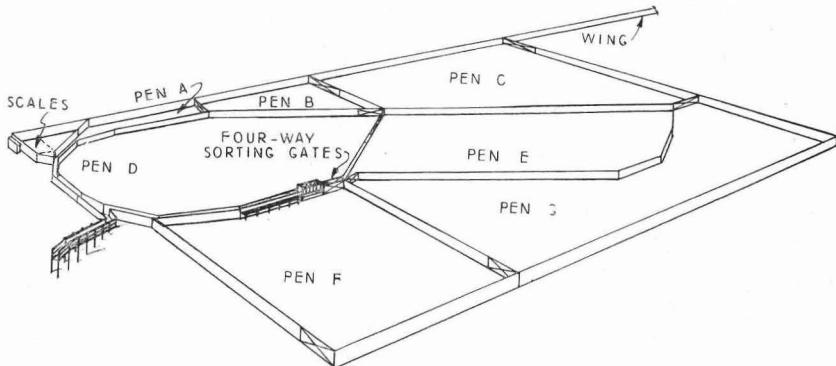
Saddle-horse cutting or sorting can take place through the gates at the junction of pens B, D, and E.

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.

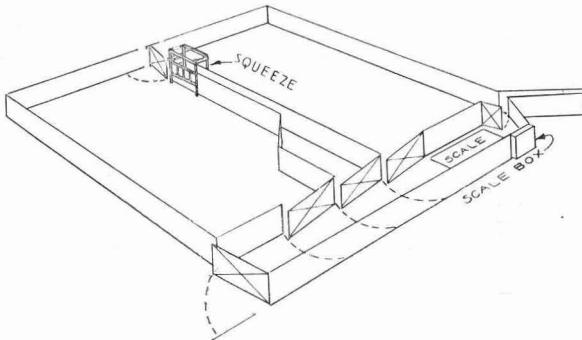
The portable squeeze chute can be moved out and the portable calf table moved in, in front of the approach chute, depending on size of cattle and operation to be performed.

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.

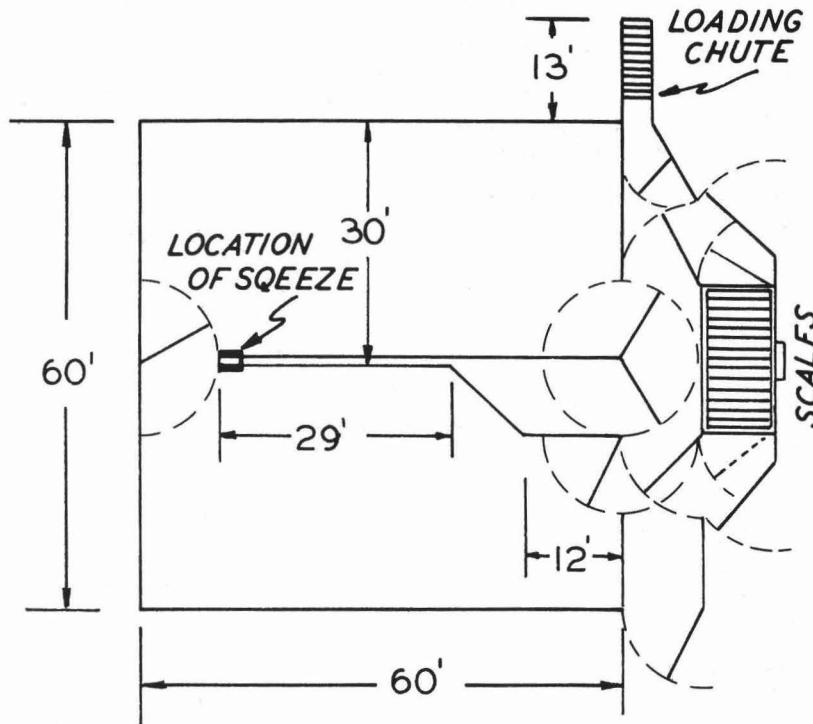
IN BUILDING CORRALS AND CHUTES, it is advisable, wherever possible, to have the rails or poles on the side where the cattle will be crowded. This arrangement cannot always be obtained. For example, in pen D, part of the outside fence is formed by one of the chute fences. In this case, it would be best 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.

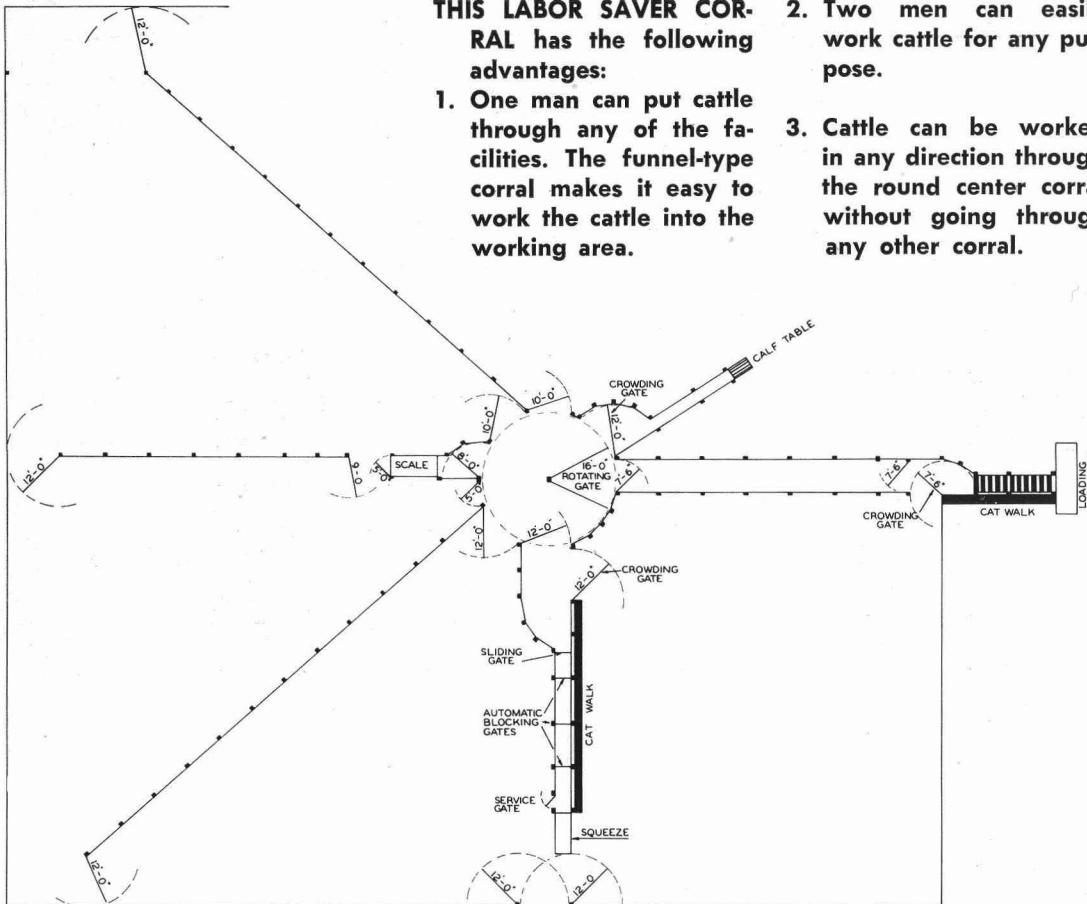


THE CHUTE LEADING TO THE SQUEEZE for 20 to 50 feet back should be made approximately 16 inches wide inside at the bottom and 3 feet wide at the top, about 6 feet up. On these chutes, one side may be hinged at the bottom so that it can be narrowed down for young calves and opened up for older cattle. In no place should the chutes be wider than from $2\frac{1}{2}$ to 3 feet inside. Add corners, in the chutes especially, should be rounded to avoid livestock injury. Pens may be adjusted to size of herd. Pen C should be 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 the scales near loading chute at right.

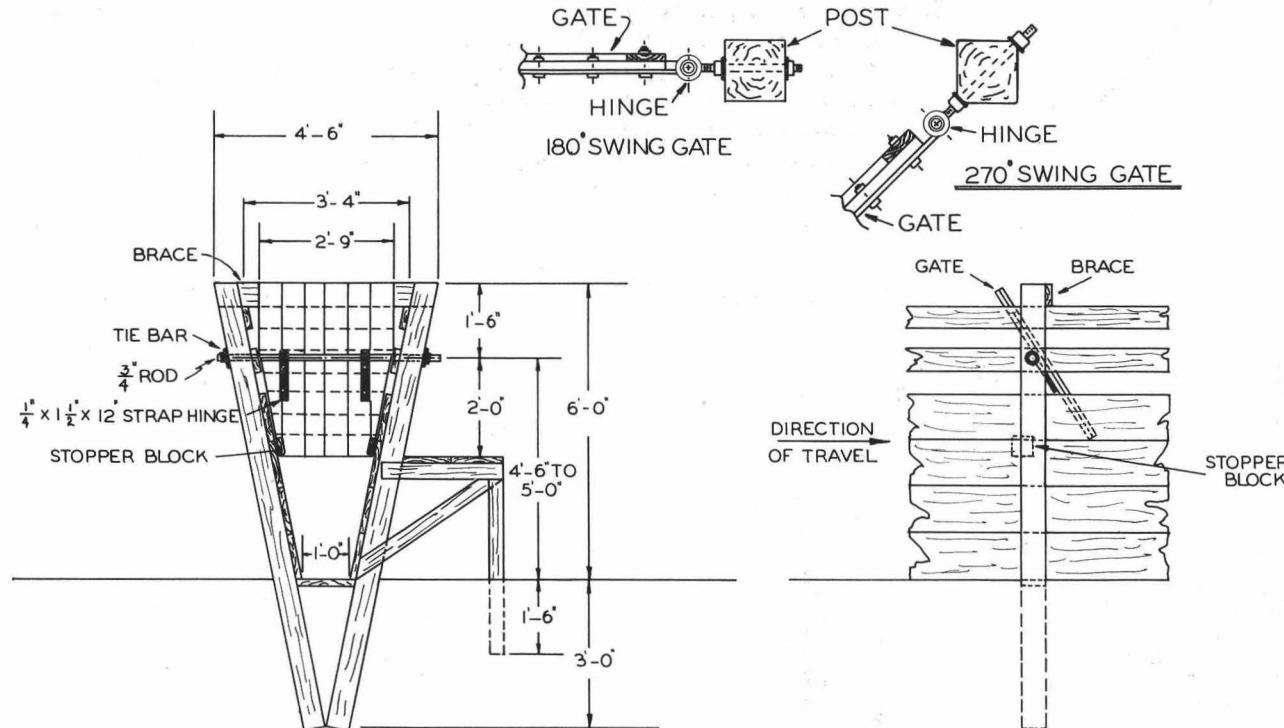




THIS LABOR SAVER CORRAL has the following advantages:

1. One man can put cattle through any of the facilities. The funnel-type corral makes it easy to work the cattle into the working area.
2. Two men can easily work cattle for any purpose.
3. Cattle can be worked in any direction through the round center corral without going through any other corral.
4. The two 16-foot gates in the center round corral can be placed at any angle and will go all the way around.
5. With this center corral and gate arrangement, cattle can be easily worked into any working facility; they can also be separated by working back out of the lane.
6. The gates into all of the working facilities are arranged to function as crowding gates to push the cattle into the facility.
7. The lead-in chute will have automatic hanging stop gates at each post.
8. Scales for individual weighing may be placed following the squeeze; or, for loading or unloading, scales may be placed off the lane.

Gate Hinges and Automatic Gate



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 they 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 12 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 13 is excellent for polled or dehorned cattle in the width shown. 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.

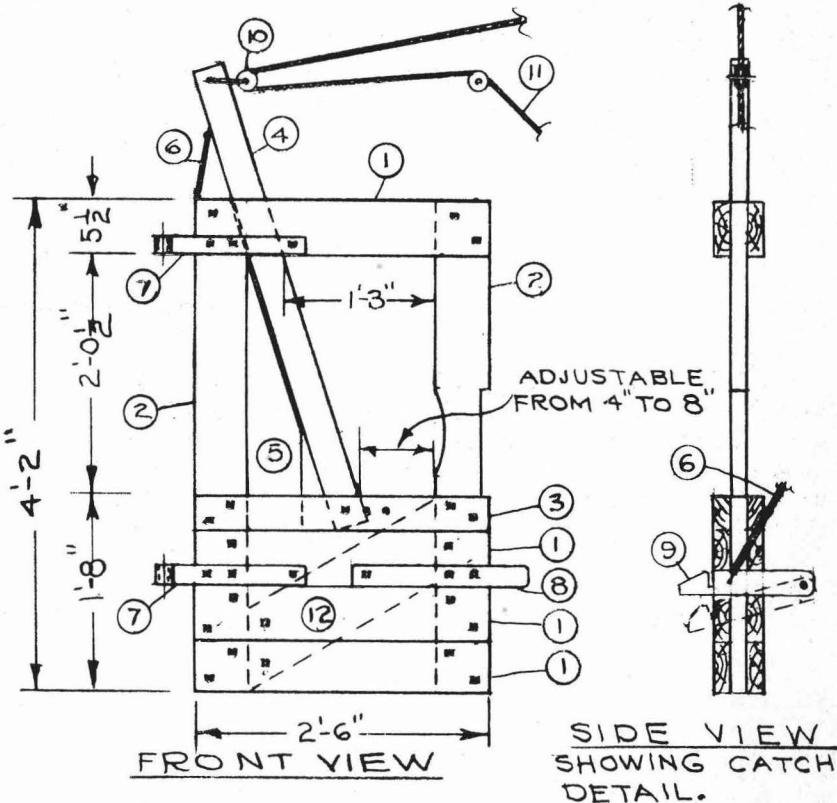
A narrow chute without a squeeze but fitted with either one of the two head gates might serve for dehorning, taking blood samples, and so forth.

A Hinged Head Gate Can Be Adjustable

Bill of Materials

| Item | Quality | Description |
|------|---------|---|
| 1 | 8 | 2 x 2 — 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 block |
| 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 OF 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.

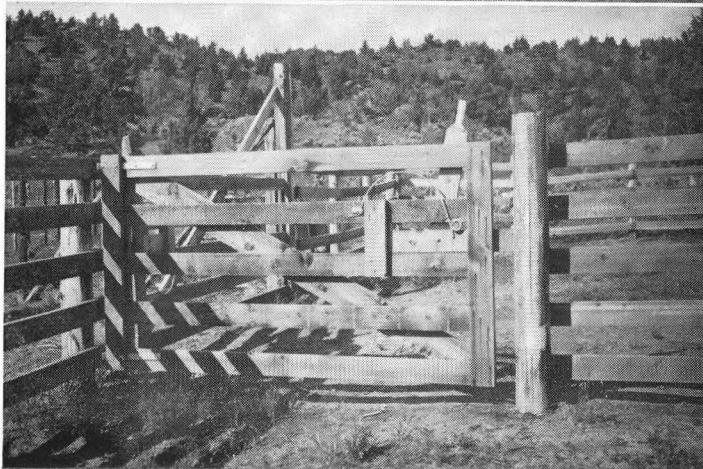
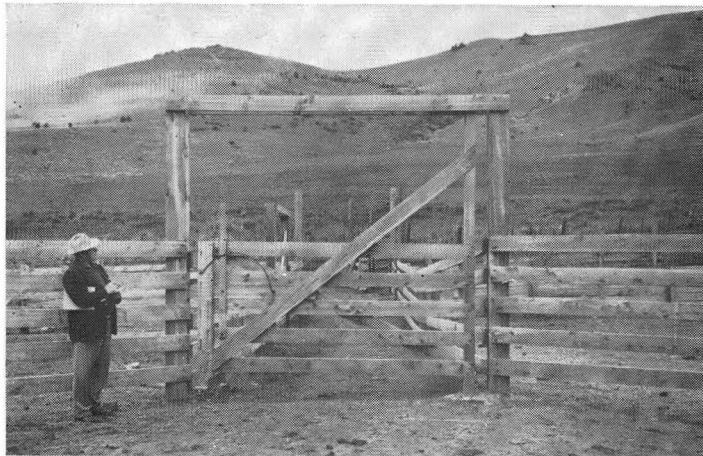
Set the gate post, treated with wood preservative, in concrete or use a "deadman" as shown on page 15. The deadmen should be treated wood. Make the posts on both sides of the gate of sufficient height for cross bracing to clear all farm-operated vehicles.

An adjustable gate hinge may be desirable in some corrals where cattle are wintered to allow for raising the gate above packed snow. One type is shown on page 15.

A number of good gate latches and fasteners are available. A dump rake tooth as shown in the gate plan on page 14 and a lever for opening will prevent cattle from opening the gate. These are inexpensive and easy to build.

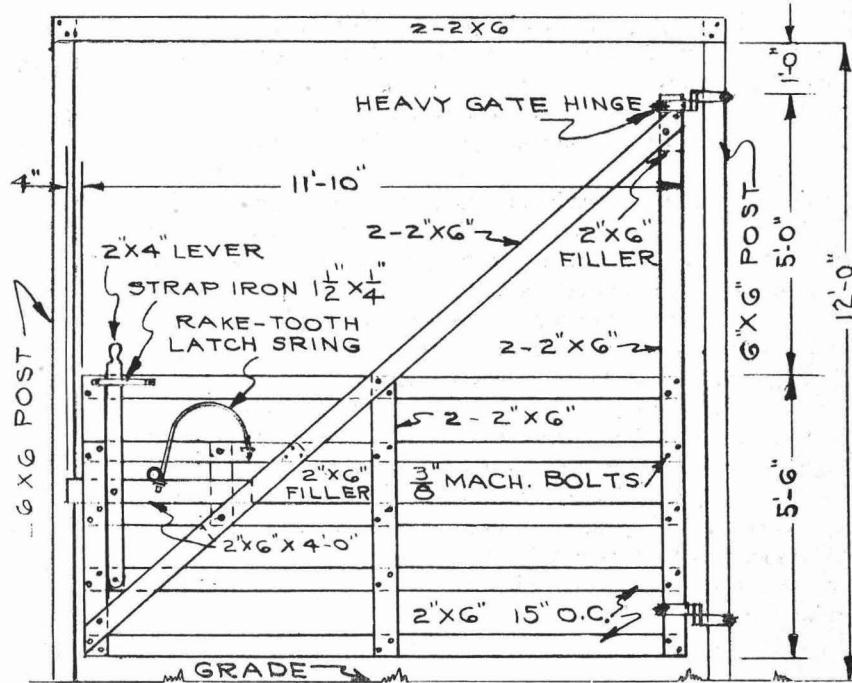
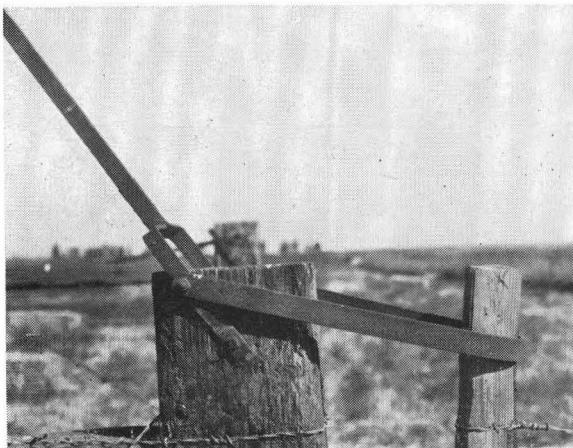
Whenever diagonal braces are used, it is advisable to put a parallel brace on each side of the gate to prevent warping or the extra weight will tend to twist the gate out of line or make it lopsided.

THESE EXAMPLES OF CORRAL GATES show different types of gate posts, latches, and bracing. For stability and greater permanence, posts either should be set in concrete or have "deadmen" like those on page 16 attached beneath ground or backfilled with gravel or crushed rock for $\frac{3}{4}$ -inch or less.



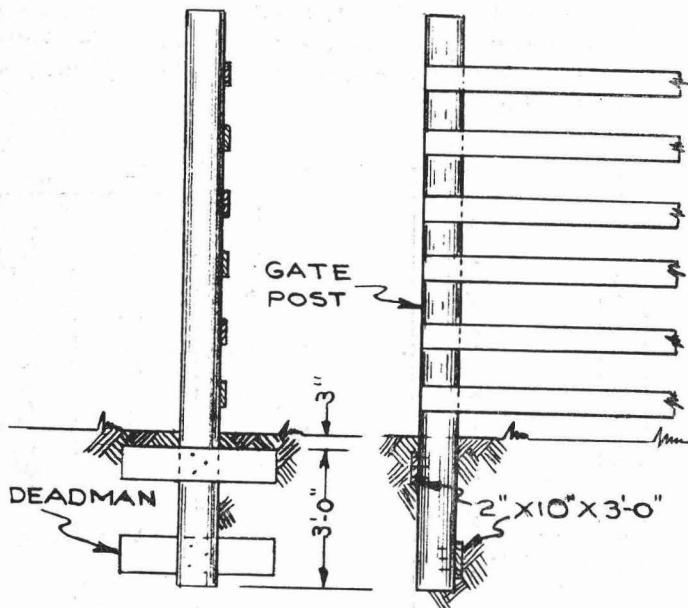
Corral Gates Require Sturdy Construction

THIS 12-FOOT CORRAL GATE (right) has 6" x 6" post 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 level for opening gate.

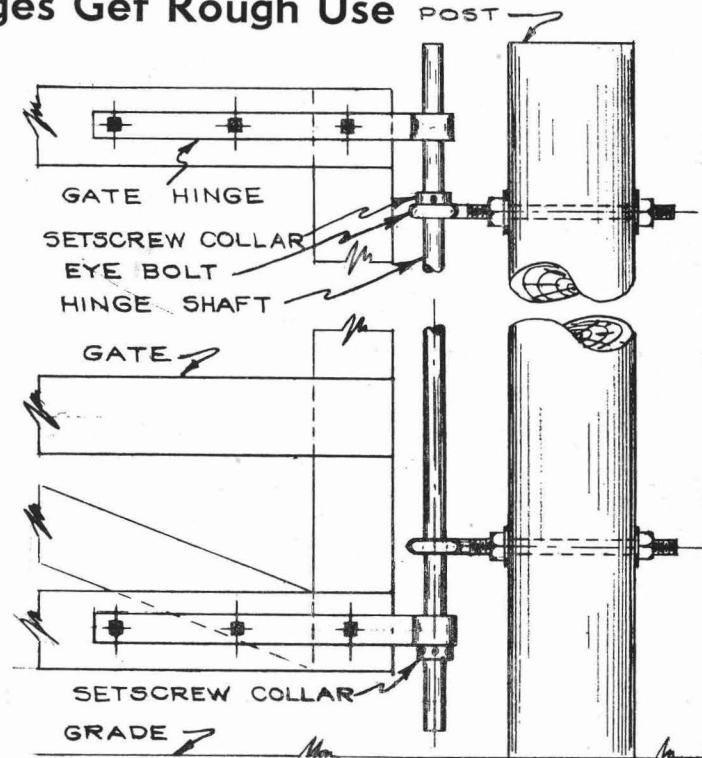


THIS GATE FASTENER (left) is easy to install and is adequate for wire gates used only occasionally. The handle pushed down tightens wire.

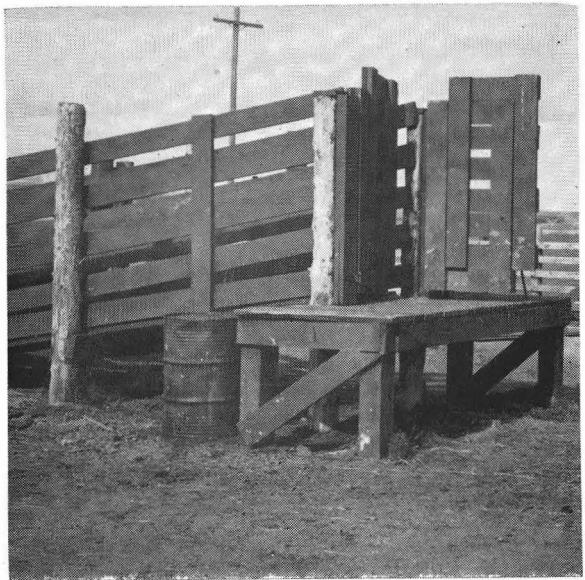
Gate Posts and Hinges Get Rough Use



GATE POSTS SHOULD BE TREATED with wood preservative and either should 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 to clog gate.



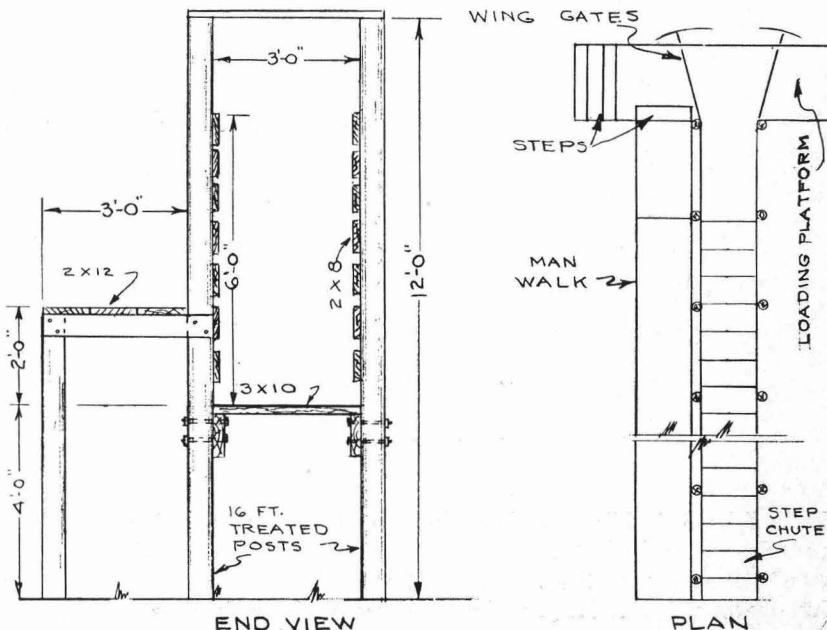
A WING GATE at the head of a loading chute.

A SECTION through the step ramp loading chute shown above. 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 the height of trucks most commonly loaded from it.

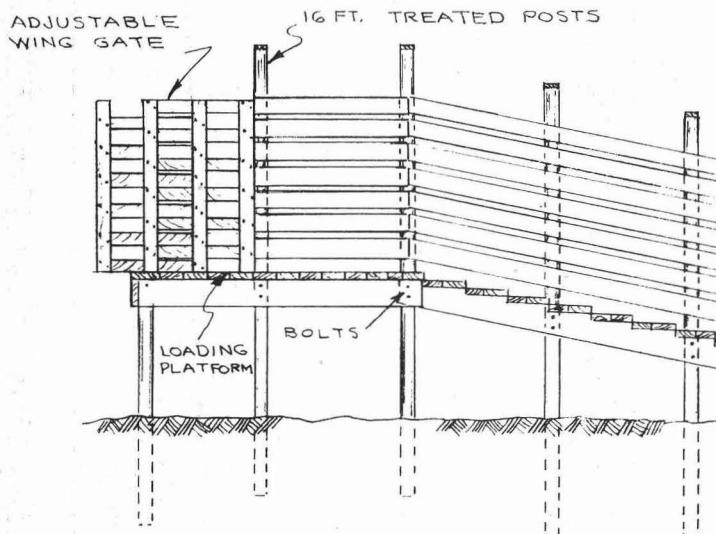
LOADING CHUTES

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 is to prevent spread of disease.

The width should not be over three 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.

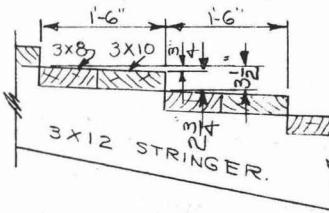
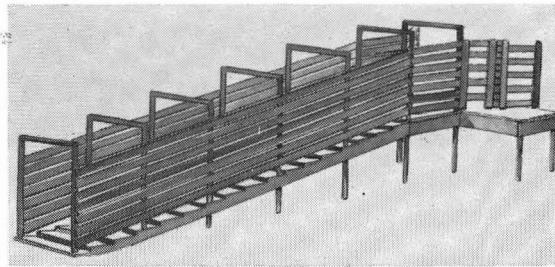


Step Ramp Makes Good Loading Chute



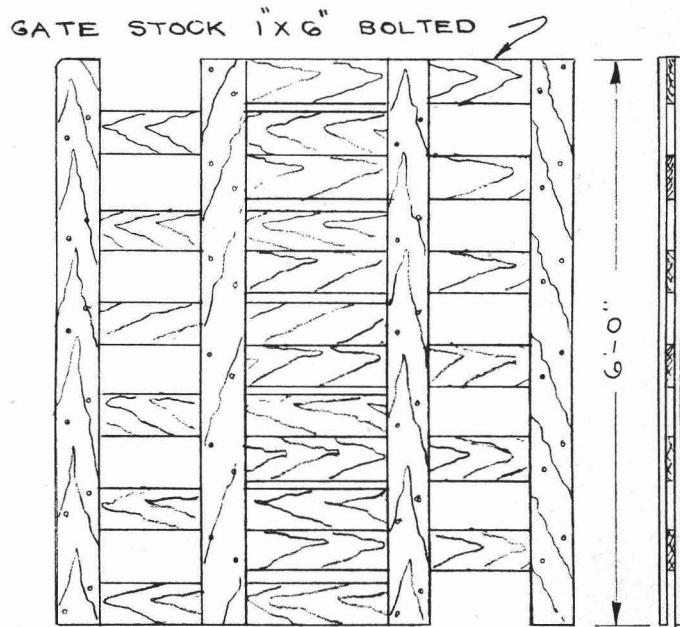
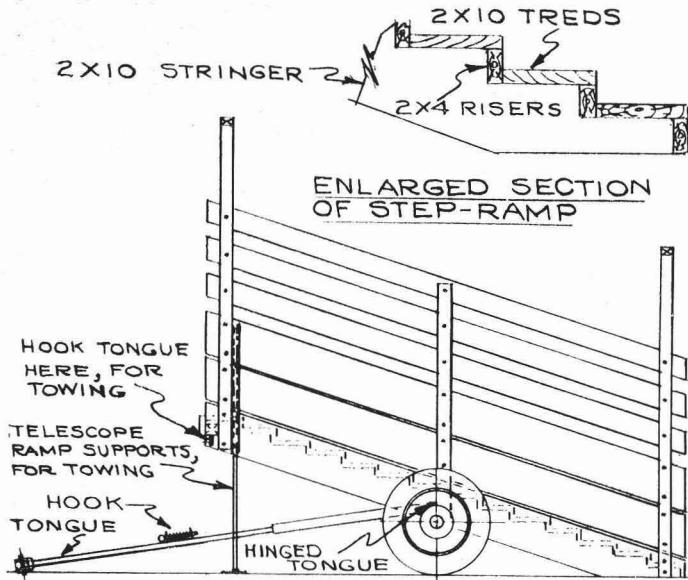
STEP LOADING CHUTE WITH LOADING
PLATFORM AND WING GATES

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.



DETAIL OF STEPS

Loading Chutes May Be Portable



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 16. 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 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.

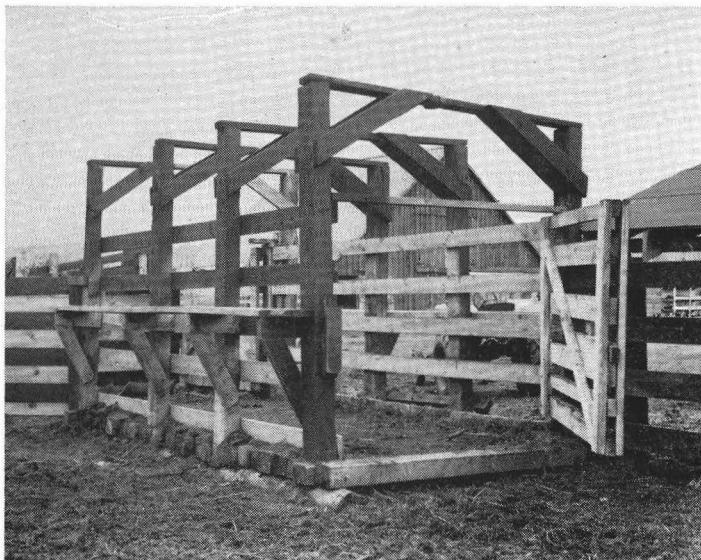
To carry on an effective program for the control of these insects it is necessary to have a good equipment, including a

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 the hose will not get 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 that sprayer can 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, allowing operators to spray the bellies.

TILTING HOOF-TRIMMING TABLE

A hoof-trimming table must be of rugged construction. A good-hoof-trimming table should have these qualities:

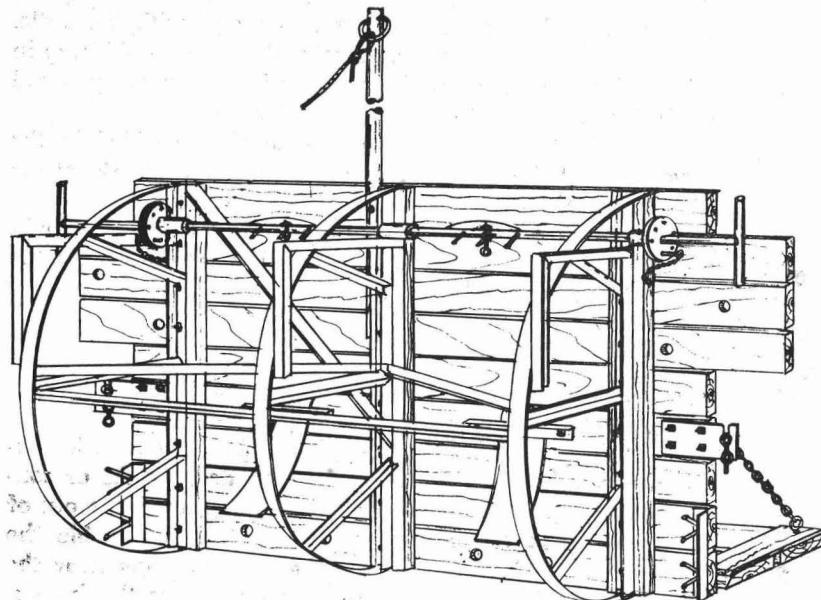
- It must be strong enough to restrain any size animal.
- It should be portable.
- It must be adaptable to various size animals.
- It should be designed so that one or two men can operate it.

- 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 table is available from Oregon State University Farm Building Plan Service.

THE HOOF-TRIMMING TABLE shown here is strong and portable. It can be adapted to fit most animals. Two men are required to operate it.

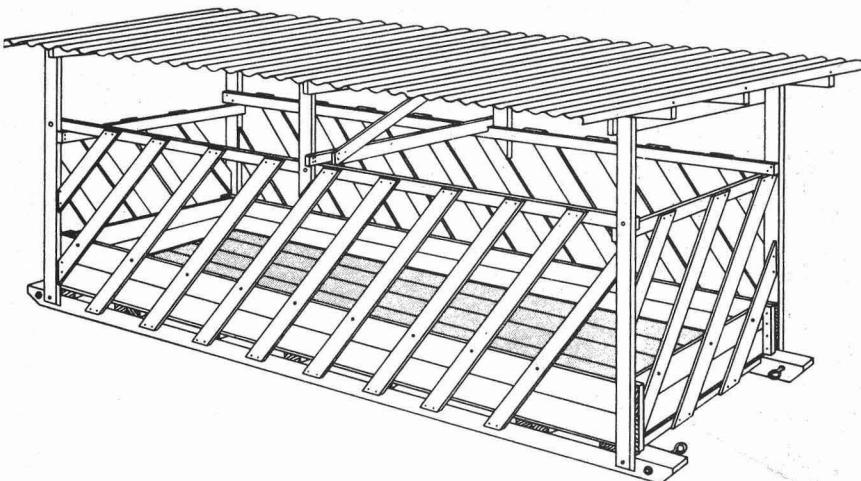


MANGERS AND FEED BUNKS

Did you ever see a contented and well-fed family of six or seven when there was room for only four or five 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

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.

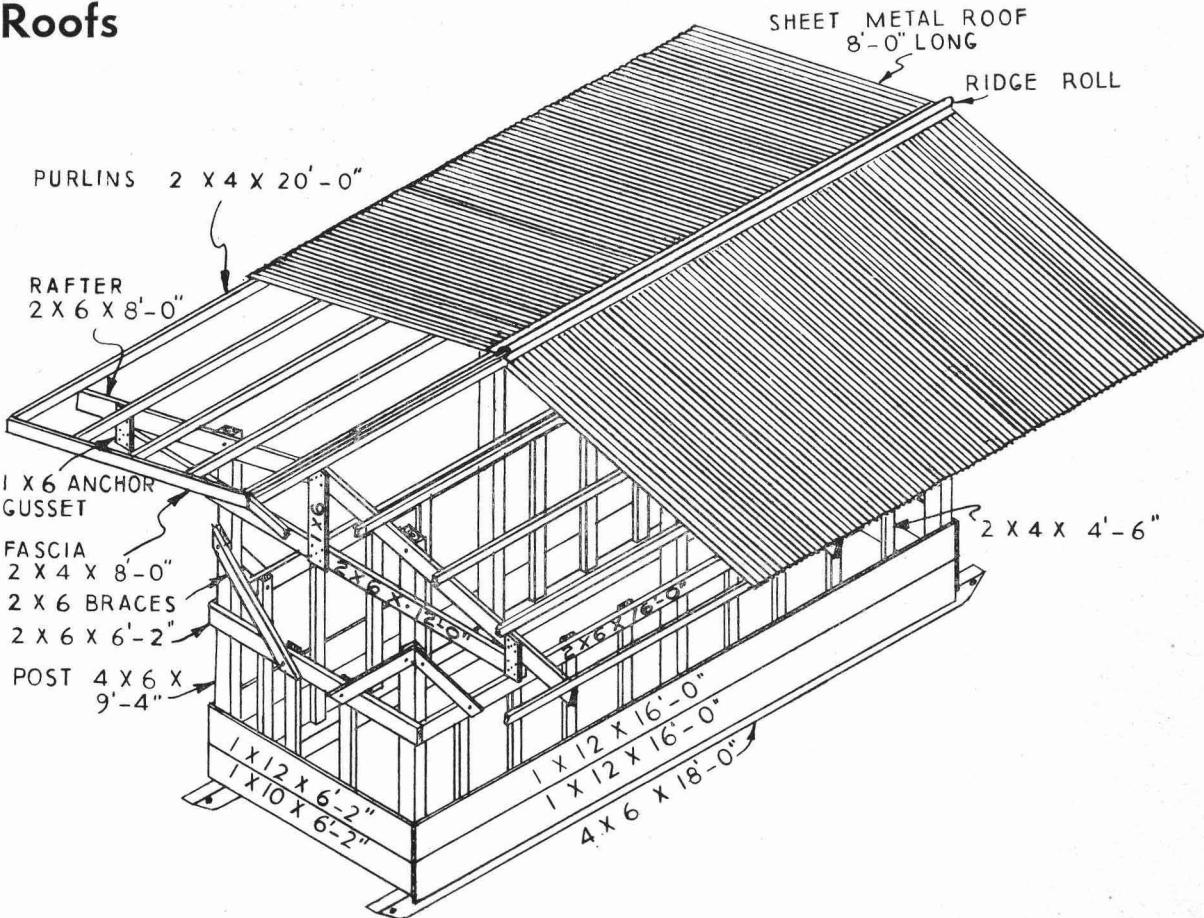
For self-feeders, use 6 to 8 inches for calves, 10 to 12 inches for yearlings, and 14 to 16 inches for steers. Some lots will do well on less space but some less aggressive animals

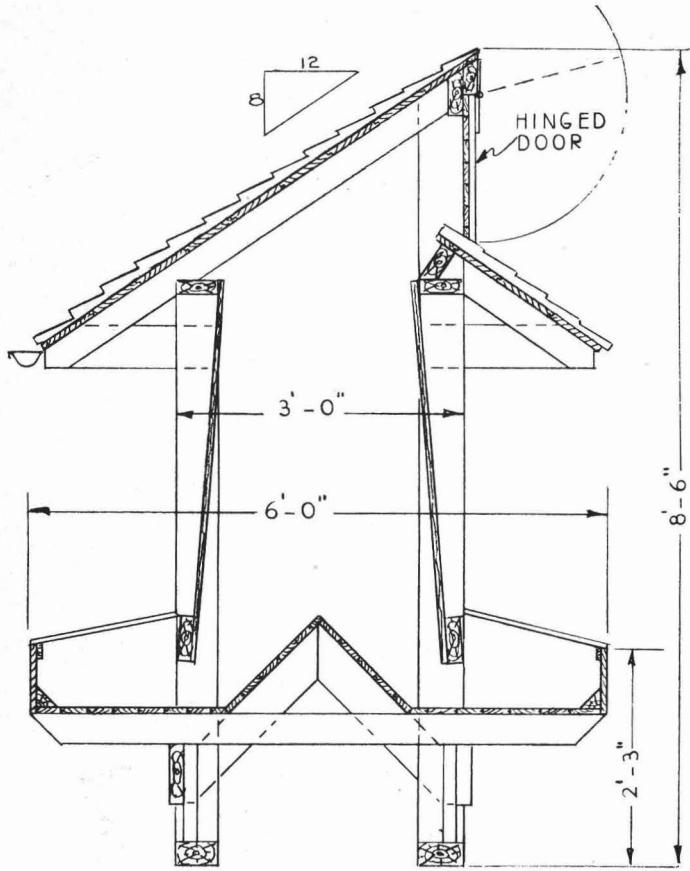


THIS PORTABLE HAY BUNK is built on skids. The floor and roof may be omitted in dry climates. Crossed 2 x 4 bracing should be added if the roof and floor are omitted. The diagonal openings result in less hay waste. This is OSU Building Plan 104.

Bunks Need Roofs

IN DAMP CLIMATES,
hay may have to be
covered in out-of-door
feeders. This drawing
illustrates a covered
portable hay bunk de-
signed for wetter re-
gions. It is essentially
the same as the bunk
on the opposite page
except for the roof.
A floor may be de-
sirable to keep hay
up off the ground.





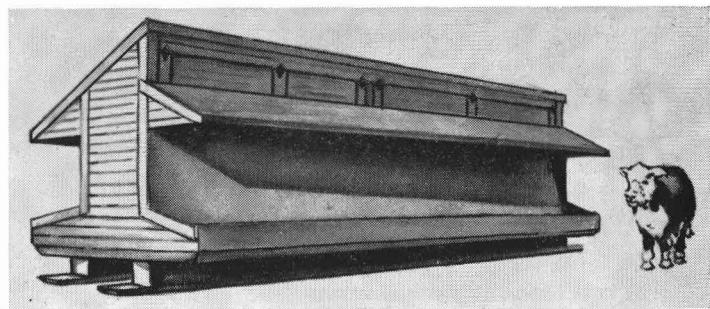
may be crowded out. More space will be needed in pastures—or wherever cattle do much waiting or pushing for feed.

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. 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 the plan on page 24. It is excellent for both open range and irrigated pastures. A portable hay bunk is shown on page 21. 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 with the bottom about on a level with the cow's feet. Uprights along the manager 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 21 is a good bunk for long or baled hay.

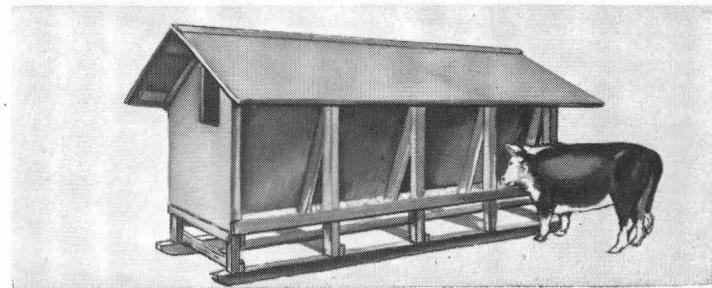
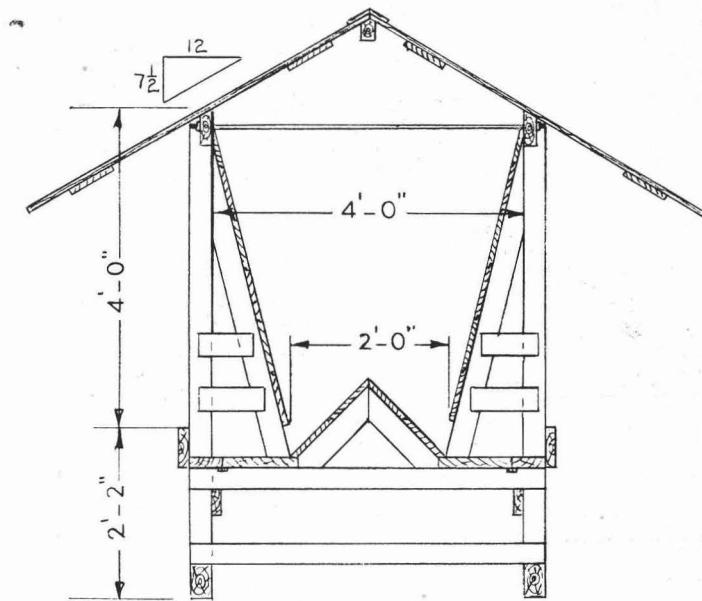
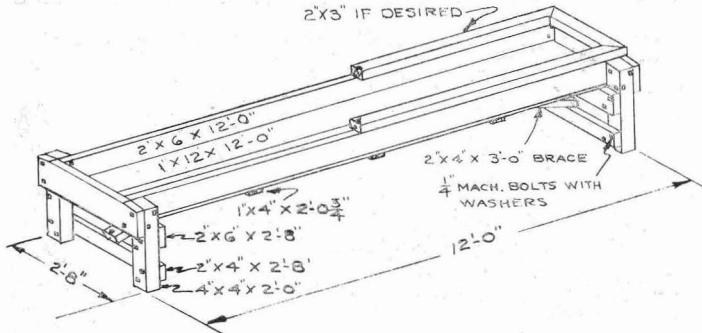
The plan on page 23 is designed as a chopped-hay feeder and has been used successfully at the Union Experiment Station.

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

The figures on page 25 show a self-feeder used for feeding meal and mineral supplements in Harney County. Feeders

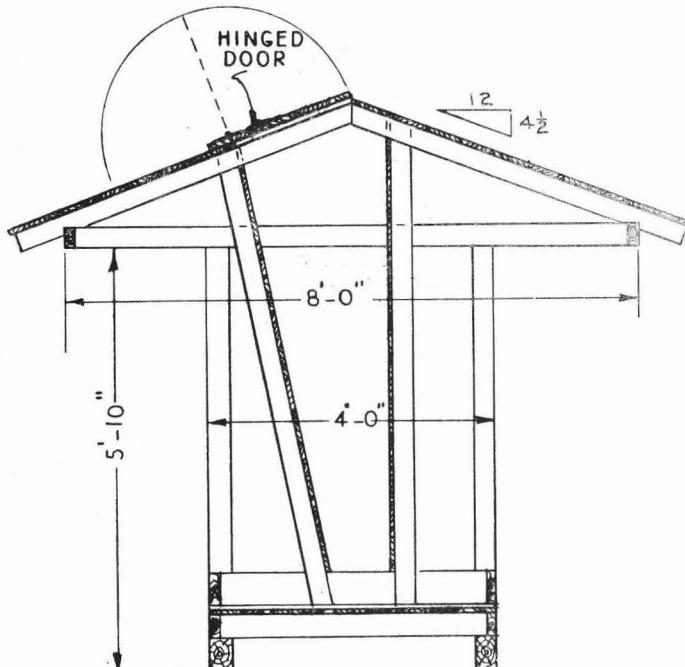
A HIGH-CAPACITY SELF-FEEDER like the one shown at the right is good for concentrates and various grain mixes.

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 moved easily to a new location.



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 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 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 22 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 about a mile apart. They are good for mineral supplements and meal, concentrates, and various other feeds.

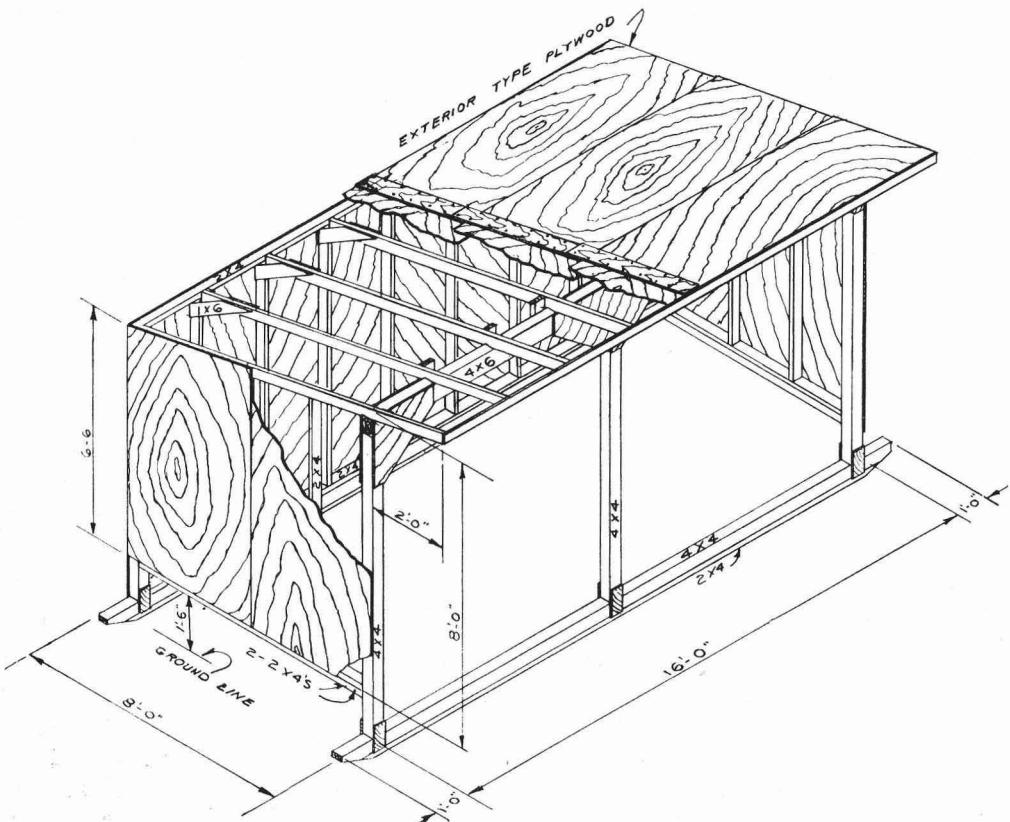
A Portable Calving Shelter Can Follow Herd

PORTABLE SHELTERS

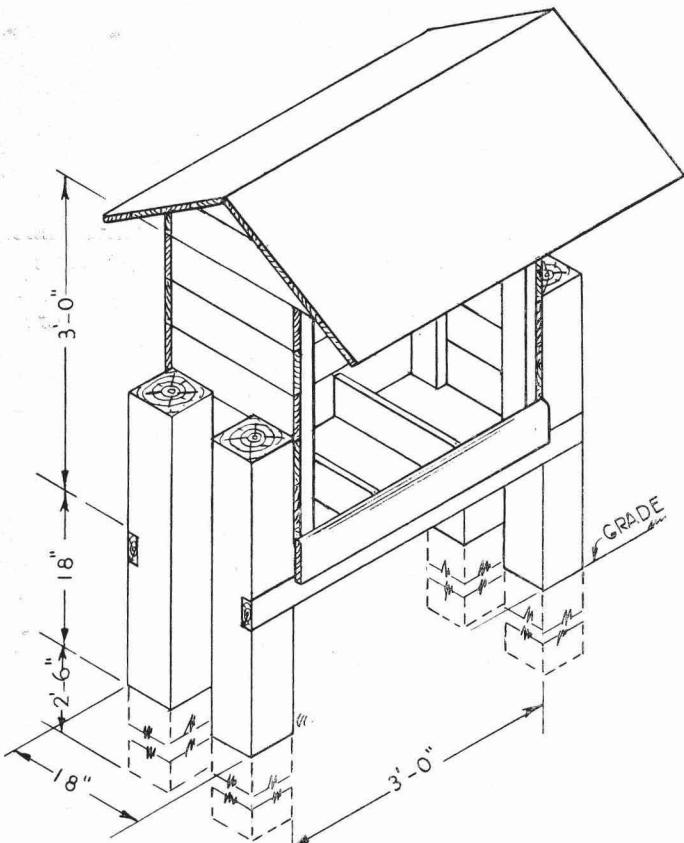
Successful cattlemen know that it takes good feed and excellent management to get over a 90% calf crop. Calving dates have been shoved back to February and even earlier in some parts of the state.

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 for cows and their newborn calves during inclement weather. The shelter is portable because some operators make a practice of rotating their herds to new ground or meadows each year for calving.

This shelter can easily be adapted to creep feeding.



Salt Box May Need Cover



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 is practically impossible for cattle to get enough salt from blocks to meet their needs and desires.

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.

The figure at the left shows a covered salt box for ground salt.

CATTLE GUARDS

The widths of cattle guards vary somewhat with use. If placed in a 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.

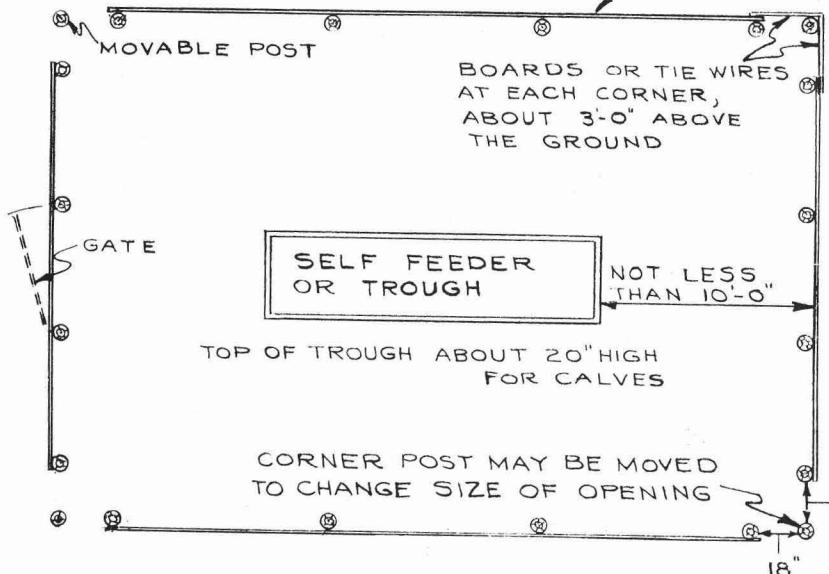
Cattle guards should never be constructed in a drainage-way. Rails or gates, whichever are used, should be removable for cleaning.

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

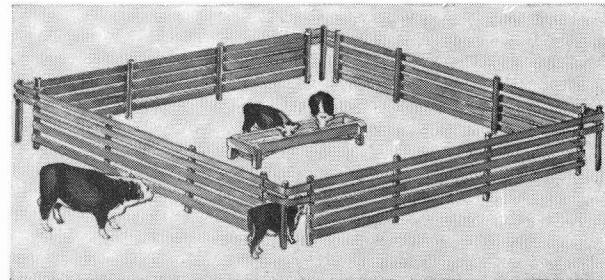
If you are building a guard on a country road, check with your county court or federal land representative to make sure your guard will meet the minimum standards for your county or area.

CREEP FEEDERS

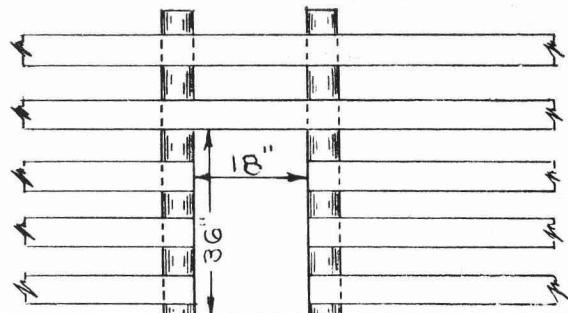
FENCE MAY BE POLE, PLANK,
OR WIRE CONSTRUCTION.

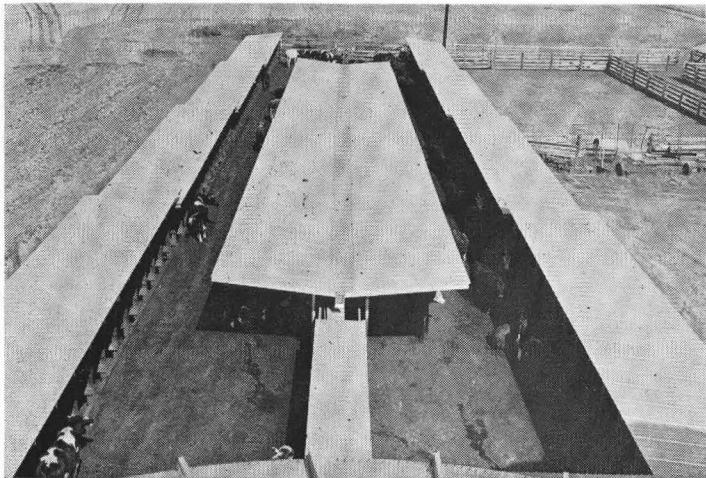


There are times when it becomes necessary or profitable to creep feed calves. Calves will begin to take a little grain at two weeks of age. A self-feeder 10 feet long will take care of 40 to 50 calves. Not all creep feeders need protection from the weather.



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.





FREE STALLS FOR BEEF CATTLE

Free stalls are satisfactory for beef cattle whether used in a feed lot or for a cow-calf operation. This has been demonstrated by both feedlot and cow-calf operations. Cow-calf operators have found that there is no problem with the calf getting in the stall with the mother if the stall is made large enough, about 4 by 8 feet, with a brisket board to prevent the cow from lying forward in the stall. Some room is then provided in front of the cow where the calf can rest.

Another arrangement that can be used is to make every third or fourth stall a creep area where calves can rest and be fed. The front of each stall adjacent to this creep area can be made an escape or creep so that calves can move to the protection of the creep area in case an unfriendly cow should enter the stall. This creep area or third stall may be converted to a conventional stall by removing the creep partitions.

Another alternative is to build a creep alleyway about 3 or 4 feet wide in front of the stalls so all calves can move from the stall to this alleyway and escape and rest there.

The advantages of stalls make it possible to build inexpensive shelters requiring much less bedding than in common loose housing. The animals stay cleaner and cleaning and feeding operations can be streamlined—making for less work.

Stall sizes for feeder cattle can be 36 to 40 inches wide and about 7 feet long. Entry to the stalls should be from a paved area.

TABLES

Feed requirements

| Animal | Condition | Period | Material | Amount |
|--------------|--------------------|-------------|--------------|----------------|
| Breeding cow | Including calf | Days 180 | Grass silage | Tons 5 to 6 |
| | Silage, hay-ration | | Hay | ½ |
| | Hay-ration | | Silage | 4 to 5 |
| Weaners | | 180 | Hay | 2 to 2½ |
| | | | Legume hay | ¾ to 1 |

Weight and volume of stored feed and capacity of storages

| Feed | Unit | Weight | Volume |
|-----------------------------------|------------|------------------|------------|
| | | Pounds | Cubic Feet |
| 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 |
|-----------------|---|----------------------|
| Breeding cow | With or without calf | Square feet 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 maturity pen | 120 |
| Calf | 2 or more in pen | 20 |

Recommended dimensions for feeding equipment

| Equipment | Conditions | Inside width |
|-------------------------------|--|-----------------------|
| Feed bunk for grain or silage | { Feed from both sides { Feed from one side | Feet 3 to 3½ 2½ |
| Portable hay bunk | Feed from sides and ends | 6 |
| Hay manger, permanent | { Feed from one side { Feed from two sides | 2½ 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 calves.

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.

Beef Building and Equipment Plans

| | <i>Plan No.</i> | <i>Price</i> |
|--|-----------------|--------------|
| Barns | | |
| Cattle barn pole construction; center hay storage—ends for loose housing 36' x 63' | 5754 | \$1.50 |
| Cattle feeding barn; center 24' and length in multiples of 12 feet; lean-to each side 29 feet wide | 5765 | 1.00 |
| Cattle and hay barn 30' x 60' | 5794 | 1.00 |
| Hay Racks | | |
| Portable rack on wheels 4' x 14' | 5777 | .50 |
| Portable hay racks (may also be covered) on skids 7 x 14 diagonal slats | BP 104 | Free |
| Portable hay rack on skids 4' x 13'-6" V-openings | 5772 | .50 |
| Self feeding hay wagon | 5908 | .50 |
| Self Feeders | | |
| Portable feeder on wheels | 5776 | .50 |
| Portable feeder | 5083 | .50 |
| Eicher self-feeder | BP 95 | Free |
| General Plans | | |
| Mangers and feeding floors | 5837 | .50 |
| Covered Feed Bunks | | |
| Fence line feeder, shed roof | 5854 | .50 |
| Umbrella-type covered feed bunk designed for silage—can be used for hay by redesigning bunk | BP 24 | Free |
| Umbrella type covered bunk can be used with unloading wagon or manger conveyor for silage | BP 56 | Free |
| Creep Feeder for Calves | | |
| 35-bushel for 30 calves | BP 48 | Free |
| 50-bushel for 40 calves—no creep fence required | BP 50 | Free |
| 65-bushel for 40 calves | 5764 | .50 |

| | <i>Mineral and Salt Boxes</i> | |
|--|-------------------------------|------|
| Portable wood construction on skids | 5759 | .50 |
| Double tiered—salt and mineral, wood construction | 5769 | .50 |
| Weathervane type from oil drum | MP 775 | Free |
| Post type (simplified plan) | MP 874 | Free |
| Cattle Working Corrals (details included on plans 5797, 5796, 5952) | | |
| Six-pen corral | 5797 | 2.00 |
| Expansible corral | 5779 | 1.00 |
| Two-pen layout, 20 to 50 head | 5796 | 2.00 |
| Two-pen layout, 130 to 170 head | 5976 | .50 |
| Range corral | 5952 | 2.00 |
| Corral and feed lots, Arizona plan | 5920 | .50 |
| Beef cattle, 50 head | 5991 | 1.00 |
| Corral for beef cattle | 5974 | .50 |
| Six corrals for beef cattle | BP 36 | Free |
| Cattle-handling corral | BP 63 | Free |
| Corrals for mechanized feeding | 5920 | .50 |
| Loading ramp and 6-way sorting trap | 5960 | .50 |
| Gates | | |
| For opening from car | 5467 | .50 |
| For opening with auto bumper | 5614 | .50 |
| Gates and fences for range corrals | 5961 | .50 |
| Cutting gate, tower, and chute for corrals | 5959 | .50 |
| Stocks | | |
| Portable | 5784 | .50 |
| Portable on pipe skids | 5792 | .50 |
| Low cost, wooden | 5740 | .50 |
| Wooden, similar to 5792 | 5761 | .50 |
| Hoof-trimming table, tilting, all metal | BP 83 | Free |

Water Trough

Water trough for cattle, continuous flow; made from 4-foot concrete pipe MP 898 Free

Loading Chutes

Suggestions for four types, three permanent and one portable 5793 .50
 Adjustable height 5852 .50
 Portable 5681 .50
 Loading ramp and 6-way sorting trap 5960 .50
 Portable step ramp BP 56 Free

Squeezes

Lever operated, hinged side (Nevada type) 5465 .50
 Lever operated, hinged side head gate 5791 .50
 Side manually tilted, three head-gate designs 5789 .50
 Tilting calf table, all metal, portable BP 64 Free
 Tilting calf table, wood, in place construction 5962 1.00
 Holding chute and headgates 5778 .50
 Variable-width working chutes 5850 1.00

Breeding Racks and Stalls

Portable 5037 .50
 Permanent 5853 .50
 For artificial insemination 5840 .50

Cattle Guards

| | | |
|--------------------------------------|-------|------|
| Concrete and steel | BP 92 | Free |
| Wood construction | BP 91 | Free |
| Concrete and wood construction | BP 90 | Free |

Dipping Vats

| | | |
|--|------|------|
| Dipping vat, swim type | 5876 | .50 |
| Cattle dipping vat and facilities (ADE approved) | 5940 | 1.50 |

Miscellaneous

| | | |
|---|-------|------|
| Pen for truck scale | 5932 | 1.50 |
| Separate stalls for loafing sheds | BP 82 | Free |

Plans with "BP" or "MP" designations are $8\frac{1}{2}$ by 11-inch sheets and single copies are free to Oregon residents (10¢ each to out-of-state residents). Order plans from the Farm Plan Service, Gilmore Hall 201, Oregon State University, Corvallis, Oregon 97331.

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