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Selection and Care of Dairy Sires--- The Nebraska Safety Bull Pen

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A good place for a "gentle" bull

The University of Nebraska Agricultural College Extension Service
and United States Department of Agriculture Cooperating
W. H. Brokaw, Director, Lincoln

Selection and Care of Dairy Sires

BY M. L. FLACK

More than a hundred years ago, a great English livestock breeder, after reviewing his breeding activities for a number of years, made the remark that "the sire is half the herd". Ever since that time this expression has been used by breeders as a most fitting axiom of an all important fact.

IMPORTANCE OF A PURE BRED SIRE

Every breeder of livestock who gives careful consideration to the problems of building up the herd to greater efficiency realizes that the greatest improvement comes through the sire. A striking example of this improvement and of the value of a pure bred bull has been shown by an experiment conducted at the Iowa Experiment Station, Ames, Iowa (see Bulletin 188, Iowa). In this experiment native cows of the Ozark region were used—scrub cows with no particular breeding. Given the same care as other cattle at the station in 74 lactation periods, these original Ozark cows averaged 3,991 pounds of milk and 187 pounds of fat. Thirteen daughters of these cows, sired by good, purebred bulls of the major dairy breeds, in 40 lactation periods, made an average production of 5,556 pounds of milk and 253 pounds of fat, an increase of 39 per cent in milk and 35 per cent in fat over their scrub dams' records. The station reported records for five cows of the second generation, which carried 75 per cent of the improved blood. These animals had an average production of 8,401 pounds of milk and 358 pounds of butterfat, an increase over the original scrubs of 130 per cent in milk and 100 per cent in fat. The above is only one of many such examples.

SELECTION OF A GOOD SIRE

Four factors determine the selection of a sire, namely: 1. Breed; 2. Pedigree; 3. Type or appearance; 4. Characteristics of offspring.

The Breed, which is the first factor, is generally decided by the breed of the females in the herd. In case the females do not show any particular breed characteristics, then the breeder should choose a sire from the dairy breed he likes best.

The Pedigree of the sire is one of the most important factors in his selection. Uniformity, good type, and consistently high production throughout the ancestry of the animal are desirable. The milk and butterfat records of the female ancestors and the records of the female progeny of both the male and female ancestors are the best guide to the value of the pedigree.

In studying the pedigree, the mother of the animal in question should be given first consideration. She should be of good type with satisfactory evidence in the form of official records or D. H. I. A. records of her milk and butterfat producing ability.

Next in importance to the dam is the sire. He should be judged mostly by the type and production of his daughters if they are in milk; if not in milk, then by the production of his sisters and mother.

There has been a tendency for a good many sellers to call attention to the sire's ancestors back four or five generations. Too much attention should not be given to animals so far back in the pedigree. For example, an animal in the fourth generation can supply only 6.25 per cent of the total inheritance.

The person who is not familiar with pedigrees is likely to be misled by pedigrees that are filled up with production records of distant relatives. The records of such animals have little bearing on the real merit of the sire under consideration. For example, in case the dam has no records upon which to base her value, one often sees under her name in the pedigree, "Dam is by a brother to the sire of . . ."

Type and Individuality. Type, particularly, has an important place in determining the sale value of both purebred and grade animals, and therefore should be considered in selecting the herd sire. The prospective buyer should choose only a bull of desirable dairy type. He should see the dam and the sire of the bull to assure himself that they also carry the same desired type. If the sire and the dam show marked dairy characteristics, the chances are good for the bull's offspring to have these also. The above method is especially important if the bull is purchased as a calf.

Characteristics of the Offspring. Proved sires, those having tested or producing offspring, are always considered the safest to buy. Unfortunately not many of such sires are available, chiefly because the breeders do not keep their sires long enough for their daughters to come into production. Young and unproved sires are used in most of our dairy herds today, because as a rule their owners have little or no means of handling them, or because the herds are too small to afford two sires. If more of the sires could be retained until they are proved and used to the full extent in their respective communities, much of the uncertainty in breeding and herd improvement would be eliminated.

If a bull has a sufficient number of daughters in production and these daughters are on test, then it is comparatively easy to determine his value. For at once the buyer can see the

PROVED SIRE

Sire's Name and Number—*Lincoln Gerben Pontiac Colantha 460699*

Date of Birth—*December 19, 1924*

Breed of Sire—*R H*

All records figured to maturity by using 70%, 80%, 90%.

Only 12-month records used.

Dam's Name and Number	Age Yrs.	Breed	Milk Lbs.	Fat %	B'fat Lbs.	Daughter's Name and Number	Age Yrs.	Breed	Milk Lbs.	Fat %	B'fat Lbs.
Marjory Kartor Leda 819857	7	Pb. H.	12,962	3.2	414	Gerben Marjory Colantha 1183558 1930	3	Pb. H.	12,739	3.6	455
Giantess Leda Kartor Swastika 983691	2	Pb. H.	11,769	3.1	359	Colantha Gerben Leda Pontiac 1189920 1931	4	Pb. H.	12,359	3.9	482
Lottie Pontiac Colantha Lincoln 560557	8	Pb. H.	12,880	3.2	406	Lottie Colantha Pontiac 1176989 1930	3	Pb. H.	13,672	3.8	525
Daisy	5	Pb. H.	9,603	3.1	300	Dolly 1930	2	Pb. H.	13,477	3.2	426
Sadie Mercedes Piebe Artis 1060096	3	Pb. H.	10,304	3.4	355	Gerben Artis 1211225 1931	3	Pb. H.	15,061	3.8	566
Sadie Mercedes Piebe Artis 1060096	3	Pb. H.	10,304	3.4	355	Mercedes Gerben Piebe 1293145 1931	2	Pb. H.	17,817	3.5	626
Belle Swastika Kartor Knoll Grange 956193	2	Pb. H.	14,559	3.5	513	Kartor Pontiac Knoll 1215712 1931	3	Pb. H.	13,125	3.5	464
Nebraska Colantha Nettje 495441	11	Pb. H.	18,678	3.6	671	Colantha Nettje Pontiac 1249111 1931	3	Pb. H.	16,189	4.1	668
Queen Mercedes Kartor 1049250	8	Pb. H.	11,112	3.7	407	Gerben Mercedes Colantha 1337163 1931	2	Pb. H.	14,389	3.7	537
Lottie Pontiac Colantha Lincoln 560557	8	Pb. H.	12,880	3.2	406	Gerben Colantha Lottie 1337162 1931	2	Pb. H.	16,578	3.5	573
Leda Kartor Betty 817747	M	Pb. H.	12,858	3.2	406	Betty Pontiac Kartor 1213711 1931	4	Pb. H.	13,562	4.0	541
TOTAL—11 dams			137,909	3.3	4,592	TOTAL—11 daughters			158,966	3.7	5,863
AVERAGE			12,537		417	AVERAGE			14,451		533

DAUGHTERS EXCELLED DAMS

Butterfat—116 lbs.....27.7%

Milk— 1914 lbs.....15.3%

DAIRY SIRE—SAFETY BULL PEN

type, shape of udders, and the production merit the sire is throwing. A bull is proved good when five of his daughters exceed the production of their five respective dams.

FEEDING AND CARE OF THE YOUNG BULL

The young bull which is to be kept for breeding purposes should be well fed during the growing period. An animal which is underfed during his first years may fail to reach his full size. Although this may not hinder him as a breeder, it will detract from his real sale value.

The young bull is generally reared with the heifer calves of the herd until he is five or six months old. During this time he can make maximum growth on the usual ration of the calves in the herd. Whole milk should be fed for the first four weeks at which time a gradual change to skim milk can be made (see Nebr. Bul. 621). It is well to feed the young calves skim milk until they are six months old, at the same time using a liberal grain ration.

At the age of five or six months it is well to separate the bulls from the heifers. The milk feeding may be continued several months longer if a more rapid growth is desired. Roughage should make up a good part of the ration. It should always be of the best quality, free of weeds, dust and mold. A good legume roughage, such as alfalfa or clover hay, is the most desirable, although some breeders get good results from feeding good quality prairie hay with a carefully balanced grain mixture.

Corn and oats in equal amounts make a suitable mixture with legume roughage or corn, oats and bran are still better. The following rations are more commonly used:

No. I	No. II	No. III
100 lbs. corn	100 lbs. corn	300 lbs. corn
100 lbs. oats	100 lbs. oats	300 lbs. oats
	100 lbs. bran	100 lbs. oil meal

One pound of grain should be fed for the first 100 pounds of live weight and one-half pound for each additional 100 pounds of live weight. At six months the bull calf will be consuming approximately 4 pounds of grain daily. In case the milk is removed at this time, the grain ration should be increased. The young sire should be kept in good flesh, but not fat—a neat, trim, slick appearance is the breeder's aim. Over-feeding makes the animal too fat and has a tendency to bring out coarse, undesirable features. Bulls should be well fed and grown until they have reached maturity, which as a rule is between the ages of four and five years.

BREEDING AGE

If well fed, the young sire is old enough for light service by the time he reaches the age of twelve months. However, one or two services a week is all that should be allowed from the age of twelve to eighteen months. As the bull becomes older and more developed, the number of services can be increased. If the handler uses good judgment and conserves the bull's breeding powers, he may be kept a good, serviceable bull for twelve or fifteen years. On the other hand, if his services are too often and too many he may become a slow and uncertain breeder early in life. The mature bull, if the services are well distributed over the year, can breed a hundred cows.

The bull should never be permitted to run with the herd. Such a practice results in the bull's exhausting himself unnecessarily and it also results in breeding heifers too young, making them small and less valuable as producers. Under such conditions it is impossible to keep accurate breeding records. Furthermore, there is always danger to persons and property when the bull is running loose.

RINGING AND DEHORNING

When the bull is ten or twelve months old a ring should be put into his nose even if he is regarded as gentle and easy to handle. The ring is a great help in handling any bull and may serve as a protection to a herdsman in case the bull becomes vicious. A copper ring two to two and one-half inches in diameter is satisfactory at this time but should be replaced by a larger and stronger ring when the bull reaches the age of two years.

Ringling the bull is not a difficult task provided the operators are prepared for the work. The bull's head should be securely fastened so that he cannot jerk around. After his head is secured, grasp his nose with the fingers, then push a trocar with cannula through the cartilage which separates the nostrils. Then pull out the trocar, leaving the hollow cannula in place. Put one end of the open ring in the cannula, then withdraw the cannula leaving the ring in his nose. Close the ring and fasten the screw.

The care and skill of performing this operation depends upon having the bull securely fastened as well as having a trocar and cannula. As soon as the bull's nose heals he should be taught to handle with a staff. This is by far the safest and easiest way to handle a dairy bull.

To remove or to leave horns on a bull should be a matter for the owners to decide. Horns have no particular value unless it is for cattle kept for show purposes. Some breeds are regarded as plain or lacking without their horns. A bull is

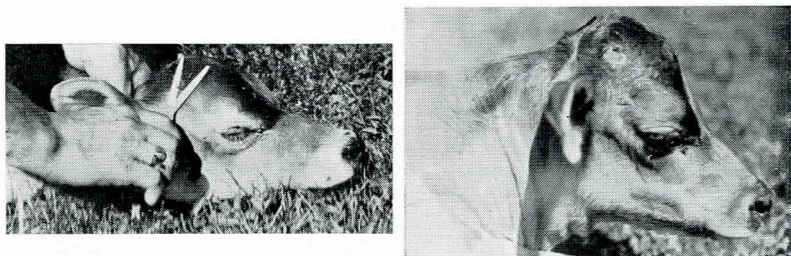


FIG. 1.—The first step in dehorning is to clip off the hair around the button. Caustic potash will leave a small scar where the horn would have been.

more or less dangerous under any circumstances, but certainly less so when dehorned.

The easiest and most humane way is to dehorn when the calf is only a few days old. This is done by applying caustic potash, or some commercial preparation (see Nebr. Circular 6-01-2) to the horn button. If the operation is properly handled the animal will have a smooth poll. Some breeders prefer to wait until the bull is two years old before removing his horns, their belief being that the operation has a tendency to quiet or subdue the bull, thus making him easier to handle.

CARE OF THE FEET

It is important to keep the feet of the breeding bull in good, sound condition. Exercise in a bull paddock tends to keep his hoofs worn off to normal length. In case the bull is sluggish and does not take enough exercise it may be necessary to trim his feet occasionally. If the hind feet do not wear off and keep growing longer, it will not be long until the bull will be unable to serve. Trimming the feet is best done with the animal cast and securely tied. The tools needed for this work are a pair of sharp hoof nippers, a sharp knife, and a rasp. This work should be done under the direction of some one with experience. The inexperienced may take too much off the hoofs, making the animal lame.

FEEDING THE MATURE BULL

A mature bull should be kept in just moderate flesh, never allowing him to get too fat. There is no set rule for feeding old or mature sires, the caretaker must be the judge as some bulls require much less feed than others. The amounts of roughage and concentrates vary in individual cases.

Legume hay such as alfalfa or clover meets the demands for roughage. As a rule the bull should be fed such amounts as will be cleaned up readily. A mature bull will eat ten to fifteen pounds if the roughage is of good quality. Silage, if

fed, should be fed in very limited quantities and be of good quality. There is a general belief among breeders that silage impairs the breeding ability of a bull. However, there is no experimental proof that it does.

The condition of the animal and the amount of service should be the breeder's guide in feeding grain or concentrates. The grain mixture should be fairly rich in protein and moderately bulky.

The bull can be fed from the same mixture as that used for the cows, provided this ration is a good one. The following mixture will give satisfactory results:

Ration I	Ration II	Ration III
3 parts corn	3 parts corn	3 parts barley
2 parts oats	2 parts bran	2 parts oats
1 part oil meal	1 part oil meal	1 part L. O. M.

Any of the above mixtures fed at the rate of 4 to 8 pounds a day should be sufficient. There are several things to avoid in feeding a mature bull. Two of the more common are:

a. Avoid getting the bull too fat—it is better to have him a little thin, as too much flesh makes a bull slow at service and an uncertain breeder.

b. Often aged bulls will develop large middles—in fact, so large that it is impossible for them to serve cows. In a case of this kind the bull's roughage and bulky feed should be cut down to the minimum.

Good, pure water should be provided at all times, particular attention being given to see that the bull does not suffer for water in hot weather. The bull pen or house should be provided with a convenient box in which salt can be kept so that the bull may have access to it every day.

PROTECTION AND EXERCISE

If the bull is confined in a restricted lot, protection in the form of a shed or house should be provided. This shed should be in a well-drained location if possible so that the floor will remain dry. It should be tight enough to furnish protection from the cold and provide shade in hot, sunny weather.

Exercise is very important to prolong the usefulness of a sire. An animal will walk about more in an oblong lot than it will in one which is more nearly square. In case a bull is sluggish and will not exercise in a properly constructed lot, often an old tree stump or piece of a log placed in the enclosure may encourage him to move about more as he will play with this object. This stump or log may be attached by a cable to a deep-set post to prevent its being pushed through the fence.

Nebraska Safety Bull Pen

BY IVAN D. WOOD

Aside from the advantages of the bull pen mentioned in the foregoing part of this circular, there are certain safety features which cannot be overlooked. The bull of dairy breed which has reached an age of $3\frac{1}{2}$ to 4 years should never be trusted. The so-called "gentle bull" is too often the one which, at an unexpected moment, gores someone to death or inflicts serious injury. The pen described in the following pages will permit handling any animal with perfect safety.

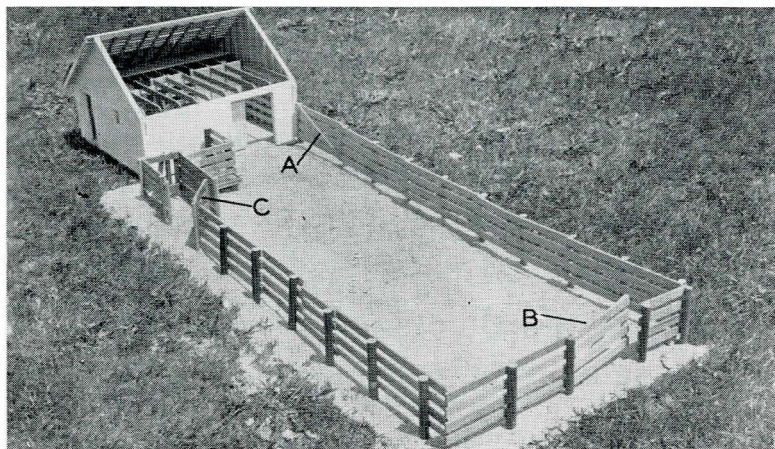


FIG. 2.—Many farmers have studied the details of this miniature bull pen while attending demonstration meetings held by county extension agents.

GENERAL ARRANGEMENT OF PEN

The Nebraska safety bull pen layout consists of a shelter shed in front of which is an oblong pen as may be seen by referring to Figure 2. A well drained, south slope is desirable for the yard. The shelter building will give better protection if it faces south or east. Local conditions may be such that the size and shape of the pen must be varied but a width of 20 feet and a length of at least 80 feet are recommended. The oblong shape gives better opportunities for exercise as has been mentioned.

The gate arrangement may be understood by referring to Figure 2. When it becomes necessary to enter the pen with a wagon or manure spreader, the bull is shut inside the shed by closing the heavy front door. Access to the pen is gained through the gate at "B". To clean the shelter house, the bull is shut safely in the pen by swinging gate "A" around to the

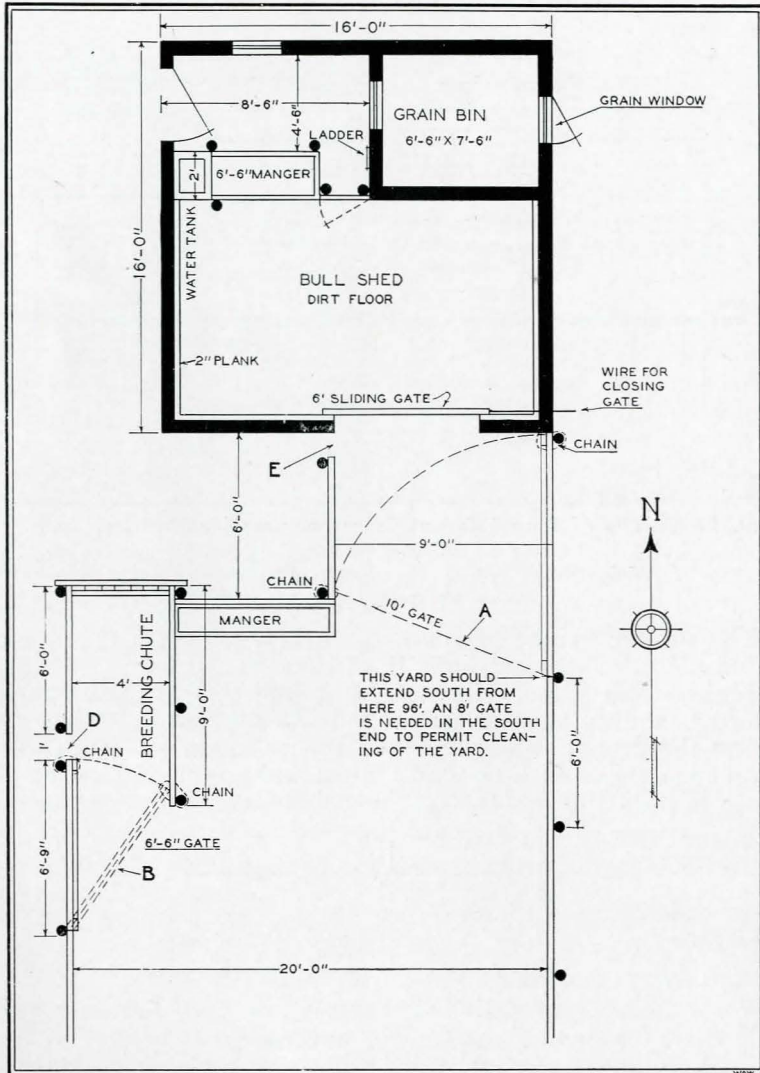


FIG. 3.—Detailed drawing of shelter shed and lot, showing arrangement of gates and equipment to afford maximum safety to the caretaker.

corner post near the front end of the breeding chute, after which the wagon or spreader can be gotten directly in front of the door. Figure 3 also shows this last mentioned gate arrangement to a good advantage.

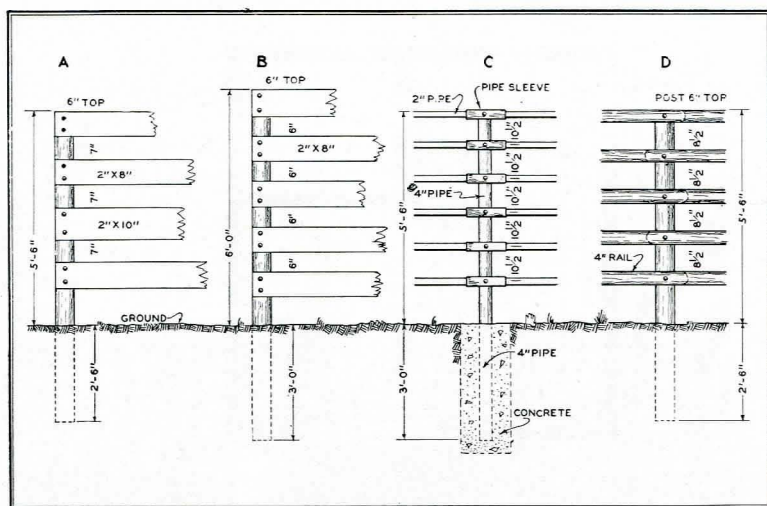


FIG. 4.—Details of four different fence constructions, all satisfactory if well built.

THE FENCE

The proper height of fence for a bull pen is a much disputed point. For most bulls it will not be necessary to make it higher than 5 feet 6 inches. For known "fence jumpers" a 6-foot or even greater height may be necessary. Figure 4 shows the proper construction of fences made of several different materials such as plank, pipe, and poles. Where plank fence is used the following dimensions are recommended:

	Height of Fence			Height of Fence	
	5'-6"	6'-0"		5'-6"	6'-0"
Length of posts.....	8'	9'	Number of 2"x8" plank....	3	5
Size of top.....	6"	6"	Number of 2"x10" plank..	1	0
Spacing of posts.....	6'	6'	Spacing of plank.....	7"	6"

Posts made from native timber may be used but only durable varieties should be set. For permanent construction two $\frac{3}{8}$ -inch bolts are recommended where each plank is attached to a post. Spikes are not at all satisfactory where pressure creosoted yellow pine posts are employed. To prevent the plank from being pushed off, the posts are ordinarily put on the outside of the pen while the washer and thread end of the bolts are placed on the inside.

As an added safety feature the bottom plank of the fence should clear the ground by at least 12 inches so that a man may escape underneath, should he be caught inside. Safety

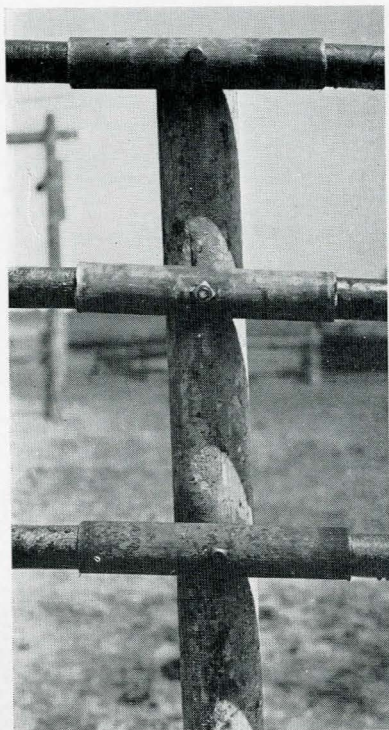


FIG. 5.—Pipes and boiler flues can be bolted together in this fashion.

used with the exception of the 2-inch plank which are bolted together with $\frac{3}{8}$ -inch bolts. Each gate is hung so that it swings inside the pen and strikes solidly against the line post. The one on the breeding chute swings only between the two posts as shown in Figure 3. Chain fastenings with heavy snaps are not easily slipped off or opened by a bull.

THE BREEDING CHUTE

The construction of the breeding chute is shown in Figure 6. It consists of two side panels and a heavy stanchion at the front end. At the rear is a gate 6 feet 6 inches long so arranged as to swing and allow communication from both the inside and the outside of the pen. This gate is also held in position with a heavy chain wrapped around the post and the gate end and fastened with a snap. The side panels "A" and

openings in the fence are shown at the side of the breeding chute (see "D", Figure 3) and near the sliding door of the shed (see "E", Figure 3).

The use of ordinary woven wire is not recommended as a bull will pull it to pieces and ride it out of shape. The frontispiece of this circular shows an excellent pipe construction in which old 4-inch boiler flues set in cement are used for posts to which 2-inch pipe are attached as shown in Figure 5. A cheap and yet durable fence may be made of ash or hickory poles which have been cut, peeled, and properly seasoned. These poles are flattened at the ends, lapped and bolted to the posts with $\frac{1}{2}$ -inch bolts.

GATES

All gates are hung with heavy gate hinges which have been drilled and cottered so that they cannot be lifted off.

Ordinary gate construction is

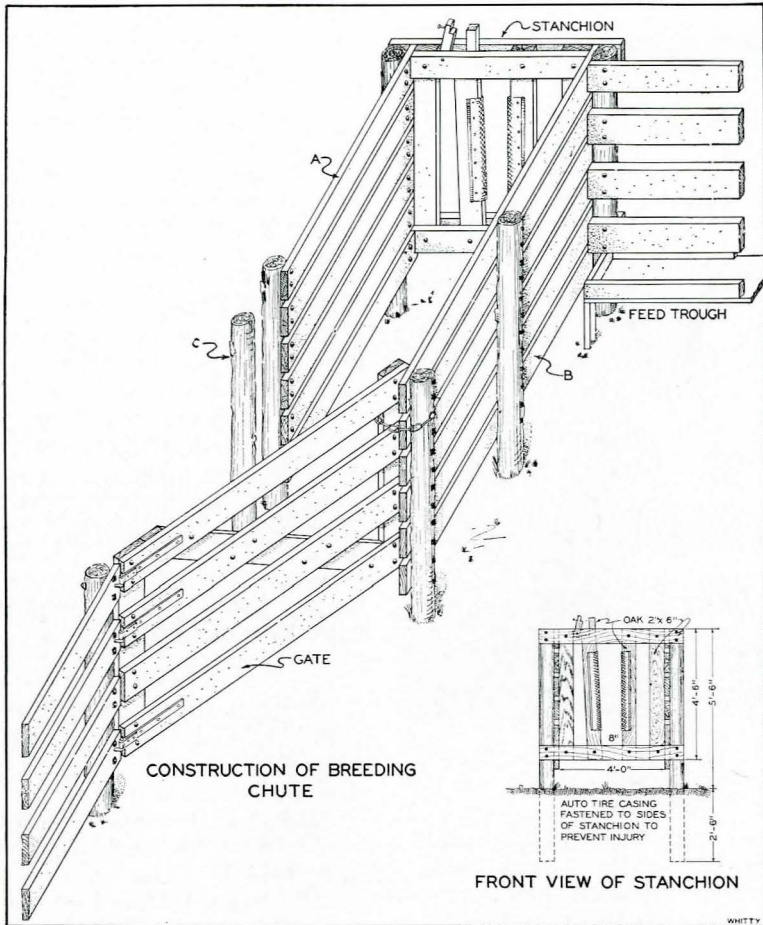


FIG. 6.—This breeding chute is practical, handy, and safe. Figure 3 shows the location of the chute with respect to the rest of the layout.

“B” should be boarded rather tight or the bull may injure his legs by sticking them between the plank as he serves the cow. The height of the stanchion is the same as the main fence.

The stanchion at the front end of the breeding chute should be very firmly made. The neck pieces are often subjected to considerable strain and for that reason should be of oak or hickory material which is free from knots. If oak or hickory is not available, selected fir 2"x8" may be substituted for the oak 2"x6". Old auto casings split and nailed to the neck

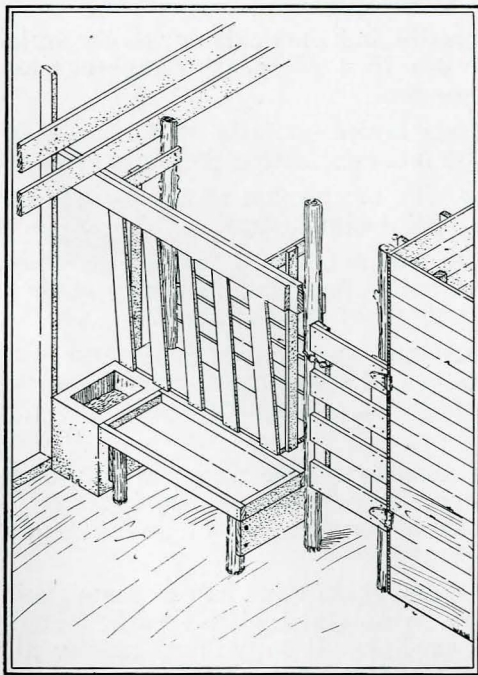


FIG. 7.—No bull can crawl over this type of feed manger and tank.

looked is that the interior should be planked in exactly the same manner as the exterior fence. If this is not done most bulls will spend their time pushing off boards. In a well arranged shelter shed it is possible to enter for feeding without incurring any danger from the bull. Figure 3 shows a floor plan of the shelter shed. The partition must be well built by setting the posts in the ground and attaching the top to the joists overhead.

A gate or heavy door on the front of the shelter is desirable since it permits shutting the animal inside while cleaning the yard or repairing the fence. Some dairymen feed the bull in the stanchion of the breeding chute often enough so that they have no difficulty in catching him there when desired. The neck-pieces of the chute may have to be set apart 2 or 3 inches wider by boring an additional bolt hole.

Many dairymen prefer to feed the bull outside of the shed in hot weather and for that reason a manger is shown in the pen at one side of the breeding chute. A detail of the interior manger is shown in Figure 7.

pieces will prevent injury during service. No bolt ends should be left exposed inside the breeding chute.

THE SHELTER SHED

The shelter shown in Figure 3 is 16 feet square. This provides room for a water trough, hay, grain, and a large box stall. A minimum sized shelter would be 12 feet square. It often happens that the farmer will have an old building which can be moved in and used for this purpose after some remodeling is done. An important detail which should not be over-

SUMMARY

1. All bulls of dairy breeds and particularly those which have reached the age of $3\frac{1}{2}$ to 4 years are dangerous and should be handled in a bull pen.

2. The Nebraska bull pen layout consists of an oblong lot 20 feet wide and at least 80 feet long with a shelter at one end.

3. If possible, the long way of the pen should be laid out north and south and on a well drained slope.

4. Fence heights of 5 feet 6 inches to 6 feet are desirable and either plank, poles, or boiler flues and pipe may be used. The posts are set on the outside of the enclosure.

5. Heavy gates are used and swung so that they open within the enclosure. Chain and snaps make good fasteners. Hinges are drilled and fitted with cotter pins so that the gate cannot be lifted off.

6. The breeding chute consists of side panels with a stanchion in front in which a cow may be fastened during service. A double swinging gate behind controls the bull and he cannot possibly endanger the caretaker.

7. The shelter shed is 16 feet square and houses some grain, hay, and bedding. It may be provided with a water trough. The interior walls of the shed should be planked exactly like the exterior fence or the bull will destroy the thin side walls.

8. If a partition is used in the shed the plank are attached to poles set in the ground and attached to the joists overhead.

9. Ordinary feed trough and manger designs as used in a horse barn will not be found satisfactory as some bulls will crawl over into the feed alley. A design as shown in Figure 7 is to be recommended.

10. A heavy door or gate on the shelter shed is to be recommended and it should be so arranged that it can be opened or shut without entering the pen.