

public opinion, or seeks to establish and educate it. It matters not which for the sake of this argument. This, however, is clear, that the producer is receiving more than his share of the blame for the present high cost of living. Of all men attacked the producers of beef cattle are possibly the least deserving of blame. If we, as farmers, allow journalists to unduly emphasize the idea that present prices of farm products are "exorbitant" and that present prices of beef are "hard to endure," without justifying our position in the matter, we will in future richly deserve what we will surely get, and the "far reaching cattle industry" referred to, may not reach as far as some of us might wish.

In the numerous discussions of the high cost of living the point is often overlooked, that the high cost of living is not owing to the exorbitant price of the necessities of life entirely. It is rather owing to the multiplicity of the luxuries which we cannot do without, even if what are commonly called the necessities of life have to be dispensed with.

Much energy has been spent to introduce scientific methods to increase agricultural production. We require some system of marketing that will procure for the producer a fairer share of the profits derived from his labor.

The eloquent articles, blaming the producer for the high cost of living, have become monotonous. By way of variety could we not have a little investigation that would reveal the true parasites of the country, who can fold their arms and earn their bread by the sweat of someone else's brow with a peace of conscience that passeth all understanding?

Those who deplore the present high cost of living might be able to accomplish more if their efforts were turned in this direction, and their efforts would then stand a far greater chance of being on the side of honesty, justice, equity and truth.

Lambton Co., Ont.

J. E. LATTIMER.

THE FARM.

Ear Test Reveals Surprises.

Many corn growers are of the opinion that they can tell by the appearance of an ear, whether it will grow or not. In the majority of cases they can, but an ear test reveals some surprises. By an ear test, of course, we mean a test by which four, six or some other definite number of kernels are taken from each ear and placed in a separate square of a box to germinate, the ears being numbered with mucilage stickers and the squares filed in order to correspond. Some likely-looking ears will sprout only five out of six kernels or even fewer, while some that an amateur would be inclined to reject will be represented by six germinating kernels. As a general thing, corn that has been judiciously dried by artificial heat, with air circulating through it, will make a much more even and satisfactory showing than corn which has been merely hung up without special ventilation or artificial heat. This is especially true of well-bred corn, with close rows of deep kernels and small cobs. Where growing corn in hills, a full stand of vigorous plants is very important. Moral, get the best seed corn you can, and if possible make an ear test of it. This suggestion was offered early, but is repeated by way of emphasis to impress the point for future heed.

Crushed Stone for Concrete Silo.

Good clean gravel not being handy, how many cords of stone should one have crushed to build a silo 14 by 35 feet by 5 feet, to be in the ground? Also the amount of cement required? The thickness of the silo wall is to be as you think best.

T. F.

Ans.—A silo 14 x 35, with walls 10 inches thick at bottom tapering to six inches at the top and with a cement floor, would require about 12 cords of gravel and 42 barrels of cement. As to the amount of stone to have crushed to substitute for gravel, we cannot instruct you better than by appending the comment of W. A. McLean, Provincial Engineer of Highways, as expressed in a letter to "The Farmer's Advocate" bearing upon this point.

"In general, stone taken from a quarry will expand one-half upon being crushed; and when taken from a pile of rubble stone, will expand about one-third. This depends very largely, however, upon the way in which the stone has been piled. As with a wood pile, a great deal of skill can be developed in producing vacuum. The stone should be crushed to go through a 2-inch screen, and should have fine material, below one-eighth inch, removed.

"Sand should be essential in making concrete with crushed stone. Stone, sand and cement should ordinarily be mixed in the proportions of

six parts of stone, three parts of sand and one part of cement.

"The proportions will depend somewhat, however, on the quality of materials. A clean, sharp building sand should be used. If the sand is fine, proportions should be made one part of cement, two parts of sand and four parts of stone.

"If an especially water-tight and non-porous concrete is desired, there should be mixed with the cement before using about 10 per cent. of hydrated lime. This lime is manufactured at the Central Prison Farm, Guelph, Ont., and at a few other plants in Ontario."

THE DAIRY.

Clean Milk Production.

Editor "The Farmer's Advocate":

In the matter of producing clean milk, it is not knowledge that we need, so much as it is the desire to do decently the things we already know. Everybody interested in cows is agreed that stables should be cleaned, windows swept down, manure taken from the gutters at least once each day, cows groomed free from manure, food always kept wholesome, and stale, unconsumed portions removed from the mangers. Good stable management consists in carrying out all these details, which are advisable in any well-conducted barn, without great expense. During the regular winter routine, these things are done reasonably well, but when the spring and summer seasons come on and every nerve is strained in planting, cultivating and harvesting the crops, the alleys go litter-covered, windows become opaque, manure accumulates in the gutters and a general air of neglect is apparent.

Everywhere in this work-a-day world, the ideal and practicable are far apart. It is easy to say that a thorough grooming is good for the cows, that it is an important thing to do if the best milk is to be made. But most of us will be doing pretty well if we can find time to brush the loose hairs from the udder and flanks and to pay a little special attention to any flecks of manure that may accumulate. A fraction of a minute per day per cow, spent in this work will keep a good many hairs out of the milk pail, and perhaps, from the layman's point of view, the number of cow hairs per pail is a better standard of purity, than the number of bacteria per c.c. Take the well-meaning and well-trained health expert, whose standards of cleanliness are laboratory ones, and whose principal opportunity is to become acquainted with dairy conditions through an occasional visit to some famous stable, that has been specially swept and garnished in honor of his coming. I wonder if he realizes the length of the milk route, from the udder to the breakfast table, and how many opportunities there are for accidental contamination by the way.

Fortunately, so long as cows are spending most of their time in pasture, grooming generally takes care of itself. The pasture bed is ordinarily clean, for the warm rains, sunshine and breezes are efficient cleaning agents. There is one kind of summer dirt, however, that is very objectionable. When pastures are so situated that the cows have access to muddy pools or swampy ponds, they will often stand up to their knees in water, switching their tails, fighting flies and plastering themselves with mud. The same thing takes place to less extent in wet weather in many barnyards. Of course this mud quickly dries and readily drops off into the milk pail, making a very finely divided, heavy dirt that passes through all ordinary strainers, and quickly sinks to the bottom of the can or bottle. Not only is this dirt but, moreover, dirt that seems to carry a very objectionable type of bacterial life.

Perhaps there is no one single factor that will do as much towards high-grade milk as the small-topped pail. Most of the dirt that gets into milk falls into it and hence the area of the top of the pail is a fairly direct measure of its cleanliness. The main objection to their use is that they are somewhat more difficult to keep clean and to handle than the open-topped pails, but they are one of the things that have come to stay. Let it be said emphatically that those contraptions where men milk into a strainer are a good deal worse than useless. The part of the dirt that is really bad washes through.

Of course, good, clean milk, means not only cleanliness in the stable, care in milking, but it means clean utensils as well, and no utensil is clean from a bacteriological standard until it has been actually boiled or well steamed with live steam. There is no more prolific source of trouble than a strainer cloth rinsed in warm water and hung over the fence to dry, but the same cloth boiled for a few minutes after washing is clean from the standpoint of the bacteriologist. There are a few fundamental principles in wash-

ing milk utensils. One is that alkalies and carbonates, like soda-lye and salsoda, are preferable to soap or soap powders for cleansing purposes. Salsoda dissolves coagulated casein and this gives it a special value for washing up old dirty cans. Still, pails and cans that are well cared for from day to day will not make any great demands upon washing powder.

All pails should be inverted while hot, after washing, and cans should be laid on their sides or inverted on a slatted rack. They certainly must not be closed tight. There are few worse smells than a fairly clean can that has been shut up tight until it has become musty. There should be no fairly clean cans. They should be clean. Separator parts, if laid on the shelf or hung up while still very hot, will usually dry very satisfactorily. Of course, if steam is not available, it is a difficult matter to do many of these things. A teakettle of boiling water is a "vain thing for safety" when it comes actually to sterilizing milk cans, and yet thousands of faithful farmwives are doing a pretty fair job with such primitive apparatus.

It is a platitude that the two great factors in making milk are "cleanliness and cold," and it might be added that the greatest of these is cold. By this I mean that there is no milk so clean and good, but that it will very rapidly spoil at high temperature, say at 65 degrees or above, though not so rapidly as if it were dirty in the beginning. On the other hand, quite inferior milk will keep in presentable condition for a long time if it can be kept below 45 degrees. In other words, spoiling is a matter of bacterial growth and bacterial growth is a matter of temperature. Fairly good milk below 55 degrees will keep fairly well, and above 65 degrees it changes fast. When we approach the temperature at which it is drawn from the cow it goes at geometrically accelerated speed. There is then one simple, unvarying rule: reduce the temperature of the milk immediately after milking as rapidly and as low as possible and do not allow it to warm up again.

Johnson Co., Ill.

W. H. UNDERWOOD.

Saving Condemned Milk for Feeding

It is the custom of officials in many cities to condemn milk because of the failure of the milk dealers to comply with certain temperature standards. Usually this milk is disposed of by emptying it into the gutter, though some attempts have been made to denature the milk by adding certain substances which would render it unfit for use in its fluid state. It is unfortunate that this milk, which is valuable for feeding farm animals, should be needlessly wasted. This loss can be prevented if the milk is returned to farms where it can be utilized for feeding live stock. Condemned milk could also be used in the city for making casein and for other purposes.

The Dairy Division of the Bureau of Animal Industry, United States Department of Agriculture, has recently conducted some experiments in order to devise some practical method of denaturing milk so that its sale as market milk may be prevented, and yet leave it in a condition suitable for feeding farm animals. The work thus far has proved that the use of a rennet solution is effective for this purpose, at the usual temperature at which milk is condemned.

In these experiments a 3 per cent water solution made from powdered rennet of a strength of 1 to 30,000 was used, and 40 cubic centimeters of this solution were added to 5-gallon cans of milk at different temperatures. The tests were made in a room where the temperature was 80° F., as that is about the temperature of the air in summer when most of the milk is condemned. In one test the rennet solution was added to a 5-gallon can of milk at a temperature of 50° F. In 1 hour and 15 minutes the milk was slightly thickened, its temperature then being 57°. Thirty minutes later the temperature had reached 59°, and a soft curd formed. An equal amount of milk at an initial temperature of 65° was treated at the same time. In 1 hour and 10 minutes the milk in this can was firmly coagulated, and it is probable that the rennet had produced the desired effect in much less time. At the end of this period the temperature had been raised only 1.2 degrees, or to 66.2° F.

In the light of these experiments it is believed that if a rennet solution of this strength is added to condemned market milk, satisfactory results can be secured under ordinary conditions without the disadvantages of the other methods which have been tried.

If a 3 per cent solution is made from rennet, strength of 1 to 30,000, about 2½ ounces (80 cubic centimeters) of this solution will be required for a 10-gallon can of milk at a temperature of 53° or higher. The cost of the material for this method of denaturing is very small, being only about three and one-third cents for a