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is a wise man e. When a new necessary to know s our purpose to action and opera- rided for the main crank shaft, and It is not possible e of the vibratory e the bearing out tment at the end between the bevel satisfactory than vibration, becomes rement should be oint between the at it can be kept e best mowers are e the back of the rter bar (Fig. 2). ace are malleable ger of breaking. knife should be nd under no con- wedge under the e knife in place action.

drive, the knife sure the circum- suppose we find umber of strokes el, and we will orward for each strokes, then 108 t is evident the ts length, which



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may be 2 inches. If it wears down till it is less than 1.8 or even 1.8 inches it has nothing to come and go on. Therefore, see that the knife has something to spare for a heavy cut.

The growing of peas always brings us to the question: How can I cut them? Use a windrowing attachment, which consists of a set of curved fingers attached to the rear of the cutter bar, which rolls the swath into a windrow. Notice figure 2, showing a large guard which is easily put on. The guard raises the vines so that the sickle can get at them.

Mowing machines are usually operated with two horses for a five-foot cut, indicating a draft of about 300 pounds. A leading manufacturer places the draft at from 190 to 325 pounds for a five-foot machine. Two other authorities place the draft at from 285 to 310 lbs. for the same width. The draft may easily be doubled by dull knives, tight boxes, etc. In one test five mowers were run in gear but not cutting, and showed an average draft of 154 lbs. While cutting, the average was 268 lbs., showing 57½ per cent. of the total draft due to the running of the mower itself. In an actual test of a 4¼-foot mower and a 6-foot mower of the same make, the drafts were 203 and 263 lbs. respectively. It is evident that the wide cut mowers are economical in the same way that an engine is economical when running at a high percentage of its rating.

Each section has to pass from the centre of one guard to the centre of the next guard during each stroke; if it does not, it is not timed right, and will pass farther in one direction than in the other. There should be an adjustment to correct this; some have an adjustable pitman. If a mower leaves a narrow strip of grass uncut, it indicates that one of the guards has been bent down, a common occurrence in stony ground. The guards are malleable, and after sighting over the ledger plates they can be hammered into line. The knife must be kept sharp, and the boxings well oiled.

THE DAIRY.

Milk Teems with Germ Life, and Should Be Pasteurized.

The cow is the foster mother of the world. She is a manufacturing plant in herself, and changes the various foodstuffs produced on the farms into a substance that furnishes all the ingredients required to build up the body, keep it in repair and supply heat, besides the power required to do its work. Milk drawn by clean milkers from clean cows, housed in clean stables, is the choicest food product of nature. It is food for young and old. However, it is subject to contamination from the time it is drawn until it is consumed. Lactic acid and destructive bacteria develop very rapidly in milk at ordinary summer temperature. Disease organisms lurk around and may come in contact with milk. Epidemics of certain diseases have broken out, and the cause has been attributed to the milk supply. Scientists have isolated the specific organisms responsible for the trouble, and have demonstrated how to render them harmless. City authorities endeavor to guard the city milk supply, but the average consumer judges the quality of milk by the amount of cream in the milk bottle and by the taste. Little thought is given to the sanitary qualities, consequently nature's choicest food may be the means of carrying organisms destructive to health.

Children are larger consumers of milk than are adults, and they suffer most from the effects of bad milk. Their systems are not so capable of throwing off the organisms. Many children die from intestinal trouble. Dirt and bacteria in milk, which are harmless to strong, grown folk, irritate and inflame the intestines of children, causing sickness. Septic sore throat may result from using raw milk. It is claimed that bacteria found on sore udders or teats of cows resembles very closely the bacteria found in sore throats. Causes of typhoid fever, scarlet fever and diphtheria have been traced to the milk supply. That dreaded disease tuberculosis is very common in dairy herds. While human and bovine tuberculosis organisms are different, it is possible for children, especially, to contract the bovine type through the use of raw milk. Few food products are so subject to contamination, and few are handled so carelessly as milk. As a rule it is pure when first drawn, but, unclean milkers, a dirty stable, a piece of straw, a hair or dust from the cow's body may add thousands of bacteria to the milk before it ever leaves the stable. In fact, very little of the average milk used is clean. This may seem a strong statement, but it can be proven by use of the sediment test. Take a pint of milk and filter it, then note the real dirt that is retained on the filter paper. Besides the dirt there may be countless disease organisms that pass through the filter. By a little extra care milk could be kept cleaner than it is.

Clean cows are the first essential. Certain diseases can be diagnosed at sight, but the tuberculin test is the only reliable method of determining whether or not a cow is affected with tuberculosis. Authorities estimate that over 50 per cent. of the dairy herds contain tuberculous cows. To guard the human race against possible infection all milk should be pasteurized. Milk from an inflamed udder or a cow off her feed is not wholesome.

Combing and brushing the cow tend to keep her body clean, and so lessen the chance of dirt falling

into the milk. However, cleaner milk would be secured if every milker wiped the cow's flank and udder with a damp cloth before commencing to milk. The stable should also be as free as possible from dust or disagreeable odors at milking time. This can be accomplished by having system in doing the stable work. Milkers' clothes and hands may be a source of contamination. In stables, where milk of a high standard is being marketed, the attendants are required to observe the law of cleanliness in person and attire. There is a laxity in this regard in too many stables. Once milk is removed to a clean milk-house or to the open air there is less danger from dirt or disease organisms, if care is taken in keeping the utensils clean. It is impossible to have raw milk absolutely clean and free from harmful bacteria, but the extent of contamination can be reduced to the minimum. Milk at the temperature it is drawn is a medium in which organisms develop and multiply rapidly. Reducing the temperature to 60 degrees will retard development. The same holds good with cream. It should be produced from clean milk and handled in a sanitary manner.

In creameries the cream is pasteurized to destroy bacteria and harmful organisms, and so control the quality of butter manufactured from day to day. Patrons insist on whey and milk from factories and creameries being pasteurized before it is returned to the farm. They claim the feeding qualities are improved, and the danger of the stock contracting diseases by consuming these by-products is minimized. But, in the average home whole milk is consumed by young and old with seldom a thought given to its sanitary condition. Truly, the hogs and calves are more carefully guarded against infection than are many children.

Heating milk to a certain degree of temperature is known to destroy most of the disease organisms commonly found in it. Pasteurization consists in heating the liquid to 145 degrees F. and holding it at that temperature from 20 to 30 minutes. This treatment is claimed to destroy about 99 per cent. of bacteria found in raw milk. The marketable properties of the product are also improved. A uniform flavor can be secured day after day. If the milk is cooled to 60 degrees or lower immediately after being pasteurized it will keep sweet and wholesome much longer than raw milk. The theory, sometimes advanced, that pasteurized milk is not so easily digested and that the food value is inferior to raw milk is not borne out in practice. While epidemics of disease have been traced to the use of raw milk, none have been traced to the use of pasteurized milk. The use of pasteurized milk is increasing in the cities, but as yet this "safety-first" precaution has not become general in the farm homes.

There is a gradual improvement in the method of caring for milk on the farms. Stables are being kept fairly clean, and an effort is made to produce and market clean milk. That there is any relation between bovine and human diseases, or that it is possible for milk to be the medium through which disease is spread, seldom comes to the average mind.

Milk at 8 cents a quart is the most economical food on the market. The consumption of whole milk might profitably be doubled. It would benefit both producer and consumer. But, many have a dislike for milk. A stable or grass flavor may sometimes be detected in raw milk, or the natural flavor may be impaired by development of certain bacteria. This turns many against drinking whole milk. Heating the milk to 145 degrees destroys these "off" flavors, and gives a uniformity of flavor throughout the season. It does not require special utensils or equipment to pasteurize milk. It can be done in the dishes found in every home. Bottles of milk may be placed in a kettle of cold water and gradually heated to the required temperature, or milk can easily be pasteurized in a double boiler. In order to bring the milk to the proper temperature every day it is necessary to use a thermometer. Too much heat will give a cooked flavor.

The dairyman may know his cows are healthy, and with every precaution taken to produce clean, sanitary milk may not think it necessary to go to the trouble of pasteurizing milk for use on the table. No dairyman knows whether or not the cows in his herd are free from tuberculosis unless they are tested. Appearances are deceiving. Only a bacteriologist can determine the kind and number of bacteria in a sample of milk, but anyone can make a sediment test and note the cleanliness of it. In estimating the value of milk for human consumption the bacteria count should be taken into consideration as well as percentage of butter-fat. It is possible to produce clean milk on every farm, but from a safety standpoint it would appear to be good policy to pasteurize the whole milk for daily consumption.

Baby Beef from Dairy Cows.

EDITOR "THE FARMER'S ADVOCATE":

On June 17 we shipped to the Montreal market, five steers that were pronounced to be one of the best quality lots that ever went into that market, and it might be interesting to your readers to know how they were raised.

Three of these steers were out of cows that did not show any breeding whatever, the other two were from grade Holstein cows of fair quality. They were sired by a very good, thickly-fleshed bull, bred on the farm. The calves came in March and April so were 14 and 15 months old when sold. They were exchanged on to five of our pure-bred cows, whose calves were put on

the grade cows, and were turned out to pasture with the cows in May and brought back to the stables in November, weaned and put into box stalls. They were fed a mixture of cut hay and roots with from 4 to 8 pounds crushed oats, and two pounds oil-cake each per day. The steers averaged in Montreal 925 pounds and sold for \$10.50 per cwt.

It seems to me when labour is scarce as at present on the farm, that the method of using the dairy cows in raising baby beef would solve the labor problem to a great extent on farms that are at present sending milk to the creamery or cheese factory. To raise baby beef that would top the market, nothing but first quality bulls of the beef breeds would have to be used.

Russell Co., Ont.

JAMES SMITH.

[Note.—There are suggestions and valuable experience embodied in this article but dairymen would probably not see their way clear to use a bull of beef type on a dairy herd unless they intended to purchase cows to renew the herd.—Editor.]

POULTRY.

Feeding Hens for Early Moulting.

During late summer and early fall is the natural moulting season. Some birds shed their old feathers much earlier than others and it is generally believed that those that moult earliest are the first to commence laying in the fall, although this is not always borne out in practice. The moult usually lasts from eight to ten weeks and during that time eggs are seldom produced. An effort is frequently made to force moulting early and then feed for the quick production of feathers. During July birds have been placed on about half the usual grain rations for two or three weeks. Naturally this treatment stops egg production but it is claimed that it has the effect of loosening the feathers. At the end of this time full rations should be resumed and a little linseed meal added to the mash has proven beneficial. As a rule yearling hens moult earlier and more quickly than older ones. Interfering with nature and hastening the moulting season by special feeding may give the birds a better show appearance in the fall, but it is doubtful if the number of eggs laid in a year is increased by this treatment.

HORTICULTURE.

Slug Invasion and Smaller Fruit Prospects.

A Middlesex, Ont., horticulturist writes: "One of the worst pests invading the garden this season has been an army of slugs, which emerge from the soil early in the evening and proceed to work havoc with the foliage of sweet corn and early beans. For a few days I did not detect what was stripping the corn leaves into muslin-like ribbons and riddling the tender bean leaves and stalks, but working after six o'clock found them getting busy in scores at almost every step. Dusting the ground about the root and on the foliage freely with hydrated or slaked lime appeared to be effectual as their slimy bodies began to squirm and roll helplessly when it touched them. I presume fresh wood ashes would also be effectual."

"An examination of fruit trees indicates that the crop will hardly be in quantity more than one-third or one-quarter of what the extraordinary blossom promised. This is certainly true of plums and pears and some varieties, at least, of apples and small fruits; black currants and raspberries possibly excepted in my observation. Baldwin apples on trees I have examined have probably set more fruit than the Northern Spy. The persistent and heavy cold rains when the trees were in bloom, evidently washed the pollen almost completely out of a large proportion of the flowers and prevented the formation of fruit. Many gave up attempts at spraying for the same reason, though a few got one application on their plum trees. This may result unfavorably on the quality of the fruit, but from present appearances it will be large in size and fine."

The Outlook for a Fruit Crop.

The almost incessant rainfall during the month of June in Ontario and Quebec has considerably decreased the visible fruit crop and the inability of many growers to spray, has permitted the development of scab to such an extent that it may be reduced still further by dropping. Such is the information supplied by the Dominion Fruit Commissioner, Donald Johnson, in the Fruit Crop Report, No. 2. The rapid development of scab in all sections of Ontario and Quebec, has caused an increase in the "June drop" over and above that anticipated earlier in the season, and this factor, following the cold damp weather during blossom time, is responsible for a smaller quantity and poorer quality in some instances than were at first expected.

"Even now," The Report states, "it is impossible to say just how the ultimate crop will compare with that of last year, as it is quite possible that the presence of scab on the stems of the fruit will cause them to weaken and result in a still further falling off. In fact, in many parts of Ontario, such a condition is expected."

Heavy dropping has taken place in Lambton County, especially in unsprayed and insufficiently sprayed