

"With the San José scale the most satisfactory work can be done only with a winter wash; for this species may be found in various stages of development at any time through the summer months, and an emulsion spray at any given time will kill only a small proportion. Moreover, the young larva of the San José scale settles almost at once and immediately begins secreting a dense scale which after 48 hours is practically impervious to the ordinary emulsion diluted so as not to injure the foliage."

As stated above, the only satisfactory treatment for this insect is a winter wash, and the question naturally arises, Which is the best? Dr. Howard answers this for us: "But one absolutely satisfactory winter wash has been found. This is whale-oil soap, a pound and a half or two pounds to a gallon of water. This mixture killed every insect upon the trees to which it was applied, as was proved by a very thorough examination. Good whale-oil soap can hardly be bought for less than four cents a pound by the barrel, and this makes a thorough winter treatment an expensive matter. The best recommendation that can be made from the present outlook, however, is to use this mixture soon after the leaves fall in the autumn, and then, if examination reveals any survivors, to repeat it shortly before the buds open in spring." A good whale-oil soap may be made at home, if preferred, as follows: Potash lye, 1 lb.; fish oil, 3 pints; soft water, 2 gallons; dissolve the lye in water and add the oil on bringing the mixture to a boil; boil for about two hours and then add sufficient water to make up for the evaporation. This will make about 20 lbs. of soft soap, equivalent to about 5 lbs. of the hard."

THE ARMY WORM.

The question has been asked by the editor of the FARMER'S ADVOCATE whether the army worm is likely to reappear in injurious numbers again next season, and if any steps should be taken to ward off the attacks of this insect? In reply, I would say that the experience of the past justifies us in the confident opinion that the army worm will not reappear in the same localities where it was so abundant last season; for the immense hosts of the army worm are always attended, as was the case last summer, by their parasitic foes, which so effectually destroy them that it seems almost impossible for two army worm years to follow one another in the same locality. One of the most useful of these parasites is the yellow-tailed Tachina fly, which is well shown at figure 2. This fly not only reduces the numbers of the army worm, but is also very useful in preying upon the locusts which were likewise particularly abundant last year.

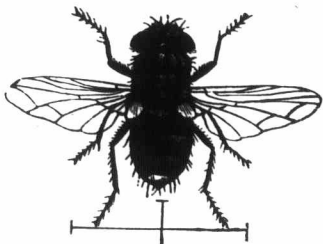


FIG. 2.—Tachina fly.

Should any one who suffered last year from the attacks of the army worm feel any anxiety about their reappearance, he might adopt the following preventive remedy (which is much relied on in the districts where the army worm is destructive oftener than in Ontario), viz., the burning of all stubble and old grass next spring in localities where the moths were observed. It may sometimes be necessary for this purpose to spread some straw over the stubble so that it may burn more easily. The young caterpillars passing the winter beneath refuse in the field, many will thus be destroyed, together with many other injurious insects. The moths of the early brood also lay their eggs by preference upon the old, dead stems, and if these are removed they will seek some other place where to lay. Systematic draining of low lands is very beneficial, the natural habitat of the species being thus rendered unsuitable for the young caterpillars.

Exterminating Pea Weevil.

To the Editor FARMER'S ADVOCATE:

SIR,—We use carbon bisulphide as the means of exterminating the weevil in peas, and find the treatment to be simple, cheap, effective, and harmless to the grain. Carbon bisulphide is a clear liquid which volatilizes very rapidly, producing vapors about two and a half times heavier than air; and as these vapors are very inflammable, great caution should be used to keep them away from fire. The carbon bisulphide can be purchased in small quantities from most druggists, or in large quantities from the manufacturers. It has been estimated that one and a half pounds of the liquid is sufficient for each ton of the grain to be treated, if used to the best advantage possible.

The peas containing the weevils should be placed in a comparatively air-tight box, barrel, bin or room, either in bulk or in cloth bags. Flat dishes should then be placed on top of the grain, and after the carbon bisulphide is poured into them the compartment containing the peas should be closed and allowed to remain undisturbed for forty-eight hours in order that the vapors may penetrate every portion of the receptacle and do effective work. The weevils can be destroyed at any stage of their growth, but the treatment should not be attempted when the thermometer stands lower than ten degrees above zero, as the liquid would not vaporize sufficiently rapid to work satisfactorily. I

would strongly recommend treating the peas immediately after they are harvested and threshed in the autumn, and thus destroy the weevils when they are still small and entirely enclosed in the peas. The vapors of carbon bisulphide will penetrate the skins of the peas and will thus destroy the weevils before they have completed their work of destruction and have made their escape. Peas which are not treated in the autumn can be treated in the warm days of the winter or in the spring and thus check the spread of this troublesome insect. All the peas grown in the experimental department in 1896 were treated last autumn, and the results are entirely satisfactory.

If peas are badly infested with pea weevil in the spring of the year, it is usually advisable to get them ground and purchase sound peas for seed. We have conducted an experiment for three years in succession, in which we have used sound peas and peas which had been injured by the pea weevil, for seed. The results show that only about two-thirds of the injured peas will germinate, and that the plants produced by them are usually much weaker and smaller than those produced by the sound seed. C. A. ZAVITZ, Experimentalist.
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DAIRY.

Losses in Farm Buttermaking.

To the Editor FARMER'S ADVOCATE:

SIR,—Allow me to bring before your readers a few facts about the care of milk as we find it in the farm dairy.

During the last year we went to a number of farmers and arranged with them to save us samples of their skim milk. We supplied the bottles and went for the samples the next day. We got about 100 samples from 36 farmers, and tested the milk with the Babcock test to ascertain the loss of butter-fat in the skim milk as found on the average farm. We found an average loss of .85% of butter-fat in the shallow-pan skim milk, and .95% of butter-fat in the deep-setting skim milk. No ice was used with the latter system. This means a loss of one pound of butter in each hundred pounds of milk, or one cow in every four that gives no return in butter for her feed and care.

In our experiments during 1894 and 1895 the average loss was .32% butter-fat in the shallow-pan system, and .28% butter-fat in the deep-setting system. About 5,000 pounds of milk was set in each way to test the merits of the two methods. The shallow pans were set in a clean, cool cellar, and no wind was allowed to blow through the room. The milk was skimmed in 36 hours after it was set. Ice was used in the deep-setting system to always cool the milk to 45° and lower, and the milk skimmed in 24 hours.

With the very best treatment we know of that milk can receive when set in the ordinary way there is still a loss of butter equal to about 12 pounds per cow per annum in the skim milk. If the butter is worth 13 cents per pound, the loss on each cow would be \$1.56, and \$9.36 on a herd of six cows. Now, when we look into the loss of butter as we find it in the average dairy on the farm, the loss amounts to 35 pounds of butter, or \$4.55, per cow per annum, and \$27.30 per herd of six cows by the shallow pans. With the deep-setting system, without the use of ice, the loss amounted to 38 pounds of butter per cow per annum, or \$4.94 per cow, and \$29.64 in a herd of six cows. This loss is worthy of consideration, and with cool, suitable rooms, plenty of ice, and careful methods of skimming, the loss in the farm dairy could be reduced about \$18.00 or \$20.00 per herd per annum. Judging from experience during the last eleven years, while connected with the dairy business, we feel that there is little hope for much reform in the private dairy in the future, and believe the only way is to advocate co-operation. The loss to the people of this Province caused by the haphazard way in which milk is cared for amounts to an enormous sum annually. There are about 920,000 cows in the Province; we estimate that 620,000 supply milk and cream to the cheese and butter factories, cities and towns, and 300,000 supply milk for buttermaking on the farm. If we divide these cows on 50,000 farms, or have six cows in a herd, the loss as shown already is about \$28.00 on each farm, and \$1,400,000 on the 50,000 farms. We have estimated that each cow will give about 4,000 pounds of milk per annum, and the milk to yield 15% of cream. This would be 600 pounds cream and 3,400 pounds of skim milk to each cow. Our milk yielded 19% of cream. The scale, churn and Babcock milk tester reveal some facts worthy of prompt consideration by the farmers.

Not over five per cent. of our farmers know how many pounds of milk their cows give in a year, nor the pounds of milk required to make a pound of butter, nor the number of pounds of butter each cow will produce per annum.

A farmer who is running a dairy for profit will not keep a cow that will not give more than 4,000 pounds of milk, yielding 200 pounds of butter per annum, nor neglect to provide a suitable room to set the milk in, nor be careless in his method of skimming.

Good dairy butter was this season advertised in the grocery stores in Guelph at 12½ cents, and choice at 15 cents; at the same time our dairy school and creamery butter is selling at 21 cents in Toronto, netting about 19½ to 20 cents per pound.

In the separator creameries milk has been yield-

ing a pound of butter from about 20 to 25 pounds of milk. If the milk from the 300,000 cows were turned into the creameries and skimmed with the cream separator, what labor and worry many a farmer's wife and family would be saved on the farm? More butter would be made out of the milk, the quality more uniform, and the butter be made a cash article at all seasons of the year. If a hundred farmers would combine, the greater part of the \$28.00 lost by them would be recovered. It would be a great advantage, and I believe it would work well, if all the farmers in reach of a creamery would send all of their milk to it and get their supply of butter from it every two weeks for home use, thus doing away with buttermaking on the farm. All that is needed is good management and confidence in the enterprise.
T. C. ROGERS,
Ontario Agricultural College Dairy School.

Pure Culture Starters in Cream Ripening.

BY F. C. HARRISON, BACTERIOLOGIST, O. A. C.

M. Sartori, a writer in the *Milch Zeitung*, of Bremen, Germany, recommends the development of about .62% of lactic acid in the cream previous to churning. This degree of acidity may be ascertained by the use of the Farrington alkaline tablets which are used considerably by factorymen in Wisconsin; an alkaline solution of recognized strength might also be employed.

For export butter, or butter that is to be kept a considerable time, it is better to have more acidity, about .67 to .7; whilst a lesser percentage of acidity, which leaves more aroma in the butter, is better for butter which is to be consumed at once. When the cream attains the required acidity it ought to be churned at once; if not, it is better to cool down. Butter thus prepared is distinguished by better taste and aroma, but the greatest advantages of this practice consist in the uniformity of the quality and its better keeping qualities. Butter from cream which has been separated, pasteurized, and then ripened by a proper starter, preferably a pure lactic ferment, keeps perfectly for 45 days.

Uniformity of quality and good keeping qualities are the prime requisites for an export butter. Sartori agrees with Storch, the Danish authority who first introduced pure culture starters, that the introduction of pure ferments corrects certain faults of milk which are due to the presence of harmful bacteria.

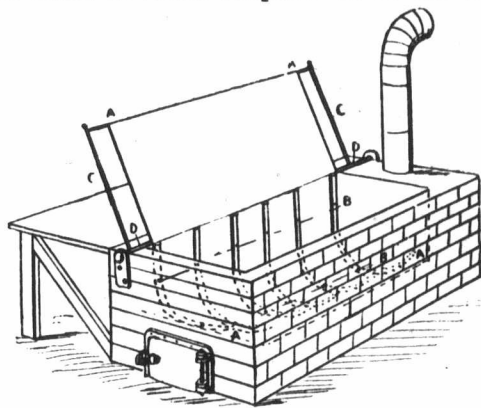
A Successful Creamery.

The Crystal City (Man.) Dairy Association reports a successful year during 1896, and anticipates a greatly increased supply of cream the coming season. The Pilot Mound *Sentinel* reports that in order to encourage patrons "the Association, through the liberality of one of last year's patrons, intends this year to give three prizes to patrons. To the patron supplying the largest amount of cream—in butter value—will be given a De Laval separator valued at \$100. The patron furnishing the second largest will receive \$40 in cash, and the third largest \$20 cash."

THE HELPING HAND.

Scalding Trough.

SUBSCRIBER writes:—"An improvement upon the scalding trough illustrated in your issue of March 1st, page 111, can easily be made by building a brick or stone fireplace under the trough.



The trough can be made with heavy sheet iron bottom and plank sides. If this is placed in feed-room of hog pen, or convenient outbuilding, it can be used at any time for cooking roots, feed, etc. A chain or rope, as shown in your illustration, answers very well, but a very handy rig can be cheaply made, as in the accompanying sketch. In this case the tank must be same width as depth, 6 feet long, 2 feet 3 inches wide, and same depth. A very small amount of fuel will keep the water hot, and if desired cold water may be added to lower temperature. An arrangement of this sort is in use on the hog ranch of R. H. W. Holt, of Moose Jaw, N. W. T. D—Iron bar upon which the apparatus works, held in place on sides of tank by staples at each end, allowing it to turn. A A—Made in one piece, passing through or bolted to iron bars B B B. From C to C should be 5 feet, to allow 6 inches clear at each end of tank. The dotted lines represent steel hooks made from rake teeth. These are turned up out of the water by turning down the handles A. The hog is lowered from the platform at the back, rolled and turned in the water until scalded and raised again by this apparatus."