

combined in 1903 the production of wool reached 103,548,000 lb.—an increase of something like 30,000,000 lb. over the figures for 1902. In 1897-98 Australasia exported 1,718,720 bales of wool. In 1903-4 the exports fell to 1,366,042 bales, but after that date there was a steady recovery, and in 1906-7 the exports reached the high total of 2,090,188 bales.—Ex.

FARM

Fall Plowing.

The importance of getting as much of the land as possible plowed in the fall, and of turning it over as early after harvest as is practicable and possible cannot be too strongly urged. The present season has been backward all through, the harvest is late, and threshing operations will be delayed in some districts until well into the fall. It may be impossible to get as much plowed before winter as we should; there will be a tendency on the part of some farmers to turn the fields over in a hurry, so as to get as much of their stubble land as possible ready for the cultivator next spring. This is one of those "expedients" of western agriculture that cannot be too much condemned, and it would require a season more unfavorable and backward than the present one to warrant a man adopting it as a fall plowing system.

Good plowing pays even in a season as late as the present. By good plowing we mean the turning over a straight furrow, even in depth, so that every weed is cut and all the soil turned over. Though some do not think so, a man plowing straight and even, can turn over just as much land in a day, as he who only tries to blacken his fields over. Plowing should be done well; it should also be done as early in the fall as possible. Early fall plowing is a weed eradicator, for there is generally a good germination of small seeds that lie near the upturned surface, which are killed by the frost and thus the surface is to that extent cleaned. And after plowing always take time to harrow or pack the soil.

Deep Plowing Rather than Clover.

EDITOR FARMER'S ADVOCATE:

Mr. H. Oscar Sheldon, your correspondent of August 21st, on steam plows and moisture conserving, would like the views of others on the subject. Now, then, steam plows would probably be alright where there is level land and say eighty to one hundred and sixty acres and up, the larger the better, with no obstructions and one-half to one mile through, otherwise the cost would be from one-third to one-half more than with horses. I do not claim, however, that we know as much and have forgotten more than

Professor Campbell knows. I think Professor Campbell's lecture on dry farming the best I ever had the opportunity of reading. As every farmer knows, the better and oftener the ground is worked the better the grain will be, as for example, a crop on a well-worked truck or potato patch. As to deep or shallow cultivation, I find for small grain plowing, well packed and harrowed when freshly plowed, and if plowed in spring the grain drilled in as fast as the soil is plowed and worked, is the best way where land is weedy. By this method grain will get started ahead of the weeds and keep ahead.

I had a good test of shallow cultivation in 1905. Instead of plowing deep on stubble land I disced once in the fall and twice in spring and harrowed it well. This mixed the weed seeds with the soil and made a fine seed-bed for the weeds so that they got ahead of the grain and I had a better crop of weeds than oats. From that time on I wanted no disc plow as I want the weed seeds plowed under six or eight inches. As to farming pure and I hope there is land enough without that, but some sand mixed with other soil can be made to yield good crops by working often.

For weedy ground I would advise the use of a press drill, either double disc or spread heel runner, so as to make a deep furrow for the grain, and the press wheels presses or packs the soil in the row. Drill the grain pretty thick. After the grain is two weeks up, take a lever harrow and drag the field; same way it was drilled. The first week drag it once, the next week go over twice, the dragging will cultivate the grain and kill the weeds. If land and grain are well cultivated the roots do not need to grow in water as too much water is detrimental to the crop.

I am afraid if we waited for clover to open up the subsoil in this part we would be so poor in ten or fifteen years we would have to sell out and go to our wives' people to be supported, as it has been tried time and again and has frozen out.

Content, Alta.

W. E. Guss.

DAIRY

Butter Making.

The Use of Starters in Home Buttermaking.

At this season of the year difficulty is likely to be experienced in churning. The butter refuses to come. The cream adheres to the sides of the churn and it seems impossible to agitate it sufficiently to bring the butter fat which it contains into the form of butter granules. Such a condition as this may be due to a number of causes; the churning temperature may be too low, the cream too old, too thick or too thin, or the churn too full; generally however it is due to too low a temperature and too thick a cream. Cold, thick cream is highly viscous, that

is to say it is sticky with a glutinous consistency. Agitate it and it froths up. It acts just about the same when agitated in the churn as it does when "whipped" on a plate. Every housewife knows that thick cream whips more readily than thin, that is thick cream holds the air better and froths up more rapidly. Such cream cannot be churned into butter. Its adhesive nature will not permit of the fat globules combining one with another to form the lumps of butter. The remedy is to decrease the viscosity by raising the temperature and thinning it down. Use warm water, or in extreme cases, weak brine.

This however is only a makeshift method. The best way to get around the difficulty and decrease the viscosity of the cream is to bring about a vigorous lactic acid fermentation, not by any means a difficult thing to do.

Cream ripening is simply a process of fermentation, the sugar it contains is transformed into an acid (lactic acid) just as the sugar which cider contains is transformed by fermentation into vinegar (acetic acid). This transformation in neither cases occurs spontaneously. It is brought about by an organism, which together with a good many others is found in all milk. There is only one organism however that can induce the particular type of fermentation required for a proper ripening of the cream. The other forms if they are too plentiful retard this desirable form's development. Another kind of fermentation is set up and we get a bitter ill-flavored, inferior kind of butter, if we get any at all. True lactic acid fermentation occurs at about 70 degrees, F. which is the temperature at which ripening cream should be held.

As cows lengthen in their lactation periods, that is as the time they are in milk becomes greater, this difficulty of bringing about a proper ripening of the cream becomes greater. When they are fresh it seems easy to make butter, but as the milk flow decreases the time, required for churning lengthens, until finally it sometimes becomes impossible to produce butter at all. The trouble is that with the lengthening of the milking period comes an increase in the viscosity of the milk, with this there seems also to be an increase in the proportion of undesirable to the desired ferments. That is there are more of the organisms that produce fermentations other than true ripening, the two seasons is such that it is easier to hold the cream at a temperature more suitable to their growth than for the development of the true lactic ferment. To begin with there are more of the undesired forms in the milk. None of them are in the milk when it is drawn from the cow but enter it from the air, in dust, or on dirt that falls into the milk pail from the cows' udder or from the milker's hands or clothes. When a cow is "drying up" or is farrow there will be as many of these organisms get into the quart or so of milk we draw from her as would get into the ten quarts she produced earlier in the season. Hence it is not hard to see why at this season of the year difficulty is likely to be experienced in ripening and churning. What is required to avoid trouble is to introduce enough of the desired kind of organism to ensure that no fermentation other than true ripening shall occur in the cream. This is accomplished by the use of what for a better name has been termed a starter.

A starter is simply a quantity of milk in which the lactic acid organism has been allowed to freely develop, until there are simply millions upon millions of the organism existent in it. These, when the milk in which they are contained is introduced into a churning of cream, and that cream held at a suit-



FARMERS
ADVOCATE

FRESHING ON MAYOR COOK'S FARM, PRINCE ALBERT DISTRICT, SASK.