

*ten or twelve days.* × × ×—A very large quantity of barley is required every year for feed, and the fact that the 2-rowed sorts are on an average from a week to ten days later in ripening than the 6-rowed, might be an objection to their growth in some places. × × × It is not to be expected that malting barley of the right quality can be grown in every part of Canada." I presume Mr. Saunders means "of the right quality for the English market." The above Italics are mine.

*Fine fall-weather here.*—Thanks, as I said before, to the Lake St. Louis. This large body of water accumulates heat all the summer, which is radiated at night, and the presence of this stratum of air is shown by the absence of light frosts during late fall, as well as by the freshness of vegetation as far as the heated atmosphere extends; while more inland a more wintry aspect prevails. Another thing. we have no dew, or hardly any; consequently no mildew.

*Grain average in U. S.*—For the last ten years, the average yield of wheat per acre has varied from 19.3 bushels in Colorado, to 4.7 bushels in Florida; the average of the whole Union having been only 12.3 bushels! The value of this crop per acre, during the years 1888, 1889, was \$9.97! Can it pay to grow wheat at this rate? It is clear that the foreign demand must have fallen off terribly.

*Oats.*—This crop varied in 1889 from 37.8 bushels in Washington Territory to 101 bushels in North-Carolina, the average of the Union being 27.0. Value per acre \$8.22.

*Barley* averaged 21 bushels an acre in 1889, throughout the Union, over about 3,000,000 acres, equal to about \$12.79 an acre. Six-sevenths of the crop is grown in seven States, California alone producing one-fourth of the whole. Up to the present, the importations of this grain have averaged 8,112, 876 bushels, costing \$6,041,495, but, this is at an end, as the McKinley tariff will put a stop to the introduction of Canadian barley, and it was from us that the brewers and distillers of the states got their supplies. Well, I suppose they know their own business best.

*Potatoes.*—The crop of this tuber for 1888—the crop for 1889 is not published yet—varied from 120 bushels an acre in Montana, to 60 bushels in Alabama, the average throughout the Union being 80 bushels—2 tons—and the value \$32.14, per acre. The New England States, of which I should have expected better things, did not yield 100 bushels an acre—2½ tons, New-York State only 80 bushels—2 tons! I suppose part of these blame for these trifling yields must be laid to the practice of planting in hills, the ground being not half occupied. Only compare these crops with the grand results obtained at the Michigan Station!

*Farm animals in the U. S.*—The decline in value of farm-stock in the States has been very serious. Horses have increased in number by more than 500,000, during the past year, but their aggregate value has decreased by \$3,500 000. Milch-cows are worth less by \$49,685, 918, than they were a twelvemonth ago, but sheep have increased in value by about \$10,000. The whole depreciation of farm-stock is given as \$88,284,000.

ARTHUR R. JENNER FUST.

### CREAMERIES.

In my last article I spoke of those self-satisfied makers who fancy they know everything about butter-making, because for some time they have been churning milk and making butter, more or less good in quality. Nevertheless, a man cannot become a good maker unless he possess the necessary

qualifications, and be willing to devote himself to study and to the acquirement of knowledge in his business; for, in this industry, which appears, at first sight, so simple, every moment some unexpected problem to be solved arises. Most makers have passed through an insufficient apprenticeship, or have taught themselves the trade from empirical principles. Is it then surprising that they do not possess the qualifications that are indispensably requisite to manufacture a perfect article? Certainly not; and until the province of Quebec sees that the future of its dairy-industry depends upon the powers of its makers, and that it can only be furnished with good ones by the institution of dairy-schools, this business will be in danger of being injured, whereas, with proper management, it promises to become the most important industry of the country. It is high time to sound the alarm, seeing that its products are but too often inferior, and that if they appear in the foreign markets in their present condition, they will acquire a bad reputation, from which they will not recover even after they have been immensely improved.

The butters that are suited to the export trade at present, are often badly made, and, consequently, unfit for keeping: in this state, they only get a bad reputation and an inferior price.

Now, you must understand that the European markets are keeping an eye on us. They know we can play them a pretty trick, if our butters reach them in good order: and they will of course profit by our neglect to stamp our butters with a bad mark if they are not well got up.

We must have dairy-schools, where our young makers can go to learn how to conduct their operations, of which they unfortunately think they know enough already; then, only, will the future of the trade expand itself before us, the creameries will flourish, the dairy-industry will find a free exit for its goods instead of, as heretofore, being obliged to content itself with restricted sales, and the upshot will be that it will become the means of reviving the fortunes of the country. Still, for this there is one condition indispensable: when well taught makers are to be hired, the creamery-proprietors must understand that it is their duty to furnish them with buildings and implements worthy of such skilled workmen.

Until this is brought about, I feel justified in saying that every tub of butter exported will injure the reputation of Canadian butters on the foreign markets.

F. MACCARTHY.

(To be continued.)

The question is most important.

E. A. B.

### NUTRITION OF PLANTS.

An interesting paper was read by Mr. MANLY MILES before the Agricultural Science Association on 'Some Biological Factors in the Nutrition of Plants.' The following is an abstract:

Reference is made to the earlier experiments relating to the sources of the nitrogen of plants, and particularly to the results obtained by Boussingault and at Rothamsted, which agree in showing that atmospheric nitrogen is not to any extent appreciated by the leaves of plants, and that the soil is the main or sole source of the nitrogen of vegetation.

In experiments at Rothamsted with wheat and barley, representing the cereals, it was found that notwithstanding the comparatively small amount of nitrogen in their composition, they were especially benefited by nitrogenous manures, while leguminous crops containing a larger amount of nitrogen were not benefited by such manures, and that they grew well under conditions of nitrogen supply that were not suffi-