hats. We need to know more about birds, to appreciate their value to the agriculturists. Some are scavengers, to purify the atmosphere; some are hunters, birds of prey, to destroy the hordes of creeping, flying pests which threaten every crop we grow. All are beautiful, and many add harmony to their exquisite grace of motion and beauty and brightness.

"They propagate slowly, and have the perils of storms and hunger to decimate them. On the other hand, our insect pests have none of these attractions. They are destructive, and many of them repulsive, and all voracious and prolific. While our bird friends lay but five or six eggs a year, our insect enemies lay from 500 to 6,000,000,000 a year. Without birds how shall we prevent these hungry hordes from over-running the land, and laying waste our crops? We can spare a few hills of corn, a few young chickens, and a few quarts of cherries, but we cannot spare our bird friends."

Why Weeds Grow—Methods of Extermination.

Nature's law of "the survival of the fittest" is strikingly illustrated in the propagation and growth of weeds. A weed has been defined to be "a plant out of place," but in reality its extraordinary vitality is caused by its being just the very right thing in the right place—that is, the right place for the weeds, but the wrong place for the farmer. This is the law of their existence. They always find the right place for their growth, whereas man is constantly struggling to find the right place for the growth of agricultural plants. It is a struggle of man against Nature, and we need not waste space to say which of the competitors has the inside track. If by some freak Nature revolutionized this law, changing agricultural plants to weeds and weeds to agricultural plants, after several centuries we would find that we could not exterminate the former, while our rapidly growing system of hot-bed culture would hardly be sufficient to preserve the latter from extinction. The same law operates in plant and animal life; we are struggling and toiling 12 to 16 hours every day in order that the unfittest may survive, whereas if we did not interfere with Nature's laws, consuming only those things which are conducive to our health, we could revel in luxury and ease without a struggle.

The more you attempt to kill weeds, the greater is the tendency for them to survive. The natural law is this: In attempting to exterminate a field of weeds, a few will not succumb to the privations to which they have been subjected, and are consequently the fittest to survive. These being the right plants in the right place, are naturally very hardy, very productive and very free from all tendencies to disease or the attacks of animal or vegetable parasites. In this manner, the few remaining weeds are fitter to survive than those of previous years, and so the process continues from year to year, until after a time it will be as difficult to exterminate a hundred plants as it previously was to exterminate a thousand.

Compare this with our system of treating agricultural plants. Let us first go back to our ideas of "improvement." It is said that what we want is *quality*. Our ideas of quality are that the grain must be neatly rounded off and plump, something like a steer fed for a fat-stock Christmas show (at the expense of the Government). Now in reality this condition is not *quality*, but it means *inferiority* in every sense of the word: the nutritive properties, the prolific qualities, the hardiness—all are inferior, the only superiority being that the article delights the eye, and so may tend to make the teeth water. When a new variety is introduced, of course it must afford a greater pleasure and delight to the eye than all previous varieties. The article is now boomed up until until it brings a fictitious price, and the buyer, in order to preserve it from the stringency of nature's arbitrary laws, must coddle it half to death; otherwise it will not survive, and the money invested will be wasted. It must be brought up in a hothouse, mulched, or protected by wind breaks; Model Farms and Experiment Stations must be established all over the country in order to teach the farmers how to keep the thing alive, how to preserve it from insects, rusts, mildews, etc.—all for the benefit of agriculture and the *science* of "improvement." All this fills the eye, but it doesn't fill the bill; and so far as health is concerned, woe! *woe!* WOE!! Is it not time for us to look back and ask, whither are we drifting? So soon as we begin to reverse our steps the farmer will see the highway to short hours and long pay.

Apple Butter.

Where apple butter is not made on a larger scale a very good article may be made as follows: Take twenty gallons of cider just from the press and made from good, sound apples, and boil it down to ten gallons. Then apples enough are pared and cored (the cores and all bruised spots taken out, and the apples quartered) to make from ten to twelve gallons, dry measure. If the cider is much acid, the apples should be less so, and *vice versa*. Rambo apples make the best of apple butter, although the various kinds of pippins usually found in most orchards are about equally as good. These twenty gallons of apples, when properly cooked, will make about seven gallons of good, old-fashioned butter, provided the stirring is kept constantly going on during the process; otherwise the butter is very apt to acquire a burnt taste. It usually takes from six to eight hours constant stirring before being taken off the fire. Spices to suit the taste are added some minutes before the kettle and contents are removed from the fire. There is no getting over the fact, however, that such butter costs all it will sell for if we consider the labor it takes. But a supply of this favorite article of "creature comforts" is a treasure which no good housewife would deny herself merely for the sake of the little extra labor it requires.—[Baltimore Sun.

The greatest possible yield of the potato crop and the average yield are surprisingly far apart. The average yield for eleven years prior to 1883 in the United States, was 84 bushels per acre. The average yield in 1882 was 78 bushels. In 1881 the average yield in Maine was 52 bushels; in New Hampshire, 63 bushels; in Vermont, 70 bushels; in Massachusetts, 55 bushels; in New York, 57 bushels per acre. These average yields look small, and so they are; 1881 was an unfavorable year for potatoes, yet the average for the eleven years was only 84 bushels per acre. These results, compared with maximum yield, viz., 1,200 to 1,300 bushels per acre, prove how much we have yet to learn about potato farming.

PRIZE ESSAY.

The Best Education for Farmers' Sons and Daughters who Remain on the Farm.

BY S. A. LAIDMAN, BINBROOK, ONT.

There has somehow arisen a kind of aristocratic feeling among city folk by which they regard themselves considerably above the average of the country people. If they wish to ridicule any of their fellows, they will say that he acts as if he had just come from the country. Now, is there anything about country folk to justify this opinion of them? We are afraid that in some cases there are good reasons for such opinions. Not that we consider farming to be a criminal offence; far from it, for we know that it is one of the noblest occupations that a man can follow. But, as a rule, the farmer has not as much education as his position calls for.

Now, the problem to solve is, How can the farmer command greater respect and at the same time manage his farm more intelligently? The latter is of more consequence than what any person may think of him. The problem would be solved, I think, by the better education of farmers' sons and daughters. But what kind of education would be best suited to the wants of the farmer? I would answer, in the first place, a good public school education.

A great many farmers make their children stop going to school as soon as the busy season commences, in order that they may get a little more work done. They think the children can get plenty of schooling during the winter months, and as they intend to remain on the farm, they do not require much education. It is a mistake to think so, and it is a mistake to keep them out of school through all the summer months; for by so doing the child forgets almost as much during the summer as he learns during the winter.

After the boy has a good public school education, it is important that he should know something about the business he is to follow. A carpenter or a blacksmith has to learn his trade before he can practice it; a teacher or a lawyer has to learn his profession before he can practice it; and how can we expect a man to begin farming before he knows anything about it? It is too often done and as a consequence we find so many farmers who are so deeply in debt.

Now, the farmers' sons are to be our future farmers, and it is as necessary for them to know something about agriculture as it is for the lawyer to know something about law, or the politician to understand politics. The farmer should study agricultural chemistry, so that he will be able to tell just what kind of food his different crops require. He should understand something about the rotation of crops, so that he will not sow the same classes of crops on the same field till the farm becomes barren and almost dies from exhaustion.

He should understand the best method of restoring such a farm to fertility, or he will lose a great deal of time waiting for it to recover its strength. He should know something about manures and fertilizers, so that he can apply such as will most benefit any particular soil or crop. Many farmers do not take the care of their farmyard manure that they should. If they would read some good work on the treatment and application of manures, they would be benefited a great deal more than they imagine.

If the farmer understands the rudiments of agriculture, he will be far more likely to be successful than if he knows nothing about it, and in these days of cheap literature, there is no excuse for not being posted in that direc