EDITORIAL.

The appropriation for agriculture by the Ontario Legislature this year amounts to $183,486, a slight increase over last year.

The success attending the Ballantyne Shorthorn sale would indicate that the long expected "up turn" in the cattle business had set in.

In consideration of the excellent work carried on by the Ontario Agricultural and Experimental Union, the Government grant, as per the estimates, is increased from $700 to $950.

In 1894 four experimental fruit stations were established in Ontario, under direction of the Fruit Growers' Association, in conjunction with the Ontario Agricultural College. This year the number is to be increased, the appropriation being raised from $1,000 to $2,000.

In the fruit-growing districts of Canada spraying will be more extensively practiced this season than ever before. In the Province of Ontario the "travelling dairy" idea is to be applied in this direction, the estimates containing an appropriation of $1,800 for practical instruction in fruit spraying, three well-equipped travelling outfits to be sent on the road.

During these times, of what is termed "agricultural depression," farmers are learning to economize in ways not thought of a few years ago. We find many who always kept their farm teams shod the year 'round now allowing them to go bare-footed, except one team, which is used to do the road teaming, which do very well with only front shoes. We would say commence every colt without shoes, and in many cases the necessity of shoeing will never show itself.

"Sacaline" is the name of a new and greatly boomed forage plant, said to have been brought to the United States from Russia. Some of the claims made for it are simply marvelous, and for summer soiling it would leave nothing to be desired if all these claims were verified; but we notice that they are disputed by several authorities. We have arranged for some seed and plants, to make a trial of it, and will report results for the benefit of our readers in due course. Mr. Bedford, Supt. of the Manitoba Experimental Farm, is testing it thoroughly.

At the beginning of the year the Australasian's correspondent, Thistledown, completed a tour of inspection of the Australian wheat fields, which were in progress of harvesting at that time. As near as could be estimated, the average yield per acre is not more than 9½ bushels. Compared with last year, there is an increase of area under crop of 62,000 acres, while the average yield per acre is half a bushel less than last season. The aggregate yield is put at 13,766,500 bushels.

There are a few teamsters who can keep their horses from losing flesh during the rush of seeding, but many more who are anxious to make the most of every fine day, cannot, or do not, prevent their teams from losing from 50 to 100 pounds each. Now that wheat is so cheap, and also so nourshing, a quart at a feed, fed crushed along with oats, will have a remarkable effect in keeping the horses up. A feed of well-boiled wheat at 8 p. m. is also nourishing and strengthening. As we have said before, wheat should be fed sparingly at first, in order that the animals may become accustomed to it, as there is danger of colic if fed at all liberally at first.

Our wide-awake contemporary, the Scottish Farmer, states that the outlook for the British dairy farmer is not promising, the fact being noted that creameries only give 4d., or at most, 4½d., per gallon for March milk, a low figure, even at the flush of grass, and, if we understand the Farmer aright, this is for the whole milk out-and-out. The increasing volume of imported butter and cheese is viewed with alarm. For example, in January last 50,000 cwt. more butter were imported than in January, 1894. Australian competition is most to be dreaded, the quantity from there having doubled in the past two years. [There is something in that for Canadians to think about, also.] The suggestion is thrown out that the Old Country dairymen should retain and utilize at home the skim-milk in calf and pig feeding, and that they should use in a portion of their herds Polled or other beef-bred sires, for the production of good store cattle. The Farmer warns its readers not to let the ship drift till she strikes the rocks.

About now a great many farmers are wondering what crops to plant or sow on certain fields; how many acres of this, and how many of the other crop had better be put in. There is certainly very little risk in growing a good-sized patch of potatoes, because, if the ground is well manured, and liberal cultivation given, a fairly good crop can be secured. If the price of potatoes happens to be low, the crop can be put to good use in the stable in feeding hogs, cows, and even horses.

The energetic Provincial Board of Horticulture in British Columbia, of which Mr. J. R. Anderson is Secretary, is fortified with a strong Act, carrying heavy penalties, in accordance with which stringent regulations are enacted for the inspection and disinfection of all nursery stock, trees, and plants infested with insect pests or fungous diseases, and for the inspection of imported or home-grown fruit. Standard insecticides and fungicides are also prescribed for use in orchards, etc. The Province is divided into horticultural inspection districts, and every possible effort will be put forth to prevent the entrance of the terrible enemies of the fruit grower. It is felt that prevention will be cheaper than cure, and B. C. bids fair to become a great horticultural Province.

"Raising New Breeds of Cereals."

Year after year brings to us the advent of new grains. How these are brought about is indeed interestiug to us, and, we trust, to many of our readers. To make the most of one's opportunities, it is necessary to be able to manipulate the business in hand so as to continually improve and increase the results of labor. This subject is one of special interest at this season of the year, and more particularly is interest awakened by the seed grain reports published in a recent ADVOCATE. The above topic has been exhaustively investigated by A. N. McAlpine, Botanist of the Highland and Agricultural Society, from whose treatise we compile the following, eliminating, as far as possible, unnecessary technicalities :—

A seed of grain has the property of transmitting to its offspring certain peculiarities derived from its parents, or in other words, seed is prepotent. The business of a "breeder" is to produce a strain of seed possessing the most desirable qualities, so thoroughly fixed that they are transmitted without change to the offspring. Unless this fixity of character has been secured, the seed is worthless for crop production by the farmer.

There are four methods used in practice to improve cereals : (1) cultivation in suitable soil and climate ; (2) selection ; (3) spontaneous variation ; (4) crossing of varieties.

Cultivation.—Cultivation has for its main object perfect nutrition of the breed, to secure which special attention must be paid to tillage, sowing, and manuring, for on these three factors depend the water, food and air supply of the plant ; defect in any of these respects entails diminished quality and defective breed. The soil should be free from weeds, and as deep as possible ; cleanness allows the plant to become luxuriant and fertile, while depth of soil regulates water and air supply. The seed should be sown in rows, but not so thin as to produce giant ears, out of all proportion to the rest of the plant ; sowing in rows or drills secures sufficiency of light, and nutrition, so far as carbon assimilation is concerned, is at its best. The manure should be of such a nature and so proportioned that the vegetative parts of the plants are fully developed, yet not excessively favored at expense of the ear and of the seed. As a manure to use in fixing new breeds of grain, dung and lime, at the rate of 20 to 25 tons per acre, on a gravelly soil, has given excellent results on one of Scotland's most noted cereal-breeding farms. The rotation used was potatoes followed by four different cereal crops in succession, thus affording appropriate cultivation for cereal improvement.

Selection, as applied to cross-breeds.—The method of selection has full scope only where cross-breeds are being dealt with, as these are especially "sportive" (that is, assuming new and different characteristics from the rest of the plant itself) until their characteristics have become firmly established. By this sportive feature they are recognized as truly crossed. Breeds of cereals in ordinary cultivation are of necessity fixed ; here sportive variations are the rare exception, not the rule. Varieties of a new cross may exhibit improvement or deterioration. The skill of the cross-breeder is accordingly exercised in distinguishing improved and suitable from worthless or, at least, less valuable varieties. One variety has to be kept, another cast aside; this is selection—a process of weeding out. Seed produced by the selected plant is sown, and weeding out repeated for a series of years, till the reaction set agoing by the introduction of new pollen has completed itself, till disturbance has subdued, till tendency to reversion has become almost completely annulled, till fixity has been attained—that is to say, till the desired characters have been thoroughly incorporated in the very embryo of the seed.

A series of years must accordingly elapse before an improved breed can be put upon the market, and further selection must still be made before the cross can be utilized by the farmer, since he can only afford to sow seed for crop production, when assured beforehand of the nature of the resultant produce. The golden rule regarding "change of seed" is this : do not change because some one else does, neither because you are advised to do so, but because you know from actual trial that the change will yield a more profitable crop. It is incumbent, therefore, upon our experiment institutions to finish and crown the work of the cross-breeder by testing the value of the fixed cross-breeds, their advantages and disadvantages when grown in the different districts, in various soils and climates.

Selection, when its advantages are fully realized, has thus two phases : (1) selection by the breeder ; (2) selection by experimental institutions and by agriculturists.

Selection, as applied to old breeds.—All the cereal breeds in ordinary cultivation at the present time are old and fixed, and not sportive and variable. Selection of the best from these has proved of considerable value in times past. Some of the greatest cereal improvers by this method have, by selecting the best ears from the best fields, increased the yield per ear from 90 to 124 grains. To improve quality, not only are the best heads selected from the field, but the best grains from the head. A certain degree of permanency can thus be given to a selected peculiarity ; and a variety already in existence is made to yield its best by skilful selection combined with suitable cultivation.

Spontaneous variation.—This method takes advantage of the fact that cereals in cultivation occasionally yield a few plants with special peculiarities. "Spontaneous variations," always rare, are most in evidence when different breeds of cereals are grown side by side on the same experimental field ; under such circumstance, the "spontaneous variations" turn out, as a rule, to be the result of that *rare event* (though many entertain a different notion) in cereal life—*natural crossing*—and the parentage on the male and female side can actually be traced. "Spontaneous variation" is thus a haphazard method of raising new breeds ; improvement obtained by accident must fall far short of what can be accomplised by the art of the skilful cross-breeder.

Artificial crossing.—As yet, the method of cereal crossing is in its infancy, and has played little or no part in practical agriculture. Cultivation and selection by hand-picking and by the sieve have been the methods relied upon for improvement. Nevertheless, crossing is the most potent improver of all ; it not only improves but provides new breeds and new material for improvement ; it takes advantage of the sexual character of plants, and combines a portion of one variety with a portion of another. This delicate mechanical operation consists in first removing the unopened anthers, to prevent self-fertilization, and then applying the pollen of the other variety to the stigma of the former. The resultant blend of the two or more selected varieties is the *cross*. Cultivation and selection, however carried out, cannot blend the desirable peculiarities of two or more varieties into one, but crossing can, and therein lies its power, therein its greatness : thereby it is distinguished from all other methods of improvement. Cross-bred cereals may show deterioration side by side with improvement; accordingly, selection by the breeder and by the agriculturist must always be handmaidens of cross-breeds, if their full value in practical agriculture is to be realized.

The Advocate Leads.

Mr. W. J. Haycraft, in a business letter to this office, congratulates us on publishing "the ideal Agricultural paper of the Dominion."

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JAS DORRANCE, Huron County, February 22 :—"I have been a reader of your valuable paper for sixteen or seventeen years, and would not do without it for any money."

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