

proceed at once to give my views, hoping that some member of the Board of Agriculture for Ontario will put me right if I am wrong.

At the outset then, I venture the opinion that close interbreeding in the vegetable kingdom is, in some families of plants, just as injurious, if followed for a very long period of time, as it is in the animal kingdom. My experiments in crossing the grape and the raspberry have showed plainly that in most instances, health and vigour resulted from judicious crossing, and in some few cases greatly increased productiveness. Such, also, has been my experience in crossing wheat. Not that every kernel operated upon would prove valuable by any means; such was the delicacy of performing the operation that frequently the vital organs were injured thereby, consequently, tender and sickly offspring was the result. But if one plant in a thousand possesses all the desirable qualities, is not the country that cultivates this variety greatly benefited thereby? One of my new varieties yielded me (4,800) four thousand eight hundred kernels from the one first kernel, and this year the same variety gave me seventeen bushels two quarts and one pint from seven pounds of seed. Now, if any person will take some old variety that "has run out," as it is termed, or take either of the parents from which my wheat sprung, and raise as many bushels from the same quantity of seed, with ordinary cultivation, such as mine was, then I will admit that I have gained nothing in productiveness by crossing; but if, on the other hand, they cannot raise as much, then are they not equally bound to admit that crossing has increased its productiveness?

There are, in my opinion, other good qualities to be gained by crossing, and resisting the midge is one of them. It is very common to hear farmers say, this or that variety of wheat is too early or too late to escape the midge. From hearing this saying repeated so often by close observers of these matters, I at one time believed it, but am now convinced that the idea is erroneous. In my experimenting I had upwards of a hundred varieties of wheat, one row of each kind within eight inches of each other, nearly all in flower at the same time, yet one row would be completely ruined by the midge, and perhaps the row adjoining it that was exactly the same in regard to earliness, untouched,—the one taken and the other left. I therefore began to look in another direction for the cause, and I observed that some of the older varieties that had been

cultivated in this country for many years, although perhaps very luxuriant in growth of straw, appeared very weak in the generative and some other organs. Now, I do not believe as many people do that the midge ever punctures the chaff, but rather with its proboscis or something else it strikes where the two chaffs join, and where wheat that is perfectly healthy in every respect overlaps its chaff. In cultivating a few plants of the favourite White Soule's by the side of the red midge proof, and both varieties brought into flower at the same time, I found the Soule's completely destroyed by the midge, and why? Simply in my opinion because of its weakness through having been for so long a period of time, fructified by its own follen that it did not produce chaff large enough to cover its nakedness.

And again, while the healthy varieties that resist the midge open their chaff and expose their newly fructified pistils to the bright sunshine for a few moments only, the poor sickly degenerated Soule's remain open with its embryo fruit exposed to the attacks of the midge frequently for hours together.

But there are two other objects to be gained by crossing wheat that must prove of inestimable benefit to Canada, viz.: *hardiness* and *earliness*.

I have feared by crossing different varieties of grapes and raspberries that the perfect hardiness and the extreme earliness of the hardiest and earliest varieties, can be joined with the more tender varieties and so produce the rich luscious fruit of the latter, and to a certain extent the same results have been obtained by crossing wheat.

Now, if some member of the Board of Agriculture will make some enquiries as to the truthfulness of the above statements, he certainly will deserve the thanks of his constituents for so doing, and if the statements are true, the inference to be drawn therefrom, and it seems to me the unavoidable conclusions to be arrived at are, that a first class, more hardy and early white midge-proof wheat, with all that can be desired in strength of straw, &c. &c., and suited to almost every soil and climate, can be raised by judicious crossing.

And who will estimate the value of such a production? We read in several of our newspapers that in some northern townships of Ontario much of the spring wheat was ruined this season from early frost. Does any person ask how such a calamity could be avoided? I answer, either by raising a spring wheat that ripens earlier, or a fall wheat that will stand the winter in these townships and ripen earlier than the present spring wheat does, and I would have no hesitation in undertaking to raise just such a wheat if I could have a guarantee that my labours would be appreciated and rewarded, but not otherwise. It must be obvious to everyone that such an undertaking would require considerable time, much labour and expense to accomplish.

It is certainly very pleasing to know, that several members of the Board of Agriculture have