that was the highest. Those who had well selected the land generally ranged between that rate and thirty-five dollars. The drought in our part of the country was extraordinary. The hemp crop suffered very severely from it, as did the flax, so that our success was far from complete. Some farmers, who had sown their hemp in good soil, but such as Sebastian Delamer describes as "apt to be scorched by the sun," were disappointed. Some others, who pitched it carelessly in poor soil, without due preparation, and expected a miracle, were more than disappointed. One must be prepared to meet these checks with patience. However, the general results of last summer's trial, allowing for the great damage done by the unusual drought, which at one time made me fear that all was lost, were of such a nature as to encourage those upon whose help we must mainly depend—the careful, intelligent and enterprising farmers, whose example will tell in the course of time upon the others.

When the male and female plants are pulled separately, the female being kept for seed, the price of half a copper a pound for unretted hemp is not unfair to the manufacturer. Both plants are then brought to him ripe; the sap is dried up; the leaves are gone, and in that state it will not lose more than half its weight in retting, which will bring it to one copper per pound for retted hemp. True, the manufacturer has got the trouble of retting it, but it may be worth his while to have ponds, and ret it in water, which will give him a superior article, the farmer generally retting on the ground. But that same price of half a copper a pound for hemp not retted, when both the male and female plants are pulled at once, is more than the manufacturer ought to pay; for while the male is dry, and worth that price, the female is still green and loaded with leaves, and will lose more than half the weight in retting; there ought to be some deduction in that case, say one-fifth or one-sixth on the whole; if the crop has been cut down with the hemp knife, the deduction ought to be much smaller, if any, because the manufacturer has not then got to pay for the weight of the roots, which is a considerable item. For my part, until the whole business is more practically understood by us, I would prefer it if the farmer were to ret his hemp himself, even on the ground, and deliver it at the mill at the rate of one copper a pound, as some have done At that rate one acre, well cultivated, ought to yield him about fifty dollars. It would not impoverish the land if both male and female plants are removed at one time, and would prepare it for wheat.

Of course, it is useless to start the growth of hemp on a large scale, where you are not prepared to dress it. In Europe, they dress it by hand. Labour is too expensive here for such a slow process. We must have recourse to machinery, as they do in the States. A hemp mill worked by water, such as I put up at Lotbiniere last fall, given the motive power (water-wheel, steam or other; it appears that in Kentucky they use horse-power, in the absence of water-power) and a shaft on which to hang two pulleys, one for the break and one for the scutchers, will cost from three hundred to three hundred and fifty dollars, at the most.

The whole machinery consists in a six-roller break (Sandford & Mallory's pattern) manufactured by Mr. Wm. Moody, at Terrebonne, near Montreal, and sold by him for $240, and of two scutching pulleys, with five knives on each, (the pulleys made of birch and pine, and the knives of well-seasoned maple or spring steel). Hemp requires much less scutching than flax, I think two scutching pulleys, with five knives each, will be sufficient for the former, where five such pulleys are required for the latter. Put over the machinery a covering, consisting merely of a roof without sides, so that the dust will not trouble the men.

The scutching pulleys, with the knives attached to them, must be raised off the ground a good deal higher than for scutching flax. The shaft of those pulleys ought to be at least four feet from the floor of the mill, the men who scutch standing on stools. The reason is that, if you leave your scutching knives as low as for flax, the ends of the hemp will lie on the ground (it is often eight or nine feet long) where the knives, in their swift revolutions, pick them up. The hemp then gets entangled, and ultimately rolled up round the shaft, and is lost, as I found out to my cost.

The outlay of $300 to $350 for the machinery of a hemp mill, though not very considerable, is more than one would like to incur for the simple experiment of a new thing, especially when undertaken with some doubt as to the final success. But, without incurring any expense, the trial can be made—as I made it before building the hemp mill—either at any flax-dressing mill, or, in the absence of such a convenience, with the common old-fashioned flax-break, worked by hand, so well known to every farmer. If there be a flax-dressing mill at hand, you can make use, for your experiments, of the flax-break, taking care to slacken a little the screws that keep down the upper rollers. Hemp, being thicker than flax, requires more room between the rollers. If your flax-break is not very strong, to avoid injuring it it will be well to cut off the roots of thick hemp before passing it through the break, but you are not obliged to go to that trouble with a regular hemp-break. Once broken scutch the hemp with your flax scutching knives, on revolving pulleys, taking great care that the long ends do not get entangled; or with a common hand scutching knife. Six pounds of retted hemp, at the rate of one copper a pound, cost the manufacturer five cents, and will produce one pound of clean dressed hemp. The cost, delivered at Quebec, of Russian hemp of the same quality as our Canadian hemp, was, last fall, about 9c. per pound, which I am told is not a very high price in this market. This would leave a margin of four cents a pound for dressing and delivering here; and I think we could give it cheaper than the Russian, hemp requiring much less scutching than flax. It is indispensable that it should be sufficiently retted, whether that be done by soaking in water or exposure to dew.

We are now beginning to dress our stock of hemp at the mill, for Mr. Onslow's rope-walk at Quebec. By the spring, I shall be able to state with more accuracy the cost of dressing hemp, and the yield of retted hemp in dressed hemp. I should not be surprised if, on an average, it took something less than six pounds for one. Some people tell me that they have found it to be five pounds for one. Experience will show.

I earnestly trust that the results of these experiments will be such as to encourage the cultivation of hemp on a large scale, and that it will be found profitable both to the farmer and to the manufacturer, in Canada, as it has been found in so many countries.

Quebec, Feb. 12, 1869. H. G. JOLY.

Note by Editor—Mr. Joly is kind enough to say he will send us one bushel Piedmontese hemp seed, and two bushels of Missouri. We will distribute it in small quantities to any of our friends who may be desirous of making a trial of growing hemp in Ontario, in order to introduce the cultivation of this very desirable crop.

Practical Drainage.

BY ALLAN MACDOUGALL, C.E.

I.

The subject of drainage has been so often dwelt upon, that any remarks on it may now seem superfluous; but to a country like this, where so much land lies yet unbroken, and even on many farms fields are often to be found that are useless in early seasons from their wet state, a few practical remarks may be acceptable to those who are anxious to improve their lands, and would wish to make a commencement this spring. The following remarks are intended to show that, little by little, a farmer ought to drain his lands, using his own and sons' labour with that object, and not run into a large scheme that he may not have means to complete, and so be disheartened at an unfinished work, and blame a project the working of which is bad on account of its incompleteness. Let the work of drainage be commenced on a small scale, doing one field only at a time, and as the improved crops show the advantage, and the purse gets longer, larger portions can be done. It is very necessary, to ensure a proper result from the operations carried on, that each field, as it is drained, is thoroughly drained. One or two large drains from the wettest portions of a field, with a few small ones at varying depths, to wet places, do not fulfil the conditions of proper drainage. They answer for the time being, and for a certain distance on each side draw off the water; but the rest of the field is left without any means of being relieved of the superfluous water, and the consequence is an unequal and irregular crop, while the return to the farmer is little or nothing. Let a plan be resolved upon on which operations are to be conducted; fix on a field that from its position affords a good and easy outfall; it may be to a stream, or the field may bound a road where a drain already exists, or some waste land or mill pond may afford a reservoir for the water.

Outfall is the first thing to be looked to, as on this depends the whole success of after operations; it is not necessary that there be a great slope in the land; water, following the laws of gravitation, will always seek the lowest place, and on many fields that look quite level, or only appear to have a slight fall, so long as it is a uniform one, water will be freely discharged.

If it is necessary to lead the water through one or more fields to get an outlet, then the outfall drain should be taken down the sides of the fields it goes through, so as to be useful in draining the fields on both sides. In laying out the lines of the drains, the eye will always be a very good guide, as one can easily see how land slopes, and in small operations there is no great fear of going wrong, and when the trenches or grips are being cut, a little observation will soon show if the water has a fall or is level, so that an intelli-