

square was laid or any portion of it struck by rust. The yield of the drained ground was about at least 25 bushels per acre—the remainder of the field being a light, dry, rather sandy, and thickly studded with heavy pine trees—yet the average of ten acres was twenty bushels. I will now dwell upon my disappointment: I did think that by this means the midge would be successfully met, but I have found that in the case of spring wheat the evil was rather aggravated. Depending upon drainage as a permanent cure, I paid no attention to the times of sowing, but sowed last spring 48 acres of fall wheat, golden drop and other varieties, between the 31st March and 18th April. This wheat, though the straw was enormous, was entirely destroyed by the midge, which was in full strength at the moment the blossom was formed. Every pollen of the grain was devoured by the insect, which numbered about three hundred to each head. What grain matured was of very inferior description, and averaged only six bushels per acre. Another field of seven acres sown during the previous winter, gave sixteen bushels per acre, sown on 8th May, from grain grown at Quebec, from grain imported from Canada in 1859 by M. Renaud. Six bushels of the same seed sown on undrained ground on 14th May, was so affected by rust that it gave no return at all. I also sowed 25 bushels of wintered Fife wheat, some on sandy soil about 15th May, and some on clay, on the 26th, neither being drained, but the yield was 9 bushels and 12 respectively. You can imagine that I do not intend to sow any spring wheat except as a mere matter of experiment. Last year my fall wheat came into between the 1st and 5th of June, and the spring wheat about the 17th. What I now rely on, by underdraining to give an early growth to all wheat, so as to enable it to blossom at a distant time before the midge appears, to place it beyond danger, and if drainage effects this advantage, I think my labour in this direction will not have been thrown away. I have 80 acres of fall wheat sown, and of these 20 are on a thoroughly drained ground, with this disadvantage however, that they were under spring wheat last year, part of the worst affected by the midge. This however was the only drained land available for the trial, to make which I did not resist the temptation to follow this exclusively unphilosophical course. I await the result of this year's harvest with great impatience. Last season I can not regard as a favourable one for comparing the condition of drained with undrained land, for the departure of the frost was followed by any of those heavy rains which commonly drench our clay soils, which then act only by evaporation and the effects of our summer's sun, become almost as solid as ice in the icy bonds of winter. Instead of this frost and snow gradually and gently disappearing without rain, and none fell afterwards

beyond what was much needed, the general temperature at the same time being moderate. The flow of water from my main drains was not remarkably heavy even in the spring, and they all gradually dried up except one; neither did they run again during the remainder of the summer, and only commenced, about six weeks ago, a light discharge, which has been gradually increasing. From these causes the soil generally retained throughout the season that finely pulverised condition which results from the effects of our winter frost. To bring about permanently this state of things, thus produced exceptionally last season, is the special attribute of underdraining.

I trust that the minuteness of detail in which I have indulged may not be considered unnecessary, or deficient in interest to some of your readers, and that others who may have been disposed to cavil at the recommendations and doubt the practicability of the adoption of this apparently expensive but necessary improvement in our farming, may be brought to see that the opinions advanced on this subject are not the vain fancies of a chimerical theorist, but the sound convictions of a practical working man.

Humberford, Feb. 23rd, 1861.

## Mowing and Reaping Machines.

### *For the Agriculturist.*

Amongst the many useful implements and machines invented for the saving of manual labour in agricultural operations, there are few more useful than reaping and mowing machines, as they assist the farmer at the busiest season of the year, and in the most laborious operations of the farm; though they have now attained such a degree of perfection as to bring them into general use on lands prepared for their reception, yet, like many useful inventions, they had to pass through many years of neglect. As the utility of well constructed reaping machines to the interest of the farmer can hardly be overrated, we propose in this communication to notice briefly some of the earlier attempts at reaping by machinery, both in Britain and America.

During the long wars in which Britain and the other European nations were engaged during the early years of the present century, the country became drained of men, a scarcity of agricultural labourers began to be felt, and a desire for some other method of harvesting than the reaping hook, which, up to this period, had been the only implement used for that purpose, began to be expressed.

The earliest reaping machine that we have seen noticed was one brought out in 1812 by the late Mr. Smith, of Deanston, to whom agriculture owes so much. This machine was brought out to compete for a premium of £500, offered by the Dalketh Farmers' Club "for an