

people are planning works of a similar character, and in places on the Atlantic and Pacific some successful works have been accomplished. At a recent meeting of the National Agricultural Congress at New Haven an interesting paper on this subject was read by B. G. Northop, from which we deduce some valuable suggestions.

He directs attention to the reclamation of waste lands by drainage in Europe, where it has been carried on for so long a time, and with such grand results as only need being briefly mentioned.

England, Ireland and Holland, to name no other countries of Europe, contain millions of acres of such land, now reclaimed and exceedingly fertile. Even lakes from ten to fifteen miles in length have been drained. In 1848 was completed the draining of Lake Haarlem in Holland. The lands thus recovered have since been sold by the Government for nearly \$3,500,000, or about \$80 per acre. The success of this grand experiment has promoted others, like the draining of the Zuid Plas—a lake covering nearly 12,000 acres, and the great work now progressing to drain an arm of the Scheldt, which will recover some 35,000 acres. Encouraged by the results of these enterprises, the Netherlands engineers now advocate the stupendous project of draining the great salt water basin of the Zuiderzee, an inland sea which covers 1,300,000 acres. The Italians have nearly completed the work of enlarging and deepening the tunnel cut by the Emperor Claudius to drain Lake Celano. This tunnel, more than four miles in length, and costing over six millions of dollars, will recover for agricultural occupation 42,000 acres of most fertile land.

Such extensive works as those are not needed here. There are in the Dominion tens of thousands of acres of fertile land ready for the labor of the husbandman; but there are also large tracts of land that may be profitably reclaimed by drainage—much of it easily accessible by railroad and highway—marshes and swamps that may be economically reclaimed and rendered very valuable. The success of such undertakings in Europe should be a stimulus to us. When the works now in progress in Hungary are completed that country will have over a million of acres of swamp land reclaimed from marsh and moor. So it is also in Italy, and similar works are carried on in England and France.

Were there similar exertions put forth in Canada her young men would find employment in the work of improvement, and the improved value of the land would repay, with a large profit, all the expenses incurred.

The sand barrens of the coasts are especially referred to by the writer, and the feasibility of reclaiming barren wastes, making good his opinion by facts. Of the drifting sands of Europe, which cover 7,000,000 acres, Marsh, as quoted by B. G. N., says:

"There is no question that most of this waste is capable of reclamation by simple tree-planting, and no mode of physical improvement is better worth the attention of civilized governments than this. There are often serious objections to extensive forest planting on soils capable of being otherwise made productive, but they do not apply to sand wastes, which, until they are covered by woods, are not only a useless incumbrance, but a source of serious danger to all human improvements in the neighborhood of them."

After an extended account of the manner of reclaiming the sand dunes in Europe, by government appropriation, and similar enterprises in this country, with some remarks on the necessity of adapting the method in any particular case to the nature of the soil and other local conditions, the writer said: As this scheme of recuperating sand wastes is regarded as chimerical by many who have not investigated the subject, I will cite facts found near at home. The amount of land planted with trees in Barnstable County is estimated at about 10,000 acres. Before the trees were planted these well-nigh worthless lands could be purchased at from

twenty-five to fifty cents per acre. John Doane, of Orleans, has planted 170 acres. He has sold planted lands for \$14 per acre, not worth over fifty cents before planting. John Kenrick, of South Orleans, says: "My experiments in tree-planting have been made on over a hundred acres now covered with trees from one to thirty-five years old, chiefly pitch pine. I am now trying Scotch and Corsican pine and European larch. My first aim has been to cover my worn-out lands with beauty and verdure, and it has proved a successful and economic experiment. The seed of the pitch pine is worth from one to two dollars a pound, the higher prices being in the end the cheapest. Fresh seeds carefully gathered are as sure to vegetate as corn, but obtained from seedsmen they are very unreliable in germinating. European nurserymen take far greater pains in gathering forest tree seeds, and understand the art of curing them better than Americans. I have tried every method of tree-planting, transplanting trees from the smallest to those that are two feet high. This is a costly plan, but may be adopted when one wishes to save time or desires a few trees as a wind-break or otherwise. In transplanting trees immediately from my own nursery to the fields, my favorite time is just as the buds begin to start in the spring. I have planted seeds both with a planter and by hand. On our light sands a man and a boy will plant three acres in a day; dropping six seeds in a hill, it will take about one-half a pound of seed to the acre. This is my favorite method, and is more satisfactory in results, though more costly than that of using the plow and planter. When the evergreens are two feet high I would thin them, leaving one thrifty plant in each hill. I do not trim till they get large, and then cut off only the dead branches."

The best time for planting the pine seeds is as early in the spring as the frost permits. The work is done by hand or by a seed-planter, and in rows about as thick as corn is ordinarily planted. On the Cape Cod barrens there was no vegetation except a little moss, low poverty grass, so-called, and in some cases light beach grass. Experiments are now in progress to fix the dunes or sand hills which threaten the Suez canal, by planting the maritime pine and other trees. Last summer I visited the celebrated forest of Fontainebleau, in France, which covers an area of sixty-four square miles. The soil of this wide tract is composed entirely of sand, and apparently as dry as the sand plains of Wallingford, Conn. Jules Clare, a student of forest science of world wide fame, says: "The sand here forms ninety-eight per cent. of the earth, and it is almost without water; it would be a drifting desert but for the trees growing and artificially propagated upon it."

#### Improvement in Machinery.

We were recently at the Joseph Hall Agricultural works, Oshawa. Here we find the spirit of progress most strikingly manifest. They aim to keep ahead of all implement manufacturers in the Dominion, but sometimes they find that a difficult task. We think in the "Champion" reaper there is a new feature, far in advance of anything we have yet witnessed, although we have recently been to the Royal Exhibition and to Paris. In place of using cast iron in the frames and shafts of the "Champion," solid steel is used, and the bearings of the latest machines are of brass. We think there is ten times more brass and steel used on the machines we saw in course of construction than on any we have yet seen. This must add to the strength, lightness and durability of these machines. We also noticed a new horse-power. It is much lighter than the old Pitt's power, and is said to reduce the power required to run it to over the power of one horse and nearly the power of two. Farmers that have old Pitt's powers examine the new power, and if you are satisfied sell your old horse-power to some one that does not take the *Advocate*, and purchase the best. This company has already shipped near two hundred threshing machines this autumn already. The timber and other material used by this firm is unsurpassed in quality. Their clover thresher appears to be destined to take the lead and surpass some that have had a great noise made about them. Just examine their goods at the Exhibition.

#### A Large Canadian Enterprise.

The Waterous Engine Works Company, of Brantford, has sent us the following astonishing results of their last year's business:—

The sale of "Fire Proof Champions" was 85—more than five times as many as all others put together in any single year—evidencing the appreciation of its FIRE PROOF QUALITIES by both farmers and threshers.

In Germany, where it was tested lately, it elicited much admiration; and Mr. C. H. Waterous jr., is now in the vicinity of Vienna, Austria, testing it there on a 40-cylinder threshing machine of English make, and experienced men predict a large sale of this engine there, in preference to the heavy, cumbersome, screen spark-arresting English engine.

Besides building engines at the rate of four per week, they are manufacturing portable saw-mills and grist-mills with wonderful despatch, to keep pace with their vast trade in this line, which embraces the whole of Canada, including Manitoba and British Columbia. They have also shipped seven saw-mills to foreign countries.

They are adding valuable improvements to their Champion Engine, enlarging their works, and purpose building 200 engines for 1879.

#### Weather Predictions.

VENNOR'S IMPRESSIONS FOR THE AUTUMN AND WINTER.

Ottawa, Sept. 27.—Vennor, the weather prophet, writes to the *Citizen* as follows:—It is my impression that there will be a pretty general snow fall early in the month of October. That following this there will be a brief but well marked Indian summer, which will again be followed by a prolonged wet spell. Unless I am greatly mistaken, the setting in of winter of 1878-79 will be as marked for its unusual earliness as was that of 1877-78 for its extreme lateness. Navigation will close early, and will not open until late, so that the winter will be a long one. There will in all probability be an abundance of snow during the fore and latter part of the season, but, judging from the number and severity of our thunder storms this summer, I look for a warm and singularly open term towards midwinter. The woods are already full of our winter birds. Snow fell in Ottawa County to-day. North of the Hull Mountains the atmosphere has been extremely cold for several days past.

NOTE.—It will be well for our readers to have their work well forward and be prepared for the worst.

#### Phosphor-bronze.

The following brief notice from an English paper on this very valuable English alloy is of peculiar interest to mechanics and manufacturers. We hope it will be shortly introduced into the Dominion and used in our agricultural implements as well as in other works.

There is a very fine set of examples of that most valuable of modern alloys—phosphor-bronze. If the ancients had known what an enormous improvement in their bronze was to be effected by the simple process of adding a little phosphorus to the copper and tin, the bronze age would have lasted many centuries longer than it did. No metal or alloy capable of being put to ordinary uses yet known presents such capabilities as phosphor-bronze. It is, in effect, almost indestructible. Among the exhibits is a bronze plunger which had been in constant work for 572 days, sixty strokes a minute under a pressure of three tons, and which shows no signs of wear whatever, while hardened steel plungers only lasted two months. And so there is a phosphor-bronze worm hardly worn after 18 months' use, while a brass worm, after 12 days' work, is all but worn out. The adaptability of the material to the widest variety of uses is shown by its application in the manufacture of chisels, revolvers, stirrups, wire, hammers, &c., whilst its art capabilities are admirably illustrated in a couple of busts, one in the rough and the other polished. One of the great uses of the phosphor-bronze is for bearings; but, indeed, wherever constant resistance to friction is required it is of the highest utility, while, in addition to all its other good qualities, it possesses the merit of lightness.