

North-West have been the most earnest in urging on the Government a generous and energetic policy adapted to our circumstances and needs.

A work is now in progress at Port Arthur which, when completed, will have converted what was formerly an open, exposed and dangerous roadstead into a safe and commodious harbour, without rival on Lake Superior. This important entrepot, once known as Prince Arthur's Landing, was the starting point, beyond the lakes, of the old land-and-water route to the North-West. It received its earlier name from Col. (now General Lord) Wolseley when, in 1870, the Imperial and Canadian troops landed there on their way to Fort Garry to suppress the first Riel rebellion. Its commercial importance and shipping faculties have been greatly increased since the incorporation of the River Kaministiquia with its harbour. To protect the wharves it was necessary to construct a breakwater, the first length of which (2,000 feet) was begun in 1884 and finished in February, 1886. A year later a further length of 1,600 feet was commenced, and this was completed in November, 1888. Its strength was, moreover, increased by the erection of a talus of stone against the outside of the work, the resisting power of which has been fully tested by the furious storms that have taken place during the last eighteen months. Westward of the work already completed, a further length of breakwater of 1,500 feet was begun in May last, and it was also decided to extend the talus of stone along the length first built, so as to withstand the eroding action of the water under heavy gales. The breakwater so far has admirably served the purpose for which it was constructed, having withstood the force of breaking seas driven by gales moving at the rate of 54 miles an hour, as well as ice shoves of tremendous volume and violence. The depth at low water in the central opening is 18 feet. At the north-east opening, which is 250 feet wide between the end of the breakwater and the C.P.R. elevator wharf, the depth is 17 feet. When the length of 1,500 feet now being constructed, which will have block piers at each end, has been completed, there will be a depth of 17 feet at the western end, with ample room for steamers and vessels to pass.

OUR EXPERIMENTAL FARMS.

No movement of our time has been more fruitful of good than the establishment of experimental farms. There are now in operation in Canada, besides the Central Farm at Ottawa, the branch farms at Nappan, N.S., at Brandon, Man., at Indian Head, N.W.T., and at Agassiz, B.C. The Central Experimental Farm was opened in the spring of 1877; in the spring of 1888 the Nappan and Indian Head farms began work, and in the summer of 1888 the farm at Brandon, and in August, 1889, the farm at Agassiz were duly organized, and since this last date all these establishments have been fulfilling their important tasks. The Government was fortunate in securing Mr. William Saunders, F.L.S., as director of the Central Farm, who has been ably supported by Messrs. Fletcher, Shutt, Hilborn and Gilbert. Messrs. W. A. Blair, S. A. Bedford, Angus Mackay and Thos. A. Sharpe have charge of the farms at Nappan, Brandon, Indian Head and Agassiz, respectively. The work at the Ottawa Central Farm is of a comprehensive character, covering the vast and varied field implied by its name. In its organization Mr.

Saunders availed himself of the experience gained in a number of years by like institutions in Europe and on the continent, adapting his arrangements, however, to our peculiar conditions and needs. All that relates to agriculture, forestry, stock and the economy of the farm is under his own immediate supervision. The testing of seeds, the examination and comparison of the various grains, the ascertainment of the best breeds of cattle, the conducting of experiments with wheat, oats, barley, vegetables, forest trees, and the distribution of samples, the keeping abreast with the needs, faults and progress of the agricultural class, and the supply of timely information, with occasional visits to such parts of the country as may most require counsel and encouragement—these are some of the arduous duties that Mr. Saunders has to discharge. Mr. Fletcher has charge of the department of botany and entomology, studying especially the insect enemies of the farmers' crops and the means by which they can be evaded or exterminated. The chemist, Mr. Shutt, is engaged on the analysis of soils, of water, of vegetables (as sugar beets), of manures, or of any substance, the constituents of which it may be desirable to ascertain, in its relations with agriculture. Mr. Gilbert has charge of the poultry department, and the horticulturist attends to the duties which that name implies. The work of the past year in all these departments of the Central Farm has been most useful, and the experiments have been for the most part both interesting and of practical value. The testing of seeds has been attended with results largely beneficial to the farmer, the timely information as to the vitality of frozen grain, especially, having doubtless saved many from disappointment. The entire number of seed tests was 933. The average vitality was 78 per cent. The distribution of Ladoga wheat through the local governments, which purchased it from the Central Farm authorities, has been generally received with favour. Of 142 reports sent back 137 were satisfactory. Danish Chevalier and other barleys, various kinds of oats, and tree seeds were also distributed. The experiments conducted on the farm covered a large range—grains, corn, roots, vegetables, grasses, sugar beets, fodder plants of new varieties, seed grain from India and a large number of forest trees.

The report of the chemist and entomologist contain much that is of scientific as well as practical interest. That devastating plague, the Hessian fly, has been found in specimens of destructive insects sent from Thornbury, Ont., and Prince Edward Island. Mr. Fletcher publishes remedies. He also answers inquiries regarding the grain aphid, the wheatstem maggot, and he gives lists illustrating the greater or less freedom of certain grains from these vermin. Cutworms, the flea beetle, the flower-moth, the granary weevil, the grape "black knot," and other insects are also treated at some length.

The progress made in the horticultural department was satisfactory, few of the fruit trees being injured. Mr. Gilbert's report shows a good deal of fairly successful experimentation, his crosses being, in many instances, gratifying. No cross, however, rivalled the pure Plymouth Rock, the nearest approach to it being the Plymouth Rock-Brahma. The eggs of some of the crosses were unusually large, those of the Brahma-Minorca pullets weighing one pound fourteen ounces the dozen, thus exceeding the eggs of the Brahma and of the Minorca.

The reports of the branch farms show some good work accomplished. The year was a good one for farming at Nappan, and Mr. Blair's operations seem to have covered the whole field. During the early summer some of the grain turned yellow, but whether through the presence of the Aphis in the stalks he could not determine. Eighty varieties of wheat, sixty of oats, eleven of corn, several of buckwheat, over a hundred of potatoes and various kinds of vegetables were planted. His fruit trees, generally, did well. On the whole, there has been no reason to complain of the interest manifested by the farmers of the Maritime Provinces in the work of the farm. The farm at Brandon has begun to serve its purpose as a training school, distributing centre and source of information for the farmers of Manitoba, and the establishment at Indian Head is no less prized in the Territories. Both these points are well situated for the objects in view. The character of the Brandon district has already been described in this journal—one issue of which was devoted to it—and the neighbourhood of Indian Head to the famous Bell Farm is enough to show its fitness for the site of such an institution. It is satisfactory to learn that attention is being earnestly given to the development of suitable trees in the North-West. The maple avenues and other plantations of forest trees at Brandon are doing well; and at Indian Head, in addition to trees of that kind, a number of Russian apples—such as Mr. Gibb first made known in this Province—have been obtained from the farm of Prof. Budd, of Ames, Iowa, who was Mr. Gibb's companion on his patriotic voyage. Pears, plums, and cherries of like origin have been secured from the same source, as well as a fine collection from Fonthill, Ont. A selection was also made from the hardiest fruit trees of the Eastern Provinces, comprising gooseberries, currants, raspberries, etc., as well as the larger kinds. Of deciduous trees, Manitoba maples, white elm, rock elm, white and green ash, mountain ash, yellow birch, Russian mulberry, Norway maple, black ash and other varieties, and of evergreens, Riga and Scotch pine, white spruce, etc., and ornamental shrubs, like Siberian pea, Russian olive and varieties of lilac and barberry have been introduced, with fair success or promise of success. Agassiz, the site of the British Columbian farm, is the C. P. R. station for the provincially famous Harrison Springs, on the lake of the same name. The work has been well begun there, as at the other farms, and, though it is as yet but partially equipped, there is no reason to fear its ultimate success. About 7,000 young forest trees, mostly valuable hard woods, were forwarded last year in order to test their usefulness in a province where hard woods are wanting. The report of Mr. Saunders is enthusiastic about the exhibition of the province at New Westminster, and of the Agricultural Association at Ashcroft, the displays of fruit, etc., on both occasions being a sight to do one good. On the whole, it is evident that in these experimental farms the Government has undertaken a work that is sure to yield rich returns in a near future—a work on which all who rejoice in Canada's progress are justified in congratulating themselves.

From the Egyptian manuscripts owned by the Austrian Archduke Rainer it appears that printing with movable types was practised in Egypt in the ninth century of our era, and that a paper factory existed in Bagdad as early as 794.