

Rock Dam to Lockport. Next year the canal in its best condition, will be thronged with the products of the boundless, enterprising west. A slight interruption would be mischief—a total one, destruction to interests too extensive and momentous to be perilled for an hour. The welfare of the city of New York, New England, this entire State, and the vast West; the prosperity of our own city, and the solvency of the Treasury of our State, the credit of its stock, its faith and honour, depend on enough being done and done in time to arrest a catastrophe, which we are forced, against our own hopes of prosperity, to admit is like to happen. The remedy is within reach, and there should be no hesitation in making the application."

It is an ill wind that blows nobody any good.—What, if a stoppage of the navigation of the Erie Canal should bring into unexpected activity the Grand Trunk, the Great Western and the Ontario, Simcoe, and Huron Railroads? What, if Hamilton, Collingwood Harbour, and Toronto, should share much of the carrying trade which has hitherto passed through Buffalo, and the vast granaries of the Great West disburden themselves through the natural outlet to that region, the valley of the St. Lawrence, until the gentle stimulus of "Free Navigation?"

#### Materials for Paper-making.

In our present number we publish two articles on "Materials for Paper-making." The growing importance of this subject is attracting general attention in the United Kingdom, and has already secured a small corner in the public mind, by the recent increase in price of many newspapers and periodicals, solely on account of the scarcity of materials for making paper.

As is always the case, whenever any undue pressure is felt among the great manufacturing interests, arising from any dearth in the supply of raw materials, numerous attempts are made to relieve the want by the introduction and adoption of new sources of supply or of appropriate substitutes. For centuries past, by far the greater part of the paper consumed has been made from rags. There is, however, every reason to believe that a considerable supply has been manufactured from other kinds of fibrous matter. The natives of China manufacture the greatest part of their paper from the inner bark of the bamboo and various other trees. No inconsiderable portion of their common wrapping paper is made from rice straw.

The best materials for this manufacture are unquestionably linen, cotton, and hempen rags. They are the best, because they are as yet the cheapest. It is, however, a question not yet solved, whether they are artistically best adapted for making paper. For many years paper has been made from hop-bines, wood-shavings, straw, plantain, the inner bark of trees, and even from cow-dung, as will be seen by reference to page 32 of this Journal. Among the list of patents recently published in the *Canada Gazette*, is one for the manufacture of paper from Cudweed or Everlasting. We have good reason to believe that the search for paper-making materials is very assiduously pursued in Canada West. We had recently an opportunity of examining a raw material from the banks of the St. Clair, which appeared, from its fibrous nature, to give fair promise of successful application. The new material can be obtained in vast quantities, and without much labour or expense. No paper has yet been made from it, but we understand, that Frederick Widder, Esq., Chief Commissioner of the Canada Company, has made arrangements for procuring a supply of the fibre, and placing it in the hands of competent persons to examine its fitness for the important manufacture it is desirable to promote.

We may here remind our readers that many varieties of fibre are found to be well adapted for the manufacture of paper, and, indeed superior to rags: but their commercial value for other purposes does

not admit of their application, or the expense of preparing the pulp from them precludes their adoption. If we suppose that the question of fibre is satisfactorily answered, the next question involves the preparation of the pulp; at what price can the fibre be converted into pulp?

We are indebted to a friend for a suggestion which we hope will arrest the attention of those who have the opportunity and means to engage in this useful and highly interesting search after raw material for paper manufacture. Why not make paper from bass-wood logs? Every one is familiar with the fibrous character not only of the bark but of the body of the tree itself. Partially decayed bass-wood logs may be procured to any extent in our forests, and they furnish a fibre of great tenacity, and comparative freedom from those impurities which it is necessary to abstract before a good sample of paper can be manufactured.

#### New York Industrial Exhibition.

We are indebted to the politeness of Mr. W. Antrobus Holwell, Commissioner from Canada to the Exhibition at New York, for the Special Report of Mr. Dilke, which was presented to the House of Commons by command of her Majesty, February 6, 1854. That portion of Mr. Dilke's Report which comprehends the Reports on Class 8 and 10, was written altogether by Mr. Holwell, and in our opinion constitutes by far the most important portion of the whole. The Report having arrived at the moment of our going to press, we are compelled to reserve further notice until our next issue.

#### Miscellaneous.

*Theory of Glaciers—Shadow of the Moon—Weight of the Earth—Discovery of Iron-Stone in Ireland and England—Canadian Shipping—The Copyright—Distribution of Public Documents in the United States—Metallic Wealth of the United States.*

Professor Forbes' work on "Norway and its Glaciers," completely established his theory of the growth and march of these stupendous moving masses of ice, as explained in his former works.

The leading facts on which that theory was then established are as follows:—1. That the downward motion of the ice from the mountains towards the valleys, is a continuous and regular motion, going on night and day without starts or stops. 2. That it occurs in winter as well as in summer, though less in amount. 3. That it varies at all times, with the temperature, being less in cold than in hot weather. 4. That ruin and melted snow tend to accelerate the glacier motion. 5. That the centre of the glacier moves faster than the sides, as is the case in a river. 6. The surface of the glacier moves faster than the bottom, also as in a river. 7. That the glacier moves faster (*other things being supposed alike*) on steep inclinations. 8. The motion of a glacier is not prevented, nor its continuity hindered, by contractions of a rocky channel in which it moves, nor by the inequalities of its bed. 9. The crevasses are for the most part formed annually.—the old ones disappearing by the collapse of the ice during and after the hot season. The theory of motion, deduced from the facts above referred to, is thus given by Professor Forbes:—

"That a glacier is a plastic mass impelled by gravity, having tenacity sufficient to mould itself upon the obstacles which it encounters, and to permit one portion to slide past another without fracture, except when the forces are so violent as to produce discontinuity in the form of a crevasse, or more generally of a bruised condition of the mass so acted on;—that, in consequence, the motion of such a mass on a great scale resembles that of a river, allowance being made for almost incomparable greater viscosity,—hence the retardation of the sides and bottom. Finally, that diminution of temperature, diminishing the plasticity of the ice and also the hydrostatic pressure of the water which fills every pore in summer, retards its motion, whilst warmth and wet produce a contrary effect. These are the opinions which I laid down in 1842, and which ten years' experience and consideration have only tended to confirm."

The dark shadow of the Moon sweeping through the air during a