TRANSPORTATION ON OUR INLAND WATERWAYS.

At a meeting of the Canadian Society of Engineers at Montreal last month, a paper by A. L. Hogg was read, entitled "Transportation on our Inland Waterways and Canals." After dwelling on the great cost of the locking system at present in use on our canals, the author went on to discuss what he considered a good alternative plan for the transfer of vessels over summits, or from one water level to another. This plan consisted of a series of skidways, combined with pontoons and slips, applying the French principle used in the "Chemin de fer Glessant." This consists in eliminating friction, so far as is possible, between the sliding surfaces of the ways, while the vessel is being drawn up the incline, and in making it act as brake power when the vessel is being let down an incline. To utilize to greatest advantage this system of skidways, the engineer must secure a suitable site; gently sloping hillside is the most favorable for the purpose, as then the work of grading up the ways, being mostly surface work, gives greatest strength with least expense. There are a variety of ways in which these skids can be placed, according to the nature of the ground selected for site, but the simplest form of their use would obviously be up and down in one direction. The utilization of these ways in connection with dams and weirs, for the improvement of natural water-courses, especially in mining or isolated districts, as are found in the Kootenay District of British Columbia and many other parts of the interior of Canada, would be an economical means of local transport to the highways of trade for the products of these districts, and thereby develop the country and benefit our mining and other interests, which have been sadly neglected, and which are in much need of some encouragement. That it is possible to lift vessels from out of the water on to cars or platforms, on which they can be transported any required distance, does not at this day require proof, and of this idea the system proposed in the paper by Mr. Hogg was but a new and developed application. The vessel is raised to the incline by means of pontoons, to which is attached a swinging gridiron, consisting of a very stiff combination of longitudinal and cross girders made of steel and firmly riveted together, and which when lifted to the angle of the incline is supported at intervals by iron chock-blocks and stays underneath worked by hydraulic power, so that the gridiron then in effect constitutes a solid part of the main skidway. Hydraulic power is also to be provided for pumping pontoons, capstans and winches for manœuvring the vessels on the ways; at the ends of the incline, cradle slips are provided to expedite the work of placing the vessel on cradle over-ways, and properly securing it before being hauled up incline. These slips have also attached a swinging gridiron, similar to those in the pontoons described above. The cradles, like the gridirons, are formed of a rigid combination of steel girders carrying keel-blocks and sliding bilge-blocks of the usual lifting-dock type. The order of procedure in raising a vessel and transferring it across the skidways would be as follows: The vessel is floated into the pontoon or cradle slip, as the case may be, over the submerged, swinging incline and cradle, then sufficient water is pumped out of the pontoon to bring it to the level of the incline, where it is secured, and the vessel with cradle on gridiron properly blocked; the whole is mechanically swung to the angle of the incline. The ship and cradle would then be in position to be hauled along the ways, on to the incline, in the cradle slip at the foot of incline, and there placed in the water to resume her voyage by a converse operation to that used when being raised to the incline at the other side of the way. Of course the details of the system may be varied according to circumstances, but these are its fundamental principles.

For THE CANADIAN ENGINEER

THE LAKE SIMCOE POWER AQUEDUCT.

BY E. A. MACDONALD.

Lake Simcoe is a large body of fresh water, lying about 40 miles north of Toronto, at an elevation of 477 feet above the latter. The lake is one of the largest on the continent, the great chain of lakes excepted.

The slack waters of the Holland River (one of Lake Simcoe's feeders) now constitute 15 miles of the proposed aqueduct, leaving but 25 miles to be constructed; seven of the 25 miles of land above Lake Simcoe that cannot be dredged, constitutes "the divide" between Lakes Simcoe and Ontario.

The company are now actively at work on the surveys and in the sinking of test wells preparatory to actual construction.

Besides the boring made by themselves, the company are in possession of the results of borings made under the personal supervision of Mr. Kivas Tully, C.E. They show conclusively that there are no rock formations on the line of the proposed work, and the absence of rock enables the company to apply hydraulic power direct upon the work of excavation by means of a temporary construction tunnel, which reduces the cost of excavation by fully 70 per cent. as against any other known method.

Besides the cheapening of the work, the hydraulic principle of excavation enables the company to complete the aqueduct in a much shorter time.

Upon the completion of the aqueduct the company will be in a position to develop for sale 691,674 electric horse power, to be generated by the waters of the aqueduct. Electricity is now selling in Toronto at from $60 to $150 per horse power per annum. The company propose to sell at an average of $20 per horse power per annum, and at that price 691,674 horse power would yield an annual revenue of $13,833,480, a sum sufficient to pay interest at four per cent. on $300,000,000, besides leaving $1,833,480 for working expenses.

It is not urged that any such revenue could be derived for many years, if ever. The figures are simply given to show the immensity of the possibilities of the undertaking, which are only limited by the market for the electric energy. But for the purpose of this paper it will be sufficient to show one item of assured revenue.

The company proposes to sell electric energy for heating and lighting purposes. Over $3,500,000 per annum is expended by Toronto for coal, wood and other fuels, including oils for illuminating purposes. All the results derived from the use of fuels and oils can be obtained at less cost and in an infinitely superior and preferable manner by the use of electric energy. It is therefore fair to assume that the $3,500,000 now expended for fuels and oils will become part of the company's revenues, which sum alone would pay interest at seven per cent. on $50,000,000, or four per cent. on $77,500,000.

Nothing has been said concerning Toronto's do-