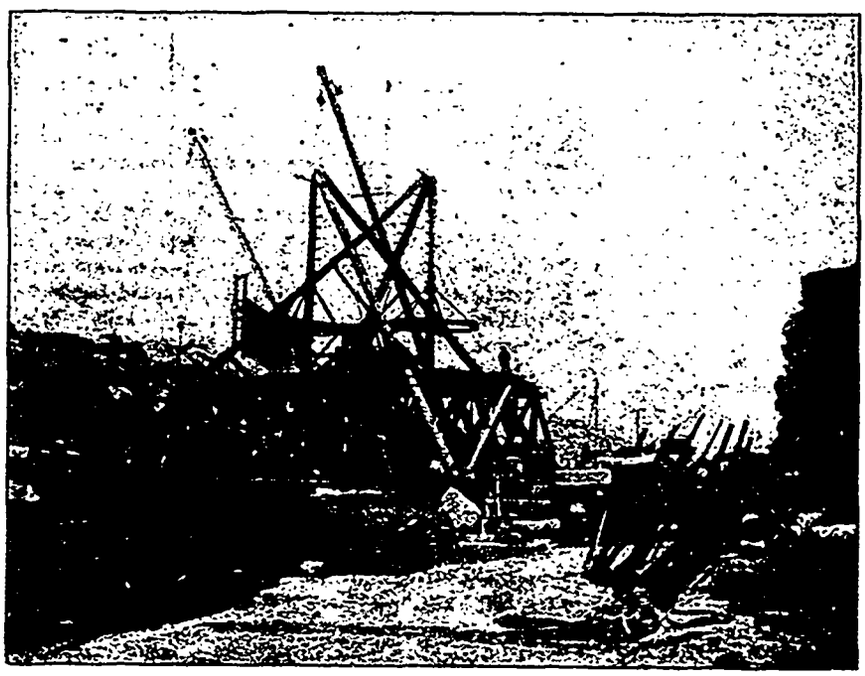
The length of the canal from water to water will be 3,700 feet. The masonry walls will be 1,106 feet on each side; the length between the gates will be 900 feet, and the width of the lock 60 feet. There will be but one lift to overcome the eighteen and three-quarters feet of fall between the upper and lower levels. There will be twenty-one feet of the water above the mitre sill, taking the lowest recorded water level. In this connection it is to be observed that the level of the water has a variation of about three feet in a season, and depends on the effect and direction of the wind On the 22nd of August, 1883, after a wind storm, the water was three inches from the top of the wall in the Michigan Canal; it is usually five feet below this.

The filling and emptying of the lock will be accomplished by means of the four culverts beneath the floor of the lock In this floor there will be 152 openings through which the water will flow up or down as may be required. The old way of letting water through a sliding valve in the gate itself or through the walls around the gates was found objectionable, for the reason that the force of water driving the boats to the lower gates and breaking their lines, often causes damage to both boats and lock. This will be avoided by the method to be adopted, as the boats will be lifted rather than shoved.



A Travelling Derrick.

There are to be three sets of gates at the eastern or lower end; one is to be a guard gate, and will be used only when it is wanted to empty the lock for repairs Of the other two gates, one is a spare set to be used in case of accident to the other, which will be the outer gate and in constant use At the west end there will be a main gate and a guard gate

The width of the walls will be eleven feet at the top and twenty feet at the bottom, but there will be a uniform width around the gates of twenty-five feet carried the whole way up. There will be altogether seventy-five thousand cubic yards of masonry in the work.

The manner of opening and closing the gates will be by electricity This power will be generated from the water power The water will be supplied by means of a pipe running back of one of the walls, and turbine wheels will be used.

There have been a great many changes in the design of the canal and lock since the plans and specifications were first made, but in the main, the plans are those of the late John Page, who was chief engineer of the Public Works Department at Ottawa. The resident engineer in charge on behalf of the Dominion Government is W. J. Thompson.—*J. J. Kehoe, in Canadian Magazine.*

TO CORRESPONDENTS.

G. T M, Red Rock, Ont —There are many books published on engineering. Which branch are you interested in—civil, sanitary, electrical, stationary, or mechanical? On hearing from you we shall be pleased to give you titles of some works.

E. D.—We are sending you the names of makers of slate quarrying machinery, and shall be glad to hear your quarry is a success.

THE EXHIBIT OF FRIED. KRUPP.

Perhaps the most wonderful of all the exhibits at the World's Fair has been that at Krupp's Pavilion. The main hall of this building is 197 feet long by 82 feet wide and 43 feet high, and the entrance hall 137 feet by 24 feet. From the exhibition catalogue, for a copy of which we are indebted to Jas. W. Pyke & Co., Montreal, the representatives of the firm for Canada, the enormous extent of this exhibit at Chicago may be estimated from the fact that a bare enumeration of its items occupies 210 of its pages Besides this, it contains several well-executed diagrams and an appendix. The larger portion is occupied by descriptions of guns, together with ballistic data and information regarding projectiles and armor-plates. Interspersed with the descriptions of guns, gun-carriages, etc., are diagrams, showing at a glance the average number of hits made at a distance of 2,000 or 2,500 metres. Other portions of the catalogue are devoted to forgings, castings, articles of steel pressed in dies, tires and wheels. In the last-mentioned department are bogies and springs, sets of wheels, etc., made by Krupp and used in constructing the cars and engines shown in the transportation department.

Under Section G there are various articles indicated, such as hoisting shears, field railway plant, rolling machines, etc A very interesting portion of this wonderfully complete catalogue consists of statistical data concerning the firm and its works. From this we see that in the cast-steel works at Essen the average amount of coal and coke used per working day is 2,410 tons, and that in the outlying works and in their steamers the annual amount is 530,276 tons. The list of departments of the Essen Works alone occupies nearly four pages, and besides these there are coal and iron mines, dwellings and hospitals for workmen, iron works at various places, etc., etc There are also some historical data concerning the *personnel* of the firm, and from this we see that Peter Frederick Krupp, the founder of the firm, was born in 1787, that it was established in 1810, and that in 1847 was turned out the first finished piece of artillery in cast steel. The catalogue, which, by the way, is an admirable example of the printer's art, is further embellished by a series of plans of the various exhibits as they are placed at the World's Fair.

PROGRESS IN OFFICE FITTINGS.

There is little excuse for a man to have an untidy or ill-kept office, with the convenient desks and other appliances that have come into use within the last ten or twenty years. A representative of The Canadian Engineer, on looking over the show-rooms of the Canadian Office and School Furniture Company Co., of Preston, was struck with the conviction that it should be almost impossible for a man to have a slovenly office with an outfit such as this firm can furnish. To be fitted out by their desks and office furnishings must indeed be a temptation for any man starting business. Mr Stahlschmidt, the founder of this business, may be called the king of office furniture manufacturers. This position he has gained not only because of his numerous inventions and improvements in school, bank and office furniture, but because of the special machinery he has developed for producing these goods and for the quality of the work invariably turned out. The writer believes he is safe in saying that in all the work turned out from this factory, not a single piece of really defective furniture has ever been received by a purchaser. The Preston furniture factory is a model of its kind, and all parts of the furniture are made by machinery, so that imperfect work is almost an impossibility. The wood-working department of the factory is fitted with large tubes through which the dust and shavings are drawn from the air and good ventilation is insured. The engine-room has recently been provided with a feed-water heater of a new type, which purifies the water and prevents scale from forming in the water. The factory is lighted by electric light produced from its own dynamo, and has recently been fitted throughout with automatic sprinklers Water is supplied to the works by a Northey pump with a capacity of 800 gallons a