A New Rock Breaker and Dredge.

A solution of the difficult question of widening and deepening the Suez Canal, at the Suez end, appears to have been provided by Messrs. Lobnitz & Co. in a large marine dredger launched from their yard at Renfrew on October 6. This vessel, which is named the Derocheuse, is intended to inaugurate a new and simple method of excavating subaqueous rocks. She is very powerful and strongly built, and embodies a novel principle in rock breaking, invented by Mr. H. C. Lobnitz. Instead of using the ordinary system of boring holes in the rock under water, and breaking up the rock by means of explosives, the work is done by means of heavy blows with long chisel-shaped cutters. These cutters weigh each about four tons, and, when dropped upon the rock, they break it up, and dislodge it ready for removal by dredging. This has been demonstrated by various dry land trials with these cutters on some of the hardest rocks to be met with in Scotland. The cost of excavating and removing rock by the blasting system, when working at, say, 30 feet under water, may be stated at 20s. per cubic yard. With the new system, of which the Derocheuse is the pioneer representative, 4s. per cubic yard will easily cover the cost of breaking the rock and raising and carrying away the debris.

Various trials, which were carried out from March to June of this year at Craigmillar Quarry, Edinburgh, under the personal supervision of engineers from the Suez and Panama Canal companies, and Scotch and French engineers, have given most satisfactory results. At the last of these experimental trials the results showed an average of over 6 cubic feet of rock dislodged for each blow of a cutter weighing less than two tons. Similar results were attained at the other trials. The lowest average result was about 4 cubic feet per blow of this light cutter.

The dimensions of the Derocheuse are: Length, 180 feet; breadth, 40 feet; depth, 12 feet; and she is divided into eighteen water-tight compartments. She has machinery on board of a total indicated power of 1,000 horses, including hydraulic engines and rams for working the ten rock cutters, which are each 45 feet in length. For these, ten 6 ton hydraulic hoists are provided, capable of lifting to a height of 60 feet, and working with a pressure of 1,000 pounds per square inch. By means of a set of levers, one man can maneuver the whole rock-breaking apparatus without moving from his post, everything being self-acting and simple.

The rock, when broken and dislodged, is immediately lifted by a powerful dredging apparatus, the buckets of which work between the rows of cutters. This dredging machine is fitted with Lobnitz's guide wheel and pitch wheel driving gear, and is specially designed for the present purpose. It is capable of dredging from a depth of 10 feet down to a depth of 40 feet below the surface of the water, and will dredge ordinary material with ease and economy, and will also remove rocks of the most refractory nature.

On deck the Derocheuse is fitted with various powerful winches and cranes. There is special hydraulic gear on deck for maneuvering two steel pivots, which enable the vessel, when at work, to adopt a very neat system of covering the ground by a series of concentric curves. Thus the work never stops for the purpose of maneuvering, and every portion of the ground can be properly dealt with, leaving a level surface. In short, nothing that could tend to make the vessel efficient for her purpose has been omitted; and comfortable accommodation is provided in the vessel for the civil engineers, officers, and crew who will work her. Having twin screws, driven by two pairs of independent compound engines, solely used for propulsion, the Derocheuse will steam out to her destination, where she will immediately set to work upon the rocky part of the bed of the Suez Canal, where there are about three million tons of very hard rock to be removed.

During the last six years Messrs. Lobnitz & Co. have built for the Suez, Panama, and other works more than 26,000 tons of dredgers, floating cranes, hopper barges, and tugs, with over 20,000 indicated horse power of machinery.—*Iron.*

THE "ROBINSON" VICTORIA HANSOM.

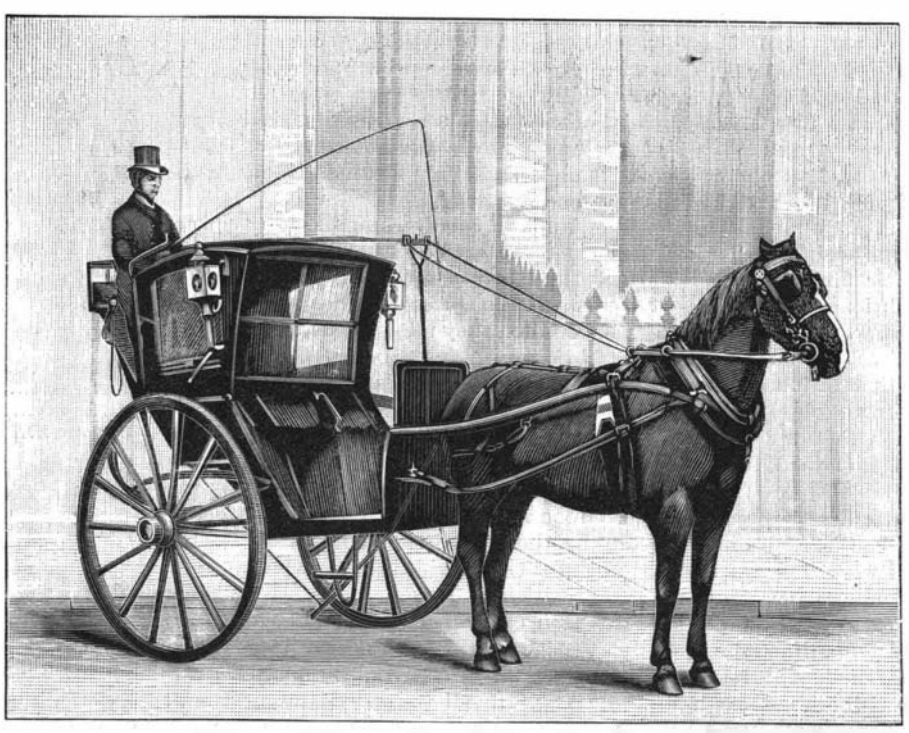
The popularity of the Hansom cab, patented in 1834 by Mr. Joseph Hansom, is attested by the fact that there are now some 10,000 in use in the city of London. Hitherto they have been distinctively a closed vehicle. By a recent improvement, which we here illustrate, this feature is disposed of. The "Robinson" Victoria cab provides at will a perfectly closed Hansom, undistinguishable from the ordinary one, or an open carriage, adapted for full enjoyment of the pleasure of a drive in fair weather.

Besides this feature of opening or closing, other improvements are introduced. Thus the wheels have heavy rubber tires, similar to those of bicycles, so that a quietness of motion is by this feature alone insured to a considerable extent. The sash frames are metallic, and move in rubber-cushioned grooves, so that whether open or shut they cannot rattle.

THE ROBINSON VICTORIA CAB—OPEN.

The cab can be opened or closed by the driver in three seconds, while the horse is on the full trot. No intervention of the passenger is required. A sudden shower does not bring about a delay for putting up side curtains or adjusting other fixtures.

To close it, the two parts of the roof and the back are moved by one hand, without any noise, smoothly into their place. The action of the foot upon a pedal almost simultaneously raises the two side sashes, and the interior is completely inclosed. The reverse series of operations effects the opening. A slight pressure upon the foot pedal drops the side windows. A stud upon the roof is pressed, which releases the catch. The rear half of the roof and the back drop down. Reaching forward, the front half is pulled back, when it folds into place like an ordinary buggy top.



THE ROBINSON VICTORIA CAB—CLOSED.

Our illustrations show the cab both open and shut. The general system of construction is also clear from them. It is needless to insist on how great an improvement this brings about. The transport by cab will assume a new aspect when the occupant can effect the journey in an open vehicle, with the knowledge that on a sudden shower of rain it can be instantly closed.

The inventor, Mr. J. C. Robinson, of London, whose present address is 140 Nassau Street, New York, has been interested in various street railroad enterprises in Europe, and having just completed the successful organization of a similar company in London, is now here to effect the introduction of this vehicle in our streets. After a personal trial of it we wish him every success, believing it to be a decided advance upon the ordinary Hansom and the coupe.

Progress of Triple Expansion.

The Drummond Castle, the second of the Castle line of Royal Mail steamers which has been tripled by Messrs. T. Richardson & Sons, of the Hartlepool engine works, lately left Hartlepool for a full speed trial of her new machinery. The original engines were built by Messrs. John Elder & Co., in 1881, and were of the two-crank compound type, having cylinders 51 inches and 88 inches in diameter, with a stroke of 4 feet 9 inches. These have been converted into three-crank triple expansion, with cylinders 33 inches, 55 inches, and 88 inches, steam being generated in three very large double-ended boilers, at a pressure of 150 pounds. During the twelve hours' trial the engines worked most satisfactorily, after which the ship was taken over by the representatives of the Castle Company, and left for London, where she arrived in due time, having made a very successful passage.

Besides the alterations to the main engines, a large refrigerator has been fitted, by means of which the passengers will be supplied with fresh meat, fish, milk, etc., throughout the voyage. All the cabins which were damaged by fire in London have also been renewed by Messrs. Withey & Co., of the Middleton Shipyard, and the whole of this work was accomplished in the short space of fourteen weeks. Messrs. Richardson & Sons have been advised by the Currie Company that the saving of fuel on the Grantully Castle, as compared with the old engines and boilers, has been 34 per cent on the voyage from London to Cape Town, and this great success has resulted in a decision to place their finest steamer, the Roslyn Castle, in Messrs. Richardsons' hands to triple, and she will arrive in Hartlepool early next year. This great saving in fuel has also been accomplished in the Union Company's steamship Trojan, which has just returned from her third Cape voyage. It is an interesting fact that the Drummond Castle's engines complete the large total of 30,000 indicated horse power manufactured by Messrs. Richardson & Sons since last January.—*The Engineer.*

Carpet Moths and Beetles.

A correspondent, in a seemingly discouraged mood, writes to the *Carpet Trade and Review* saying that carpet moths are playing sad havoc in Detroit, Lansing, and other cities at the West. Ordinary poisons seem to make them fat, and he appeals to the editor to suggest some remedy, adding that it would be hailed with pleasure by the sufferers and the trade generally.

The editor, after reminding the correspondent that he has already published several articles on the habits of carpet moths and beetles, adds that among the most effective remedies are kerosene oil and corrosive sublimate. Wads of cotton saturated with kerosene oil and placed in the cracks between the boards of floors are said to be efficacious against moths and carpet beetles. Corrosive sublimate is, perhaps, a still better remedy. Dissolve in an open jar one tablespoonful of corrosive sublimate in two quarts of boiling water, and after allowing the solution to remain undisturbed a few hours, apply it to both sides of the carpet or rug, using for the purpose a small whisk brush. It is not necessary to use more of the solution than enough to slightly dampen the surface of the fabric. As the solution is poisonous, it should be plainly labeled. In the case of carpet beetles, it is sometimes necessary to reduce the quantity of water in the solution, using but one quart instead of two.

THE Carriage Builders' National Association, at their last meeting, passed a resolution approving of the adoption of 4 feet 8 inches, measured from outside to outside of tire on ground, as the standard track for carriages in the United States.