

"The building by-law recently adopted covers the ground fairly well, but makes no provision for mandatory protection of exposed openings in district B. This is an important feature, especially in blocks having no lanes, and where buildings on either street are built back to within a few feet of one another.

"The building inspector's department is apparently understaffed, and during the busy season unable to carry on the necessary supervision, but I have at all times received most courteous attention when reporting any defects."

THE DEVELOPMENT OF DIESEL MARINE OIL-ENGINES.

Among sundry notices that have recently appeared in the press about new engine works for the development of Diesel oil engines for ocean-going ships, little notice has been taken hitherto of progress made in this direction on the River Tyne. Messrs. Swan, Hunter & Wigman Richardson, Limited, at their Neptune Engine Works, Walker, Newcastle-on-Tyne, have for some years been actively engaged in studying and developing Diesel oil engines.

Diesel-engined Ships.—Two years ago they completed a twin-screw cargo ship called the "Toiler" which has the distinction of being the first oil-engined vessel to cross the Atlantic. She is owned by Mr. James Playfair, of Midland, Ontario, and trades in the Great Lakes of North America. Her builders at once followed up the "Toiler" with another similar twin-screw cargo steamer for the same owner. The vessel is called the "Calgary," and has greater engine power than the "Toiler." She has been safely delivered at her destination in Canada, and trades on the Great Lakes. Messrs. Swan, Hunter & Wigman Richardson, Limited, are now engaged in the construction of two much larger cargo boats for British owners, and carrying about twice the dead-weight of the "Toiler" and "Calgary."

Electric Transmission.—In addition to these ships the same builders have in hand another interesting ship being built for the Montreal Transportation Company, of Montreal. This will be the first large vessel designed for propulsion by power transmitted electrically from the engine to the propeller. The designs of the engines have been executed by Mr. Henry A. Mavor, of Messrs. Mavor & Coulson, of Glasgow, who have already tried this system on a small experimental vessel called the "Electrical Arc." The dead-weight cargo capacity will be about 2,500 tons. The machinery will consist of two 300-h.p. high-speed Diesel engines, each with its own alternating current generator and exciter. Just ahead of the thrust block there will be a specially designed motor operating a single propeller, and reducing the 400 revolutions per minute of the Diesel engines to about 80 revolutions per minute. Among the advantages claimed for Messrs. Mavor & Coulson's system of electrical transmission it may be noticed that the total power of the propelling engine required in a single unit for direct drive can be split up into several sub-units, each with its own generator, all connected to a single propelling motor. Furthermore, all reversing and speed changes can be done by switches, and the electrical control station can be placed in any convenient spot in the ship, e.g., on the navigating bridge, in the engine-room, or elsewhere.

The "Neptune-Diesel" Engine.—Messrs. Swan, Hunter & Wigman Richardson, Limited, have for some little time been developing two-stroke cycle Diesel engines. Various well-known designs of this type of engine have been critically examined and the details exhaustively analyzed. The outcome of all this study has resulted in the "Neptune-Diesel" engine, which for marine purposes is claimed to be second

to none. The design is substantial in its strength, no undue risks being taken by imprudently cutting down weights. Another leading feature is much greater simplicity than is found in many Diesel engines. This means a smaller prime cost and less expense in running and maintaining the engine. The builders have also aimed at easy accessibility to all parts of the engine, which is of the highest value, if ever repairs are necessary. Several radical improvements have also been introduced in the valve gear, pistons and cooling arrangements, all of which are distinctive features in the "Neptune-Diesel" engine.

New Engine Works.—The Neptune Engine Works, which have been established since 1879, have been frequently enlarged and improved, and the best of modern machines have from time to time been installed to replace older tools. Partly in order to develop the "Neptune-Diesel" engine more successfully, and also owing to the general expansion of business, Messrs. Swan, Hunter & Wigman Richardson, Limited, have now embarked upon a complete reorganization of their engine works. This department is to be moved to another site within the Neptune shipyard, and entirely new shops are being erected. The present buildings of the engine works will be used for the shipyard blacksmiths, plumbers and angle-smiths. For some months Messrs. Swan, Hunter & Wigman Richardson, Limited, have been busy clearing a plot of ground of about three acres in extent, with a splendid river frontage. The old Anglesey Cooper Works of Messrs. Henry Hills & Sons formerly stood on this spot. These buildings have been entirely pulled down, chimney stacks demolished, and fresh foundations laid for the new engine works. These new buildings will touch the existing boiler shop of the firm, which is a lofty building 220 feet long by 120 feet wide. The whole of this department for building both engines and boilers will then be at the north end of the Neptune shipyard and will be adjacent to the dry dock department of the firm, giving further splendid facilities for executing repairs to ships and engines with rapidity and economy. Mr. David Purdie, of Shields Road, Newcastle-on-Tyne, has the main contract for piling and excavating.

The new engine buildings are being built of brick and galvanized iron, with glass roofs, most of the work being undertaken by the Clyde Structural Iron Company, Limited, of Scotstoun, Glasgow. Apart from smaller erections the main building will measure about 300 ft. by 200 ft., divided into six bays, and comprising a combined machine and erecting shop. A considerable amount of modern machinery of the latest and best designs will be installed. A new railway siding is being made and the lines from the North Eastern Railway Company will be led right into the shop so as to facilitate the discharge of material coming from distant parts. The river front is being furnished with a completely new jetty making a deep water berth for ships lying alongside. This new wharf will be extended along the front of the Neptune north yard and will be joined to the older portion, making in effect a fitting out berth 1,800 feet long. The existing 80-ton sheer legs at the old Neptune Engine Works quay will be used to help the completion of ships after they are launched. The 150-ton floating crane "Titan," belonging to Messrs. Swan, Hunter & Wigman Richardson, Limited, will be mainly used to lift sets of engines entire from the new engine works quay into ships. This, of course, means a very great economy, saving a great deal of labor in dismantling and re-erecting an engine. This is another example of the splendid and powerful modern plant possessed by these builders. The utility of their floating crane "Titan" has been much appreciated by other firms, for it is frequently hired for lifting heavy weights on board warships and merchant vessels, and it has also been sent to neighboring ports for harbor work, such as lifting and laying concrete blocks, drawing piles, etc.