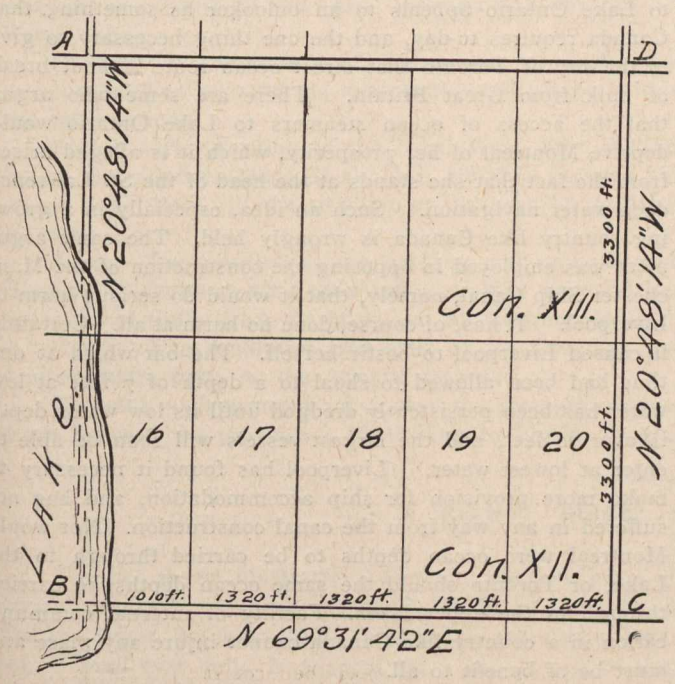
## RUNNING A LOT LINE.

Sir,—A. B. C. in his question as to running the lot line between lots 16 and 17 does not give enough information. If the township in which this lot is located is in certain dis-




tricts mentioned in the Survey Act, and if none of the other lot lines are run then he should take the astronomical bearing for running new lines irrespective of the bearing of the blazed line he mentions. Yours.

Toronto, January 17th, 1908.

## FOLKESTONE PIER WORKS.

(From our Own Correspondent.)

Important harbour and pier works have been carried out by the South Eastern Railway Company at Folkestone since 1897. New works, designed to meet the increased traffic requirements comprise the extension of the old pier by 900 feet of solid work, with the provision of four new berths available at all tides and in all weather; the protection of the west face of the old pier by a solid wall carried down to a secure foundation, the strengthening of the root of the pier by a wall founded on cylinders and protected by a wave breaker of 20-ton blocks deposited pell-mell; the renewal of the east face of the old pier in greenheart piling and the provision of a new dock throughout its length. The pier terminates in a round head 65 feet in diameter upon which stands a granite lighthouse exhibiting a fourth order double flashing light, and a fog-horn house with air compressing machinery. The new works are composed of 20-ton concrete blocks, of which 133,500 cubic yards were used. Among the methods adopted for testing the cement was a boiling test used as a measure of the aeration necessary. Experiments were made with 100-ton lots to ascertain the increase of volume due to aeration, and one of the consignments tested in this manner continued to increase at a rate sufficient to pay the cost of turning the cement up to the twenty-second turn. Tests extending to three years were also made of cement which had been adulterated with gypsum to control its setting properties, and the results showed a serious diminution of strength in the last year of the test with neat cement, but a steady increase with the mortar test. The staging from which the actual building was carried on was 101 feet wide, and 400 feet long, with a rail level 21 feet above high water. It was formed of Oregon pine piles 18 inches square carrying lattice girders of 40 feet span. There were two 20-ton and two 30-ton goliath cranes, the latter being used for handling the diving bells of which there were two, each 13 feet by 10 feet by 6 feet, weighing 26 tons. The 20-ton goliaths were used mainly for block setting. In connection with the strengthening works at the root of the pier, owing to the proximity of the old work and the amount of cover to be removed before obtaining a good foundation, it was necessary to resort to cylinders to obtain a secure footing in the lower greensand beds. These cylinders, which were 11 feet in diameter were placed in two rows. Those in the front row were built up of steel rings 5 feet deep, whilst in the back row the cylinders were made of concrete in sections each weighing nearly 20 tons. The steel cylinders were sunk by means of compressed air, and the concrete cylinders by grabbing in the usual way. The block work wall, built on the top of the cylinders, was backed with chalk filling upon which the main pier station was built.

## EXPERIMENTS ON WIND PRESSURE.

Dr. T. E. Stanton, of the National Physical Laboratory, has just completed the second part of the research on the distribution and intensity of the pressure of the wind on structures, which was proposed by the Committee of the National Physical Laboratory as the first investigation to be underaken in the Engineering Department. For the purpose of the work a steel windmill tower was erected in the grounds of the National Physical Laboratory at Teddington. Experimental boards and models of structures were attached to a light framework carried by the cap of the tower, the height of the centre of the boards from the ground being 50 feet. In these observations, the velocity of the wind was estimated from a pair of pressure tubes, placed about 15 feet above the centre of the board. These tubes were connected by lead pipes to a sensitive water gauge placed at the foot of the tower. The resultant pressure of the wind on the board was estimated from a measurement of the pressure produced in a closed cylinder of air by the deformation of a thin steel diaphragm forming its cover which was in contact with the centre of the pressure board. This pressure was also transmitted through lead pipes to the foot of the tower and there measured by a similar tilting gauge to the one used for the velocity estimations. The simultaneous observations of pressure and velocity were only possible in the short periods of time in which the velocity of the wind was fairly constant. Such periods, lasting from two to five seconds, were found to occur about once a minute in a fairly steady breeze. The results of these observations on three pressure boards, one 5 feet by 5 feet, one 5 feet by 10 feet, and one 10 feet by 10 feet gave practically identical values of the constant in the pressure velocity relation. In units of pounds per square foot, and miles per hour, the mean value of this constant for the three boards was 0.0032. As this value agreed so well with the average of those obtained by previous experimenters when using plates of the order of one square foot in area, experiments were not made on smaller plates. Experiments were also made on a model of a braced girder 29 feet long by 3 feet 7 inches deep, and on a roof model whose sides were 8 feet by 7 feet. The ratio of the resistance per unit of area of the model girder to that of a square board in the wind was found to be precisely the same as the ratio of the resistance per unit of area of a small model of the girder made to a linear scale of 1 in 42 to a square plate in the experimental channel and uniform current used in the previous experiments. The resultant pressures on the roof were obtained, for both windward and leeward sides, at angles of 30, 45 and 60 degrees inclination to the horizontal, and indicated the considerable suction effects on the leeward side of a roof when the pressure inside the building is augmented from the windward side by open doors or windows. These results lead to the conclusion that the resistance of a complicated structure in the wind can be accurately predicted from a determination of the resistance of a small model of the structure in an experimental channel.