forms were well, or ill adapted to resist the forces to which they were opposed.

If a form like that of the Chesil Bank was adopted at Dover, the work would never be finished, with any ordinary means, or at any reasonable expense, as the material would cost nearly three times as much as that used at Plymouth, and unless a whole fleet was employed to convey the stones, the necessary quantity could not be obtained; therefore the pier that had been commenced was nearly vertical, particularly as it was necessary, that vessels should come alongside to load and discharge their cargoes.

Mr. Walker was of opinion, that however good, or successful any work might be, it should not be blindly used as an argument, or as a precedent for any other construction; it was the business of the Civil Engineer to adapt his design to the locality, the material, and the cost, and to use the experience he had acquired, or the examples set him by others, to prevent his falling into errors. Such also was the great use of the discussions at the Institution, and he would conclude by again thanking the Earl of Lovelace for bringing the subject before the Members, and trusted, that during the next Session his Lordship would be very frequently found among the Engineers, and contributing Papers to the Institution.

LAMBERT'S FLEXIBLE DIAPHRAGM WATER-VALVES.

After the Meeting, Mr. Lambert exhibited and described his flexible diaphragm water-valves. Two flexible diaphragms, *c* and *cx*, are used, confined at the edges by screws *i*, the centre portion being moveable and connected by a spindle, so that they move simultaneously when acted upon by the lever *e*.

The chief novelty of the invention consists in the application of the lower diaphragm *cx* as a surface to be pressed upon by the column of water in the supply-pipe, and thus aid in keeping the valve tight, by holding the upper diaphragm *c* to its seating. The area of *cx* being greater than the area of the opening, or outlet closed by *c*, it follows, that as soon as the diaphragm *c* is pressed upon, the valve-seating, by means of the lever *e*, assisted by the screw in the cover *d*, (or otherwise,) is there held by the excess of pressure upon the area *cx*, and thus by adapting the area of *cx* to the height of the column of water, it may be made to open as easily under a pressure of 500 feet, as of 50 feet. The upper diaphragm *c*, in addition to its making the valve-joint, serves the purpose of a

stuffing-box, so that it is impossible for any leakage to take place, so long as the India-rubber is sound; and there being an almost perfect absence of friction, it is necessarily very durable.

Fig. 1.

Longitudinal section, showing the valve open.

Fig. 2.

Longitudinal section of cistern, or ball-valve, closed.

In this valve a piston is used instead of the diaphragm *cx*, and it is found to answer exceedingly well under any pressure.

June 27, 1848.

JOSHUA FIELD, President, in the Chair.

The following Candidate was balloted for and duly elected:—
Captain John Milligan Laws, R.N., as an Associate.

The discussion upon the Paper, No. 796, "On Harbours of Refuge," by The Right Hon. the Earl of Lovelace, being resumed, was continued to such a length as to preclude the reading of any other communication.