of the berth floor. The dam framing consists of a number of built-up tapered box girders, made up of a 6-in. x 6-in. x ½-in. angle at each of the four corners, covered on three sides with ⅜-in. plate. The width of the face of the girders is 32 ins., the width of the tapered sides being from about 4 ft. 6 ins. at the bottom to 3 ft. at the top.

These girders are braced with struts consisting of two latticed 15-in. channels. These struts can be seen clearly in Fig. 4. The struts are braced against a reinforced concrete slab, built on piles, which runs across the face of the double berth with a spread of 19 ft. inside of the centre line of the girders. This slab is 9 ft. 6 ins. deep under the girders, tapering off to 5 ft. under the struts, each of which is bolted with two bolts to a steel grillage set in the concrete.

There is an anchor bolt from the outer face of each box girder to a steel grillage set in the concrete slab.

The box girders are spaced from 11 ft. to 19 ft. 9 ins. apart, centres, the space between them being filled with the logs. Fig. 3 shows the outer face of the flitch dam. On top of this dam (the top being braced by a girder consisting of two 10-in. channels, latticed 3 ft. back to back with 2½-in. x 2½-in. x 5/16-in. angles) a number of lighter girders, 48 ft. high, are placed at 11-ft. 8-in. centres and bolted at the top to the wind girder and

Fig. 5.—One Section of Completed Berth, Looking Toward Land End. Note Preparation for Laying Keel of Ship

at the bottom to the 10-in. channel strut, and four square steel frames, filled with 4-in. plank, are dropped into grooves between each pair of these girders. Above these frames the end of the berth is sheeted to the roof. When ready for a launching, the bolts fastening all of the frames, girders, struts, box girders, etc., are removed, and all parts are swung clear of the end of the berth by the aid of the hoist on the roof.

PIT-RUN GRAVEL CONCRETE USED FOR PAVEMENT SUB-BASE AT LONDON

As a result of the dispute between Sir Adam Beck and the city engineer of London, Ont., regarding the quality of the concrete base for pavements in that city, the mayor appointed R. J. Marshall, B.A.Sc., instructor in the department of applied mechanics of the University of Toronto, to make a report upon the whole subject. Mr. Marshall's report shows the danger of

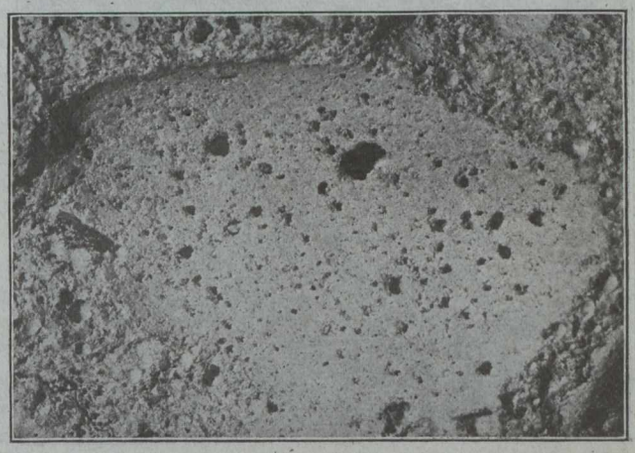

Fig. 1.—Showing Mortar Bedding of Stone Taken from 6-in. Cube

using pit-run gravel for concrete without screening and grading—and then, of course, it's no longer pit-run material. The following is an abstract of Mr. Marshall's report:—

This report is made from an examination of the roadway sub-base as seen on Richmond Street and Beaconsfield Avenue, where the sub-base was exposed. Samples of concrete taken from the pavement and some 6-in. cubes were tested. Samples of the gravel were taken from the material piled on Beaconsfield Avenue, where on account of the high water, both the pit and river gravels were to be used.

The two samples of gravel were divided into sand and stone by sieving the material on a standard ¼-in. sieve. The material passing the sieve was taken as sand and that retained was considered as stone. The following proportions were found:—

	Sand.	Stone.
River gravel	58.2%	41.8%
Pit gravel	49.8%	50.2%

These samples were a fair average of the quality of the material piled on the street. Some samples might be found which would run higher in percentage of stone, but undoubtedly there were samples poorer in stone content.

The specifications in use for this work require one part cement to eight parts of good gravel containing not more than 40% of sand; then, it is specified that all stone mixed with the concrete shall pass a 2½-inch ring. I am convinced that 90% of the material which I saw would not fulfil the specifications with regard to relative proportions of sand and stone; also stones of as great as five inches in diameter were to be seen, mixed in the concrete of the sub-base and also on the piles on Beaconsfield Avenue.

The purpose of the specification is that the cement added should fill the voids in the sand, and this mortar should then fill the spaces between the stone. The specification presupposes a void of 33⅓% in sand. My tests on