At West Lorne, Ont., Peter Welsh, a sectionman, struck by M.C.R. express and instantly killed. Stepped from other track out of road of freight train.

At Dalton, Ont., two C.P.R. work trains met in a headon collision, killing a train hand and seriously injuring the trainmaster. Cause, mistaken signals.

At Newtonville, Ont., G.T.R. passenger engine and baggage car left rails. Nobody injured. Cause, broken rail.

June 11.—At Brampton, Ont., Joshua Moddison, badly injured by C.P.R. express whilst walking on track. He is quite deaf and did not hear train approaching.

June 12.—At Toronto, a street car trailer left rails and collided with a sprinkler on other track, injuring five, none seriously.

At Cobalt, a man was found on T. & N.O. tracks with both legs severed. He died later.

At St. Therese, Que., a young man named Paquette jumped from a C.P.R. train travelling 35 miles an hour, followed by his father. The son died some hours later; the father will probably live.

At St. Jerome, Que.—A two year old child crawled on the tracks and was killed by a C.P.R. passenger train.

Near Hamilton, on the Hamilton and Dundas electric line, a trolley car was derailed and several passengers sustained injuries.

Near Port Hope the G.T.R. express train from Toronto to Montreal left the rails. No passengers were seriously hurt. Four hundred yards of track were torn up. Probable cause, watersprings undermined track.

At Toronto, Mrs. Crawford was alighting from a street car and fell to the pavement, sustaining slight injuries. Mrs. McKenzie had a similar experience.

Near Whitby, several G.T.R. freight cars in a train of 50 left the rails.

June 17.—Near Viscount, Sask., a freight train was wrecked and several cars left the rails.

June 17.—At Ottawa, Ont., Paul Brennan, G.T.R. yardmaster, was instantly killed. He fell off the footboard of a shunting engine under the wheels.

June 18.—At Russell, Man., C.N.R. engine No. 100 and construction train left the tracks, turned over on her side and pinned the engineer between the engine and tenders, badly injuring one of his legs. Cause, spreading of skeleton tracks.

At Winnipeg, Man., Mrs. Alex. MacDonald was run over by a street car trailer and injured.

June 19.—At Hamilton, Ont., a street car jumped the track, injuring two passengers.

June 20.—On the Chipman-Moncton, N.B., section of the G.T.P., a supply train ran away and jumped the track, killing two and injuring two more, whose recovery is doubtful.

June 21.—At London, Ont.—William Clark, a G.T.R. crossing watchman, struck by engine and badly shaken up.

June 22.—At Toronto, Patrick McGovern attempted to board a moving train. He fell under the wheels of a car and a portion of his left foot had to be amputated.

At New Westminster, B.C., a G.N. engine left tracks and plunged into the Fraser River. Engineer and fireman were drowned. Cause, open switch.

June 22.—At Winnipeg, Man., Thomas Young was struck by a street car and died a few hours later.

At Ottawa, a boy who was struck by a street car was compelled to have his leg amputated.

June 24.—At Haileybury, Ont., an express from Toronto ran into a siding through a misplaced switch. Damage to rolling stock only.

At Toronto, three women were injured whilst alighting from street cars.

June 25.—At Kenora, Ont., Robert Neilly, a C.P.R. brakeman, caught his foot in a frog and was knocked down by a passing train. He will probably die.

At Gravenhurst, Ont., Harry Kinsella, aged 26, was killed in the G.T.R. yards whilst crawling under a freight train.

June 28th.—At Nothchill, B.C.—five laborers were killed in a freight wreck, caused by broken flange. A sixth was seriously injured. All were stealing a ride.

At Georgetown Junction, Ont., a man named Stevens was killed by a passeneger train whilst driving across tracks. At Montreal, Paul Struble, 11, was knocked down by a street car and slightly injured.

Near East Toronto, Charles Wright, a driver, crossed the G.T.R tracks at an unprotected level crossing after a freight train going east had passed. The Montreal express, west bound, came along, killed his horse and smashed the wagon to pieces. Wright was rendered unconscious but recovered shortly after.

Near Hull, Que., Alphonse Laroque, run over by C.P.R. gravel train; left foot and thumb cut off.

June 29.—Near North Bay, Ont., a C.P.R. freight train was wrecked and 25 cars ditched; five hundred yards of track were torn up and five cars completely destroyed. Train hands escaped injury.

DESIGN OF ELEVATED TANKS AND STAND-PIPES.*

O. E. Selby.

This paper presents a desirable addition to the list of standard engineering specifications. Heretofore, specifications for structures included within the scope of the paper have been, to a great extent, the output of designers employed by manufacturers, and have shown the effects of the latter's bias.

If this discussion seems to be largely in the line of pointing out shortcomings in the author's specifications, it is not done in any spirit of criticism, but with a desire to see the specifications properly amplified and completed before they pass into a form which may be adopted as a standard. It is the writer's view that a technical specification should be something more than a mere check on the contractor; it should be a manual of design, complete enough to be a guide for the designer, whether he be employed by the purchaser or manufacturer, and should be so explicit and unambiguous as to permit of little discretion on the part of the designer, to the end that two independent designers working from it will produce substantially the same results.

The specifications seem to start with the assumption that the general dimensions of the structure are fixed. This should not be. For any given capacity and pressure there are certain economical ratios between height and diameter for elevated tanks, and there are other ratios for stand-pipes. Something relating to these rules of proportion should be included.

The specifications cover only stand-pipes and elevated tanks with hemispherical or flat bottoms supported on steel towers. One important form of elevated tank is ignored, that is, the tank with a semi-elliptical bottom and a small stand-pipe extending from the bottom to the ground, which serves both as a partial support for the tank and as a frostproof inlet. This form is used largely for railroad waterstation tanks, and the features which are peculiar to it should be included in this manual of design.

It is convenient to assume the weight of water at 62.5 lb. per cubic foot, because this makes convenient figures for calculation, namely, $8\frac{1}{3}$ lb. per gallon, and $7\frac{1}{2}$ gallons per cubic foot. The use of two-thirds of the exposed area for computing wind pressure on cylindrical tanks is better practice than the use of one-half, as is done in many specifications. This ratio should be extended also to conical surfaces.

Table 1 allows a tension of only 12,000 lbs. per square inch in tank plates, while a tension of 16,000 lbs. per square inch is allowed in other parts of the structure. This is in

* Discussion on Mr. Birch Noid's paper before the American Society of Civil Engineers, appearing in vol. xxxv. No. 5.