paulin was battened down on top of the green concrete at the completion of each tide's operations to prevent scour.

Concrete was stopped 2 feet below low-tide mark, after which 3 feet of hardwood timber grillage was used to form a footing for the granite pier.

The work already described was performed from the time operations started in July, 1915, to the end of the same year.

Pneumatic Caissons.—The responsibility for the design of the caissons was entirely in the hands of the contractors, except for the outside dimensions. Further, the engineer's requirements that no concrete be deposited through water, in addition to the launching and holding problems, presented a set of conditions none too easy of solution. To fulfil the first requirement, the caisson was divided into three parts with two water-tight bulkheads, so that any one compartment could be pumped out and concrete deposited in the dry space during low-tide periods. This shortened the time of pumping and permitted longer time for concreting and also reduced the buoyancy, as only sufficient weight was necessary to overcome the displacement of the pumped-out chamber and the natural buoyancy of the caisson.

No. 1 caisson, as launched, was built 18 ft. 9 ins. high, with 18 ins. of concrete on the roof of the air chamber, floated 13 ft. 6 ins. deep and weighed 370 tons. At the time of launching, three-quarters of an hour before high tide, there was only 15 ft. of water available at the end of the launchways. The intention was to launch early enough before high water to permit the caisson to be towed to place and the moorings secured before the turn of the tide, then to place enough timber on the top of the caisson so that when sunk in place the top of the caisson would be above low water. Intentions are not always carried out and it proved so in this case, for the launching was not successful. The caisson slid off the ways, sideways, just after starting. However, after jacking up, the above programme was followed. The caisson was launched successfully, towed across the river, moored, and several courses of timber placed. The moorings held through one ebb and one flood tide, but parted at about half ebb the second day. It is only fair to state that this accident was due to an extremely heavy surge of the current. The caisson grounded on a mud flat about six hundred feet below the bridge and partially rolled over, enough to expose one cutting edge at low tide. Here she lay, the sand scouring until she had enough bearing to carry, but resting in a hole in the sand 18 feet deep and sand banked up to the water's edge within 30 feet of the caisson. How, after rolling over several times, she was finally floated and brought back to place, might be interesting, but the writer can assure you it was just a succession of difficulties, not the least of which was the continued rainy weather. Simply, it consisted of righting the caisson and holding until she could be pumped out and nursed into a convenient place for handling.

(To be continued.)

TRANSCONTINENTAL OF AUSTRALIA.

Up to July 29th, 1916, the cost of the east-west transcontinental line of Australia from Kalgoorlie to Port Augusta was $20,683,970, exclusive of rolling stock and stores on hand. Rolling stock had cost $3,352,361. Recent advices say that 917 miles have been laid and that only 41 miles are required to complete the railway.

A NEW ORGANIZATION TO HELP WIN THE WAR.

The engineers and technical men belonging to the various branches of the profession in Ontario have recently organized to lend their technical knowledge in the service of their country.

The new movement is known as the Joint Committee of Technical Organizations, Ontario Branch, and is governed by a strong committee composed of representatives from all the known engineering associations of the province.

Representatives have been selected from such institutions as the Canadian Mining Institute (Toronto branch), Canadian Society of Civil Engineers (Toronto branch), Ontario Association of Land Surveyors, Society of Chemical Industry, Canadian Section (Ontario members), Engineering Alumni Association of the University of Toronto, Engineers' Club, Toronto, Royal Canadian Institute, Canadian Engineers (Military District No. 2), American Society of Mechanical Engineers (Ontario section), American Institute of Electrical Engineers (Toronto section), Institute of Electrical Engineers (Ontario members), Ontario Association of Architects.

As the members of the committee are probably as busy men as are to be found in the community, meetings are held once a week only, but a small executive meet three or four times weekly and report at the weekly meeting to the representatives of the above-mentioned societies.

That there is ample scope for good work from such a galaxy of knowledge as is represented at these meetings is evidenced from the fact that after less than a month's existence matters in hand embody nearly all interests connected with the war, from aiding recruiting in the engineering branches of the service, to giving technical advice when requested to the Munitions Board, munition manufacturers, and others engaged in war work.

The committee is making a canvass of the province to register all engineering ability of every sort and description, and cards have been distributed to the members of all the societies, asking for accurate information as to each man's special experience and qualifications.

This information should prove useful when obtained, as Ontario is called upon to organize her resources, mental as well as physical, to defeat the common enemy.

Through the efforts of this committee similar organizations are being brought together in the other provinces, and already Nova Scotia, Manitoba, Saskatchewan, British Columbia and Alberta have active work started to organize engineers for any work that may be delegated to them.

The objects of the association are clearly defined in their rules, which read as follows:—

"The object of the Joint Committee shall be to devise ways and means by which engineers and other technical men may, as a result of their special training and experience, render assistance in the development and government of our Dominion. The immediate aim shall be to evolve a plan or plans whereby such of these men as for business, family, or other reasons, are unable to go to the front, may be used for war purposes at home in such a manner as their special technical training may make them most valuable."

Any engineers not affiliated with any of the above associations and willing to lend a hand should apply to the secretary's office for a registration card.

The office of the Joint Committee is in Room 710 of the Excelsior Life Building, Toronto Street, Toronto.