# ENGINEERING NEWS FROM GREAT BRITAIN.

(From our Own Correspondent.)

London, September 25th.

#### Railway Truck Brakes.

In April, 1906, Mr. Lloyd George, the President of the Board of Trade, appointed a Departmental Committee to enquire into the whole question of safety of railway employees. This committee has just presented a report upon their investigations into either side brakes on goods wagons. The following conditions are laid down as necessary before any such brake can be adopted :- Ease of application; ease of release; security in locking the brake after application, although subjected to such shocks as may be incurred in working; means of holding off the brake under similar conditions; uniformity in the position of the levers on both sides of a wagon, namely, on the right hand side of a man when facing the wagon; simplicity of design; and sufficiency of braking power. Altogether the committee have examined 51 models on design and 69 full-size brakes, but in no instance does the committee feel justified in recommending compulsory adoption. The committee, however, take the view that a brake which can be applied from either side is absolutely necessary in the interests of railway employees, and the following is therefore suggested as an additional rule under the Railway Employment (Prevention of Accidents) Act, 1900. (1) All wagons constructed after a certain date, (say three months from the date of the rule), shall be fitted with a brake lever on each side in the "cross-cornered" position, in such a way that sufficient brake power can be applied to the wheels of either of such levers. (2) All wagons which are at present fitted with a brake lever on one side only shall, within a period of seven years from the date of the rule, be fitted with an additional lever in the "cross-cornered" position on the other side in such a way that sufficient brake power can be applied to the wheels by either of such levers, and all wagons which are at without brakes shall be fitted with two present levers in a similar manner within the same period. (3) All wagons at present fitted with a brake lever on each side in the "single ended" position shall, within a period of ten years from the date of rule, have levers rearranged in such a way as to comply with the conditions in (1) and (2) and (4). No wagon for service shall be fitted hereafter with an either side brake as defined in this report unless it has been approved by the Board of Trade on the advice of the committee.

#### **Reinforced** Concrete.

Bearing upon my note on this matter last month, I am able to state that reinforced concrete has been employed to a considerable extent both at Woolwich dockyard and Woolwich arsenal. The material has been made use of in foundations, in piling, and above ground, and is considered by the War The first Office authorities to be satisfactory and economical. instance of its use there was in the construction of a storehouse at Woolwich Dockyard, erected between October, 1904, September, 1905. In addition to the above reinforced concrete has been employed by the War Office in the construction of a roof and stairway in Cairo in 1905, and was found economical and satisfactory. Evidently, therefore, the War Office does not share the pessimistic views of the Local Government Board as to the lasting and economic properties of this form of construction. Apropos to this matter also is the report of a committee appointed by the Royal Institute of British Architects to draw up rules as a guide to architects in using reinforced concrete. This committee was presided over by Sir Henry Tanner, I.S.O., of His Majesty's Office of Works. The aim of the committee has been the production of a good working guide, the laying down of the necessary conditions and setting safe rules for a proper disposition of the parts. The rules proposed are by no means revolutionary; in fact they are the same principles that are being adopted abroad, but with some variation of detail. There is not sufficient space here to deal with the report at great length, but

it may be pointed out that the results of a large number of tests are embodied, including some by Prof. W. C. Unwin, F.R.S., whilst there is also a large amount of information regarding the design of beams and columns.

### Surface Contact Tramway Experiment in London.

The decision of London County Council to adopt the surface contact system of electric traction upon one of the present horse tram routes in the east end of London marks a change of policy in tramway matters which is very welcome. Political considerations enter largely into municipal government now-a-days, and no doubt for this reason, the London County Council in 1900, owing to the elections which were then about due, inserted in a tramway bill promoted that year, a provision that in no district should the overhead system be adopted without the consent of the local authority. In consequence of the lavish adoption of the conduit system in the south of London-a good portion of which later experience has proved to be unnecessary-the local authorities in the north equally determined to have nothing but the conduit system, or some similar system. Consequently, by reason of many attempts on the part of the London County Council to get the local authorities in the various boroughs to change their attitude, considerable delay has been experienced in converting some of the lines on the north of the River Thames which have been in the County Council's hands for some time. The most obstinate of all has been the Poplar Borough Council, and as the only course, it has now been decided to mstal the Griffiths-Bedell surface contact system, which has, for nearly two years, had a good trial at Lincoln. The average cost of this system is put at £10,500 per mile of single track, against £17,000 for the conduit system, and £9,500 for the overhead system. The route in the borough of Stepney, which has been selected for the experiment, is about 31/2 miles long, and the total cost, including special equipment of cars, cables, car shed, etc., being put at £122,210. The company operating the "G. B." surface contact system agree to withdraw the equipment at its own cost if the County Council are not satisfied with the results. If the County Council, when it first became the tramway authority in London, had shown less desire to consider the wishes of the borough councils, and more disposition to economise in the general interests of the ratepayers, considerable expense would have been saved both on the conduit system and on parliamentary expenses.

## Ice Problem in Engineering Work in Canada.

Before the British Association meeting at Leicester last week, Dr. H. T. Barnes of the McGill University, Montreal, read an interesting paper on the ice problem in connection with hydro-electric installations in Canada. He said there were three kinds of ice to be reckoned with, namely; (1) surface or sheet ice; (2) specular ice, or as it is called in Canada, frazil ice; (3) anchor ice. Frazil ice, which gave the most trouble in hydraulic work, was formed by surface agitation in the more turbulent rivers and waterfalls, and accumulated in great quantities in the quieter waters. It varied in size from thin plates to fine needle crystals, depending on the degree of agitation of the water. A study of the temperature conditions in the water during the production of these forms of ice showed that it was accompanied by a small temperature depression in the water amounting to a few thousandths of a degree Centigrade. During the severe weather, the water was thus thrown into a slightly super-cooled state, during which time the ice crystals are growing rapidly by continued freezing, and giving rise to the agglomerating stage, when they stick together into lumps and spongy masses, and adhere to the racks or to the machinery of the wheel gates or turbines. Fortunately it was only a small temperature depression which brought about these conditions; consequently the action of the sun during the day was sufficient to prevent the ice from gaining a foothold. At night, however, it had been found