ENGINEERING NEWS FROM GREAT BRITAIN.

(From Our Own Correspondent.)

London, March 30.

The launch of torpedo boat No. 9 (lately known as H.M.S. "Grasshopper") at the Cheswick yard of Messrs. J. I. Thornycroft & Co. is an event of considerable interest from the fact that it is the fifth of the new class of British turbine-driven torpedo boats constructed at this yard, and, in addition, marks the end of the long and notable list of torpedo craft which has been constructed by this firm at their Chiswick works, commencing with the "Lightning"—known in the service as torpedo boat No. 1—which was delivered in 1877. The "Lightning" was a boat of 85 feet in length, and capable of a speed of 18 knots, which was then considered most remarkable. Torpedo boat No. 9 is 168 feet long, with a beam of 17 feet 6 inches, and a draught, under fully loaded conditions, of 5 feet 11 inches. She is fitted with Parsons turbines and Thorneycroft boilers, using oil fuel, both turbine machinery and boilers being constructed by Messrs. Thorneycroft. The contract speed is 26 knots, but in the case of four earlier boats, which have already undergone trials, this speed has been exceeded by considerably over a knot. The armament consists of twelve quick-firing guns and three torpedo tubes.

The Canal System of Great Britain.

Considerable interest is just now being taken in the future of the canal system of the British Isles. At present, of course, the greater mileage of the waterways of that description here are in the hands of the railway companies, who have been charged with sacrificing the usefulness of the canals to the benefit of the railways. That is a question of economics, which hardly comes within the purview of these notes, but there is also a very serious engineering question involved which the ordinary trader hardly stops to consider when he is attacking the powers that be for cheaper freight rates. To be of signal service, horse traction must admittedly be abolished on our canals. Hence, the question arises as to the most economical form of mechanical propulsion. Popular fancy may fly to electricity, but the results to date do not justify great optimism. The Teltow Canal installation, according to experts, is over-capitalized, in that a too elaborate equipment has been adopted, and a reliable guide from such an installation is hardly likely to be forthcoming. Experiments have also been carried out in France and Belgium, but from the figures, the running costs seem to work out higher than horse traction. In view of the uncertainty in this direction attention has been drawn to the possibilities attaching to self-propelled boats, and the following particulars of a trip with a gas-driven barge will indicate the capacity of such plant for this purpose, and at the same time expose the limitations of our canal system. The boat referred to was 71 ft. 6 ins. long by 7 ft. 1 in. beam by 3 ft. 3 ins, draught. She was originally fitted with steam engines and boiler, and, under the old conditions, was carrying a useful load of 16 tons. This is the largest type of boat which can navigate the majority of our canals, but even this length was too great for some of the locks. By installing the suction gas plant a saving of about 4½ tons was effected in the weight of the machinery, whilst there was a gain of space of three feet in the length of the engine-room. The boat was thus enabled to carry a load of 20 tons instead of 16 on the same draught and at the same speed as formerly, and without increase of power. The experience gained with the trials of this boat go to prove that a very large capital expenditure will have to be incurred in increasing the cross section of practically all our canals if commercial use is to be made of them. The cost of carrying goods over a particular section of the canals traversed worked out to .34d. per ton mile. This includes fuel, wages, depreciation, interest on capital, insurance, and repairs. Objection has been taken to the use of producer gas on the ground that danger would arise in passing through tunnels, owing to the deleterious nature of the exhaust gases. As a matter of practical experience, no ill effects were felt on the trials above referred to. It is pointed out that the chemical composition of the exhaust from a gas engine is the same as the gas from the funnel of a steamboat, with the advantage that gas engine exhaust is free from smoke or sulphur. The conclusion arrived at is that with a reorganization of our canals, with through communication and through tolls, by the use of such barges as that described above the cost of transport of goods might be reduced to one-third or one-fourth the present rates.

The Patent Laws.

A bill has been introduced by the Government which should be welcomed by the engineering industry in common with all others, inasmuch as it removes several of the disabilities now attaching to our patent laws. One particular detail in which reform has been necessary is in respect of the large number of foreign patents taken out in Great Britain and factories erected abroad for their development. Under the new bill this will be remedied, for if after three years any patent taken out in Great Britain is not actually worked here, it will be open to anyone to object. The present practice—and this applies to both British and foreign patentees—is to deposit in the patent specification all manner of possible combinations, many of which have never been tried by the patentees themselves, in order to forestall the possibility of later patents. But the new bill says that samples of everything proposed in a patent specification must be deposited. Finally, the poor inventor is thought of in that the procedure is simplified, so that the cost of patenting an invention, or of setting up a defence to threatened actions for infringement, is reduced. Being a Government measure, and uncontroversial, there is every likelihood of it becoming law.

The definite expression of opinion from the Government that its support will not be given to the project of constructing a tunnel between Dover and Calais has virtually killed the proposition, for it would be futile for a set of private promoters to proceed in face of such opposition. From a national and political point of view the construction of such a tunnel would probably lead to more harm—indirect rather than direct—than good, but we have been deprived of an opportunity of studying an engineering problem of intense interest.

The Victoria Bridge Over the Zambesi.

The Victoria Falls Bridge in South Africa is one of those engineering undertakings in which the general public takes more than its wonted interest. Carried out under the supervision of British engineers, the following particulars, given to the Institution of Civil Engineers, will be interesting, for it is the first description of the bridge, in any detail, to be published. The choice of the site for the bridge was due in the first instance to the late Mr. Cecil Rhodes. The position fixed upon is about 700 yards below the cataract, and, the rock being very hard, the bridge was designed to fit the profile of the gorge with as little expenditure in excavation as possible. Several types of bridge were considered, but the nature of the situation and the purpose of the work made it obvious that a two-hinged, spandrel-braced arch was the one which most completely answered the requirements of the case. The bridge is designed to carry two lines of the usual South African gauge, 3 ft. 6 ins. In addition to the dead load, the forces which the bridge is calculated to sustain are (1) a train on each line of way, consisting of two engines, followed by heavy trucks, the weight of the whole train averaging 1.40 ton per lineal foot; (2) temperature stresses caused by a 60° F. variation above or below mean; (3) wind stresses due to a wind pressure of 30 pounds per square foot on the train and bridge, or 45 pounds per square foot on the bridge alone. The pressure is calculated on the entire area of both