

rections. Each individual pair of gyroscopes of course, are connected together so as to ensure equal peripheral speed. These are motor-driven at a speed varying between 7,000 to 8,000 revolutions. The model which has been built has shown rare extraordinary performances with loads up to 20 tons, an incline of 1 in 5 being successfully negotiated. One of the pet fancies of the inventor is the utility of the system for military purposes, and there would certainly appear to be field for it here. A full size vehicle, which will have a length of 12 feet is under construction, and will be driven by a 100 h.p. petrol motor directly coupled to a motor. The gyroscopes in this case will have a diameter of 2 feet 9 ins., and will run at about 2,500 revolutions per minute. The inventor has hopes of introducing variable speed gears and free wheel eventually. Another use to which Mr. Brennan believes the system will be suited is for the conduction of pioneer lines in the Colonies, making it possible to give a means of communication at a minimum cost, and thereby giving settlers an opportunity of reaching the markets with their produce at much lower rates than would otherwise be possible.

Electric Power in London.

Last month I mentioned that the proposals to supply electric power in bulk in London were in a state of suspended animation. The present position is one of considerable animation. A sub-committee of the new County Council has recommended considerable modifications of the proposals made by its predecessors. These have been passed by the Council, but the effect has been a storm of criticism which has extended to the House of Commons, and bids fair to continue for a while. The intention of the late Council to work the undertaking as a municipal enterprise, to purchase all the existing municipal works, and later on to acquire those of the companies as well, has been completely thrown over, and in its stead is a resolution to lease all the powers of the bill to private enterprise. But the progressive party, which has just been defeated at the County Council election, has considerable influence in the House of Commons, and the debate upon the second reading of the County Council Bill has already occupied one evening and stands adjourned. The London Liberal members are pressing the Government for an assurance that no contract shall be entered into with private enterprise without the full terms being presented for Parliamentary discussion, a course of action which has some advantages, but many disadvantages. In the meantime, the delay which is taking place is gradually precluding the possibility of any definite result being arrived at this season. But then there are many here who do not believe there is the pressing need in London for extra electric supply facilities.

Railway Mechanical Engineering.

The new president of the Institution of Mechanical Engineers devoted his address a few weeks ago to that part of the mechanical engineering of railways which is represented by rolling stock and machinery. He regarded the requirements of modern travelling as necessitating modifications of both engine and coach designs which were difficult to secure owing to our limited gauge, and he half regretted that our standard gauge of 4 feet 8½ inches has survived as such. In fact, he showed a prediction for a 5 feet 6-inch gauge. Dealing with the efforts to procure a power supply of water for locomotive boilers, the president referred to the efforts that have been made to introduce means of purification. Many efforts have been made with more or less success to introduce compounding, but there seemed to be one requirement that had not been fully accomplished, viz., to get the full effect out of the steam. It would appear that this might be improved if some method of condensation could be applied, and with the facilities now existing on many railways for picking up water it might be possible to apply a condenser, and so assist in front of the piston by obtaining at least a partial vacuum, and then pumping the condensed steam back into the boiler at high temperature. The following remarks upon electric traction are worth quoting: "In the case of passenger traffic there can be no doubt that for frequent trains, for not too long distances and for frequent stops and high speeds, electricity is extremely useful

and desirable. As regards goods and mineral traffic, I cannot help thinking that the dealing with this problem will find it worth consideration in the highest degree to solve the question of regenerative control. In hilly mining districts if it were possible to use the gravity and momentum of the down train to generate current for the up traffic, and that at a reasonable cost, then it ought to make an enormous difference in the possibilities of electric traction for such purposes."

New Dock on the Clyde.

An important engineering work is in progress on the Clyde in the construction of the new Clydebank Dock, near Glasgow. The work is part of the scheme of the Clydebank Navigation Trustees, and although the new facilities are not yet absolutely completed, yet they are sufficiently advanced to admit of their opening by the Prince and Princess of Wales. I shall be in a position later to fully describe this work, but in the meantime a general outline may be given. The width of the entrance to the dock is 200 feet; there is an outer basin 600 feet square leading into an inner basin some 500 yards long. At low tide there will be a depth of 25 feet, and at high tide 36½ feet. Inside there will be berths for 16 vessels. A leading feature of the equipment is the electrical plant, especially the cranes, hoists, winches, etc., into which many novelties have been introduced and used for the first time. There are four coal hoists, 36 cranes, transporters, etc., and a separate power house has been erected for supplying the necessary electrical energy.

The Irish International Exhibition.

One of the main features of this Exhibition at Cork is the Canadian pavilion. There is a good deal of engineering interest to report from here, but so far things are not in a very forward state.

Flying Machines.

The possibility of a really practical design of flying machine always keeps this subject interesting, although commercially, their application had best not be discussed. Major B. F. S. Baden-Powell, however, who is taking much interest in the matter over here, believes that with the progress that has been made of late in the problems of balancing and landing, there is a great probability that aerial navigation will be in fact accomplished within a very few years. The following table gives important facts of recent progress as to the power, speed and surface necessary to raise a given weight off the ground:

	Span ft.	Area sq. ft.	Total weight with operator lbs.	Engine h.p.	Propeller Diameter ft.	Revs. per minute	Speed attained on ground	Speed in air
Wright	40	480	925	24	2	—	—	38-40
Santos Dumont (1)	39	560	550	50	6	1,000	24½	22-26
Santos Dumont (2)	36½	146	500	50	6½	—	25	—
Bleriot	25½	140	600	24	5¼	—	—	—
Delagange	32	645	638	50	6.9	1,500	—	.15
Veria	—	215	605	—	7¼	—	—	—

The fast steamship line between Blacksod Bay, Ireland, and Halifax, is having plentiful publicity. The possibilities of the Canadian Atlantic route, perhaps, are not fully appreciated. The Canadian steamship companies should take a larger proportion of the traffic which the New York steamships now handle. The present scheme looks very well in print. And so, for many years, has the English channel tunnel project. There is room for improvement in the Canadian Atlantic steamship service. The establishment of the new route would cost many millions of dollars. The Governments of Canada and Britain would be asked to subsidize it heavily. And then the public would discuss whether up-to-date improvements to existing routes could not be made to suffice.