

MARCONI'S WIRELESS TELEGRAPHY AUTOMOBILE FOR MILITARY PURPOSES.

BY ENGLISH CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

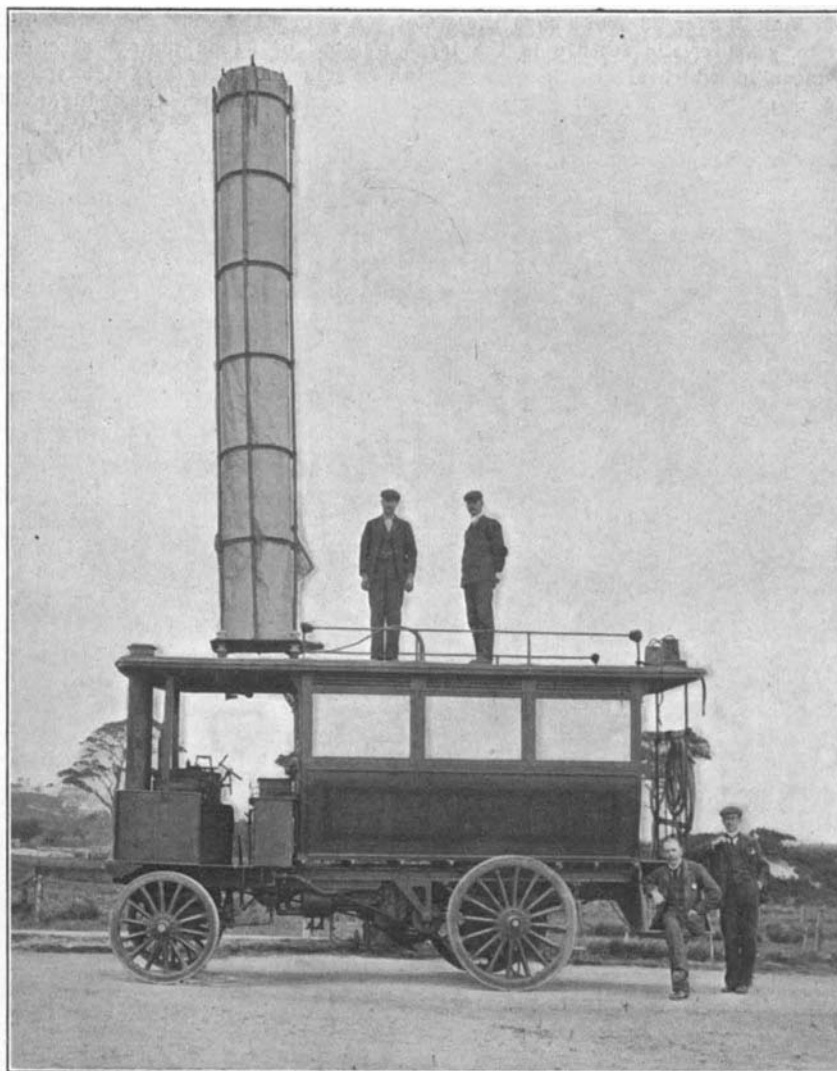
It will be recollected that during the earlier stages of the war in South Africa the British forces utilized Marconi's wireless telegraphy for the purposes of communicating between various army detachments and for the transmission of messages. The experiment was not attended with very conspicuous success and was shortly afterward abandoned. The cause of the failure was not due to any defect in the system, nor to the presence of minerals in the earth, as was generally supposed, but was entirely due to the inefficiency of the military department.

When the war broke out the military authorities decided to install the system at Cape Town for the purpose of telegraphing the arrival of the various transports to some point inland. The operators were sent to Cape Town, but upon their arrival there the military authorities requested them to proceed to the front. The operators acceded to the desires of the War Department, and went to the front. When the men reached the scene of action they were unable to secure poles to which to attach the aerial wires, and as there were no trees within miles they could not improvise masts. They thereupon requisitioned Major Baden-Powell's military kite, but even then the results achieved were very unsatisfactory. Marconi himself has no confidence in the kite for this purpose, owing to its remarkable vagaries and liability to fall to the ground. Under these circumstances the military wisely decided to dispense with the system; but that its failure was simply due to insufficient preparation is borne out by the fact that whenever an elevation was obtained the messages were received and transmitted without the slightest hitch.

In view of the inconvenience that had been caused by the absence of the necessary poles Marconi decided to construct a portable installation which would be specially adaptable to military requirements. For some time past he has been experimenting with huge cylinders to act as receivers in lieu of the high wire. These cylinders have been proved to be more efficacious for the transmission of messages over short distances, than the ordinary apparatus. When the electric currents are excited, the waves at first oscillate very rapidly and violently, but in a few moments the vibrations die down, or become damped, in much the same way as the wire of a piano decreases its vibrations after a note has been struck. It is imperative that these vibrations should be sustained as much as possible, in order to travel over a long distance, and to ensure this end you must have a great capacity in your sending instruments. The effect of the cylinder is to render greater capacity than the ordinary aerial wire, and consequently you obtain more sustained vibrations.

The apparatus that Marconi has devised for military purposes is shown in our accompanying illustration. The automobile is the Thornycroft steam motor car, or lorry, which is now so much used in England for heavy road traffic. The car has a capacity for about five tons, and can attain a speed of from twelve to fourteen miles per hour with a full load. The rear part of the lorry is fitted up as an operating room, containing instruments and electric batteries. Upon the roof of the car the long cylinder is placed. In our photograph the cylinder is raised ready for use, but when not required it is laid down flat upon the roof, out of the way. The cylinder is about

twenty-five feet in height. It is constructed of metal and thoroughly insulated. The points from which the currents are transmitted into, and received from, space may be plainly observed at the top of the cylinder, and the wires connecting them with the instruments below. The cylinder can be raised or lowered instantaneously. The car, owing to the strength and stability of its construction, is a typical vehicle for military work where rough roads are encountered.



MARCONI'S MILITARY AUTOMOBILE EQUIPPED WITH THE CYLINDER SYSTEM OF WIRELESS TELEGRAPHY.

One special recommendation of this migratory installation is that communication can be maintained while the vehicle is traveling. The maximum distance over which messages can be dispatched and received by means of this installation is 20 miles at present, which is generally sufficient for military purposes. Marconi, however, is still continuing his experiments with a view to increasing this distance. The cylinder performs exactly the same functions as the aerial wire, even in connection with the tuned or synchronized messages.

This automobile is the first to be equipped in this manner, and it has been subjected to several exacting trials to prove its efficiency. The military authorities are following the experiments very closely, and since there is a keen desire to utilize the system as extensively in the British Army as it is being requisitioned in the British Navy, there is no doubt that they will avail themselves of this car. The question has simply resolved itself into the designing of a portable, light, yet strong apparatus, simplified as much as possible for easy transport. For military purposes such an installation must be conveyed in such a manner that it can be ready for use at a moment's notice. It would be absolutely useless to carry an extensive plant, together with a sufficiently high mast

to carry the aerial wire, for a valuable waste of time would necessarily ensue in getting the apparatus into working order. This automobile offers all the desired advantages, and the raising and lowering of the cylinder instantly at will is a sufficient recommendation for the utilization of the invention.

Although Marconi is still continuing his investigations with the cylinders, his principal experiments are still concerned with the perfection of the original system, an improvement upon which has not yet been discovered. Although Marconi has found the cylinders to be specially valuable for the transmission of messages over short distances, up to about thirty miles, it has not been found so successful in the case of long distances.

THE FIRST PASSENGER TURBINE STEAMER "EDWARD VII."

BY OUR ENGLISH CORRESPONDENT.

After the satisfactory results obtained from steam turbines in driving vessels of the torpedo-boat type, it was inevitable that this system should be tried in other vessels where high speed was desired. The first attempt to utilize this method of driving for a passenger vessel has just been made on the Clyde in the steamer "King Edward," of which we are able to give herewith a photograph specially taken for us on her first trial run. The "King Edward" has been built by Messrs. William Denny & Brothers to designs by their own draughtsmen, working in combination with the Hon. C. A. Parsons, and she is intended for service between Fairlie and Campbelltown.

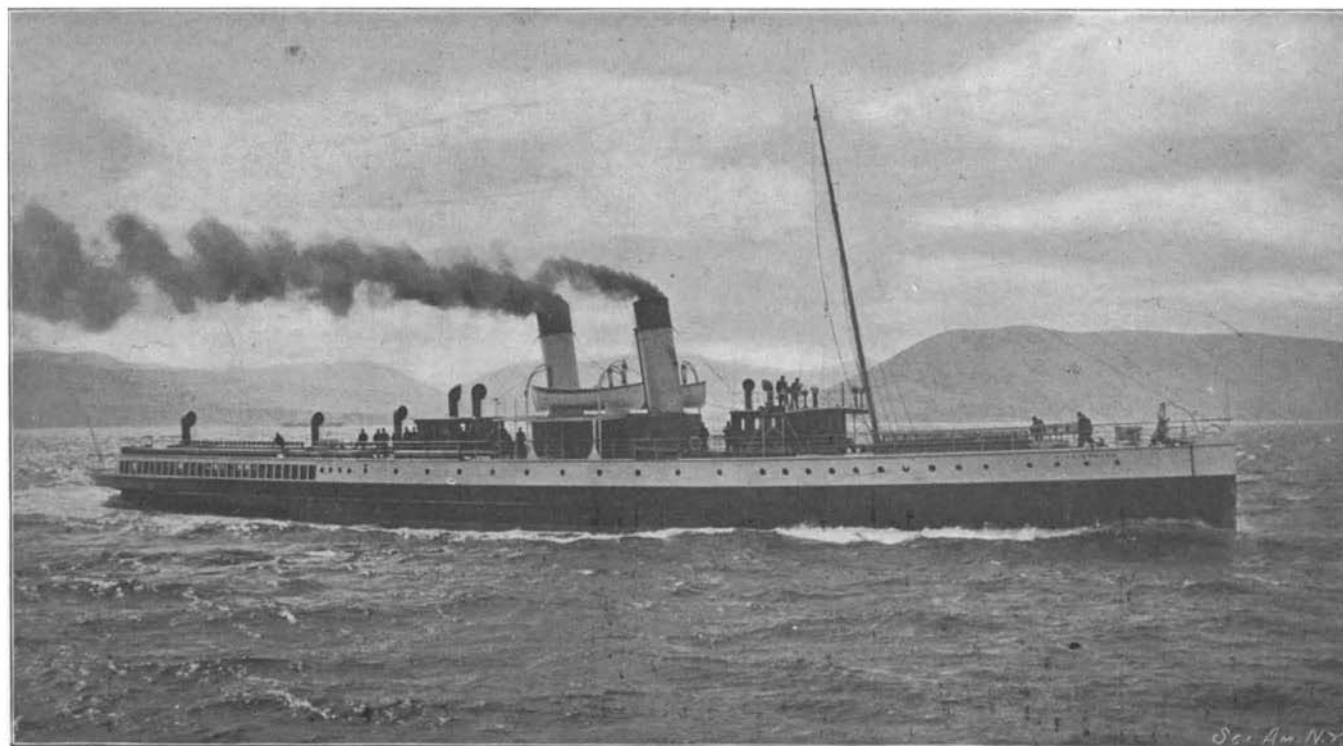
There is very keen competition for the passenger-carrying traffic on the Clyde, three different railway companies being interested, and the boats engaged are the finest river steamers in Britain. This

seemed to offer a promising field in which to test the turbine principle, but the Parsons Marine Steam Turbine Company failed to induce any of the competing companies to experiment with the turbine. The project seemed likely to be shelved, when Messrs. Denny took the matter up, and in conjunction with the Parsons Company and Capt. Williamson agreed to build the vessel as an independent experiment.

In the hull of the boat there is comparatively little calling for special attention, although it is evident at a glance that she has been lined in such a manner as to give the turbines the greatest possible opportunity for making a record in speed. The model of the hull carries more than a suggestion of the torpedo-boat form, although it has been modified to suit the passenger trade. She has a shallow-draught hull of exceptionally fine entrance and run, with the beam carried

well forward. There are three propeller shafts and five propellers, two of them being carried on each of the side shafts, and a larger one on the central shaft.

It is in the machinery, however, that the chief interest of the boat lies. It consists of three turbines, all separate, and each driving one of the shafts. The high-pressure turbine is placed on the center shaft, and each of the low-pressure turbines drives one of the outer shafts. Inside the exhaust ends of each of the latter were placed the two astern tur-



THE FIRST PASSENGER TURBINE STEAMER, "EDWARD VII."