

MARCONI'S WIRELESS TELEGRAPHY AUTOMOBILE FOR MILITARY PURPOSES.

BY ENGLISH CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

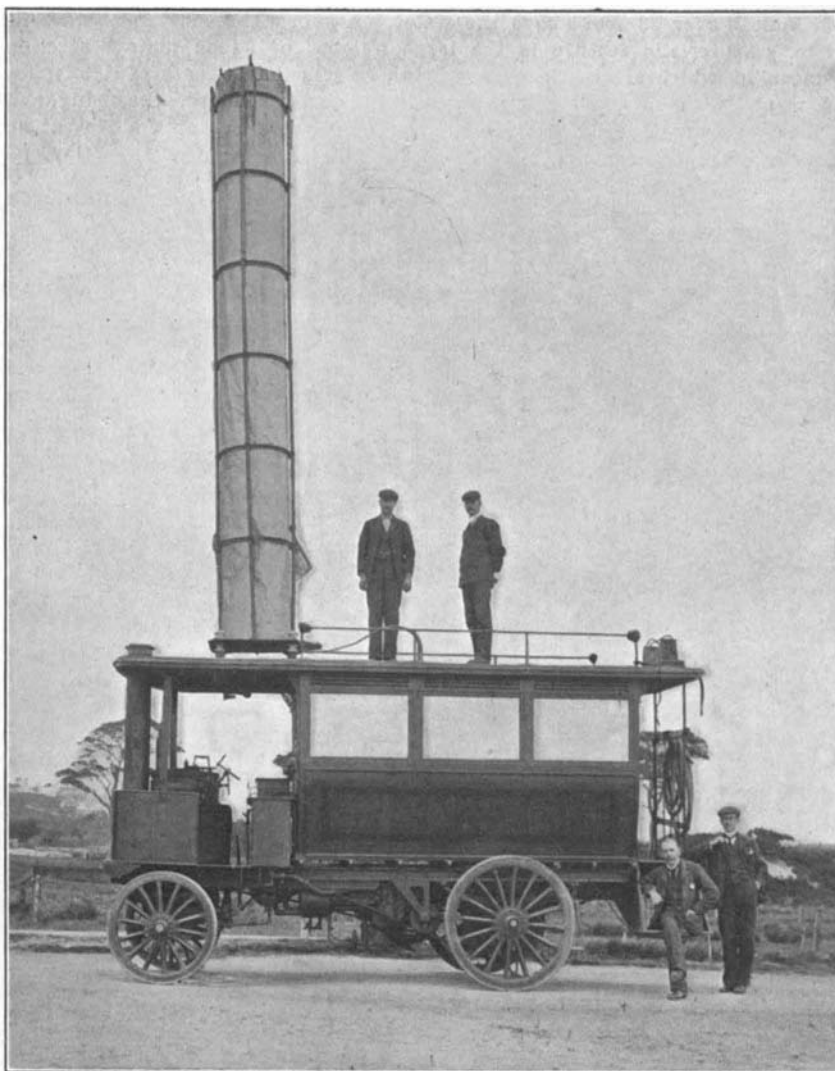
It will be recollected that during the earlier stages of the war in South Africa the British forces utilized Marconi's wireless telegraphy for the purposes of communicating between various army detachments and for the transmission of messages. The experiment was not attended with very conspicuous success 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.

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.

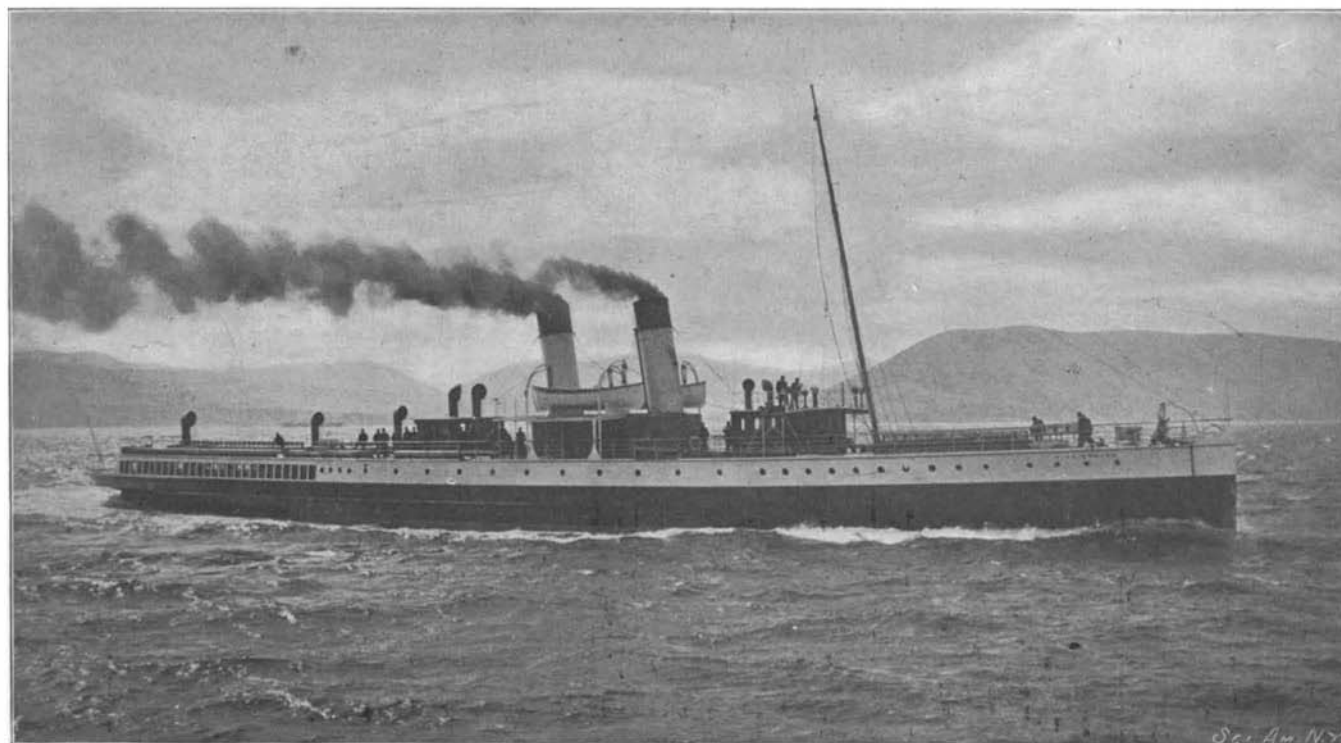
There is very keen competition for the passenger-carrying traffic on the Clyde, three different railway companies being interested, and the boats engaged are the finest river steamers in Britain. This

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."

bines. In driving ahead in the ordinary way, the steam from the boilers is admitted to the high-pressure turbines, and after expanding it about five-fold, it is passed to the low-pressure turbines, where it is expanded about twenty-five-fold more and then passed on to the condensers. This gives a total expansion ratio of about 125-fold. At twenty knots speed—and this has already been obtained without any excessive driving—the speed of the center shaft is 700, and that of the two outer shafts 1,000 revolutions per minute. When coming alongside a jetty or maneuvering in a harbor, the outer shafts only are used, and steam is admitted by suitable valves directly into the low-pressure motors, or into the reversing motors independently on either side of the vessel. The high-pressure turbine under these circumstances revolves idly, its steam admission valve being closed, and its connection with the low-pressure turbines being also closed by non-return valves. By this arrangement great maneuvering power has been secured. Up to the time of writing there have been several trials of the vessel, and the engineers declare themselves as perfectly satisfied with her last test. She easily made twenty knots, and even at this speed there was a noticeable absence of vibration. The comparatively small space occupied by the engines leaves large accommodation for passengers—a consideration of much value in the trade in which she will be engaged.

THE MOST PRIMITIVE AMERICAN SAVAGES.

BY WALDON FAWCETT.

After centuries of ineffectual effort to penetrate their rigid exclusiveness, something is at last coming to be known regarding that strange people, the Seri Indians, the fiercest Indians on the American continent and unquestionably the least-studied and most completely isolated race of people on the globe. There is something almost pathetic in the fact that what little information has been gleaned by the Bureau of American Ethnology, a branch of the United States government, has been secured on the eve of the total extinction of this, the most strongly marked and distinctive of the aboriginal tribes of the New World. For hundreds of years these savages, in many respects the most terrible fighters the world has ever seen, have been continually at war with their neighbors until now the population of the tribe, which a couple of centuries ago numbered several thousand, has been reduced to little over three hundred persons, of whom not more than seventy-five are adult males or warriors. The great dominant characteristic of the Seri is their absolute isolation in thought and life and feeling. It has no counterpart on earth to-day. More impressive still is the fact that the ages of life in their own little sphere, almost as completely isolated as though they inhabited another planet, have fostered in the Seri a bitter and implacable hereditary enmity toward all other human beings. All the mistrust and hatred which it is possible for one race to feel for another culminates on the borders of Seriland. The nearest neighbors to the Seri regard them as hardly human—a feeling fully shared by the Seri themselves, who deem themselves more closely akin to the beasts which they worship than to the despised humans haunting their borders. In very truth they stand alone in every respect, far out-Ishmaeling the Ishmael of old on Araby's deserts.

The geographic position of the Seri domain and its physical features assist these Indians, if not, indeed compel them to live a people apart from all the world. They inhabit Tiburon Island in the Gulf of California and a very limited area on the adjacent mainland of Mexico. Their little principality is protected on one side by stormy seas in which any craft must wage a hard fight for life and on the other by



PREPARING A SERI MEAL.

almost impassable deserts. Their home itself is too hard and poor to tempt conquest, being arid and rugged and consisting chiefly of desert sands and naked mountain rocks with permanent fresh water



FULL-BLOODED SERI.

in only one or two places. Finally their possessions are too meager to invite spoliation, but did they possess the treasures of the Aztecs they would be almost equally secure, since the natural terrors of this mod-

ern inferno would be likely to exterminate any civilized force which might attempt an invasion.

Both the Seri men and women are of splendid physique, they have fine chests with slender but sinewy limbs and are notably vigorous in movement, erect in carriage, and remarkable for fleetness and endurance. The members of the tribe subsist almost wholly on sea food, land game and fruits, and most of their food is eaten raw. They neither plant nor cultivate, and are without domestic animals save dogs, and these latter are little short of wild beasts. Their only habitations are flimsy bowers of shrubbery, occasionally shingled rudely with turtle-shells and sponges. The Seri clothing consists of a kilt or skirt extending from waist to knees, and the women indulge in the most fantastic symbolic face-painting.

At present polygyny prevails in the tribe, but in former years polyandry was practised.

The primary marriage is negotiated between the mothers of the would-be groom and the prospective bride. If the mother and daughter in the latter family look with favor on the proposal, the candidate is subjected to rigorous tests of character, and if these are successfully passed the marriage is considered complete and the husband becomes a privileged and permanent guest in the wife's household. In every phase of the life of these people there crops out their intense, fiendish hatred of all other human beings. In their estimation the brightest virtue is the shedding of alien blood, and the blackest crime on the Seri calendar is conjugal union with any person from the outside world.

These Indians, who have for centuries successfully stayed Spanish, Mexican and American invasion, worship innumerable mystical deities, most prominent among which are the pelican, the turtle, moon and sun. It is known that there are certain observances at the time of the new moon and that there are held annual ceremonies at various times, but the character of these no white man has ever been able to ascertain. How great is their secretiveness may be imagined from the fact that to this day no alien has ever seen the christening of their children, the burial of their dead or the ceremonies of their shrines.

In the olden days the Jesuit missionaries and after them the Franciscan friars and the secular officials sought to scatter the Seri by both cajolery and coercion, and endeavored to divide families by restraint of women and children and by banishment of wives. There are traditions, too, of the capture and enslavement of Indian and Caucasian women in Seriland, yet the fact remains that not a single mixed-blood Seri is known to exist, and not more than two of the blood now live voluntarily beyond the confines of the tribe, and these have been outlawed and could not return to their people if they wished.

It is impossible for a person who has not traveled through the country to understand with what mingled horror and terror and loathing the Seri are regarded through the length and breadth of western Mexico and in the southwestern portion of the United States. Their practices in warfare have afforded repeated proof that they are not only the most primitive but by far the most bloodthirsty and treacherous of the Indians of North America. Even at the present time, with their wasted forces, it would be little short of suicide for even a Mexican official to visit these Indians or land

on their island without an armed guard. Any white man, Mexican or Indian of another tribe coming in contact with them is killed without the slightest compunction unless they are restrained by fear.

In warfare they make use of the deadly poisoned arrows, and although the United States government explorers have virtually established the fact that these Indi-



GROUP OF SERI INDIANS.