THE TRIALS OF A PILOT.

BEING SOME ACCOUNT OF THE EXPERIENCES OF M. ESNAULT-PELTERIE AND OTHERS IN THE AIR.

ON Tuesday of this week, January 26th, Mons. Esnault-Pelterie—who is well-known to our readers as the inventor of a novel type of aero motor, and as an ardent supporter of the monoplane principle in flying machines—delivered a lecture on aviation before the members of the Aero Club at the Club House of the Royal A.C. M. Pelterie held his audience for upwards of three hours, and even then it was obvious that he was unable to say as much as he would have wished during the later sections of his address—which, by the way, was illustrated with lantern slides and cinematograph views. It was the more regrettable, too, that this should have been the case, inasmuch as the author naturally reserved the subject of modern experimental work until the last, so that the greater part of the remarks which he found time to make applied more particularly to the labours of those pioneers who have made what has already come to be regarded somewhat as ancient history in the art of flying. The historical side of a subject is always a popular one with speakers, and as a very little history covers a tremendously wide field for discourse, it only too frequently happens that the problems of more immediate interest get pushed into the background at such meetings as these. It was a sympathetic audience, however, who listened to M. Pelterie's remarks on Tuesday night, and his excellent command of the English language which enabled him to speak unhesitatingly throughout, with but an occasional reference to his notes, did much to hold his hearers' attention through such a relatively long period.

There was very little doubt at any time, however, that the audience was vastly more interested in having a personal narrative of the author's own private experiments than in hearing once again about the comparatively well-known work of Hargreave, Pilcher, Lilienthal, Chanute, and the Brothers Wright. It was the rumours relating to the flights accomplished by these latter pioneers, which was, as a matter of fact, instrumental in causing M. Esnault-Pelterie to investigate the problem of artificial flight for himself. He had carefully studied all the available information relating to the Wright gliders—and, as we have often had occasion to remark before, the Brothers Wright were by no means secretive about this stage of their work—and he constructed a glider which was very much like theirs in 1904. With this apparatus he carried out practical experiments from a natural hill in the vicinity of Calais, but the almost perpetual inclemency of the weather, from the aviator's point of view, caused him to very soon seek a less precarious mode of investigation.

As a means of obtaining an artificial draught in the right direction at an appropriate velocity, he utilised his motor car, hitching his glider on to it by a rope so that it should act in the manner of a kite. One little detail, however, did M. Pelterie forget, and that was to establish any system of communication between himself and his chauffeur for service during such times as he might happen to be aloft in his machine. This neglect went near to costing M. Pelterie his life, for having satisfactorily risen in the air on one occasion, he was unable to get his commands executed at the right moment, and the glider pitched forthwith head first on to the ground. How he escaped, he is uncertain to this day, but escape he did, and vowed henceforth to forswear that particular form of investigation.

Being of a scientific turn of mind, however, M. Pelterie was still intent upon establishing a certain amount of fundamental data of value to himself and others, for he had not, it would seem, that peculiar desire to fly first and learn how afterwards, which characterises the *modus operandi* of so many of the more modern would-be adherents to the cause. He saw that while a motor-towed kite was no safe place for his abode, an occupation of the car at the other end of the string would be far less inimical to life, and he forthwith rigged up an apparatus which resembled what might be described as an embryo limousine hood, supported on four uprights, from the body of the vehicle. This hood was in reality an aeroplane surface, so arranged that its movements could be recorded and observed on instruments carried lower down in the car itself. The car was driven along the highways at speeds which would admittedly have been impossible in England with any regard to the law or safety of the public, and a quantity of data was collected about the behaviour of various aeroplane surfaces under these particular conditions.

Among other information which M. Pelterie collected in the course of his earlier experiments were data to the effect that a piece of wire offers resistance to the air which is altogether disproportionate to its size. "Almost as much resistance as a piece of wood as thick as a man's arm," said M. Pelterie, in the course of his lecture, and although this is not a very definite statement even when only a minimum allowance is made for quite ordinary differences in muscular development, the comparison is of a sufficiently startling nature to attract attention. It led Mons. Pelterie to espouse forthwith the monoplane type of flying machine, because, he argued, it would be impossible to build a double-decker without wires, which would make this latter form of machine relatively inefficient. Incidentally it may be remarked that M. Pelterie considers it is the vibration of the wires which causes such a tremendous wind resistance.

Still aiming at avoiding his thus discovered *bête noir*, Mons. Pelterie decided that he would have to build a monoplane with wings of sufficient strength to be entirely self-supporting from their attachment to the body, and having laid down this fundamental principle he evolved from it a peculiarity which has made the "Rep" monoplane unique. All other flying machines which make use of wheels for starting, have a bogey of the tricycle type, so that they run normally on an even keel. The Pelterie machine, on the other hand, has but a pair of wheels below its longitudinal axis, and it makes use of either one of the two wings as an outrigger for its support when standing still. The wing tips have bicycle wheels fitted to them to protect them from the ground, and the first portion of an initial sprint in starting is actually accomplished with the machine in this lop-sided position. In order to establish a balance on the two main wheels, M. Pelterie operates a lever which warps the wing surfaces, and thereby causes the wind to exercise a greater lifting effect upon that which runs in contact with the ground than is acting upon the other wing which is