when they are raised for going down. The trailing edges of the elevators are formed by a strip of aluminium, $\frac{1}{8}$-in. in thickness, and standing out rearwards for approximately 1 in. In the earlier model, which, as previously mentioned, crashed in 1927, the front wing was so mounted that it could be moved see-saw fashion on its support, from the pilot's cockpit. This arrangement was adopted, as it was hoped to counteract, by moving it one way or the other, the effects of one of the engines ceasing to work in mid air. Now, however, the wing is held in a horizontal position by double cables at each side, while horizontal stresses are, to a certain extent, taken up by the wing tips being connected by cables with the tips of the main wing. Underneath the front wing, recessed in the fuselage, is a third wheel.

Owing to the turning point of the 'plane lying so far back in front of the main wing, it was necessary to provide a very large rudder fin, to which is then attached a narrow and high rudder. There appear to have been difficulties to ensure the 'plane keeping on its course, for in addition to the rudder fin, two further fins, of relatively large size, have been provided, one each side left and right underneath the main wing, about half way between the engine nacelles and the wing tips. These vertical fins are supported on both sides by cables, and they are set at a slight angle to the axis of the fuselage in such a manner that, if their 'planes were to be prolonged in a forward direction, they would meet some distance in front of the 'plane. All controls are operated by wire cables running over pulleys.

The weight of the complete 'plane, including the passenger appointments, is 2,585 lb., and it is capable of transporting a load of 1,045 lb., making a total flying weight of 3,630 lb. The maximum speed attainable is 88·5 m.p.h., whilst the cruising speed is 79 m.p.h., and the landing speed 51·5 m.p.h. The 'plane climbs to 1,000 m. (3,280 ft.) within $8\frac{1}{2}$ min. These performances are not very exceptional but in a 'plane so young of development, they must be regarded as very good. As a matter of fact, most of the development has been done in the wind tunnel and in the drawing office, and the makers were pleasantly surprised to find the machine behaving so excellently as already to admit of its introduction in the passenger transport business. The writer has enjoyed a ride in the machine, and was struck with the relative noiselessness in the cabin and the fine manœuvrability in the air. The makers say that they have gained so much experience in constructing this 'plane that they now feel capable of building any size " Ente " 'plane from a small sporting to the largest transport 'plane.

One of the Power Plants of the " Ente " : These are Siemens Sh-14 type, of 110 h.p. each. The undercarriage consists of a horizontal Vee and a telescopic strut to the engine mounting.

SOME COMMENTS ON THE FOCKE-WULF " ENTE "

WHEN trying to form an opinion of the merits or otherwise of the Focke-Wulf " Ente," one should bear in mind that, although it has now been approved by the German authorities for passenger-carrying, the machine is to be regarded as an experimental type, and it is to be assumed that improvements can be made in later machines. This supposition is necessary in order not to be unfair by being *too* critical, as one might well otherwise be. The designers do not claim for the " Ente " type either better aerodynamic efficiency or more economical structure weight. What they do claim is a number of advantages not possessed by the orthodox type of aircraft, such as impossibility of stalling and consequent spinning, and virtual impossibility of turning over on the ground, even when landing on very rough ground, or with the wheels locked by the brakes. Both these claims would appear to be supported not only by theory but by the very thorough flying tests carried out before the machine was approved for passenger-carrying. Thus the points in favour of the " tail-first " type of aircraft may be summed up briefly as follows: It will not stall, in the sense that its main lifting surface cannot, by any manœuvre possible to the pilot, be made to exceed its maximum lifting angle. It will not spin, because before this is possible the main wing must reach stalling angle, which it never does. It cannot turn over on the ground. This is, of course, an obvious result of the length of fuselage projecting ahead of the centre of gravity and of the wheels. One point upon which we have no data is the loss of height incurred when the front lifting surface is stalled and the nose drops. A certain loss of height there must, presumably, be, but it would seem likely to be a good deal smaller than that which would result from a stalling of the main lifting surface. Apart from the actual loss of height, the worst case would, one presumes, be that in which the front lifting surface was stalled at such a height above the ground that the machine struck while at its steepest angle, *i.e.*, just as the nose had dropped, and before it had had time to rise again as a result of increased speed gained in the dive. Much seems to depend upon that angle. If it is very great, serious damage might result from striking the ground. If the angle is not very great, or in other words, if the nose does not, at the maximum angle attained, point downward very steeply, then it seems likely that, even in this worst case, the machine might simply glide on to the ground without damaging itself.

Turning to the other side of the balance sheet, it is not at all difficult to find room for criticism. For example, an examination of the figures reveals the fact that the ratio of gross weight to tare weight is only 1·405, a figure which can only be described as poor. A ratio of gross to tare weight of 1·6 or more is reached in most British aircraft, and that with loadings (wing and power) lower than those of the Focke-Wulf " Ente." One British machine which is comparable with the " Ente " in that it is of approximately the same weight, power and wing area, is the Saro " Cutty Sark." This machine, as our readers will know, is a flying-boat, also produced as an amphibian. In its plain flying-boat form the Saro " Cutty Sark " weighs fully loaded 3,700 lb., and the tare weight is 2,425 lb., giving a ratio of 1·522 as compared with 1·405 for the " Ente." The difference in gross weight is but 70 lb., but the difference in tare weight is 160 lb., both figures being in favour of the " Cutty Sark." The wing areas of the two machines are approximately equal, and the engines are also of approximately the same power.

On the subject of aerodynamic efficiency, the " Ente " cannot be described otherwise than as disappointing. With a wing loading of 9·77 lb./sq. ft. and a power loading of 16·5 lb./h.p., the maximum speed given is only 88 m.p.h. With approximately similar loadings, the Saro " Cutty Sark " has a maximum speed of 105 m.p.h. It is a little difficult to account for this disappointing performance. The Everling " High-Speed Figure " is only 8·04 which is extremely low. The corresponding figure for the " Cutty Sark " is 11. Thus, assuming equal propeller efficiency, the minimum drag coefficient of the " Ente " is 1·375 times as great as that of the " Cutty Sark." There is no very obvious explanation of this. The " Ente " *looks* fairly " clean," although the " whiskers," in the form of large clumsy cranks, on the forward plane might produce a certain amount of unnecessary drag, as probably does also the fuselage flying " wrong end on."