



THE ARADO "TREFF AS"

First German Light Aeroplane to be Designed for Inverted Argus.

ALTHOUGH the inverted aero engine is no novelty, a German firm having produced engines of this type long before the war 1914-18, the type has never hitherto become really popular. It is probably no secret that the makers of British light aeroplane engines have been experimenting with the inverted type of engine, and could, did the demand exist, put such engines into production at very short notice. We believe we are right in stating that the chief argument used against the inverted "in-line" engine is that with its cylinders hanging down from the nose of the fuselage, there is considerable likelihood of damage if the aircraft turns over on the ground, or even if it merely "stands on its nose." Probably this criticism is quite justified. There are many cases on record in which the machine turned up on its nose, or the undercarriage collapsed and let the machine down on to the ground, the only damage being, perhaps, a broken or bent propeller. The engine was undamaged because the machine "slithered" along on the crankcase, which was strong enough to stand this treatment. A cylinder head, particularly that of the front cylinder, would doubtless have been rather badly damaged.

On the other hand, the radial type of engine has two or more of its cylinders projecting below the level of the fuselage, and the number of "casualties" to lower cylinders does not

appear to be excessive. While thus the inverted in-line engine may be at a slight disadvantage as compared with the upright engine of the same type, it is no worse off than the radial engine in this particular respect, possibly a little better, and there is no denying the fact that a very fine forward view is attained when the engine is "turned upside down." It is held by some authorities that there is some difficulty in getting as good carburation with the engine inverted, although why this should be so is a little obscure.

Bearing in mind that a British aero engine firm was the first to produce the four-cylinder, in-line, air-cooled light aeroplane engine which is so popular at the present time, and that at least two firms could without doubt produce inverted versions very quickly, it has remained for the German "Argus" firm of Berlin-Reinickendorff to place on the market the first inverted four-cylinder, in-line air-cooled engine of 80 h.p. One of these engines was, it may be recollected, exhibited at the Olympia Aero Show last July. And the first German aircraft firm to design a machine specially for the inverted "Argus" engine is the Arado Handels-Gesellschaft, of Berlin, whose works are situated at Warnemünde.

The Arado L.II, or "Treff As," is a cantilever monoplane two-seater cabin machine, in which the pilot and passenger

