

The practical construction part of the work is excellent, and reveals Mr. Russell as an excellent and painstaking workman who is always ready with an ingenious expedient for overcoming difficulties. This part of the work is well illustrated and contains information which will be of great interest to model builders. The weight of a modern petrol-driven model may be 15 lbs. or more, and it is clear that the design of such a machine, which naturally has to land by itself, must be carried out carefully if every landing is not to be followed by a bad smash.

The aerodynamical side of the work consists largely of a mass of incorrect statements. The author relies on a sine cosine formula for the lift of a flat plate, ignoring shape. He is capable of giving a formula for the static thrust of an airscrew which contains no term for the diameter, and is unable to make up his mind whether the density of air in slugs is .002378 or .2378. Such errors can be found on almost every page.

CORRESPONDENCE.

TREND OF AIR-COOLED AERO ENGINES—THE NEXT FIVE YEARS.

To the Editor of the JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY.

Dear Sir,—I have read in the August *Journal* Mr. Fedden's very interesting paper, which will be valued by every engineer concerned with the development of aero engines as an excellent guide for the period covered.

I am sure you will kindly excuse my frankness if I disagree with one point, *i.e.*, Mr. Fedden's criticism of the 12-cylinder inverted Vee engine.

Flattering as it is to have our Sagitta engine selected as the representative of this type, the particulars given are used to prove the disadvantages of this layout. These particulars are as published for the last Paris Aero Exhibition, but at that time the Sagitta was an entirely new and untested type, and the data published were quoted with the utmost prudence.

To-day the Sagitta is a thoroughly tested type, which has been submitted to the international civil type test, and to the military type test of 100 hours on the same conditions as usual in England. These tests have been supplemented by a 100 hours development test carried out at 570 b.h.p. ground level power.

On both of these type tests the following outputs have been established, using 87 octane fuel:—

International Rating.

550 b.h.p. at 2,500 r.p.m. at 1,400 metres.

Maximum Output.

580 b.h.p. at 2,600 r.p.m. at 1,700 metres.

Weights less airscrew hub:—

Direct drive ... 360 kgs. (794lbs.).

Geared drive ... 375 kgs. (827lbs.).

From this it will be seen that for the maximum output of 580 h.p. the weight is only 1.4lbs. per b.h.p. instead of the 1.81lbs. per b.h.p. quoted in Mr. Fedden's paper.

I would like to emphasise that with this performance the Sagitta engine has the same standard of reliability as, for instance, the "Bristol" Pegasus engine;

actually we took the reliability and durability of "Bristol" engines as an example and standard for our smaller engines.

These performances are, however, not the last word in the development of this type because already we are obtaining 650 h.p. without difficulty and without abnormal cylinder temperatures. I believe that the 12-cylinder inverted Vee engine is sure of a future for engine sizes up to 20 litres capacity, and, with the excellent figure of 1.4lbs. per b.h.p. already achieved, this type will become of importance within the next five years as developments on this new type will be more rapid than on the traditional thoroughly elaborated and tested types.

I take the liberty of asking you to be good enough to publish this additional information, in order that the interests of my Company are not prejudiced by deductions based upon data which are now obsolete. May I also ask permission to publish a translation of Mr. Fedden's paper in the Czechoslovak Aeronautical Reviews.

Yours truly,

(Sgd.) Ing. TENY KUMPERA,

Managing Director, A. S. Walter, Praha.

Dear Sir,—I was very interested in the latest performance data of the Sagitta engine, and must congratulate Mr. Kumpera on the excellent figures he has obtained.

I still feel, however, that the in-line type of engine is bound to be heavier than the single-bank radial, and in this connection would refer him to Fig. 6 in my lecture, from which it will be observed that even at 580 b.h.p. for 375 kilograms (*i.e.*, 830 lbs.) the Sagitta engine has a slightly greater specific weight than the single-bank radial, despite the fact that this engine is a moderately supercharged type, whereas the curves in the figure are based on the altitude performance of fully supercharged engines.

There are, of course, definite applications for the 12-cylinder Vee engine in the medium powered classes, and the popularity of this type is sufficient evidence of its efficiency in these applications. However, when considering the very high speed multi-engined machine, I think he will agree with me that weight and wetted surface of the nacelle (as opposed to overall diameter) become primary considerations, and so far as these factors are concerned, the radial layout still has an advantage.

Yours faithfully,

A. H. R. FEDDEN.