

CORRESPONDENCE

proposed by Dr. Ricardo. One feels, however, that the ultimate answer will not be altogether fairly judged on economic factors alone and after all the factual costs have been assessed we shall be prepared to pay a little more for smoother, quieter and quicker travel and for the mere satisfaction of being rid of the propeller.

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To The Editor:—

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After reading the most interesting proposals put forward by Mr. Ricardo in his recent paper on "Turbine Compounding of the Piston Aero Engine" one is left with the feeling that the admirable brevity and conciseness with which they have been presented might make the project too attractive to minds less familiar with thermodynamics than the author's.

At first sight it would appear that two blacks are being made into a white, for Mr. Ricardo has purported to show how, by compounding with an inefficient and uneconomical turbine engine an inefficient and uneconomical two-stroke compression-ignition engine, a power unit of transcendental overall economy can be obtained.

Various practical difficulties which militate against this, however, are likely to bring it down to more mundane levels.

In the first case, it is not so generally appreciated as might be supposed that the turbine engine is internally cooled, whereas the piston engine, neglecting for the moment those types which make abundant use of the lubricating oil, is externally cooled. In this respect the airscrew can be compared with the compressor of the turbine engine in that part of its function is to deliver air for cooling the engine. Granted that the two-stroke engine will receive a large measure of internal cooling from the excess air which is supplied, nevertheless, the problem of cooling the cylinder of a Mercury-sized engine producing 4,000 h.p. will be one of considerable difficulty.

Moreover, in the estimate of overall weight it is important to take full account of the inter-cylinder baffling and exhaust arrangements necessary to achieve satisfactory cooling. The weight of cowling, baffling and exhaust system for an air-cooled engine is of the order of 17 per cent. to 20 per cent. of the dry weight of the engine, so that an appreciable amendment needs to be applied to the weight estimates.

Incidentally, when comparisons are made of the fuel economy and weight of piston and turbine engines, the piston engine should be debited with its cooling drag horse power and the weight of these items, the equivalents of which are already built integrally into the turbine engine.

One last point—advantage has already been taken by the R.A.F. of the reduced ground maintenance staff needed for turbine engines. The re-introduction of a piston engine, simple though it may be, but penalised by the need for more involved exhaust gas piping (never a joy), and requiring probably more complicated gearing, would inevitably require larger ground crews than ever before.

While compounding will always have its attractions and its adherents, success in the aviation field has so often come to the man who has limited his objective and who has concentrated his efforts on a narrow front, that there are strong grounds for assuming that the best results will be achieved by more orthodox power units of greater simplicity, and very probably of the same ultimate overall efficiency as the compounded unit.

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