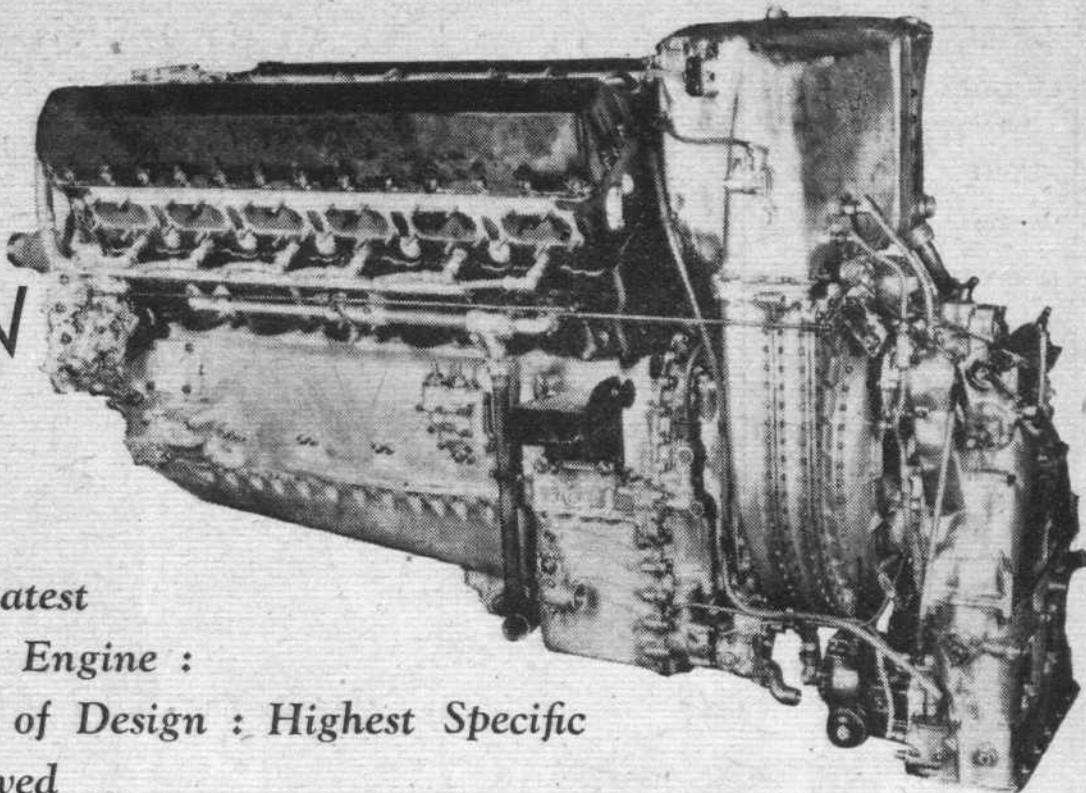


ROLLS-ROYCE GRIFFON (65)



Review of the Latest

Rolls-Royce Piston Engine :

Classic Orthodoxy of Design : Highest Specific Powers Yet Achieved

WHEN confronted with the Rolls-Royce Griffon for the first time, the facile result of an initial rapid appraisal is that the engine is nothing much more than a scaled-up Merlin, and, although there is doubtless a certain amount of justification for this view, it is not wholly accurate. In actual fact, as one's investigations progress, the impression is steadily strengthened that, far from being merely a scale-up of an existing engine, the Griffon is an entirely new engine in its own right. It would, however, probably be pretty accurate to hazard the assumption that the Griffon was born of a desire to redesign the Merlin, eliminating all the snags and, at the same time, increase the capacity to meet the imminent demand for a larger engine whilst retaining the smallest overall dimensions possible.

How well the men of Derby have succeeded in doing what they set out to do may be appreciated in part by a comparison of overall dimensions as between Griffon and Merlin, together with the respective swept volumes and piston areas. In overall length the Griffon 65 is 81in., three inches longer than the 78in. of the equivalent Merlin, the 66; overall heights are respectively, Griffon, 45in., and Merlin, 43.675in., whilst the overall widths are: Griffon

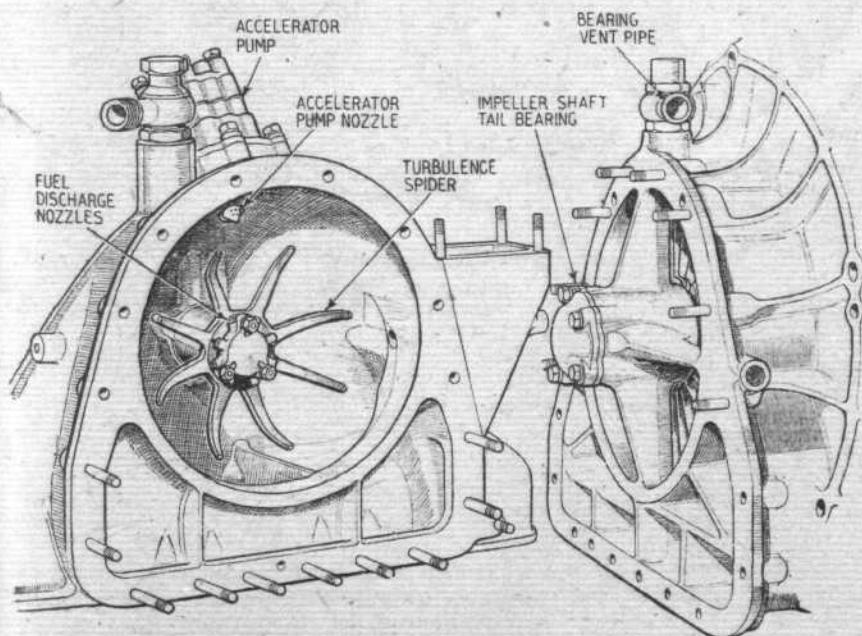
29.5in., and Merlin 29.825in. It would seem well-nigh impossible, on the face of it, that with such similarity of overall dimensions in two engines of the same basic type, the swept volume of one should be 35.9 per cent. larger than that of the other. Such, however, is the case. Piston area of the Griffon is 23 per cent. greater than that of the Merlin, this having been achieved by increasing the cylinder bore to 6.0in.: a figure which is just about verging on the optimum limit.

In view of this one is led to wonder what form the Griffon's successor will take; the useful limit of piston diameter having been reached, one is forced to the conclusion that any larger capacity piston engine that Rolls have in mind to follow the Griffon will, of necessity, have more cylinders. It is an interesting speculation which naturally, and on precedent, takes it for granted that Derby do intend to produce a new and bigger orthodox engine.

Influence of the Racing "Buzzard"

Before going on to deal with the Griffon, a word should be said on the prevalent and somewhat erroneous assumption that the engine is a counterpart of the famous "R" special Buzzard racing engine which secured the Schneider Trophy for England in 1929 and 1931, and established a World's Speed Record. Certainly, the bore and stroke size are the same and so is the fundamental layout of the engine—but there the similarity ends. It can truthfully be said that the lessons learned on the "R" engine have had their influence on all the subsequent Rolls engines, but equally, the knowledge gained in the Merlin has resulted in the refinements which distinguish the Griffon. The one particular feature which the Griffon owes directly to the "R" is the crankshaft, for the amount of development put into this member on the racing engine virtually paved the way towards making the Griffon a success from the very beginning of its life.

It is not, perhaps, generally known that the Griffon was originally developed primarily to meet the Fleet Air Arm's specific needs—low-altitude power, ease of service, reliability, etc. In the early days of



Induction throat to impellers showing turbulence spider with fuel nozzles.