

Yours faithfully,
 Wm. A. CALDER.

Experiences with the "Busy Bee" Engine

DEAR SIR,—Now that my *Busy Bee* engine is finished and running satisfactorily, I feel that I should write to tell you what an interesting job this has been. It has not yet been put on a cycle, since one is not at the moment available, but its behaviour on test leads me to believe that the performance will be up to standard. It is, incidentally, destined as a wedding present, and is going to a place where it will be the only one of its kind. No snags were encountered in construction, and the only real difficulty was with a badly chilled cylinder flange.

Experience with the engine so far has confirmed a suspicion formed when the Bantamag flywheel magneto was delivered, namely that the dimensions of the taper bore in the flywheel hub are somewhat inadequate. The maximum permissible shaft diameter is $\frac{7}{16}$ in. and the taper is also short, whereas the flywheel is $4\frac{5}{16}$ in. diameter and weighs 2 lb. It can be kept secure when the engine is used as a cyclemotor, but the margin is so small that trouble would

THE MODEL ENGINEER

JANUARY 3, 1952

almost certainly occur if the engine was used for, say, driving a lawnmower, and the drive was taken from a pulley bolted to the flywheel. This theory was confirmed when attempts were made to couple up the engine to the S.M.E.E. dynamometer. The flywheel persistently slipped on its shaft under the stress of the drive and it was impossible to take any readings.

The Bantamag is an excellent instrument, but if it was provided with a taper bore of adequate dimensions and had the cam integral with the flywheel it would be a great deal better. Keys could then be dispensed with: Messrs. Villiers, for one, do not use them and in the writer's opinion they are not necessary.

The cutting of the teeth on the driving roller was perhaps the most interesting job, and the methods used were those described by Mr. D. H. Chaddock in his articles on his steam turbine which appeared in *THE MODEL ENGINEER* early in 1951. I found them easy to use and

the results were most satisfactory, the teeth having the correct involute form. A depth of cut of 0.090 in. was found to be about right; in this connection it should be noted that, owing to the variation between the roller diameter and the correct outside diameter of a 18 d.p. 35 T. gear, the teeth are not cut to the full calculated diameter, otherwise they will be pointed. I have all the equipment and I shall be glad to lend it to anyone wishing to borrow it.

The engine is very easy to start and even at the first attempt went off without any trouble. When hot it starts instantly.

In conclusion, I should like to thank Mr. Westbury for a most interesting engine, and to express the hope that in the future there will be more designs for the larger type of engine that can be put to a job of work, together with carburation and ignition equipment for them.

Yours faithfully,
 J. F. HICKIE.
 London, W.2.