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## THE ENFIELD CYCLE COMPANY LIMITED

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HEAD OFFICE AND WORKS  
REDDITCH  
WORCS. ENGLAND

13th November, 1961

Major F.W. Smith  
Major V.T. Mountford  
Mr. V.L. Young  
Mr. J.J. Booker  
Mr. G.H. Baker  
✓ Mr. R.E. Thomas  
File

### REPORT OF DEVELOPMENT WORK IN PROGRESS OCTOBER, 1961

(Sub-Section Nos. refer to Minutes of meeting held on 17th October)

#### 1. Bottom Link Forks

The prototype 'Crusader Super 5' machine has been fitted with a fork having all components machined on the jigs, casquette from the tools, foot pressings flash welded to the main tubes and the latest damper units with modified bump stops and springs to Messrs. Armstrong's drawing. Brake link bushes are Glacier 'DU' material requiring no lubrication. This fork has covered 518 miles including 27 miles on the Pavé at M.I.R.A.. The 'DU' bearings in the break linkage have covered 491 miles including 720 hard applications of front brake during 180 miles on the No. 2. Circuit at M. I.R.A. Mr. Thomas has put a Draughtsman to work on a design for a spindle mounted front mudguard but this is not yet completed.

*Parts in Tool Room*

#### 2. 750 cc Engine

The prototype 750 cc engine with steel ring seals for the cylinder spigots has been run 13½ hours at 3,000 - 4,000 r.p.m. on the test bench. The lubrication appears to be satisfactory.

*Bottom end O' Rings  
tommorow*

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*1/2 larger silencer now  
on the board*

*N.S.U. Silencer for  
perusal*

3. Silencing

The silencer referred to in the first paragraph (with welded front joint, tail piece and centre spool secured solely by self-tapping screws, 'Cosywrap' packing) has been run 419 miles on the '350 CRUSADER'. When examined at this distance, about half the packing had disappeared. This machine has been off the road (see sub-section 5) but the silencer has been run, without packing, on another machine for about a further 100 miles.

A packed silencer, of the old type construction with a centre rod, but with an additional flange half way along the centre spool and using stabbed tubing as well as Cosywrap packing has been used on the crusader Sports ridden by myself. This appeared to be getting noisier. Examination after about 500 miles showed that most of the packing had disappeared from the forward end of the front half of the packed space and also from the rear end of the back half, the remaining packing being concentrated either side of the centre flange.

Messrs. Fibreglass Ltd., have advised us that the improved type cartridge packing they had offered us is still in the experimental stage and is not yet available for test.

4. Five Speed Box (Heavyweight)

This has now been returned by Albions and fitted to the 750 cc machine. The oil thrower which came loose and caused loss of oil is now keyed to the mainshaft.

5. Crusader 750

This has been fitted with the prototype BHB pistons and a plate .040 in. thick beneath the cylinder barrel. This reduces the compression ratio to approximately 7.8 : 1 and prevents the valve hitting the piston. At the same time the cams have been changed for Crusader Sports type.

These modifications have produced a good deal of extra power. The piston was examined after 50 miles running and appeared to be bedding in satisfactorily. 378 miles after fitting the new piston, however, the engine became very rough. Examination showed that the built up flywheel assembly was running out of true up to .007 in. and that the big-end bearing was showing considerable signs of wear. Total mileage at this time was 5,788 miles.

The rear chain was replaced at 5,200 miles having reached the

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5. Crusader 350 (Cont)

limit of its adjustment. Its life could have been extended by removal of one pitch. C.N. Rogers now reports that this was not the original chain as I had understood. When the 350 cc engine unit was fitted, the rear chain on the machine was not changed. A new chain was fitted at 1,194 miles so that the life of this chain was, therefore, 4,006 miles. The original primary chain is still in good condition. The machine has just been fitted with  $\frac{5}{8}$  in. pitch rear chain.

The engine has now been rebuilt with a new connecting rod and big-end and with a bronze steady bush as an outrigger bearing between the drive side ball bearing and the sprocket. The possible need for such a steady bearing had been foreseen when Mr. Thomas prepared the original design of the engine but it was decided to try the engine without it initially.

As reported on 25th October, a third exhaust valve failure occurred at 5,410 miles. Tests showed that this trouble might in part be due to the cylinder head distorting when tightened down. The engine is now fitted with a standard Crusader Sports head which does not distort but necessitates longer holding down studs which must be removed before the head can be lifted off.

Clutches Three experimental clutches with Glacier 'DU' bearing  
Rings are now on test as follows :-

350 Crusader Ml. drum and sprocket with bonded J.17 facings.  
4 pairs loose friction plates with J.17 facings.  
Mileages :- drum, sprocket, centre 2,487  
                    loose friction plates 2,623  
For the last 450 miles this has been fitted with  
14 g. springs, short distance tubes, no washers.

WNP 852 Steel drum and sprocket with bonded J.17 facings.  
3 pairs standard friction plates with cork inserts.  
Mileages :- drum, sprocket, centre 1,317 miles  
(including 136 on 350 Crusader)  
other parts, 1,211

Crusader Sports (Gold Tank)

MI. drum and sprocket with bonded Armstrong facings.  
4 pairs loose friction plates with Armstrong facings.  
665 miles.

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6. Crusader Frame with 'B' Quality side tubes

This has successfully completed 500 miles on the Pavé. The schedules are being altered to change to 'B' quality tubes on a no scrap, no delay basis. No change of Work Number or suffix.

*Adopted*

7. Design of 175 cc Machine

Mr. Thomas has proceeded with this as far as his day to day commitments permit.

*Detailing*

8. Light Alloy Cylinder Barrels

The chrome plated barrel (Ref.B) has covered 3,332 miles.

The molybdenum sprayed barrel (Ref.D) has covered 665 miles.

9. The Scooter

Assembly of the second scooter is waiting for the head lamp and handle bar assembly which has been held up in the Tool Room waiting its turn on the Jig Borer.

10. Batch Tests

A batch test was run on a Super Meteor on October 19th. The following speeds were recorded :-

Std. riding position -	E. 90.37	W. 86.89	Mean 88.63 m.p.h.
Using pillion rests -	E. 88.49	W. 91.34	Mean 89.91 m.p.h.

Petrol Consumption at 45 m.p.h. - 68 m.p.g.

Strong N.W. wind (10-25 m.p.h.) blowing across timing straight.

Rider - N. Buckingham - 2 piece riding suit.

A batch test on a Constellation was run on October 25th. The following speeds were recorded :-

Std. riding position -	E. 107.5	W. 82.11	Mean 94.8 m.p.h.
Using pillion rests -	E. 107.2	W. 87.35	Mean 97.77 "

Petrol Consumption at 45 m.p.h. - 76 m.p.g.

Very strong S.W. wind (30 m.p.h.) blowing down the timing straight, making good mean speeds impossible. It seems, however, that a better E. speed might have been obtained when using pillion rests.

Rider - M. Bowers - Barbour suit.

11. Nylon Idler Gears

The 350 Bullet has been returned by the A .C.U. with the nylon

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11. Nylon Idler Gears (Cont)

idlers in perfect condition. These have been removed prior to disposal of the machine.

12. Sports Airflow Fairing

Nothing to report.

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(R.A. Wilson-Jones)