Manufacturers of Royal Enfield BICYCLES and MOTOR CYCLES

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THE ENFIELD CYCLE COMPANY LIMITED

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MINUTES OF MOTOR CYCLE DEVELOPMENT MEETING HELD

ON THURSDAY, 28th NOVEMBER, 1963

Present: Mr. J. J. Booker
Mr. E. C. Greenwood
Mr. R. A. Wilson-Jones
Mr. R. E. Thomas

Copy: Mr. L. H. Davenport
Major V. T. Mountford

750 cc Interceptor.

Since the Minutes of the last Meeting and subsequent to Major Mountford's visit to America, the decision was made to standardise on magneto ignition with automatic advance and retard, and in view of the insistance of the Americans for maximum performance, the engine is fitted with twin 1 3/16 inch carburettors.

To improve slow running and also to give more stable carburation when cornering the two carburettors are each fitted with a float chamber.

Also a small balance pipe is now fitted between the two inlet ports. Mr. Wilson-Jones has pointed out that this balance pipe as at present fitted is unsatisfactory in so far that it is a straight pipe between the two banjo union attachments and is, therefore, liable to fracture under the heating and cooling of the engine. This is to be taken up with Westwood with a view to their having a slightly longer curved pipe which will absorb any stress.

Tool Box.

At the request of our American distributors the small compact based on our 250 model is standardised on all American machines. In view of the small demand for 6V lighting equipment on the home market the large boxes are still retained on all U.K. Interceptors. The fitting of 12V equipment necessitates in any case the large tool box. It would appear that for next season the standardisation of 12V for U.K. Interceptors would mean that only two compacts are involved.

Con Rod Bolts

Mr. Wilson-Jones has now received the fatigue test results on the bolts from G.K.N. Tests were carried out on bolts from America with the threads rolled after heat treatment and waisted shanks. These have been compared with the standard Unbrako bolts which we have been fitting and also with G.K.N. standard cap screws. G.K.N's figures show that the American bolts were the best, the Unbrako next and G.K.N's were the worst. Mr. Wilson-Jones has sent some of Unbrako's latest bolts which have threads rolled after heat treatment but no waiste. We are awaiting the results of these tests. Engines at the moment are being assembled with the latest Unbrako bolts with threads rolled after heat treatment.

175 cc Machine

Mr. Wilson-Jones mentioned in passing that the two main faults which have been prominent in the 250 machine, i.e. tendency of some units to over oil at high speed and connecting rod failures, had been eliminated in this 175 unit by (1) designing it as a single oil pump system and (2) by the fitting of a steel connecting rod. In the event of any further engines being designed in the future, these alterations should be borne in mind.

It was agreed that all the castings and machined parts should be collected together and stored. Any parts which are common with the 250 machine, e.g. gear parts, could be used for normal production models.

Batch Tests

It is still intended as soon as a 750 Interceptor is available to carry out batch tests, but in the meantime, it is considered desirable that a batch test on a Turbo Twin should be conducted as soon as possible. Particular attention being paid to obtaining an accurate maximum speed and petrol consumption.

250 cc Machine

The specially modified crank case produced for the Oulton Park and Thruxton races and subsequently used in one or two scrambles gave results which are more consistent than any modifications previously carried out and Mr. Thomas and Mr. Booker will look into the possibility of incorporating as many of these modifications, possibly one at a time, in production cases.

With regard to pump discs, reports from American indicate that the modifications made to the drilling of the pump disc did not achieve any substantial reduction in the trouble they have experienced with wet sumping and at the present moment, Mr. Thomas is having a ~~number~~ ONE of discs drilled to figures suggested by Messrs. Cooper Motors. These will be sent to America as soon as possible.

Counter Shaft Sprocket & Nut with Extended Thread

This has been on test for some considerable time and the results are to be examined with a view to immediate modification.

Kick Starter Spindle

The larger diameter spindle is now standard on all 250 cc machines and supplies have been received from Messrs. Albion Engineering. Arrangements have been made by Mr. Thomas that one folding crank is standardised on all 250 and 350 machines.

250 Timing Chain Tensioner

In view of the change of supplier we should make certain that these castings are delivered accurate in every respect. One of the original castings was machined square on the face and was tested for several thousand miles without undue wear taking place.

75 cc Machine

This machine has run approximately 1,000 miles with the Villiers 75 cc engine and the rear suspension appears to be reasonably satisfactory. Any faults such as pitching on rough bends could, it would appear, be eliminated by using a different Shore hardness for the suspension block. Mr. Wilson-Jones is continuing his contact with the patent agents to ensure that we do not approach the production date of this machine and suddenly find ourselves in conflict with any Spencer Moulton patents. In the meantime, the machine is to be run as continuously as possible on the road.

75 cc Engine

Whilst the performance of the engine appears to be good, considerable trouble has been experienced with the clutch and its operation. Also at times gear selection has been uncertain which may, to a certain extent, be due to clutch drag. However, it is intended to run the machine to see if some major fault will develop. It does appear, necessary however, that Villiers should modify the clutch operation so that more travel is allowed on the operating lever. There appears to be in the unit we are using at the moment, some end

float discrepancy because there is considerable noise when the clutch is engaged. This noise disappears when the end float is pushed over to one side when the clutch is lifted.

In view of the considerable sales of the touring type of 50 cc Honda and Susuki machines it is essential that as soon as possible Mr. Thomas proceeds with his design for this version of the 75 cc machine.

On this type of machine a self starter appears to be very desirable. Mr. Thomas mentioned a new Siba type of mechanical self starter (clockwork). It is felt that the desirability of a self starter should be brought to Messrs. Villiers notice immediately.

The question of a self starter for the Turbo Twin engine should also be taken up with Villiers.

Nodular Iron Clutch Centres

The clutch centre on test has now completed 1000 miles and appears in excellent condition, better in fact that the steel centre would have been under similar conditions. It is, therefore, agreed that the nodular clutch centres should be adopted on 250 cc machines and future orders will be in this material.

Smaller Diameter Valve Sets

Sets of parts have been received from the tool room and these valves are now running in machines. Messrs. Motor Components have told Mr. Davenport that the design of the valve at presetfitted to our 250 machines is extremely expensive and we should make a saving by conforming more to their standard design. A visit of their representative is awaited and it is possible that the results of the above test can be taken into account when the visit is made. In view of the possibility of fitting a more standard type of valve, tests are to be carried out at Messrs. Amals with our existing inlet valve and a valve having a smaller underhead radius &o ascertain the effect on flow.

Morse Chains - Primary and Rear

These are now to be fitted as standard on 250 cc machines.

250 Scramble Machine

This machine was designed with the leading link fork having tubular front swinging arm continuing round the front wheel. It was arranged to give approximately 1¼ inch more wheel movement than the standard leading link. When run the machine was fitted with 250 Crusader Sports engine. This was reasonably successful, but lacked power at the lower end of the speed range. The machine has now been fitted with a Villiers "Starmaker" engine and is at the present time in the hands of Mr. Bill Gwyne who is preparing it for a scramble next Saturday, the 30th November. He is pleased with the performance of the engine.

250 cc Cam Shafts

It has been agreed that the sports type cam shaft will be standardised on all 250 cc machines.

350 Bullet

In view of the unsatisfactory results obtained from the Automotive Products 350 Piston, it is agreed that a modified Hepworth & Grandage type piston will be fitted to this model.

Side Lamps on Models using Cast Aluminium Casquettes

Arrangements have been made for the deletion of the side lamps to take effect as soon as possible. This will be for 250 and 350 models early in the New Year and Interceptors about mid-season.

Front Fork Springs - Interceptor Model

In view of complaints from America it is decided that the weaker fork spring, i.e. 30-35 lb, will be fitted on U.S. Interceptors instead of the 45-50 lb spring which has been standard up until now.

Cast Aluminium Alloy Tool Box

The costs of changing to the above instead of pressed steel have been investigated and it appears that these would be prohibitive.

Not decided - awaiting reply of tests from America