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Minutes of the Motorcycle Development Meeting
held on May 9th, 1961.

Present:- Major V.T. Mountford
Mr. J.J. Booker
Mr. R.A. Wilson-Jones
✓ Mr. R. Thomas

Matters arising:-

1.- Silencing:-

Action has been taken to fit a copper asbestos washer to the silencers as soon as the stocks of rubber washers have been exhausted. In the meantime, the woven asbestos rings have been proved satisfactory, a quotation for these is awaited. No further action is to be taken with regard to rubber rings.

The results of tests of the brazed up silencer on the 750 cc machine are awaited.

2.- New Fork Head Clip:-

* In abeyance - subject to using existing stocks of casquettes. Mr. Thomas is to arrange for Mr. Freeman to keep a check on existing stocks of casquettes.

3.- Pressed Steel Fork Head for Leading Link Fork:-

* Samples of pressings have been received from Messrs. Elms Metals on the 8/5/61. The pattern for the ball head is expected during the present week when a bronze casting and three or four malleable iron ones will be taken. In view of the fact that delivery of malleable castings is in the region of two months, the approval and testing of this component are to be treated as a matter of extreme urgency.

4.- Lubrication on 700 cc Engines:-

The 750 cc engine has been run on the bench with all the latest modifications, except that the pump spindle was not pegged, and also that the breather balance hole between the timing cover and the

crankcase was stopped up.

The first set of runs was satisfactory, and indicated that the system was functioning better. The second test was not so satisfactory, and during the third test the engine seized, and it was found on dismantling that the pump worm and the teeth on the spindle had disintegrated due presumably to lack of oil. This was at first thought to be due to the fact that the drain hole to the sump was as low as possible in the timing cover thus preventing any build up of oil. However, it is not altogether certain that this is the case; it is possible that insufficient oil reaches the case when the breather balance hole is stopped up - the amount of oil reaching the timing cover being entirely dependent on the clearance between the cylinder barrel spigots and the crankcase.

The engine is being rebuilt with the oil drain hole level in the timing cover raised so that sufficient oil is retained to lubricate the pump worm. During these tests the plug which stopped the breather balance hole is to be removed.

It is suggested that some effort should be made to seal off the cam tunnels from the crankcase to ensure that all the oil fed into the cam tunnels is drained into the timing cover, or alternatively to revise the lubrication system so that the cam tunnels are open to the crankcase, which should ensure sufficient lubrication to the cams and tappets. At the same time the tappet guides would need modifying so that the oil drainage groove in the tappet guide is not continued down the full length, and the termination of the groove would then meet up with (a) on the driving side two holes drilled to connect with the present outside breather and pipe, which would return oil direct to the tank; (b) on the timing cover side with holes which would drain oil into the timing cover. This oil would then be returned via the new drilling direct to the sump.

5.- Cross Cylinders and Pistons:-

It was agreed that the matter of the Cross pistons and alloy cylinders should not receive the same urgency as they had hitherto.

6.- Pistons for 250 cc Super Sports:-

The question of the production of the 10 - 1 compression ratio piston for this machine was discussed. Mr. Wilson-Jones, who has been in touch with Messrs. Hepworth and Grandage said that they have pointed out that the Constellation dies would require a slight alteration to the core to ensure sufficient thickness under the valve cutaway. In view of the fact that the 250 cc Super Sports machine is

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5.- Cross Cylinders and Pistons:-

It was noted that the matter of the cross pistons and alloy cylinders should not receive the same urgency as they had hitherto.

6.- Pistons for 250 cc Super Sports:-

The question of the production of the 10 - 1 compression ratio piston for this machine was discussed. Mr. Wilson-Jones, who has been in touch with Messrs. Heworth and Grandage said that they have pointed out that the Castrol oil dies would require a slight alteration to the core to ensure sufficient thickness under the valve outways. In view of the fact that the 250 cc Super Sports machine is

already running about with a Constellation piston modified to accommodate the 250 cc valve - the crown of which must be at least .040 ins. thinner than the proposed piston - it was agreed that this machine should be taken to M.I.R.A. and driven at full throttle for a period on the outer circuit to confirm or otherwise that there is sufficient metal under the valve cutaway. Messrs. Hepworth and Grandage said that $\frac{1}{8}$ - $\frac{7}{64}$ " is not sufficient metal in the crown of the piston.

7.- Chrome Plated Cylinder Bores:-

Action was taken to make available the cylinders to be sent to Messrs. Monochrome. Contrary to the decision taken at the last Meeting, and by reason of the comments contained in Paragraph 7 of Mr. Wilson-Jones' last report, it was decided to have some barrels sprayed with molybdenum (Methods A & B - one of each).

8.- Slotted Clutch Plates:-

A report was awaited from the Service Department regarding the slotted clutch plates fitted to the works sidecar outfit. Mr. C.A.E. Booker is arranging for some others to be sent to customers. It was also suggested that at a later date the clutch is to be tried with the slotted plates so arranged that the slots are running in varying directions.

9.- Oil Filter on 250 cc machines:-

× Delivery of the nylon filters are due in approximately another four weeks. A sample of the filter has been received and approved and arrangements have been made to machine these as and when required. Mr. Thomas will ensure that before we take quantity deliveries of the filter element we have a limited number for test and approval.

10.- Batch Tests:-

It was agreed that the next machines to be batch tested are to be the Meteor Minor Sports and a Crusader Sports.

11.- Reynolds 250 cc Frame:-

Nothing further to report. Mr. Thomas suggested that a standard frame should be built with B quality rear side tubes, and it was agreed that such a frame should be built and tested.

12.- Nylon Roller Cage:-

It was reported by the Buying Office that delivery was expected of quantities within the next seven days.

13.- Five Speed Gear Box:-

It was decided that the five speed gearbox should only be offered as an optional extra on the 750 cc machines - as this model will be of 750 cc capacity it was agreed that a set of gears with coarse pitch teeth on the high pinion should be obtained for these.

14.- The Scooter:-

Mr. Booker reported that having had a ride on the Scooter -

- 1.- The vibration is in excess of what might be expected.
- 2.- The suspension both front and rear, predominantly rear, is not satisfactory with the grade of rubber at present fitted. It was too weak, and somewhat stronger suspension is indicated.
- 3.- The steering is not satisfactory - varying degrees of trail should be tried.
- 4.- The handlebar gear change, which has now been fitted with return springs, which are only just strong enough to return the assembly to the neutral position, is too hard to operate. Whilst it is possible to engage all the gears it cannot be considered a marketable proposition. It was also suggested that a foot change should be investigated, and that gear operation of the "straight through" type should be tried.

With regard to the vibration; it was suggested that any modification to balance should be held in abeyance until the second machine is built, which will have a different grade of rubber for the suspension as it is felt that this might be beneficial from the point of view of vibration. Mr. Welsher is obtaining a suspension unit with a different grade of rubber for the second machine. Mr. Wilson-Jones is to contact Zenith Carburettors to obtain a range of jets etc.

15.- Bottom Link Front Forks:-

These are to be put back into the machine from which they were taken in order to test the bonded rubber link forks, and the new setting of the Armstrong dampers is to be tested on the road as soon

as possible. In view of the protracted delivery of forgings, it is emphasised that the placing of orders etc. is to be treated as urgent.

16.- 350 cc Crusader Engine:-

* The results of this machine have so far been extremely satisfactory, except for the two clutch failures noted in Mr. Wilson-Jones' separate report. The possibility of fitting an extra clutch plate is being investigated by Mr. Thomas. In the meantime slotted plates have been fitted, and Mr. Wilson-Jones is to get some lighter springs - also some plates with J.17 friction lining. IT IS MOST IMPORTANT that the mileage on this machine is increased. It is visualised that this machine might replace the 350 cc Clipper and 350 cc Bullet, and a decision must be taken at the earliest opportunity in view of future sanctions.

* 17.- 175 cc Engine:-

After some discussion it was agreed that Mr. Thomas should devote himself solely for the time being to the design of the OHV push rod engine.

When circumstances permit, the design of an overhead camshaft type is to be carried out.

18.- Bottom Link Forks with Bonded Rubber Suspension:-

No further progress on the bonded rubber front forks is to be made for the time being.

19.- Siba Self Starter:-

Mr. Wilson-Jones is to arrange for two Police type batteries to be fitted to the 250 cc machine.