"THE TRADER" REPAIRERS' SUPPLEMENT—14

THE AR STURMEY-ARCHER HUB

This week, instead of our "Costed Cycle Repairs," we include a selection of service hints of general interest which have been contributed by manufacturers and retailers

IN our Service Supplements Nos. 10 and 12 we have dealt fairly exhaustively with the old K type Sturmey-Archer hub and with the AW and AM hubs which are the wide and medium ratio hubs in the latest Sturmey-Archer range.

For the enthusiastic clubman, however, there is the AR hub, and this is selling in such numbers that we have been compelled to include some notes regarding its maintenance in this series although as yet unable to include it in our "Costed Cycle Repairs" series.

The information contained in the following article has been specially prepared for us by the Service Department of Sturmey-Archer Gears, Ltd., to whom we are indebted for the information.

COG AND DRIVER

This hub provides very close ratios which are specially suited for racing and competition purposes.

The splined-fitting driver and sprocket mentioned in a previous "Trader" Supplement with regard to the AM type hub are fitted as standard to all AR hubs. The special right-hand ball ring with ball retainer and single dust cap are only necessary with 14- and 15-tooth sprockets owing to the small diameter of these sprockets. With 16-tooth and larger sprockets always use the standard right-hand ball ring which uses loose $\frac{3}{16}$in. diam. balls and two steel dust caps, as this affords much better protection against the entrance of dirt and water. When the small sprockets are used, it should be stressed to the customer that special attention to lubrication is desirable, and the use of a good quality oil is also very essential in such cases.

PLANET CAGE ASSEMBLY

The planet cage assembly in these hubs is rather more complicated than in the other types, and where it is found necessary to dismantle this part of the hub two special spanners will be necessary. There are two trains of gears which are inter-coupled. The gear ring meshes with the planets in the planet cage proper, but a second left-hand gear ring is screwed to this planet cage, and this left-hand gear ring carries pawls providing the usual low-gear drive to the left-hand ball cup. The intermediate planet cage, which meshes with the left-hand gear ring, is extended in the form of a sleeve along the axle and on this sleeve is cut the sun pinion for the primary train of gears. The sun pinion of the intermediate train is solid with the axle.

HOW THE GEARS WORK

The drive on high gear is from the sliding clutch to the planet cage in the usual way. Thus the left-hand gear ring drives the intermediate planet cage, and consequently the sun pinion of the primary train, at a slower rate. It is because this sun pinion is caused to revolve in this way that only a small increase in speed is transmitted by the pinions in the main planet cage to the gear ring, which drives the wheel by means of the gear ring pawls and the right-hand ball ring. Middle gear is direct drive from sliding clutch to gear ring and right-hand ball ring, and low gear reverses the high gear action, as is usual with the Sturmey-Archer design.

DISMANTLING

This hub is dismantled in similar manner to the AW type (see "Trader" Repairers' Supplement No. 12) until the planet cage assembly has been removed as a unit from the axle. Then pull out the planet spindles and examine for wear the ends which project to form driving dogs for the high gear. The four planet pinions will then drop out.

The special holding block DD.4976 is now required. Fix this in the vice and place the planet cage over the pegs, then unscrew the lock ring which secures the left-hand gear ring. This has a left-hand thread and is provided with two small holes for punching it round, but be careful not to damage the thread beneath in this process. Now use the peg spanner DD.4977 to unscrew the left-hand gear ring from the planet cage. This has a right-hand thread. The pawl spindles in the left-hand gear ring are punched over on the inside to secure them in position, but it is not a difficult matter to knock them out if necessary in order to renew the springs or change the pawls. These pawls are reversible, so that they can be turned round unless the nose at both ends is worn, when new pawls will be required. Both pawls should be reversed at the same time to ensure even pressure when driving.

The intermediate planet cage can next be lifted from the main planet cage and the planet spindles and three planet pinions removed. These pinions are identical with those in the main planet cage, and it is immaterial which of the sets are replaced in this position. A thin steel washer will be found between the two planet cages. This is to keep the two sets of pinion spindles apart, and fits over the sun pinion end of the inner planet cage. Care must be taken not to trap this washer when re-assembling.

This completes dismantling, and the parts can now be cleaned and examined before commencing re-assembly. The two special tools are obtainable from the factory.

REASSEMBLING

First, fit the main planet cage and the intermediate planet cage together with the steel shim washer between, and fix the main cage down over the pegs of the holding block in the vice. Fit the three pinions to the intermediate planet cage. Fit the pawls in the left-hand gear ring, taking care that they are the right way up and facing the correct direction, and screw this to the main planet cage, using the special peg spanner. Lift the assembly off the holding block and fit the lock ring, replacing on the block to enable the lock ring to be punched tight. Remove from block and turn over to fit the planets in the main cage Make sure the projections on the pinion spindles are in good condition. Then slide the complete assembly over the axle.

The rest of the assembly is exactly the same as described for the AW hub.

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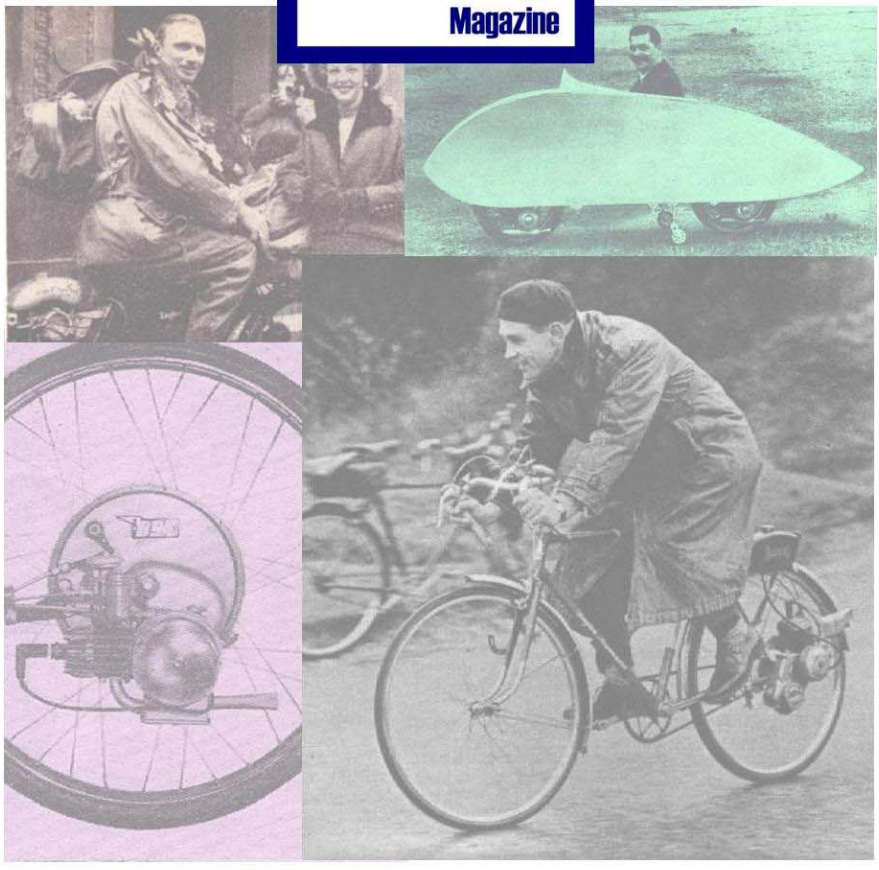

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