minium cups either side of the Metalastik bushes. These aluminium cups should now be removed by knocking out with a piece of ¼in. dia. rod placed through the bolt hole. Once one cup has been removed from either side, it is a simple matter to remove the remaining ones.

It will be noticed that the outside pair of clamping cups have been pinned into the housing of the Metalastik bush by two pins, which should be removed and kept for re-assembly. The bottom loop is now free to be removed. To re-assemble, offer up the bottom loop and fix into position the four clamping cups, making sure that the drilled cups are on the outside of the legs. Insert the two bolts (the long bolt and spacer on the offside) but tighten them only lightly so that the pinning angle can be set. This angle allows the correct amount of pre-load to be applied to the bushes and is correct when the centre distance between the two fixing points of the damper unit is 11¼in. Having set the angle tighten up the clamp bolts, this will hold the loop in position while the four pin holes are being drilled. Using a No. 15 drill, drill through the existing holes in the outer clamping cups into the housing for a depth of ¼in. Replace the four pins and bolt up the damper bottom fixings. As the 11¼in. given is greater than the extended dimension of the damper it will be found necessary to force the loop round until the bolts can be inserted.

Frame

The frame will not require any attention unless it has been involved in an accident, in which case it should be inspected very carefully and checked for wheel alignment. If the frame is damaged or distorted it should be returned to the Works for rectification.

Handlebar Adjustment

To adjust the position of the handlebars, slacken the "Allen" cap screws with the key provided, whilst holding the nuts with a spanner under the crown plate. Rotate bars to required position and clamp up.

Alternative Fitting of Dual Seat or Saddle

The dual seat (Scrambler pattern) and saddle are interchangeable on the following models :

20TA, 20SA, 20SA Special and 25SA

and either can be supplied on request from the Works Spares Department. Prices on application.

Control Cables

Control cables are far too often sadly neglected to the stage where they become harsh in operation and prevent the rider from having the fine control over his machine necessary for competition riding. To prevent this, the cables should be periodically removed from the machine, hung up and a light oil allowed to run down inside the cable. A tip here is to form a cup in plasticine around the top of the suspended cable to form a reservoir.

Water Proofing

It is most important before using the machine in competition, to prepare the engine in such a way that water will not enter the contact points or the carburettor.

Upon removal of the contact points cover, it will be seen that the high tension cable passes through a rectangular hole. This hole allows water which has entered the cover from other points to flow in, causing an electrical short and the engine to stop. Therefore the hole must be sealed around the cable to prevent this and we recommend Sealastik for this purpose. The seating of the cover plate should also be treated with Sealastik, and this will enable the compartment to be made water-tight when the cover is replaced. It is important to note that the cover should be removed frequently, and any condensation formed due to the sealing up, dried out.

The problem of preventing water and mud entering the carburettor is one that is tackled in many ingenious ways, and the actual method employed is rather dependent upon the facilities available. The comparatively small amount of time necessary to prepare the water-proofing may mean the difference between winning or losing.

Tyre Pressures

Competition Use

Tyre pressures used in competition will vary considerably from one type of terrain to another. We are therefore unable to offer general advice on this subject.

Road Use 20TA

We recommend the following pressures :

FRONT 18 lbs. per sq. in. REAR 16 lbs. per sq. in.

Alternative Rear Wheel Sprockets

The following alternative rear wheel sprockets are available for competition machines. Prices available from the Works upon application.

Alternative Overall Gear Ratios

Sprocket	MODEL	1st	2nd	3rd	4th
52 Tooth	20TA	26.8	17.89	9.99	7.45
	20SA	21.9	13.3	9.47	7.45
	25SA	21.382	13.276	9.258	6.987
54 Tooth	20TA	27.9	18.6	10.37	7.74
	20SA	22.76	13.78	9.83	7.74
	25SA	22.2	13.79	9.61	7.256
56 Tooth	20TA	28.9	19.27	10.76	8.03
	20SA	23.61	14.29	10.2	8.03
	25SA	23.026	14.297	9.97	7.525
60 Tooth	20TA	30.96	20.64	11.52	8.6
	20SA	25.28	15.3	10.92	8.6
	25SA	24.67	15.32	10.683	8.06

Notes on Hawkstone Special

Carburettor — Amal Monobloc Type 376 1⅛" bore. Standard Setting—Number 280 Main Jet, No. 3 Slide. Depending upon prevailing conditions it may be found necessary to fit either a larger or smaller main jet. Air Filter — The Garda Air Filter should be removed after every meeting and thoroughly cleansed with petrol.

Dope Conversion

A Conversion kit for "dope" (Alcohol fuels) is available, details of which can be obtained from the Competition Department.

Tintera Press 315 Westborough Road, Westcliff-on-Sea.

GREEVES MOTORCYCLES

SERVICE NOTES for COMPETITION MODELS

CHURCH ROAD, THUNDERSLEY, ESSEX

TELEPHONE : SOUTH BENFLEET 2761 (3 lines)

Service Notes

Running In

The running-in period is really the most important time in the life of the engine, and the handling you give it during the first 1,000 miles will determine what sort of service it is going to give you later.

The Importance of Using the Correct Lubricating Oil

Self-mix or S.A.E. 30 oils are only suitable for light road use. For competition use we strongly recommend an S.A.E. 50 oil and our own preference is for Shell "2T" at a ratio of 16 : 1 / 20 : 1 or Filtrate Colloidal two stroke oil (graphited) at 24 : 1 / 32 : 1 (½ pint to 2 galls.) when the engine is fully run-in.

The Villiers handbook supplied with your machine will assist you in maintaining and servicing the power unit.

Gear Change Lever

Due to footrest design the gear lever on the 20TA has been shortened and reversed, thus 1st gear is obtained by depressing the lever downwards. 2nd, 3rd and 4th gears are engaged by lifting the lever upwards. Stiffness in changing may occur for the first few hundred miles but this will ease as the gear box becomes run-in.

Wheels

All Greeves competition machines are fitted with sealed and grease packed ball journal wheel bearings. They will not require greasing throughout their life.

To Remove Wheel Bearings from Either Wheel

Having removed the back plate, drive the spindle out with a copper or hide mallet. One bearing will remain in its housing and can be removed by tapping from the opposite side of the hub with a short length of rod. When assembling, care should be taken to see that any packing shims are replaced and that the various spacers are correctly placed.

Wheel Alignment

It is advisable to check the wheel alignment whenever the chain is adjusted or the rear wheel removed from the frame. Alignment can be checked by glancing along the wheels from front to rear when the front wheel is set straight.

Security Bolts

Security bolts are fitted to all competition machines to prevent tyre creep. It is important that when re-fitting tyres the security bolts are correctly positioned. This operation is clearly illustrated in the Dunlop booklet supplied with the machine.

Rear Wheel Removal

Undo speedometer cable at the backplate connection, remove chain connecting link and free the chain; disconnect rear brake rod by unscrewing the knurled adjuster, remove torque arm securing bolt. The wheel can now be removed from the frame by slackening the wheel nuts. When replacing the rear wheel great care should be taken

to ensure that the torque arm securing bolt is replaced as serious damage will result if the machine is ridden without it.

The torque arm should not be bolted up finally until the chain is fitted and the wheel aligned and bolted in position.

Chain Adjustment

The chain should be adjusted to a total up and down movement of ½in. in the tightest position. This position can be found by compressing the rear suspension whilst rotating the wheel and feeling the tension of the chain.

Care of the Driving Chain

Driving chains fitted to competition machines are destined for a very hard life, but their life can be extended by regular removal, cleaning in paraffin and lubricating with one of the many chain lubricants. Note : The spring fastener must be fitted with the closed end facing the forward direction of travel. When it becomes necessary to replace the final driving chain, a check should be made to see that the engine and the rear wheel sprockets are in good condition and have not become hooked. It is uneconomic in the long run to fit a new chain to worn sprocket as its life will be greatly reduced.

Front Wheel Removal

Remove the front brake cable at the backplate end by pulling out the split pin from the shackle clevis pin. It will now be possible to unscrew the adjuster screw locking nuts and free the cable from the wheel. Unscrew spindle nuts and remove wheel keeper plates. The wheel is now free to be removed. Care should be taken upon replacement to ensure that the torque arm stop is correctly positioned in the slot of the torque arm.

To Remove Front Fork Dampers

It is possible to remove the Girling fork dampers without the necessity of removing the fork loop, if the following instructions are followed. Release the front wheel as previously described and withdraw both top and bottom damper fixing bolts. The top fixing bolts pass through the fork leg. Place a stout piece of wood across the top edge of the loop plates directly over the spindle slots, another piece, say a 3ft. length of 2in. x 2in., should be laid on top of this and under the bent tube at the back of the loop. Using this lever it will be possible to turn the loop downwards and release the damper units.

Steering Head Adjustment

The steering head bearing consists of two sets of 17 steel balls ¼in. dia. running in hardened race tracks. To test for slackness, raise the front wheel off the ground by packing under the engine plates and eliminate any fore and aft movement of the fork as follows :

Slacken the two bolts at the top of the fork legs and strike them a light blow downwards, this will free the tapered locking discs in the fork legs and allow the crown plate to move. Slacken the locking nut under the bottom crown plate and adjust the bearings by turning the head of the bolt clockwise until the slackness is removed. Care should be taken not to overtighten or the steering will be stiff.

Engine Removal

Removal of the engine from the frame is a straightforward job and should present no difficulties if the following instructions are followed. Disconnect exhaust pipe, chain, throttle, clutch and decompressor cables. Removal of the carburettor is advisable to prevent its accidental damage. To do this it is necessary to remove the air

filter. The rear engine fix is a stud with a self-locking nut either side of the cradle. Both nuts must be removed before the stud can be drawn out through the holes provided in the flywheel cover casting. This done, the two remaining bolts in the front and bottom fixings can be withdrawn and the engine lifted from the cradle. This operation will be eased by loosening the bolts fixing the engine cradles to the frame. Remember to retighten.

Exhaust Silencer

To facilitate cleaning, the centre section of the silencer can be withdrawn by removing the small nut and bolt at the extreme end of the silencer.

Rear Suspension

The swinging arm is pivoted on "Metalastik" rubber bushes which require no lubrication whatsoever.

The Armstrong hydraulically damped rear units are of the sealed pattern and do not require topping up. The springs can be inspected or replaced by removing the top fixing bolts to the frame and compressing the unit by hand, thus releasing the split collet. With the collets removed the cover and spring can be withdrawn. To prolong the life of the units when scrambling or trials riding the units can be covered by a rubber sleeve or piece of inner tube to prevent sand and mud from entering them.

The spring rating of the unit supplied as original equipment has been carefully selected to provide the maximum road holding and comfort under normal loads. Should you feel that a heavier spring would be more suited to your personal requirements, these can be obtained from the Works, price on application.

Front Suspension

Metalastik rubber bushes are used in torsion as the suspension medium for the Greeves front fork. The assembly is hydraulically damped by a Girling damper unit fitted inside each leg. The rubber bushes are virtually indestructible under normal conditions, but, should the occasion arise that a new set is required either the complete fork or the bottom loop only should be returned to :

Service Department,
Greeves Motor Cycles,
Church Road,
Thundersley,
Essex.

Your name and address must be clearly marked in at least two places on the packing and a letter, under separate cover, giving full instructions for the work to be carried out must be forwarded to the above address.

If the repair is claimed under guarantee it is essential that the date of purchase and frame number are included. Attention to these details will prevent delay and enable us to give you satisfaction and speedy service.

Removal of Bottom Loop

As the bushes are originally pressed into their housing under a screw press, it will be necessary for the repairer requiring replacement bushes to remove the bottom loop containing the bushes and return it to the Works Service Department. Instruction for bush replacement must be accompanied by model type and year of manufacture.

To Remove Loop

Remove front wheel. Remove the bottom fixing bolts of the Girling dampers. Remove the two bolts which clamp up the alu-