

Moto-cross with the Matchless

by DAVE CURTIS



ONE thing I was always told in my novitiate—and now I know it to be very true—was that races could be lost or won on preparation alone. Today I can confidently state that if a rider has any ambition he must spend many hours preparing his machine. And he must be physically fit.

My contemporaries, writing in earlier Souvenirs of this series, have covered the basic points of machine and rider preparation. These are equally applicable to the 500 c.c. Matchless scrambler, and I do not intend to go over the same ground. However, it may be useful to list a few personal fads that have stood me in good stead.

I always wear a body-belt. My gloves are of soft leather, or even chamois, and have no thick interior seams on which the hands can rub as they grasp the grips.

Goggles are very necessary, of course, especially if the circuit is dry and dusty; but if it is muddy or has a lot of water on it I find a peak to the helmet much more suitable. The peak must not be too low, or the rider will get a stiff neck through peering under it.

As scrambling is a really strenuous sport, with attendant risk, I consider it essential to supplement the compulsory personal accident insurance, particularly if a man has family responsibilities.

Although I think that the British custom of dead-engine starts is wrong, the fact remains that most races begin in this way and thus test the starting ability of the machine as well as its primary quality—going power. Therefore it is essential to get the motor in action at the first kick. I have experimented to find the best crank position and throttle setting for starting, and have taught myself to "leap six feet in the air to give a good hefty kick." Of course the G80CS does not actually need vigorous kickstarting, but in a race one good and certain kick is better than two feeble ones; in the excitement as the flag falls, it is so easy just to push the kickstarter down—and bang goes a couple of precious seconds.

Once the machine is started, it only remains to ride it. The 500 c.c. Matchless is very fast and in a scramble it isn't hard for it to gain control of the rider! There is no need to use all the r.p.m., because it pulls very well low down, but the revs are there if they are wanted. As an example, consider two bends, both taken in second gear, separated by a nominal third-cog straight. If the sprint section is short enough, a moment or so can be saved by squirting the Matchless along in second on full throttle.

It should go without saying that when I "anchor up" I use both brakes together for maximum retardation. However, I stress the point because—dare I confess it?—it was only two years ago that I started using the front

CONTINUED ON BACK PAGE

Page One

MOTOR CYCLING'S

SPORTS MACHINE SOUVENIR No. 8

The Matchless Scramblers

A POST-WAR HISTORY

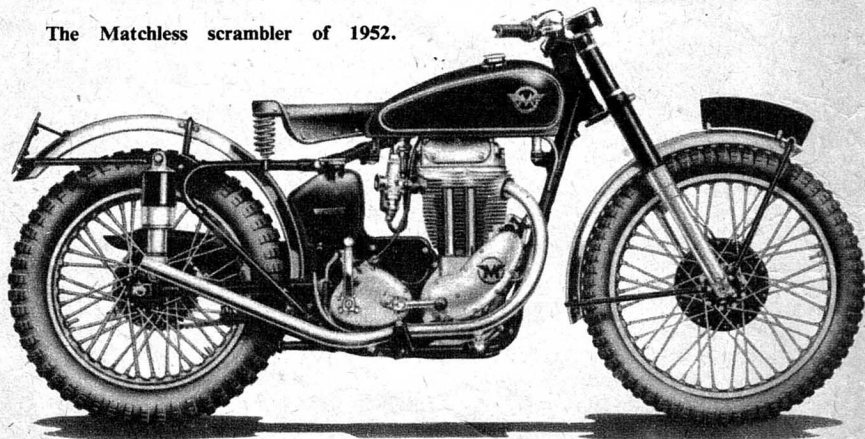
MATCHLESS scrambles history in the post-war era naturally began with the conversion of the Teledraulic-forked "rigid" ex-W.D. machines. These were, of course, "350s" and they were soon followed by scrambler versions of the 500 c.c. civilian motorcycles. During this early period, conversions were done by private owners until such time as "ready-mades" were catalogued. The Matchless engines of those days were all-iron, but later an alloy head was fitted.

With the all-alloy engine introduced for the 1950 season came the Matchless swinging-fork rear suspension though, at that time, both innovations were not listed for the same model. The 50-G80S was the springer version and the 50-G80C the competition job; the latter had a wheelbase one inch shorter than standard, detachable lights and low-level exhaust system. A characteristic of the all-alloy engine of that era, in contrast with today's, was external push-rod tubes.

However, for the 1953 season an all-sprung all-alloy scrambler was introduced with the suffix "CS" for competition springer, and this soon made a name for itself. The following year the motor was made more potent by the use of racing cams and a high-compression piston; full-width hubs were fitted and there was a new frame.

An entirely new moto-cross machine was catalogued for the 1956 season and was on sale, over the counter, to the general public.

The Matchless scrambler of 1952.



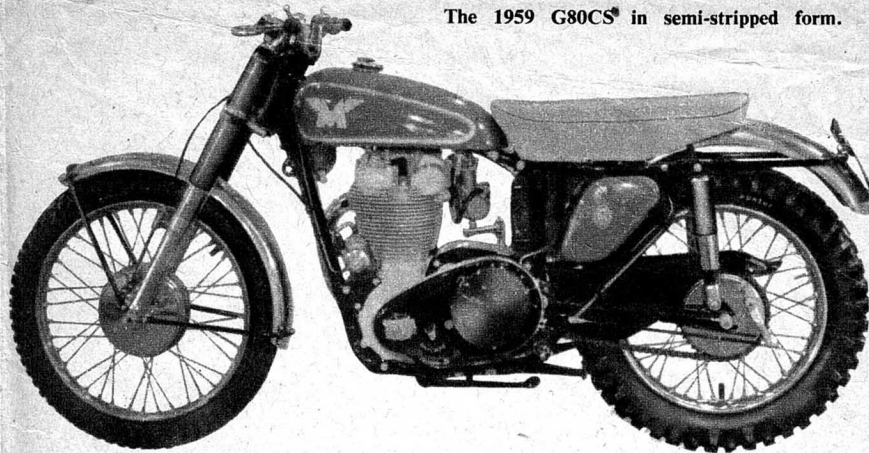
An 85.5 mm.-stroke engine was installed; it had steel flywheels, a large-diameter, two-piece racing crankpin and a special con-rod. Two ball races were used on the drive side, as hitherto, but the timing side's plain bronze bush was supplemented by a caged roller bearing; to accommodate this additional support, the timing-side crankcase casting was modified and the cases stiffened generally at the same time to cope with the extra power. Racing high-lift cams were specified, with special cam followers; these followers were later modified for 1957 so that owners would not be obliged to use only "R" oils.

The frame for the new machine was basically to existing design, except for the use of malleable lugs instead of trapped tubes at the sub-frame attachment points. Both the Teledraulic forks and the "jam-pots" were fitted with stronger springs and heavier damping. The straight spokes, evolved as a result of racing experience, were retained, having proved very satisfactory.

Detail points included the use of a 1 1/8-in. Amal "Monobloc" carburetter, an 8.7-c.r. piston and a side sparking plug; the gearbox at that time was the Burman with wide ratios.

For 1957 an entirely new frame was produced, with the rear loop integral with the engine cradle. It carried the new gearbox of A.M.C.'s own make; special steel was used for the internals. Alterations for 1958 also were few but important. The frame main member was stiffened by the use of thicker

The 1959 G80CS⁸ in semi-stripped form.



gauge h.t. tubing; the plug was moved to the centre of the head and fired through a slot between the valve seats.

A series of useful modifications is being implemented for the coming year. The frame is to be strengthened by thickening the steering-head casting and incorporating a fillet. Engine improvements are legion. For example, the inlet valve stem is being reduced in diameter to 1/8-in., with the necessary mods. to the valve gear. Seats are now to be dovetailed in place, instead of being retained in the alloy, which is poured completely eliminate any tendency to loosen.

Largely for use on the short circuits and fast scrambles courses of America—which permit high r.p.m. to be maintained—a speed kit is being marketed. Special cams, followers, push-rods, valve springs, a carburetter spacer and a small megaphone are to be available. When these are used in conjunction with a 1 1/8-in. bore Amal G.P. carburetter and an exhaust pipe of the correct dimensions, the claimed maximum output is increased by over 20 per cent to more than 40 b.h.p. In this trim, the Matchless G80CS will undoubtedly be one of the quickest 500 c.c. push-rod singles marketed today.

The Men Behind the G80CS

CHARLIE SMITH

THE man responsible for the design of the cycle parts of the current Matchless G80CS, Charlie Smith, is a well-built six-footer who has spent all his 40 years in his birthplace of Woolwich. He went to the



A.M.C.'s chief designer, Phil Walker (left), responsible for the G80CS motor, and Charlie Smith, who designed the cycle parts.



Matchless factory in 1932 at the age of 14 and started in the drawing office under the late Harry Collier.

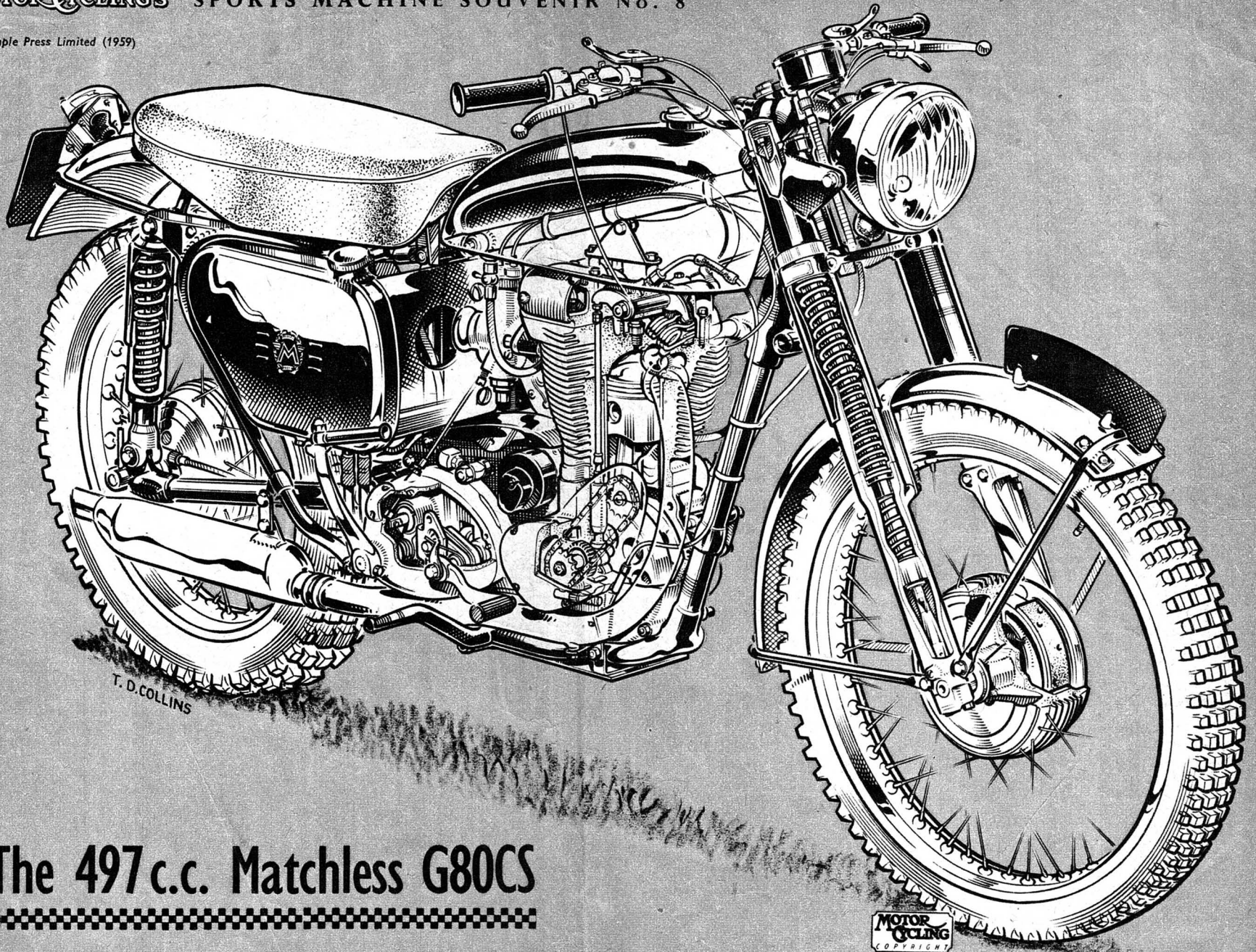
Smith has remained in the drawing office ever since, though in recent years he has moved into a special section, under Phil Walker, which is devoted to new projects.

His hobbies are motorcycling, music and reading. But the first of these is more than just a hobby, for his machine—a Matchless, of course—is also a means of transport; he rides it daily to and from his home at Sidcup. And since he was so intimately involved in the design of the latest Matchless, the "250," what more natural than that this should be his mount?

PHIL WALKER

THE designer of the Matchless G80CS motor, Phil Walker, is a quiet-spoken (Continued on page Six)

© Temple Press Limited (1959)



The 497 c.c. Matchless G80CS



MOTORCYCLING
COPYRIGHT

THE MATCHLESS G80CS BRIEF SPECIFICATION

Engine: 497 c.c. single-cylinder four-stroke; 86 mm. bore by 85.5 mm. stroke; built-up crankshaft with caged, single-row roller big-end and steel connecting-rod with plain small-end; solid-skirt silicon-aluminium-alloy piston with twin compression and single scraper rings; c.r., 8.7 : 1; light-alloy sleeved barrel; light-alloy head and rocker box; o.h. valves with chromium-plated stems, controlled by hairpin springs and operated by o.h. rockers and Duralumin push-rods; Amal "Monobloc" carburetter, 1 1/8-in. bore; engine tuned to produce high output at low r.p.m.

Lubrication: Rotary reciprocating duplex plunger pump circulating oil at 9 gal. per hour at 6,000 r.p.m.; gauze filter in feed line, magnetic filter in crankcase; gearbox and primary chain lubricated by splash; secondary chain lubricated by vent pipe from oil tank.

Electrical Equipment: Lucas "NR1" magneto with manual control and integral waterproofing; ignition at 39° b.t.d.c., fully advanced; contact-breaker gap, 0.012-in.

Transmission: Single-row primary and secondary chains; multi-plate clutch; rubber-vane shock-absorber in clutch centre; four-speed gearbox; ratios on standard gearing, 5.8, 7.8, 10.3 and 15.5 : 1.

Frame: Brazed high-tensile tubular duplex cradle type, with single front down-tube and bolted-on sub-frame.

Suspension: Teledraulic front forks of Matchless design with 5 1/2 in. of movement, controlled by single coil springs with two-way hydraulic damping and hydraulic limit stops on both strokes; rear springing by swinging-fork assembly pivoting on oil-flooded bronze bushes, with Girling sus-

pension units; spindle adjustment by push bolts.

Wheels: WM-1 front and WM-3 rear steel rims; Dunlop scrambles tyres, 3.00-in. by 21-in. front and 4.00-in. by 19-in. rear; full width hubs with 7-in. dia. brakes front and rear; cable operation to front brake, rod to rear; one security bolt in front wheel, two in rear.

Tanks: Light-alloy petrol and steel oil tanks; capacities, fuel 2 gal., oil 4 pints; quick-release filler cap to fuel tank, screw-in cap to oil tank; gauze filters on all outlet lines; lever-type twin taps for fuel.

Dimensions: Wheelbase, 55 1/2 in.; ground clearance, 6.5 in.; unladen seat height, 32.5 in.; weight, 329 lb.

Finish: Black with optional black or Cardinal red tanks; chromium plating and light-alloy buffing where appropriate.

General Equipment: Kit of tools; tyre pump; straight-through exhaust system with detachable silencer; dual seat; high-lift centre stand; prop stand; crankcase shield; optional handlebar bends; polished aluminium mudguards; forged steel footrests.

Alternative Equipment: Road-going equipment, including standard tyres and large tank.

Extras: Lighting equipment; air cleaner; q.d. rear wheel; chromium-plated fork covers, lamp brackets and other details; alternative sprockets.

Price: £215 00s. 0d. plus £53 4s. 3d. P.T. = £268 4s. 3d.

Annual Tax: £3 15s.; quarterly, £1 0s. 8d.

Makers: Matchless Motor Cycles, Associated Motor Cycles Ltd., Plumstead Road, London, S.E.18.

THE MEN BEHIND THE G80CS Continued

58-year-old Yorkshireman from Hull, who was 17 when he joined one of A.M.C.'s parent companies, H. Collier and Sons. Starting in the machine shop, Walker soon moved to the drawing office where, in 1925, he was made chief draughtsman.

Between then and his move to the Handley-Page aircraft concern for the duration of the war, he was responsible for much of the drawing-office work on such famous machines as the Matchless "Silver Arrow" and the M3, later known as the Model X.

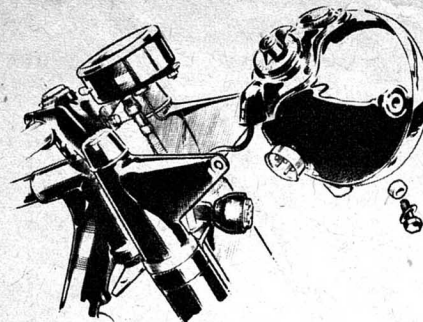


They also served . . . Trials veteran Hugh Viney (left), now competitions manager, who was responsible for detail development, and his chief mechanic, Wally Wyatt.

On Walker's return to Woolwich in 1954, he succeeded to the post of chief designer, which he has held ever since. In his younger days he was a keen athlete as well as an avid reader; reading, together with motorcycling, continue to be his chief spare-time occupations.

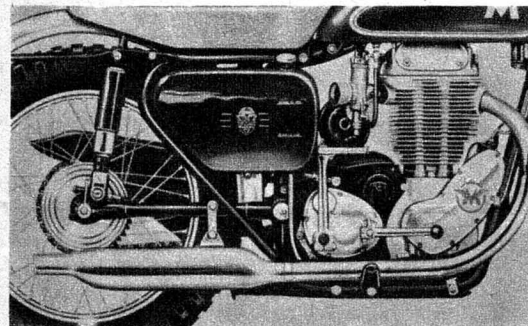
A Spring Binder for Your
"Sports Machine Souvenirs"

Application form on page 317

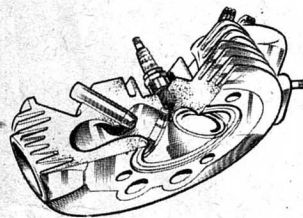


The headlamp is quickly detachable; all leads except that of the dipswitch run into a multiple plug on the main harness.

IN DETAIL

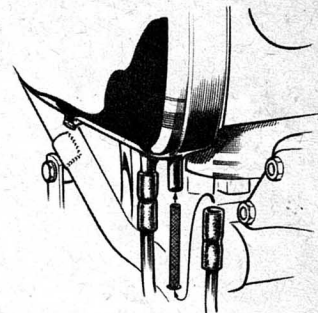


Removal of the pipe-enveloping silencer leaves the straight-through exhaust pipe at the correct length for scrambling, so that no additional equipment is necessary for conversion.

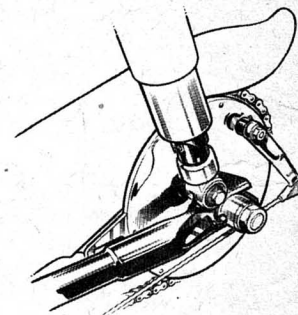


The central sparking plug fires through a slot between the valve seats.

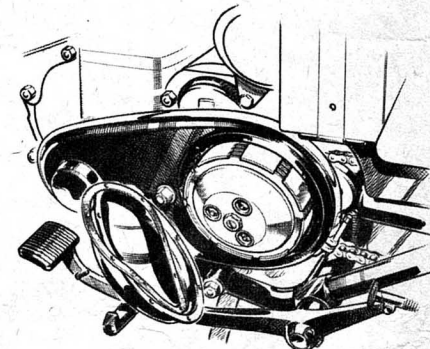
(Right) The pressed steel chain-case incorporates a detachable clutch cover. Visible at bottom right is the forward-mounted brake rod adjuster.



The oil-line contains a cunningly devised detachable gauze filter.



Forged rear fork ends are used. Note the special clevis end of the Girling suspension unit.





Moto-cross with the Matchless

Continued

stopper! I know this was all wrong but, for a long time, I could never bring myself to use the front brake; the factory did not have to reline the shoes at the front, though they found I was doubly hard on the rear ones. Anyway, I now appreciate that a scrambler can stop quicker and under better control if he uses both anchors.

When the going is bumpy I try hard to keep hold of the bars and sometimes aren't

lift a finger to the clutch lever. So on those occasions—which I keep to a minimum—I change gear without the clutch.

I find the Matchless G80CS very flexible and only in exceptional circumstances is it necessary to change engine sprockets. Such circumstances I have found on the small and twisty Continental moto-cross courses, where one has to drop one or even two teeth at the engine, and at last year's Sunbeam Point-to-Point, with its long starting straight and sweeping bends, where I cogged up. I usually fit a 19t. engine sprocket and a 52t. at the rear wheel, the latter being rather large. With the standard 42t. rear wheel sprocket, a 17t. engine sprocket is the wear.

Though the scrambler engine is highly tuned, it performs well on premium petrol; but it is even better on 100-octane, so naturally I use that to get maximum power.

With a machine of the size and power of a "500" moto-cross motorcycle, tyre pressures are very important. If the course is muddy and the rear cover is struggling for grip, I let it down to 6 p.s.i., though this is not advisable when there are rocks about. If the track is hard or rocky, about 10 p.s.i. is right with modification to suit rider-weight, of course.

Front tyre pressure is rather simpler: 10 p.s.i. for mud and 12 for rock about sums it up. I prefer the front tyre to be hardish as an insurance against rim dents and the wheel collapse resulting therefrom.

It is a good thing before each meeting to disconnect the breather-pipe on the magneto and blow it out to clear any condensation; the mag end-cover can be removed with the same object.

Look after these points, and the Matchless will be as ready as its rider to enter the fray. It will serve you well. The best of luck!



The winner both times! Dave Curtis in action at the 1958 Experts Grand National (top) and in the 1957 Cotswold Scramble (left).