

The 'Square-Fin' D.M.W.

Norman Surtees' 250 c.c. Scrambler Sampled

by BRUCE COX

"If you want to get ahead, get a square finned barrel" seems to be the maxim of many successful lightweight-class scramblers these days and if that's anything to go by Norman Surtees should do very well indeed on the Moto-cross model which he has been lent for the winter by D.M.W. of Wolverhampton. True to current fashion, the top-half of the machine's standard 34A Villiers 250 c.c. single cylinder two-stroke has been replaced by a square-finned alloy barrel and a high-compression cylinder head with a centrally located sparking plug. This conversion, made by D.M.W. themselves, gives a compression ratio of about 12:1 and has resulted in a very marked increase in power over that forthcoming from the normal Villiers unit.

Following in the wheeltracks of his ex-World Champion brother, John Surtees, Norman will be road-racing again this summer. But he has returned to scrambling—at which he was quite expert before he turned to the asphalt—in order to keep his hand in through the close season. But don't imagine that this is a form of winter relaxation, for putting the startling urge of the D.M.W. to good use is something that quite definitely requires the expert touch.

The ubiquitous Villiers 34A is powerful enough for most scramblers even with an untuned cast-iron barrel and a comparatively low-compression head, and D.M.W. also market their scrambler in this form. For

really fast men, however, the alloy barrel is a must: different porting, better cooling characteristics and a near-equalization of expansion differentials between cylinder and piston all contribute to one thing—more power! No brake horsepower figures are available at the moment, but it is certain that the standard 34A Villiers output of 19 b.h.p. at 5,500 r.p.m. is considerably improved upon.

The new barrel uses a Laystall "Cromard" dull-chrome steel liner and a

'Begorrah Mrs. Rafferty, yer' louping like a hare!' Mr. Cox emulates the lady of the famous Irish ballad, despite some of the worst weather the winter could offer.

"Hepolite" scrambles alloy piston, two components so well suited to one another that the motor is virtually unburstable—even during prolonged spells at peak revs.

Actually the D.M.W. barrel fins are not all square. Those above the inlet and exhaust ports are rounded like the horizontal fin of the cylinder head. Head and barrel are both secured to the $\frac{1}{8}$ -in. Villiers crankcase studs by four waisted through-bolts which thread down and lock up all the parts in one assembly.

Usually, the exhaust system is very simple: a short, flat megaphone widening all the way from the port itself. This was the form in which Norman used the motor at the Double Five Kent club's November meeting when he won his first race but was forced out of later events with piston-ring trouble. For the Pirbright Boxing Day meeting, however, a trials exhaust system was fitted as the regulations demanded a silencer.

This system is a perfect example of how to tuck quite a lot of exhaust pipe out of the way. Coming out of the left-hand side of the barrel, the pipe curves almost



A special Girling brake is fitted to the D.M.W. scrambler as a standard feature. It is mounted outboard of the hub on the opposite side to the chain and benefits from good cooling and easy accessibility.

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immediately upwards, crosses over to the right-hand side of the machine and then loops down again and runs into a D.M.W.-Villiers silencer that sits neatly alongside the barrel. The system is the right length for power requirements, yet the silencer ends well before the rear wheel spindle. If the pipe followed a more conventional line the silencer would almost poke out past the rear tyre! When the machine was being prepared for Pirbright, the mechanics at John Surtees' West Wickham shop, where Norman works, found that with the Amal Monobloc carburetter jetted correctly there was no great loss in overall power with the silencer fitted.

Connected to the Monobloc carb. by p.v.c. tubing is a special D.M.W. air-cleaner that simply uses corrugated paper as the filter insert and is contained in a saucer-like outer cover which bolts to the frame.

Particular attention has also been paid to the cycle parts of the D.M.W.—especially to the front forks. These are the new Earles type which pivot on "Silentbloc" bushes and are damped by Armstrong units. They are immensely strong and do absolutely everything that is required of them. Armstrong damper units also control the rear swinging-fork.

Hubs are all-alloy components made by D.M.W. and fitted with special cable-operated Girling brakes. Though they are of the normal single-leading-shoe type, they have a special operating mechanism which makes sure that the maximum area of brake-lining comes into contact with the drum. The rear hub incorporates a rubber transmission shock absorber. Its brake drum and sprocket are separate from the main hub and the spindle is of the knock-out type.

Trying the scrambler in somewhat restricted circumstances I found that handling and braking were really first class. Conditions prevented me from taking the machine to a proper scrambles course, but



Externally, the Surtees D.M.W. is identical to the production models.

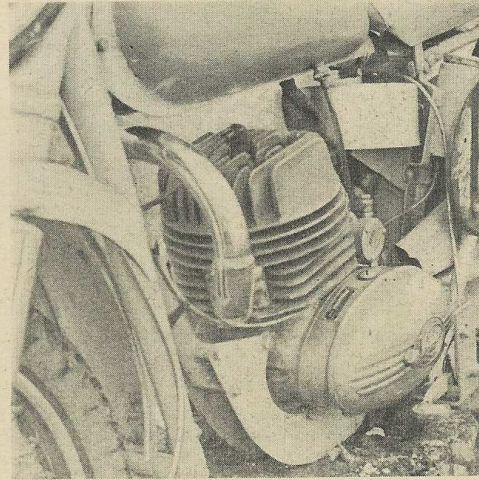
we were able to lay out a short run which included a jump, a series of long, frozen ruts and a few yards of smooth grass in which to pull up before a large wire fence and a hedge barred the way.

Whether I took the jump with just the front wheel aviating or with both wheels in the air the D.M.W. always behaved perfectly on landing and steered beautifully over the solidly frosted ruts which followed. The only times it became unmanageable were whenever the wheels landed skewed across the lip of a rut—this was only understandable and I don't suppose that sort of

situation would bother Norman Surtees anyway!

Cornering on the slippery mud was almost too easy to be true . . . the machine could be heeled right over in a speedway-type broadside with the power screwed full on and the front wheel would just not waver from the chosen line.

I had no qualms about pulling up in the limited distance available as the brakes were excellent. It's a good job they were, for it would have been rather embarrassing to have had to ask Norman to help extricate his pride and joy from a wire-mesh barrier!



Two close-ups of the engine, which also show the unusual route taken by the exhaust pipe.