

Motor Cycle

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£10,000 ISDT plan approved

BRITAIN'S 1968 ISDT effort will be backed by the *News of the World* group, and manufacturers, dealers and enthusiasts are to be invited to contribute to a £10,000 fighting fund which the ACU hopes to raise.

This was agreed last week at a meeting between ACU ISDT chief Cliff King, Suzuki (GB) director Alan Kimber, the Union's secretary, Ken Shierson, and Mike Evans of the Impress public-relations firm.

Part of the *News of the World* organisation, Impress have undertaken to put on ISDT promotion without fee.

The work will be handled by Evans and Alan Robinson, both ex-Motor Cycle staffmen.

Provisionally named British International Support Ltd, a company is being formed to administer the fund. Its registered offices will be at the ACU headquarters, 31 Belgrave Square, London, SW1, and its directors include King, Kimber, Shierson and ex-team manager Jack Stocker.

After the meeting, Kimber said: "British riders and machines can win—but it is up to the public to give them the best possible opportunity."

USA match for Hagon?

ALF HAGON, the world's official fastest sprinter, may take his 1,260 cc super-charged JAP to the USA to challenge America's fastest, Leo Payne, and his Harley-Davidson.

A return match between the two is also being tentatively planned for the Santa Pod strip at Podington, Beds.

Initiative for the match comes from America's Hot Rod magazine.

Eyes fixed ahead, Vic Eastwood leaps his 500 cc BSA during an October scramble. Living in Kent, outside the infected area, Vic will almost certainly be back in action when the BBC resumes television scrambles on Saturday, January 6.



SMART FAVOURITE TO REPLACE EVERETT

THREE TIMES runner-up in the British 250 cc road-racing championship, 27-year-old Reg Everett has decided to retire from racing. His place on Ted Broad's super-fast Yamaha-powered special may be taken by Paul Smart.

"I've now been racing for eight seasons, and I've had a good time," said Reg, "but I don't think it would be fair to Ted if I went on. His 250 cc Yamaha is an easy race-winner with the right bloke on it and I now feel I haven't the talent to do it justice."

Ted Broad said he was sorry that Reg had decided to retire: "He's been riding for me for three seasons now and you couldn't wish for a more con-

sistent man. He won 36 races on the two-fifty."

Already well advanced with the preparation of the bike for next season, Ted read in *Motor Cycle* that Paul Smart was looking for a two-fifty ride and thought Paul might well be the man to take over from Reg.

Interested

And Paul says he is very interested in riding for Ted in the 250 cc class. Now, they are to meet to discuss plans.

Reg Everett did more than

any other person to get Greeves into road racing. In 1962 he built his own Greeves road racer from scrambler and roadster parts and won his first-ever outing on it in a heat at the Brands Hatch Trophy meeting that summer. He finished second in the final.

At the end of that year, the first road racer to be built by Greeves was shown at Earls Court. In 1963 and 1964, Reg continued to race Greeves with semi-works support before joining Ted Broad for 1965.

Despite foot-and-mouth TV SCRAMBLES WILL RESTART

TELEVISION scrambling is to restart, despite the foot-and-mouth epidemic. A special meeting will be run on Saturday, January 6, with the approval of the Ministry of Agriculture, the National Farmers' Union and the police concerned. And it will be telecast in that afternoon's BBC Grandstand programme.

To meet foot-and-mouth precautions, it will be held well away from any infected zone. Riders invited to take part will come only from clean areas, as will officials. And no spectators will be permitted; for this reason, the venue is not being disclosed.

Since some famous riders who live in restricted areas cannot be invited, the races will not count in the Grandstand Trophy rounds. And, to even up the racing, the televised events are to be handicaps, with the handicapping arranged by ACU TV liaison officer, Harold Taylor.

He, in co-operation with BBC producer Brian Johnson and the ACU, has been trying for weeks to restart TV sport in this way. They feel that blanket postponement throughout the country is unnecessary.

Harold is himself a farmer in Oxfordshire. In his opinion, carefully controlled meetings cannot possibly add to the risk of spreading foot-and-mouth.

"Every rider and official will be hand-picked, and no one from an infected area stands a

chance of encroaching," he said. "In addition, every person, scrambles machine and vehicle at the site will be thoroughly disinfected as an added precaution."

"Of course, should there be an outbreak of the disease in the area chosen between now and January 6, the meeting will be cancelled — if necessary at the shortest possible notice."

So far, only the first BBC Grandstand scramble of this winter's series has been held — at Canada Heights, Kent, on November 11. Since then, meetings scheduled for Ripon, Yorks, on December 2, Leighton, Wilts, on December 9, and Clifton, Derbs, on December 23 have been postponed.

ITV's first meeting, on November 4 at Cuerden Park, Lanes, opened the TV season, but its second, intended for Scarborough on December 16, was axed.

New AJS is being track tested

A NEW prototype AJS scrambler has been built by Norton Villiers as a result of criticism of the handling of the Star-maker-powered machine.

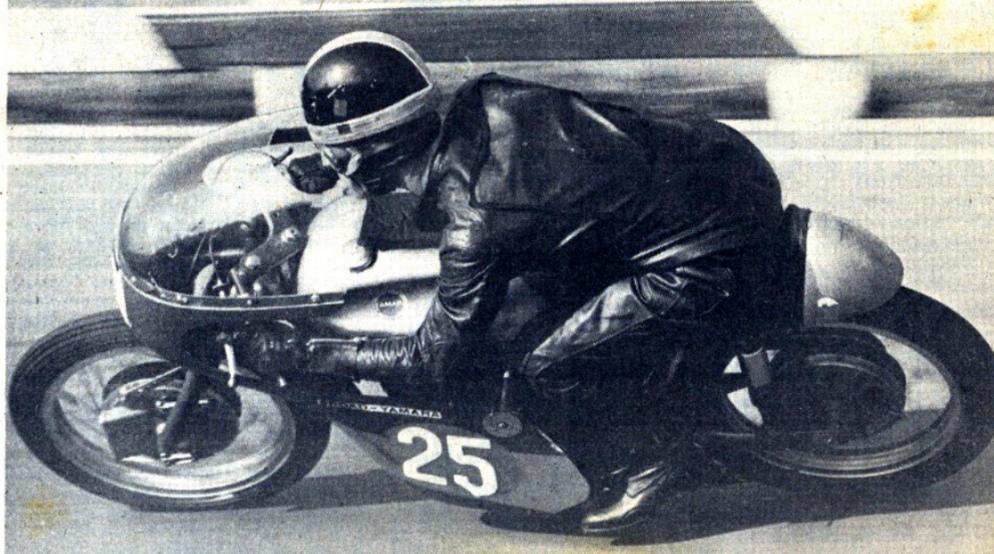
Due to be track tested for the first time last week, the latest Wolverhampton mount carries its engine lower and farther forward and has a longer rear fork.

Peter Inchley, Villiers' development engineer and new competition manager, explained: "This is an experiment to find out how good or how bad the present machine is."

Both factory rider Malcolm Davis and Husqvarna privateer Dick Clayton, who has had one outing on Villiers works machinery, were due to test the machine.

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Reg Everett hurls the Ted Broad Yamaha round the Devil's Elbow at Mallory Park, scene of several of his most spectacular performances. Now Reg would like to become an instructor at a racing training school

GARDNER CHALLENGES THE BIG BOYS

AN ENGINEER has to be very bold to challenge the big names in carburation, such as Amal and Dellorto, especially on the racing front. No one knows that better than Ron Gardner, yet that is precisely what he is doing. But his boldness and confidence are soundly based. Backing the new carburettor shown in the main drawing are years of development culminating in an impressive string of short-circuit successes by Kevin Cass on one-two-five and two-fifty Bultacos.

When Cass set sail for his native Australia earlier this month, he just couldn't be parted from his Gardner carbs. Equally enthusiastic is British 500 cc champion Ron Chandler who will be among several riders switching to Gardner carburation next year.

In the Ulster Grand Prix, the Cass Bultaco (standard, not the disc-valve version) was, at 108 mph, the fastest non-works 125 cc machine through the electronic speed trap. However, top speed is by no means the only attraction of the Gardner carburettor. Chandler is impressed by the added tractability it gives his AJS 7R; and Cass' meteoric getaways have set even Mike Hailwood the task of overhauling him.

Simple in construction, the Gardner instrument is unorthodox in several ways. Chief of these is that the height of the jet outlet is not fixed just above the level of petrol in the float chamber.

Instead, the jet tube, fed at the bottom by a flexible pipe from the float chamber, is housed in a guillotine-type throttle slide—a $\frac{1}{16}$ -in-thick, flat Tufnol block bored to match the carburettor choke at full throttle.

The slide opens downward and the petrol level is set to correspond with the top of the jet at about a quarter throttle.

Boost

Hence, at smaller throttle openings the top of the jet is above the level and petrol issues only as a result of the depression on the jet.

At larger throttle openings this effect is increasingly supplemented by siphoning as the jet outlet is brought father and farther below the petrol level.

Object of this is to give a slight boost to petrol flow when the throttle is snapped open, in much the same way as an

For direct feed (no float chamber) this spring-and-diaphragm unit, subjected to fuel-supply pressure, automatically compensates for variations in petrol head

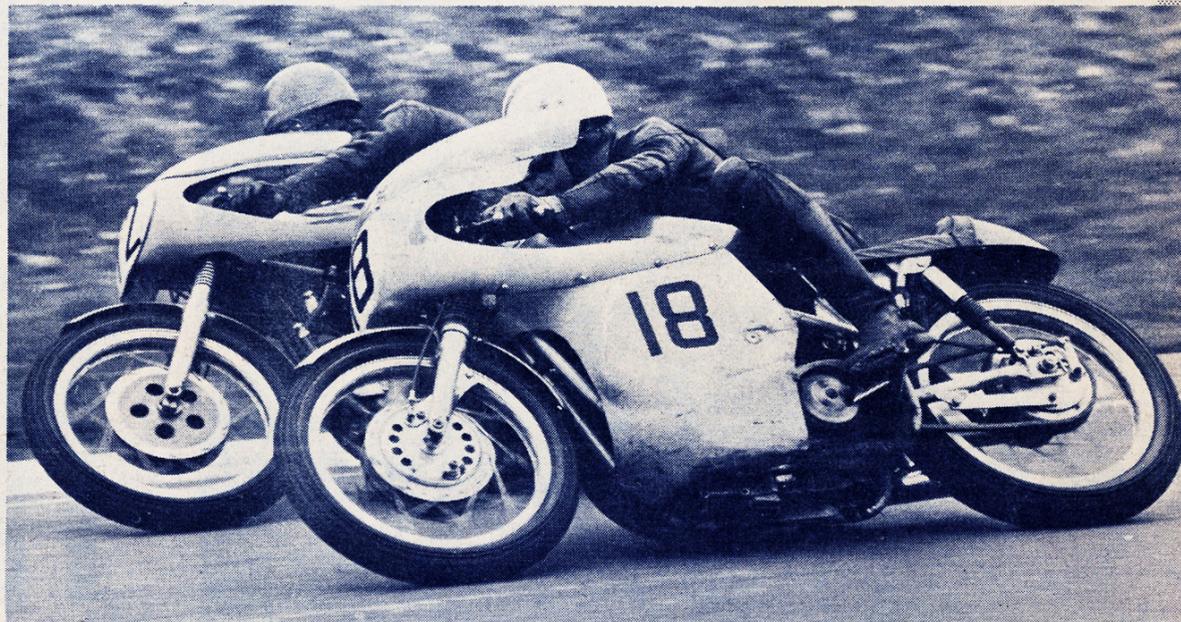
accelerator pump does in many car carburettors, including racing instruments.

At anything less than full throttle, the cross-section area of the air passage through the carb is governed by the concave edge of the slide bore.

This gives a more variable rate of opening than a straight edge would—slower initially and correspondingly faster beyond half throttle.

The gentler initial opening rate is partly responsible for

This exploded view shows how the Gardner carburettor combines simplicity with unorthodoxy. The throttle return spring holds the jet tube in the Tufnol slide



out vertical adjustments in whole turns, so as not to upset the angle of the needle flat to the airstream, carefully pre-set by the makers.

Besides 50 different needle profiles, there are carriers giving ten different rotational settings—in four-degree steps from zero, which sets the needle flat parallel to the airstream.

Since the needle may be pinned to the carrier in two opposite ways, there are thus 1,000 basic settings, each subject to vertical adjustment.

Consequently the makers can cater for any standard engine by supplying a carburettor with the correct choke, needle and carrier, and leaving the rider, if necessary, to finalise the vertical adjustment by trial and error.

For expert tuners and non-standard engines there is ample

plunger and the fitting of a locknut to the needle carrier instead. Next, a needle is selected which gives clean steady-throttle running with the flat parallel to the airstream and the vertical adjustment midway.

If acceleration then reveals symptoms of weakness, the flat is turned gradually towards atmosphere until the weakness is severe, after which the needle is raised to compensate.

Thus the original mixture strength at steady throttle openings is restored but that for acceleration is enriched; this is because choke depression drops during acceleration and the new flat position has reduced the mixture's dependence on the depression at the engine side of the jet.

Best angle

Conversely, if the zero setting gives signs of richness on acceleration, the flat is turned towards the engine and the needle then lowered to compensate.

These adjustments indicate whether a richer or weaker needle profile is called for; and once the best angle is determined a standard, flattened carrier is selected to suit.

Particular care is needed when the flat has to be turned towards atmosphere. While a four-degree adjustment may have only a small effect on acceleration, it weakens full-throttle mixture considerably and failure to compensate fully by raising the needle can cause overheating.

Gardner carburettors come in two basic patterns. The 100 series covers choke diameters from 20 to 32mm and has 2in centres for the flange studs. In the 200 series, choke sizes range from 30 to 40mm and stud centres are 2 9/16in. Stub fixing is also available.

For racing two-strokes requiring the shortest possible induction-tract length, the bellmouth can be omitted; in that case, the leading edge of the throttle-slide bore is suitably flared.

Not available

Overall lengths vary from 2 to 4 1/2in (100 series) and 3 to 6 1/2in (200 series). For greater lengths, separate flanges and coupling hoses are obtainable.

Available in March, the first batch of carbs will be hand made for competition work and service will be available at race meetings.

Float-chamber assemblies are not supplied and solo racing men will have to use proprietary chambers. However, the correct petrol level is marked on the side of the Gardner carburettor.

If necessary, it is possible to dispense with a float chamber. For sidecar racing, for example, the jet tube may be fed by a pump while on scramblers, trials

At Brands Hatch, Ron Gardner (496 Seeley-Matchless) corners outside Dave Degens (649 Dresda Triton). After tests on his AJS 7R, Chandler is switching to Gardner carburation next year

bikes and roadsters the pipe from the petrol tap may be connected direct to the jet tube.

In these cases, it is necessary to compensate for pump pulsing and for variations in the head of petrol which would otherwise weaken the mixture as the tank emptied.

This compensation is achieved by using a needle carrier incorporating a lightly spring-loaded diaphragm connected to a T-branch at the petrol tap.

Weight of a high head of petrol depresses the diaphragm and lowers the needle slightly. As the petrol level falls, the spring gradually raises the needle.

Though prices are not yet finalised, the 100 series is expected to cost £9 upward, with the 200 series ranging up to about £20.

Makers are the Gardner Carburettor Co Ltd, 45 Newport Road, Burgess Hill, Sussex.

SEASONAL



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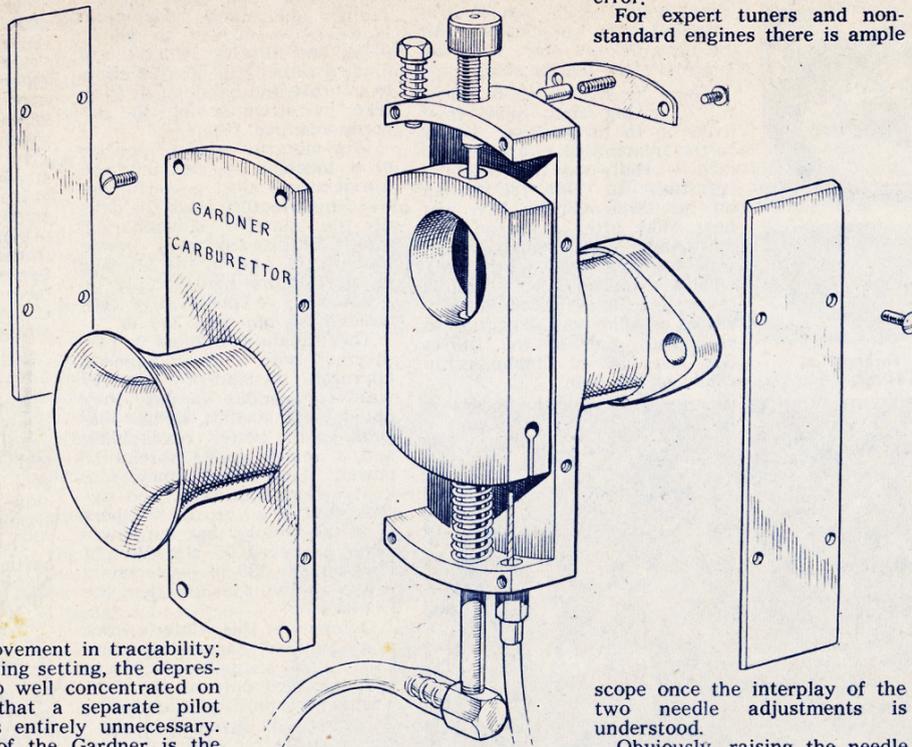
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the improvement in tractability; and at idling setting, the depression is so well concentrated on the jet that a separate pilot system is entirely unnecessary.

Heart of the Gardner is the tapered needle that regulates the petrol spray from the 0.125in-bore jet. Unusually, the needle is not conical in shape. It is a plain rod of 0.123in diameter with what appears to be a flat machined at an angle over the length traversed by the mouth of the jet.

Actually, the profile of the machined face is not absolutely flat but an extremely shallow S calculated to meter the petrol with great precision at all throttle openings.

Incidentally, to prevent the needle from rattling in the jet at full throttle, the maximum depth of machining is less than half the needle thickness. Hence there is always the full diameter (parallel to the flat) to guide the needle in the jet.

Reason for using this type of needle is that mixture strength is governed not only by the

position of the needle in the jet but also by the angle of the flat relative to the airstream. Indeed, the latter is the more critical setting of the two.

Up or down

For vertical adjustment—say, to enrich the mixture for cold starting on a roadster or to compensate for atmospheric variations at different race circuits—the needle is pinned in a threaded carrier which may be screwed up or down in the top of the carburettor body.

But since the rotational adjustment of the needle is so sensitive, especially at full throttle, a broad flat is machined on the carrier threads to mate with a spring-loaded plunger. This makes it easy to carry

scope once the interplay of the two needle adjustments is understood.

Obviously, raising the needle enriches the mixture and lowering weakens it. Less obviously, the mixture is enriched by turning the flat from zero towards the engine and weakened by turning the flat towards atmosphere.

This is because the depression on the engine side of the jet is greater than that on the atmospheric side.

For simplicity, the vertical setting may be regarded as controlling mixture strength at steady throttle openings while the rotational setting governs compensation for acceleration.

But since the settings are interdependent and angular adjustment affects the two running conditions to vastly different extents, only tuners of wide experience are recommended to experiment.

Tuning from scratch calls for removal of the spring-loaded