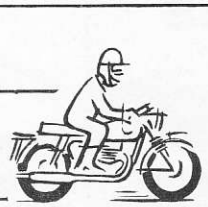
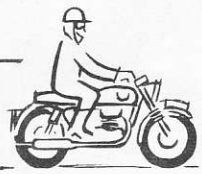
"Scintillating high performance"...

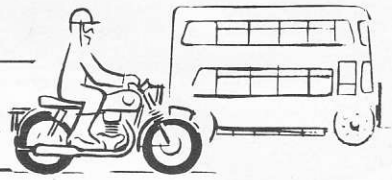
"good brakes"...



"excellent rider comfort"...



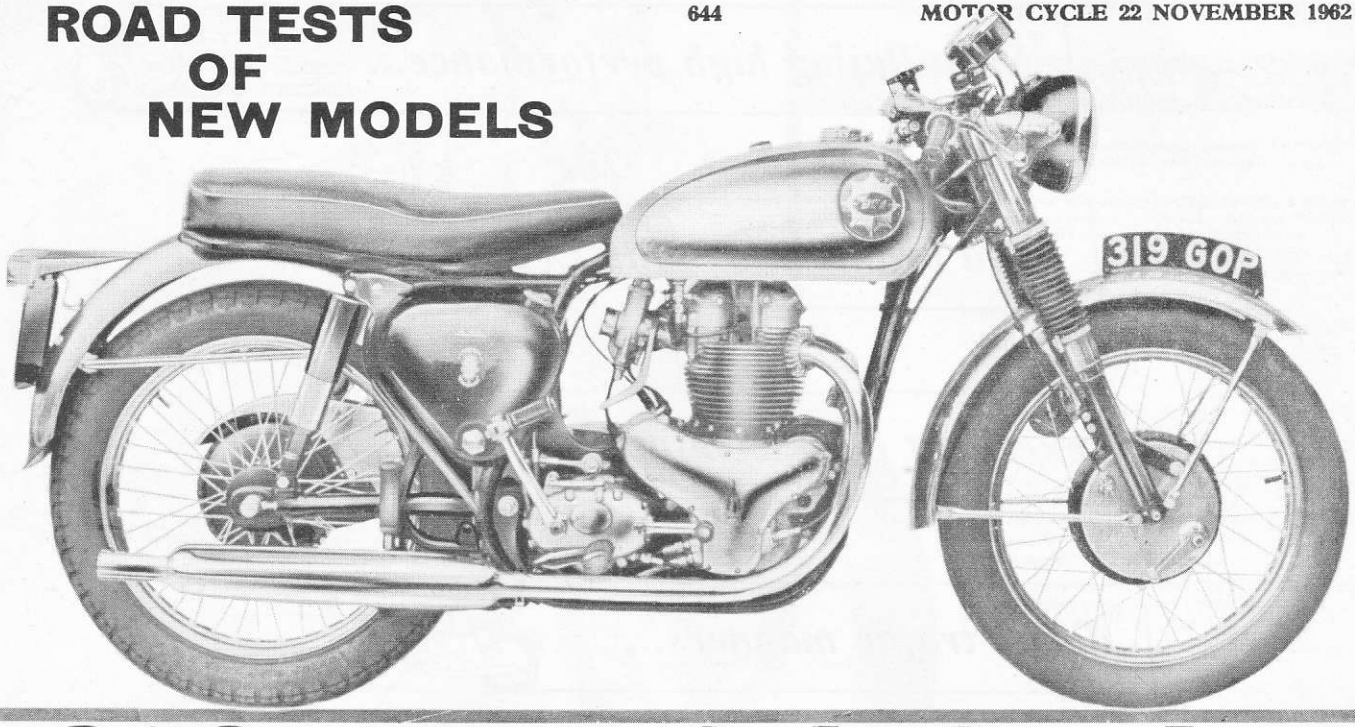
"docile traffic manners"...



"Motor Cycle" Tests
and Reports upon the

BSA 646 c.c.
ROCKET
GOLD STAR

ROAD TESTS OF NEW MODELS



646 c.c. B.S.A. Rocket

Scintillating high-performance road burner: good brakes, excellent rider comfort and docile traffic manners

AN 85 m.p.h. top-gear spread speaks volumes for the tractability of a sporting engine. And on top of this the 646 c.c. B.S.A. Rocket Gold Star has effortless, surging acceleration through the gears and a tireless 90 m.p.h. cruising gait. The maximum of 105 m.p.h. obtained on test could certainly have been bettered had the November weather been co-operative.

The standard Super Rocket engine, with compression ratio raised from 8.25 to 9 to 1, is housed in a Gold Star frame. Narrow, chromium-plated mudguards, four-gallon petrol tank with snap filler, rubber gaiters and chromed dust covers on the front fork and matching speedometer and rev-meter are inherited from the Gold Star.

For production-machine racing, the full range of Gold Star extras and a track silencer, said to boost power output by 4 b.h.p., are available.

Although most of its contemporary rivals boast twin carburettors for maximum performance, the Rocket Gold Star has a single Amal Monobloc. This is perhaps one of the prime factors in the sweetness of carburation at the lower end of the scale.

From tickover at 800 r.p.m., the engine answered the throttle crisply and instantaneously, provided the ignition lever was used intelligently. From 1,500 r.p.m., beefy, usable power was on tap right up to the manufacturers' recommended ceiling of 6,800 r.p.m., at which 46 b.h.p. is developed.

CLOSE RATIOS

Gold Star close-ratio gears are employed; a bottom ratio of 8.39 to 1 necessitated slipping the clutch to prevent the r.p.m. dropping below 1,500. Above 15 m.p.h., the clutch could be ignored and the ignition lever gradually moved to the fully advanced position. (The 10-to-30 m.p.h. acceleration figure in the performance data was obtained with the ignition fully retarded at 10 m.p.h.)

Although 100-octane petrol was used, pinking was audible if the throttle was opened hard on full advance at any engine speed.

Moving the ignition lever to the one-third-retard position made it possible to thread dense traffic in a docile manner, but top was not engaged in 30 m.p.h.-limit areas. It was after the derestriction signs that the model really gathered itself up.

The close-ratio gears meant a drop of only 1,000 r.p.m. between first and second, 800 between second and third and 400 between third and top. As you might guess, acceleration was exceptionally rapid—guaranteed to satisfy the most hardened enthusiast.

The delightfully subdued drone from the siamesed ex-

haust system allowed full use of the performance without fear of causing offence. Because of the wide spread of power, upward gear changes were normally made at 5,400 r.p.m.—rather than at the ceiling of 6,800—equivalent to a corrected 50 m.p.h. in bottom, 66 in second and 80 in third. The speedometer read a constant 4 m.p.h. fast.

Tweaking the twistgrip half way continued the rush of the speedometer needle round to the 85 mark. The appallingly poor weather during the test period—continuous rain and mist—dictated cruising speeds no higher than 85 to 90 m.p.h.

A further tweak of the grip at ninety unleashed a fresh surge of power until the needle was hovering near the magic 100, but to achieve a genuine "ton" it was necessary to chin the tank top.

While not in the turbine-smooth category, the power unit was no rougher than one would expect of a vertical twin with high-kick pistons, and was commendably free of any noticeable vibration period.

COOL CLUTCH

In spite of being continually slipped in traffic, the clutch showed never the slightest sign of protest. Even after six full-throttle standing starts, when the performance figures were being obtained, only an insignificant amount of free play appeared at the clutch lever; this free movement disappeared as the plates cooled.

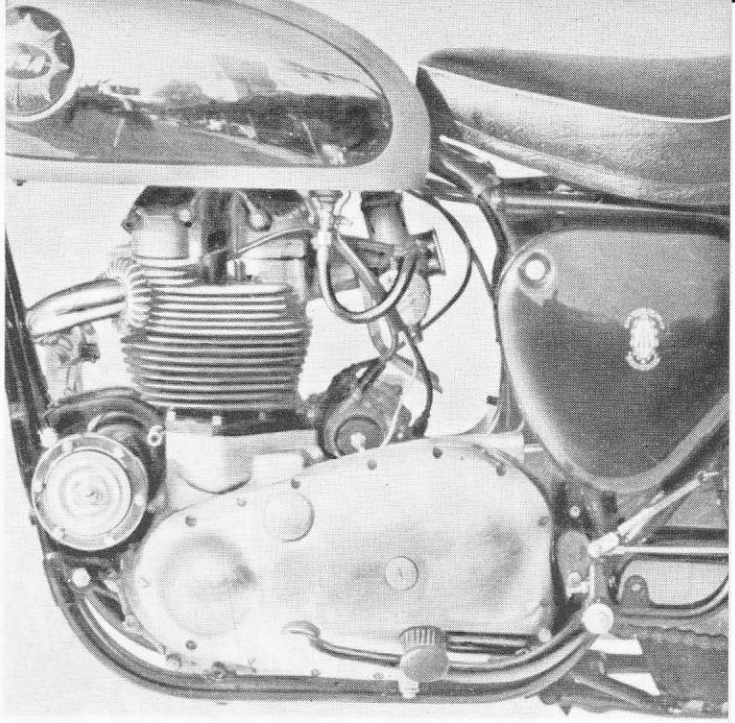
The gear change was light and crisp in movement and positive at all times; neutral was easily selected from bottom or second.

After the front wheel had been balanced and both wheels correctly aligned, steering and handling were of true sporting class. Straight-ahead steering was precise up to 90 m.p.h. but then became progressively lighter until at maximum speed, 105 m.p.h. on a wet road, the front wheel tended to wander slightly. Tightening down the steering damper effected a partial cure.

NO BRAKE FADE

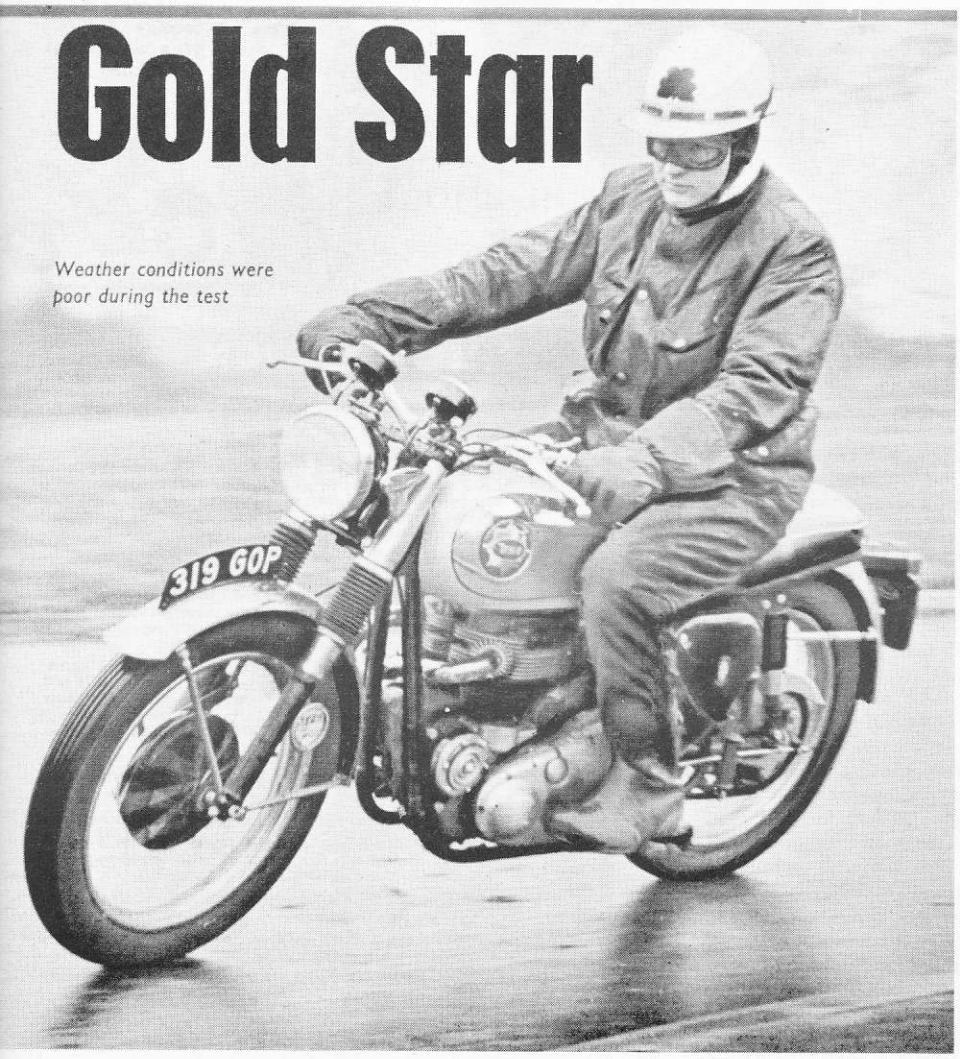
Roadholding and stability under normal conditions allowed high average speeds to be maintained safely. Stiffening the action of the front fork would probably eliminate a tendency for slight rolling on fast corners.

As befits such a high-performance model, both brakes were light in operation and extremely powerful. Initially, dust in the drum caused loud squealing from the front brake. In spite of repeated hard application from maximum speed, neither brake showed any tendency to fade, nor were they affected by prolonged riding in heavy rain.

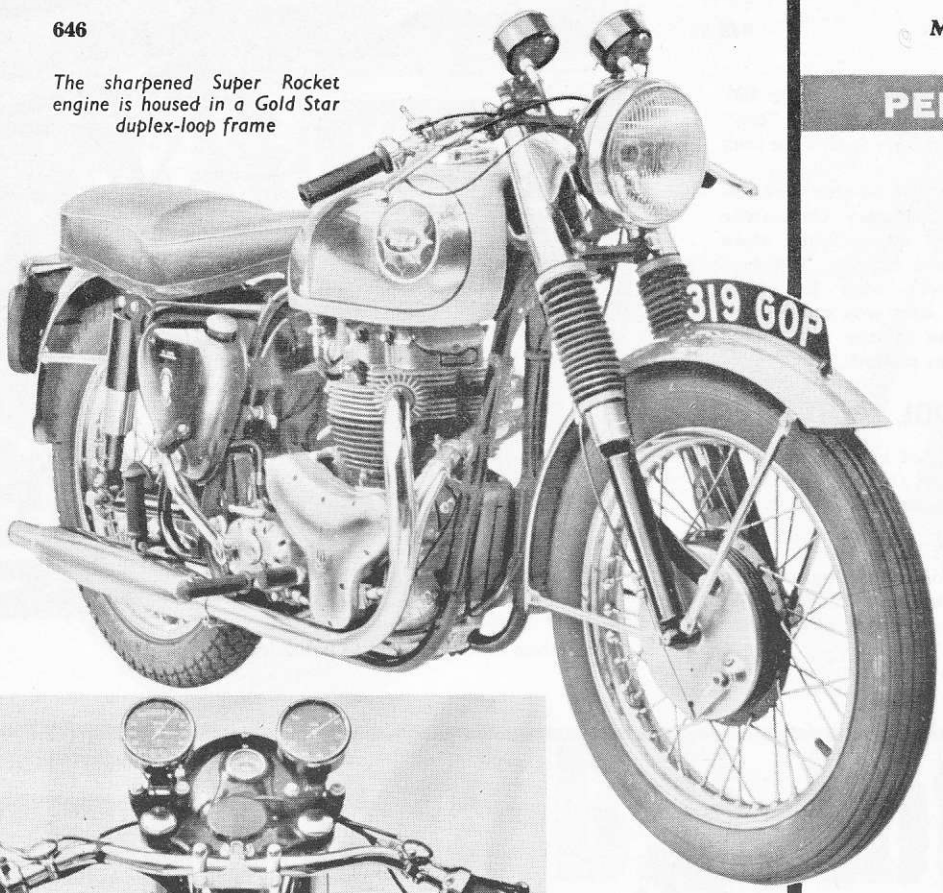


Compression ratio of the engine is boosted to 9 to 1

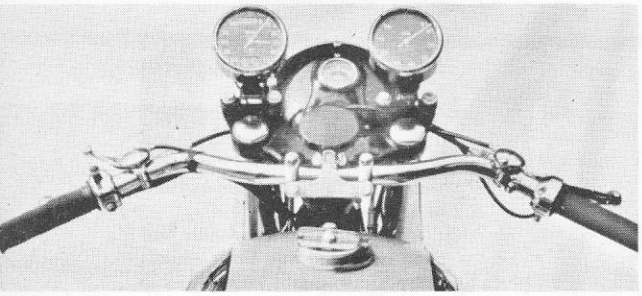
Gold Star



Weather conditions were poor during the test



The sharpened Super Rocket engine is housed in a Gold Star duplex-loop frame



The model was supplied with a down-turned touring handlebar. This brought too much weight to bear on the rider's wrists, particularly in traffic, so a more comfortable position was obtained by reversing the bar. A satisfactory compromise would be a shorter, straighter bar to provide slightly more forward lean without lowering the wrist level.

DE-LUXE SEATING

All controls were well placed for ease of operation and a reasonable range of adjustments is allowed. A more prominent dipswitch lever would have been preferred.

Well shaped and deeply upholstered, the dual-seat provided exceptional comfort no matter what mileage was being covered. It did not need a very long run in the rain, however, to prove the drawback of a narrow sports front mudguard —the amount of road filth that blows back on the machine and rider.

Lighting was adequate for mile-a-minute cruising after dark and the dipped beam was satisfactory. Loud enough for jaunts about town, the horn would have to be more penetrating to be much use during fast, open-road touring.

Accessibility for routine maintenance tasks was good, but the tool kit did not include a spanner for adjusting the rear wheel. The roll-on centre stand required only moderate effort to operate, but its feet were too sharp; parking places had to be carefully chosen, for the legs would gradually dig into tarmac. A prop stand is available at extra cost.

The Rocket Gold Star, then, is that rare bird, a high-performance motorway express which is almost equally at home in less exciting urban surroundings.

PERFORMANCE DATA

(Obtained at the Motor Industry Research Association's proving ground at Lindley, Leicestershire.)

MEAN MAXIMUM SPEED: **Bottom 63 m.p.h.; *second 83 m.p.h.; *third 101 m.p.h.; top 103 m.p.h. *At 6,800 r.p.m., makers' recommendation.*

HIGHEST ONE-WAY SPEED: *105 m.p.h. (conditions: slight tail wind, heavy rain; rider wearing two-piece suit and overboots).*

MEAN ACCELERATION:

	10-30 m.p.h.	20-40 m.p.h.	30-50 m.p.h.
Bottom	5 sec	4 sec	3 sec
Second	—	5.8 sec	4.8 sec
Third	—	7.6 sec	6.2 sec
Top	—	8.4 sec	8 sec

Mean speed at end of quarter-mile from rest: 86 m.p.h.
Mean time to cover standing quarter-mile: 15 sec.

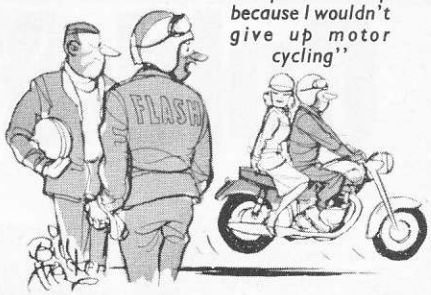
PETROL CONSUMPTION: *At 40 m.p.h., 82 m.p.g.; at 50 m.p.h., 71 m.p.g.; at 60 m.p.h. 66 m.p.g.; at 70 m.p.h., 61 m.p.g.*

BRAKING: *From 30 m.p.h. to rest, 39ft (surface damp tarmac).*

TURNING CIRCLE: *15ft 6in.*

MINIMUM NON-SNATCH SPEED: *19 m.p.h. in top gear (ignition fully retarded).*

WEIGHT PER C.C.: *0.64 lb.*



"That's the girl who packed me up because I wouldn't give up motor cycling"

SPECIFICATION

ENGINE: *B.S.A. 646 c.c. (70×84mm) overhead-valve twin. Crankshaft supported in plain bearing on timing side and a ball bearing on drive side; plain big-end bearings. Light-alloy cylinder head; compression ratio 9 to 1. Dry-sump lubrication; oil-tank capacity 5½ pints.*

CARBURETTOR: *Amal Monobloc; air slide operated by handlebar lever.*

IGNITION and LIGHTING: *Lucas magneto with manually operated advance and retard; Lucas dynamo charging 6-volt, 13 amp-hour battery through voltage-control regulator. Lucas 7in-diameter headlamp with prefocus light unit.*

TRANSMISSION: *B.S.A. four-speed gear box. Gear ratios: bottom 8.39 to 1; second 6.34 to 1; third 5.25 to 1; top 4.78 to 1. Multi-plate clutch with bonded friction facings. Primary chain, ½×0.305in light-alloy oil-bath case. Rear chain, ⅝×⅜in with guard over top run. Engine r.p.m. at 30 m.p.h. in top gear, 1,850.*

FUEL CAPACITY: *4 gallons.*

TYRES: *Dunlop: front, 3.25×19in ribbed; rear, 3.50×19in. K70 Gold Seal.*

BRAKES: *8in-diameter front, 7in-diameter rear; finger adjusters.*

SUSPENSION: *B S.A. telescopic front fork with hydraulic damping. Pivoted rear fork controlled by Girling three-position spring-and-hydraulic units.*

WHEELBASE: *57½in unladen. Ground clearance, 6½in unladen. Seat height, 31in unladen.*

WEIGHT: *415 lb fully equipped and with full oil tank and approximately half a gallon of petrol.*

MAKERS: *B.S.A. Motor Cycles, Ltd., Armoury Road, Birmingham 11.*

DESCRIPTION: Motor Cycle, *8 February 1962.*

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