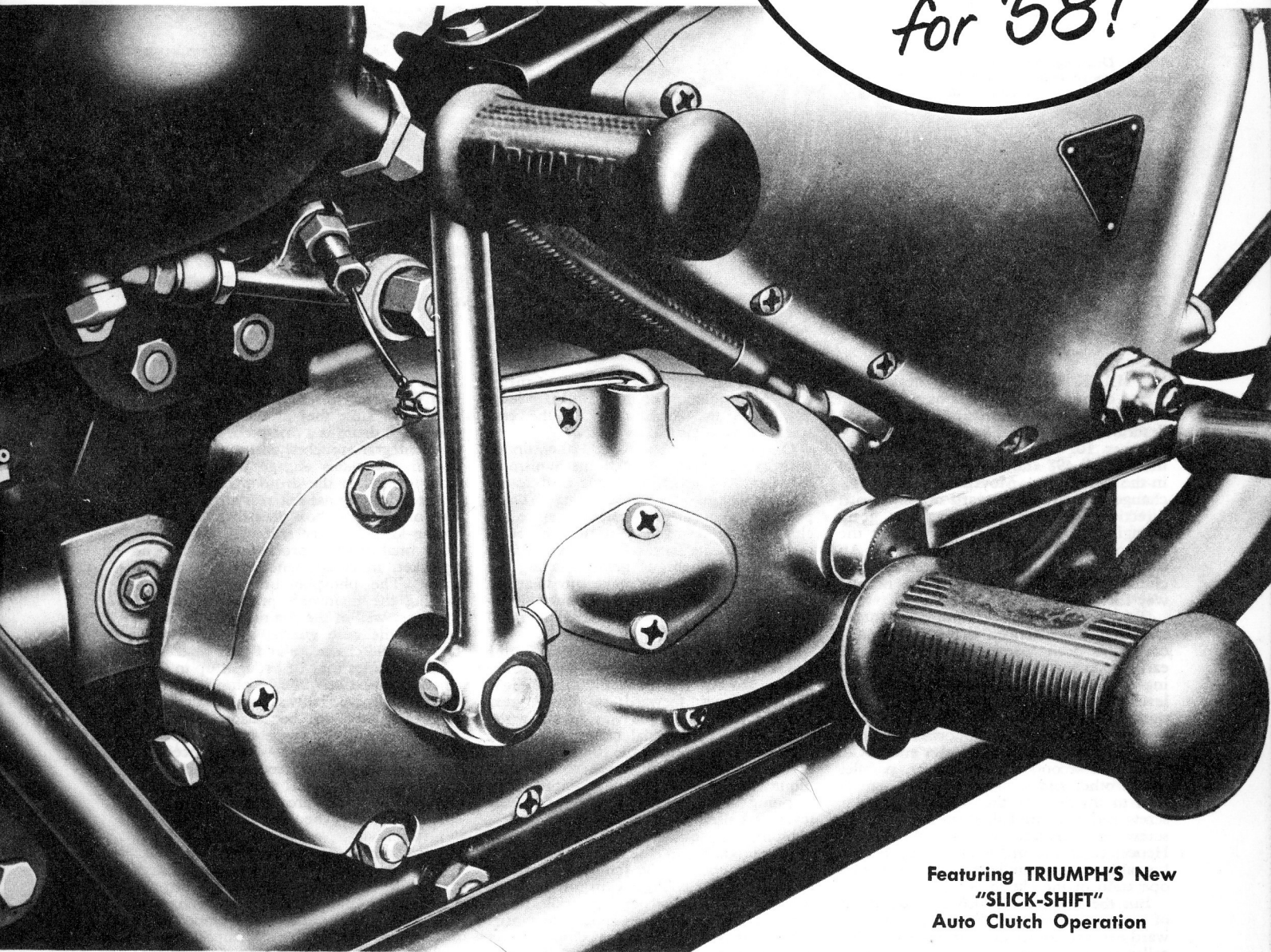


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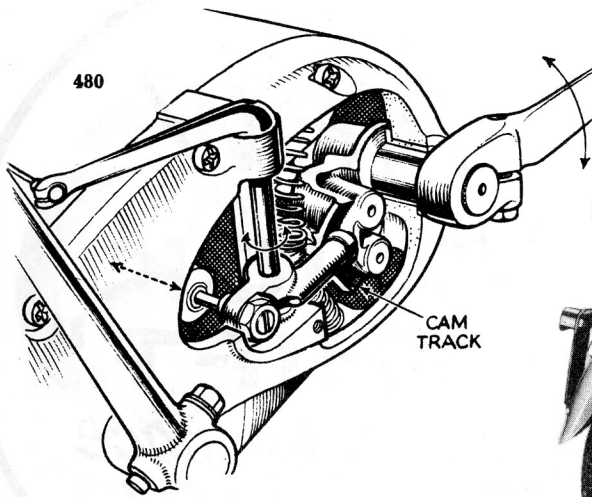
New
**"SLICK
SHIFT"**

*Sets the pace
for '58!*

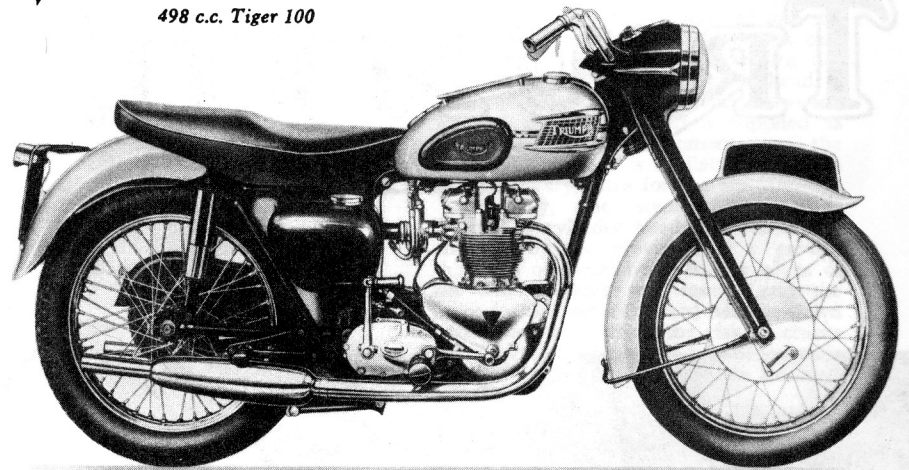


Featuring TRIUMPH'S New
"SLICK-SHIFT"
Auto Clutch Operation

enters the new season still further ahead • • • •



498 c.c. Tiger 100



Above: Drawing showing the simple cam-and-lever arrangement by which the clutch is operated by movement of the gear pedal

Automatic Clutch Operation

TRIUMPHS INTRODUCE INGENUOUS DEVICE TO SIMPLIFY GEAR CHANGING

"SLICK Shift" is the designation chosen by Triumphs for that intriguing automatic-clutch device, described briefly in *The Motor Cycle* for October 10. Ingenious yet simple, it is fitted to all 498 and 649 c.c. vertical twins in the 1958 range. Movement of the gear-change pedal in an upward or downward direction frees the clutch, so that gear-changing can be carried out without the need of operating the handlebar lever. An over-riding action is incorporated and the clutch can be disengaged in the normal way for stopping and restarting.

To accommodate the automatic clutch-withdrawal mechanism the gear-box end cover has been redesigned; replacing the earlier, vertically-mounted clutch operating arm is a rearward-facing horizontal lever. Lying parallel to the upper face of the end cover, the lever is part of a vertically-disposed shaft supported in plain bearings. Attached to the lower end of the shaft is a second (shorter) lever, parallel to the other and embodying in an extension to the rear of the shaft an adjuster screw and nut; the ball-shaped end of the screw bears against the clutch thrust rod. Hence, since the upper arm is connected by cable to the handlebar lever, orthodox operation of the clutch is retained.

But the lower lever also extends ahead of the vertical shaft and carries at its forward extremity a small, coaxial roller. The roller is in contact with a vertically disposed face cam formed on the gear-change selector quadrant which, in turn, is keyed to the gear-pedal shaft. Movement of the pedal in either direction, therefore, causes the one or other of the cam lobes to actuate

the lever, so operating the clutch thrust rod. Manipulation of the handlebar lever withdraws the roller clear of the cam track. It is as simple as that.

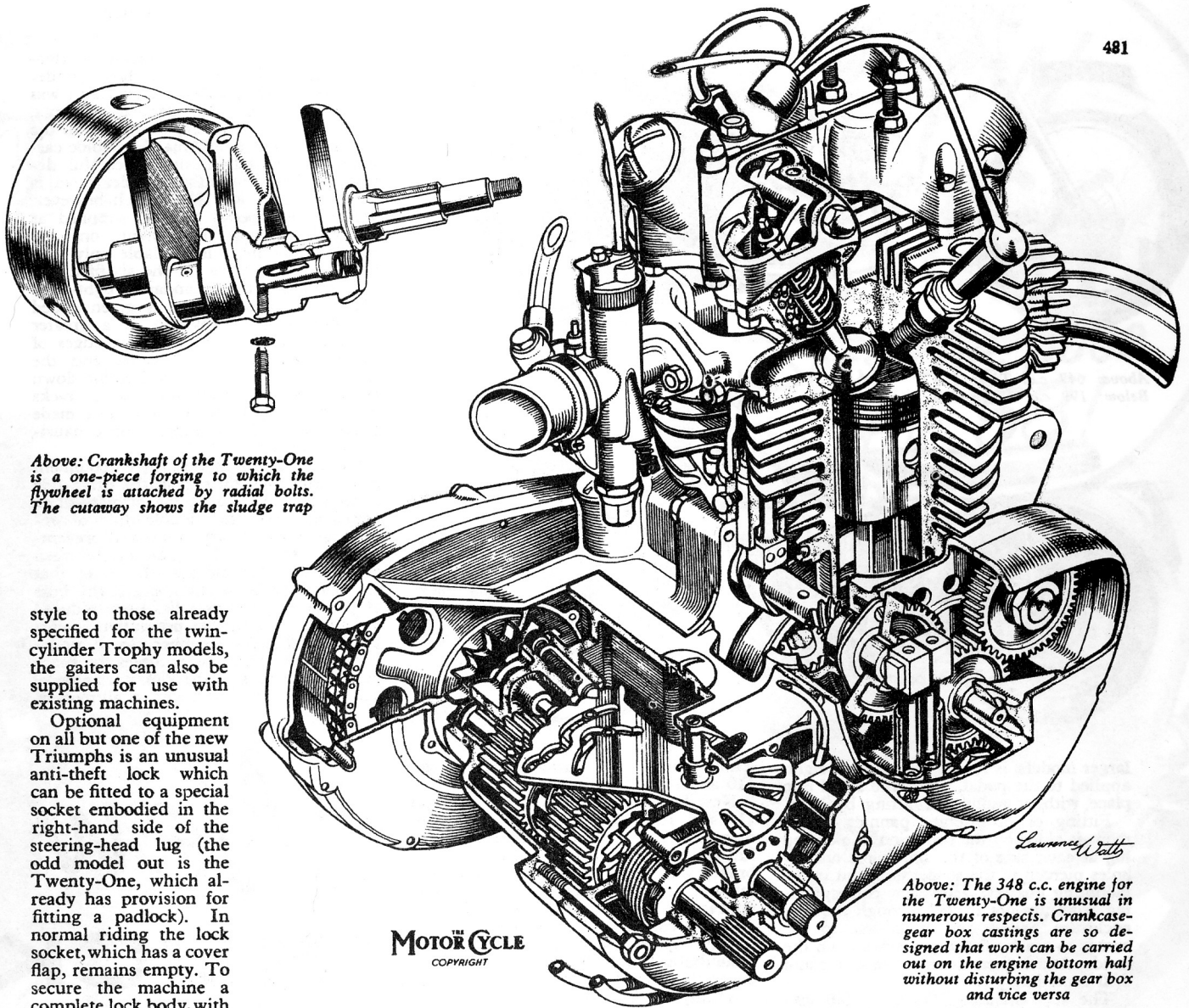
On the road with a Tiger 110 equipped with the automatic clutch mechanism, a member of *The Motor Cycle* staff found that for making an upward change a quick pedal movement was necessary, since the clutch was disengaged until the pedal returned to its normal position. Many riders have a habit of gently moving the gear pedal in order to make sure that top gear is engaged. In this instance, however, to do that was to free the clutch and cause the revs to mount!

Downward changes required some knack initially, for to allow the pedal to return quickly was to result in the rider being thrown forward; a lower gear selected, the technique was to allow the foot to linger on pedal before release, at the same time opening the throttle slightly. It was felt that, with practice, the technique would be quickly acquired. For stopping and restarting, the handlebar lever was used in the normal way.

Numerous other developments have been embodied in the latest Triumphs. Junior member of the family, the robust and lively 199 c.c. Tiger Cub (available, as before, in both roadster and trials form) inherits a smoother and more substantial primary drive, based on that employed on the 348 c.c. Twenty-One. Replacing the $\frac{1}{2}$ -in.-pitch roller chain previously used is a non-stretch Renold duplex chain of $\frac{3}{4}$ -in. pitch; the change has meant that sprocket-tooth widths have been increased and the light-alloy chaincase made deeper.

At the same time the opportunity has been taken to improve the clutch assembly. Like that of the Twenty-One, the clutch drum is a one-piece iron casting with integral sprocket, and the tongues of the driven plates engage with shrouded slots formed in the drum periphery. Replacing the original felt seal at the driving end of the gear-box mainshaft is a new spring-loaded garter seal which bears on the final-drive sprocket boss. The sprocket, in consequence, is of modified form. The phosphor-bronze bush supporting the mainshaft protrudes through the inner wall of the chaincase; a labyrinth seal in the case guards against oil loss between the chaincase and gear box. Pre-1958 machines may be brought up to date, since conversion kits, comprising the deeper chaincase halves, duplex chain and sprockets, are to be made available. Appearance of the roadster Tiger Cub—neat, low and compact—is enhanced by a rear mudguard of deeper section. The guard has the practical advantage of offering a greater measure of protection from spray thrown by the tyre.

Greater absorption capacity and hence a quieter tone without increase in back-pressure is claimed for the larger silencer also fitted to the roadster Tiger Cub; the silencer mounting bracket, which also carries the right-hand pillion footrest, is modified to suit the new component. In competition form the Tiger Cub retains the small silencer and, of course, the up-swept exhaust pipe; latest models have plastic front-fork gaiters to exclude dirt from the fork oil seals in the rough-and-tumble of scrambles or trials. Similar in



Above: Crankshaft of the Twenty-One is a one-piece forging to which the flywheel is attached by radial bolts. The cutaway shows the sludge trap

style to those already specified for the twin-cylinder Trophy models, the gaiters can also be supplied for use with existing machines.

Optional equipment on all but one of the new Triumphs is an unusual anti-theft lock which can be fitted to a special socket embodied in the right-hand side of the steering-head lug (the odd model out is the Twenty-One, which already has provision for fitting a padlock). In normal riding the lock socket, which has a cover flap, remains empty. To secure the machine a complete lock body, with key, is inserted into the socket; turning the key locks the body into the socket and the key can then be withdrawn.

Representing the three-fifty class is, of course, the exciting Twenty-One, with sleekly-integrated engine and gear box and

extensive enclosure of the frame middle and rear sections. Among the unorthodox features of the overhead-valve power unit is a crankcase which is split along the longitudinal centre-line of the engine; the joint then follows an offset path so that

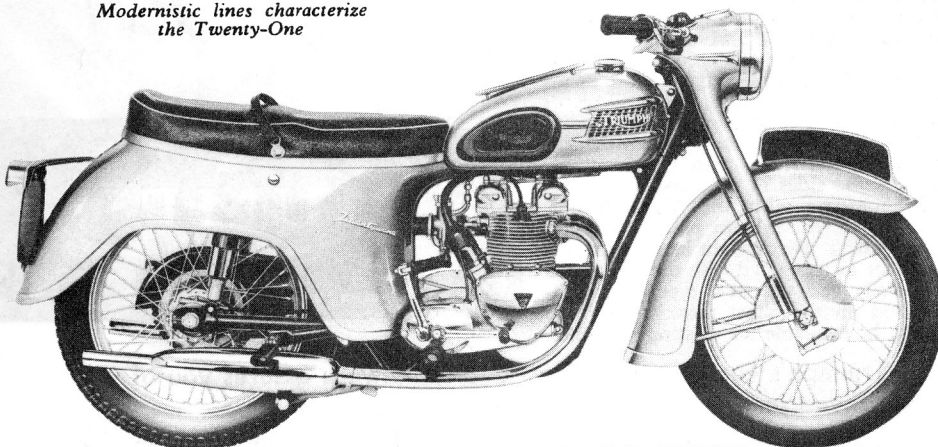
the gear box is combined with the timing-side crankcase half while the inner half of the primary chaincase is integral with the driving-side crankcase casting. A self-contained compartment in the crankcase casting houses the gears, so that after detaching the clutch assembly the entire gear cluster can be withdrawn without disturbing the adjustment of the gear-change selector mechanism.

On its introduction the Twenty-One attracted world-wide attention. An alteration in production technique brings the fuel tank into line with that used on the larger-capacity twins in that two half-pressings are joined by a longitudinal welded seam; a chromium-plated beading covers the seam and adds a touch of contrast to the tank. In addition a chromium-plated tank-top parcel grid is provided.

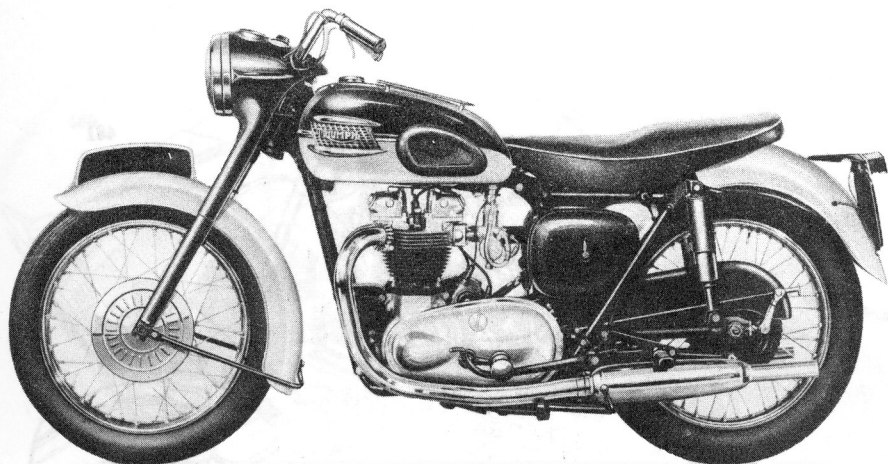
Brazed to the frame left-hand cradle tube is a lug to which may be attached the standard Triumph prop-stand (available at extra charge), while parking is further facilitated by an altered design of tubular centre stand. A small pedal extension, such as recently standardized for the

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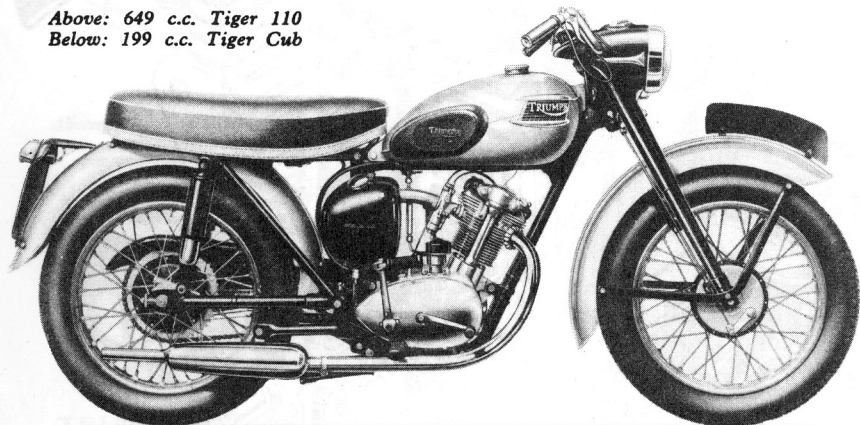
Modernistic lines characterize the Twenty-One



Reprinted from THE MOTOR CYCLE



Above: 649 c.c. Tiger 110
Below: 199 c.c. Tiger Cub

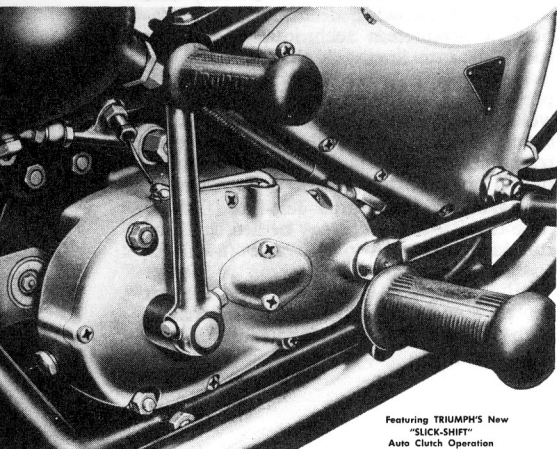


larger models, is fitted; the rider's weight, applied to the pedal, levers the stand into place without pulling or lifting by hand.

Fitting of proprietary pannier equipment is aided by the provision of a drilled lug at each side of the sub-frame and by holes pierced in the suspension-unit upper mounting gussets. However, corresponding holes are not drilled through the rear enclosure panels and it is left to the owner to mark off the pressings from the inside, detach them from the machine and drill accordingly.

The six remaining Triumphs fall into the B group and all have overhead-valve vertical twin engines of either 498 c.c. (63 x 80mm) or 649 c.c. (71 x 82mm) and are alike in many respects. Comprising the five-hundreds are the Speed Twin roadster, the high-performance Tiger 100 sports model and the TR5 competitions mount; corresponding six-fifties are the

Modified end cover of the gear box on 498 and 649 c.c. twins



Featuring TRIUMPH'S New "SLICK-SHIFT" Auto Clutch Operation

Thunderbird, the power-packed Tiger 110 and the TR6 Trophy.

New for 1958 on the Tiger 100, Tiger 110 and TR6 Trophy models is an 8in-diameter front brake, incorporated in a full-width hub, which replaces the earlier brake with cast-alloy shoe plate and integral air scoop. In construction and appearance the hub is similar to the 7in-diameter component introduced last year for the Speed Twin, TR5 Trophy and Thunderbird; both sizes of hub now have decorative, fluted cover-plates on the left.

Styling of the four roadster models in the group—the Speed Twin, Thunderbird and the two Tigers—is improved by fitting a deeper-section front mudguard designed to dispense with forward stays. The possibility of water thrown up by the front wheel being blown back on to the rider's knees is thereby lessened. Other minor changes which will be appreciated by discerning owners are the relocation of the oil-tank filler cap in a more convenient, upright position, where it cannot be fouled by the leg when kick-starting; attention to brake and clutch cables is simplified by knurled finger adjusters incorporated in the handlebar-lever pivot blocks. The cables follow a new, easier path (so that lighter operation is obtained) through holes, fitted with rubber grommets, in the sides of the nacelle.

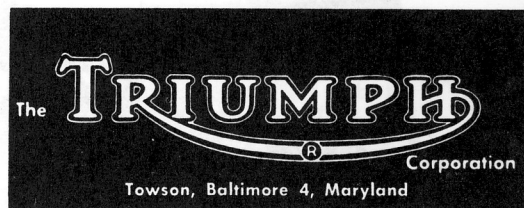
Experiments with the Tiger models have shown that exhaust pipes of smaller, 1½in diameter give a slight increase in performance as compared with the pipes used previously and the new pipes are standardized on the latest models; they are also to be available for existing machines.

Specifically for clubman racing, a two-carburettor Tiger 100 light-alloy cylinder head with widely-splayed inlet tracts was announced last year; flanged adaptors, secured by locknuts, are screwed into the tracts to accept twin Amal Monobloc carburettors. Based on this successful design, a two-carburettor cylinder head is listed for the Tiger 110 model; however, whereas the special head is supplied as optional original equipment on the smaller machine it is available only as a supplementary extra for the six-fifty.

Internally, the standard light-alloy Tiger 110 cylinder head is given added strength by the provision of a greater thickness of metal between the edges of the exhaust-valve seat inserts and the holes for the inner forward holding-down bolts, thus minimizing the risk of cracks developing. The change has been made possible by a slight reduction in exhaust-valve diameter.

On all B-group models the embodiment of a garter-type oil seal in the drive-side crankcase half, behind the primary-drive sprocket, serves the double duty of improving crankcase aspiration and preventing the transfer of engine oil between crankcase and chaincase. In order that the seal may be accommodated the boss of the driving sprocket has been reduced in length. As a further precaution against possible oil leaks a rubber sleeve, under light compression, now occupies the space between the boss of the kick-starter pedal and the gear-box end cover on all models.

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