



NEW FOR GENEVA SHOW

# TRIUMPH

**Substantial Improvements  
to Already Successful  
Sports Cars**



## and SPITFIRE Mk. 2

**C**LASSIC is a much-overworked adjective when applied to cars. But its use in relation to the Triumph TR range of sports cars seems justified by the rightness of the design, their ability to endear themselves to their owners and their considerable sales and competition success over the years.

The announcement of the TR4A with independent rear suspension is a logical development, since the TR4, which it succeeds, remained the only live-axle car in the Triumph passenger car range. It was also logical that the design of a new independent suspension system should follow that of the successful Triumph 2000 model. However, the company have wisely retained the 2,138 c.c., four-cylinder, wet-liner power

unit which has contributed so much to the attractive character and longevity of TR models ever since their inception.

Concurrent with the revised suspension, a modified engine and exhaust system giving an extra 5 b.h.p. is introduced. Other changes are a walnut fascia panel, revised handbrake location and closed-circuit engine cooling. The improved specification of the TR4A is marked by a price increase of £60 including purchase tax.

Brief road experience with the new model indicates that the TR4A IRS successfully marks the transition of the TR series from the traditional British sports car form to the modern European type of G.T. vehicle.

To adapt it to independent rear suspension, the separate chassis frame has

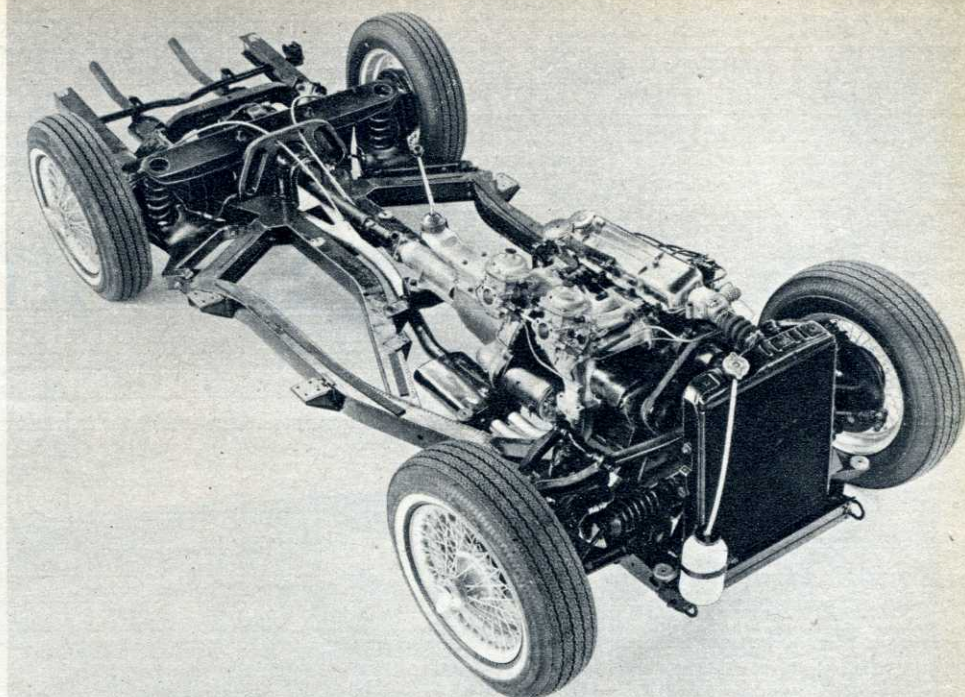
been redesigned completely. While it bears some resemblance to the old, rigid-axle chassis, the stress paths are quite different, although clever design has made it possible to fit live-axle suspension as a special alternative for U.S. buyers only. Constructed entirely of steel box sections, the new frame is best regarded as a backbone type. Rear spring loads are fed into two parallel members running close together along the middle of the car and forking outward by way of the gearbox to join the outer side members. These outer members, at their forward ends, are primary load carrying structures, but, behind the joint with the backbone members, their main function is to brace the central members and to carry beam loads.

Torsional loads are fed to them

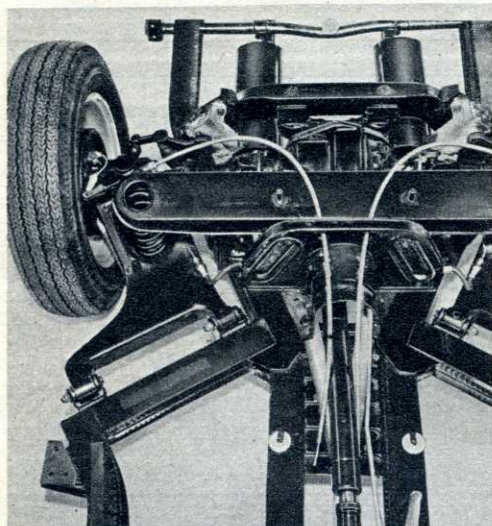


**PRICES**

	Basic	Total (inc. P.T.)		
	£	£	s	d
TR4A	800	968	4	7
TR4A Hardtop	835	1,010	10	5
Spitfire Mk. 2	550	666	2	11
Spitfire Mk. 2 Hardtop	578	699	19	7
Extras (Including P.T.)				
Laycock-de Normanville Overdrive		51	7	1
Heater		13	5	10
Wire wheels		36	5	0
Tonneau cover (for TR4A)		12	10	9
Tonneau cover (for Spitfire Mk. 2)		11	6	0
Goodyear Whitewall tyres		6	0	10
Leather seating (for TR4A)		14	10	0

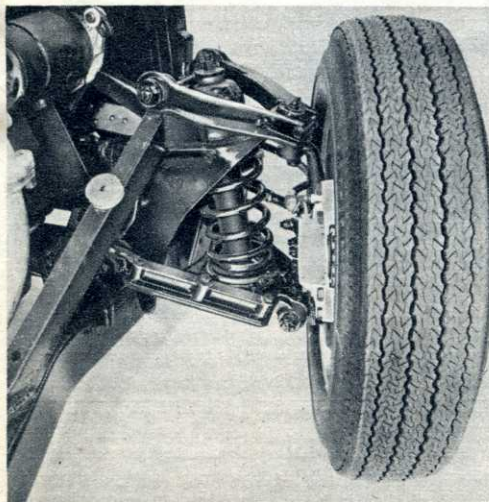


*Workmanlike and immensely strong is the new TR4A chassis*



*Above: Plan view of the TR4A rear suspension showing the transverse spring reaction member and the arched crossmembers from which the final drive unit is suspended*

*Below: Basically the same as that of the TR4, the front suspension has longer springs and sealed-for-life bearings*



through two transverse arms on the dorsal members, just forward of the final drive. These outrigger members are angled to the centreline of the car and carry the rear suspension arms. The frame centre members also open out to the full width of the spring base to provide body mounting points aft of the final drive unit. A light tubular cross-member, to support the exhaust system and spare wheel, ties the two extremities of the frame together.

The hypoid bevel final drive unit is

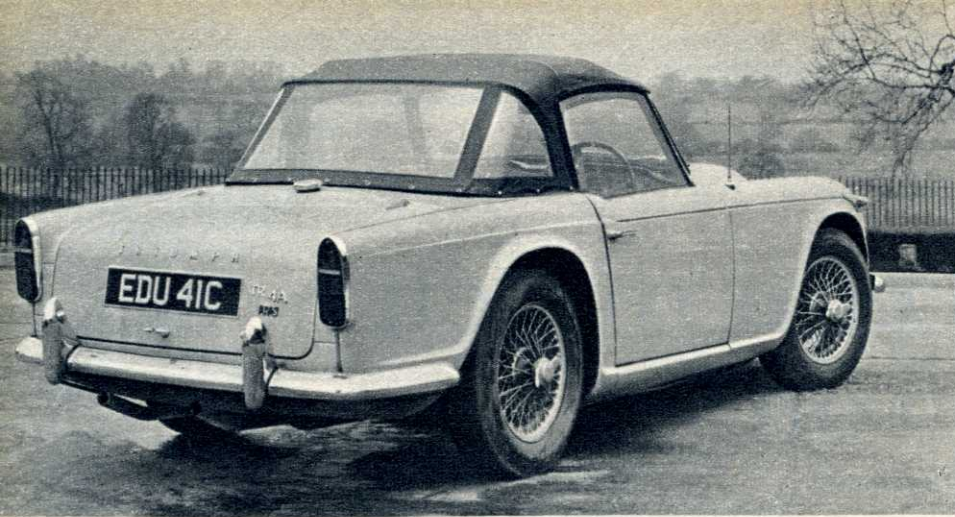
suspended on four widely spaced, bobbin-type rubbers from a pair of pressed steel arches bridging the dorsal frame members. Spring reaction is taken on a transverse pressed channel attached by vertical pillars to the frame members.

A complete reappraisal of the suspension geometry has been made, with the twin objects of improving the handling, by reducing the amount of understeer, and of softening the ride by giving greater rear wheel movement. To

*New handbrake location between the seats increases the effective width of the driving compartment, and the walnut instrument panel will appeal to many buyers*







The neat hood, model identification motif and side-lamp carrier show up well from this angle

## TRIUMPH TR4A and SPITFIRE Mk. 2 . . .

achieve the former, the roll axis of the car has been tilted back, the front roll height being raised from 0.75in. to 7.81in. and the rear roll height being lowered from 9.88in. to 4.35in. By increasing the rear wheel travel to 6in., it has been possible to fit softer, long-travel springs. The resulting reduction in roll stiffness at the back has allowed the front spring rates to be reduced without losing the essential relationship between front and rear roll stiffness.

Following the same basic layout as that of the 2000 model, the TR4A IRS

suspension features cast light-alloy, semi-trailing arms, incorporating the rear wheel bearing housings, and coil spring suspension. Lever arm, piston-type dampers are mounted transversely on the rear final drive arch. While the use of lever arm dampers is unusual, in this application they permit a lower boot floor and the arms are arranged to take rebound, being strengthened locally to act against the rebound rubbers. Because of the narrower wheel track, compared with the 2000, and the necessity to provide clearance between the suspension

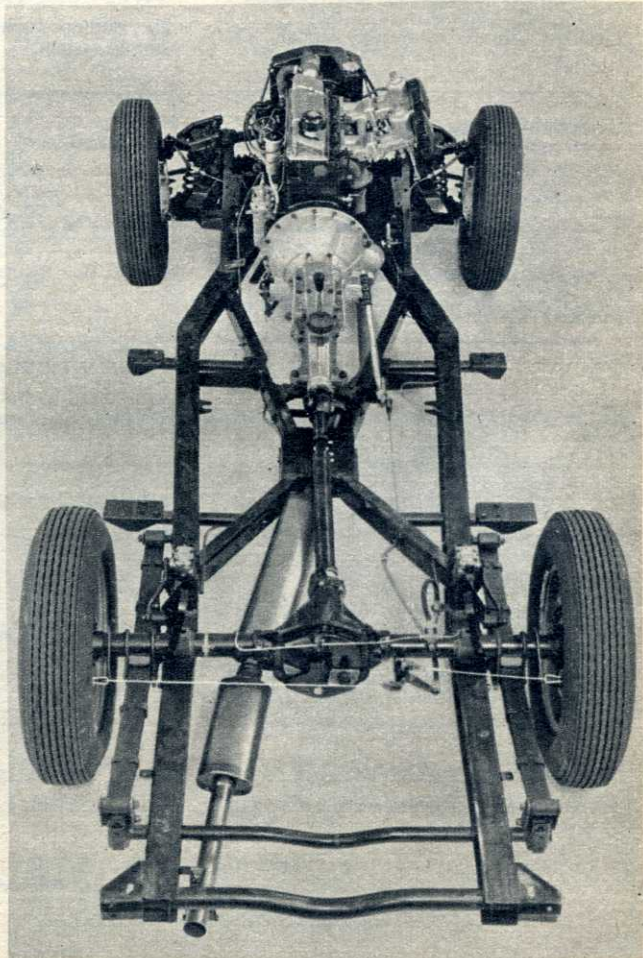
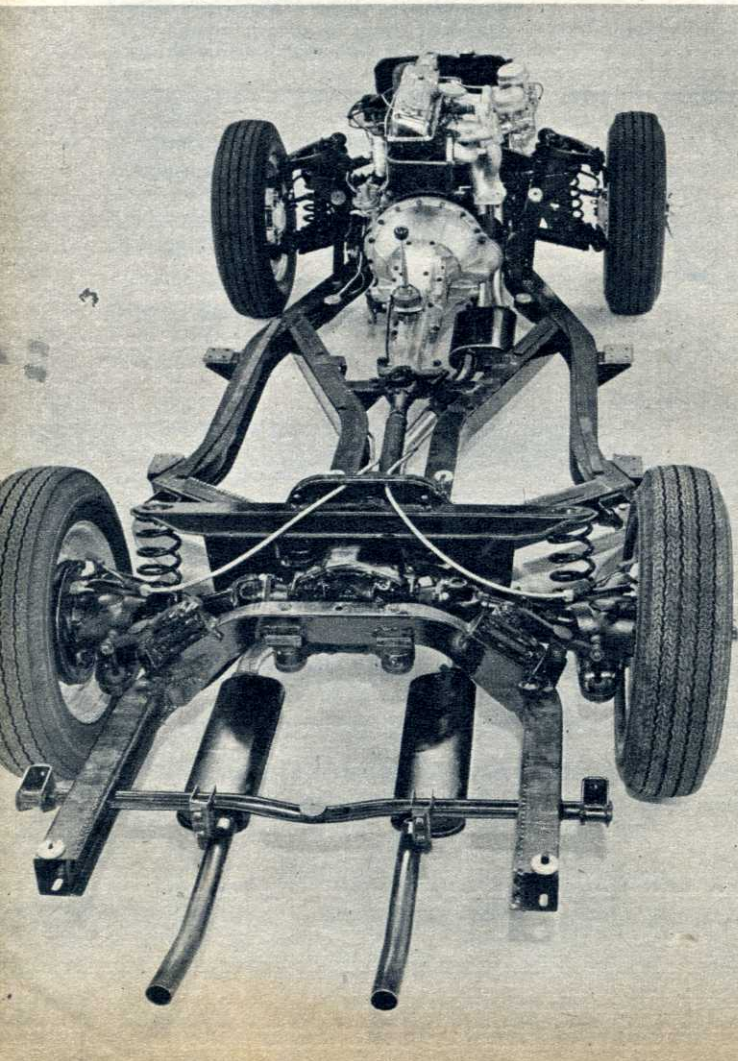
arms and the body floor, none of the suspension parts is interchangeable with those of the Triumph saloon model.

Although the Alford and Alder wish-bone front suspension is superficially the same, the pivot centres have been modified to raise the roll height, and pressed steel "bowler hats" are fitted on the spring abutments to permit the use of longer springs. Nylon bushes and sealed joints reduce the need for maintenance.

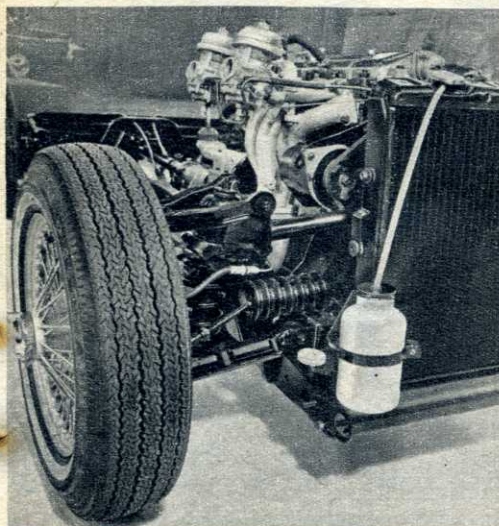
The rigid-axle, leaf-spring version of the TR4A uses the same frame as the independent suspension car, the front eyes of the rear leaf springs picking up alternative brackets bolted to the outer trailing arm attachment points. The absence of the outer side-members by way of the axle makes possible the fitting of longer, softer rear springs to give the same softer ride characteristics to this model.

The main engine changes have been aimed at boosting power output and reducing exhaust noise and valve clatter. The camshaft has been given a longer inlet valve dwell, for better cylinder filling, while modified quietening ramps reduce noise and permit the use of lighter springs for the same valve crash limit because of their lower acceleration and deceleration rates. These changes, in combination with a cast-iron, four-branch exhaust system with twin down-pipes, give a useful increase of 5 b.h.p.

Left: The bell-shaped TR4A frame bears a family resemblance to that of the Herald. Although superficially like that of the TR4 (right), the stress paths are quite different







Catchpot to convert the cooling to a closed circuit system; a similar arrangement is used on the Spitfire

The damping effect of cast-iron also reduces noise.

In anticipation of a general tightening-up of noise regulations—most manufacturers of sports cars are having trouble already in Germany—the remainder of the exhaust system has also been completely replanned. The twin downpipes feed into a baffled resonance box, mounted level with the gearbox. A single pipe from this box runs between the frame backbone tubes to a junction piece under the final drive nose-piece, where it splits into twin tail pipes, each with a straight-through silencer. Although not the subject of a special announcement, Stromberg 175CD constant-vacuum carburetors have been fitted to the TR4 for some time (replacing twin S.U.s) and continue on the TR4A.

To comply with certain American state regulations, crankcase ventilation is fitted. A Smiths "anti-smog" one-way valve and flame trap maintains the balance of crankcase and manifold pressure. A further refinement is the adoption of closed circuit cooling, a plastic bottle connected with the radiator overflow pipe acting as a condensation chamber and coolant pot.

Body lines of the TR4A are basically unchanged. However, a practical improvement has been to move the sidelamps from the ends of the grille, where they were partly obscured when the bonnet was opened, to a position on the outside of the front wings where they are incorporated in a styled motif. A new grille with more widely spaced horizontal bars is a further recognition point, while TR4A badges on the tail identify the car from the rear.

Out-and-out enthusiasts might say that the nature of the car has been

## Specification TR4A

### ENGINE

Cylinders	... 4-in-line
Cooling system	... Water: pump, fan and thermostat
Bore	... 86mm (3.39in.)
Stroke	... 92mm (3.62in.)
Displacement	... 2,138 c.c. (130.5 cu. in.)
Valve gear	... Overhead, pushrods and rockers
Compression ratio	... 9-to-1; option 7-to-1
Carburetors	... Two Stromberg 175CD
Fuel pump	... Mechanical
Oil filter	... Full-flow, renewable element
Max. power	... 104 b.h.p. (net) at 4,700 r.p.m.
Max. torque	... 132 lb. ft. (net) at 3,000 r.p.m.
Max. b.m.e.p.	... 153 p.s.i. at 3,000 r.p.m.

### TRANSMISSION

Clutch	... Borg and Beck diaphragm spring, single dry plate, 8.5in. dia.
Gearbox	... Four-speed, all-synchromesh, central floor change
Overall Gear ratios	... Top 3-7, OD Top 3-04, Third 4-9, OD Third 4-02, Second 7-43, OD Second 6-09, First 11-61, Reverse 11-92
Final drive	... Hypoid bevel, 3-7 to 1

### CHASSIS AND BODY

Construction	... Separate chassis, pressed steel body
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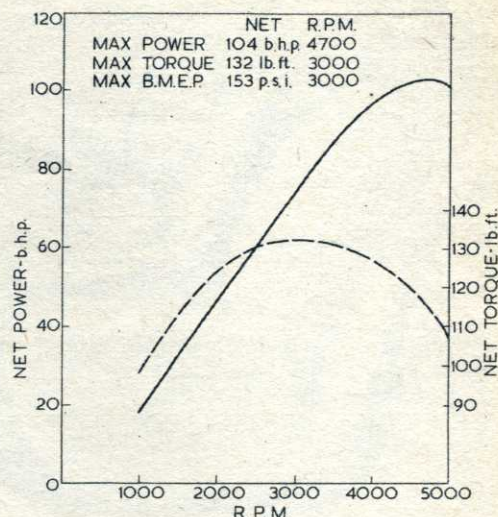
### SUSPENSION

Front	... Independent, coil springs and wishbones, telescopic dampers
Rear	... Independent, semi-trailing arms, coil springs, lever arm dampers
Steering	... Rack and pinion. Turns lock-to-lock 3-25. Wheel dia. 16in.

### BRAKES

Type	... Girling disc front, drum rear, no servo
Dimensions	... F 10in. dia; R 9in. dia. 1-75in. wide shoes
Swept area	... F 233 sq. in.; R 99 sq. in. Total 332 sq. in.

changed by the adoption of a non-detachable hood with a rigid front rail. The same might have been said when fold-flat screens were abandoned. The much-improved hood utilizes the old folding frame, with the addition of side irons to support the rigid leading edge. This is located at the top rail of the screen by short pegs and retained by over-centre clips. It can be erected in seconds, stows neatly below the waistline and is covered by a button-on tonneau cover.



Power and torque curves of the TR4A engine, continuous and broken lines respectively

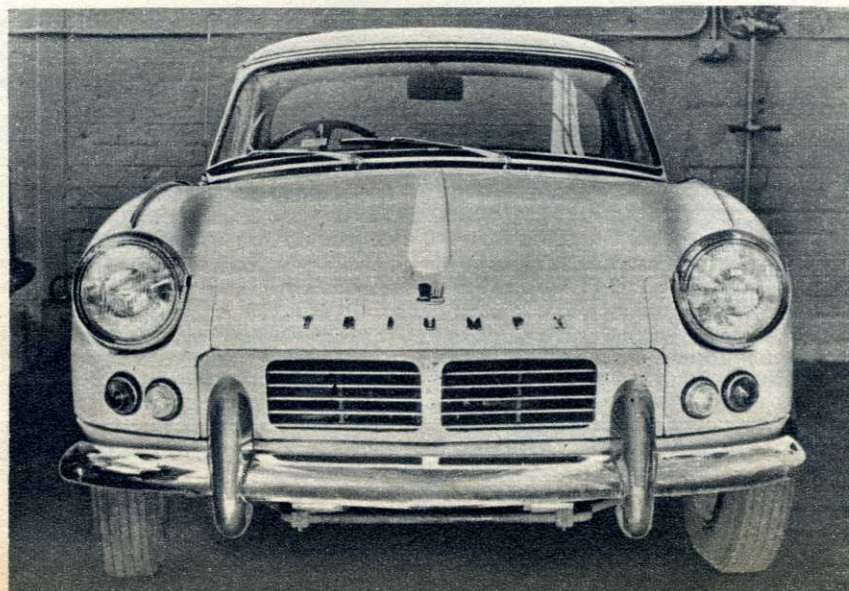
### WHEELS

Type	... Steel disc (optional centre-lock wire wheels) 4in. wide rim
Tyres	... Goodyear Grand Prix tubeless; 6-95-15in.

### DIMENSIONS

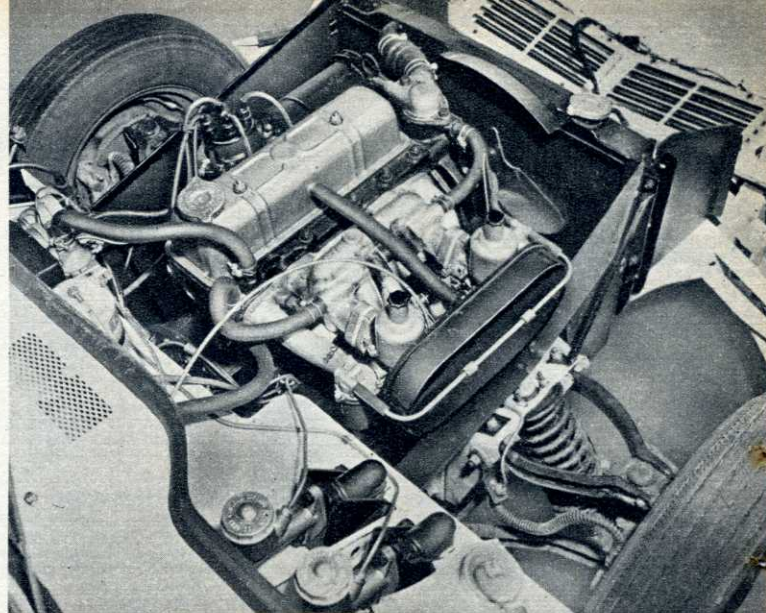
Wheelbase	... 7ft 4in. (224cm)
Track: front	... 4ft 1in. (124.5cm)
Track: rear	... 4ft 0.5in. (123cm)
Overall length	... 13ft 0in. (396cm)
Overall width	... 4ft 10in. (147cm)
Overall height (unladen)	... 3ft 11.5in. (120.5 cm)
Ground clearance (laden)	... 6in. (15.2cm)
Turning circle	... 34ft 0in. (10.4m)
Kerb weight	... 2,240lb. (1,016kg)

Internally, the modifications which catch the eye are the adoption of a walnut-veneered instrument panel and a revised location for the handbrake on top of the transmission tunnel. This latter change moves the lever from its traditional position along the right-hand side of the tunnel where it was prone to dig into the driver's leg in a right-hand-drive model. The instrument layout on the new panel is unchanged, with a large rev counter and trip speedometer in front of the driver

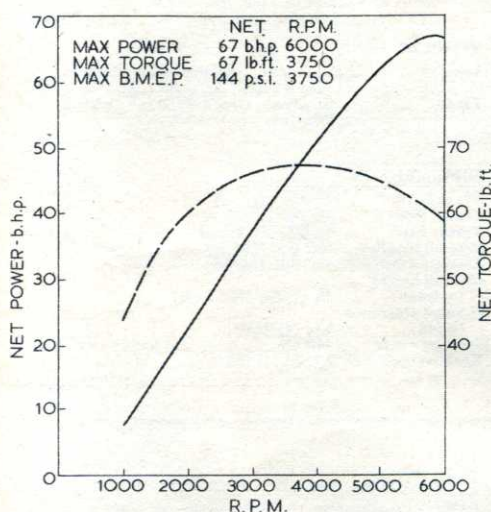


This new grille with horizontal slats identifies the Spitfire Mk. 2





Left: Revised interior trim of the Spitfire Mk. 2 gives an added impression of luxury. Right: The twin carburettor Spitfire engine now develops 67 b.h.p. A water-heated inlet manifold is a worthwhile innovation and the pipe leading rocker box fumes into the air cleaner will be noticed.



Power and torque curves for the latest Spitfire engine

and minor instruments grouped in the middle of the panel.

A brief drive on a test track proved that the ride and handling of the car has been very much improved. On rippled fast bends, always a *bête noire* with the TR3 and 4 models, the car now holds a steady line, while on a wet track high-speed cornering was possible without any tendency for the rear end to drift out. At the request of American



## TRIUMPH TR4A and SPITFIRE Mk. 2...

dealers, all production is to be fitted with Goodyear Grand Prix banded tyres. To avoid material handling problems, cars for the home market will also have these, although Dunlop SP tyres are available at extra cost.

## SPITFIRE Mk. 2

With the launching of the TR4A, a Mk. 2 version of the Spitfire two-seater sports car is announced also. This has increased power, more luxurious interior trim, and will sell in the United Kingdom at a suggested price of £666, £24 more than that of the model it supplants.

Main mechanical alterations are to

the engine, which has a revised camshaft profile and now develops 67 b.h.p. at 6,000 r.p.m. This compares favourably with 63 b.h.p. at 5,750 r.p.m. for the Mk. 1 model and is reckoned to increase the maximum speed to 96 m.p.h. A fabricated, four-branch, twin exhaust manifold has contributed to the extra horsepower. There is also a new water-heated inlet manifold, which should shorten engine warm-up time. To reduce exhaust cross-feeding, the four-branch manifold is laid out so that gases flow from numbers 1 and 4, and 2 and 3 cylinders respectively into twin downpipes.

A Borg and Beck diaphragm spring clutch is part of the new specification, and a Laycock-de Normanville overdrive is still available as an extra. As on the TR4A, a coolant catchpot is fitted and converts the cooling to a closed circuit system. The interior of the Mk. 2 is much more cosy as the result of a number of trim additions and changes. Black leathercloth covering has been applied to all the surfaces inside the cockpit which were previously painted. In the main these surfaces are the fascia panel, the parcels' shelf and the door waist rails, which are also padded. Carpeted kick pads have been added to the lower front corners of the door trim pads.

A full range of extras, including tonneau covers, hardtops and improved performance kits continue to be available, most prices remaining unchanged

## Books Reviewed

**Farm Holiday Guide 1965.** By David Murdoch. Published by Farm Holiday Guides Ltd., 18 High Street, Paisley. Price 3s 6d.

Containing 2,460 ideas of where to stay for a country holiday, this guide covers England, Scotland, Wales and Ireland by counties. Each entry begins with the name of the proprietor, followed by the full address and a description of the amenities offered, together with the prices charged. Further sections of the guide cover furnished accommodation, village inns, pony trekking and horse

riding, children's holidays, camping sites, fishing holidays and caravan holidays in Britain. It is a useful little guide that simplifies the problem of choosing where to stay for a country holiday.

W. L. H. A.

**The International Grand Prix Book of Motor Racing.** Edited by Michael Frewin. Published by Leslie Frewin (Publishers) Ltd., 18 Hays Mews, Berkeley Square, London, W.1. Price £1 15s.

Another addition to the growing number of motoring anthologies, the

title of this one is somewhat of a misnomer since the book is concerned with a wider degree of motor sport than pure grand prix racing. The excerpts have been well selected and are by distinguished contributors.

We feel that the tone of the book is spoiled by the sensation-seeking aspect of the large number of photographs, many of which display particularly unpleasant accidents. The enthusiast needs no such reminders of bygone tragedies and outsiders will receive a completely erroneous impression of the sport. J. C.