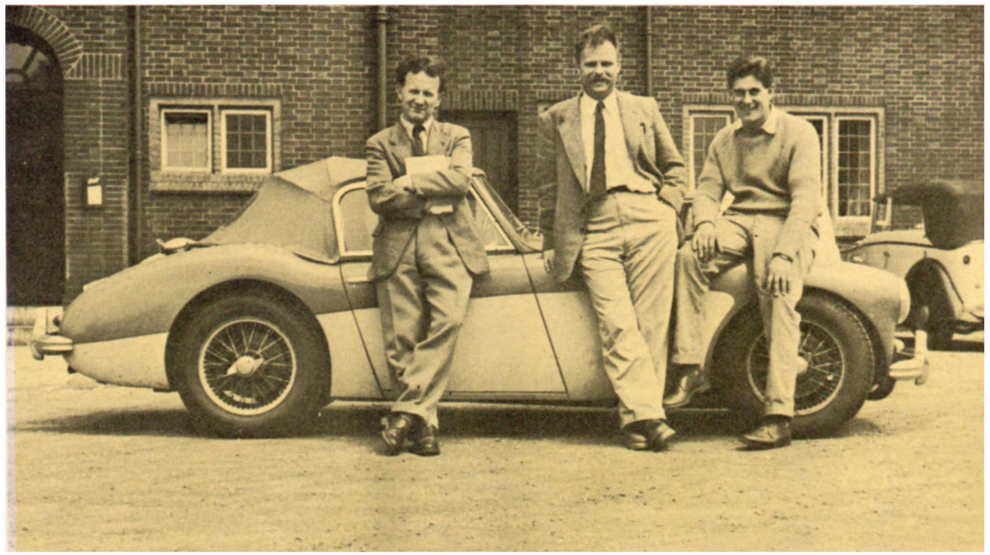


The "MM" model looks same from the outside. So do Denis May, Geoffrey Healey and Tony Wilson-Gunn, sales rep.

21 MORE HORSES FOR THE HEALEY

by Dennis May

AUSTIN HEALEY catered to gourmets rather than gourmands when they switched from four cylinders to six in the fall of 1956. The new engine, borrowed from the parent Austin company's A105 sedan, had the expected civilizing effect on the hitherto roughish A-H Hundred sports car; but the accompanying power bonus of 12 bhp (up from 90 to 102) didn't exactly set the pavement on fire when translated into extra alacrity on the street.

Foreseeably, Donald Healey and his sages were going to have to find a further instalment of performance from somewhere, primarily to keep the needful jump ahead of the smaller displacement but commercially competitive wares of Triumph and MG. This development, hinted at during the 100-6's gestation period by certain top-end singularities of the prototype six that took records on the salt—as a f'instance, 1000 kilometers at 150.98 mph—has now been realised. The new stuff, resulting in a top speed gain of over 13 mile per hour and comparable improvements in takeoff, is to be part of the 100-6 parcel for '58. It will also be available in kit form, distributed in the U.S. by Hambro Automotive Corporation, for the conversion of first-year sixes.

This fresh tureen of soup has been on the hob since the summer of 1956, and made a quiet debut in European competition on the car that Tommy Wisdom, a safe rather than meteoric driver, took around the Mille Miglia course at an average of 75.9 mph to place second in the "price class" last May. Stock 100-6's for 1958 will be identical as regards engine specification with the Mille Miglia entry, and so will converted '57 models.

Centerpiece of the pack is a new cylinder head, basically similar to the old one but with important revisions aimed at, and achieving, better filling. This is the head the Bonneville team had, only it omits the three dual choke carbs and the 9 to 1 compression used on the salt. In that form it turned 150 bhp at 5000 rpm, but a 9 to 1 ratio would make super grade gas a must if adopted on the breadwinner, and likely decivilize the engine to somewhere around the level of the old four. Too, all experiments with one choke per inlet port have failed to produce the kind of power curve that's generally acceptable for non-competition roadwork. (Parenthetically, *SCI* showed a flair for crystal ballplay in last February's test report on the contemporary 100-6 by running a photo of the top end of the Bonneville record breaker with the guesstimate "Next Year???" alongside).

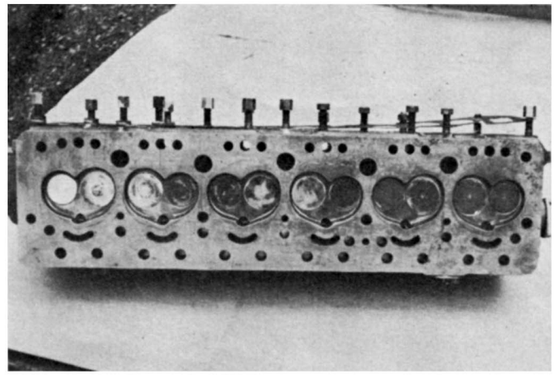
Cylinder head of BMC's regular C-type engine, it will be remembered, has the inlet manifold cast in. The new A-H variant has a separate aluminum manifold, the main object being to multiply ram effect by increasing the distance between the carburetors and the valve heads. Comparative port lengths are 3 inches for the normal C-type and 5½ for the A-H job. Cross section of the cast aluminum gallery itself goes up by roughly 25 percent and is square in shape, whereas the cast-in one is nearer circular. Divorcement of the head and manifold eliminates a source of gasflow restriction because the head holding down studs don't have to pass through the manifold.

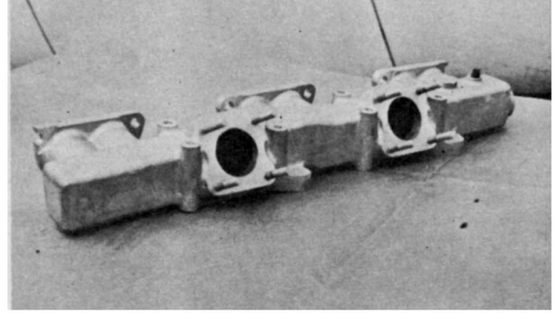
The internal form of the combustion chambers has been slightly modified and the size of both inlet and exhaust valves increased—former from $1^{11}/_{16}$ inches to 1¾; latter from $1^{7}/_{16}$ to $1^{9}/_{16}$. Inlet valve material stays the same but KE965 steel has been adopted for the exhausts. Strength of the valve springs (two per stem, of course) is unchanged, for although the power peak has been shifted 200 rpm up the scale, the new summit still comes a safe thousand-per-minute below the ascertained crash rate for these springs.

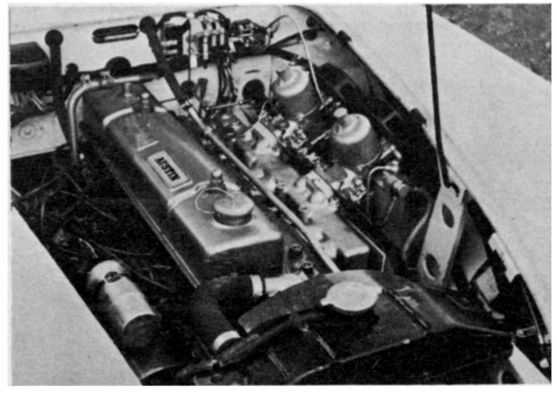
Larger bore SUs, type HD6 with 1¾ throats, replace the old 1½ inch carbs, and are angled at 35 degrees to the horizontal instead of being flat. The internal ports, inlet and exhaust both, have been opened up and reflowed in consultation with Harry Weslake, who was responsible for much of the design work at the top end of the original C engine.

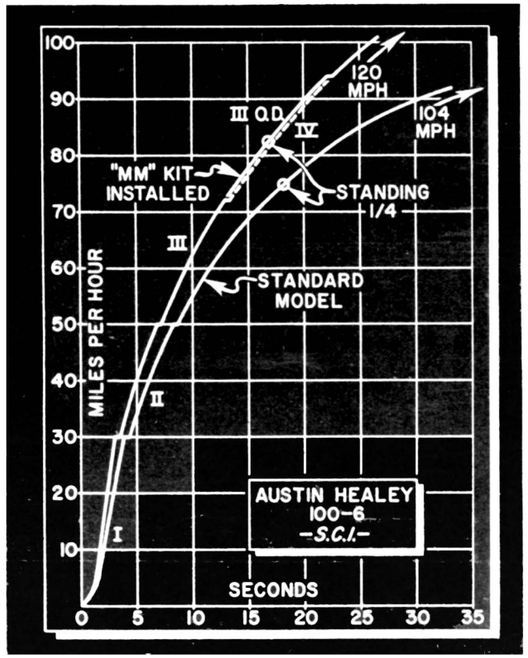
(Continued on page 56)

TOP: New head has enlarged valves, a modified combustion chamber, and reflowed porting. The regular "C" camshaft has been retained, but resculpturing the combustion chamber for the larger valves has fractionally reduced the compression ratio from 8.25/1 to 7.9/1. CENTER: The new separate aluminum-casting inlet manifold. It now carries twin SU's with 1¾ inch throats set at 35 degrees downdraft angle. BOTTOM: Although a compact fit between the head and body side, the new gasworks—oversize SU's and separate inlet manifold—do not interfere with accessibility for tune.









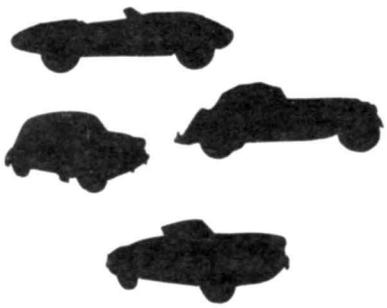
AUSTIN HEALEY 100-6 MM PERFORMANCE

	MM Kit	Standard
TOP SPEED:		
10 Lap Average (see text)	120.2 mph	104.2
Fastest run	121.7 mph	108.4
ACCELERATION:		
From zero to	Seconds	
40 mph	5.0	6.1
50 mph	6.8	8.3
60 mph	8.8	11.6
70 mph	12.2	15.7
80 mph	15.9	21.3
90 mph	21.3	30.4
100 mph	25.5	——
Standing ¼ mile	16.9	18.2
Speed at end of quarter	82 mph	75 mph
FUEL CONSUMPTION:		
Hard driving	16.7 mpg (U.S. gals)	19 mpg
Average driving (under 60 mph)	25 mpg	27 mpg

SPECIFICATIONS

POWER UNIT:	
Type	In-line six
Valve Arrangement	Vertical in-line, pushrod.
Bore & Stroke	3.13 x 3.51 in. (79.4 x 89 mm.)
Stroke/Bore Ratio	1.13/1
Displacement	161 cu. in. (2639 cc.)
Compression Ratio	7.9/1 (was 8.25/1)
Carburetion by	Two 1¾ in. semidowndraft SUs, HD6. (were 1½ in. H4)
Max. Power	123 bhp at 4800 rpm (was 102 bhp @ 4600 rpm)
Max. Torque	147 lb-ft at 3000 rpm (was 141 lb-ft @ 2400 rpm)
Idle Speed	750 rpm
RATING FACTORS:	
Bhp per cu. in.	0.76 (0.63)
Bhp per sq. in. piston area	2.68 (2.21)
Torque (lb-ft) per cu. in.	0.91 (0.87)
Pounds per bhp—test car	19.5 (23.9)
Piston speed @ 60 mph	1500 fpm
Piston speed @ max bhp	2800 fpm (2680 fpm)

SPORTS CAR OWNERS LET YOUR CAR SPEAK FOR ITSELF IN SPARKLING CHROME.

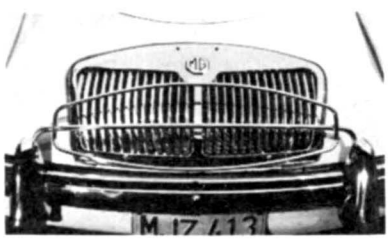


We can plate any part of your car from bumper to bumper and anything in between. Valve Covers—Windshield Frames—Spoke Wheels — Radiator Shells — YES, EVEN FENDERS & HOODS.

Write, wire or contact Bill Carlson or Art Sherwin at:

ARROW PLATING COMPANY, INC.
2155 W. WABANSIA AVENUE
CHICAGO 47, ILL. — CAPITOL 7-4774

NOW READ THIS!!
M. G. A. Owners



- PROTECT THAT 80.00 GRILLE
- CONTOURED BAR STEEL
- TRIPLE CHROME PLATED
- NO DRILLING CAR
- 15 MINUTE INSTALLATION
- GOOD VALUE **$22.75**

DEALER INQUIRY INVITED

'SPEEDBALL' SHIFT KNOB FOR ALL CARS

- Lightweight-Comfortable
- Internal Threads
- Bright Silicone Finish
- 1½" Diam. (3.5 oz.)
- 1⅞" Diam. (5 oz.)

$2.25

Prices Include Tax & Postage-No. C.O.D.

GEAR SHIFT EXTENSION 4" x 40°
RENAULT—MORRIS MINOR—VW
EXTENSION ONLY **$1.35**
EXTENSION WITH SPEED BALL **$3:25**

MULTI-PRODUCTS CO.
5054 E. ALAHAMBRA AVENUE
LOS ANGELES 32, CALIF.
CA 3-1186

Morgan 4/4

(Continued from page 17)

and TD, and has comparable top speed. And this is in spite of its being under-transmissioned, although not under-powered.

The small Morgan's engine is mounted far forward on the frame, so that almost the entire Ford three-speed box also lies under the hood and ahead of the firewall. Shifting is accomplished by means of a horizontal shaft which pivots and slides in a bearing in the bulkhead. The far end of the shaft connects with a rather conventional vertical shift lever and the driver's end is bent upwards to terminate in the usual knob. Shifting, therefore, requires the same fore-and-aft and transverse motions that go with a conventional three-speed box, with the difference that the pattern is reversed. Instead of R-2 top; 1-3 bottom: it is 2-R top; 3-1 bottom.

Acceleration times through the gears in the new 4/4 could be reduced by a full second or more if the final shift could be made quickly, but the 2.01 to 1 jump between second and third is what really hurts.

There are remedies if you care to pay for them. This Ford transmision is used a lot by the specials set in England and close-ratio gears made specifically for it are inexpensive and easily available. Herndon has ordered a set which will permit him to wind out to 70 mph in second, which will greatly improve performance. A better move is swapping the Ford box for a four-speed unit. This can be done at little cost and with a minimum of adapting problems if you use the transmission from a side-valve Morris Minor.

Most of the important things in the 4/4 have been well provided for. The brakes, for example, may not sound impressive with a total friction area of only 88 sq. inches. But the car is light and the lining ratio works out to 110 sq ins per ton. This is a very decent figure for the speeds involved, and the brakes benefit further from good design and ample cooling. During our standard tests, which reduce many brakes to a state of near-total failure, the 4/4's brakes showed no sign of fade; they became only slightly grabby, tending to pull to one side.

On rough corners the rear wheels tend to chatter outward in the manner of all hard-spring, solid-axle cars. When charging full-tilt down the straight there is considerable shaking movement of the cowl and a slight tendency for the car to 'walk" — to wiggle a bit in its forward course. Little road shock is fed back to the steering wheel and extra-light front wheel loading adds to the ease of quick, no-slack steering. This and the character of the ride, the very perceptible flexing of the supple frame, and the vista down the long, narrow hood are all reminiscent of good things of the past and contribute to the Morgan's nostalgic appeal.

The 4/4's P.O.E. base price is $2195, although most cars shipped here carry a few extras. The speed kit costs an additional $275 and there are rumbles that the 4/4 may soon be available with Coventry Climax single-cam 1500 cc engine at substantially higher cost. Morgan cars are distributed east of the Mississippi by Fergus Motors of New York. Worldwide Automotive Import Inc. of West Los Angeles serves the western U. S.

–Griff Borgeson

Austin Healey

(Continued from page 18)

Exhaust plumbing is largely as before, with the front three and the back three ports spilling into separate manifolds, which in turn discharge through individual downpipes to a sound absorption type muffler. Final exit is normally via a single tailpipe, and with this system the warmed up 100-6 seems no noisier than the '57 version. Dual tailpipes, as used on the Mille Miglia car, are worth an extra 5 bhp at the top end of the rev range, but their note is conspicuously rude.

Two pairs of hotspot areas, with calculated air gaps between them, are formed on opposing faces of the exhaust and inlet manifolds. Hotspotting has been designed to localize heat exchange in the carb regions, rather than spreading it over the whole length of the manifolds. Undesirable heat transfer to the float chambers is baulked by a sheet steel plate attached sandwich-wise between the flanges of the SUs and the intake gallery. The latter has the usual center dividing wall, pierced by a balance hole of 7/16 inch diameter.

On the ignition side, the new equipment includes a replacement distributor giving a modified advance curve.

What all this adds up to is a gain of 21 horsepower, maximum output being 123 bhp at 4800, compared with the 1957 car's 102 at 4600. Max torque goes up from 141 pounds foot at 2400 to 147 at the surprisingly high turnover of 3000 per minute. The torque curve is flatter and longer than the basic C-type's. The power curve follows approximately the "C" path as far as 2000 rpm, then really starts showing a dividend.

All concerned in the project—Geoffrey Healey at Warwick, Morris Engines Division at Cowley, and freelancer Harry Weslake—have sensibly resisted the temptation to let this thing develop into a mere gunpowder plot. They wanted, and were determined to achieve, a substantial performance increase, but they weren't willing to sacrifice any of the smoothness they'd boughten with their two extra cylinders. To this end, the regular C camshaft, with the moderate lift of .3125 inch has been retained, and the compression ratio is even reduced a piece—from 8.25 to 7.9/1. This drop in ratio, as a matter of fact, is the more or less incidental result of the combustion chamber sculpture necessitated by the larger valves.

Most of Healey's power-seeking exercises have centered around inlet tract length and its relation to charge ram. Oddest of the several empirical relics we saw at Warwick was a semi-downdraft manifold flanged to slope the SU's back towards the

rocker box, so the mixture had to make a V-turn of about 40 degrees. Purpose of this peculiar layout was to make room between the cylinder head and the body for abnormally long induction passages, which of course it did. It didn't work, though. Another of Warwick's wallflowers is a complete and intact GP Ferrari of the immediate pre-Lancia type. This doesn't presage twin ohc and four oversquare cylinders for the Austin Healeys of tomorrow; in fact, we gather BMC's C-type engine will be the basis of Healey powerplants for quite a while to come. But it seems at one time there was a possibility of Healey and Ferrari becoming next-of-kin. The projected 3 litre 450 horsepower engine, which, as reported in *The Sixty Fast Years (SCI August)*, it was planned to build for 300 mph records by Donald Healey this year, is in abeyance temporarily, anyway. On mature consideration, BMC couldn't see any sense in two of its family members, MG and Austin Healey, both shooting for records in the same theater at the same time, and thereby stealing each other's publicity thunder. So they called Healey off and gave MG a clear field.

The new 100-6 used by *SCI* to get the test figures was the only one available at the necessarily early date of our Warwick visit, namely, it was the actual Mille Miglia runner. However, even if it is assumed this one's engine was selectively assembled in the first place, the hard usage it has undergone during a subsequent mileage of 18,000 would almost certainly be enough to restore it to, or below, par. So it's reasonable to expect that a purely stock version, operating under conditions identical with those of our test—top up and two up—would show a top speed of around two miles per minute, and a standing quarter-mile time in the 17 seconds region. Both these marks, as the tabled data shows, were slightly bettered during *SCI's* gallops.

The maximum speeds recorded, although taken over a shorter distance than the quarter-mile standardized in *SCI's* fulldress roadtests, were electronically timed to a thousandth of a second in the course of several consecutive laps of a 2.82 mile proving track with two level straightaways and two connecting turns with fairly steep banking. The short distance clocked was dictated by the range of the circuit's permanent electronic equipment, and was considered a preferable alternative to stopwatch timing over a quarter. As a matter of interest, the fastest full lap was turned at 105.6 mph. Radius of the curves, relative to the banking angle, was acute enough to oblige the passenger to brace himself strongly against centrifugal throwout. The timings were taken in still air, so although the local counterclockwise-only rule made opposite direction runs impossible, no advantage was gained from, or penalty imposed by, wind.

During ten successive full-bore laps, water temperature crept up to and remained steady at 190F. In hard highway driving it stayed almost constant at 180 F. The engine switched out clean after the track tests.

The A-H chassis for '58, in all departments outside of the engine, is unchanged. Commenting on the fact that in spite of a considerable step-up in power and a slight

(Continued on page 58)

World-famous racing driver Stirling Moss and his Sunbeam Rapier

Champion race drivers and the

SUNBEAM RAPIER

They just naturally go together. For you, it's a smart move to follow the lead of the world's top sporting drivers who choose Sunbeam Rapiers for their personal transportation. For here is striking proof that only the stunning, spirited Sunbeam, among all family sedans, comes so close to matching the exciting performance that attracts men like this to racing cars.

There is much to admire in a Sunbeam: its surging acceleration from 0 to 60 m.p.h. in under 20 seconds; its perfect spacing of six gear ratios; its hair-trigger controls that respond to every instant command; its incredibly durable ohv power plant with 8 to 1 compression ratio; its sturdier, safer unitary chassis; the relaxed comfort it offers for hundreds of miles at a stretch; its surprisingly low cost. Parts and service everywhere. If you drive for fun, road-test a Sunbeam Rapier, at your Hillman/Sunbeam dealer's.

SUNBEAM

A ROOTES GROUP PRODUCT

Rootes Motors, Inc., 505 Park Avenue, N. Y. C., N. Y. • 9830 W. Pico Blvd., L. A., Calif.
In Canada: Rootes Motors (Canada) Ltd., Toronto, Montreal, Vancouver

Removable

PLASTIC TOPS..

add beauty & comfort

AUSTIN HEALEY (1957)
FORD THUNDERBIRD ('55-'57)
MERCEDES-BENZ (All Models)
PORTHOLES OPTIONAL $25.00

MG (A), (T.D.), (T.F.)
JAGUAR (All Models Except Convertible)
CORVETTE ('54-'57)
PORSCHE (All Models)
TRIUMPH (TR-2), (TR-3)
AUSTIN HEALEY

Color choice of cloth headlining material (no flock). Large rear window. Chrome hardware. Easily installed or removed. Call your dealer to see one on display or order direct.

PLASTICON INC.

9721 Klingerman El Monte, Calif. Gilbert 4-0519
country's largest mfg. of plastic tops

THE NEW HOME OF
ISKENDERIAN RACING CAMS

The Only American Manufacturer
WITH FACILITIES FOR THE
DESIGN AND PRODUCTION OF

RACING CAMS for both FOREIGN and AMERICAN SPORTS CARS

CAMS and ENGINEERED KITS
In Stock for the Following:

- JAGUAR
- AUSTIN-HEALEY
- VOLKSWAGEN
- PORSCHE
- TR-2, TR-3
- MGA, MG
- VOLVO

We also grind cams for other foreign cars. Write for specific information on your car.

ED ISKENDERIAN
607 No. Inglewood Ave.
Dept. SCI, Inglewood, California

Austin Healey

(Continued from page 57)

gain in torque the gearbox and axle ratios were being kept as heretofore, Geoffrey Healey remarked that the normal C-type engine wasn't capable of hitting its 4600 rpm peak in overdrive top. But the new 125 bhp edition could, would and did do so. Be that as it may, it is of interest that *SCI's* best two-way average in overdrive on the '57 model was more than 5 mph up on the corresponding speed in normal high. From this it will be gathered that overdrive fourth is in constant use during unhindered highway driving with the latest 100-6, and that this ratio gives a really big margin in top speed over normal top. It does, too. That's as it should be, and experience proves that five of the six available ratios (there is OD on third as well as high) are ideally suited to the new engine characteristics. Overdrive third is practically uniform with direct fourth; life would be much the same if it weren't there.

The closeness of the steering wheel to the dash—on which, as before, the overdrive switch is located—makes it possible to trigger OD in and out without taking your hand off the wheel. The Mille Miglia car, of course, had right hand steering, and the benefits of this fingering feature would perhaps be less marked where the same hand had to be used for lever shifts and OD manipulations, too.

Most endearing single characteristic of the latest Healey is its breadth of scope on the two highest ratios in its robust and eaily manipulated transmission train. Even on the narrow and overcrowded roads that Britain officially classifies as "main", these two gears, direct top and OD, meet practically every contingency from a dawdle to a full-bore maximum that takes the smirk off the face of almost anyone you're likely to meet in a 500-mile day. At ninety on OD the car has a stride that belies its relative paucity of cubic inches, and at or below this speed a flick of the Laycock switch, accompanied by an instantaneous traversal of what's left of the throttle arc, uncorks a fresh and abounding lease of life under the hood.

The fact that the engine is the only engineering element now being modified makes it unecessary to comment here on chassis behaviour in general. What was good when *SCI's* full test report appeared is good still, and vice versa. But just by way of an *aide memoire* to those concerned, it didn't escape our notice that the exhaust system is still too close to the ground. Also, a driver's ability to make himself cent percent comfortable is somewhat a matter of luck, governed by his personal dimensions. If he's tall, has long legs and average arms, everything is fine. But if he's below average height, has longish arms for his build and likes an almost straight-arm driving position, he'll find that the right fore/aft seat setting makes it hard to reach the pedals. And this won't do because clean and easy gearshifts are dependent on using nearly the full clutch travel. Not even a telescopic steering column would lick his problem because he needs to get the wheel further away from him, and it's already as far forward as it can go without cramping clearance between its top arc and the dash.

In the body department the important new Healey development is the introduction of a strictly-for-two version of the 100-6. The familiar 2½ seater, with room at the back for two kids, carries on without change; but now Warwick also caters to customers who have no small progeny and aren't immediately expecting any. The actual body shells are identical, but the two's-company model is reworked astern to convert the nursery into extra trunk room. Also, the spare wheel, which lies on the floor of the none too cavernous trunk of the 2½ placer, is relocated higher up and further forward on the new model, increasing the effective depth of the hold by around eight inches. Erecting and lowering the top, with its clamp attachment to the windshield frame crossbar and fourteen snap fasteners at back and sides, is, happily, a good deal easier on the two-seater.

Dennis May

German G. P.

(Continued from page 29)

In reviewing such an event, one can only conclude that Fangio is an absolute genius—to be able to set exactly the tempo required to win. The strategy of Ugolini to refuel half-way through was a gamble that paid off handsomely. Ferraris were confident on their Englebert tires, and ran the same set on all three cars, running the full distance, 312.4 miles, without stop. The revolution counters of both Ferraris were stuck at well over 8400, while Fangio's rested exactly on the 8000 mark. And so it was that a brilliant combination of car and driver made history on the Nürburgring—August 4, 1957.

Jessie L. Alexander

RESULTS: GERMAN GRAND PRIX — 1957

22 laps; 14.2 mile circuit; 312.4 miles; weather: warm and sunny.

1. **Juan Manuel Fangio, Maserati 250F; 3 hr. 30 min., 38.3 sec.; average speed: 88.79 mph.**
2. **Mike Hawthorn, Ferrari-Lancia D-50; 3 hr. 30 min., 41.9 sec.; average speed: 88.73 mph.**
3. **Peter Collins, Ferrari-Lancia D-50; 3 hr. 31 min., 13.9 sec.; average speed: 88.54 mph.**
4. **Luigi Musso, Ferrari-Lancia D-50.**
5. **Stirling Moss, Vanwall.**
6. **Jean Behra, Maserati.**
7. **Harry Schell, Maserati.**
8. **Masten Gregory, Maserati (1 lap behind).**
9. **Tony Brooks, Vanwall (1 lap behind).**
10. **Georgio Scarlatti, Maserati, (1 lap behind).**

Fangio's fastest lap: 19 min., 17.4 sec., average: 91.84 mph.