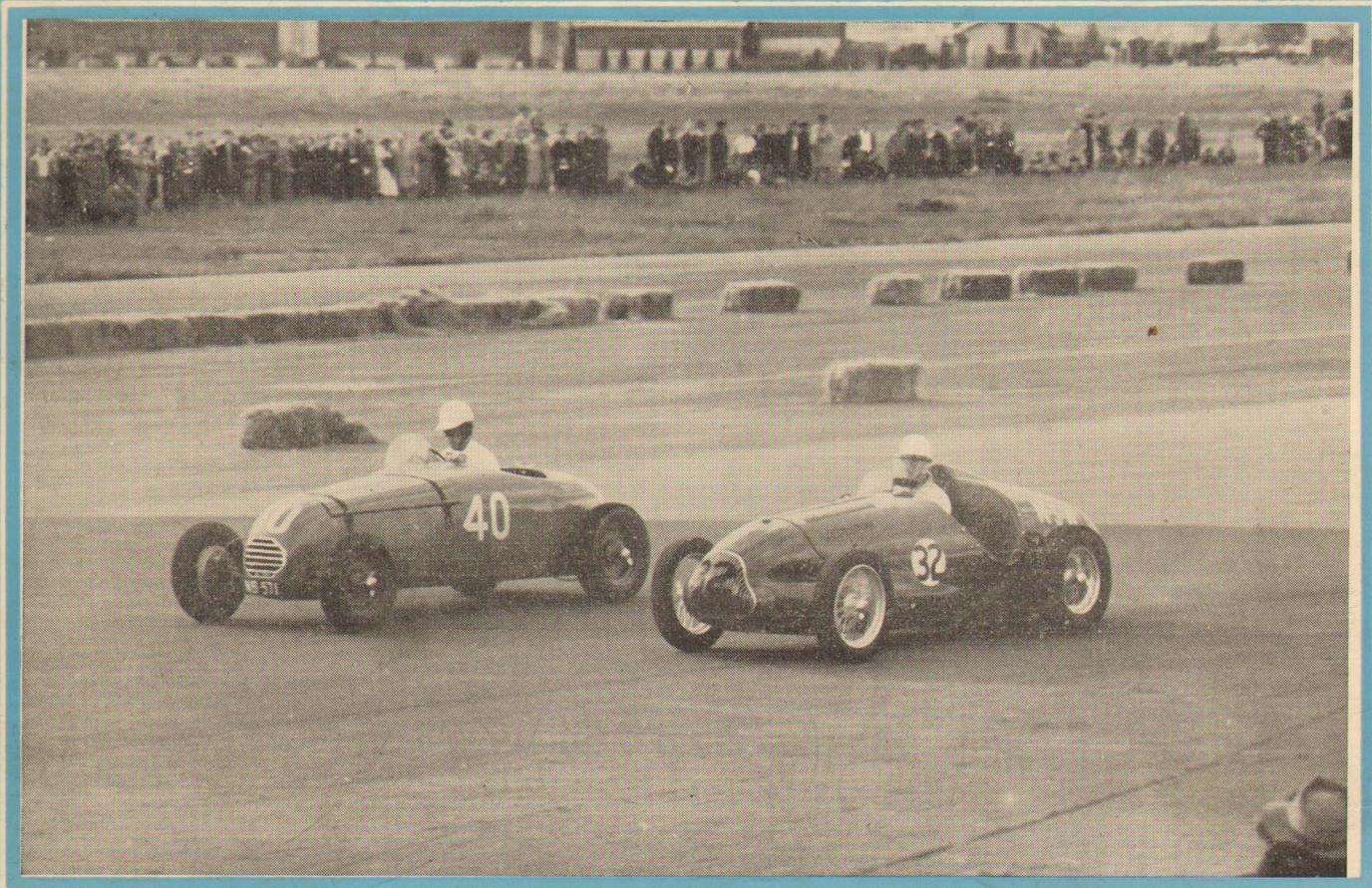


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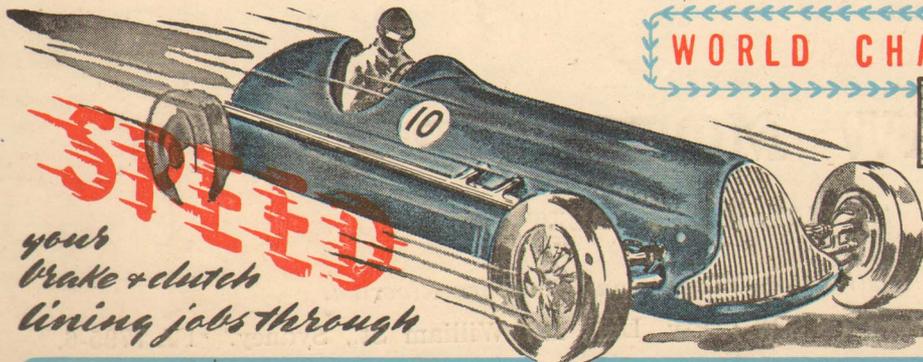
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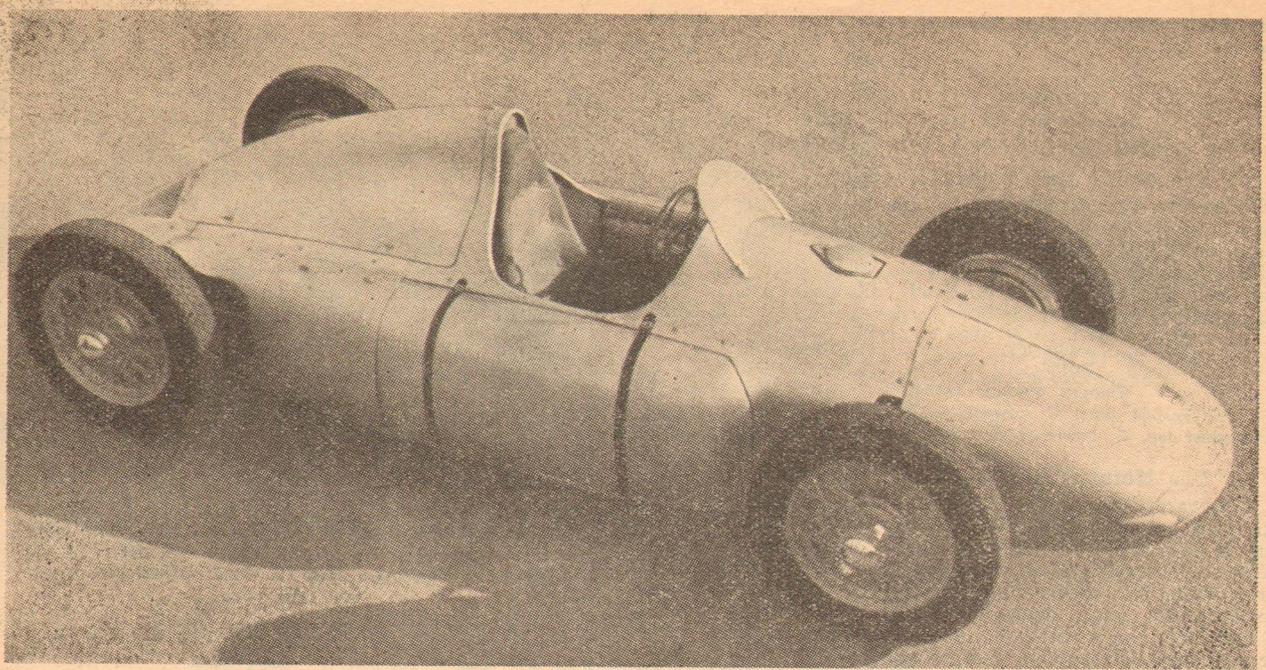
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Auto-Union inspiration is very apparent in this view of Italy's latest 1½-litre racing car, the Cisitalia.

THE FORMULA I CISITALIA GRAND PRIX CAR DESIGN INSPIRED BY AUTO-UNION

By PETER DALE.

With their usual facility for winning the peace after losing a war, the Italians have put it all over the other European nations in the matter of Grand Prix racing since the sport recommenced in 1946. Although the fact that their main rivals, the Germans, were temporarily hors de combat may be said to have made their task the easier, it must be admitted that the combination of Italian skill with Latin enthusiasm must be given the lion's share of the credit. This enthusiasm is something that touches all classes and industries—for instance, we find a brand new maker of racing cars springing ready made from what had been until 1939 a large scale manufacturer of textile machinery.

I refer to the Cisitalia factory, whose head, Pietro Dusio, was an enthusiast of long standing who had driven sports and racing cars for quite a number of years before the Hitler war. Starting in 1946 with an idea and unlimited enthusiasm, he set out to build a racing car to a new recipe, using a hotted-up stock car engine in an ultra-light chassis, and at once scored success after success in voiturette racing in Italy and elsewhere. So successful in fact was he that he had visions of breaking into Formula One Grand Prix racing in earnest, so looked around for a design suitable for this purpose and a team of engineers to build it for him.

He found what he sought in a 1½-litre racing car which had been designed and a prototype built by Auto-Union in 1939 for the then new 1½-litre Formula, but which had never been raced for reasons obvious to all. Not only did Dusio get the car, but he hired the staff of engineers responsible for it, and installed both car and engineers in his factory, surrounded by all modern conveniences, then told them to get cracking. The new 1½-litre Grand Prix Cisitalia is the result, and although the car carries the Cisitalia badge, the design, like that of the Bristol engine, carries the unmistakable hallmark of Teutonic engineering skill.

Seen from any angle the new car shows its Auto-Union parentage, and this is very apparent when looking at the front suspension and the engine-transmission train. However, even Sunbeams were not above pinching Fiat brains and design for their 1923 French Grand Prix winning car, so who are we to cast the first stone?

The new Cisitalia designing staff, under Doktor Ferdinand Porsche and Prof. Eberan von Eberhorst, have evolved a car with a 12-cylinder horizontally opposed engine mounted at the rear with a five-speed gearbox as was previous Auto-Union practice, but this time they have gone a step further and provided either two-wheel or four-wheel drive at the option of the driver, who has merely to move a conveniently placed lever under the steering wheel to have two or four wheels transmitting the drive.

Compression ratio is 15 to 1, the more than square bore and stroke of 56 m.m. and 50.5 m.m. give a capacity of 1,492.6 c.c., and the superchargers, which are vane type, give a manifold pressure of 33 lbs. per square inch, or a total of more than three atmospheres. This is quite a high pressure even for these days, and should give pause to those who have been abusing the vane type blower in favour of the Roots type. As the engine peaks at over 8,500 r.p.m., when it develops more than 300 b.h.p., these blowers cannot be as bad as they have been painted. Maximum torque is delivered at 6,000 r.p.m., when 226 horse power are available.

Each bank of cylinders is one light alloy casting, and incorporates one half of the upper crankcase. The wet cylinder liners are made of steel and the light alloy cylinder heads have aluminium bronze valve seat inserts with two valves per cylinder set at 90 degrees to one another, and the radially disposed sparking plugs located off centre. Each valve is provided with two coil valve springs. Following Auto-Union practice, the crankshaft is built up on the Hirth principle, with 52 m.m. crankpins and 55 m.m. main journals. There are eight of the latter, of

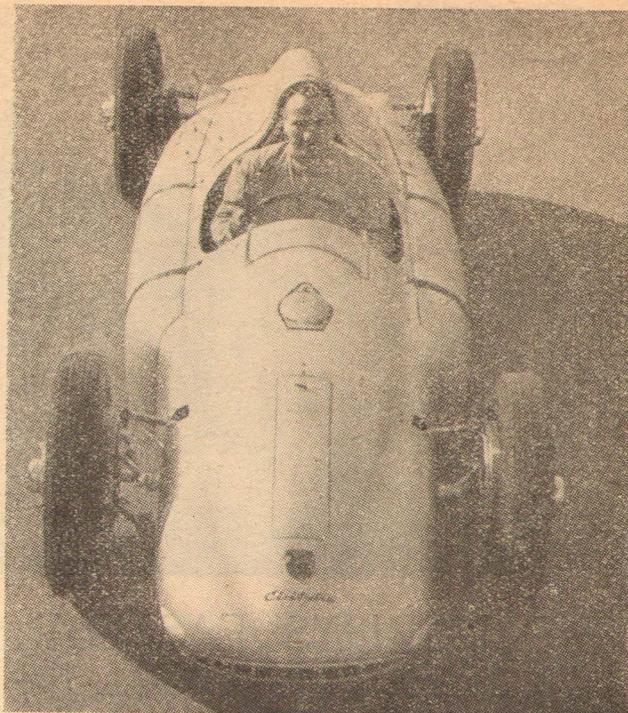
which seven run in rollers and the other in a ball bearing. Connecting rods are 101 m.m. long, and have roller bearings for their big and little ends. Quarter inch by 3/8 inch rollers are used for both main and big-end bearings, and are held in cages.

Forged aluminium alloy pistons with two compression rings and one oil scraper each are used, and each valve is actuated by an oscillating valve follower. There are four overhead camshafts driven by four spindles through bevel gears, and a fifth spindle connects the two exhaust camshafts. The two blowers are built by Cisitalia to Centric patents, and their Weber carburettors each have two float chambers. Fuel is fed to them by a vane type pump, with a spill valve. There are two Marelli magnetos, one to each bank of cylinders, and they incorporate an automatic advance and retard mechanism. An unusual point of design, with such small combustion spaces, is the use of 18 m.m. Bosch sparking plugs instead of the 14 m.m. or even 10 m.m. plugs which one would expect to be more suitable for the purpose.

Naturally, dry sump lubrication is used, with three oil pumps, of which two scavenge and the third feeds under pressure. There is a centrifugal oil cleaner, and the oil tank and cooler are both carried in front of the car where, with the radiator, they get the best of what cooling is available. Oil capacity is nearly six gallons altogether. Either water or ethylene glycol may be used in the cooling system. The nine plate clutch runs in oil and is said to be very reliable and to give a smooth take-up at all speeds, unlike other Italian designs we could name. Gear-box ratios are: 1st, 2.625 to 1; 2nd, 2.052 to 1; 3rd, 1.636 to 1; 4th, 1.32 to 1, and 5th, 1 to 1.

The differential for the rear wheels is of the self locking, limited slip type, but that for the front wheels is of the normal type. Both front and rear wheel drives are made on the Gleason system, and the half shafts in front have homokinetic universal joints at their road wheel ends. Suspension both front and rear is independent, by torsion bars assisted by hydraulic shock absorbers; the front suspension is on the Porsche system with trailing parallel links, while the rear wheels have swinging half axles and long radius arms fabricated by welding. The brakes are hydraulic, each wheel having four shoes operated by two cylinders, with two master cylinders, one for front and the other for rear brakes.

Built up from chrome-molybdenum steel tubing by welding, the chassis frame also forms the framework for the light alloy body, which is easily detachable in sections for maintenance purposes. Two 22-gallon fuel tanks are carried, one on either side of the body, and included in its contours. Rudge-Whitworth centrelock wire wheels



A frontal view of the car, Pietro Dusio at its wheel; 44 gallons of fuel are carried in the two side tanks, and the driver can select four wheel drive at will.

with knock-off hubs carry 5.50 x 17 tyres in front, and a choice of three sizes at the back, that is to say either 5.50 x 17, 6.00 x 18, or 7.00 x 19. Track front and rear is just over 4 feet, and the wheelbase is 8 feet. Ground clearance is 5 inches, and the all-up weight with oil and water but without fuel is 1,320 lbs.

The centre of gravity with full fuel tanks is exactly half way along the wheelbase, and it moves back only 2 per cent. when the tanks are empty. This is very good indeed, and, together with the very low centre of gravity, augurs well for the car's stability on corners and slippery surfaces, also for the driver's peace of mind as the race progresses.

SOUTHERN FIFTY (Continued)

however, knew that his own front brakes were starting to fade badly. Negus, though still lapping at 2-39, was plainly out of the picture barring accidents; Nelson took second place on his 18th lap, ahead of Uphill and Glendenning, Lawrence having run a big-end. Lakey retired, overheating.

As they started on the last lap, Collett led from Nelson and Uphill, and it seemed that they would finish in that order, though Nelson was clearly doing everything he knew to bridge the gap; his last lap was also his fastest, in 2-35, despite oversliding at the hairpin and just grazing the sandbags.

The crowd waited anxiously for the leaders to enter the main street for the last time; they finally came into sight. Collett still ahead and Nelson hotfoot after him but five seconds to the bad, and so Collett crossed the line for the last time to well earned victory after a skillfully driven 21 laps during which his car never missed a beat. Uphill came home third in his first long distance road race after a fine drive with no mishaps; Negus and Glendenning were 4th and 5th, while Mackintosh, Dry, Glover and Kinlock were flagged off at 20 laps.

The Great Southern Fifty.

- 1. A. COLLETT M.G. series TC
- 2. J. A. NELSON Ford 10 Special

- 3. C. UPHILL Morgan 4/4
- 4. S. NEGUS Plymouth Special
- 5. J. GLENDENNING Mercury Special

Winner's average speed, 47.4 m.p.h.

Fastest time, S. Negus, 56-13 (50.4 m.p.h.).

Fastest lap, S. Negus, 2-33 (53.0 m.p.h.).

Narrogin T.T.

At 4.25 p.m., the Narrogin T.T., a solo motor cycle handicap, was run over a distance of 14 laps. Limit man J. Harling (250 Excelsior) pushed his machine as hard as he could for the whole distance to win from C. Davies (500 Norton), who made fastest time at a speed of over 60 m.p.h. T. Barker (500 Triumph) finished 3rd and only narrowly lost second place to Davies.

The Narrogin M.C.C., which conducted the motor cycle events, is now looking forward to its next fixture, a major motor cycle road race in the New Year.

After the T.T. had finished, placed competitors in the Great Southern Fifty lined up in front of the timing stand, and the Mayor of Narrogin decorated Arthur Collett with the traditional victor's laurel wreath. All competing cars which were still serviceable then made a lap of honour of the circuit, followed by the motor cycles.

The 1949 Narrogin motor racing carnival wound up that evening with a presentation ball, at which the Sunbeam-Talbot Trophy was presented to Arthur Collett.