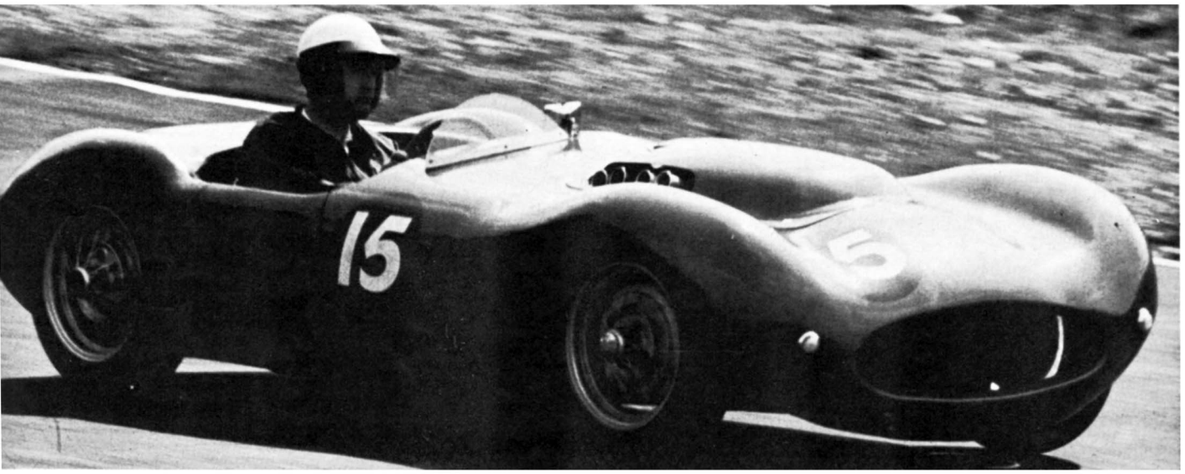
"At around 2600 dollars complete, it will be surprising if a good many more of these potent little cars do not find their way across the Atlantic."

By ALBERT DOUGLAS



The 1956 experimental Elva with De Dion rear suspension. Ford engine has Elva IOE cylinder head, four Amal carbs.

Special from Sussex

A comparatively new name in racing circles, the Ford-based sports/racing Elva is nevertheless amassing a formidable list of competition successes. In 1955, the first year of "production," first places were gained at Brands Hatch, Aintree and Charterhall, as well as many 2nds and 3rds and a class win at the Prescott Hill climb. At the Bodiam Hill climb in October, fastest time of the day, irrespective of engine capacity, was scored.

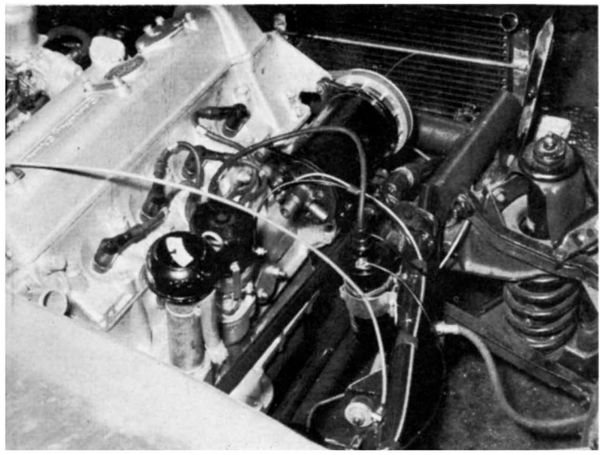
Obviously, a new name does not spring into prominence without a background of experience, and Elva Chief Frank Nichols measures up to this requirement in every way. Just over two years ago he was enjoying an amazingly successful season as a driver with a Ford-engined C.S.M.—a light, tubular-framed special with swinging-axle front suspension.

Nichols, a native of "Silly Sussex" gave up racing at the end of 1954, and with his chief mechanic "Mac" Witts devoted himself to the evolution and design of the Elva sports car. Mediaeval county titles were once again proved to be misnomers, for the design and performance of the Elva, or to be more accurate, Elvas were anything but silly.

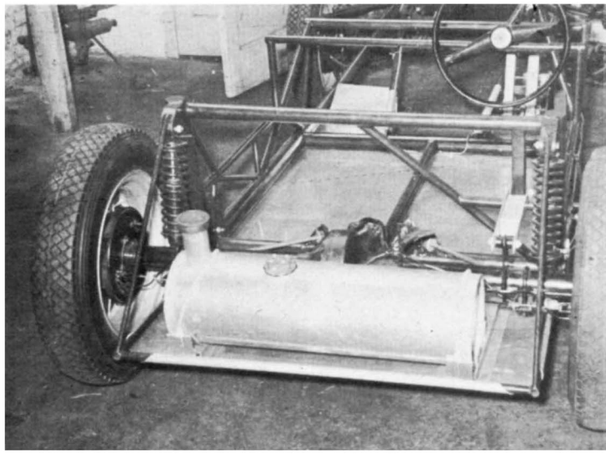
Nichols' creed was simple enough. He wanted to produce a machine which was capable of acquitting itself honorably against serious opposition in the small-capacity sports classes, and to embody where possible, existing standard components which were not only readily obtainable, but simple in design and easy to service. He has certainly adhered to these ideals and the cars fully justify the derivation of their name—Elle Va, French for "She Goes."

Basis of the Elva is a lightweight "space-frame" constructed of 18 and 20 gauge steel tubing varying in diameter from a ½ inch to two inches. There are three main tubes of two-inch diameter and the whole structure tapers towards the front end, where a rigid bridge-like structure supports the front suspension. The frame weighs but 75 pounds complete with duralumin belly-pan, the latter item also assisting in stiffening the structure.

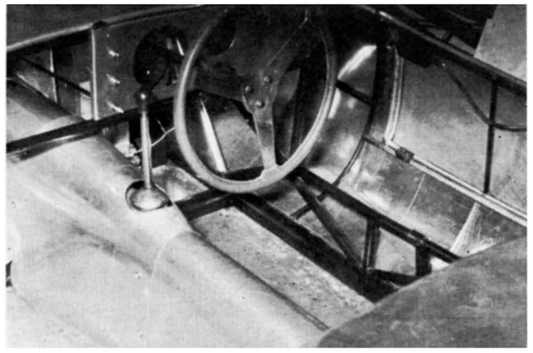
Front suspension is independent by coil springs and wishbones of unequal length, and is in fact the complete, as fitted to the British economy (but surprisingly fast), Standard "Eight" saloon. The assembly, attached to its mass production steel pressing, bolts straight to the Elva frame through rubber bushes, and has proved entirely satisfactory under racing conditions. This form of construction materially assists in keeping production costs at a low level, and ensures an easy supply of reasonably-priced spare parts. Shock absorbers are normal Standard "Eight", but the coil springs are special. Cast iron brake drums of seven-inch diameter are the usual equipment, but bi-metal drums can be specified at extra cost. The iron brakes are very efficient, the front with two-leading shoe operation, and with only around 900 pounds to arrest.



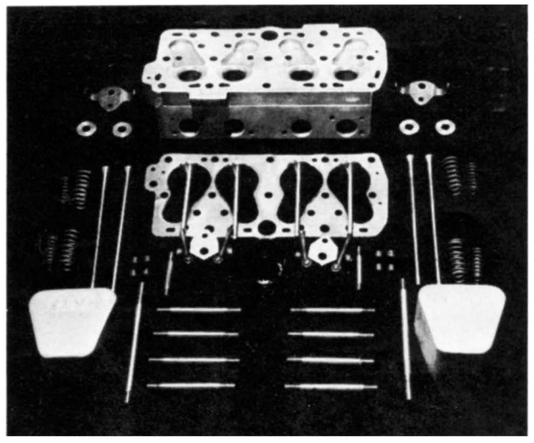
Coventry Climax engine fits neatly into the Elva frame. Front running gear detail shows unequal length wishbones with shock inside spring.



A Ford Prefect rear axle is converted to take coil springs with telescopic shocks. Note duralumin tray under space frame.



Elva-Climax in construction. Gearbox is MG TC, usual equipment with Climax engine. Drop down door is aircraft type, wheel is light alloy.



Elva light alloy head has overhead intake valves and converts the 1172 cc side-valve Ford engine into a small-bore-head screamer.

Steering box and much of the steering gear is also Standard "Eight," but there is a special lightweight column to the two-spoke Standard steering wheel. Light-alloy wheels of handsome appearance with leather binding and padded rim are available at extra cost. Accent is on light weight right through the specification of the car. The cut-down Morris radiator weighs only 12½ pounds, the three inch rim front wheels are 12 pounds each, and the four inch rear wheels are 14 pounds each.

Rear suspension is non-independent by the latest type Ford Prefect, which is modified by the Elva Engineering Company to accept coil springs instead of the normal Ford semi-elliptic leaf springs which are, of course, heavier. The axle is located by tubular trailing arms and a transverse reaction rod, and tubular hydraulic dampers are fitted.

Most small engines can be accommodated in the frame, in fact one has been fitted with a 1500 cc Maserati "six" (ex-supercharged single-seater), but power units usually chosen are the ubiquitos Ford "Ten" or the potent 1100 cc Coventry-Climax with light-alloy block and single overhead camshaft. With the Climax installed, the power-to-weight ratio of the Elva approaches 200 bhp per ton.

Several Elvas are fitted with the comparatively expensive Climax unit, but Nichols continues to enter his "factory" machine, driven by "Robbie" Mackenzie-Low, with a Ford-based engine. Nichols has had a great deal of experience with these inexpensive engines; his own very successful C.S.M. was powered by a flat-head which was both powerful and consistent.

Nichols has come a long way, however, since the days of his highly-tuned flat-top, and he produces in addition to his Elva cars a special Elva cylinder head with overhead inlet valves which converts the small Ford engine into a unit of real potency. Not only does it fit the sports racing engine, it will bolt on to any later-type Ford Anglia, Prefect, Squire or Escort car, or Thames light truck. Performance increase is

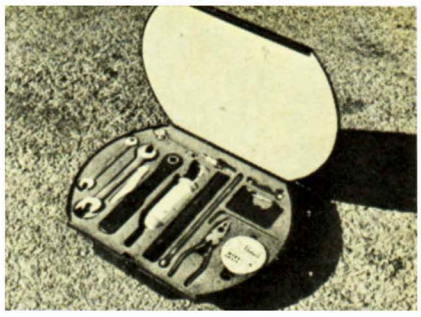
(Continued on page 56)

(Continued from page 55)

We expected a hood full of revs, but we weren't prepared for unusually good low-speed torque for a 150-cubic-incher. A glance at the torque curve and its 2000 rpm peak told the story, though the 2.4's road behavior was more than convincing enough. It does like to wind, though, and it's a shame that the gearbox occasionally dampens its ardor. The cover of the basically standard Jaguar box has been redesigned to give a mechanically more direct lever control, which somehow manages to have a very vague and rubbery feel. It improves on acquaintance, but the pattern remains widespread and the knob still evades the wildly groping hand at crucial moments.

Jaguar's machinelike whine remains in the lower ratios, and is accompanied by slight dog clutch protest if the synchromesh is rushed at all. The indirect gearing is closer to that of the first XK's than it is to the close ratios used in the present 3.5 liter machines, and as a result you're all done a little sooner in the gears than you would like to be to use that engine to the full.

When you get on good terms with the gear train, the 2.4 responds with strong and steady acceleration that will carry it quickly to an easy cruising speed of 80 or so, which is still within the common piston speed limit of 2500 feet per minute. In its present trim, the 2.4 Jag is a nice balance between the paired factors of power and roadholding. The word now seems to be that the big 3.5 engine will find its way under this hood for the American market, which will dump 51 more pounds where they aren't needed and apply more power when it can't be fully used. We'd much rather see this fascinating short-stroke six developed further, with perhaps an optional C-Type head and close-ratio gearbox if more suds are demanded. Those plus stiffer shocks all around would push the 2.4 over the line into the Gran Turismo class and enable it to surprise many a sport car. Even now it's one of the most satisfying small sedans around. — K.E.L.



Kit has tools for minor services.

Sussex Special

(Continued from page 27)

amazing. Maximum speed of an 1172 cc Anglia sedan with twin carburetors, raised compression and so on, is around 95 mph, and reliability is not affected. The very first Anglia conversion was driven straight from the plant into the 1956 Monte Carlo Rally and finished the course after much ultra-high speed motoring, and with no bothers. Nichols also produces a similar F-head ioe (inlet over exhaust) for the earlier Ford Eight/Ten engines of identical capacity, and these are called L.R.G. heads, after his other business, London Road Garage.

INTAKE

Power output of the Ford-Elva engine is 65 bhp at 5700 rpm on a 8.9 to one compression ratio and with two 1½ inch S.U. carbureters. A sports camshaft is also employed to gain these figures, and the Elva Engineering Company can supply similar camshafts if the customer so desires.

When it is pointed out that Harry Weslake, gas-flow expert and designer of porting and combustion-chambers on all Jaguar engines, has given a great deal of his time and attention to the Elva head shape, it is not surprising to learn that the engine has an exceptional power curve. Maximum torque is produced at 4500 rpm, but the curve is flat enough to maintain most of it through the greater part of the rev-range. The head is of a light alloy with the overhead intake valves operated by pushrods and rockers from a normally-positioned single camshaft which also actuates the side exhaust valves. Oil is supplied under pressure to the rocker gear through a ⅛-inch copper pipe attached to the main oil gallery. The intake valves seat on Bimetal cast iron inserts which are positioned directly above the pistons.

Combustion space is over the exhaust

This Sussex special is equipped with more expensive Coventry-Climax mill.

valve and a 10 mm spark plug is fitted in this area. A useful feature which has a great sales appeal to keen owners of normal English Fords is the use of "drop-in" inserts for the redundant intake valve seat in the cylinder-block. The inserts are ready-machined and require only a light grind with carborundum paste to effectively seal off the port. Centers of the inserts are drilled for the new pushrods to pass through, and complete conversion to overhead valves takes only about three hours. Ford exhaust valves of standard type are retained.

The latest works Elva is fitted with one of these ice power-units, but it has an even hotter specification than the "standard" engine and is now developing 83 bhp at 5800 rpm with four Amal motor-cycle carburetors. Nichols' scheme is to use his works car as an experimental machine with which to try out new ideas which may possibly be embodied in next year's Elvas. With this plan in mind, he had equipped the new car with an even lighter frame and front suspension, rack and pinion steering gear and a De Dion type suspension layout at the rear.

REAR END

He and "Mac" Witts have arranged the rear-end so that should it eventually become a standard Elva fitting, existing cars with Ford back axles can be converted by bolting the De Dion arrangement on with virtually no modification. The same coil springs and telescopic dampers are used, and the final-drive unit which is rigidly attached to the frame, is a cut-down and modified Ford component. The works car has a single transverse disc-brake, hydraulically-operated, and fitted to the rear of the differential casing where it provides all rear wheel braking. This feature reduces unsprung weight to the minimum and should also improve the already noteworthy roadholding. In addition, it substantially reduces wheelspin under fierce acceleration due to the two short universally-jointed half-shafts being unaffected by torque as with a "live" axle. It should be stressed, however, that the whole car is experimental and that only the features which prove themselves satisfactory under racing conditions will find their way into the specification of the 1957 Elva.

Many new Elvas are to be seen on British circuits this year and several are being exported to Canada. As this article is being written, an Elva-Climax is on its way to a new owner, Charles Dietrich of Sandusky, Ohio, who should be seen in competition before long. At around 2600 dollars complete, it will be surprising if a good many more of these potent little sports cars do not find their way across the Atlantic. #