

KEEPS
CLASSICS ON
THE ROAD

YOUR CLASSIC

July 1993 **£1.95**

USA \$4.50

ITALY 6200 LIRE

Printed in the UK

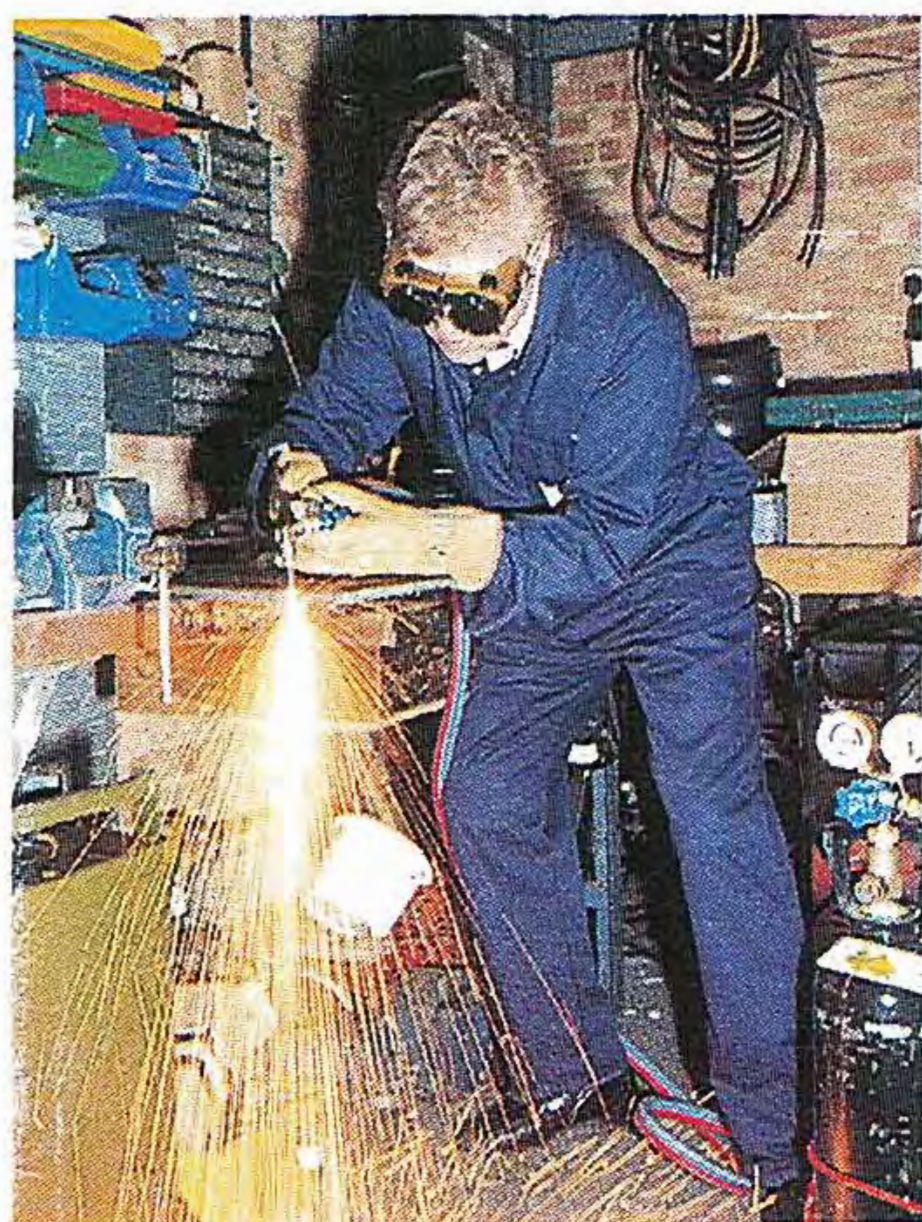


MINI
MAINTENANCE
Keep your Mini
running sweetly

LOTUS
EUROPA



Reader restores
plastic sportster



Welding
made easy
— your guide

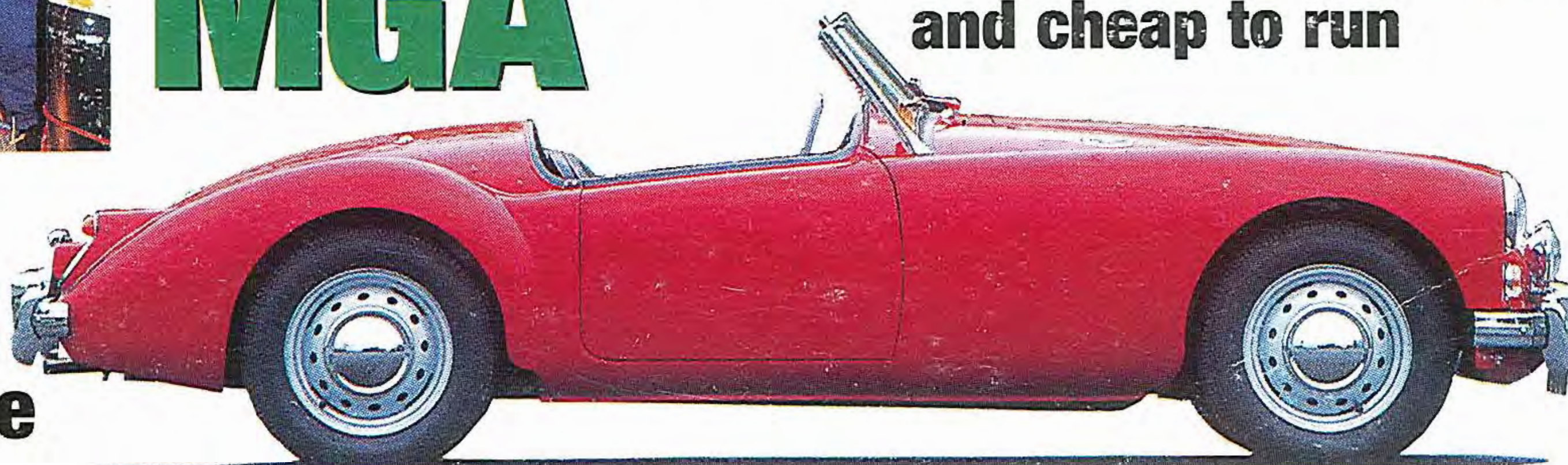
AUSTIN A40

Baby Farina
rebuilt for
under £1000



MGA

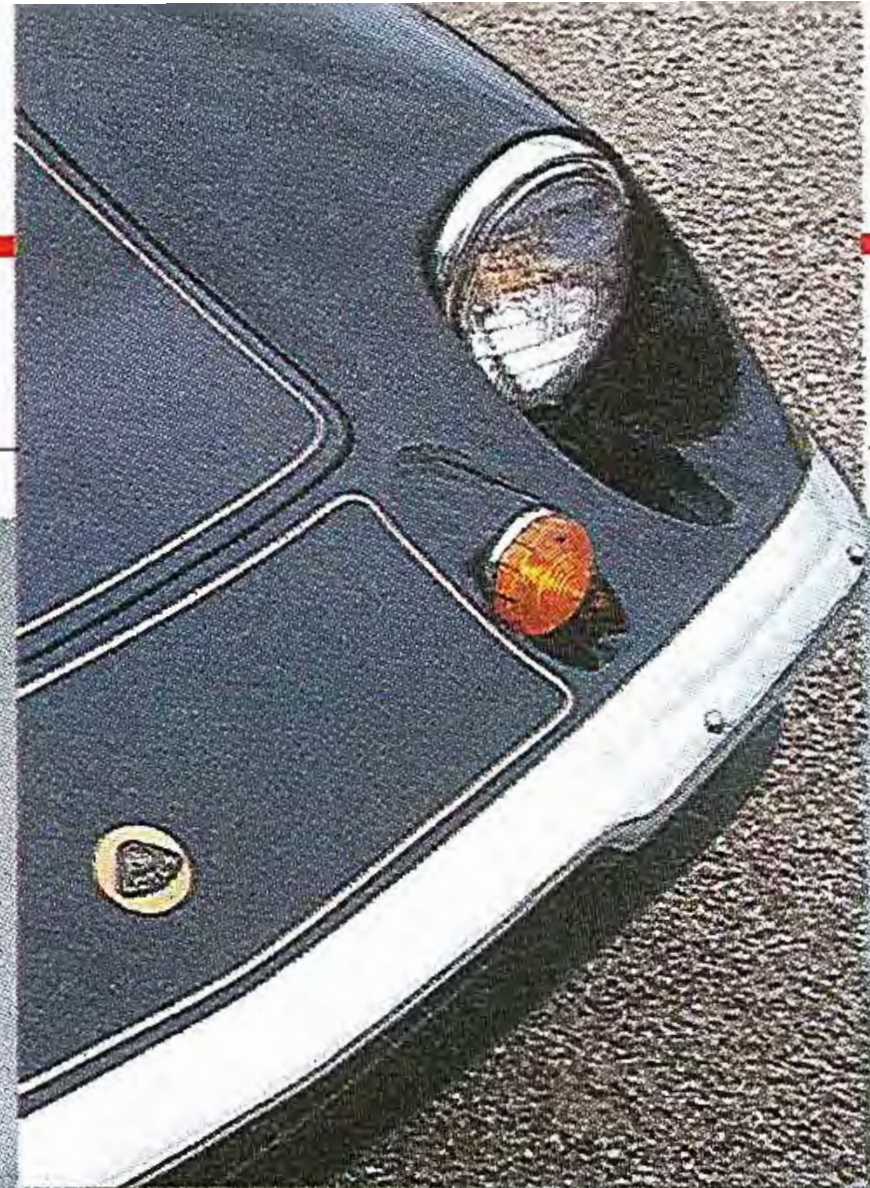
'50s soft top now affordable
and cheap to run



PLUS

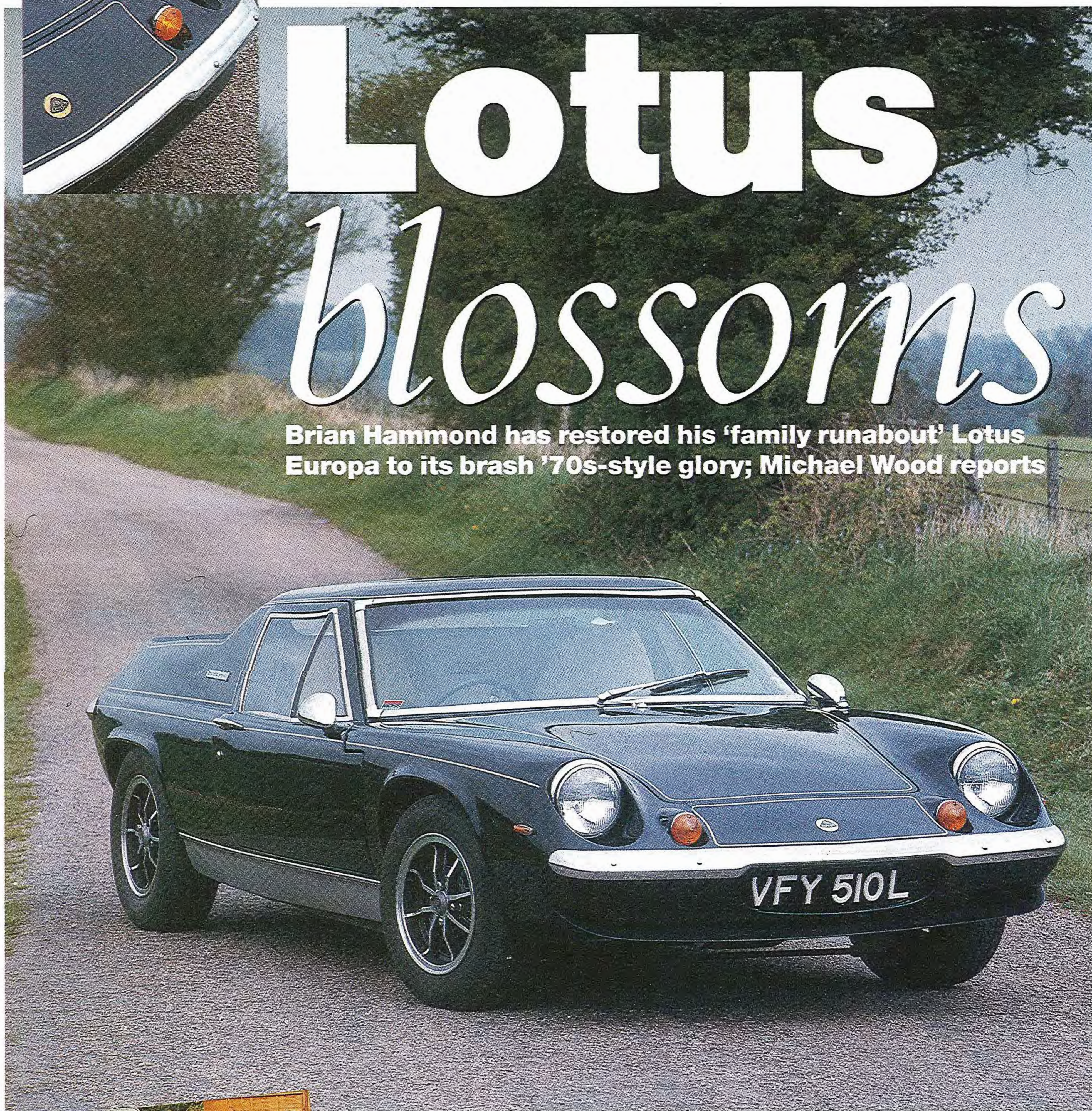
- ★ Scimitar SS1
- ★ Glassfibre special
- ★ Alfa Spider
- ★ Triumph TR6





Lotus *blossoms*

Brian Hammond has restored his 'family runabout' Lotus Europa to its brash '70s-style glory; Michael Wood reports



Brian stripped Europa down to its wishbone chassis

FLARES AND PLATFORM shoes are in the high street: the '70s are back. Brian Hammond's Lotus Europa twin-cam Special, with its cheeky low-cut lines, is the epitome of that decade.

The car has been a family runabout since its purchase in 1976 and has motored all over Europe. But, in 1989, the purchase of a second car gave 55-year-old Brian the opportunity to take the Europa

off the road for the nut and bolt restoration it deserved. He says: "I'd serviced the car for the last 13 years so it was in a good overall state, but I wanted to bring it back to its original condition while parts were still available."

The Europa has a reputation for being a fragile car with a brittle glassfibre body but Brian, an ex-Telecom technician, has found from experience that all it needs is a little careful research and the help of a few experts to

nurture it back to health. He says: "I learned mechanics from my father who owned a garage and I spent many hours as a child decoking heads and reassembling parts so I was prepared to tackle all the mechanicals. The glassfibre body, though, is another matter and I decided early on that I would employ an expert to take over the relaminating the body." So Brian approached Banks Service Station, a Europa specialist, to carry out the necessary



New and refurbished parts await methodical reassembly



body repair work.

The Europa was comprehensively stripped of its interior, windows and fittings before the eight retaining bolts which secure the bodyshell to the chassis were removed and the body manually lifted off and placed on a waiting van. Brian then busied himself removing all the running gear, engine and gearbox until the Lotus was down to its backbone, the distinctive wishbone chassis. The box-section steel showed signs of wear around the front crossmember where rust was apparent in the spot welds.

New chassis for the Europa do not come cheap, so Brian drilled out the spot welds, opened the seams for shotblasting and finally continuously welded the sections back together. Elsewhere the chassis was pitted with surface rust where protective foam matting had been placed by the factory to cushion the chassis. These areas around the front crossmember and backbone were all brought back to bare metal and the rebuilt chassis was then bitumen-covered, zinc-sprayed and covered in layer after layer of black Hammerite to ensure its future longevity. Brian also took the precaution of drilling a few holes in the bottom section so that any water which did manage to breach the box steel would have a means of escape. The chassis was treated with copious amounts of Waxoyl.

By now Richard Winter at Banks service station had stripped the bodyshell with Nitromors, and the full scale of damage became apparent. On the surface a glassfibre car often seems in

good condition, but beneath the cellulose paintwork a plethora of cracks and splits are visible. It is impossible to fill any indentations on the body with standard filler because glassfibre flexes in use and these hardened sections are rejected and break through the paintwork causing ugly scars.

Restoration requires delicate grinding away and, where necessary, the use of specialist relaminating skills. Both front wings showed evidence of crazing, probably the result of stone-chip damage, and these areas were ground out and the outer surface relaminated. Similarly the front bonnet and engine

cover suffered from microscopic blistering, a visible localised bubbling, which was removed by the same methods. Damage to the passenger side door, roof and windscreen pillars was more serious and not only was the outer skin ground down and relaminated, but Andrew also ground out and laminated the inner skin to make sure that the fractures were completely removed from the skin, effectively producing new panels from old.

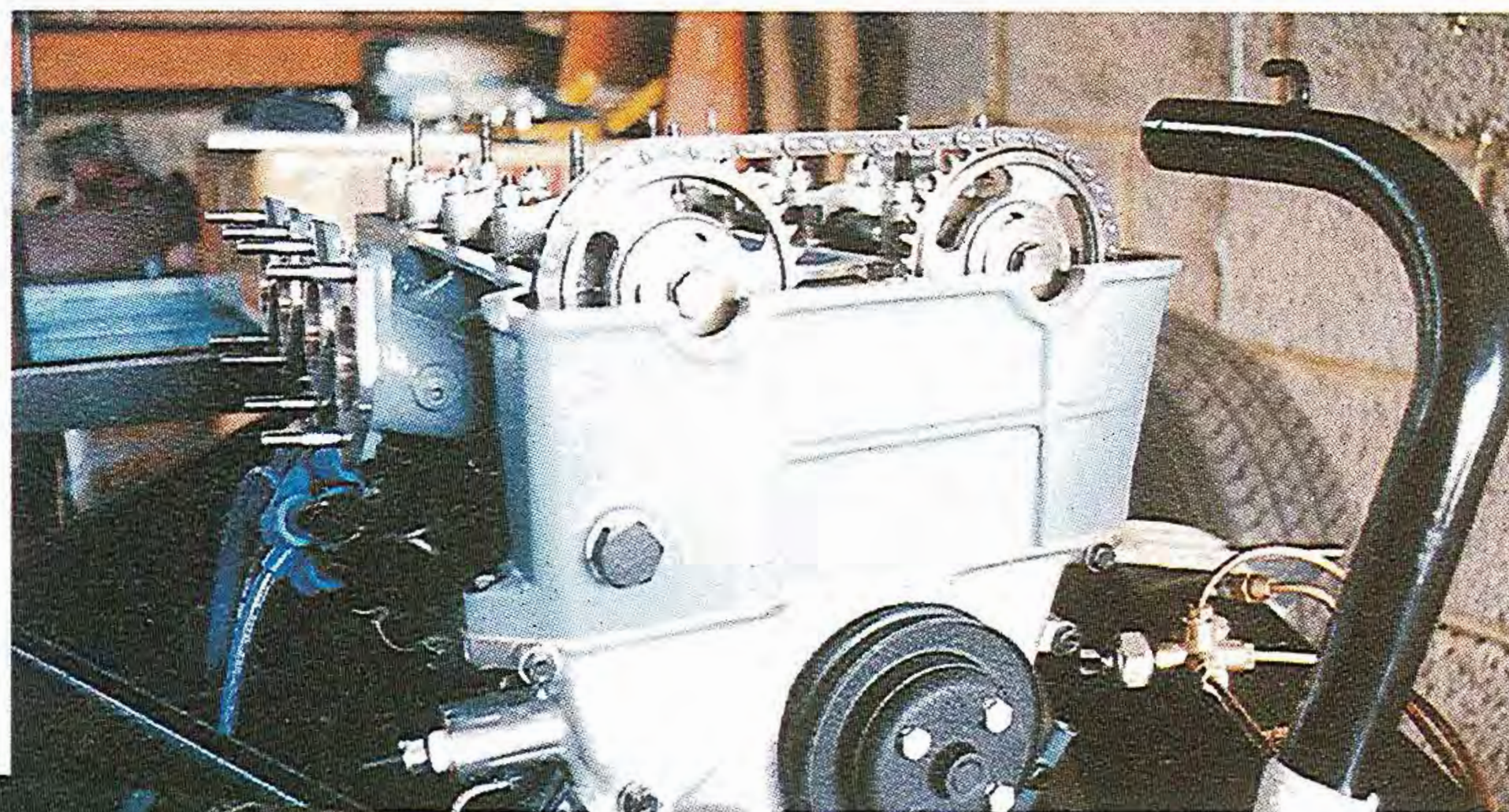
Brian had no access to spray facilities so he decided to have Banks paint the bodyshell in cellulose before reuniting it with the chassis. The many layers of

Europa cuts a dash with its low profile and sharp nose

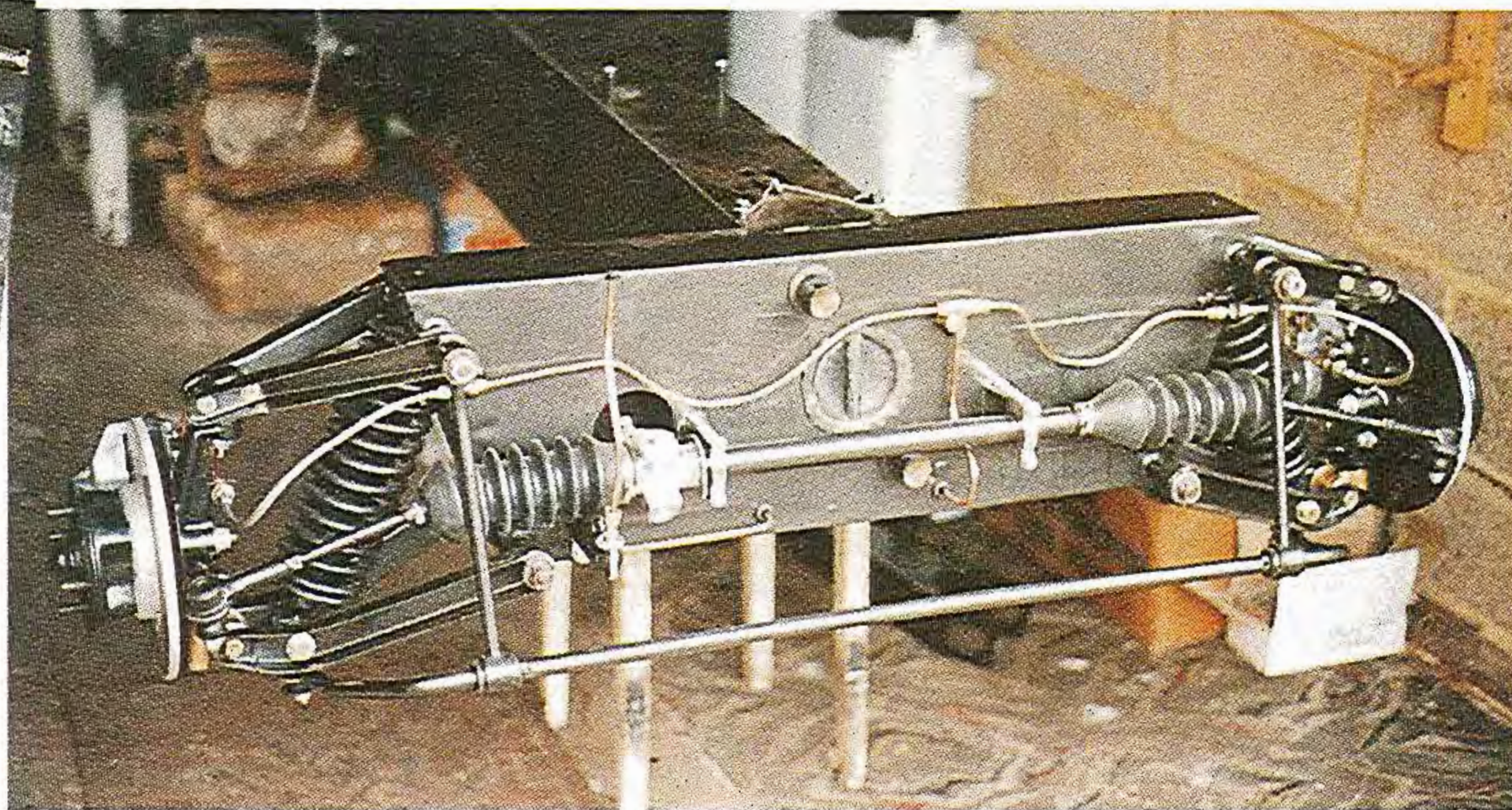
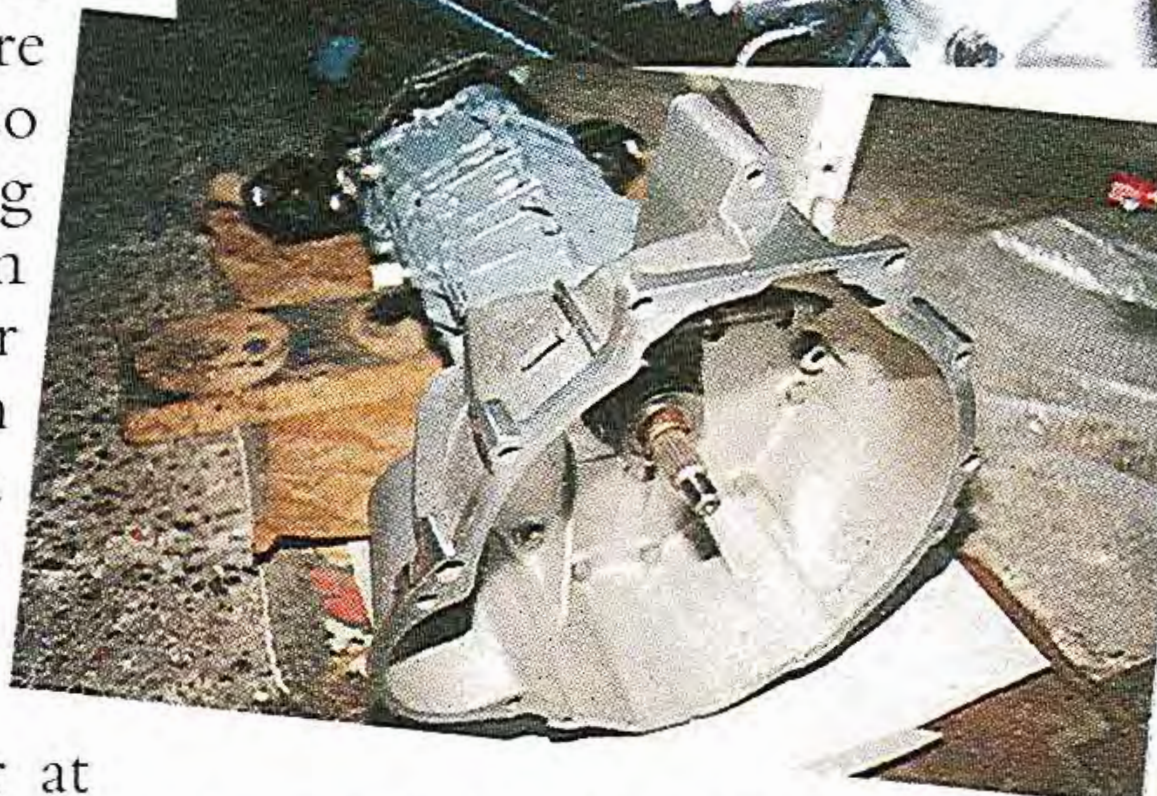
deep black were T-cut and polished for a full day to produce that mirrored surface. The distinctive JPS pinstriping was then applied by hand using a hairdryer to accomplish all those delicate twists and turns.

All the suspension parts were shotblasted and zinc-sprayed ready for reassembly and Brian refurbished any components which were in bad repair. The bottom front wishbones on the Europa are a particular problem where they bolt on to the trunnions. Wear and tear causes the bolt holes to elongate but he overcame this by placing a washer in the wishbone, filling the area with braze and then redrilling the hole to the correct dimensions. One of the rear radius arms also showed signs of decay so this was cleaned

Brian rebuilt suspension with new bushes, wishbone spindles and trunnions



Specialist QED rebored block (top) Brian had Renault gearbox rebuilt in Belgium





Europa: a tarmac limpet

and the rotten sections cut away before being remade with good metal. Brian subsequently overhauled all the running gear, replacing the bushes, wishbone spindles and trunnions. He also stripped the steering rack and checked it before reassembly with new bushes. The universal joints at the rear of the Lotus have a life expectancy of only 15,000 miles because, although the horizontal link and radius arm are efficient, the UJs take rotational and horizontal strain. Brian replaced the old parts and now checks their health regularly. The rear wheel bearings are prone to wear so he replaced these and now primes them frequently with grease to maintain the outer seals. New Armstrong shock absorbers all round completed the suspension revamp.

Brian bought a set of copper brake pipes to replace the origi-

Esprit de Lotus

Clambering into the Europa is an art in itself but, once inside, there is a surprising amount of room in the cabin. The view through the rear window is adequate but the car suffers from appalling three-quarter vision and the door-mounted mirrors are next to useless. Once on the road, though, the excitement of driving takes over. The gear linkage requires strong nerve and practice, but the predictable clutch and quick throttle response make it a pleasure to learn. The pedals are small, with little space in the footwells to relax your feet, so

concentration is important if you don't want to accidentally heel-and-toe through town. The 126bhp big-valve engine provides exhilarating acceleration from rest and the steering has a remarkable lightness of touch which allows you to drive with confidence. The Lotus chassis is superb and the car holds the road without fuss, the mid-mounted engine providing near neutral handling, except in the wet. The Europa may have a reputation as a difficult car to maintain and run, but for all its eccentricities this is a car for adrenaline addicts.

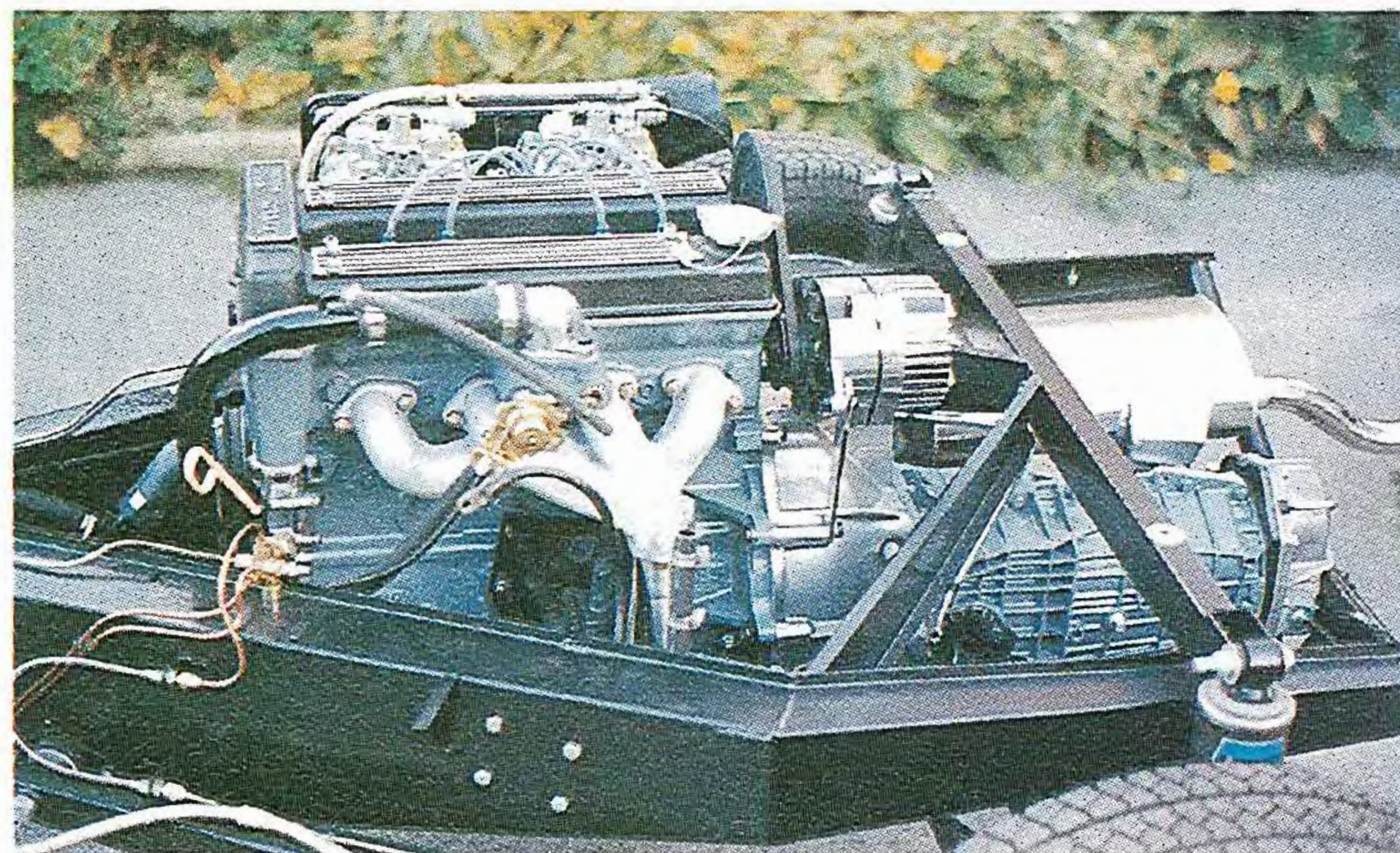
nal, corroded steel items and bent them by hand around the rolling chassis. He had to take particular care with the rear pipelines because the handbrake has floating callipers in the backplate and it is essential that all pipework is fitted accurately, otherwise the

brake may become fouled, causing binding. The original rear drums were still in serviceable condition after 90,000 miles of use, but the brake linings, return springs and wheel cylinders were all replaced from repair kits as were the callipers and piston seals.

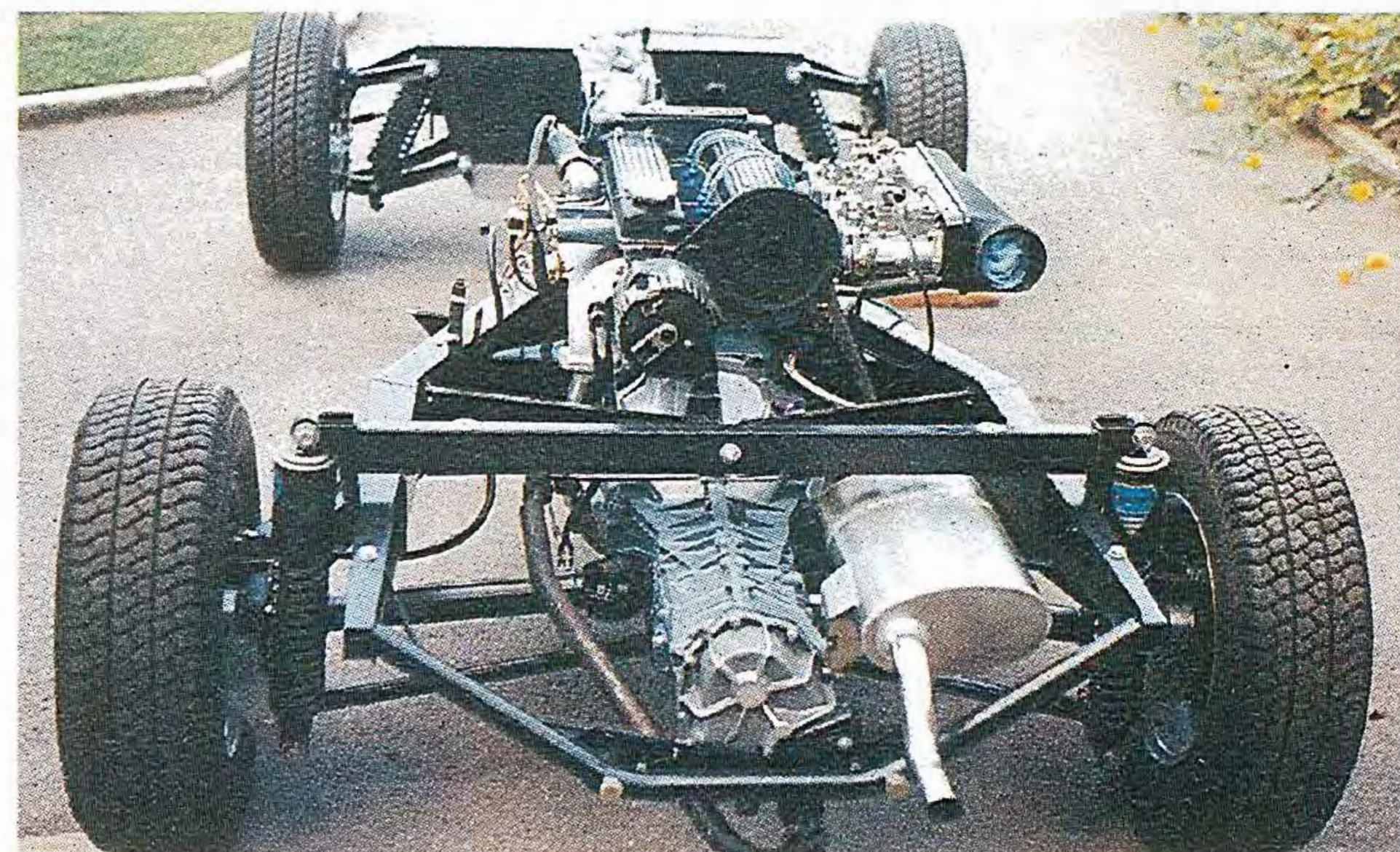
The front brakes are servo-assisted discs and these parts had only recently been rebuilt, so Brian concentrated on overhauling the Girling servo unit which had been problematic for some time. The rocking valves had perished so he tried to purchase new parts, but Girling informed him that production had ceased long ago on that model and that they no longer built any servos to a suitable Europa spec. Eventually he managed to track down a Lockheed option and this has proved very reliable.

The gearbox is a sturdy Renault affair with a fifth gear adaptation by Lotus. In the UK parts are now rare so Brian contacted a long-standing friend in Lieges to ask if he could help out. So he took his 'box on a cross-channel trip to Belgium and had it rebuilt with new seals and bearings. Plus, while he was there he acquired a few other rare items: "I also mentioned that I needed a couple of original Sebring wing mirrors but that they were not available in England. Francis Lecler headed off into his garage and emerged a few minutes later smiling with a matching pair of mirrors in his hands – still boxed."

Having dropped the gearbox on to the rolling chassis Brian then contemplated refitting the notorious linkage system: "This is the Europa's main failing as it is a mixture of rods and universal joints which is exposed to the elements and frequently becomes troublesome when corrosion sets in." The rear longitudinal link was badly worn so Brian sent it off to Banks to have the UJ restaked and then spent several frustrating nights trying



The 1598cc engine's big-valve head gas-flowed and rebuilt



Wheel bearings need regular maintenance, UJs have short life

High-revving Lotus Ford dohc engine produces 126bhp

to get accurate gear selection.

The main adjustment is around the universal pivot assembly, which is attached to the clutch bellhousing. Two rods screw into a pivotal universal joint and you have to fiddle with the adjustment until you can select all gears. Once this has been achieved you have to drill through the rods into the joints and insert roll pins to ensure that the settings remain accurate. From then on it is a constant struggle to keep the joints and rods clean, greased up and in working order.

The 1598cc big-valve engine had never been treated to more than routine maintenance so Brian decided to give it a little tender loving care. Ed Winter, a doctor of engineering who specialises only in twin-cam heads, came to lecture the local Lotus club and Brian was so impressed that he approached the good doctor there and then to tackle his own car's head. So it was gas-flowed and new guides, valves, camshaft bearings and tappets fitted. Ed also balanced the combustion chambers.

Meanwhile, the block was on its way to specialist Lotus engine builders and leading Lotus-approved parts supplier QED (0509 412317) which rebored the crankcase. QED fitted new pistons and balanced them. The crankshaft merely required polishing after 90,000 miles of use because it was still well within the acceptable tolerances. The whole engine was chemically cleaned and new core plugs fitted. Brian reassembled the sump and ancillaries, but noticed that the front timing cover was damaged where the head bolted through. A lug had cracked, forcing Brian to begin a lengthy search for a replacement.

The rebuilt engine was treated to brand-new twin-choke Dellorto DHLA 40s, the last in stock at that time. They run on standard settings but are adapted with vertical spray jets, Lotus' response to complaints that the car often suffered from an acceleration dead spot caused by the mixture running too rich at idle. The whole engine was now resplendent in a new coat of Lotus' engine grey and ready to



Damage to glassfibre body ground out and relaminated

accept new timing gear wheels, timing tensioner, plunger spring chains and dampers.

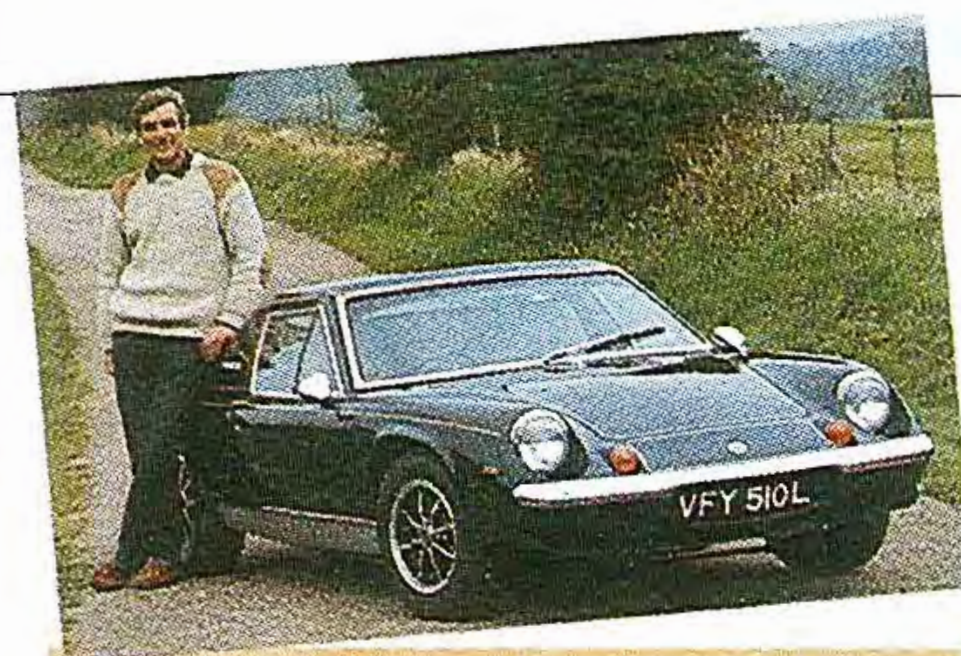
Brian was eager to get the rebuilt body reunited with the rolling chassis, so he travelled back to Banks Service Station where the black bombshell was delicately lowered by a four-leg hoist under Richard's watchful eye. All that remained was to fit the interior and trim but many problems were still left unsolved. Brian had taken expert advice

from a local rechromer who convinced him that he could refurbish the bumpers and other brightwork with the minimum of fuss. When the parts returned, however, the standard of work was clearly not acceptable. Brian was forced to abandon many of the parts and once again to scan the small ads in the hope of finding those elusive spares.

Similar problems surrounded the rare limited edition badges which adorn the rear wings. A



Brian had dashboard reveneered. He made up and fitted carpets close to the original champagne colour



Restoration costs

Purchase price:	£3000
Engine work	£875
Cylinder head rebuild	£520
Carburettors	£275
Bodywork	£2950
Chassis work and zinc spraying	£550
Trimming	£250
Misc	£380

Total: £8800

local vandal had stolen these invaluable items and as there were only 100 such cars ever manufactured, the chances of replacements were slightly less than nil. Brian asked the factory for copies but, mindful of fakers, they refused. Eventually he was able to contact a fellow enthusiast who made up badges to order. The tricky interior reupholstery was handled by a local firm who did a splendid job but once again Brian was disappointed when he searched for replacement carpets to complete the refurbishment. "The champagne colour carpets, presumably fitted to celebrate the world championship win in 1972, were no longer being manufactured, so I picked the nearest possible shade and fitted them myself," says Brian.

The original dashboard was reveneered and the dials fitted but, inexplicably, the previously reliable rev counter refused to work. He says: "I took it to a specialist who said it had probably been damaged as a result of being stored face-down in my loft."

Brian installed an undertray cut to size from stainless steel to give the front chassis extra support, and headed off for a first-time MoT pass. Says Brian: "I took early retirement recently so I can spend all day driving the Europa. My only problem is finding time to restore the Series III Lotus Esprit I bought in a moment's weakness while I was trawling through the small ads searching for Europa parts." If only we all had the same problems. 