

TWO ANGLO AMERICANS

"Motor Sport" Calls on Jensen and Bristol

HAND-MADE.—The assembly shop of Jensen Motors, at West Bromwich, with Jensen C-V8 cars being assembled on the right and Austin Healeys on the line on the left of the picture.



THE other day I was driving a vast boudoir of an American automobile and came up in traffic alongside a Jensen C-V8. Perhaps catching its elderly occupants unawares, I beat it on acceleration, but when the time came to brake again, the Jensen sailed past me, due to having far better anchors.

This merely heightened my opinion that motor cars combining the power and reliability of American power units ("there's no substitute for litres") with European standards of suspension and braking should be very desirable cars indeed. Two come to mind immediately—the Jensen and the Bristol.

I decided to call at these factories, to see what's cooking in this attractive Anglo-American field. First I drove to West Bromwich, suburb of Birmingham, wondering, *en route*, which is the slower road, Oxford-Banbury or Oxford-Stratford, and what Marples proposes to do about it . . . ?

Jensen now occupy new premises, dating from 1956 with the finishing touches in 1958, comprising long and lofty concrete halls and flanking office blocks. There are ample car parks, a canteen and lots of rather dingy working-space in this unpretentious Midlands factory where they do not go in for too much show, preferring to get on with the jobs in hand. I was conducted round by Mr. J. Branson, the Sales Manager.

Apart from building the C-V8 Jensen, Austin Healey 3000 and Sprite bodies are constructed, using Bronx presses to shape panels delivered from an outside source of supply. They are then trimmed and painted for B.M.C., before being dispatched to Abingdon. The Sunbeam Tiger is assembled for Rootes. A three- or four-line assembly-line bay, as required, and a four-line paint bay are employed for making these Austin Healey bodies, Jensen being able to cope with up to 250 a week.

The Alpine bodies for the Sunbeam Tiger are sent to Jensen Motors, who then install the Ford V8 260 power unit after modifying the structure, and complete the car for shipment to America. No-one was prepared to let me look closely at a Tiger or tell me the production figures but, judging by the impressive numbers going through the shops, and the Ford engines from Detroit in their Rootes' packing cases, I would estimate a weekly output in the region of three figures.

It is significant that the aforesaid desirable Anglo-American amalgamation is accepted avidly in the U.S.A., as the demand for compact Sunbeam Tiger and powerful A.C. Cobra testifies.

Jensen wanted real power, so decided to go over to an American power unit, and having installed a few Chrysler engines in the old Jensen chassis they were entirely convinced that there was no need to look for any other engine. These cast-iron 90° 108×86 mm. (6,276 c.c.) V8 power units develop 330 b.h.p. at 4,800 r.p.m., using a c.r. of 10 to 1. The engine arrives ready to install, separated from its Torqueflite automatic transmission for ease of shipment, Jensen merely bolting the two together for installation in their chassis.

The Jensen C-V8 really is hand-built and finished. It was like a flash-back to pre-war craftsmen-built cars to see them being assembled on a single floor-level line which has nothing automatic about it, the cars being moved along by hand on rail-track conveyors.

The chassis consists of two parallel tubes to which the fabricated sub-assemblies are electrically welded. The o/s. tube incorporates the brake vacuum-servo and for this reason all chassis tubes are immersed in a simple water bath and tested under pressure for leaks.

After the sub-assemblies are in place the chassis is turned right side up, and commences its leisurely journey along the assembly-line. The Jensen body is entirely of fibreglass, with the exception of the light-alloy doors. Jensen have had experience of this form of construction, on the 541, since 1954. The sections are made carefully by hand, baked overnight at 60°, then the body shell is cured for a period of three weeks before it takes its place on the assembly-line. The only pigment in the resin is that used to protect the under surface of the front-wheel arches against stones flung up from the road.

As a fibreglass body is immune to corrosion the entire metal chassis is completely immersed in a bath of anti-corrosive fluid so that it, too, will be immune from rusting.

I was interested in two items of technical detail. To ensure cool oil in the automatic gearbox a heat-exchanger is incorporated at the base of the Jensen's water radiator, through which the gearbox oil is circulated, while ducts above the front-wheel arches convey cool air not only to the interior of the body, for the comfort of the occupants, but also over the gearbox to obviate a hot transmission tunnel. Another ingenious aspect of the C-V8 is a lockable flap over the release on the nose of the bonnet. This means that the car can be driven but no-one can tamper with the engine. Moreover, the sizeable handle which frees the bonnet of all save its safety-catch is so positioned that if the bonnet hasn't been shut the lockable flap cannot be closed, and as this is then visible from the driving seat, only a complete moron would drive off with the bonnet unfastened. The fuel filler flap is solenoid-operated, incidentally.

Great care is taken over the finish of the car. The paintwork is very carefully inspected for blemishes after the body has been through the single-car paint-spray booth, and small parts are painted along with the body they belong to, to ensure even colour. The "eyebrows," or metal beadings, above the dual headlamps are definitely individual to each car, being fitted to its body before being plated, to ensure a perfect fit.

The finished cars go up on a ramp for detailed inspection. Another very encouraging aspect of this small-output, hand-built car—and only four or five C-V8 Jensens emerge per week—is the careful testing, undertaken by two drivers who do nothing else. Each car is run on the road for some 200 miles, the testing broken

up by the dictates of meal times, before it is passed as ready for delivery, a most unusual procedure these days.

The Jensen chassis is quite conventional, but sturdy, to cope with those 330 American horses. Front suspension is by coil-springs and wishbones, Dunlop disc brakes do the retarding, and the Salisbury back axle, with specially heavy $\frac{1}{2}$ -shafts and a Powerlok differential, is sprung on two-stage $\frac{1}{2}$ -elliptic leaf-springs damped by electrically adjustable Armstrong shock-absorbers.

Altogether this big, rugged hand-built £3,490 Jensen is a most satisfactory-looking car, about which we hope to publish a full road-test report in the near future.

* * *

Some years ago, when the Managing Director was Bristol-minded, there was fairly frequent reference to Bristol 401, 403 and 404 cars in MOTOR SPORT. At the time there were people who maintained that these beautifully engineered and appointed cars were under-engineered, but to me they represented high-efficiency 2-litres, for those enthusiasts who didn't object to changing gear when they wanted to go quickly.

Around 1957, however, re-organisation of the factory at Filton coupled with the fact that Hawker-Siddeley had dropped car production, caused repercussions, and the manufacture of car engines by Bristol was abandoned.

They had, in any case, realised that something new was required and had designed a number of experimental engines, with a V8 in an advanced state on the drawing-board. It was felt that the new car should have automatic transmission and every kind of gearbox in this category—Hobbs, Borg-Warner, Hydramatic, Flight-o-Matic and Torqueflite—was tried, the verdict going very much in favour of the last-named, after Bristol had tried their hand at making an automatic box of their own, in conjunction with Smiths.

Having decided that they wanted a Chrysler transmission, the Bristol engineers found it logical to employ a Chrysler V8 engine. American foundry methods are notable for excellent light-weight aluminium castings, and to reach similar standards for an output of 10 or 20 engines a week would have entailed enormous tooling costs, apart from the undesirability of matching a specialised transmission to an engine for which it wasn't designed.

So a Chrysler power unit was adopted, a Canadian-built type 313, with a high performance power pack—special camshaft, four-barrel carburetter, etc.—chosen by the Bristol engineers. They also decided to have nothing to do with hydraulic tappets and the engines are supplied with mechanical tappets installed.

Tests were carried out in England, Bristol doing their own development work in harmony with the Chrysler Corporation in the States. For instance, full-throttle motorway driving could have produced bearing failures, but the engine proved entirely satisfactory. Experiments were made with higher peak revs. under kick-down, to the extent of extending the change-up point by some 8 or 10 m.p.h., but overall acceleration times were unaffected. In carrying out such tests the Brabazon runway adjacent to the factory proved extremely useful.

Chrysler had just introduced the Californian smog pack and this was adopted as being an ideal method of keeping fumes out of the car interior. In particular, Chrysler's ball and trunnion propeller shaft joint was found to function exceedingly well, ironing out transmission problems.

Small modifications to the 98.5 x 84.1 mm. (5,130 c.c.) 250-b.h.p. 90° V8 engine to enable it to go into the Bristol 408 box-section chassis, such as shortening the dip-stick, altering water outlets, tapping heater connections, modifying the gearbox extension and so on, are done at Filton, surplus parts removed from the imported engines being scrapped. So far as larger mods. are concerned, like manifolding, pulley sizes, etc., Chrysler were able to provide what was required from amongst the parts for their range of engines.

The Torqueflite transmission is cooled by an oil radiator let into the base of the water radiator, oil being circulated through this by the gearbox pump at over 30 lb./sq. in.

Calculations were made to see whether any engine cooling problems would arise, working in conjunction with J. W. Lawrence, the radiator manufacturer, and by pushing air through the radiator by means of two thermostatically-controlled, cowled fans mounted side-by-side in front of it, using a thermo-switch in the underside of the header tank, temperatures remained in conformity with the theoretical checks. The cooling system is pressurised at 14 lb./sq. in.

The very ingenious and compact push-button control unit for the Torqueflite transmission fitted easily on the right of the Bristol fascia after a new bracket had been made for it. This is a

very satisfactory control unit, neatly illuminated *via* the fluorescent buttons, rheostat-controlled in company with the instrument lighting.

The 12-volt electrical system of the Bristol 408 is positively earthed and Ferodo DA2 pads are used for the Dunlop disc brakes, not a trace of fade being evident after 30 stops from 70 m.p.h. at 0.6 or 0.65 g., which is the standard test procedure.

Since the British Aircraft Corporation moved in, changes have taken place at the Bristol Car Division, which is situated compactly, factory and office block, on a hilltop overlooking the Bristol Company's airfield. The old body shop is now devoted to assembling VC10 wings, so the 16 g. light-alloy 2-door saloon body now comes from the London works of Park Royal Vehicles Ltd. on transporters which take three chassis up and return with two of them, to which body shells have been fitted. Seat frames are also made in London, but trimming and completion of the bodies is done at Bristol.

Every Bristol car is given a road test of 50 to 75 miles before being finally fitted out. Bodies spend as much as ten days in the paint shop, a very high standard of finish being maintained.

The Chrysler power units arrive at Avonmouth docks in two parts, engine with torque convertor, and gearbox.

There is no assembly-line at Filton, where Mr. Selby, who used to run the Bristol competition cars and who raced Bugattis at Brooklands in the "golden age," hence the B.R.D.C. badge on his Morris 1100, showed me round. The cars are just put together on the floor of a spacious, well-lit shop. Production of this £4,459 motor car is very small, as befits a hand-built job. No production figures were disclosed but one might almost say that the Bristol 408 is produced pretty well to individual orders.

W. B.

B.M.C. MINI MOKE NOW IN PRODUCTION

Available as either an Austin or a Morris, the rugged front-wheel-drive Mini Moke is now being produced for world markets. It is unique in that no other vehicle in production has so many and varied uses—from a site survey vehicle to a golf buggy. Although in a class of its own, it is powered by the standard Mini power unit of 848 c.c. and the general layout is the same as that of the Mini saloon, most chassis details being identical, thus facilitating servicing and replacements.

The fully rust-proofed unit construction steel body has a very low centre of gravity, which together with the all-round-independent-rubber-suspension makes the Moke as sure-footed as a cat at all times and gives it outstanding handling qualities for fast road work. Car-like comfort is not usually associated with the rugged runabout type of vehicle; however, the Mini suspension gives a high standard of comfort when working over the roughest roads. With front-wheel drive, and the power unit mounted transversely over the front wheels, maximum traction is assured over any terrain. The Moke is equally at home as a beach car, hotel wagon or camp taxi, or when used as factory transport, site vehicle, maintenance vehicle or airport ferry.

The Moke is supplied with a vinyl-treated fabric tilt, supported by detachable tilt tubes, and the windscreen can be folded flat or detached completely if not required. Passenger seat, sump protector, windscreen washer, grab handles and laminated windscreen are a few of the available extras for this new B.M.C. Mini.

The price of this vehicle, fitted with driver's seat only, is £405 7s. 1d.

[A sports car in its way, too, especially if it still has two separate gear-levers, enabling front and back wheels to revolve at different r.p.m.—ED.]

FORD CORTINAS' SUCCESS IN THE U.S.A.

For the second year in succession Ford Cortinas have beaten all-comers in the Marlboro (Maryland) 12-hour race. Against the full might of opposition from both the U.S.A. and Europe, Lotus-Cortinas finished first, second and ninth, won the team prize and the index of performance award. The winning car was driven by Jackie Stewart and Mike Beckwith, the second by Sir John Whitmore and Tony Hegbourne. D. Clark, with David Hobbs, completed the all-conquering Cortina team.

This endurance race, held on a tight 1.7-mile circuit, is one of the top events in the American calendar. The winning Ford set up new records for speed and distance in the race.

