

SCI

tests the

Arnolt - Bristol

"...a car enthusiasts ought to be fighting to buy."



Gracefully designed by the Bertone coachbuilding firm of Turin, Italy, the aerodynamic body of the Arnolt-Bristol stands a mere 44 inches in height.

IT WAS 5 a.m. in the desert. The air temperature was a frigid 35 degrees, and the car hadn't been tuned since it left the factory many months before. I had already discovered that the stock plugs, fine for Britain's lower-grade fuel but not for premium U.S. gas, were misfiring, and that three of the brakes were dragging. The time and place were wrong for taking corrective measures, and I didn't expect much.

To start the car I went by the book. I pulled out the mixture-control lever and pressed the starter button. One spin of the crankshaft and the cold

engine fired, ticking over at a fast warm up idle of 1500 rpm. The water temperature rose to a good operating level within three minutes, but the oil temperature was slow. After 10 minutes' warm up and five miles of tooling along below 2000 rpm, though, the oil stood at 40 degrees Centigrade. Now, according to the book, I could go ahead and use whatever the engine had to give.

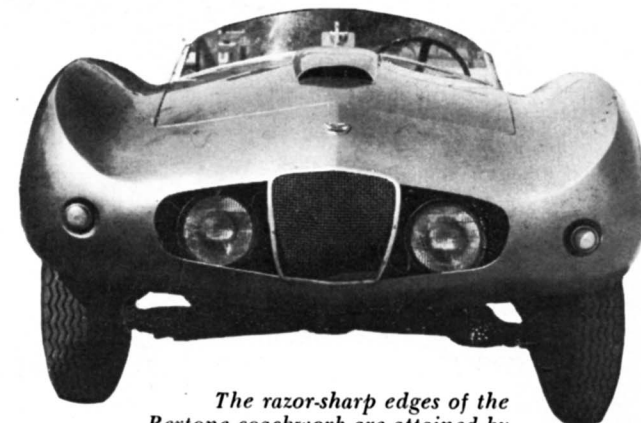
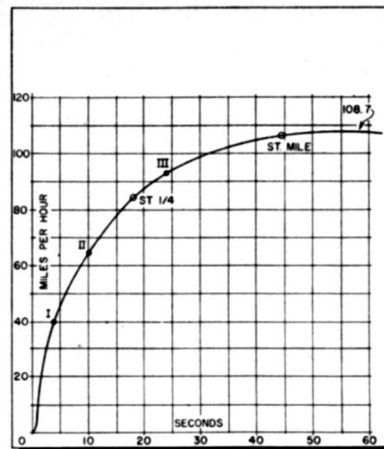
First, the standing quarter-mile. I revved the engine to 5000 with clutch in and shift lever in first cog, popped the clutch and stood on the throttle. Low gear was quite high (low numerically) by touring car standards, and for

a full second very little happened. The car started forward, moving like a rocket, slowly at first, gathering momentum. The tach needle crept around to 3000. Suddenly the racing cam effect came in. Within two seconds the needle was swinging past 5000, the speedometer read 40 and the valve gear was screaming its tension.

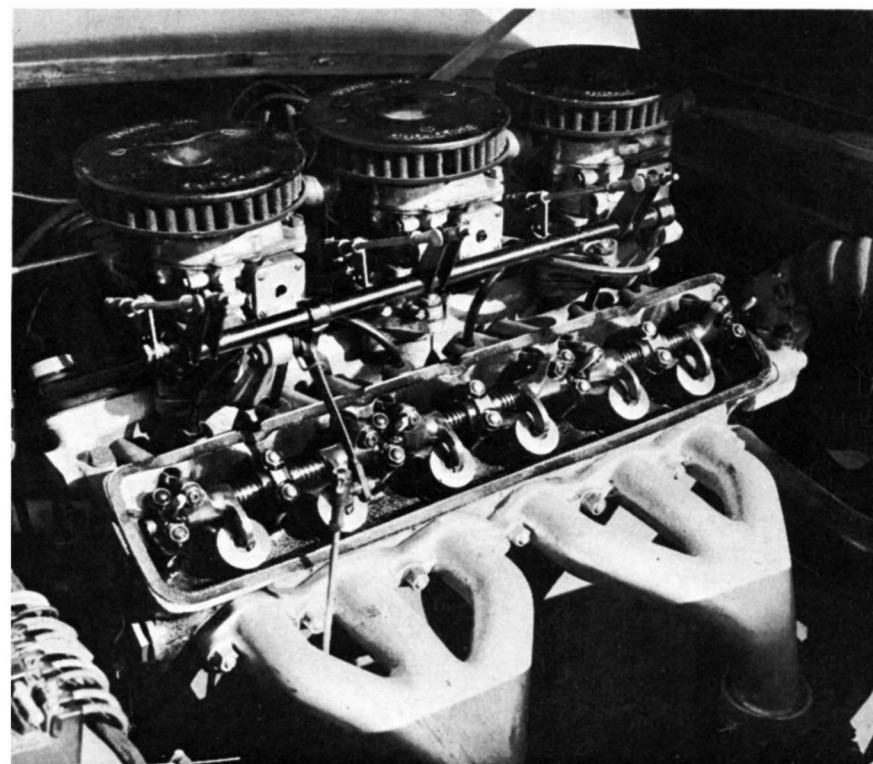
With foot hard on the throttle I punched the clutch, whipped the shift lever down to second and snapped the clutch out again, keeping the revs above the thrusty 3000 mark. I wound past 4000, listening to the *haawnk* of great volumes of air ripping through slender venturis become louder and stronger. Now the tach read 5000, and as it approached 6000 at 65 mph I popped another shift, still keeping the throttle pinned to the floorboards. There was the ascending engine note in second, the sudden descent, then as the clutch bit, the start of another, lower-keyed ascent. I wound on out in third at 6000, indicating about 95 mph, and threw the final shift into fourth. The engine, losing only a few revs, continued to drone its song of pure power. In 17 seconds flat I'd spanned the standing quarter, indicating nearly 90 mph in 1320 feet with a 120 cubic inch engine!

This, friends, is a car:

The Arnolt-Bristol is one of the finest real high-performance sports cars I've ever driven. Its engine and chassis have European lineage of unique distinction, and its beautiful body is one of Bertone's best. In competition form the car costs just \$3995. Yet you can buy one without having to sweat out a long waiting list, and this is the fact that astonishes me. By all that's rational, hot-eyed enthusiasts ought to be snatching these machines off the boats as fast as S. H. Arnolt can produce them. The reason they aren't, apparently, is that there's a widespread notion that the A-B is some sort of cobbled-up U.S.



The razor-sharp edges of the Bertone coachwork are attained by careful finishing of the metal. Large airscoop helps accommodate tall engine and ducts cool air to three Solexes.



All parts including the short rockers are polished to a near-mirror finish on the Bristol BS-1 Mk II engine. Transverse pushrods actuate the exhaust rockers. In effect and in operation, this arrangement acts as a direct overhead camshaft.

jalopy that happens to use the Bristol engine. This is far from true.

The Arnolt-Bristol is a purebred sports car. Its sweeping class win at Sebring in '55 proved that it's every bit the machine that Bristol-powered cars are across the Atlantic — cars that can win their class 1-2-3 at Le Mans and sustain over 125 mph for 200 miles at Montlhery. In the U.S., A-B's have finished ahead of two-litre Ferraris, 300-SL's and Jaguar XK140M's. There's nothing in the two-litre production class that can keep up with them.

The A-B is magnificent for short, straight road courses. It has a top speed

of about 112 mph and it's geared to reach the maximum right away. The top speed it can achieve theoretically on a long desert highway is actually beside the point. What is the point is the fact that within a mile, from a standing start, it can come within a hairsbreadth of its potential maximum.

It thunders through first so fast that you need all your alertness to keep it from yielding its limit right there. Second and third ratios arm you to cope with any situation of acceleration, ascent or descent. Fourth is a dream. You can use it to pull smoothly from 20 mph or you can use it where it's happiest:



Speedometer of the A-B indicated from 70-75 mph as the aerodynamic two-seater sped around test bend.



Weight distribution, and stable suspension geometry permit high cornering speeds with slight drift.

cruising between 80 and 100 mph. Here the engine runs with a free and totally frictionless feel. This is a car that hungers to prance at 105 mph at only a nudge from the driver. Only at the bitter end of its top limit does it begin to tighten up.

The Bertone has built for Arnolt are beautiful, and that's a deliberate understatement. The lines are essentially the same for all the body styles. Our test car was the simplest, the competition two-seater, which has a racing windscreen, and no top, side curtains or bumpers. Next in price is the Bolide model, which has full weather protec-

tion and a price of \$4250. The De Luxe model, with top, side curtains, bumpers and an elegantly finished interior, sells for \$4995. And finally there's the Coupe at \$5995, which has roll-up windows and interior appointments that are really luxurious.

All these models derive their lines from Bertone's brilliant B.A.T. series of aero-dynamic body forms. No matter from what angle you view the Arnolt-Bristol, it has beauty, harmony, and integrity of line. At a three-quarter rear

view, for example, the sharply sculptured curve of the front fender harmonizes faultlessly with the curves of windscreen and aircoop. The body is light, strong and practical. The doors are so light, so well-balanced and lightly-hinged, that I thought they must be made of aluminum. But they're of steel sheet, and so are all the panels except the hood and rear deck. This is good from the standpoint of strength, and strength has been an important consideration in the laying out of this body.

Welded-in steel-sheet wheel wells give the body's front and rear extremities a boiler-plate solidness. Because of the structural strength you can haybale an A-B and pay for the damage without too much strain. For one reason or another two of these cars have been rolled in West Coast races. They came to rest on the high points of their fenders and the repair costs, including paint, ran between \$150 and \$175.

In the past I've seen some sad examples of "fine Old World craftsman-

ship" in which the sheet metal was just a rough base for a sculptor's skill with many pounds of body putty. This was the first thing I looked for in the Bertone body, but I could find nothing but paint and well-formed sheet metal. The razor edges of the fenders are areas that even the least cynical observer would be likely to suspect. But if you reach up under the body and feel inside you find that the razor edge was achieved by steel alone, and not by lead, putty or any other substitute for competence in

metal-shaping.

The aerodynamics of this body are notable. If you're of average height—say from 5 ft. 6 ins. to 5 ft. 11 ins.—you ride in total comfort. The airstream gives you a gentle scalp massage and rips up and over the racing windscreen to deflect insects and other airborne impediments harmlessly. But extend your arm to make a turning signal and you discover how efficient the streamlined packaging is. You can almost break a wrist by testing the airstream

too boldly at high speed.

The big aircoop in the hood is no dummy. Without it the car would have to be a good deal higher than it is, to accommodate its tall engine. The scoop channels cool outside air to the three Solexes that mix the engine's fuel and air.

The passenger space is one of the most acceptable I've found. Bertone's bucket seats are perfectly form-fitting and give superb lateral support to pas-

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TEST CAR:

Arnolt-Bristol 2-liter Competition model. Bristol 404 chassis, B.S. 1 Mk. II engine.

TEST CONDITIONS:

Number aboard.....2, weight of passengers and instruments 340 lbs.
Top position.....Down (no top on competition model)
Temperature.....Top speed, 36°F. Acceleration, 74°F
Miscellaneous.....No wind, top speed taken at sea level, acceleration at 950 ft.

PERFORMANCE

TOP SPEED:

Two-way average.....107.3 mph
Fastest one-way run.....108.7 mph

ACCELERATION:

From zero to:
30 mph.....2.9 sec.
40 mph.....4.0
50 mph.....6.2
60 mph.....8.7
70 mph.....11.7
80 mph.....16.0
90 mph.....21.3
100 mph.....27.9
Standing 1/4 mile.....17.0 (avg. 52.9 mph)
Speed at end of quarter.....82 mph
Standing mile.....44.3 secs. (avg. 81.4 mph)

CHASSIS:

Wheelbase.....96 ins.
Front Tread.....51.25 ins.
Rear Tread.....54 ins.
Suspension, front.....Transverse leaf and A-arms
Suspension, rear.....Rigid axle, longitudinal torsion bars
Shock absorbers.....Hydraulic double-acting telescopic
Steering type.....Rack and pinion
Steering wheel turns L to L.....3
Turning diameter.....32 ft. 10 ins.
Brake type.....Lockheed hydraulic; two leading shoes at front
Brake lining area.....148 sq. ins.
Wheel studs, circle diam.....Five 9/16 in. studs; 4 1/4 in. bolt circle
Tire size.....5.50 x 16
Rim width (outside).....5 7/8 ins.

GENERAL:

Length.....167 ins.
Width.....68 ins.
Height.....44 ins.
Weight, test car.....2120 lbs. with full fuel tank
Weight distribution, F/R.....49/51
Weight distribution, F/R with driver and passenger.....47/53
Fuel capacity—U. S. gallons.....18.5

RATING FACTORS:

Bhp per cu. in.....1.08
Bhp per sq. in. piston area.....4.07
Torque (lb-ft) per cu in.....1.05
Pounds per bhp-test car.....16.3
Dry weight.....1990 lbs.
Piston speed @ 60 mph.....1850 ft. per min.
Piston speed @ max bhp.....3465 ft. per min.
Brake lining area per ton (test car).....140 sq. ins.

SPEEDOMETER CORRECTION:

Indicated	Actual
30	29
40	38
50	47
60	56.5
70	66
80	75.6
90	82.5
100	92

FUEL CONSUMPTION:

Hard driving.....16.5 mpg
Average driving (under 60 mph).....24 mpg

BRAKING EFFICIENCY:

1st stop.....	71 percent
2nd stop.....	71 percent
3rd stop.....	71 percent
4th stop.....	76 percent
5th to 10th stop.....	73 percent

SPECIFICATIONS

POWER UNIT:

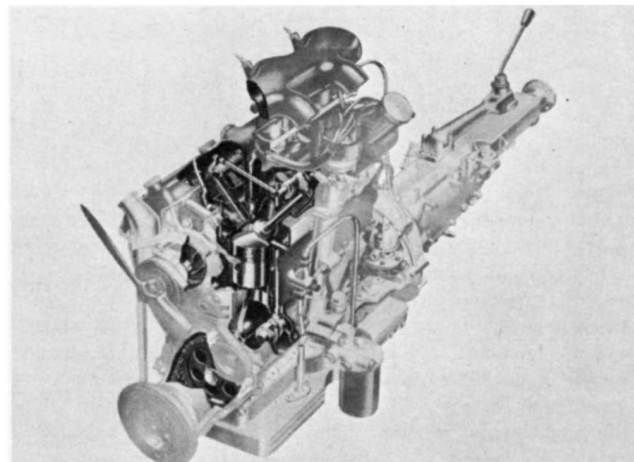
Type.....In-line six
Valve Arrangement.....Vee-inclined ohv, pushrod operated
Bore & Stroke (Engl. & Met).....2.59 x 3.77 ins. 66 x 96 mm
Stroke/Bore Ratio.....1.455 to one
Displacement (Engl. & Met.).....120.2 cu. ins., 1971cc
Compression Ratio.....9.0 to one
Carburetion by.....3 single-throat Solex type 32B1
Max. bhp @ rpm.....130 @ 5500
Max. Torque @ rpm.....128 @ 5000
Idle Speed.....600 to 900 rpm
Ignition by.....Lucas coil and single-breaker distributor

DRIVE TRAIN:

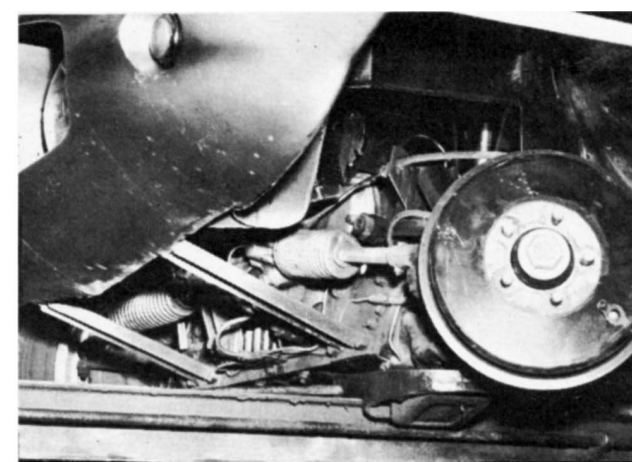
Transmission ratios I.....	Overall.....	Gearbox.....
I.....	11.4	2.92
II.....	7.12	1.83
III.....	5.04	1.29
	3.9	1.00



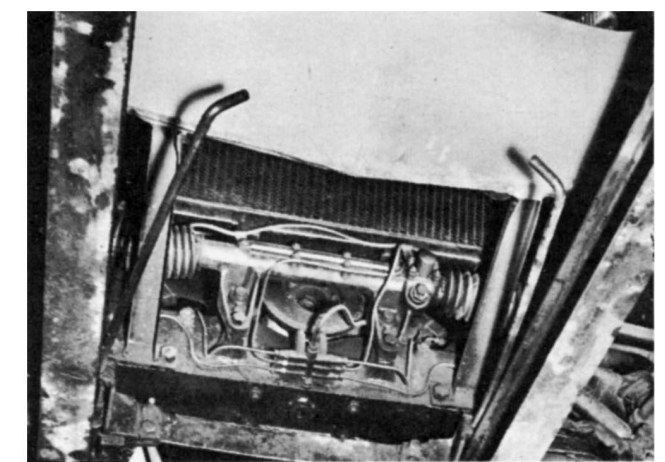
With excellent grouping of instruments, adjustable bucket seats, precise location of shift lever and handbrake, ample leg room for the lanky, the A-B cockpit leaves little to be desired.



Partial cutaway exposes valve train and operation. Single camshaft in block actuates intake valves by pushrods and rockers. Exhaust valves are activated by transverse rods impelled by bell cranks on intake rocker shaft.



Front running gear detail. Eleven-inch brake drums lack finning and ventilating ports for cooling, but in spite of simplicity endure harshest treatment with impunity. Note concertina-type seals shield rack and pinion.



Front underchassis view of plumbing for Bristol chassis' excellent one-shot lubrication system. All running gear friction surfaces are sealed from dirt either by neoprene seals or by leather covers secured by straps and buckles.

to the left of the driver under the dashboard and is connected to an aluminum channel secured to the top of the propeller-shaft tunnel whence it runs the length of the tunnel to supply an air-stream. The other pipe bends to the right of the driver then goes forward through to bulkhead to connect to a carburetor air-box. Two

slots in the tail of the body eject the warmed air.

Height of the complete car is a mere 27 inches to top of headrest with driver aboard, and the dry weight is 1175 lbs. With its small frontal area and power-output of over 170 bhp this is a speed recipe.

Replicas of the new car are being

built for several drivers, some to have 2-liter six-cylinder Bristol and others four-cylinder Alta engines of the same capacity. In Great Britain, intending purchasers must supply their own engine and gearbox if they are to receive the Purchase Tax conditions, but of course complete cars are supplied if required. #

Arnolt-Bristol

(Continued from page 31)

sengers under the hardest cornering. Leg-room is unusually ample. The seats have five stages of positively-locked adjustment. My height is 5 ft. 10 ins., and with the driver's seat in the next-to-longest notch I was barely able to touch the front floorboard with either foot. In the competition body there are no interior panels to the car's doors. But there is a metal strip about 1½ inches deep along the bottom inside of each door. This adds to the doors' rigidity and also makes a useful parcel-storage area in each door. There's no partition between the passenger compartment and the luggage space at the rear. Thus this space is accessible both from behind the seats and through the rear deck lid.

The A-B's complement of instruments is very complete. There are a big speedometer, a tachometer of equal size, and gauges for oil and water temperature, oil pressure, ammeter and fuel supply. The tach includes a clock and the speedometer a trip odometer. Warning lights are used to indicate high beam of headlights (Italian "warning" style), two-gallon fuel reserve, direction indicator and battery discharge. Controls include hand throttle and automatic mixture control for starting. The pedals are nicely dimensioned and spaced for feet of average size and the hand-brake lever is ideally placed between the seats. The shift lever is long and on the springy side. If you insist on the last word in refinement you can get a special remote shift linkage from Arnolt.

The 96-in. wheelbase chassis is based on a rigid, light, box-section frame with front suspension by a single transverse leaf and upper wishbones damped by steeply inclined, double acting tubular shocks. The rear axle is solid, with its differential housing offset to the right. Suspension is by longitudinal torsion bars, and the axle is positively located by a triangular stabilizing bracket that anchors final drive housing to frame. There are four shock absorbers at the rear and fabric slings to prevent excessive axle travel during rebound.

Steering is by rack-and-pinion that is dead-positive and impeccable. It appears to be completely non-reversible — that is, although the steering wheel directs the road wheels very sensitively, there is no playback from road wheels to steering wheel. The system responds as quickly as the most demanding driver could want. A wheel movement of just an inch or two is enough to execute most changes of direction, and gentle road curves need only a fraction of an inch. The steering has what I consider an ideal amount of feel — it's slightly heavy even at high speeds. Because of this you can set the wheel on the straightaway or in a constant-radius turn, take your hands off and enjoy the rare experience of having your car "remember" your command long after you gave it.

The A-B is one of the fastest-cornering cars I've ever handled, and this includes many quality road machines capable of far greater top speed. Its fore-and-aft weight distribution is very close to being equal and is slightly tail-heavy. Its tread is wide, its wheelbase short, and its suspension geometry is very stable. Under heavy side loading the rear wheels slide outward just the right amount to permit fast and effortless cornering. At high cornering speeds in big-radius bends the car drifts ever so slightly. Its natural cornering stance is flat and rock-steady and it stresses its tires hardly at all. It tracks true and perfectly at almost any speed. Once you learn not to use too much tiller, you can steer it with something very close to a centaur-like sense of oneness with the mount — especially when you gauge the wheel-setting for any curve precisely in advance, set the wheel with a single motion, and let the car do the rest.

The Bristol gearbox is a near approach to perfection. Its bottom cog has obviously been chosen for racing. It's low in terms of numerical ratio and therefore makes the car slow in getting away from the line. There's a good second lost between letting the clutch out and meaningful forward acceleration. But if it had a higher numerical ratio the engine would peak sooner. You only start once in a race, but there will probably be many times when you can use a broadly useful low-gear-range.

The A-B's first is good up to 40 mph.

First has no synchromesh, but you can downshift to it with no clash or noise by using elementary Model A Ford double-clutch technique. The other gears are synchronized and can be changed with a delicious degree of silence and certainty if you will make the change "slowly" — taking about one-tenth of a second to pass from gear to gear, while never lifting your foot from the throttle. A similar pause insures silent downshifts. You can make them more rapidly, with less stress on the mechanism, by double-clutching and blipping the throttle with the clutch out.

The brakes are terrific. I pulled a wheel to inspect one of the brake drums and was totally unimpressed by the sight of the simplest sort of non-finned, non-ventilated drum. Yet these brakes are all you could ask for. During our ten-stop fade test they lost not a bit of their massive stopping power. These are brakes to race with — which means they're the kind of brakes you don't mind entrusting with your life.

So let's summarize. In terms of performance, the Arnolt-Bristol is a thoroughbred racing car fit to be stabled with Ferraris and Mercedes. Its acceleration is shattering and any point on the acceleration curve can be reached in a matter of instants. You can get tremendous speed in the space of a few watch-ticks, then downshift and brake and be creeping along in Second split-minutes after you were indicating 110 mph. The engine's power is nothing short of a revelation. It forces you to take a second look at all the scholarly arguments in favor of the short-stroked engine. In terms of hand-work and fine finish on mechanical components, there are few machines in the world that can compete with the Arnolt-Bristol. It's a goer and a winner, a full fledged racing machine that can blow off others far out of its displacement class and worlds apart from its price class. It's a car the enthusiasts ought to be fighting to buy.

I'm thoroughly convinced that you'll find no car with more performance per dollar than you can get in the A-B. It's a Golden Age-type sports car, the sort of combination of fierce racing car and obedient road machine that survives here and there only in the high price-brackets.

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