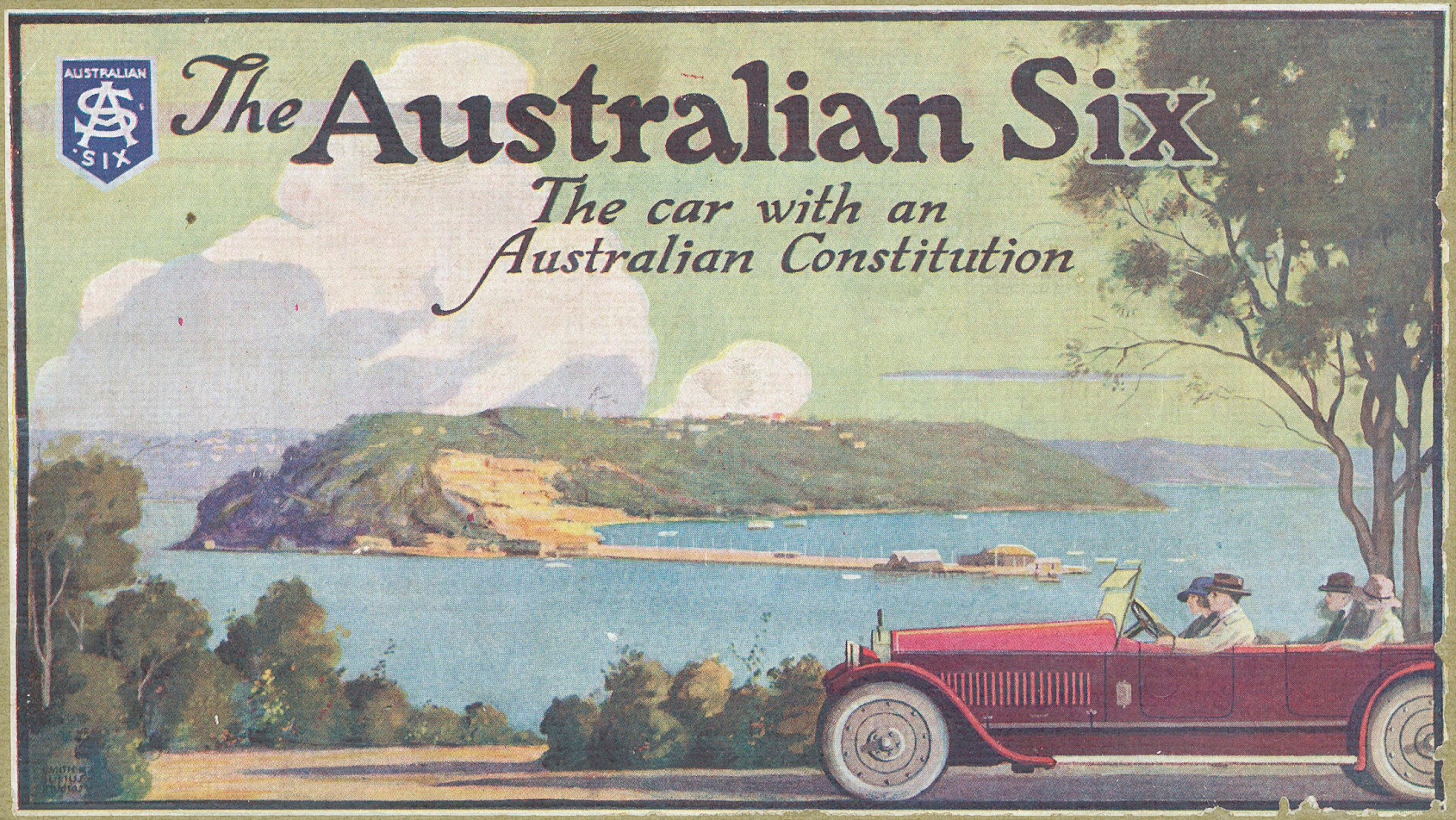
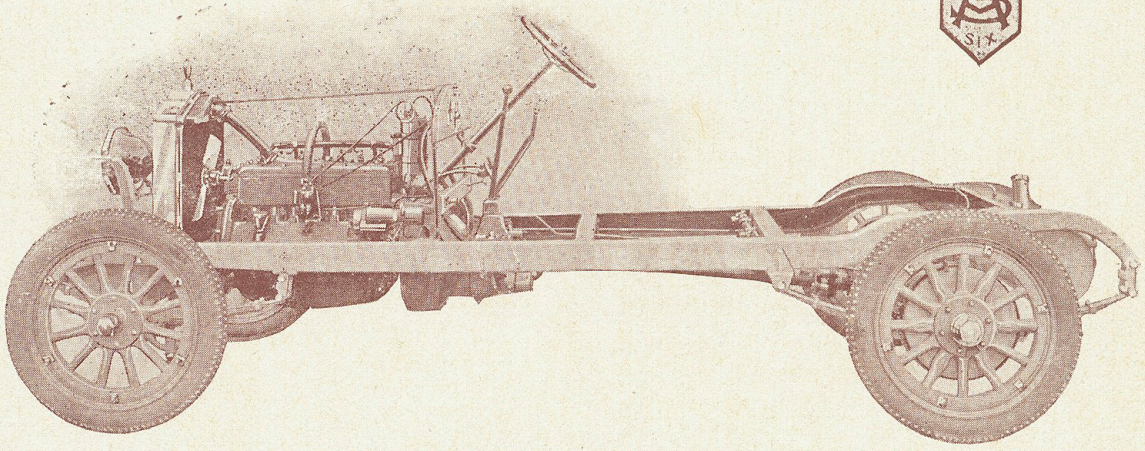

AUSTRALIAN
SIX
The Australian Six
The car with an
Australian Constitution

H. N. Haswell
20 Rosslyn St
Oakland

1922 Model

Australian Six —

THE CAR WITH AN AUSTRALIAN CONSTITUTION

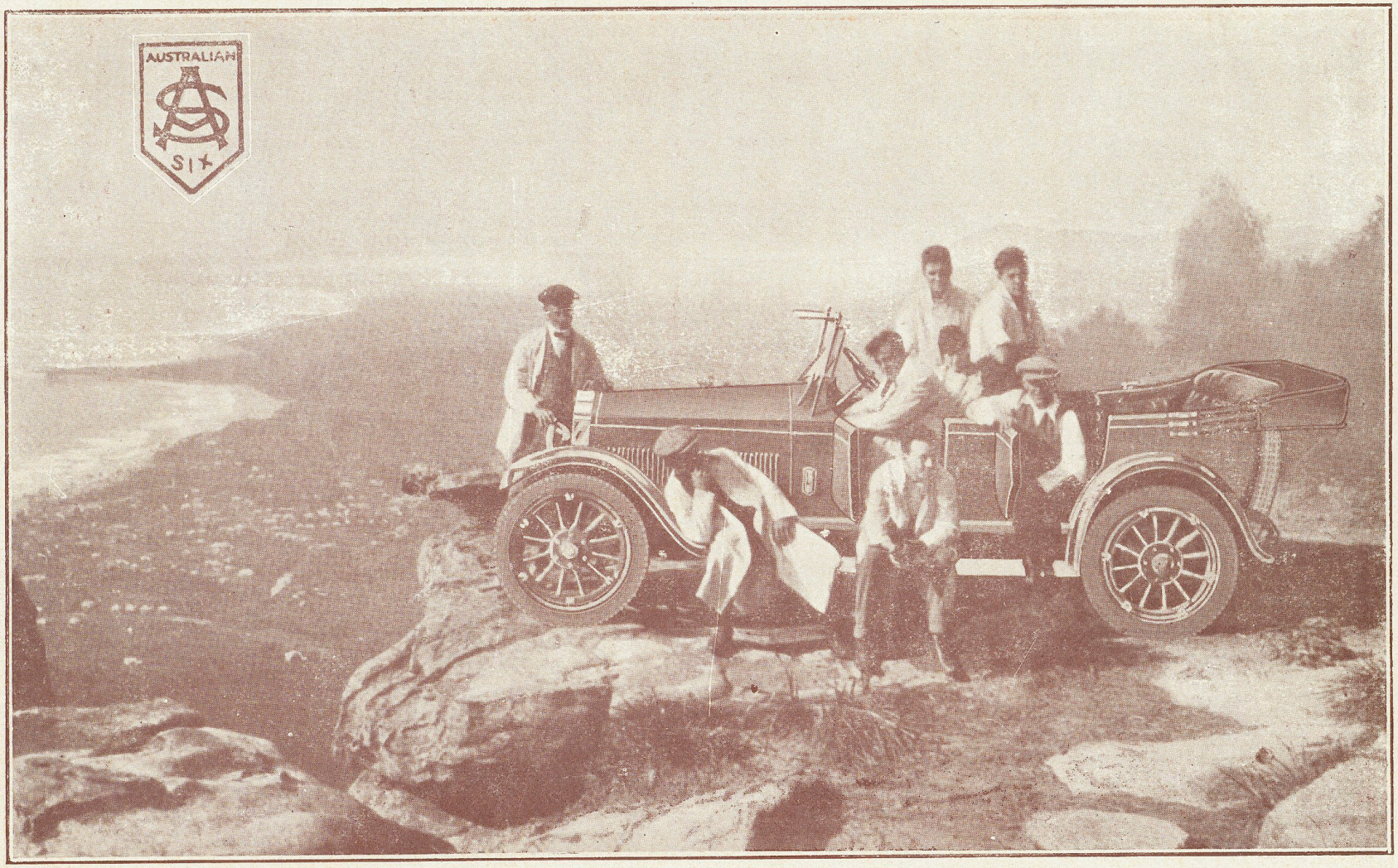


Australian Six
Chassis

Sole Distributors for New South Wales:

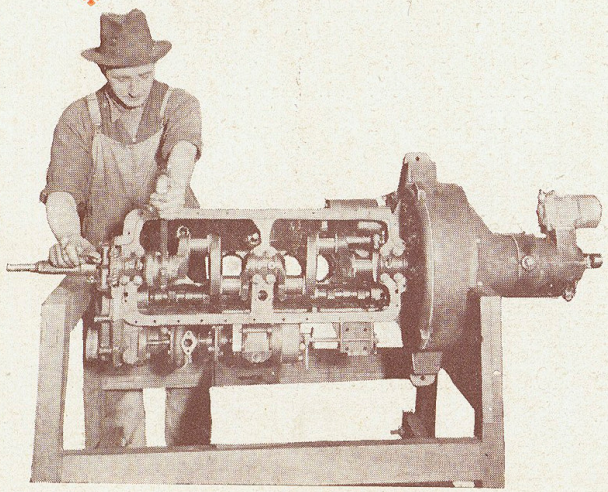
Australian Six Motor Sales Ltd.

Show Rooms: 133-7 Castlereagh St., Sydney



Seeing Australia in the "Australian Six." *The View from Sublime Point, Bulli Pass.*

Hand Fitting
Engine Bearings



IN presenting the Catalogue of our latest "Australian Six" Motor Cars to the public, we feel certain of the same sympathetic reception extended to our previous announcements.

The volume of business we are now transacting indicates, beyond doubt, that our efforts to place exceptional value for money before the public have met with appreciation.

Our customers know that we have set steadily to work to eliminate the initial errors which have accompanied the efforts of every firm or individual entering into the business of motor car manufacture. Our car now possesses a degree of mechanical excellence which, in conjunction with its moderate price, makes it unquestionably the best value in Australia in 6-cylinder motor cars.

We have anticipated and realised that Australians are not so slow in supporting their own industries as many people are led to believe. There is, unquestionably, a section of this community, greatly interested in imports, who find it useful to keep informing the

public, through the Press, that Australians do not support Australian industries. By constant repetition of these statements they have obtained a certain amount of credence.

Our own observation of this matter is that Australians **DO** support Australian industries wherever and whenever they are worthy of it; but that, as a nation, they have a very strong and legitimate aversion from seeing the name of their country upon inferior articles. In our minds, the keynote of success for a local manufacturer is to produce really high-class goods, and show customers that they obtain high quality, combined with some advantage in the matters of lower freight, exchange and tariff.

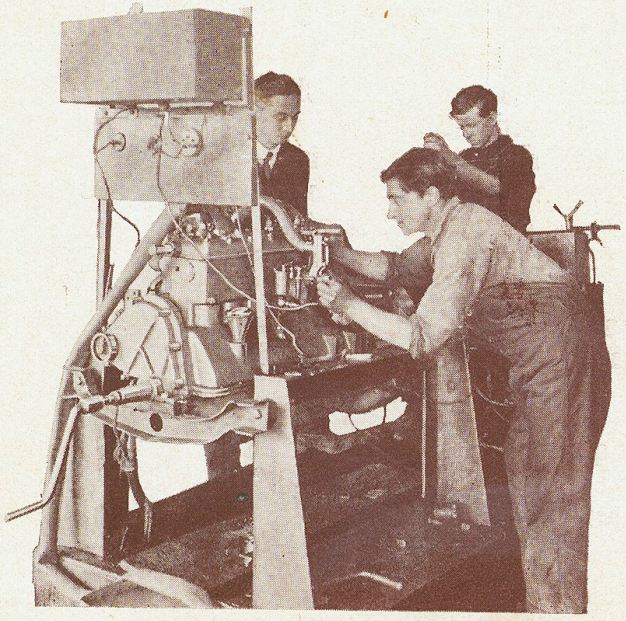
We believe the policy we are pursuing will be followed by the trade generally and that eventually the whole of the motor cars used in Australia will be locally assembled. The expense in importing complete motors is so great that it makes any foreign car, equal in grade to the "Australian Six," cost the Australian buyer a figure which is out of proportion to its real value.

The history of the Bicycle trade in Australia provides a striking demonstration of a business being entirely diverted from the importation of a number of foreign built machines to a demand for, and supply of, locally assembled ones. As a matter of fact, there is hardly such a thing in Australia to-day as an imported bicycle, whilst hundreds of assemblers are doing a profitable business, and the public are, as a direct result, getting better value for money than ever before.

FACTORY.—Our factory, which is situated in Parramatta Road, Ashfield, is easily the largest of its kind in Australia, and is complete with every modern convenience for the economical assembly of parts, as well as the manufacture of Bodies and a great number of items usually imported with chassis.

The building on the right-hand side in the illustration on page 20 consists of the bulk

Brake Testing a Completed Engine



store for cased parts, chassis assembly and mechanical departments, whilst that on the left comprises the body building shop, paint rooms, finishing department and spare parts store.

There is also another building, not shown in the illustration, in which all engines are brake-tested before going into the Chassis assembly room.

At the time this catalogue goes to press there are more than two hundred men employed in these various departments, and it is the earnest wish and intention of the Company to double this number at a very early date.

The engines, when unpacked by us, are entirely dismantled. Every part is then thoroughly inspected and gauged with most accurate instruments—piston rings are all closely fitted and gauged, and valve operations receive special care. Extra oil ways are cut in big end bearings and the engines are then assembled tight without the cylinder head and sump. They are then run, under constant supervision, by a power driven belt, until it is judged that they are

sufficiently run-in to go to the brake-testing department. The head and sump are then put on, and the complete unit goes to the brake-test bench, where it is required to develop its rated horse power at 1,000 revolutions per minute, and then "run in" for 24 hours.

When this has been achieved, the O.K. mark is put on, and the engine is sent to the Assembly room; not until the whole of these operations have been performed can it be put in a chassis.

This special hand fitting distinguishes the "Australian Six" from the average imported stock car, which is simply machine fitted to so many thousandths of an inch, and thereby easily produced in great quantities. It is this special fitting which places the "Australian Six" on the same level with high grade European cars, where factory methods and process of assembly coincide with that described above.

In the Chassis assembly department, the side and cross members of the Chassis are first set up on jigs, drilled, and hot rivetted under pneumatic hammers. We would here point out that having all these parts always on hand, we are able, at any time, to put a new side member or cross piece in the frame (that may have been broken through accident) and put our customer on the road again within 48 hours. This, of course, is effected without recourse to plating or oxy-welding, which may or may not be satisfactory, and always result in a depreciated price for the car when it is to be disposed of. The frame is then fitted with the springs, axles, etc., and gradually goes forward, receiving part after part, until it is ready for the engine to be installed which, as mentioned above, is meantime going through a special hand fitting process.

The complete chassis, fitted with a test body carrying weight equal to the weight of the finished body and complement of passengers, is then thoroughly tested on the road for 160/200 miles, according to the time necessary to discover any faults and tune it up thoroughly.

It is then handed to our body works and fitted with a body which will eventually be used on it. Then, before painting, it is taken on further road tests that may be necessary to determine the correct fitting of the body. This test also is run under load equal to full weight of passengers that can be seated.

When this test is finally satisfactory to our engineers, the whole car is handed to our paint shops to be finished.

CHASSIS—Frame.

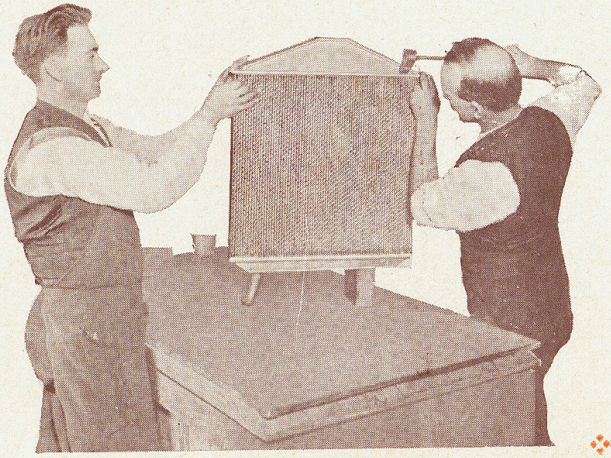
The side Members are of deep [section heavy gauge channel steel fitted with dumb irons providing eyes for the Spring Shackles. The design produces a low centre of gravity—at the same time providing ample room for the attachment of long resilient springs.

All cross members are hot-rivetted, and every angle is reinforced by a gusset-plate, hot-rivetted both to the main bars and cross members.

The result is a frame of exceptional strength and rigidity, with a carrying capacity in excess of any load or road stress that it will ever be called upon to bear.

SPRINGS.—Both front and rear springs are half-elliptic, wide and long, the rear spring being under-slung and provided with non-reversible shackles. Grease cups are installed at every moving point.

Making All-Copper Radiator



AXLES.—The front axle is a drop forging of I section slightly dropped at centre and giving ample road clearance. The steering wheel jaws are wide and large, and the stub axle king bolt bearings are fitted with hardened steel bushes. The hubs are mounted on adjustable taper roller bearings of large dimensions. The steering pins are surmounted by grease cups. The vertical load is carried on a very large thrust ball bearing.

The Rear Axle is of the full floating type—weight being carried on the axle housing none on the driving member. The housing is a heavy gauge one piece steel stamping electrically welded—having no tubes, collars, rivets, flanges, or bolts—the whole forming an integral shell that requires no staying, and is absolutely indestructible. It is furnished both back and front with an aperture 12in. in diameter which permits withdrawal of the crown and pinion wheels and differential gears as a unit—an exceedingly valuable point.

The driving axles are extra heavy, splined into both the hub and differential gear, so that these parts will not work loose and clatter. The Hubs are on roller bearings of ample surface.

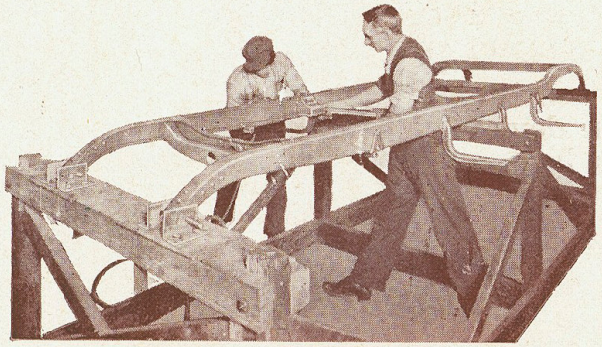
The Differential is of the Bevel Gear Sun and Planet type, long proven to be the most effective. The Driving Pinion and Crown Wheel are of very large size, with Helical Bevel teeth of exceptionally strong section, securing at all speeds and under any strain a noiseless and economical transmission of power to the driving axles. The Differential and Driving Pinions are carried on adjustable roller bearings, and the greatest care has been taken to ensure that this vitally important part of the car shall be invulnerable to the greatest abuses of motor car driving.

BRAKES.—There are two sets of Brakes both operating on Steel Drums on the Rear Axle. These drums are very large, actually 16in. diameter with 2½in. face. The Foot Brake is of the external type. The Emergency Brake is internal expanding type, and is worked by hand lever, with pawl and ratchet to lock it on when leaving the car standing on a grade.

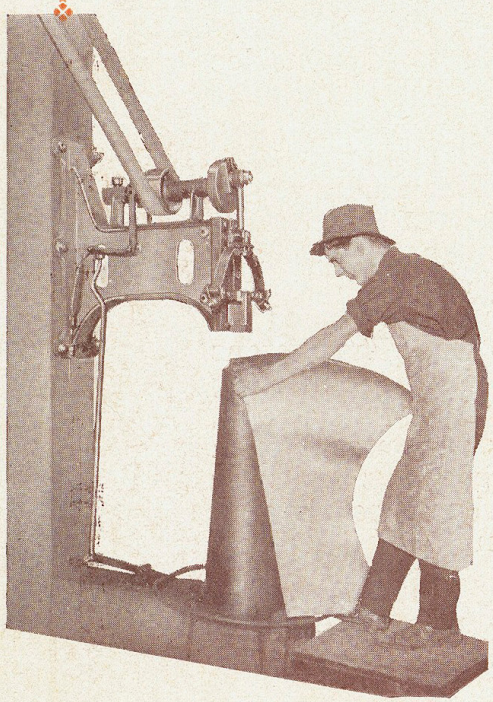
The release mechanism of both these brakes is of the latest European design, giving smooth and easy engagement and immediate complete throw-off. This is most important. A separate adjustment device is fitted to each of the four brake Bands, and all brake rods are fitted with adjustable turn buckles.

ENGINE.—The Engine is a high speed monobloc motor of six cylinders, cast in line, with detachable head. Dimensions of the cylinders are $3\frac{1}{8}$in. x 5in. (78m/m x 127m/m) and the R.A.C. rating is 23.4. It develops 45 H.P. at 2400 R.P.M. The Valves are of a special Alloy Steel, interchangeable, placed on right side of the motor and fully enclosed. The tappets and guides are removable from the outside by two detachable plates, so that they can be attended to without otherwise disturbing the motor. The Pistons are long and each is fitted with four rings. Connecting Rods are I section drop forgings, light and strong, fitted with bronze gudgeon bearings at top and extra large interchangeable white metal bearings at lower end. The Crankshaft is a high carbon steel forging machined to 2in. diameter on all bearings.

Hot Rivetting with Pneumatic Hammer



Panel Beating with
Automatic Hammer



Lubrication is provided by a pump, actuated by an eccentric on the camshaft, continuously forcing oil to the bearings. The Pistons and Cylinders are lubricated by the Splash System. Oil scoops are fitted on the connecting rods, which descend into oil troughs specially installed in lower half of crankcase. All oil is recovered through a filter and passed continually through the pump ensuring regular fluidity and cleanliness. The oil pump is located in the lower half of crank case so that it is always submerged in oil. An oil float indicator is installed on side of crank case showing at a glance the depth of oil in the oil sump. This fine system of lubrication shows an efficiency of 800/1000 miles per gallon.

The timing wheel teeth are helical, and the large centre wheel is made of a special imperishable material, preventing noise at the highest speed of the motor.

The water-jackets are large, and circulation is taken care of by a centrifugal pump of ample size.

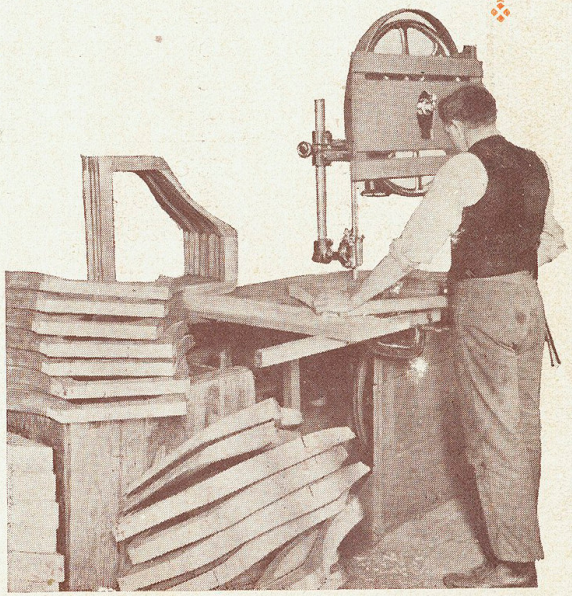
IGNITION.—Is by high tension Magneto. No finer Ignition system has been devised yet, and the "Australian Six" must have the best.

SELF STARTER.—This is the Westinghouse unit —rigidly mounted upon an arm of the engine assembly, meshing accurately with the toothed gear on the flywheel. The name "Westinghouse" carries its own credential as the best and highest priced electrical service.

The Carburettor is the "Marvel"—of the float feed type, having a petrol chamber controlled by a float operated valve. This valve issues to the vaporizing chamber the correct amount of petrol that should be delivered and turned into the exact mixture the engine requires to perform its best work. The Petrol feed adjustment is on the outside and can be regulated by the driver to the various conditions that may be met in a day's run, such as the matter of altitude requiring special attention, or heavy roads, which have to be got through, demanding a stronger mixture from the feed valve. We are prepared to supply on request and without extra charge, a "Zenith" or "Stromberg" Carburettor.

RADIATOR.—This is a special feature of the "Australian Six" and designed to entirely eliminate

Body Department—
Cutting Out
Frame Parts

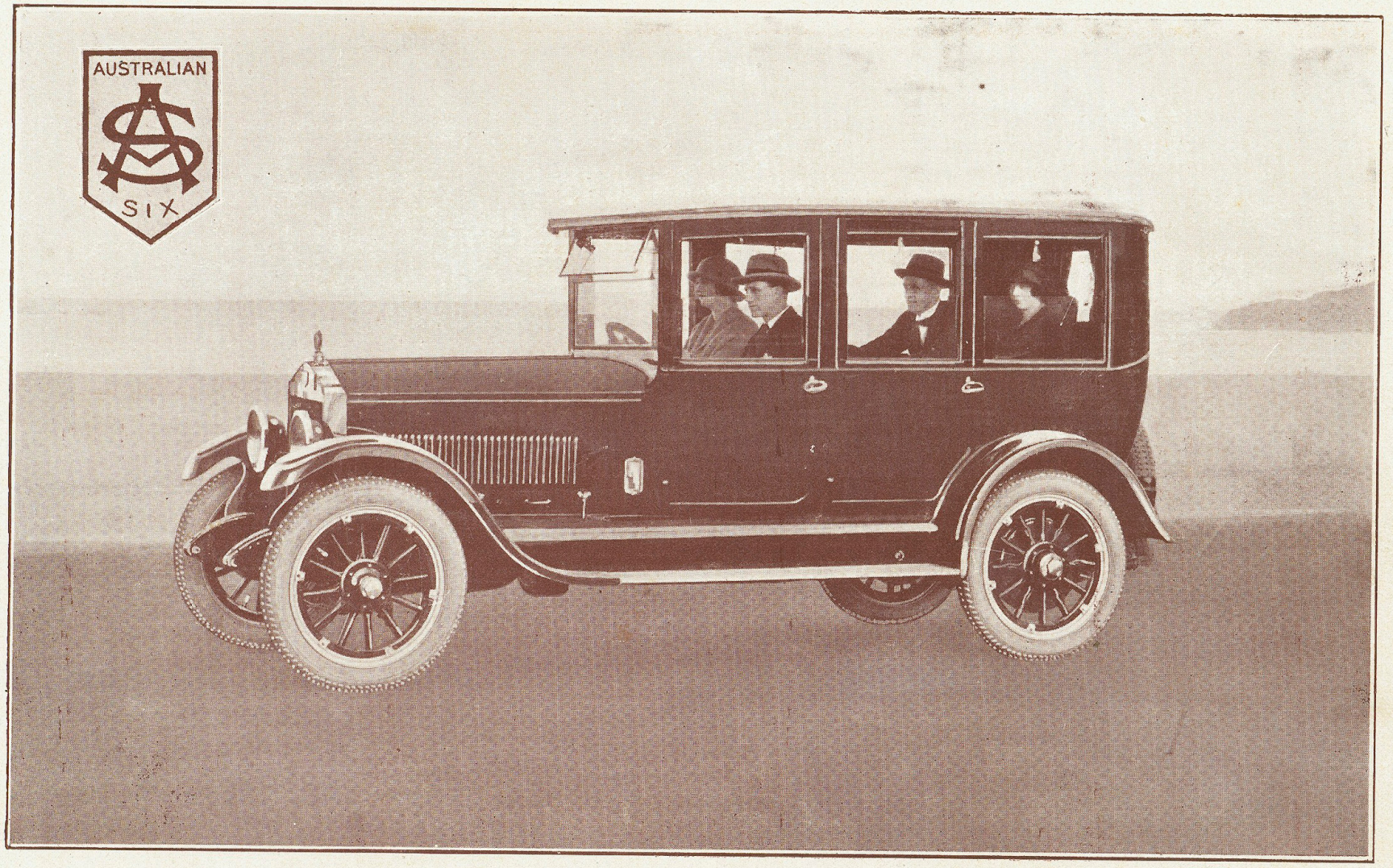


any possible troubles experienced by overheating. The new radiator is made throughout of copper, and is therefore non-corrosive—a very important feature. It is of the flat vertical tube type, the tubes being separated by corrugated copper spacers. The cooling area provided is enormous and our experience has shown that, in any except the hottest weather, there is no necessity to run the fan. This Radiator is very expensive, the copper sheeting alone required in its construction costing £14. It is not possible to produce a more efficient cooler. Another constructional feature is that the radiator core is built in sections—in the event of damage through accident, it is only necessary to replace the damaged section.

STEERING GEAR.—The Steering Gear Box is unusually efficient. It is of the accepted worm and screw design but differs from many others in having four thrust bearings, one each against the screw up or down, and also one each against right or left hand turn of the wheel. It is impossible to get a more faithful device. This is connected to the front axles in the usual way. The tie rod is behind the front axle and adjustable by screwed turnbuckles at each end.

TRANSMISSION.—Having already stated the strength of our frame, and the capacity of our Engine, we now have to proceed to the transmission of the power to the road. To do this it is necessary to employ a Clutch, Gear Box and Propeller-shaft to take the power of the engine to the Back Axle. Both Clutch and Gear Box are attached to the Engine, and form with it an integral Power Plant. The Clutch is a Dry Plate device in which alternate discs of steel and fibroid engage the power of the engine smoothly to the various loads it may be required to drive. This Dry Plate Clutch requires practically no attention at all, and is easily adjusted if occasion arises. All the discs are splined to the slide shaft, and no noise or clattering can ever occur in its operation. It is designed to carry a 40 h.p. load and will not slip at any speed.

The Gear Box is a 40 h.p. type Grant-Lee. This is a most dependable Gear Box, as all our tests have proven. It provides 3 speeds forward and reverse, with concealed gate change. The teeth of the gear wheels are big and wide, giving enormous bearing surface. The shafts are of



"AUSTRALIAN SIX." Sedan Model.

large diameter, very short and stiff, and carried on ball bearings of heavy duty size. Owing to the power of the engine, suitable gear ratio, and design of gear box, gear changing is extremely easy.

PROPELLER SHAFT.—This most important item is also designed to transmit 40 h.p. It consists of a steel shaft having at each end a double universal joint, and a sliding part to compensate the displacements caused by spring motion.

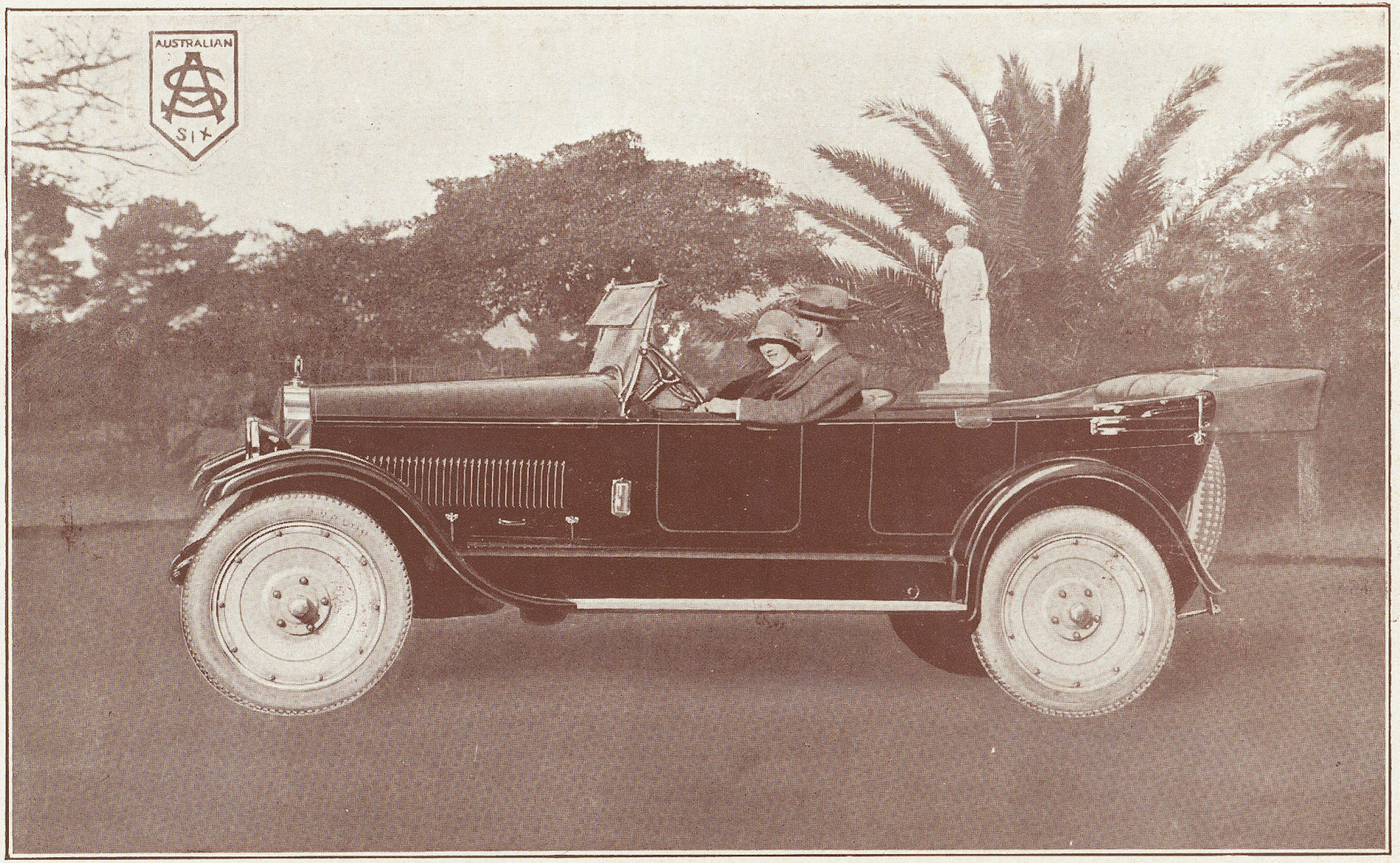
The direct drive shaft of the gear box is joined to the propeller shaft by a double universal joint. That joint is flexible in four directions. The centre of this joint is an oil chamber closed by a screw. One filling of oil in this chamber is enough for 500 miles, and relieves the driver of all those troubles accruing to the use of grease cups in positions which are awkward to reach. The universal joints of the "Australian Six" are the finest ever made, and no car—at any price—can show better.

The sliding members of the propeller shaft consist of a perfectly machined spline joint of 10 teeth with great depth, checked against any possible displacement by a screwed collar. This construction is the final word of Engineering as applied to Motor Car transmission. The lower end of the Propeller Shaft is furnished with another self oiling universal joint, exactly the same as described above, which is keyed to the short shaft carrying the driving pinion. This shaft is adjustable through two sets of taper roller bearings.

The wheels are Artillery pattern, with 32in. demountable rims, carrying straight side Dunlop Railroad Tyres. A spare rim, with tyre and tube, is carried on the front right-hand guard. Wire or Disc Wheels can be fitted at slight additional cost. We shall be pleased to quote at any time.

An engine tyre pump is installed on every "Australian Six." It is driven by gear from the secondary shaft of the gear box and engaged by a pull-up lever in the front seat floor, adjacent to which is a nipple for hose attachment. A hose with Pressure Gauge of sufficient length to reach any of the wheels is included in the car equipment.

Petrol supply is from a 13 gallon Steel Tank suspended from rear of the chassis and



"AUSTRALIAN SIX" DE LUXE. 7 Passenger Model.

equipped with gauge showing quantity contained. This tank is piped along the inside of the chassis to a Stewart Vacuum Tank located under the bonnet, well above the carburettor, thus providing gravity feed to the latter on any incline. There are no pressure pumps or air gauges to look after. Wheel Base is 10ft. 2in. Width of tread 4ft. 8in. Overall length of car (Hood down), 15ft. 4in. Overall width 5ft. 6½in.

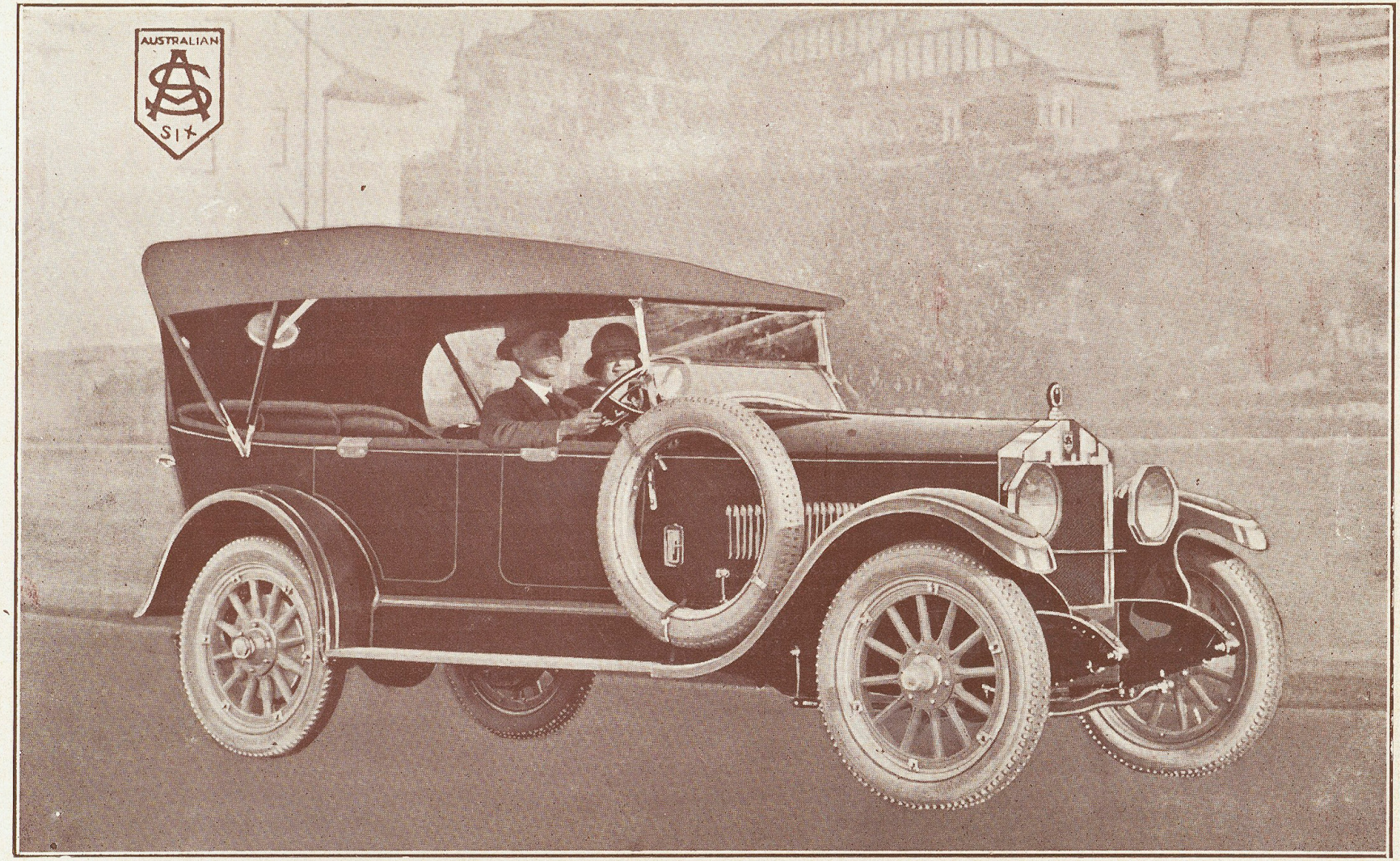
This description completes our exposition of the Chassis. We will now proceed to the Body.

The Body Coachwork of the "Australian Six" surpasses in distinctiveness the best efforts of competition. It is alive with beauty and character. The perfect streamline from radiator to back panel captures the eye and compels admiration. Not only are these bodies admired in Australia. They have been the source of congratulations from Europe, America, New Zealand, the Dutch East Indies, and more remote places where the owners of "Australian Six" have taken their faithful cars. They have been pulled to pieces by rivals, who, upon discovering the cost of production, decided to avoid this particular style of competition with "Australian Six."

For the body is as good as it looks—which is a great deal to say, but it is true.

The frame is first built up of Ash and Queensland Maple. The doors are sawn out of solid parts of the frame, so that they have no joints to break loose with slamming. Faithfulness is the keynote. The things that cannot be seen in "Australian Six" are as good as if they were in plain daylight to be seen every day. All joints of sheet steel are oxy-welded—there is no solder used. All springs in cushions and backs are copper-plated so that they will not rust and break. Nothing but the finest full hide leather is used in trimming. There is no split leather, imitation leather, or any kind of dodge-leather allowed in our Factory. We produce a body of the highest possible excellence, therefore worthy to be put upon the chassis of "Australian Six."

The Mudguards are very strong, curved, domed and ribbed. No finer mudguards are made. They are so firmly secured that the whole body can be lifted from the chassis by the



"AUSTRALIAN SIX." 5 Passenger Model.

mudguards alone. They will never work loose, squeak, or rattle.

In painting and varnishing these bodies the greatest care is taken to ensure durability of the splendid finish we turn out. Fourteen to seventeen coats of paint and varnish (according to colour) are applied to each body in our dust-proof paint-rooms. It is not possible to be more earnest and careful than we are.

We make six standard types of bodies:—

3 Seater ..	Straight Seat.	5 Seater ..	Sliding Front Seat.
3 Seater ..	Clover Leaf.	7 Seater ..	Touring Car.
5 Seater ..	Fixed Front Seat.	8 Seater ..	Special Service Car.

We are prepared to make any other kind of body to order, such as Clover-leaf, Country Club Roadster, Landaulette, Limousine, Coupe, Cabriolet, etc. Our plant is unexcelled and we are able to do anything that can be done in any part of the World.

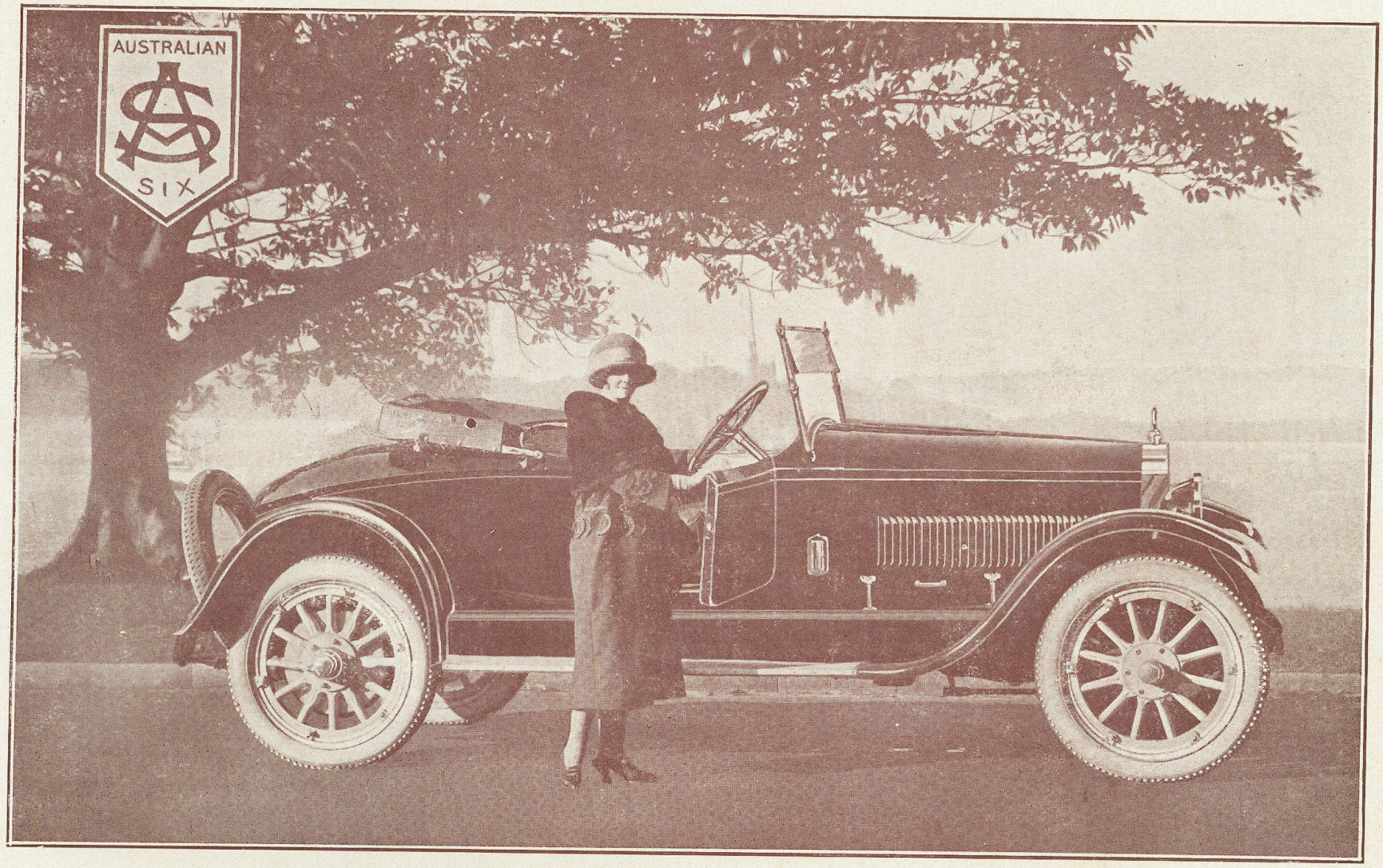
The Hood is the "'One Man" style, fitted with a light and strong anti-rattle device. It is covered with the very finest khaki twill and equipped with an envelope of the same material. The general design of the hood is a slow curve in every direction, so that water will always run off it and not make sags between the hood bows.

The Back Window of the Hood is bevelled plate glass set in a solid aluminium frame.

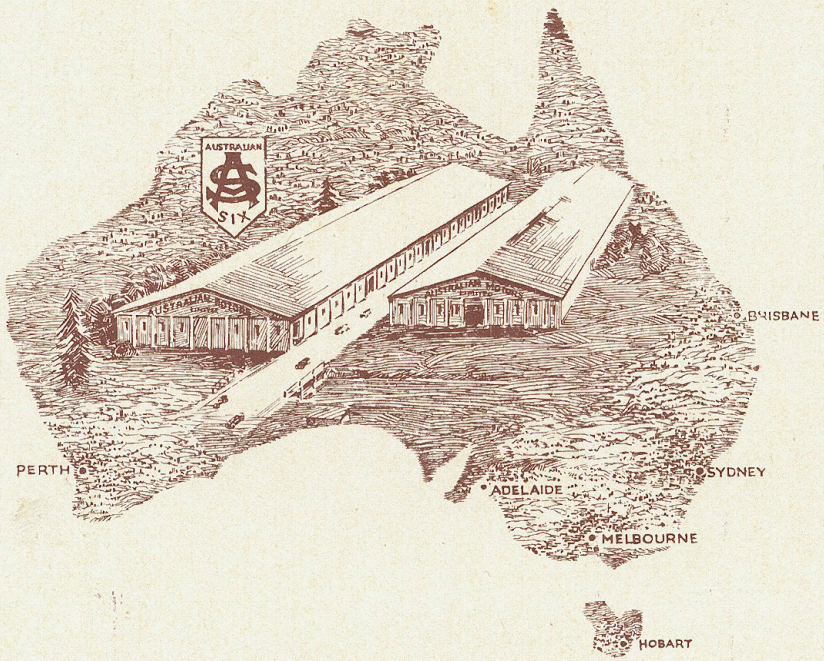
The Windscreen is a double glassed design, either top or bottom can be moved in any direction independently. The very finest plate glass is used.

LIGHTING.—The Electric Lighting consists of a Westinghouse Generator which charges a Willard Threaded Rubber Battery, through an Amperemeter on the Instrument Board. These are most expensive components and their inclusion in the "Australian Six" specification is one more indication of our determination to have nothing but the best in our car. The Battery current is conveyed by conduit covered wire to handsome Octagon Head Lamps which match the angular outline of the Radiator Head.

These lamps are fitted with main and dimmer bulbs, controlled by a switch on the instrument board, which also operates the Instrument Board light. The Tonneau and Tail Lights have separate switches.



"AUSTRALIAN SIX" RUN-ABOUT. 3 Passenger Model.



The "Australian Six" Car is built by the Manufacturers at their Modern Factory at Ashfield, Sydney

Sole Distributors for New South Wales:

Australian Six Motor Sales Ltd.

Showrooms: 133-7 Castlereagh St., Sydney

1921-to 1925

AUSTRALIAN SIX

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