

to look for the cause rather than to continue to use up the battery output, with the risk of damage to one or more cells, remembering that the battery may not always be fully charged at the time.

If the starter appears to be sluggish in its action, and such sluggishness is traceable to the battery, no further attempt should be made to use the starter until the battery has been duly inspected and fully charged from an external source.

### **Electric Fuel Pumps and Gauge.**

The electric fuel pumps should not need any attention over long periods of running, except, perhaps, the cleaning of the suction or delivery valves (see page 44); if an electrical fault is suspected, it is recommended that the necessary inspection and any work in connection with repairs should be carried out by Messrs. Bentley Motors (1931) Ltd., or one of their "Special Retailers".

Reference to the wiring diagram (Fig. 35), will show that they are supplied with current through the ignition switch, and, consequently, are only operative when the ignition switch is closed.

The fuel gauge is divided into two parts:—

- (a) An indicating instrument, mounted on the instrument panel, and marked "0,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and F".
- (b) A petrol tank unit, with a float for measuring the amount of petrol in the tank.

The indicating instrument has two actuating coils:—

1. A control coil, which is connected across the battery and so provides a constant torque on the pointer, tending to swing it over to the "Full" side of the scale.
2. A deflecting coil, which is connected in series with the battery and the tank unit rheostat, and so arranged to act in opposition to the control coil.

The tank unit consists of a variable rheostat, the sliding arms of which are operated by the up-and-down movement of the float, thus varying the circuit resistance from a minimum in the empty position to a maximum in the full position. With the float in the "empty" position the current in the deflecting coil is at a maximum, and its turning effort is of sufficient strength to move the pointer, against the opposing force of the control coil, back to the "O" position on the indicating instrument. Thus as the resistance is varied by the position of the float, the pointer indicates the petrol level in the tank.

A warning light is provided on the instrument panel, which is automatically illuminated when there is approximately three gallons or less of petrol in the tank.

### **Electric Horns.**

Two tuned, wind-tone horns are provided, operated through a sealed relay mounted on the front of the dashboard.

No adjustments should be attempted. In the event of derangement, or deterioration of the tone, Messrs. Bentley Motors (1931) Ltd., or one of their "Special Retailers" should be consulted.

### De-Mister and De-Froster.

An electrically operated de-mister and de-froster is fitted under the scuttle, (See Fig. 41).

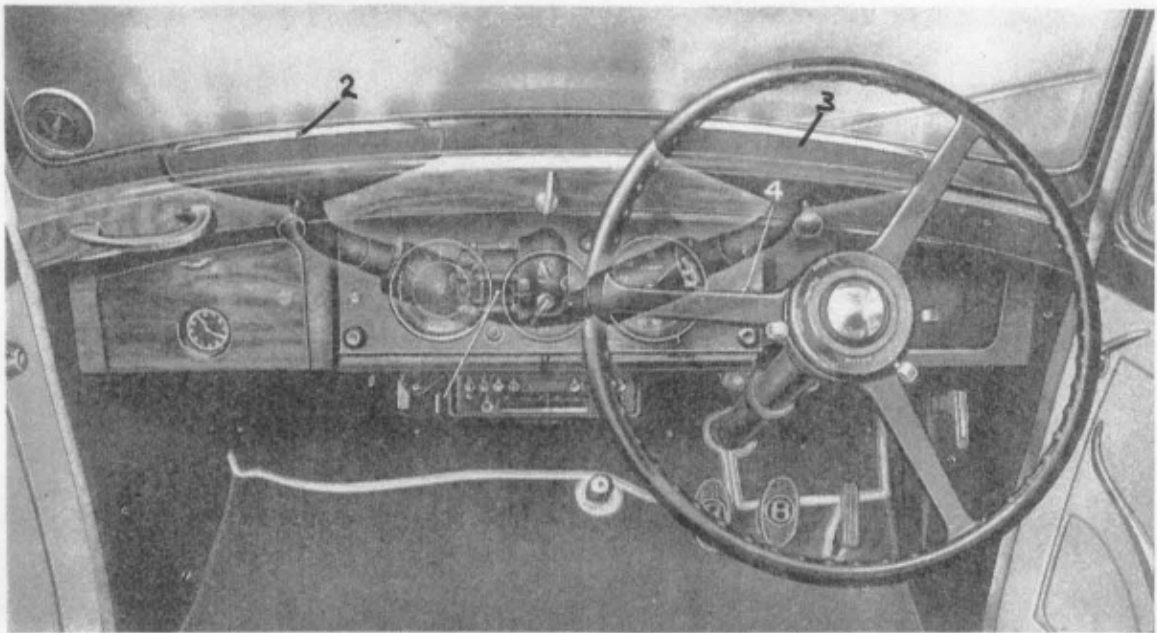


Fig. 41.—DE-MISTER AND DE-FROSTER.

- |                    |                    |
|--------------------|--------------------|
| 1. Blower motor.   | 3. Air vent cover. |
| 2. Air vent cover. | 4. Motor switch.   |

Warmed air, after passing through the radiator, is collected and taken via the large pipe (1, Fig. 42), to a blower motor mounted behind the dashboard.

Vents are so arranged in the top of the fascia board to allow streams of warmed air to be forced onto the wind-screen.

The vents are fitted with metal covers, these should normally remain open, but they may be closed if it is found that warmed air is being drawn into the car at unseasonable times.

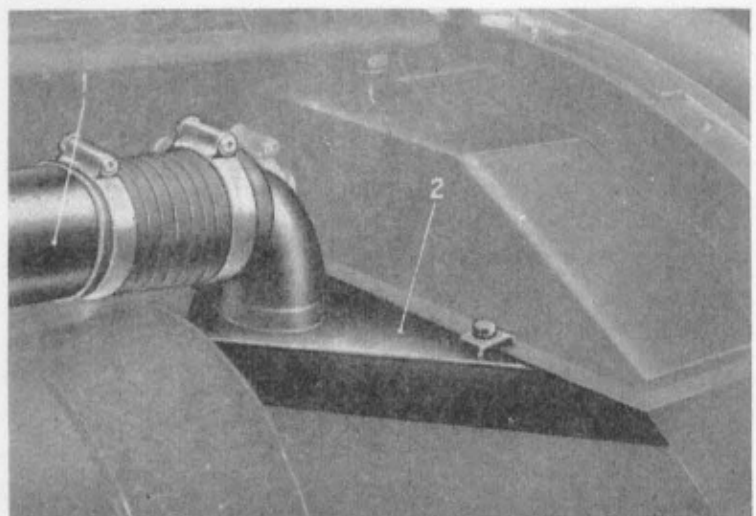


Fig. 42.—AIR COLLECTOR—DE-MISTER.

- |                          |                   |
|--------------------------|-------------------|
| 1. Pipe to blower motor. | 2. Air collector. |
|--------------------------|-------------------|

To operate, ensure vent covers are open by gently pulling same rearwards, and switch on motor (4, Fig. 41).

**Electrical Fault Location.**

In case of faulty operation, proceed to investigate as follows:—

1. Failure of any part of the system separately, may be due to a blown fuse in the fuse box (Fig. 36).
2. Failure or incorrect operation of the system, may be due to the fusing of the main fuse (Fig. 36), due to an earth.

If the dynamo does not charge:—

1. Check correctness of ammeter by switching on headlamps, this should show a "discharge" reading.

NOTE:—See that the main switch is in the "OFF" position, before making any change to the wiring connections.

2. Ascertain whether the dynamo or regulator unit is at fault by connecting together the regulator terminals F and D, this will short circuit the regulator. Start engine gently and increase speed slowly, engine speed should not exceed a fast idle. Observe ammeter, if dynamo is in order, the ammeter will show a "charge" reading and the defect will be in the regulator unit.
3. To test dynamo, disconnect the wiring from both main terminals and connect these terminals together. Connect a lamp between one terminal and earth, and gently speed up engine as before. If the dynamo is in order the lamp will light.
4. Dynamo brushes may be sticking, due probably to oiliness. Clean brushes and holders with rag moistened in petrol.
5. Cut-out contacts may be burnt out or sticking.

If dynamo output is low, this may be due to the battery being fully charged, but if low with lights on, i.e., ammeter indicates an abnormal discharge, the regulator may be sticking in such a manner as permanently to insert the field resistance. Low output may also be caused by a slack driving belt.

If dynamo gives an excessive charge when speeded up, this may be due to the regulator sticking or to a break in the regulator shunt coil circuit. Check regulator wiring conditions.

*In the case of defective operation which is traceable to the regulator, the unit must be removed and returned for rectification to Messrs. Bentley Motors (1931) Ltd., or one of their "Special Retailers".*

If, with the fuses intact, and the lights in order, the ignition:—

## (a) Misses.

1. First confirm right condition of sparking plugs.
2. Assure correct condition of contact breaker points, and adjust gap .019" to .021", if necessary.
3. Check condition of ignition coil casing. (See page 92.)

## (b) Fails.

1. With ignition switched on, see by ammeter, while engine is cranked, that coil is taking current intermittently. If no current, test availability of battery voltage at coil terminals.



(Insert in Bentley Mk. VI Handbook No. VII to face page 98.)

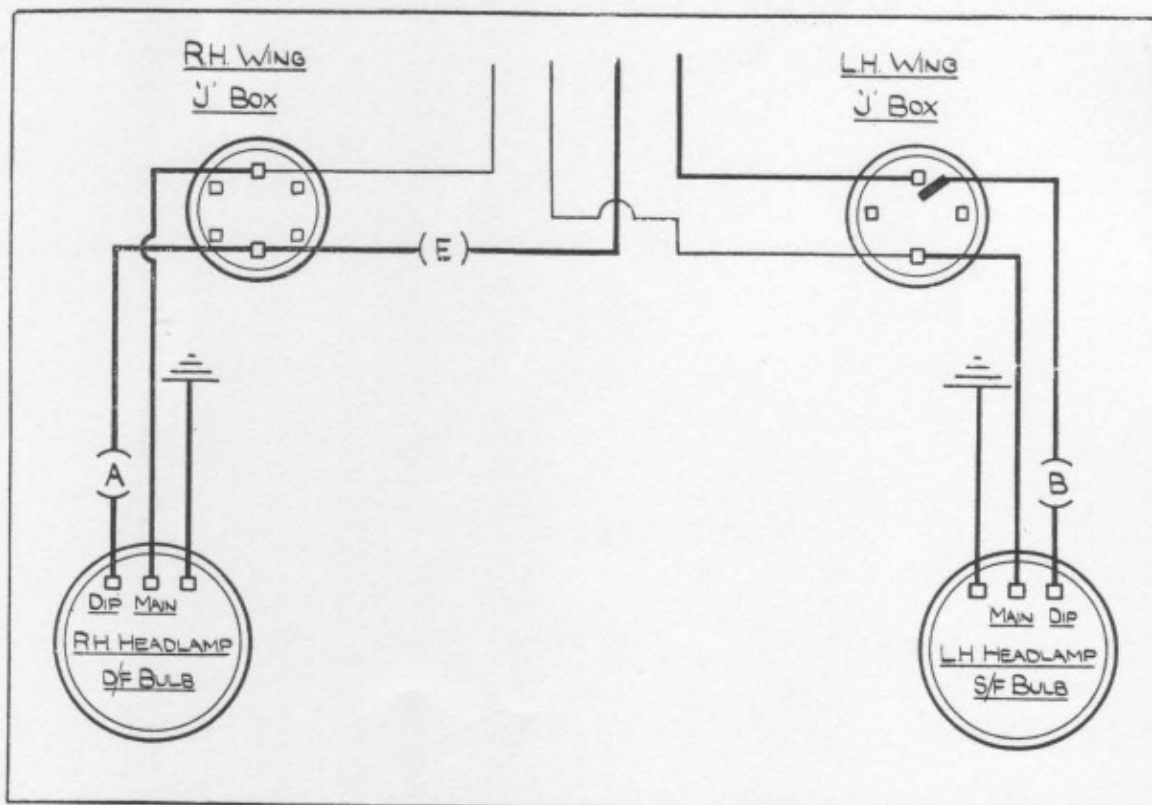
## HEADLAMPS.

The original installation in which the foot-switch, operated to extinguish the headlamps and switch on the pass-lamp, has been altered; the foot-switch now operates a "dipping" system for the headlamps, whilst the pass-lamp is controlled by a separate switch on the dashboard.

The foot-switch now operates to extinguish the right-hand light, and deflect the left-hand beam vertically downwards by switching over to the displaced filament of a twin-filament bulb in the left-hand headlamp.

Provision is made so that this system can be reversed for use in countries where the car is driven on the right-hand side of the road.

1. Change over the headlamp bulbs, i.e. fit the double filament bulb in the right-hand headlamp, and the single filament bulb in the left-hand headlamp.
2. Refer to sketch, and connect wire "A" to wire "E" in the right-hand wing valance junction box, as shown.
3. Disconnect the wire "B" in the left-hand wing valance junction box, and tape up the end.



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LONDON.

If, with battery in order, starter motor is sluggish or does not turn, examine commutator and brushes. Clean oily brushes and holders with a rag moistened with petrol. If motor turns without turning engine, check freedom of engine with starting handle. If found in order, the trouble lies in starter drive, and Messrs. Bentley Motors (1931) Ltd., or one of their "Special Retailers" should be consulted.

If battery will not retain charge:—

1. Ascertain that no circuit is left switched on.
2. See that no cell of the battery leaks acid.

### Recommended Lamp Bulbs.

R.H. Headlamp—12 volt, 48 watt—Single Centre Contact. (Lucas prefocus axial filament No. 185.)

L.H. Headlamp—12 volt, 48/48 watt—Double Contact. (Lucas prefocus transverse filaments No. 191.)

Centre Lamp—12 volt, 48 watt—Single Centre Contact. (Lucas prefocus axial filament No. 185.)

Front Wing Lamps—12 volt, 3 watt—Single Centre Contact, S.B.C. Cap.

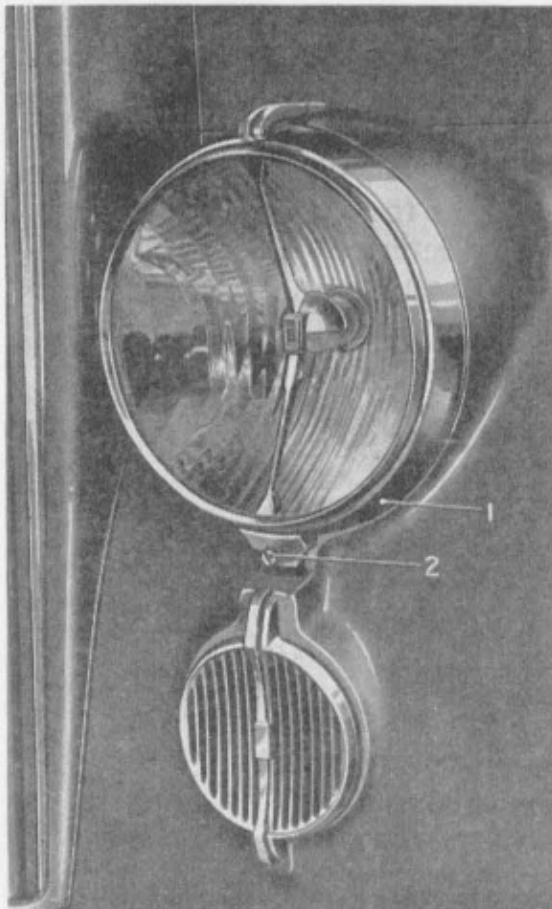


Fig. 43.—THE HEADLAMP.

1. Rim.
2. Rim securing screw.

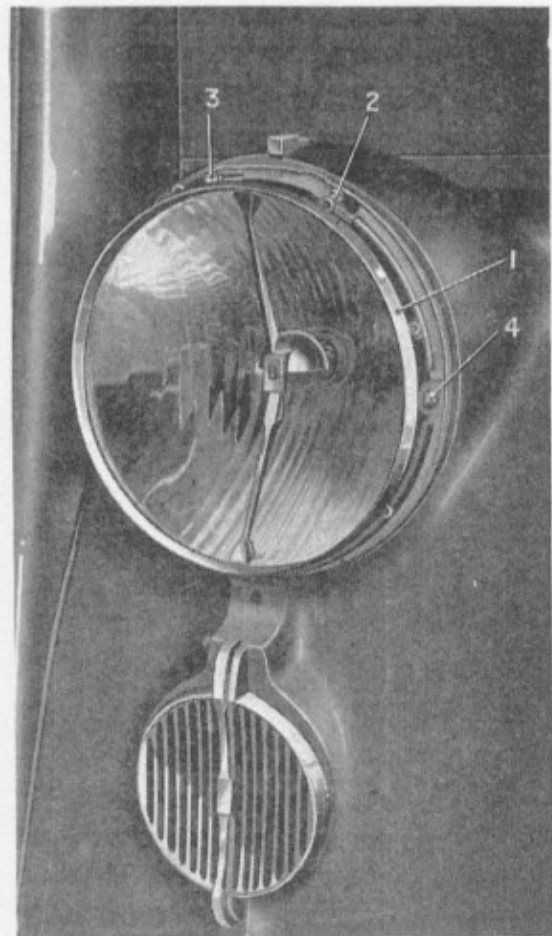


Fig. 44.—HEADLAMP—WITH RIM REMOVED.

1. Light unit.
2. Light unit securing screw.
3. Vertical trim adjustment screw.
4. Horizontal adjustment.

Stop/Tail Lamps—12 volt, 24/6 watt—Double Contact—S.B.C. Cap. (Lucas No. 189.)

Number Plate Illumination—12 volt, 3 watt—Single Centre Contact—S.B.C. Cap.

Reverse Lamps—12 volt, 6 watt—Single Centre Contact—S.B.C. Cap. (Lucas No. 207.)

Instrument Lights—12 volt, 2.4 watt—M.E.S. Cap.

Warning Lights, Map Lamp and Boot Lamp—16 volt, 3 watt,—M.E.S. Cap.—15 m/m bulb.

Interior Roof Light—12 volt, 6 watt—Single Centre Contact—S.B.C. Cap. (Lucas No. 207.)

Trafficators—12 volt, 3 watt—Festoon. (Lucas No. 256.)

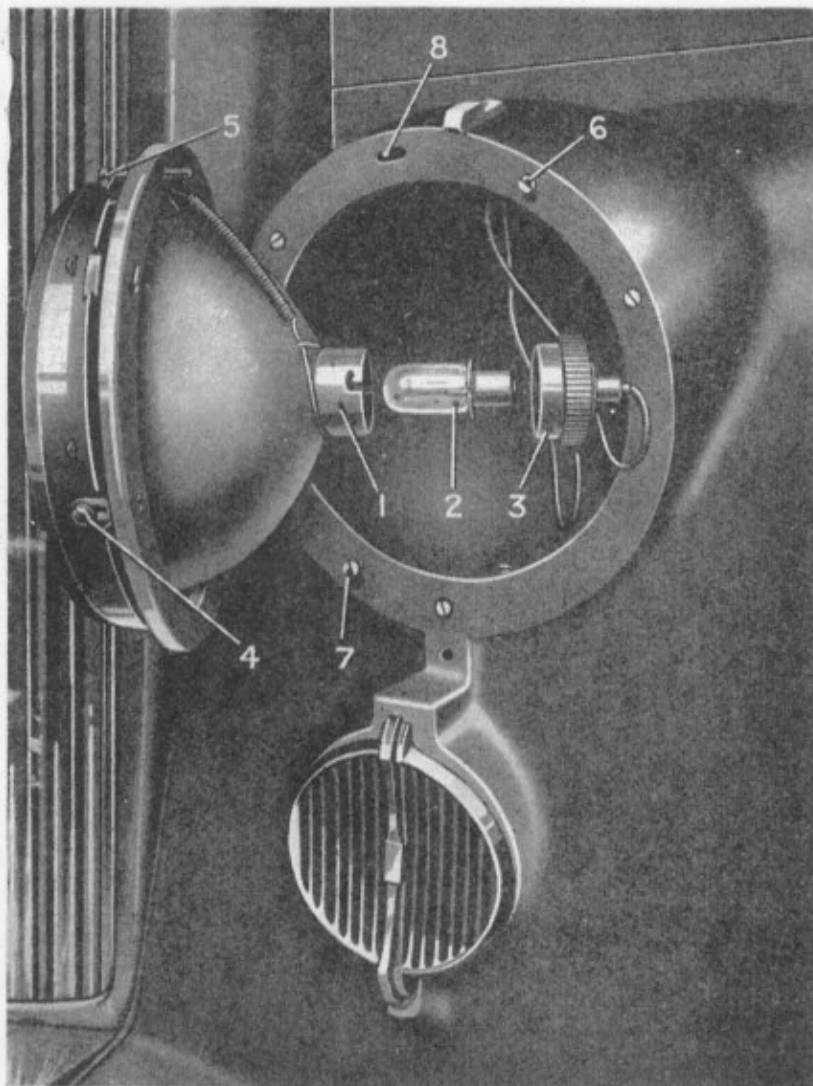


Fig. 45.—HEADLAMP—CHANGING THE BULB.

- |                           |                                             |
|---------------------------|---------------------------------------------|
| 1. Bulb holder.           | 5. Vertical trim adjustment screw.          |
| 2. Bulb.                  | 6. Light unit securing screw.               |
| 3. Backshell.             | 7. Light unit securing screw.               |
| 4. Horizontal adjustment. | 8. Slot for vertical trim adjustment screw. |

### Headlamps.

Each headlamp incorporates a Light Unit, which consists essentially of a reflector and front glass assembly provided with a mounting flange, by means of which it is secured in the body housing.

The bulb, which has a pre-focus cap, is located accurately in the reflector, and is secured by a bayonet-fixed backshell which also provides the contact to the bulb.

The design of the bulb and of its holder is such that the bulb is correctly positioned in



relation to the reflector, and no focusing is required when a replacement bulb is fitted.

### **Replacing a Headlamp Bulb.**

Remove the screw (2, Fig. 43), at the bottom of the lamp and lift off the rim. Slacken the two screws (6 and 7, Fig. 45), which secure the flange of the Light Unit, and turn it in an anti-clockwise direction to detach the flange from the securing screws. The Light Unit can then be lifted out of the lamp body.

Twist the backshell (3, Fig. 45) in an anti-clockwise direction and pull it off. The bulb can then be removed by inverting the Light Unit and holding one hand under the bulb holder so that the bulb slides into the hand.

Place the re-placement bulb in the bulb holder (1, Fig. 45), taking care to locate it correctly. Engage the projections on the inside of the backshell with the slots in the holder, press on and secure by twisting it to the right.

Position the Light Unit in the lamp body so that the vertical trim adjusting screw (5, Fig. 45), locates in the slot in the body rim, and the heads of the two fixing screws (6 and 7, Fig. 45), protrude through the holes in the flange of the Light Unit. Twist the Light Unit in a clockwise direction and secure by tightening the two screws.

Engage the tongue on the inside of the front rim in the slot at the top of the flange of the Light Unit, press it on fully at the bottom and secure with the fixing screw (2, Fig. 43).

### **Aligning the Headlamps.**

The headlamps should be aligned so that they direct their beams straight ahead, i.e. parallel with the road and with each other.

The simplest way of checking the adjustment of the lamps is to take the car on a straight level stretch of road at night and examine the direction of the beams. If one appears to be out of adjustment, adjust as follows:—

Remove the screw (2, Fig. 43) at the bottom of the lamp and lift off the rim.

Vertical adjustment is made by operating the screw (5, Fig. 45), screwing in raises the beam and screwing out lowers the beam.

Horizontal adjustment is made by slackening the nuts (4, Fig. 45) and sliding the reflector unit forward or backward in the slots provided.

Having obtained the correct adjustment, the nuts (4, Fig. 45) must be securely re-tightened, and the rim replaced.

### **The Side Lamps.**

The method of changing a lamp bulb is illustrated in Figs. 46 and 47.

The locking screw, (1) should be removed, and the lamp unit drawn bodily forward as in Fig. 46.



Fig. 46.—SIDE LAMP.  
1. Locking screw.



Fig. 47.—SIDE LAMP.  
2. Spring catch.

To obtain access to the bulb, detach the front portion by holding firmly, and rotating the rear portion a quarter of a turn to release the spring catch, (2).

The bulb is of the standard bayonet fitting type.

To replace, reverse the above instructions.

### Radio.

"His Master's Voice" automobile radio equipment is fitted as original equipment in the Bentley car. The receiver, known as "Radio-mobile" Model 100, has a six valve superheterodyne circuit designed for medium and long wave reception.

Fig. 48 illustrates the controls.

The combined Volume Control and "On/Off" switch, at the left of the control panel and below the push-buttons, switches the receiver off when turned fully anti-clockwise. Turning the knob clockwise switches the set on, indicated by the illumination of the tuning scale and controls the volume.

A period of about 40 seconds after switching on is required for the receiver valves to warm up.



The left-hand group of four push-buttons contains two buttons marked "MW" and "LW", and two marked "MU" and "SP".

The buttons marked "MW" and "LW", enable either the Medium or Long waveband to be selected, by pushing the appropriate button.

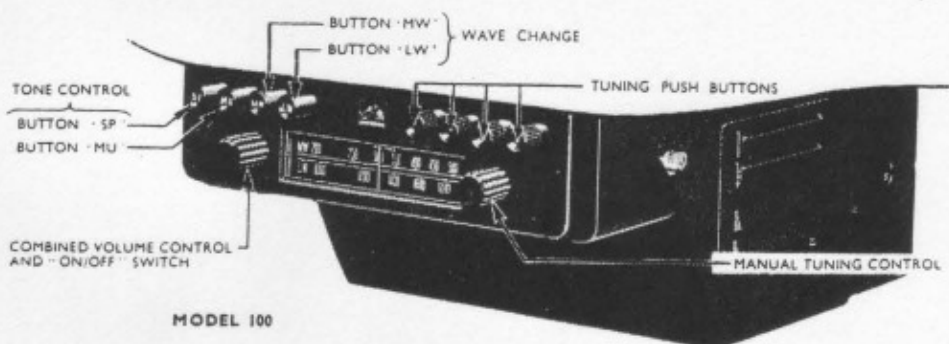


Fig. 48.—THE RADIOMOBILE CONTROLS.

The buttons marked "MU" and "SP" are for tonal control. Pushing the "MU" button the tonal balance is set to conditions favourable to musical reproduction, while the "SP" button provides accentuated high frequency response for good speech intelligibility.

The Manual Tuning Control, at the right of the control panel and below the push buttons, operates through a friction clutch, and in order to tune in a station it is necessary to press the tuning knob while turning it.

The four Tuning Push-buttons, at the right of the control panel, provide automatic tuning of four stations on the Medium or Long wavebands. These buttons can be rapidly adjusted to tune any four stations; the required station may then be selected simply by pushing the appropriate button.

The Tuning Scale is calibrated in wavelengths and is illuminated. The upper (yellow) scale covers the Medium waveband, the lower (red) the Long waveband.

#### TO SET UP THE TUNING PUSH-BUTTONS.

1. Switch on the receiver, leaving Volume Control set at roughly two-thirds of full rotation, and allow about 40 seconds to warm up.
2. If the station desired is on the Medium waveband, press the button marked "MW". If on the Long waveband, press the "LW" button.
3. Tune in the station, using Manual Control, in the same way as when tuning a domestic receiver. For example, if the London Home Service programme is required (wavelength 342.1 metres) turn the Tuning Control until the scale pointer reads approximately the correct wavelength on the Medium Wave scale. The station should then be heard, and a final adjustment should be made to tune it in accurately.

4. Release tuning knob.
5. Gripping the knurled portion of one of the Tuning Push-buttons between finger and thumb, unscrew it about half a turn (i.e. turn it anti-clockwise). Then push the button firmly as far as it will go. Allow it to spring back to normal position, and tighten firmly by turning it clockwise. The push-button is now set to tune the station required, and when pressed will "bring in" the station irrespective of the position to which the scale pointer may have been adjusted previously.

Proceed in the same manner for the other push-buttons, remembering that if the desired station is on the Long waveband the "LW" must first be pressed before the tuning button will bring in the station, similarly, the "MW" button must be pressed for Medium wave stations.

The aerial is normally mounted above the windscreen on the outside of the car, and is operated from the inside by a bakelite knob. An engraved arrow indicates the position of the aerial, vertical being for normal use and horizontal for when parked and not in use.

In some cases an under car aerial may be fitted, and with these there is no inside aerial control knob.

It is unlikely that either of these types of aerial will need attention, but to ensure the best reception they should be kept clean.

If any further advice or assistance in connection with the radio equipment is required, Messrs. Bentley (1931) Ltd., or one of their "Special Retailers", should be communicated with, or, if more convenient, any of the Radiomobile Service Depots.

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## CHAPTER XI

**The Body and Coachwork**

*General—Washing and Polishing—Doors—Seat Slides—Upholstery and Carpets—Sliding Roof—Luggage and Spare Wheel Compartments—Tools.*

**General.**

The following instructions apply only to the body as manufactured and fitted by Messrs. Bentley Motors (1931) Ltd., owners of cars fitted with special bodies should be guided by the coachbuilders' instructions.

The standardised saloon body on the Mark VI chassis is constructed entirely of pressed steel, and, possessing great strength and rigidity with minimum weight, ensures the greatest stability of body and chassis combined with maximum resistance to accidental damage.

Large doors permit quick and easy access to the driver's and passengers' compartments, the interior upholstery being of fine quality hide.

For the car to look well and retain its beauty and smart appearance, the coachwork must receive its share of attention and should never be neglected.

**Washing and Polishing.**

The cellulose finish of the car is easily cleaned and polished. It is inadvisable to polish the car without first washing down with a chamois leather and plenty of clean running water, as dry cleaning off, no matter how clean the cloth, will tend to produce surface scratches on the paintwork.

Tar should be removed with a grease solvent, while a light application of petrol will remove grease marks.

This petrol must be lead-free and dried off immediately.

Cleaning of movable windows by means of hosing should be avoided as this invites the collection of water inside the doors which may take some time to dry out.

After washing, chromium plated parts should be dried off with a damp chamois leather.

A recommended polish is "Belco No. 7", although other body polishes of known quality may be used in accordance with the instructions on the containers.

*Under no circumstances should any polishing compound containing ammonia be used.*

### Doors.

The door lock bolts and hinges should receive periodical attention with oil "A". Every 10,000 miles, as directed on page 33, the hinge plate (see Fig. 49) should be removed and the slides carefully oiled.

The window winding mechanism should need no attention for a very considerable period as this is amply provided with lubricant upon assembly.

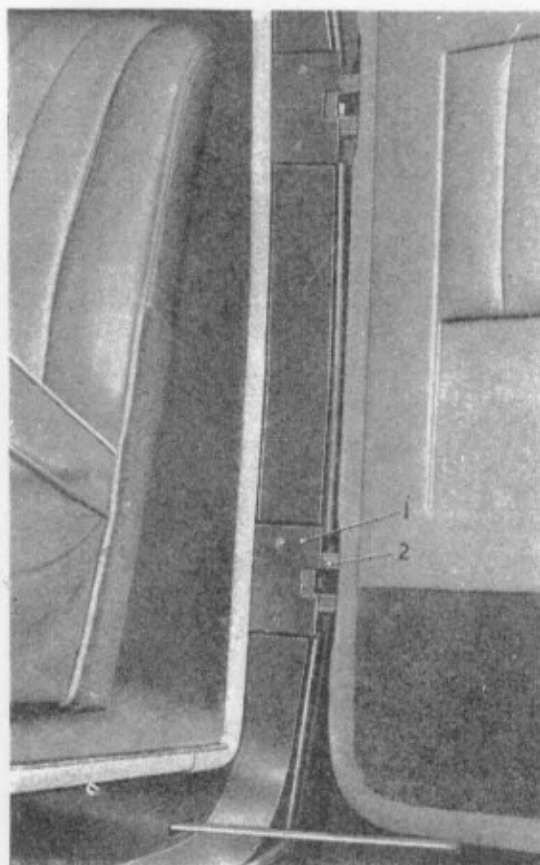


Fig. 49.—DOOR HINGES.

1. Hinge plate.                      2. Slide.

### Seat Slides.

Occasionally check the securing screws for tightness, and apply sparingly a little grease to the runners to ensure smooth operation.

### Upholstery and Carpets.

In general the leather upholstery has an impermeable surface, and to keep it clean and fresh looking, we recommend that the leather should occasionally be treated with a preparation known as "Connolly's Hide Food".

Floor carpets should be removed and cleaned with a vacuum cleaner, and any stains or grease marks removed with a clean cloth moistened in a solvent such as "Drik". This solvent can be used to advantage particularly on the head cloth, which should receive periodical attention similar to the carpets and the other upholstery.

**Sliding Roof.**

Occasionally inspect the side channels of the roof to make sure that the drain holes are clean.

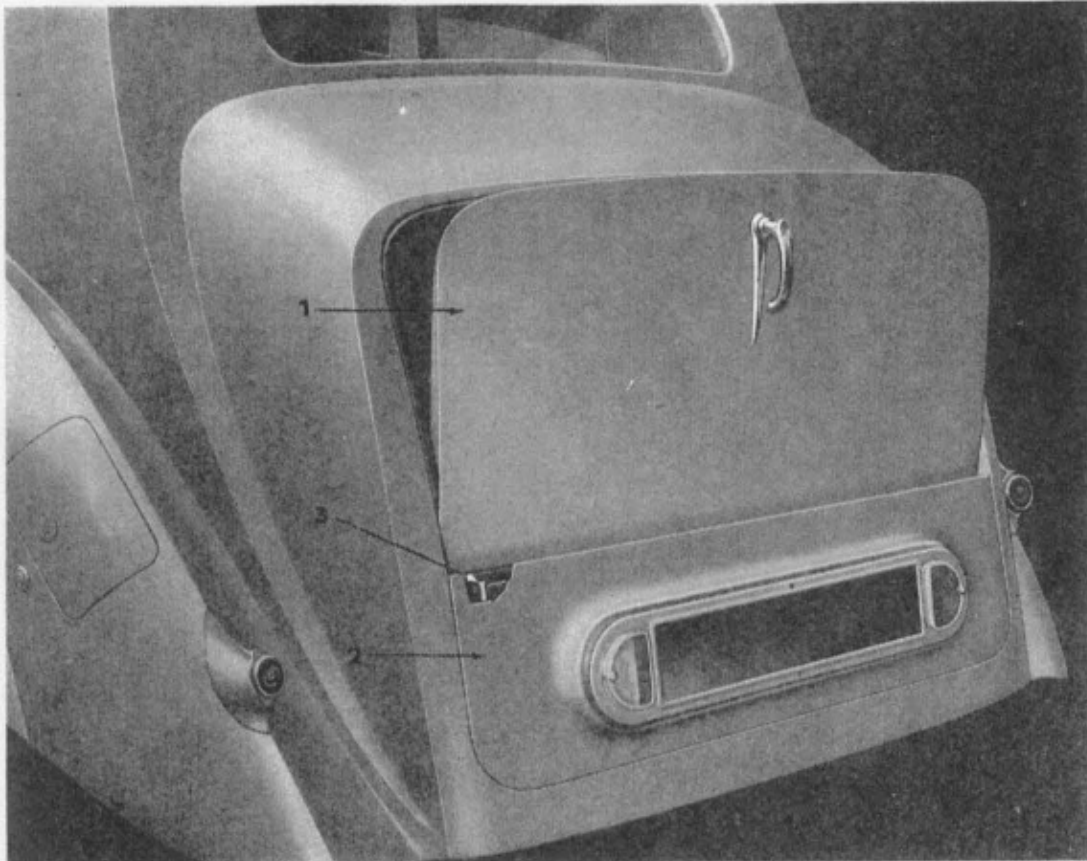


Fig. 50.—SPARE WHEEL COMPARTMENT.

1. Door to luggage boot.
2. Spare wheel and tool compartment.
3. Operating catch.

**Luggage and Spare Wheel Compartments.**

Ample luggage space is provided, and the spare wheel is carried in a separate compartment below, as illustrated in Fig. 50.

To gain access to the spare wheel compartment, firstly, open the luggage boot approximately corresponding to the position in Fig. 50. Secondly, insert the left hand into the slot below the door and operate the catch. Pull the lower door outwards, and then close the luggage boot. Thirdly, with both hands, lift and pull forward the spare wheel compartment door, which may then be lowered to rest on the hinges.



**Tools.**

An adequate set of tools is supplied with each car, the "small" tools being carried in a fitted tray in the tool drawer under the dash. (See Fig. 1.)

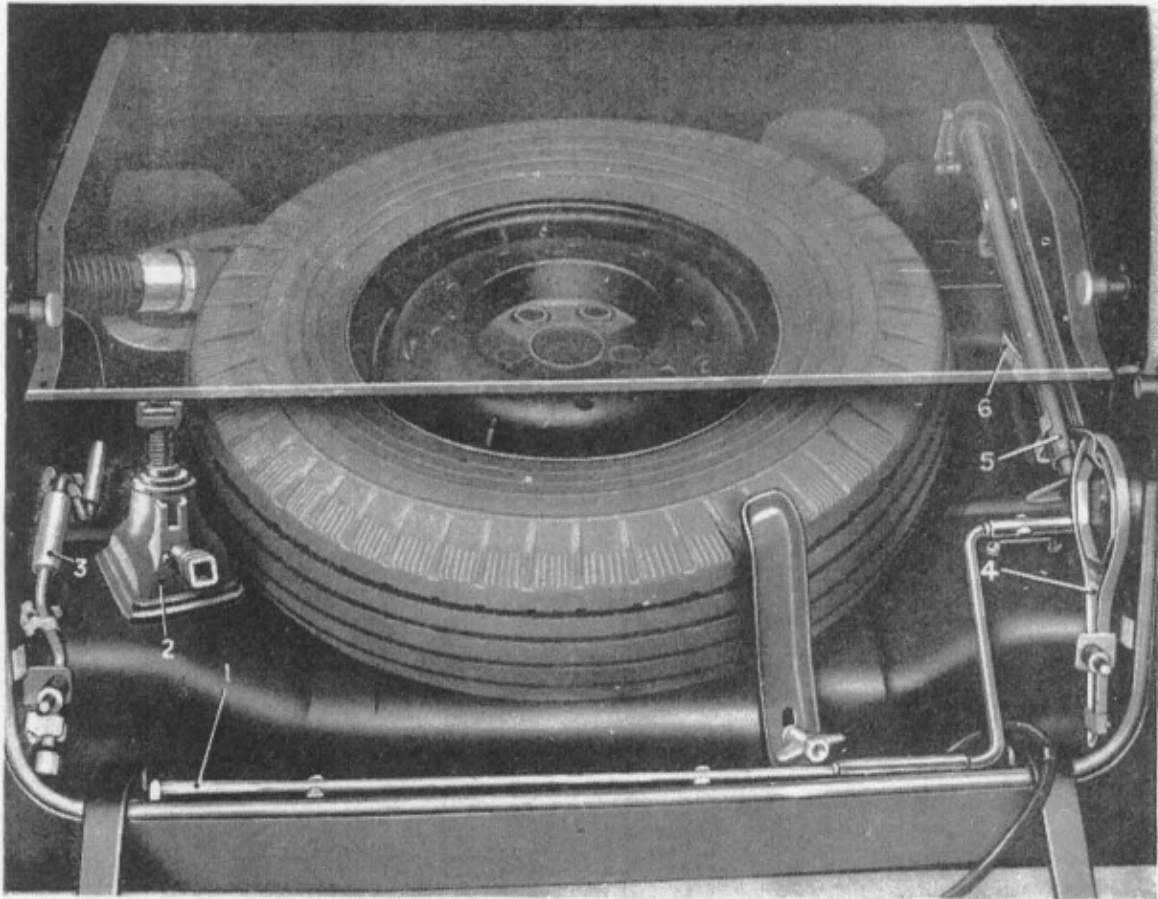


Fig. 51.—SPARE WHEEL AND TOOL COMPARTMENT.

- |                  |                        |
|------------------|------------------------|
| 1. Jack handle.  | 4. Wheel disc spanner. |
| 2. Lifting jack. | 5. Tyre pump.          |
| 3. Wheel brace.  | 6. Tyre levers.        |

The larger tools being carried in the spare wheel compartment, as illustrated in Fig. 51.

## CHAPTER XII

### Storage and Recommissioning of Cars

1.—After jacking up both rear wheels, as directed in (3), run engine gently for a few minutes with a gear engaged.

When engine is cold inject about two tablespoonfuls of engine oil through spark plug holes of each cylinder and turn crankshaft by hand a few times to distribute oil over cylinder walls.

2.—Crank engine over by hand once a week during storage. It must *not* be run under its own power.

3.—Jack up both axles to take all weight off tyres, using wood blocks or other suitable packing\*. Do not deflate tyres, but cover up to exclude light.

4.—If the cooling system contains anti-freeze, do not drain.

If the original coolant has been replaced by plain water, and there is any danger of freezing, drain the system. Otherwise leave water in.

5.—Drain all fuel from main tank, rear strainer and carburetter.

6.—Clean all bright parts and lightly smear with vaseline.

(*Note.*—In the case of parts having untarnishable finish, such vaselining is both unnecessary and undesirable.)

7.—Wash down and polish coachwork, extend hood in the case of an open touring car, and cover the whole with a light dust sheet.

8.—The storage place should be dry, well ventilated, and preferably heated.

9.—Remove battery and properly charge from an external source. Give a subsequent freshening charge from an external source every four or five weeks.

If the storage period is likely to exceed three months, the engine crankcase and also the gearbox and rear axle should be drained and filled up to the correct level with a *pure mineral* oil, e.g. Vacuum "BB" or Wakefield's Aero "C". One of these oils should also be used for injecting into the cylinders under such circumstances.

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\* A jacking pad is provided on the centre of the front suspension "pan"

Before putting the car into service again the following operations should be performed:—

- 1.—Drain engine crankcase and refill to correct level with *fresh* engine oil.
- 2.—Prime cylinders with engine oil.
- 3.—If previously drained, refill coolant system to correct level.
- 4.—If gearbox and rear axle have been filled up with a pure mineral oil, as directed for long period storage, drain and refill with correct oils.
- 5.—Run engine gently for a time after starting up.
- 6.—Remove and clean spark plugs.

Tanks should be completely drained when it is known that the car will be laid up for an appreciable period.

Owing to the fact that motor spirits undergo deterioration with time, thereafter causing them adversely to affect inlet valves and the moving parts of the carburetter, it is undesirable to keep fuel tanks half filled with fuel in a warm atmosphere such as a showroom or garage.



## CHAPTER XIII

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### School of Instruction

To enable the maximum satisfaction to be obtained from the ownership of a Bentley car, Instructional Courses of two weeks' duration are held on the maintenance of the Bentley chassis. During the Course, the mechanical features of the chassis are fully explained, particular emphasis being stressed on the points requiring lubrication or adjustment, at the same time instruction is given in the handling of the car on the road, where a high standard of driving is demanded. Suitable cars are maintained by the School for instructional purposes.

The Course is intended for chauffeurs who are undertaking the care of Bentley products for the first time, and also for drivers who have had previous Bentley experience on other models. In this latter case shorter periods can be arranged, although in most cases the full Course is desirable.

In the past owner-drivers and/or members of their families have frequently attended the Courses with beneficial results, and suitable arrangements may be made by application.

The School is located in part of the Service Department building at Willesden. Further particulars may be obtained from the Principal, School of Instruction, Bentley Motors (1931) Ltd., Hythe Road, Willesden Junction, London N.W.10. (Telephone No.: LADBROKE 2444.)

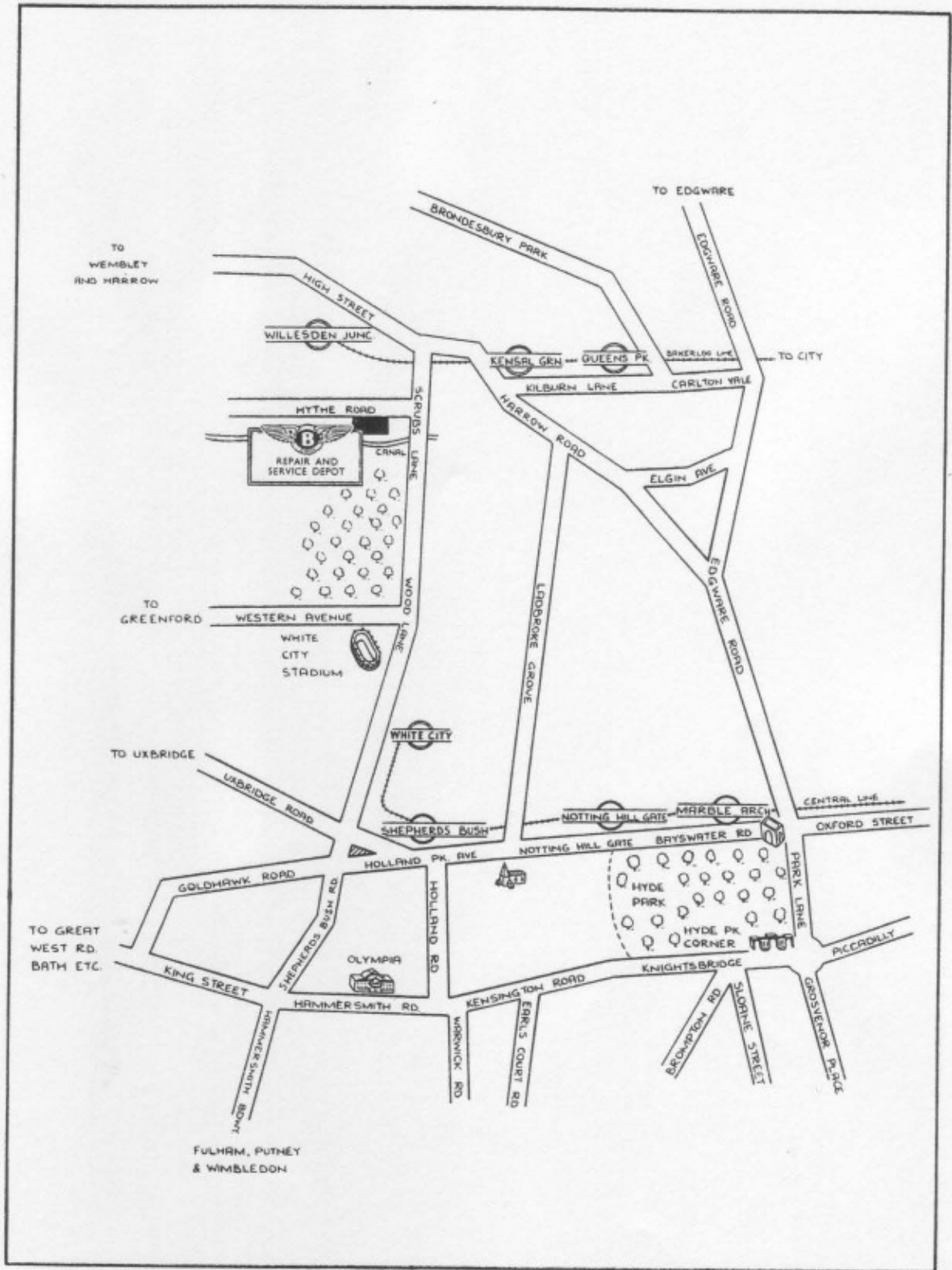


Fig. 52.—GUIDE TO LOCATION OF MAIN SERVICE STATION.

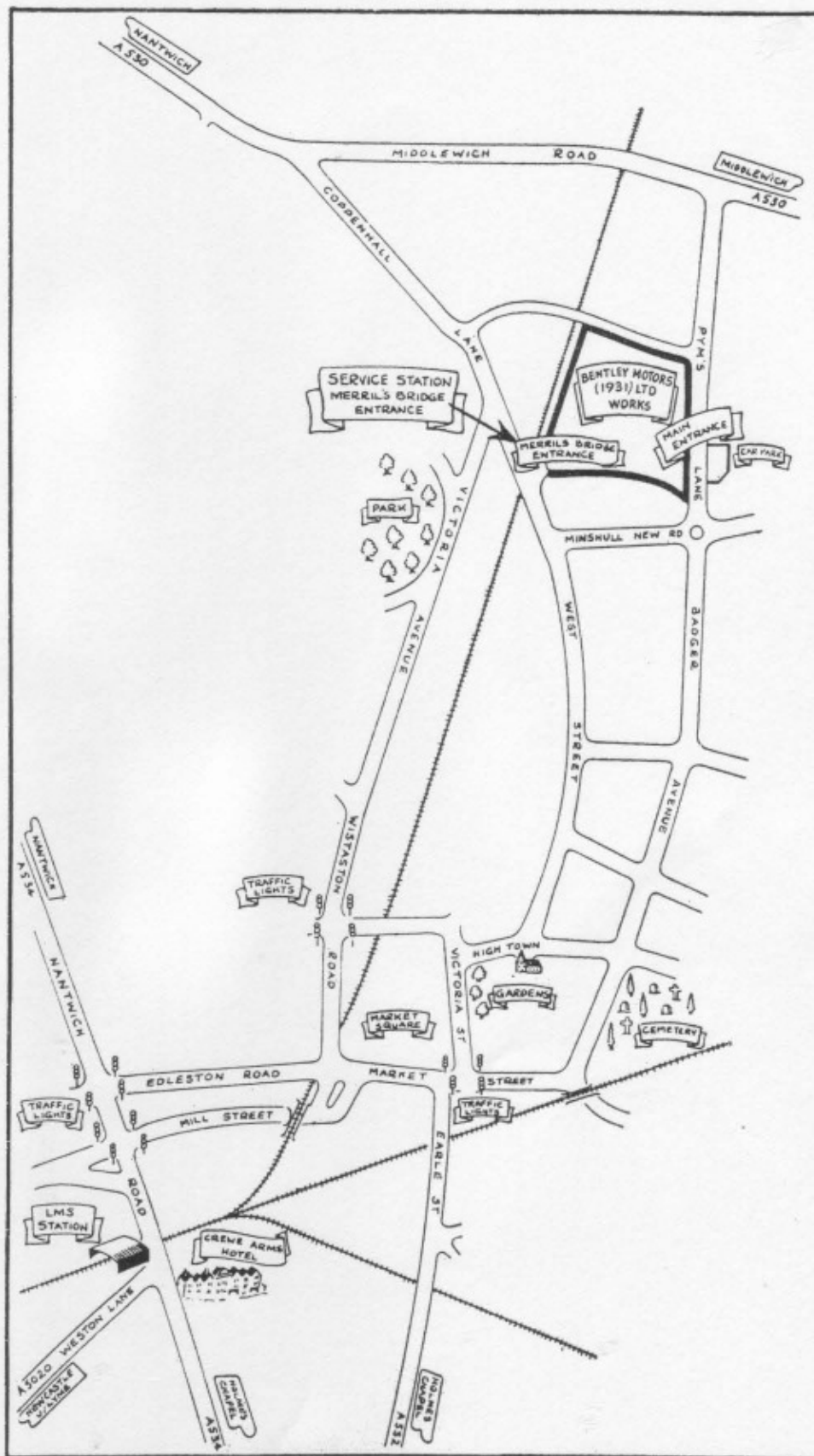


Fig. 53.—GUIDE TO LOCATION OF CREWE SERVICE STATION.

