THE SECRET OF SUCCESSFUL RUNNING

Before a Bentley car is sold, it is very carefully tested and adjusted by experts. It will run best if no attempt is made to interfere unnecessarily with adjustments.

An owner would do well to instruct his driver as follows:—

Lubricate effectively, in strict accordance with the advice given in this book, and do not neglect *any* part.

Inspect all parts regularly, but take care not to alter any adjustments unless really necessary.

SERVICE FACILITIES FOR BENTLEY CARS

Our interest in your Bentley car does not cease when you take delivery of the car. It is our ambition that every purchaser of a Bentley car shall continue to be more than satisfied.

With this end in view, the "Special Retailer", through whom the car was purchased, has established a properly equipped Service Station, staffed by men who have been specially trained in servicing Bentley cars.

In addition, on the staff of Bentley Motors (1931) Ltd., there are experts whose sole duty it is to maintain contact with the "Special Retailers", and they are available, at all times, to be called in for consultation on any matters affecting your car.

If, therefore, you require any assistance, we ask that you should immediately contact the "Special Retailer", who will be only too pleased to place his facilities at your disposal. If necessary he will call in for consultation our expert in that area. It is earnestly hoped that this arrangement will prove of mutual benefit, as we shall thus be kept in constant touch with our Customers, who may be spared the trouble of a long journey to one of our Company's Service Stations.

In the event of it being more convenient to call on us direct for assistance, our main Service Station at Hythe Road, Willesden, London N.W.10, and the one at our factory at Crewe, will be ready at all times to help. (See maps at end of Handbook.)

LEADING PARTICULARS OF CHASSIS

Engine.

Six cylinders, $3\frac{5}{8}$" (92 m/m.) bore, $4\frac{1}{2}$" (114 m/m.) stroke, 4,566 c.c., cubic capacity.

Mono-bloc casting, detachable cylinder head, overhead inlet valves, side exhaust valves.

Aluminium alloy pistons.

Engine Lubrication.

Pressure feed to all crankshaft and connecting rod bearings.

Relief valve, providing positive low-pressure supply to the valve rocker shaft, from which the inlet valves, push rods and tappets are lubricated.

Two-gallon capacity sump.

Carburetter.

Two special type S.U.

Air intake silencer, with which is incorporated a special air cleaner element.

Fuel System.

Eighteen-gallon tank at rear of chassis. Supply by electric pumps. Fuel level gauge and warning light on instrument board. The warning light indicates when fuel is low.

Cooling System.

By centrifugal pump circulation and fan. Thermostatically controlled. Coolant temperature thermometer on instrument board.

Electrical Equipment.

Twelve-volt system with automatic regulation of dynamo output. Starter motor with reduction gear and pinion providing gentle engagement. Battery of 55 ampere-hour capacity.

Gearbox.

Four forward speeds and reverse. Synchromesh on second, third and fourth speeds. Right-hand control lever.

Gear Ratios.

Rear Axle Ratio.	1st Speed.	2nd Speed.	3rd Speed.	4th Speed. (Direct.)	Reverse.
3.73 : 1	11.11 : 1	7.52 : 1	5.0 : 1	3.73 : 1	11.76 : 1

Rear Axle.

Semi-floating type. Hypoid gears with differential. Torque and brake reactions taken by road springs.

Rear Suspension.

Semi-elliptic springs in combination with controllable hydraulic shock dampers.

Front Suspension.

Independent; open helical springs in combination with hydraulic shock dampers.

Steering.

Cam-and-roller type.

Brakes.

Hydraulic operation on front wheels, mechanical operation on rear wheels assisted by mechanically driven servo motor.

Hand brake operates on rear wheels.

Chassis Lubrication.

Centralised chassis lubrication system supplied by foot-operated pump and reservoir on dashboard.

Road Wheels.

Detachable steel wheels, fitted with 6.50″ by 16″ India Super Silent Rayon tyres.

Dimensions.

Total length overall, including bumpers	191½″	— 15′ 11½″
Width of car	69″	— 5′ 9″
Wheelbase	120″	— 10′ 0″
Track—Front	56½″	— 4′ 8½″
Rear	58½″	— 4′ 10½″
Turning circle, over front wings		46′

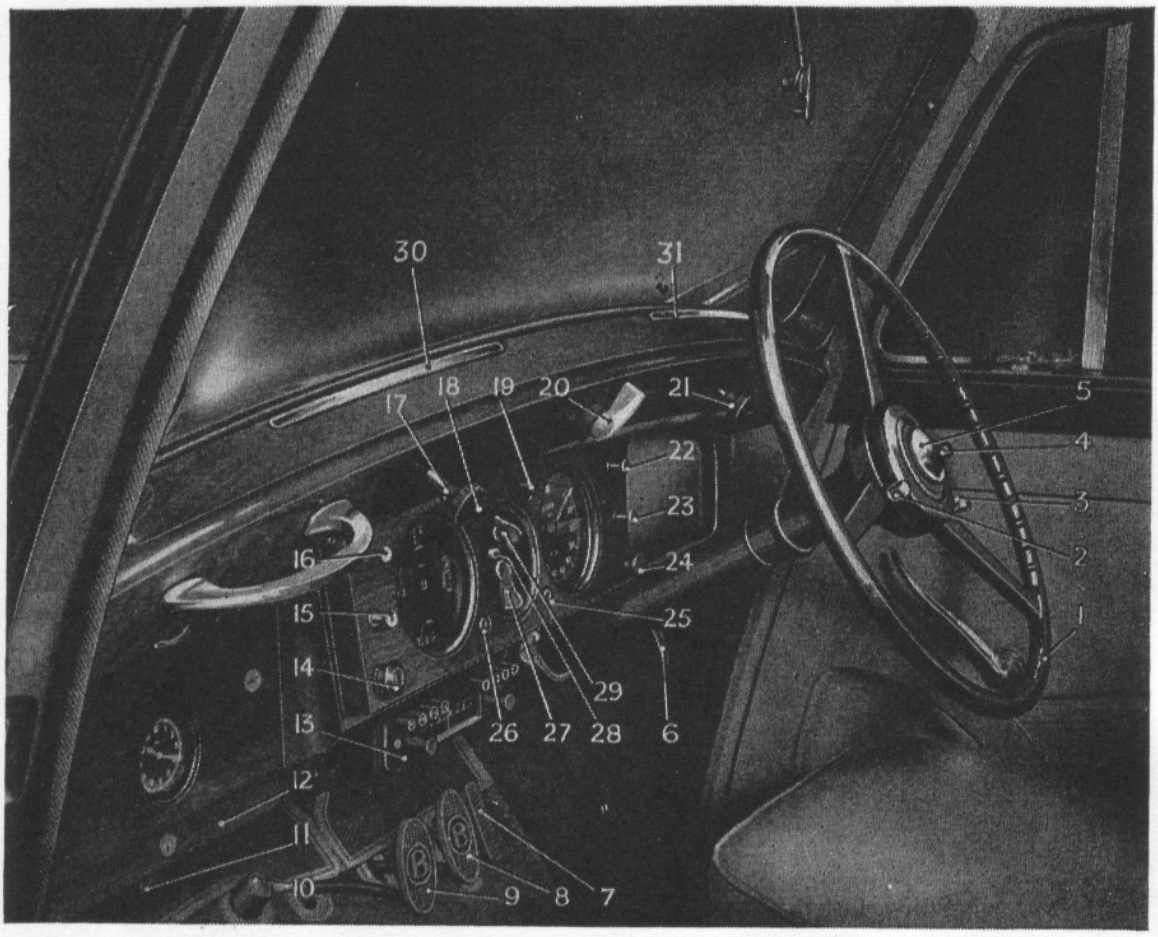

FIG. 1.—GENERAL VIEW OF DRIVER'S CONTROLS.

1. Steering wheel.
2. Throttle control.
3. Mixture control.
4. Ride control.
5. Horn push.
6. Hand brake.
7. Accelerator pedal.
8. Brake pedal.
9. Clutch pedal.
10. Dip switch.
11. Chassis lubrication pump.
12. Small tool drawer.
13. Radio.
14. Cigar lighter
15. Instrument light switch.
16. Windscreen wiper switch.
17. Windscreen wiper parking knob.
18. Fuel/oil level switch.
19. Map lamp switch.
20. Trafficator switch.
21. Windscreen wiper parking knob.
22. Fog lamp switch.
23. De-mister switch.
24. Car heater rheostat.
25. Ignition warning
26. Fuel warning light.
27. Master switch.
28. Starter motor switch.
29. Ignition switch.
30. Air vent cover.
31. Air vent cover.

CHAPTER I

Starting the Engine and Driving the Car

Starting the Engine—Throttle Control—Mixture Control—Ignition Control—Fuel Feed—Fuel Gauge—Maximum Engine Speed—Gear Changing—Controllable Shock Dampers—Battery Charging—Lighting Control and Switch—Accessories—Radiator Thermostat and Thermometer—Coolant Level in Radiator—Frost—Fitting of Snow Chains.

Starting the Engine.

Switch on the ignition by turning master and ignition switches on the instrument board to **On.**

The master switch controls all the electrical system, excepting the inspection lamp and the roof lamp, the latter being left always available for convenience when entering the car in the dark.

The action of switching on the ignition also switches on the electric fuel pumps, and a few pulsations of the latter may then be heard.

A small red warning light on the instrument board will be illuminated when the ignition is switched on, but will be extinguished when the engine speed is sufficient to cause the cutout contacts to close.

Set the mixture control to **"START";** it must not be maintained in this position. As soon as the engine starts running, gradually reset the control to **"RUN".**

With a cold engine the hand throttle control should be opened about one third of its range, but should be re-set to the closed position when the engine has warmed up.

Re-starting with a warm engine, the above is not necessary as the carburetter slow running adjustment has been set to give an adequate idling speed.

Depress the starter button firmly, *an appreciable pause must be made between the operations of switching on the ignition and depressing the starter button, especially when making a start from cold.* This is necessary in order to give the pumps time to fill the float chambers of the carburetters.

When starting the engine for the first time in the day it is a good plan to form the habit of depressing the chassis oil pump pedal once at this stage. Subsequently it should be depressed once every 100 miles. If the car is to be driven only a few miles, however, half a pump-full will be sufficient at the first starting.

When the engine is cold a high oil pressure will be shown on the gauge, due to the greater viscosity of the oil at low temperatures. The pressure will fall, however, as soon as the oil becomes warmer.

A starting handle is carried in the tool kit; in the event of it being used, it should be removed afterwards from the bracket and returned to the tool kit.

Throttle Control.

Under normal running conditions, the hand throttle control should be carried right back at the closed position. An adjustable stop is provided on the carburetter for the throttle lever, which is so adjusted that the engine will idle reliably in these circumstances when the accelerator pedal is released.

Mixture Control.

Under normal running conditions the lever should stand at **"RUN"**. This control is only intended for use when starting from cold, and should not be used for varying the mixture strength under running conditions. Actually, its effect decreases rapidly as the throttle is opened.

Ignition Control.

Control of the ignition timing is entirely automatic, no hand control being provided.

Fuel Feed.

Fuel is supplied from the main tank to the carburetter by means of a dual electric pump mounted in the frame (See Fig. **11**). The total capacity of the main tank is 18 gallons.

Fuel Gauge.

The electric fuel gauge on the instrument board is graduated to register the total quantity of fuel in the main tank. The gauge is inoperative when the ignition is switched off.

Special contacts carried by the tank unit cause the green warning lamp to light when only about three gallons of fuel remain in the tank.

Maximum Engine Speed.

The engine speed must never be allowed to exceed 4,500 r.p.m. It is, therefore, recommended that as a safe guide, the following speeds should not be exceeded:—

1st Gear	...	...	...	...	27 miles per hour.
2nd Gear	...	...	...	...	43 miles per hour.
3rd Gear	...	...	...	...	65 miles per hour.

The quietness of the Bentley engine and chassis, and the smoothness of the ride provided by the Bentley suspension, make it difficult to judge speed. *Keep an eye on your speedometer.*

Gear Changing.

The position of the gear lever for each of the four speeds and reverse is shown in Fig. **2**.

When reverse is required, the top of the lever must be depressed; this operates a catch, and allows the lever to be moved into the reverse gate.

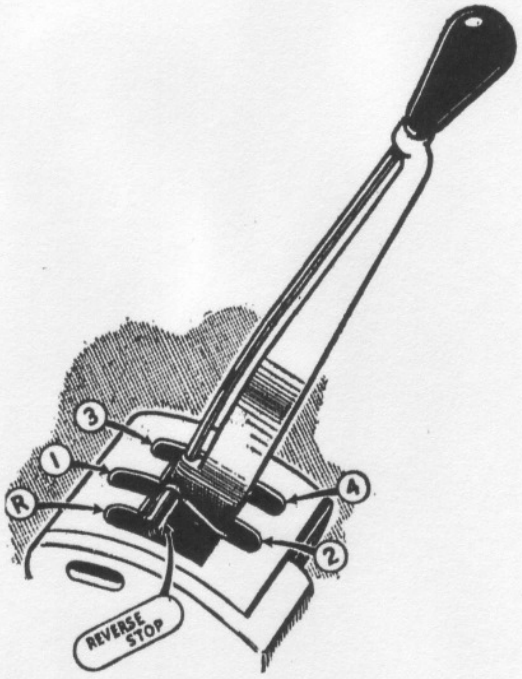

Fig. 2.—GEAR CHANGE LEVER AND GATE.

Generally the car should be moved from rest in second gear, this is in no way detrimental to the transmission or clutch; but if starting on a gradient, first gear should be used.

The second, third and fourth gears are of the synchromesh type, and it is necessary to depress the clutch pedal fully when changing gear. The gear lever should be moved gently into the required gear position and, before re-engaging the clutch, the engine should be speeded up when changing down, or allowed to slow down when changing up, so that its speed shall suit the car speed on the required gear.

The change from second to first must be made in the usual manner by double de-clutching.

It should be noted that the travel between first gear and neutral is greater than on the other gears. Therefore, when manœuvring in traffic, it is important to remember that care should be taken to make sure that the lever has reached neutral position from first gear before re-engaging the clutch.

When changing from first to second, the fullest use should be made of the synchro mechanism, and the gear lever should be moved gently from first speed to second speed whilst the clutch is fully disengaged.

The car must be stopped before engaging the reverse gear, and the same advice applies when changing from reverse to a forward gear.

Controllable Shock Dampers.

In order to provide comfortable riding at all speeds, controllable shock dampers are fitted to the rear axle.

The control is effected by the lever, mounted above the steering wheel, and marked **Ride Control.**

For ordinary town work, or touring with moderate loads, it will be found that the damper loadings as set by the pump are adequate when the hand lever is at **Normal.**

With heavy loads, improved riding comfort will be obtained by moving the lever towards **Hard,** the control being progressive.

Battery Charging.

This is entirely automatic, as the provision of an automatic output regulator in conjunction with a shunt wound dynamo, adjusts the charge rate to suit the state of the battery.

When the battery is low in charge, the ammeter on the instrument board will show a higher reading towards **Charge** than it will when the battery is well charged. In making such a comparison, however, other factors which affect the ammeter reading must be taken into account, chiefly engine speed and current-consuming apparatus in use at the time.

Whenever the master switch and the ignition switch are **On,** and the engine running above idling speed, the battery is being charged. This should be checked by reference to the ammeter.

Further information regarding the electrical system is given in Chapter X.

Lighting Control and Switch.

As already mentioned, the movement of the master switch and the ignition switch to **On** not only switches on the ignition and charge, but brings into operation the electric fuel pumps and fuel gauge.

The ignition switch also switches on a red warning light on the instrument board, which is automatically extinguished when the engine is running at a speed sufficient to cause the dynamo to excite up to battery voltage.

The master switch controls the head, side and tail lamps, alternative **On** positions being provided, viz.:—

S and **T**.—Side and Tail lamps on.
H, **S** and **T**.—Head, Side and Tail lamps on.
PL.—"Parking" lights on, e.g. Side and Tail lamps on, accessories off.

In addition, a foot operated switch is provided, by means of which the beam of the driving lights is altered to allow anti-dazzle precautions to operate, thus extending courtesy and safety to passing traffic.

Accessories.

The control of the Windscreen Wiper and De-mister is provided by means of switches on the instrument board.

A press button switch is also available for ascertaining the engine oil level which reads on the fuel gauge. (See Fig. **1**.)

These are all controlled by the master switch, and it is recommended that the master switch be regularly used to avoid leaving the car with one of the accessories in operation.

Radiator Thermostat and Thermometer.

A thermostat is provided in the upper radiator coolant pipe which automatically restricts the flow through the radiator, until the coolant in the system attains a temperature of about 78° C.

A thermometer is provided on the instrument board to indicate that the thermostat is operating properly and that there is no shortage of coolant.

Coolant Level in Radiator.

The radiator filler cap, which is located beneath the bonnet on the left-hand side, should be removed occasionally for inspection of the coolant level, but it *must not be removed when the engine is running.*

The level of the coolant should be maintained at approximately one inch below the bottom of the filling orifice. Top up if necessary with the correct anti-freeze mixture. (See page 80.)

Frost.

The car is delivered with a suitable anti-freeze mixture in the cooling system. (See page 77.)

If the original coolant has been replaced with water, and the car has to stand exposed to frost with the engine not running, it is of vital importance that the system should be drained by opening the drain taps on the water pump inlet pipe, and on the cylinder block (**1**, Fig. **34**), and releasing the filler cap. The car heater must also be drained by opening the tap on the return pipe.

Before attempting to start, or even move the engine again, hot water should first be poured over the water pump, as otherwise damage may be caused to the pump rotor by the presence of particles of ice within the casing. Warm water can be used with advantage for refilling the radiator.

Fitting of Snow Chains.

In the event of snow chains being necessary, they should be fitted to the rear wheels only.

A Parsons chain, known as the "Special Bentley Type", is available. It is recommended that these be obtained through Messrs. Bentley Motors (1931) Ltd., or one of their "Special Retailers", in order to ensure the supply of the correct type.