

1931 MODELS ON THE ROAD—



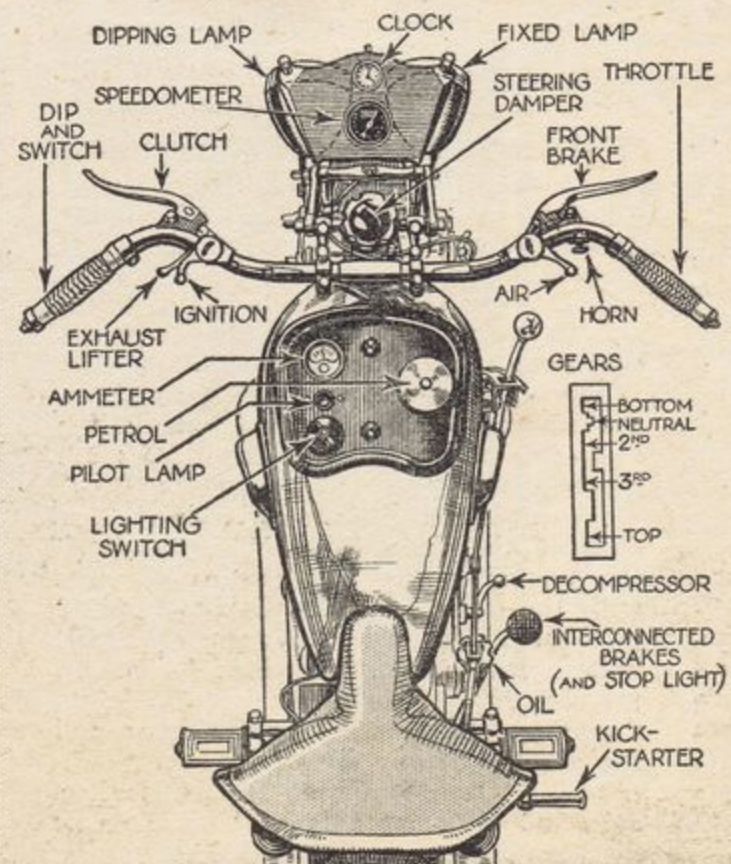
IT is interesting to know the ideas around which a machine has been planned when trying its performance on the road, since thereby much light is thrown on its qualities. For example, the designer of the P. and M. Panther model known as the "Redwing 90" definitely set out to produce a machine with a racing performance, coupled with reasonable docility and tractability for touring requirements. It was decided that certain aims should be achieved, and equally it was realised that in achieving them certain qualities that are demanded in "ideal" specifications would have, to some extent, to be sacrificed.

Design almost always involves such compromises, and in the case of the Redwing it can be said that the inevitable compromises have been very skilfully made.

Thus, a maximum speed of 80 m.p.h. was decided upon as being an essential feature of the machine, together with good acceleration from low speeds, even on the third and top gears.

Now it is realised that 80 m.p.h., and more particularly

The 490 c.c.  
"Redwing 90"  
Panther



Control plan of the 490 c.c. P. and M. Panther.

rapid acceleration, cannot be obtained with a single-cylinder engine without that variety of snappy cam gear which creates noise. It can be said at once that the Redwing, on favourable stretches of road, will exceed 80 m.p.h.—a speed seldom actually used or even possible under average road and traffic conditions. What is more to the point is that 52 to 58 m.p.h. appears to be the Redwing's most comfortable touring range, with violent acceleration in top gear from 40 to 55 m.p.h., i.e., just where one wants it.

From 60 to 70 m.p.h. the rate of acceleration begins to drop, but the latter speed is comfortably reached on stretches of good, straight road without undue hesitation—indeed, it is only the "over-70" speeds that become dependent on time and place. On the third gear of 6.2 to 1, 70 m.p.h. was reached quite easily on a slightly rising gradient against a fairly stiff wind, and the acceleration from about 30 m.p.h. to about 55 on this gear is positively breath-catching. Seventy miles an hour on third is equivalent to 5,400 r.p.m., so that about 86 m.p.h. should

be the ultimate speed reached on the 4.9 to 1 top gear.

All this, of course, is accompanied by a certain amount of noise of both exhaust and mechanism. Experiments have shown that a camshaft giving complete silence of the valve gear reduces the maximum speed to just over 60 m.p.h. with negligible accelerative powers. Similarly, cams have been used putting the maximum up to 90 and lifting the maximum acceleration from the 45-60 range to the neighbourhood of 50-70 or more, but at the expense of all semblance to quietness. Thus it is fair to say that the model represents that balance which is characteristic of all good design.

Speed and acceleration are all that can be used in really fast touring, and the amount of noise, though considerable, is not too bad if driving care is used in circumstances where it is indicated by common sense.

As the machine is one primarily intended for high-speed touring it was not tried on real "rough stuff." On secondary roads, somewhat greasy from thawed snow, and even on the remnants of snowdrifts, it showed great stability, however, and on the thick grease of a much-used but unsurfaced cart road only dropping into some definite rut had any effect upon the handlebars.

At high speeds on main roads the steering and stability were absolutely beyond criticism, the machine being effortless to handle and quite unaffected by bumps or potholes, although the steering damper was left quite loose even for speeds of over 70 m.p.h.

#### High Averages with Safety.

Over 60 m.p.h. there was a slight tendency for the back wheel to bounce (chiefly noticeable in the altered sound of the valve gear), but it had no effect on the steering.

Gear changing proved very easy, second gear generally being used for starting. The change from third to second gear was the only one that caused any trouble.

In ordinary use in traffic it was found best to change down from top to third if the speed fell below 20 m.p.h., and from third to second at under 15 m.p.h. Acceleration from 15 m.p.h. on third was free from pinking if benzole mixture or ethylised spirit was in

#### SPECIFICATION.

**ENGINE:** 79 × 100 mm. (490 c.c.) P. and M. single-cylinder overhead valves; compression ratio, 6½ to 1.

**IGNITION:** M-L. magneto.

**CARBURETTER:** Amal, with twist-grip throttle control.

**GEAR BOX:** P. and M. four speed. Ratios: 4.75, 6.2, 9.3, and 13 to 1.

**LUBRICATION:** Dry sump.

**TYRES:** 26 × 3.25 in.

**FUEL CAPACITY:** 2½ gallons.

**WEIGHT (with full tanks and separate dynamo lighting):** 387 lb.

**PRICE:** As tested, £77 8s. (£62 10s. without lighting).

**MAKERS:** Phelon and Moore, Ltd., Cleckheaton, Yorks.

the tank, and at 40-45 the top gear was snapped in. This method gave wonderful acceleration from 15 m.p.h. to about 58 m.p.h., just about as quickly as the grip could be twisted and the gear lever manipulated, and made a 40 m.p.h. average possible without the slightest risk or stress. In hilly country the third gear simply flattened out long climbs of about 1-in-15 gradient, which it was a great joy to ascend at about 45 to 50 m.p.h.

The good average speed characteristic was influenced naturally by the first-class stopping power provided by the coupled brakes, which were free from any suspicion of harshness or tendency to unpleasant reactions, and yet very powerful. The

pedal was well placed with regard to the footrests.

Starting, when warm, was perfectly simple, thanks to the decompressor, but cold starting generally proved somewhat less easy, although, after adjustment, it could not be said to be too difficult, provided the start was made with the machine jacked on its central stand in order to get a more powerful swing on the starter pedal.

#### Efficient Lighting System.

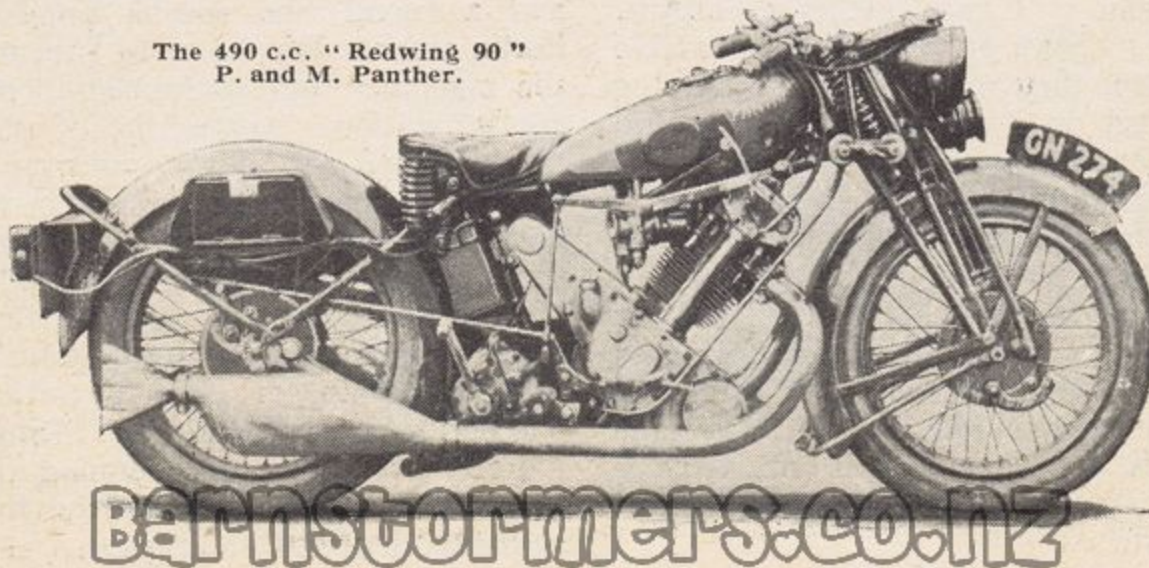
Very special praise must be bestowed on the double head-lamp lighting system. This is just glorious; at night one rides down a lane of brilliance, yet at a touch of the left twist-grip one lamp goes out and the other swivels and dips to the near side, giving the greatest confidence to carry on, no matter what lights oppose one. The speedometer mounting on the head-lamp bracket enables both road and "clock" to be observed at the highest speeds.

Fuel consumption, in view of the good average speeds maintained, worked out at 66 m.p.g., while oil was used at the rate of 1,200 m.p.g., the setting causing a smoky exhaust at low speeds.

Summing up, the Panther Redwing 90 can be put definitely in the ranks of the fast motors. Yet it is docile and easily handled in traffic and stable to a degree on the road.

The machine as a whole is extremely accessible, while the appearance, finish and oil-tightness of the engine indicate first-class workmanship. In short, the Panther Redwing 90 can be described as a he-motor for he-men.

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P. and M. Panther.



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