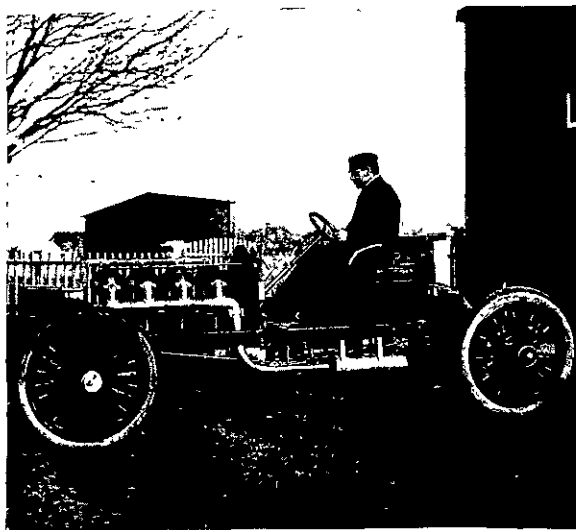


MOTORS and MOTORING.

A Useful Water Motor.

ENGINEERS in charge of garages and motor-running sheds will be interested in the "Hector" water motors, which are constructed by Mr. Percy Pitman, of Bosbury, Ledbury, Herefordshire. The direct-coupled type, which we illustrate, is specially designed for the charging of accumulators. It possesses the advantage of being suitable for connection to either the ordinary house water supply, where the pressure may vary between 40 and 60 lb. on the sq. in., or to a hydraulic supply. The charging set consists of a direct-coupled dynamo, bolted to the same bed-plate as that which supports the water motor, all parts being accurately machined and finished. A half-inch supply pipe is provided, and the approximate speed of running is 2,000 revolutions per minute. If the water is furnished from a hydraulic supply main of high pressure, as is obtainable in London and many cities, one b.h.p. can be obtained for a consumption of two gallons of water per minute, and higher powers in exact proportion. The water motor illustrated is an improved Pelton type wheel, fitted with three interchangeable nozzles, one only being used at a time, the bore of these nozzles being 1-16th, 1-8th, and 3-32nds of an inch. When the pressure is 40 lb. on the sq. in., the consumption of water does not exceed fifty gallons per hour for a dynamo to provide a current of five amperes at an E.M.F. of ten volts. This current and pressure is suitable for the charging of motor vehicle accumulators, and the low price at which the whole of the outfit is marketed—twelve pounds, complete, with voltmeter and ammeter—should lead to a free enquiry and numerous orders for so compact and useful a fitting. If the water pressure is below 40 lb. on the sq. in., belt driving is necessary in place of direct coupling, whilst Mr. Pitman is prepared to supply special sets to run under a 6 ft. head of water only, which is equivalent to only 2.6 lb. on the sq. in. He points out that, in order to obtain the highest efficiency in working his motors, the supply pipe should be free from sharp elbows or bends which tend to throttle the flow. A supply pipe should be larger than the actual inlet to the motor to avoid frictional losses in the pipe line, and the exhaust should have a free outlet so that waste water cannot back up on the wheel. Knowing, as we do the wasteful methods which are in use in many garages

he added, was equivalent to "writing himself down as a crank," he felt convinced that the future did not lie in the steam engine or the petrol motor, but in electricity, which would in time offer a solution of the whole difficulty of public and industrial transport. Colonel R. E. B. Crompton, C.B., insisted upon the far-reaching influence of the commercial vehicle, which he said, concerned every class of the community, including public bodies, such as municipalities, the railway and shipping companies, and carriers generally, as well as the landowner and his tenant farmer, and, finally, the general public who use the streets. They who were pressing on the cause of commercial automobilism believed, he said, that it had a great future, because it would do something for all.



"PEERLESS" 80-H.P. RACER.

THE above depicts the famous 80-h.p. "Peerless" racing car, which is patterned after the American touring cars, whose name it bears. The motive power is furnished by a vertical four-cylinder gasoline engine. Bevel gear transmission with a direct drive on high speed is one of its features. The speed gear is of the sliding type, and is connected with the bevel gear on the rear axle by means of a universal shaft. Ball bearings to reduce the friction and aluminium to eliminate excessive weight have been used as much as possible. The wheel base is nine and one-sixth feet. The wheels are thirty-two inches in diameter and are equipped with 3½ inch tyres.

The Motor Eye.

In an American medical journal Dr. Edward Davis states that he has observed several cases of conjunctivitis, which could be attributed to no other cause than rapid riding in motor-cars with eyes unprotected. The direct causes of the inflammation are said to be the friction of the wind against the sensitive covering of the eye and chilling the eyeball. As the wind and the cold are the specific causes of the inflammation, it will be recognised that when out for extended automobile trips, during the late autumn and winter particularly, it is important to protect the eyes with goggles or eye-shields.

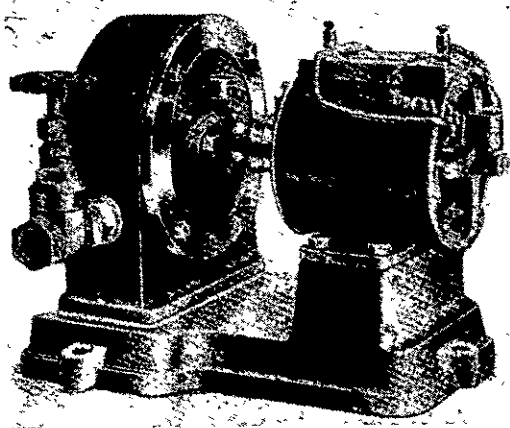
Mechanism of a Petrol Motor.

A, petrol inlet to carburettor B; B, carburettor; C, throttle, or air gas inlet control; D, air inlet to carburettor; E, float; F, petrol level; G, air gas discharge pipe to valve box; H, valve box; J, valve; K,

mixture lever; L, air inlet to valve box H; valve M, inlet valve for the mixture; N, exhaust for the exploded charge; N1, exhaust outlet; N2, muffler; N3, valve for controlling the muffler (when open it discharges into the open air, when closed it follows arrow points); O, cylinder; O1, water jacket; P, piston; Q, connecting rod; R, crank pin; S, crank arms or counter weights; T, crank shaft; U, fly wheel; V, exhaust valve rod; V1, plunger for lifting exhaust valve; W, cam for lifting plunger; W1, two to one shaft; X, spark plug; Y, two to one toothed wheel; Z, two to one pinion; A1, clutch; B1, transmission gearing; C1, make and break contact; D1, brushes; E1, batteries; F1, switch for using two batteries; G1, jump spark coil; H1, wire to engine or ground; J1, wire to plug X.

A recent English patent is an improved motor car radiator. The radiator is composed of thin, flat, vertical tubes spaced by horizontal gills of that section, viewed endwise. These gills are perforated so that the air may pass vertically through, as well as horizontally along them, giving greater cooling effect. The flanges of the gills are also serrated. The radiator is surmounted by a filling cap of special form, maintained in space in the filling neck by balls thrust outwardly by springs. The balls press against an inclined rim and so keep the cap closed tightly. Should pressure increase within, the cap is raised slightly and steam allowed to escape, the balls being forced inwards by the inclined rim.

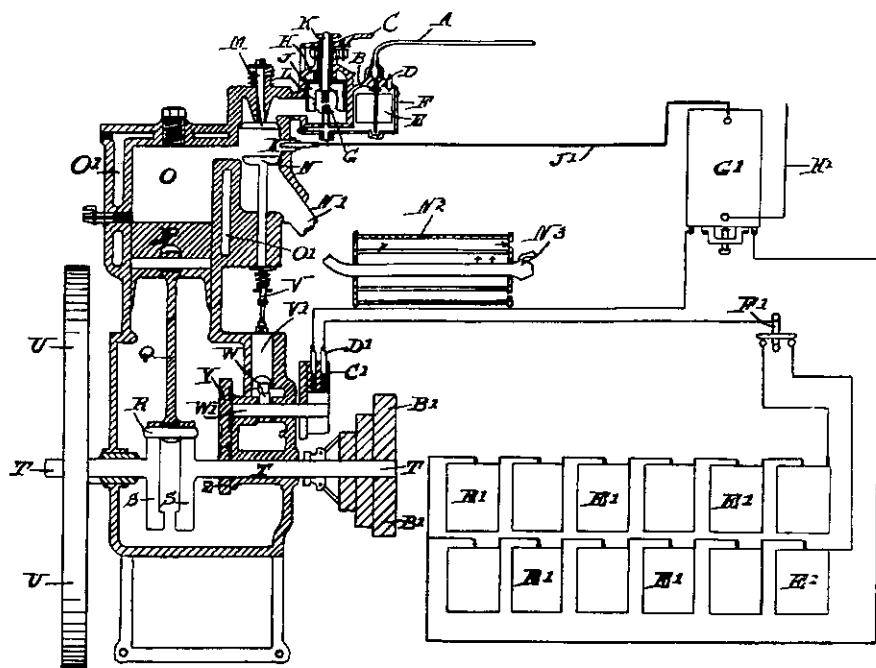
A few months ago Mr. C. W. Darley, M.Inst.C.E., inspecting and consulting engineer for New South Wales Government in London, reported strongly in favour of the adoption of motor buses by the Railway and Tramway Department of that State. In his opinion, motor omnibuses are exactly suitable for the roads and conditions of traffic there. Mr. Deane, the late engineer-in-chief for railway construction in New South Wales, also holds a similar view. He has forwarded to Sydney the results of interviews he has had here with officials and managers of British railway companies on their experiences. He considers that there is a wide field of usefulness for motor buses in Sydney, to run in conjunction with and as feeders to the State electric trams. The Railway Commissioners in New South Wales, upon the receipt of these communications, went into the matter, and reported to the Government in favour of expending £8,500 in experiments with motor omnibuses to be employed as tramcar and train feeders, and also to test new routes for which demands are made by the inhabitants for trams or trains. Further, the buses are to be used for another purpose, shown by the following extract from the Commissioners' report:—"Whilst it is not expected that motor omnibuses would be able to compete successfully in this State with trams on long-distance routes, they might be able to do so in selected portions of existing routes or along parallel streets. Should this prove to be the case, it would, if competition were established, be difficult to deal with the question, and for this reason—having due regard to the fact that £3,500,000 of public money has been expended on the tramway system—it might be prudent to anticipate it." Upon this report the Ministry brought in a Bill to empower the State to run motor omnibuses, and this measure was carried through both Houses of Parliament with



THE "HECTOR" WATER MOTOR.

for charging batteries, we think that this small adjunct to the equipment of such an establishment is one that would very quickly earn its first cost for the purchasers. Water motors have obvious advantages over most other motors, among which may be mentioned cleanliness, economy, and simplicity.

That we are "on the brink of a tremendous future" is the opinion expressed by Sir William Preece, K.C.B., in the address he delivered at the banquet of the Motor Van and Wagon Users' Association, when he pointed to the fact that out of 26,000 motor cars registered in this country no fewer than 3,500 were being used for commercial purposes, and this, too, at a moment when we are only just beginning to profit from the facilities offered by the industrial motor vehicle. Speaking as an enthusiastic believer in electricity, which,



THE MECHANISM OF A PETROL MOTOR.