

The Mathematical Motorist.

The following amusing skit is from a legal light shining in Wellington:—

Let M be the driver of a motor car working with velocity V.

If a sufficiently high value be given to V it will eventually reach P C. In most cases V will then equal 0. For low values of V, P C may be neglected, but if V be large it will generally be necessary to square P C after which it will again assume a positive value.

By a well-known elementary equation $P C \times \text{£ s. d.} = P C \text{ squared}$. But the quadrature may sometimes be effected by substituting for £ s. d. the third power of $X = XXX$. This is preferable where £ s. d. is small with regard to M. If £ s. d. is made sufficiently large P C will vanish.

If J P be substituted for P C, which may happen if the difference between M and P.C. be large the solution of the problem is more difficult because no value of £ s. d. or X can be found to effect the quadrature of J P, for as is well known, J P squared is an impossible quantity.

The quantity P C is often irrational and may result in a totally arbitrary value being assigned to V differing largely from the real value. The equation may be solved by the use of logs but they must be used with care.

Note.—The value of V need not suffer diminution if a circle can be described round P C. But if you cannot get round P C then the method of least possible squares should be used especially if £ s. d. is a rapidly vanishing quantity.

Points at the Paris Show.

A correspondent wrote to the *Times* immediately after the big show, a most interesting summary of the much-discussed "Salon."

The Salon de l'Automobile is held this year in two distinct sections, at different dates. The first is strictly limited to motors for town use, for touring purposes, and for cars for luxurious travel, whilst the second, which will open about a fortnight later will be confined to motor vehicles for heavy loads and for industrial purposes, and it will also include the departments of navigation and aviation.

The general impression gained by a somewhat detailed inspection of the first portion of the exhibition is that novelties in mechanical features are rare this year. The pleasure car remains pretty much as it was during the previous year, and the only changes are in slight matters of detail. All the chief efforts of the manufacturers have been expended on the production of moderate or low-powered vehicles, ranging from 8 to 15 and up to 25 h.p. Each of the principal makers display one or more types of such vehicles, and it may even be said that this is the real novelty of the 1908 show.

Manufacturers who have hitherto confined their attention to the building of high-class motor-cars now enter into competition with the less important firms engaged in the production of voitures, and there is little doubt that these latter will thereby suffer somewhat severely. Very few racing cars are shown and French manufacturers would seem to be in-

terested no longer in vehicles of this character. This feeling prevails, moreover, to such an extent that many makers are said to have expressed their firm intention to abstain from any further participation in trials of speed.

There is at the outset a general consensus of opinion that, for cars of high power, the use of the six-cylinder motor has become general. In spite of the decrease in the number of exhibitors of such cars, the number of six-cylinder motors is greater than it was last year. For cars of average power, motors with four cylinders, two cylinders, and even a single cylinder are all favoured by manufacturers.

For powerful cars the employment of the chain still remains the most prevalent system of drive and is the favourite one, but for moderate powers the use of cardan transmission has greatly extended and has grown in a very remarkable way. Attention may also be called to the almost unanimous adoption of the high-tension magneto for ignition, and only the following firms who cling to the low-tension magneto are noticeable, viz.:—The makers of Bolee, Mercedes, Itala, Berliet, Mors, Brasier, and Cottin-Desgouttes cars. The improvements introduced for the purpose of lubrication should likewise be noted; most of the firms have adopted forced lubrication, involving the use of pumps absolutely automatic in their action.

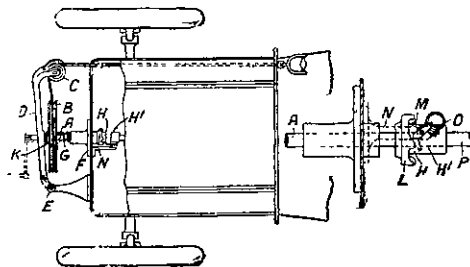
bearings against the starting shaft at the point K, compressing the spring G, and bringing the coupling H into mesh with the coupling H' on the engine crankshaft. The continued pull revolves the pulley B, and transmits through the couplings H and H' the initial movement or revolution to the engine.

The destructive effect of a back fire or premature explosion is guarded against by the addition of a pawl and crown cam on the starting shaft to throw the couplings out of mesh. In the operation of starting the engine, simultaneously with the couplings coming into gear, the crown cam L (Fig. 2) on the starting shaft A is brought into mesh with a round nosed pawl M, attached to the bracket N. When the starting shaft is rotated by pulling the cable the pawl slips over the teeth; should a back fire occur, and the crank shaft P be rotated in the opposite direction, the pawl M is locked against the stop O, and, due to the formation of the nose of the pawl and teeth of the crown cam, the starting shaft A is forced outwards and consequently the couplings H and H' separated.

The device, which is not only inexpensive but does not prevent the use of the ordinary starting handle, has proved so effective in practice that it has been decided by the Tramways and Electric Power and Lighting Committee to fit it to all the motor-cars in the service of the Liverpool Corporation.

The Mallins Engine Starting Device.

We are able to illustrate this week the simple and ingenious method of starting the petrol engines of motor-cars from the driver's seat which has been devised by Mr. C. W. Mallins, A.I.E.E., the general manager of the Liverpool Corporation Tramways. As will be seen from Fig. 1, which shows the arrangement in plan, on the starting handle shaft A is fixed a pulley



THE MALLINS ENGINE-STARTING DEVICE.

B, around the groove of which is laid one complete turn of a flexible wire cable, the end passes over a small pulley C attached to one end of a lever D, and then inside the bonnet and through the dashboard, terminating in a hand grip or stirrup J fixed at a convenient height for the driver to operate with the right hand. The pulley B is controlled by a spring G, one end being fast to the pulley and the other to some stationary part such as the bracket F. This spring always tends to wind the cable on the pulley after each operation, and also holds the couplings in the normal out-of-action position, thus performing the two operations, viz., rewinding the cable on the pulley and holding the couplings H and H' apart.

To start the engine the driver pulls the grip J sharply towards him; this pull, due to the cable passing around the small pulley C, swings over the lever D (which is pivoted at E). The latter abuts through suitable

Packing Joints for Pumps.

The least leaky packing we have yet devised for a pump consists of an asbestos string liberally smeared with ordinary blacklead. It is more efficient and lasts a great deal longer than the special washers sold at high prices by many accessory dealers.

A New Leather Automobile.

Tyre Guaranteed for 10,000 Miles.

Tyre trouble has from the first been the bugbear which has seemingly been inseparable from the lot of the automobile owner or user, and yet fully as much ingenuity has been expended upon the perfection of tyres which should answer all conditions of extremely exacting service as upon the driving mechanism itself.

With the perfection of the new mineral tanning processes for the treatment of leather, an exceedingly tough, pliable and serviceable material was developed, which was quickly levied upon for use in the composition of automobile tires. Some were made entirely of the new chrome leather or used in combination with rubber, canvas, and other materials which are ordinarily utilised in tyre construction.

Of the several leather tyres which have been offered to the motoring public as a charm against dreaded tyre troubles, there is one type which so combines the use of leather, canvas, rubber and steel in its construction, that the best possible service is obtained from each material. This tyre, suggestively called the Ke-pa-go-in, is made by the Beebe-Elliott Company, of Racine, Wis.

There are a number of features about the tyre, both in material and method of construction, which place it in a class by itself. Its makers are so well satisfied as to its re-