SATURDAY, DECEMBER 18TH, 1909.

THE AUTOCAR

A Journal published in the interests of the mechanically propelled road carriage.

EDITED BY H. WALTER STANER.

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Notes.

Pneumatic Springs.

The paper which Mr. Archibald Sharp read before the Institution of Automobile Engineers last week, the Cowey pneumatic suspension and the Amans combination of air and steel springs, indicate that the days of the ordinary leaf or laminated spring may possibly be numbered. These leaf springs have been in continual use for road carriages ever since springs were first applied to them. Not only so, but the leaf spring has become practically universal for all sprung vehicles, as with few exceptions it is used on all the great railways. It is true that spiral springs in various forms are used on a comparatively few road and rail vehicles, but the great majority are carried upon the laminated spring. The best road is rough compared with an average railway, and in many other ways the conditions under which the road and the rail vehicle work are entirely different. The laminated spring is very satisfactory for the horse-drawn vehicle with its comparatively low speeds, but even with the best leaf springs a motor car, and especially the back seats of it, do not provide that complete immunity from road shock which is desirable both for the comfort of the occupants and the longevity of the vehicle.

Another indication of the interest taken in the subject of springing is to be found in the great improvement which has taken place, so far as motor cars are concerned, during the last two or three years. The worst sprung car to-day is as good as the best a few years back. Springs have been lengthened, and the use of more suitable steels and a long series of trial and error experiments have resulted in vastly better springing. The early springs for motor cars were merely horse-carriage springs, and were found wanting for the higher speeds and heavier loads of the motor car. Indeed, until the great British firms of steel spring manufacturers could be induced by the motor car makers to take some interest in the matter, suitable motor car springs could only be obtained from abroad. At the same time the best car spring to-day is only a modification of the old cart spring of our great-grandparents—a very successful modification, but it appears that the limit has been reached, and with all the improvements which have been introduced it is still too slow, too unsympathetic, and in other ways not entirely suitable for motor car work. Perhaps the best evidence of this unsuitability is found in the fact that the two best-sprung cars to-day using laminated springs are those in which the system of springing departs farthest from the old cart spring. The spring check or shock absorber is another attempt to improve springing, and in its best forms with springs suitably proportioned for its influence it is undoubtedly a very real improvement.

Not a New Idea.

The idea of the air spring is a very old one, but it is only lately that it has assumed really practical shape, and there is no doubt that now so much attention is being given to it that, good as are the few existing examples, they will be still further improved and other systems evolved. One of the greatest advantages of pneumatic suspension is in its adjustability to load, so that whether the car be full or empty it may be still properly sprung. This is an advantage which will appeal to everyone who has driven or ridden in a car seated and sprung for five, but with the back seats unoccupied. Indeed, if there be three in a five-seated car, the odd man who takes the back seat will enjoy far less immunity from road vibration than he would do if he had a couple of companions. Air springs also permit the use of solid tyres, though we are of opinion that if full comfort be desired the pneumatic tyre should be retained, as it has the unique property of absorbing the smaller road inequalities without the wheel itself being lifted at all, and consequently without the smallest disturbance to the car or its occupants. Where it partly fails is in the longer

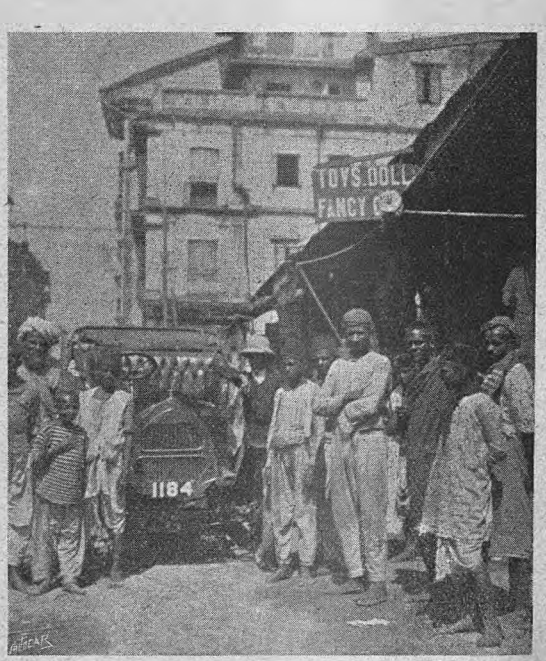
undulations, pot holes, and so forth. Further than this, improved suspension means less tyre wear and less strain on the car as a whole, so that the tyres themselves and weight generally can be reduced; the reduction of weight in the car itself also tending to lessen wear and tear of tyres. The two great reasons why good springs save the tyres are that shock to them is reduced, and they are not relentlessly hammered into the road by the weight of the car as it falls upon them after surmounting an inequality, and when that inequality is of a cutting nature this means a good deal. The second advantage is that with a more nearly perfect springing the tyre is naturally held to the road, so that the driving wheels are seldom or never slipped through being lifted or partly lifted from it. The tyre is thus saved from grinding on the road, and as radial slip often induces side-slip, that too is reduced.

The Crucial Test.

The one great criterion by which the pneumatic spring will stand or fall is that of comfort. If its additional complication be of such a nature that it gives no trouble, and there is no doubt this stage will be reached, even if it have not already been attained, then it will only be a question of whether the extra comfort warrants the additional complication and expense. We have tried the two systems to which we refer at the commencement of these notes, and there is no question whatever that they provide an immunity from road shock which is an advance on anything we have experienced, because with this immunity there is also an absence of any sense of instability, or rolling or pitching. We have also tried the Sharp system on a motor bicycle, though not on a car, and have found that a very great advance on any other form of springing which we have used on a motor cycle. It therefore appears that if these systems or any one of them will stand work and wear without giving trouble, the case for the pneumatic spring is made good.

Future Developments.

With the present limited experience and knowledge of the subject available it is not fair or wise to be too definite, but it appears to us that the right system is one which provides for the automatic maintenance of the air pressure at any desired and easily varied degree, and that in its turn appears to necessitate a central reservoir of some sort from which the pressure in the air cylinders can be automatically maintained. However this may be, we shall watch the further development of the pneumatic suspension system with the very greatest interest, as it certainly shows possibilities which lead us to believe that it is well worth the attention of all those who are seriously interested in still further improving the modern motor car and making it more and more independent of the surfaces over which it may be driven. One particular point to which ingenuity may well be directed is in the provision of the simplest and lightest equivalent of horn plates or guides which will keep the axles free to play vertically, though unable to move horizontally. The radius rod is the motor car equivalent to the horn plate, but it is not an altogether desirable fitting, as radius rods must be provided to both axles with most forms of true pneumatic suspension, and in the case of the back axle a torque bar or its equivalent must also be included in the system. This is rather a serious matter, as the conventional type of car has no radius rods to its front axle, and many designers have altogether abolished the rear axle radius rods, while others have gone further and have dispensed with radius rods and torque members too. Though this may be considered heresy yet in many cases the radius rods and torque member are omitted without disastrous results, as the springs and universal joints have been made equal to the extra work they have been called upon to perform. It may be argued that this results in less freedom for the springs, but it is equally open to argument that even when the springs have to do the work of radius rods they are less hampered than when their freedom of action is more or less checked by radius rods. It is also claimed that cars without radius rods are lighter on tyres, but we must say we do not see why this should be if the radius rods and front propeller-shaft joint be common-centred.



An Adams car in Parsee Bazaar Street, Bombay. The photograph gives some idea of the density of traffic in the streets of the larger cities.

Motorists and the General Election.

In his weekly report to members the secretary of the Royal A.C., referring to this subject, says:

"With the knowledge that the Royal Automobile and Associated Clubs neglect no opportunity to further the general interests of automobilism, motorists naturally enquire at such a time as the present, when a general election is approaching, whether it is possible to take any action in connection with the election in order to strengthen the position of the movement in the new Parliament. The General Committee has already considered the subject, and at a recent meeting both the possibility of formulating a series of questions for submission to candidates in order to ascertain their views with regard to motor car legislation and the advisability of organising supplies of motor cars were fully discussed. The committee agreed, however, that, as a concrete organisation, the associated clubs can take no action, as it is felt that the issues involved in the election are of such dominating interest that the movement cannot possibly be benefited to any appreciable extent. It is, of course, open to associated clubs to take any action individually if they deem it desirable owing to any special circumstances in their districts."

Useful Hints and Tips.

Some Random Notes on Piston Rings and their Fitting.

SCARFING or half-lapping the joints of piston rings has never been found by steam engineers to pay for the trouble involved, as the leakage through a narrow slot is very slight, and checked only in a small degree by scarfing alone. Fig. 1 illustrates an excellent design which is better able to hold compression after lengthy service.

Any advantage arising from boring rings eccentrically is discounted by a deeper annular channel in the piston and unequal wear of the edges, due to diminishing surface, and there are makers of repute who ignore this point. When a ring fits the bore the radial pressure needs to be very slight, as it is heavily increased by the gas which passes inside. Even when a ring is a little slack edgewise in the groove, there must be—except when the piston is changing stroke—one edge or the other in contact which checks escape.

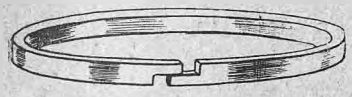


Fig. 1.

The cylinder bores of marine engines are often worn larger at the ends by the inrushing steam at maximum pressure penetrating inside the ring and expanding it with undue force. Means are often taken to prevent this by restraining the ring from opening too far—a practice generally favoured by the Admiralty. In large steam engines leakage is minimised by opening twin rings axially as well as radially, and the idea carries several patents.

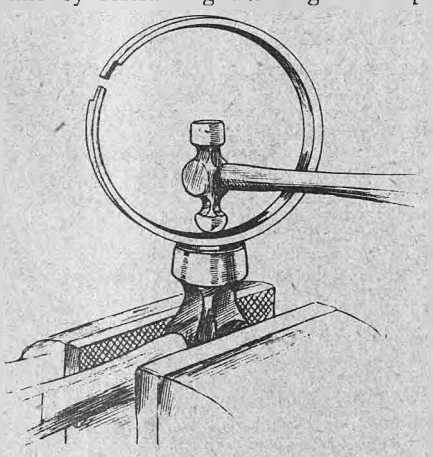


Fig. 2.

The subject has received much careful thought from steam engineers, and it has long been recognised by them that no type of floating ring without frequent axial and radial adjustments can remain tight under working conditions. Also, that excessive radial pressure can be a greater evil than leakage, and experience has also proved that a highly glazed cylinder bore is doubtful evidence of minimum friction. In the merchant service, when a packing ring is adjusted to sustain its own weight in the cylinder, it is considered to be sufficiently expanded.

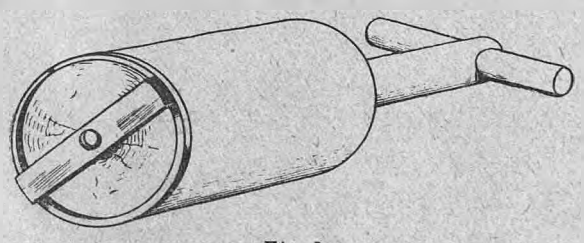


Fig. 3.

Now, if steamtight pistons be of paramount importance in marine engines, they should be still more so in petrol motors. Steam which has escaped past the high pressure and intermediate pistons can still do useful work in the low pressure cylinder, but the gas which has passed the piston of a motor is as the water in the tail race of a mill. Moreover, the loss by leakage past a small piston is greater relatively than that past a large one, in inverse proportion to the squares of their diameters.

Should a motor cylinder be worn unequally it is clear that no ring can fit well, but serviceable rings are often scrapped because they show a black mark on the outer surface. To these, with a little care and patience, a new lease of life may be given.

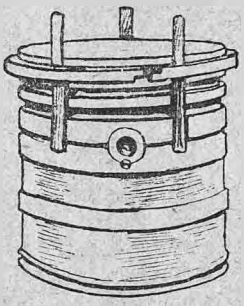


Fig. 4.

Set a hammer face upwards in the vice, stand the ring on it, and, starting from the middle, tap inside with the pene (knob) of a light hammer, gradually reducing the force of the blow as the slot is approached. It is better for the ring to be in the cylinder while doing this, but more difficult to use the hammer. If skilfully done, a ring may be stretched to reduce the slot, and expanded to restore the spring. Then a trial in the cylinder and a few artistic touches with a file complete a ready and cheap improvement. The value of the popular emery-grinding process is questionable, as it wears the edges of the rings and the sides of the grooves, especially when done with a twisting motion, as the ring seldom turns with the piston.

When fitting a new ring into an engine, the ends—or landings, to be technical—should be left so that the edges overlap slightly when the ring is in the cylinder.

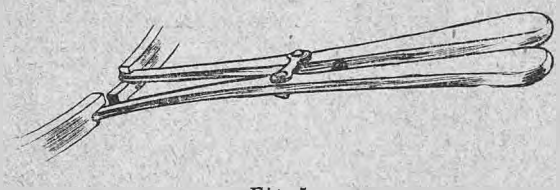


Fig. 5.

Note.—Figs. 2 and 5 are drawn out of proportion for the sake of clearness.

Then make a plug of yellow pine an easy fit in the cylinder and square one end. Lay the ring on this end with a small batten across secured by a screw through the centre, but not holding the ring tightly. Smear the bore as evenly as possible with a little vermilion and lubricating oil mixed to a paste, and move the ring to and fro in the cylinder while held square by the plug. Generally, it will be found to bear hardest at each side of the slot. File such places carefully with a 6in. smooth file, try in again and continue. When the ring fits fairly well all round, the overlap of the ends should be absorbed; if not, file them until the edges have about 1 mm. clearance when the ring is in the cylinder.

If the ends of the rings be hard butted against one another when in place in the cylinder they may be buckled by expansion when hot, and make starting a two-man job.

Before springing a ring over the piston it should be tried all round in its groove to make sure that it is not too tight edgewise, else when in place an attempt to remove it may be fatal. Three or four old contact blades inserted, as in fig. 4, between the ring and piston are useful as guides for the former when being fitted into position.

To hold a ring while the edge is filed, lay it on a flat piece of wood, drive four small brads around, and file it on one edge only.

The rings should be fitted with the slots inclined to the left and right alternately, so that the escaping gas shall drive the rings round in opposite directions, thus preventing the possibility of the slots remaining in line—at least such is the theory.

A useful tool for putting on and taking off piston rings is that shown in fig. 5. These ring expanders can easily be made with two pieces of steel linked together as shown by a couple of old chain links. Risk of breakage is thereby minimised.

Imports and Exports of Motor Cars.

The Board of Trade returns for November show an increase in the imports of motor cars, chassis, and parts during the past month as compared with the corresponding month of the two previous years. This may be accounted for by the large number of cars brought to England for purposes of exhibition at Olympia. This number would be larger than in previous years on account of their being no show at Paris. It will be seen from the last line in the appended table, however, that the steady decrease in the excess of imports over exports is not materially affected thereby.

	Month ended November 30th.			Eleven Months ended November 30th.		
	1907.	1908.	1909.	1907.	1908.	1909.
Imports, gross	£367,326	£276,093	£433,644	£4,327,824	£3,895,781	£4,001,146
Re-exported	£31,163	£31,779	£42,687	£340,403	£314,479	£354,623
Net imports	£336,163	£244,314	£390,957	£3,987,421	£3,581,302	£3,646,523
Exports	£124,315	£124,983	£160,367	£1,216,485	£1,152,540	£1,391,372
Excess of imports over exports	£211,848	£119,331	£230,590	£2,770,936	£2,428,762	£2,254,151

Checking the Flow of Charity.

In reply to a request for a subscription to the funds of a police orphanage at Redhill, in Surrey, Col. H. Le Roy Lewis, a member of the Automobile Association, writes a letter to the Chief Constable of Hampshire in which he says:

I need hardly tell you that the objects of this excellent institution appeal to me particularly, and that under ordinary circumstances I should have been only too pleased to subscribe liberally to its funds, but the good feeling which used to exist between the users of the highway like myself and the police in some counties has been severely strained of late years, and as we are powerless against the arbitrary action of some chief constables, the only means of protest left to us is to refuse to subscribe to your institutions, and to shut our purses against those localities where motorists are subjected to what we consider unjust treatment.

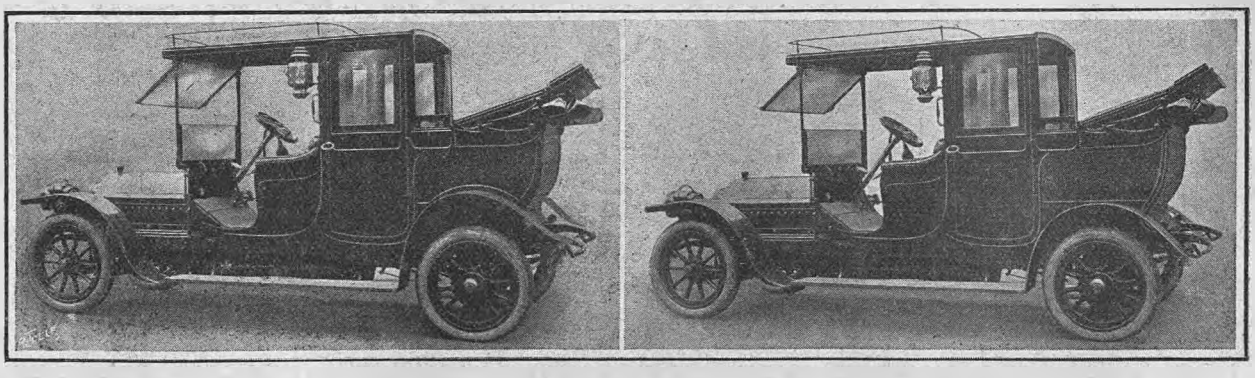
I hold a very strong view, and one which is shared by the Royal Commissioners on Motor Traffic, that the proper way to regulate mechanically-actuated traffic is to rely on the ordinary powers that are possessed by the police with respect to all other forms of traffic on the highways, and not to lay traps, as is, unfortunately, now the prevailing practice both in Hampshire and Surrey.

Most civilised countries and a large number of counties in England do not favour the police timing trap, and yet have no special difficulty in regulating their motor traffic.

We motorists do not necessarily belong to the criminal classes, and object to being made the subject of carefully worked up cases for the fraction of a purely technical offence, so you will not be surprised if we translate our objections into actions, when the opportunity presents itself. There is one side of this question, which has not yet received enough public attention in my judgment, and that is the demoralisation which your police force suffers from being put upon "Trap" duty; their object, when so employed, is to procure a conviction, and I am sorry to say that I have had cases under my observation when I have noticed that the zeal of the police has outstripped their regard for veracity.

If the setting of "Traps" tends towards this end, I for one sincerely regret a form of activity which does not heighten the public regard for an otherwise excellent body of men.

It is therefore with a genuine feeling of regret that I feel it my duty to refuse to subscribe to the funds of your Police Orphanage. I should be sorry to think that any of my money was being spent in Surrey—a county which, through the semi-delirious activities of its Chief Constable, has been marked out as the leader in the police timing trap system.

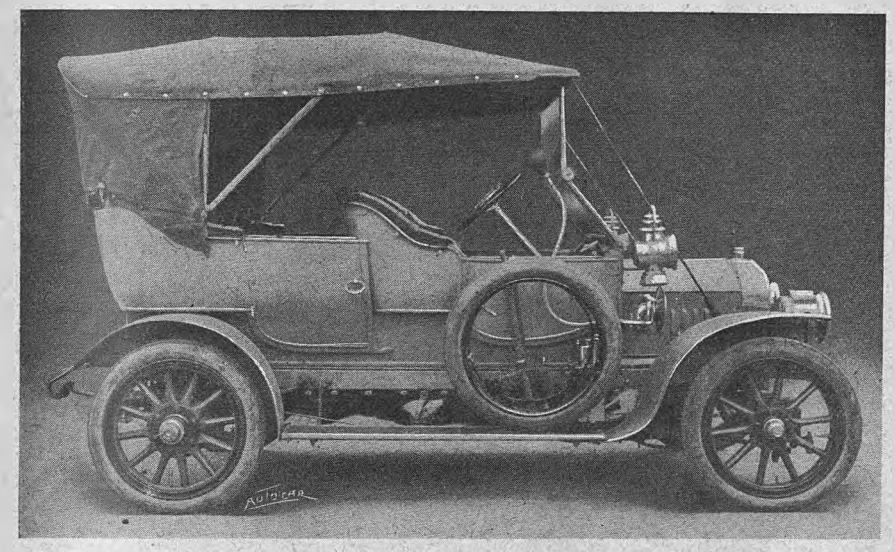


BODY DESIGN AND CONSTRUCTION. A 16-20 h.p. Peugeot chassis fitted with Million Guiet body to the order of Mr. James Murray, M.P. The body has a "Victoria" front seat and curved corner pillars at the back. We think the lines of this body would have been improved by the fitting of the rear wings nearer to the wheel and the suppression of the needless curved "paddle box" moulding above the wing. We have altered the print of the right-hand illustration to indicate our idea.

The 12 h.p. Four-cylinder Vulcan Car.

Centralised Worm Drive. Mechanical Lubrication. Thermo-syphon Cooling.

IT will be admitted by all who examined the chassis at Olympia that there is no better value for money among British-built cars than the 12 h.p. four-cylinder Vulcan and its five more powerful sisters, which are the output of the Vulcan Motor and Engineering Co., of Stockport, Lancs. Taking the 12 h.p. into special consideration, it will not be found lacking in any part which suggests itself either to the trained automobile engineer or to the practical driver, particularly to him who enacts the part of his own chauffeur. Accessibility and simplicity, together with the most accurate workmanship, clearly dominate the design of this most acceptable car. Thermo-syphon cooling, true three-point suspension of the power unit, actual automatic lubrication, short gearshafts, well-protected propeller-shaft joints, and overhead worm drive are its salient and highly recommendatory features.



12 h.p. Vulcan car with standard touring body.

The frame is, as usual, of pressed channel section steel, kept quite flush as to the upper flanges of the side members but inswept at the dashboard to afford ample lock.

The power unit (figs. 2 and 3) is formed of the engine and crank chamber, with underlying sump, bolted strongly to the flywheel and gear box *ensemble*, the whole being truly three-point suspended—that is, that, while the forward portion of the crank chamber is supported by short, stiff brackets from the side members, the rear end of the gear box is centrally slung by a stirrup from a horizontal pivot set on the centre of the cross member. So it is obvious that no frame torsion can affect the lineability of the shafts within the unit. The pivot also forms the spindle of the foot brake segments.

The cylinders (80 mm. by 108 mm.), fig. 2, which have opposed valve chambers—exhausts on left and inlets on right—are cast and set in pairs upon the crank chamber. The carburetter, which is of extremely simple design, is on the right, and is almost momentarily dismountable, the jet being promptly exposed by simply loosening the four studs that secure the inlet branch to the cylinders. The exhaust trunk is of large dimensions, and has easy leads from the exhaust chambers. Thermo-syphon cooling is most thoughtfully applied. The uptake pipes are formed into covers embracing almost the whole area above the combustion chambers, while water returns run from each side of the bottom of the radiator to each side of the cylinders. This is unusual practice, and should make for the easiest possible connection.

The radiator is of ample dimensions, and has a fan belt driven off the end of the camshaft L. The engine is fired by Bosch high-tension magneto, which is placed upon a table formed at the side of the

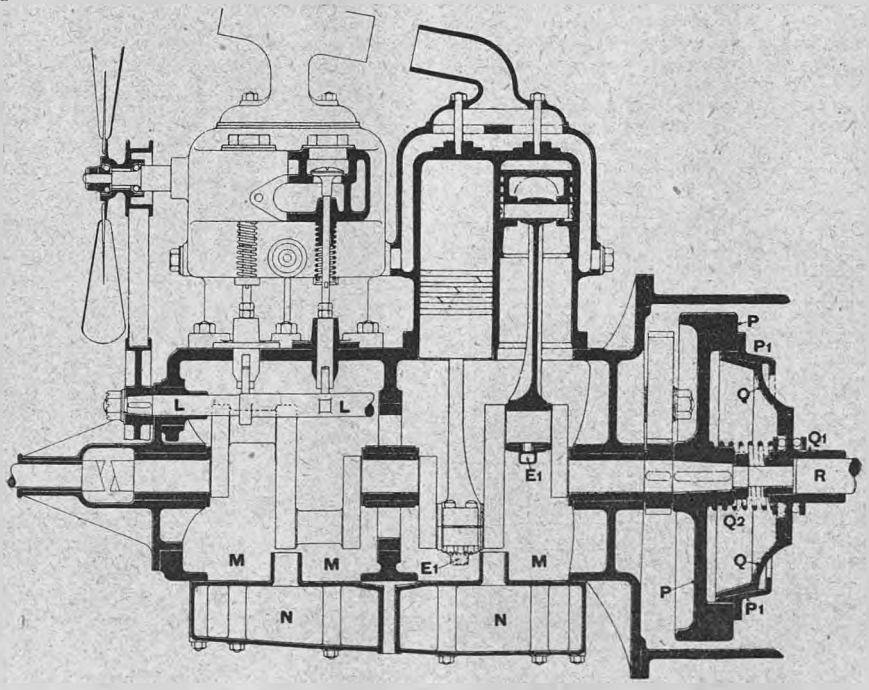


Fig. 2.—Vertical section of engine and crank chamber.

E1 E1, oil scoops on big end bearings
L L, exhaust camshaft
M, oil dips for connecting rod ends
N N, oil sump
P, flywheel
P1, internally coned clutch ring bolted to flywheel
Q, internally coned clutch
Q1, clutch sleeve
Q2, clutch spring
R, clutch shaft

crank chamber, and driven off the distribution gear, which is at the rear of the engine, enclosed within the flywheel casing. The distributer and contact end of the magneto faces forward, and is eminently accessible, as shown in the side view of the chassis. The lubrication is absolutely automatic. The sump N N seen at the bottom of the crank chamber holds one gallon of oil, from which the pump forces oil to the crankshaft bearings. On the upper side of the sump wide channels M M are formed, into which scoops E_1 on the big ends dip, and not only lubricate the crank pins, but also the cylinder walls and gudgeon pins. The engine cannot smoke for the reason that the oil cannot stand above the proper level in the channels or trays M M. The crankshaft runs in three bearings, the central bearing being of unusual dimensions. The valve tappet guides and the valve stem guides are of good length, the tappets having hardened steel rollers where they impinge upon the cams. The pistons are of good length, and have three piston rings above the gudgeon pin, with a fourth retaining the latter. The ample size of the water jackets is obvious from the engine section. The drive passes from the engine to the three-speed gear box through an internally coned metal to metal clutch Q, the female cone being formed by a ring P_1 bolted to the flywheel. This clutch runs in a perfectly dust-proof casing formed with the gear box, and has a large sized inspection lid on its raked face. The clutchshaft R (fig. 2) and the intermediate gearshaft C (fig. 3) are identical, the clutch sliding on the forward end of the latter, which is bushed for the purpose. The clutch cone is provided with two ball thrusts. It is seldom indeed that one comes across a more compact gear box. The shafts have been kept remarkably short, and run in large diameter ball bearings, the primary-shaft D (fig. 3) being very strongly feathered. The selecting and locking rods L_1 K_1 and the striking levers K and L are well and strongly made. A simple form of gate change is provided with an added feature, namely, shallow vertical slots in the sector, into which the lever is pressed by the spring shown N on the gear striking-shaft. The rear end of the primary-shaft carries the forward half of the universal joint P, with which is incorporated the pedal brake drum, having

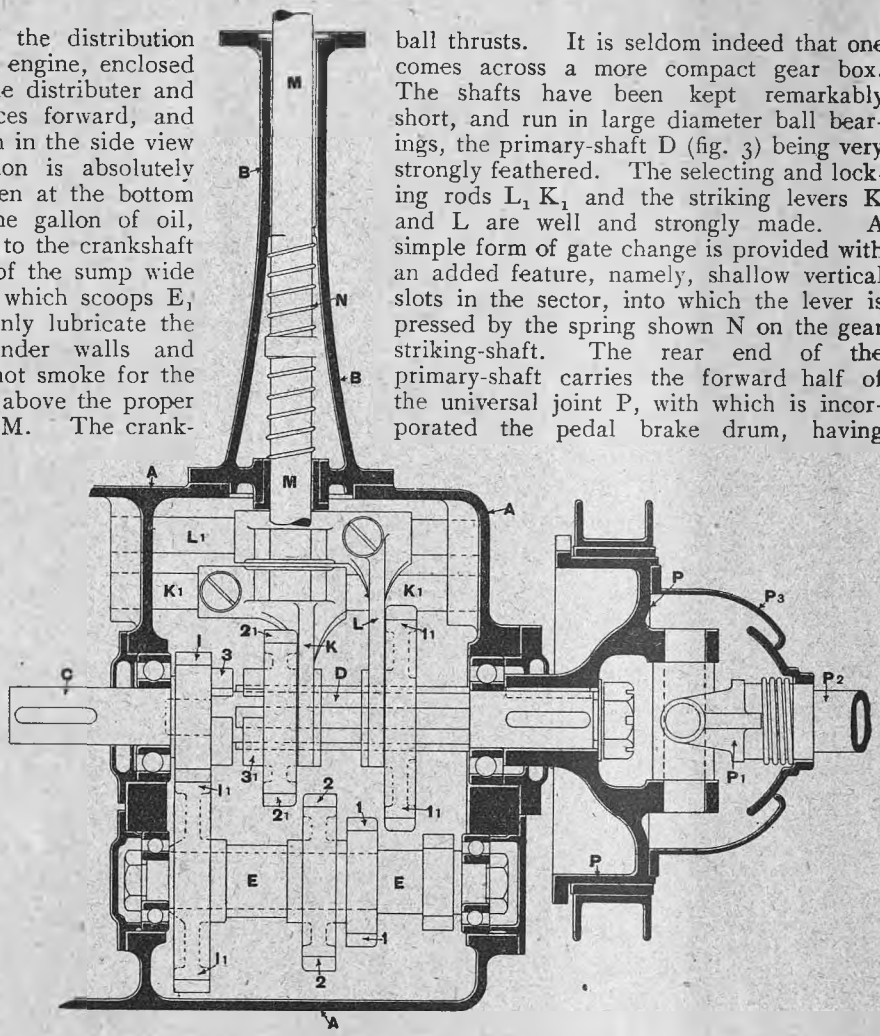


Fig. 3.—Plan of gear box and forward universal joint.

A A, gear box
B B, gear striking shaft casing
C, intermediate shaft
D, primary gearshaft
E, secondary gearshaft
I, driving intermediate gear wheel
I1, driven intermediate gear wheel
1 and 1', driving and driven wheels of first speed
2 and 2', driving and driven wheels of second speed
3 and 3', driving and driven clutches of third speed direct drive
K, striking fork of second and third speed
K1, striking bar of second and third speed
L, striking fork of first and reverse speed
L1, striking bar of first and reverse speed
M, gear striking shaft
N, returning spring
P, front portion universal joint and brake drum
P1, rear portion universal joint
P2, propeller-shaft
P3, oil-retaining cover to front universal joint

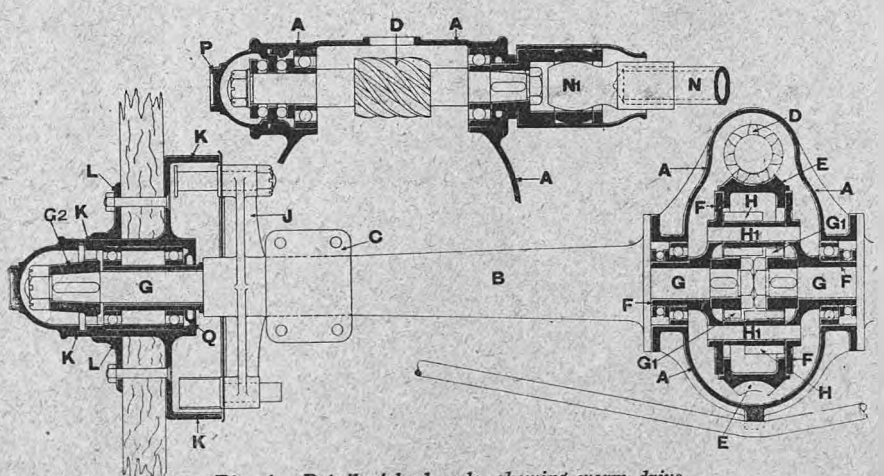


Fig. 4.—Detail of back axle, showing worm drive.

AA, casing of worm drive
B, live axle casing
C, spring table
D, driving worm
E, driven worm wheel
F, differential gear box
G, driving shafts or live axles
G1, sun wheels of differential gear on inner ends of shafts G
G2, driving dogs on end of live axles
H, planet wheels of differential gear
H1, spindles of planet wheels
J, brake carrier
K, brake drum and hub
M, hub flange
N, propeller-shaft
N1, flexible joint
P, worm case cap
Q, oil retaining ring

ratchet teeth for the engagement of the pawl sprag on its forward face. The brake shoes applying on this drum are of deep channel section, the flanges of which should always preserve the shoes from overheating. The special design of the universal joint casing P^3 to prevent oil leakage can be seen from the section.

The further end of the propeller-shaft N (fig. 4) is provided with a well-designed flexible plunging joint N_1, with which it connects to the driving worm D, meshing overhead with the worm wheel E forming the surround of the differential gear box F. Not an insignificant feature of this drive is the central position of the worm wheel as to the differential gear. The worm itself is very

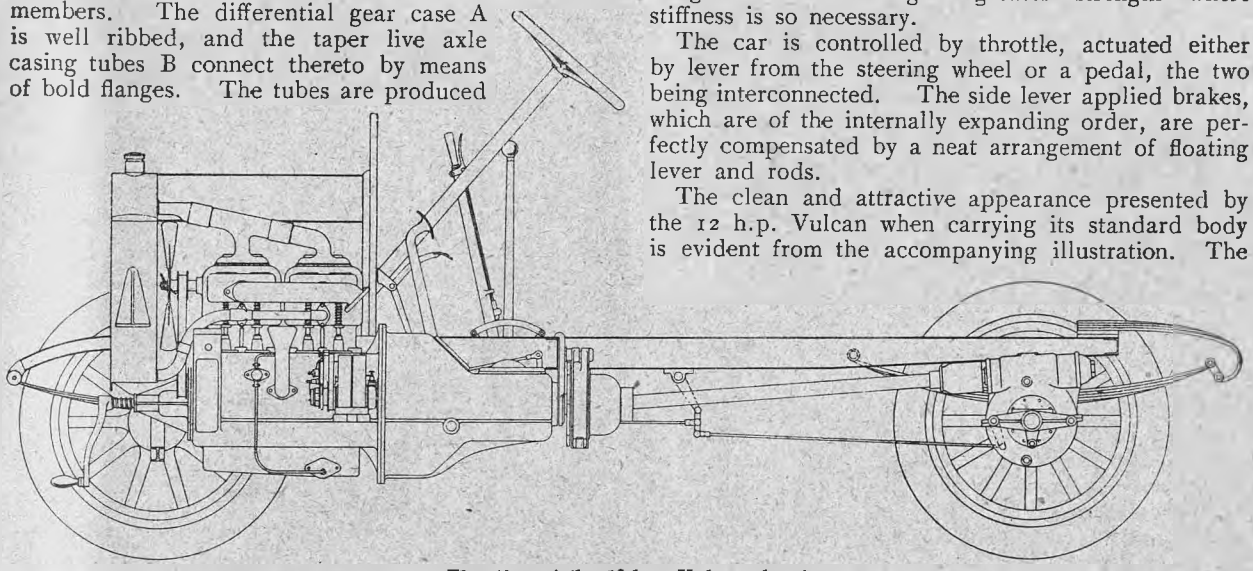
stiffly carried in two ball bearings, with a single thrust forward and a double ball thrust behind. The differential gear G_1, H, and H_1 (fig. 4) is of the parallel sun and planet type, forming with the worm drive the best possible combination of such members. The differential gear case A is well ribbed, and the taper live axle casing tubes B connect thereto by means of bold flanges. The tubes are produced through the wheel hubs, and carry two ball bearings, upon which each of the road wheels rotate.

The inner ends of the live axles G are carried in the sockets of the differential gear box F, which rotate on ball bearings, with a thrust outside each, the outer ends of the live axles being tapered and keyed to take the driving dogs G_2 locking into the road wheel hubs. The axle is stiffened by a tension rod as shown in fig. 3.

The front axle is of I-section, but between the spring tables and the stub heads the upper and lower flanges are flared to give greater strength where stiffness is so necessary.

The car is controlled by throttle, actuated either by lever from the steering wheel or a pedal, the two being interconnected. The side lever applied brakes, which are of the internally expanding order, are perfectly compensated by a neat arrangement of floating lever and rods.

The clean and attractive appearance presented by the 12 h.p. Vulcan when carrying its standard body is evident from the accompanying illustration. The wheels are 760 mm. by 90 mm., the wheelbase 8ft., and the track 4ft. All intending purchasers of a car of this type and price should pay a visit to Messrs. Mann and Overtons, Commercial Street, Buckingham Palace Road, Victoria, S.W., who are the London agents for the Vulcan Motor Co., and who always have a chassis in stock for inspection.



Elevation of the 12 h.p. Vulcan chassis.

Benzol v. Petrol.

Tests which indicate Twenty-five per Cent. Greater Economy of the British Spirit.

THE officials of the Earl of Ellesmere's Bridgewater Collieries, whose headquarters are at Walkden, near Manchester, have for some considerable time been experimenting with and testing a brand of benzol which they have produced. The tests have extended over some months, and benzol has been used in all of the nine cars of various makes and types owned and driven by the officials of the collieries, and the results are undoubtedly surprising.

For instance, on one car, which has never exceeded 9½ miles to the gallon of petrol, 13½ miles was accomplished on one gallon of benzol. On another car the economy of fuel when benzol was used compared with petrol as 20 to 15.

Two of the vehicles which were used for testing purposes were commercial motor lorries, and a saving of about 25% was obtained by the use of benzol in these.

In addition to the 25% to 30% greater mileage, the retail cost of this brand of benzol is about 25% less than petrol.

The difficulty hitherto associated with the use of this spirit has been largely a matter of excessive deposit in the cylinders, but by a special process evolved after much research and experiment, the Bridgewater officials have been able to distil a brand of benzol of exceptional quality and free from liability to cause serious deposit.

We are informed that no special apparatus is needed on the engine or carburetter when this brand of benzol is used. The only trifling alteration required in most cases is that in order to obtain the best results the carburetter float should be weighted with a small lead washer. It is also important that more air should be given at the same time.

The Bridgewater officials say that the effluent gases from the exhaust have far less smell than when petrol is used, provided the mixture be practically correct.

A correspondent of *The Autocar* in Manchester has experimented with this brand of benzol on his own car with marked success. The deposit in the cylinders so often mentioned by adverse critics he attributes to the impurity of the benzol previously produced, for he has little or no complaint to make on that score after using this brand of spirit.

The Bridgewater spirit is being manufactured in large quantities and on a commercial basis, not by mere theorists, but by a firm who have made practical tests extending over a long period, and who are satisfied that benzol, distilled in a certain manner, possesses many advantages over petrol.

The London County Council last week considered an application from the British Petroleum Co. for a licence to store 270,000 gallons of petroleum spirit underground in Stevenage Road, Fulham. An attempt was made to raise a danger scare, but permission was granted after assurances that the danger would be lessened as compared with the present system of carting.

Small Car Talk. By Runabout.

A Hint for the New Car.

DOZENS of journals nowadays devote enormous energy and ingenuity to burdening the budding motorist with good advice, but I do not think I ever saw a certain counsel which would have saved me some expense and annoyance. I mean the counsel of ordering a Cape hood with the car, and not separately as a subsequent addition. I purposely ordered a car without a hood, intending to see what the shows would bring forth in the way of a head covering easily operated by one man. Now I am kicking myself because the stanchions cannot be fitted without removing quite a quantity of upholstery; and very possibly careless workmen will scratch and damage the panels as well. Warned by which experience, other purchasers will doubtless make a point of having the back stanchions, as well as the hoop brackets, fitted when the body is built, as all should be incorporated in the body.

Combined Tail Lamps.

I should strongly advise small car owners who do not care to buy three or four big accumulators to prefer the combined oil-cum-electric type of tail lamp to the single electric. If one carry only a single twenty ampère accumulator for lighting purposes, the day will come when the deceitful voltage will leak into the illimitable ether, and to fake a temporary illumination with a small electric tail lamp and no battery is a hard nut to crack. The side lamps do not matter, but the tail lamp is vital. I have just scrapped my neat electric rear lamp, and substituted a combined pattern, which I run off the battery as a rule. But in the event of the battery running low, out comes the oil-well from its case in the boot, and I am ready to run once more with but very little delay. I would strongly advise every motorist to use these combined lamps when small batteries only can be carried.

Thermo-syphon Cooling.

One or two correspondents have recently made rather savage onslaughts upon the thermo-cooling systems from a theoretical standpoint. If a man prefer a pump system, by all means let him have it; and if he can pay a good round sum for a car into which the best materials, the best brains, and the best labour have been crammed, his pump will be quite as reliable as any thermo system, and weigh a few pounds less. But these correspondents have no right to urge that the pump system is infinitely preferable, or that the thermo system is commonly unsatisfactory. I have owned several pump-circulation cars, all of the light order, and the water pump has always given me more trouble than any other part of the mechanism. I have only owned one thermo car—that which I drive at present—and, though it is a very cheap car, I have to take off the fan to get the engine decently warm for winter work, while I can climb Sunrising in a following wind with five up and no steaming. I very seldom have to replenish the water tank in any weather. Of all the thermo-cooled cars at Olympia, only one or two revealed dubious designs. The water spaces were almost universally large, the pipes short, straight, and of generous bore. I am thoroughly convinced that, so far as cheap cars for home use are concerned, the thermo system offers the supreme advantage of perfect reliability, with no sacrifice whatever in efficiency, and with only a very negligible sacrifice in weight. Consequently, I should be sorry if any prejudiced correspondents manage to inflame novice purchasers against the thermo system.

Winter and Windshields.

I have been doing a good deal of driving in the recent cold weather, and it has led me to meditate whether something better than the ordinary screen could not be devised. At the wheel I find I should be perfectly comfortable in the absence of hail, rain, sleet, and snow if only my *hands* were protected from the cruel winds. My passengers one and all have a distinct aversion to wind screens. Sitting close together and swathed in rugs, they assert they are warmer without a screen, as there are no draughts. My first idea is that a higher scuttle, rising above the top rim of the steering wheel so as to shield the driver's hands, would be perfect in the coldest of dry weather; but it is a very open question whether such an abnormally high dash could look anything but hideous. Has anyone tried it? If this look unspeakably hideous, I am rather inclined to sink a couple of hollow rods in the side supports of the dash, and for very cold, dry weather drop into them a couple of brass rods, over which I could thread an extra piece of dashboard, just high enough to shield my hands, provided with eyes at each end to thread over the rods. This would be ugly, but it would be detachable, and storable. The new screen I illustrated recently is now in the making. It is detachable, being intended only for use in hail or snow or rain. I have incorporated one small alteration, using brass folding struts in lieu of the slotted arc side pieces, which would project like a pair of sickles when the screen was vertical, and looked unspeakably ugly.

The Cattle Danger.

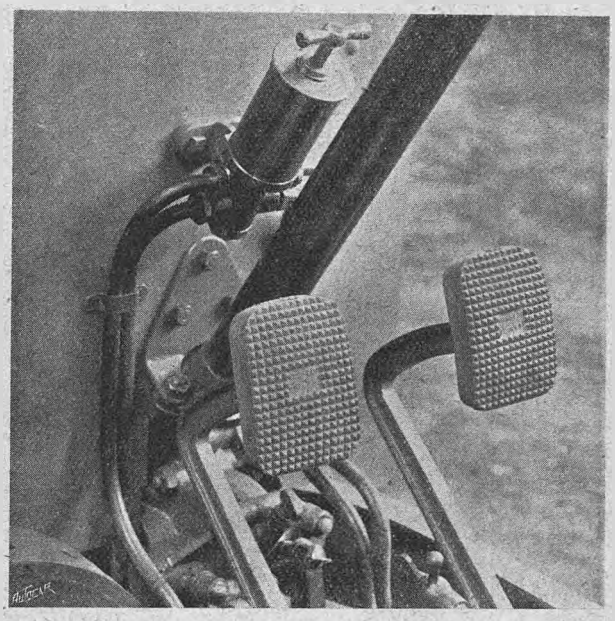
My sixth hairbreadth escape from piling up a car in a herd of bullocks at night occurred the other week. Four of us had been to Leicester for a football match, and we were returning home over wet roads in the dark. Our Rushmore head lamps showed the sides of the road up, and gave us early notice of any ordinary traffic present owing to colour differentiation. But the road surface looked black owing to moisture, and ere long, as I accelerated a trifle to clear a nasty little knuckle on top gear, I became convinced that the black patch of road immediately ahead was in motion. I had not the very faintest notion of the facts, and half suspected myself of nerves; but the road surface looked as if it were heaving, and—crash went my feet on the pedals while I hung on to the wheel for dear life, as the filthy surface gave promise of a record skid! By some miracle the car held stiffly to its tracks, and pulled up in a yard or two with its bonnet inches from a mass of black bullocks, which completely filled the narrow cutting. We coaxed our way slowly through a part of the herd on first gear, and, driving half a dozen in front of us, slowly crested the short hill. A hundred yards beyond its summit stood a roadside inn, out of which rushed a semi-intoxicated drover, brandishing a large mug of beer. We did not trouble to stop, but two or three of his beasts dribbled down the road for half a mile or so, and as the remainder of his charges were nearly a mile off in the opposite direction, he will probably think twice before he again abandons his herd to wander unattended about the roads after dark. But really I felt rather a brute when I thought of the trouble he would have collecting them, for the true blame lies at the doors of his employer, who entrusts sixty bullocks to one man, and partly at the doors of the Legislature, which obdurately refuses to compel the drivers of such herds to signal their approach by exhibiting a light.

The Tax Upon Motor Spirit.

AN unprecedentedly strange situation has been created in regard to the threepence per gallon tax upon petrol by the recent dissolution of Parliament. It will be remembered that immediately Mr. Lloyd George included in his Budget proposals the taxing of petrol in order that a central authority should have finances at its disposal for the proper upkeep of the roads, the importers were called upon forthwith to pay the tax, while the majority of those retailers who had stocks of motor spirit in hand forthwith advanced the price by adding the duty. As a matter of fact, no spirit paid the 3d. tax until several weeks after the Budget proposals had been before the House.

Nevertheless, a sum of slightly over £300,000 was paid by the tax upon petrol up to the time when Parliament was dissolved. The importers, like motorists all over the country, wondered in what position they stood, seeing that the motor spirit tax, as forming part of the Budget proposals, had neither received full Royal nor Parliamentary assent. Last week, however, the Commissioners of Customs and Excise issued a circular to the whole of the motor spirit importers informing them that the payment of the new duties had ceased to be enforced. The Commissioners themselves recognised the strange situation which they had created, though not of their own choice, and thus added a memorandum with a view to obviating any inconvenience either to the spirit importers or to the individual motorist. They stated that, although the payment of the new duties had ceased, the person whose name and address were shown upon the customs' entry as the importer of such motor spirit, or the persons who took delivery of such goods without making a deposit with the Commissioners of a sum equal to the duty which under the Budget proposals was imposed, were notified that if Parliament hereafter determined that those duties (3d. per gallon) were to be paid as from a date antecedent to the delivery, then those persons would become liable to pay the duties. The several large importers of motor spirit into this kingdom, recognising that, whatever party take office in the new year, the tax upon petrol will in all probability be sanctioned, are now paying the duties upon all spirit imported, just as though the late Budget proposals had gone through and received royal sanction.

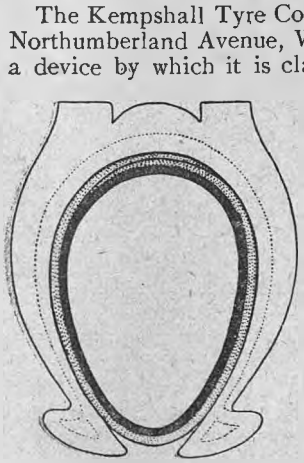
While speaking upon the petrol tax, it may be mentioned that, contrary to general opinion, there has been no diminution in the consumption of motor spirit in this country since the imposition of the 3d. per gallon tax, excessive as it undoubtedly is. In spite of the bad weather which has been experienced throughout the British Isles for the past few months, the import of motor spirit has increased since the impost of the 3d. per gallon duty, and up to the commencement of the present month, the imports for the present year amounted to over 50,000,000 gallons, exactly one-half of which came from the fields in the Dutch Indies, this being the well-known Shell spirit. In addition to this, however, some 4,000,000 gallons of motor spirit have been imported from Holland, this spirit also being from the Far East.



The United Motor Industries are the British agents for a new rubber pedal cover. These covers are made of Para rubber, and are stocked in numerous shapes and sizes to suit various cars. They are easily fitted, and are designed to obviate the disadvantages of a smoothly-worn pedal, and are most comfortable.

The Kempshall Fearnought Liner.

The Kempshall Tyre Co., of 1, Trafalgar Buildings, Northumberland Avenue, W.C., have lately introduced a device by which it is claimed the life of pneumatic tyre covers may be prolonged to destruction. The liner, for that is the best term by which it can be described, is the outcome of prolonged experiments, and is regarded by the proprietary company as a great factor in the reinforcement of pneumatic tyres. Its construction and application are very clearly exemplified by the accompanying diagram. It is a wrapped tube formed of rubber and fabric, with all rubber edges moulded to a feather edge, so as not to injure the inner tube, these edges being overlapped to such an extent that they will yield to any pressure at which it is advisable the tyre should be used without any undue weakening at any point. These liners are made in all sizes from 760 mm. by 90 mm. to 935 mm. by 135 mm.



The Nevajah shock absorber designed by Mr. A. W. Chapman, of Inverness, and recently illustrated and described in *The Autocar*, is now being manufactured for the inventor by Messrs. Thomson-Bennett, Ltd., Heneage Street, Birmingham.

The past year's trading of Messrs. A. Darracq and Co., though somewhat disappointing as compared with the results of the past three or four years, has nevertheless enabled the directors to pay a dividend of seven and a half per cent. on the ordinary shares and to carry forward £24,930.

On the Road.

Motor Journalism and the Classics.

I AM afraid that the writers in this and other automobile papers take rather a narrow and confined view of things, even though they realise, far more than the ordinary journalists do, the importance of

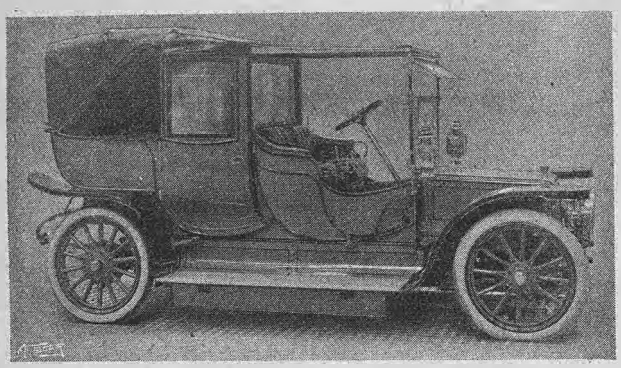


Fig. 1.—A very comfortable and thoughtfully-designed body of the cabriolet type by Messrs. W. Cole & Sons, of High Street, Kensington.

the motor and the fact that it has come to stay. This latter phrase has become, in truth, a horrible *cliché*, but, for all that, the world does not seem to be adapting itself to the new circumstances. Perhaps I had better begin to explain myself a little. I read in to-day's paper that a certain public school has chosen a new headmaster. His qualifications *(inter alia)* appear to be that he is a distinguished classical scholar, his father wrote a Latin grammar, and his father-in-law's translation of Plautus is much used in schools. Now let no man think that I despise clever men who have written translations of the classics. That would be a mistake, for I must confess that when young there were few scholars whose works I studied so much as a certain Mr. Bohn's; indeed, copies of his volumes were my daily companions, and I have even been punished with the birch for my fondness for them. But, after all, classics are only classics, and, unless one is going to be a schoolmaster, likely to be useless in the busy world. Not but what dim reminiscences of alternative expressions do not occasionally avert tautology, even to the poor motor journalist, though a fair knowledge of French would be of far more value. But as we cannot all be motor journalists our classical education is even more useless than ever, and so I should like to address a few words to those of my readers who are parents or some day hope to become so. As a father of sons myself, I am greatly troubled by the thought that when they go to school they will be taught much the same things I have forgotten. Occasionally I have read that a new spirit has entered school life, and that boys are now taught things more actually effective. But the appointment of that excellent classical headmaster I have already referred to shows me that report is incorrect, and that the vicious circle which educates boys with no idea beyond teaching them to be teachers themselves still exists. Latin and Greek are not quoted now—even in the House of Lords. In the Commons the sayings of Alf. Gagpincher or a parody of the Burial Service has raised of late a far more enthusiastic cheer, and one candidate who indites a weekly article called "Sub Rosa," is invariably addressed by his supporters as "good old snub nose." Again I ask, "What is the use of classics to-day?" Mathematics certainly are still of value, but they never had the vogue the classics had, and are looked on as things of lower degree; Euclid, they tell me, is dead, but Algebra certainly survives, if only for the purpose of rating horse-power. I often wish I had taken more interest in algebra. It is true I passed examinations in it at Cambridge, but as there was never one of my tutors who in those days explained to me that it could be of any practical use, I merely learnt it as a parrot might, and forgot it as soon as ever I had done with my general. Therefore when one comes to add up at the end of one's (apparent) educational period the amount of useful things one has learnt, it is a very small lot when compared with the appalling list of absolute uselessnesses acquired. No one ever showed me how to use a spanner; and I was given the option of Paley's "Evidences of Christianity," or dynamics and statics. Of course, I chose the former, because I had a copy of its essence boiled down into two pages of rhyming jingle. Therefore when I was thrown upon the world and motor cars were invented I was ignorant of the use of any tools but the hammer, the gimlet, and the corkscrew. This is by no means a singular confession; thousands of young men are similarly situated, and, judging by the afore-mentioned appointment, the end is not yet. It behoves us, therefore, as fathers of the new generation to do something,

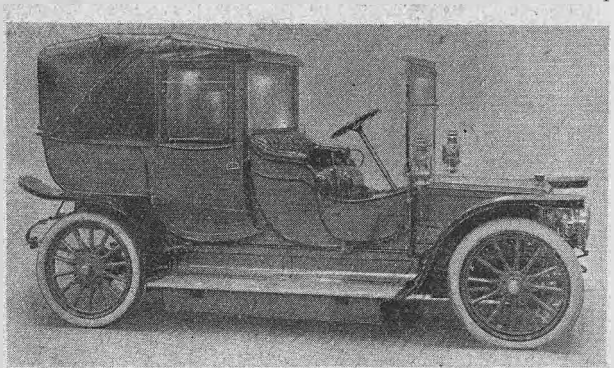


Fig. 2.—The most noticeable feature is the front extension, providing shelter for the front seat. Detachable and hinged aluminium extension pieces connect the front screen to that behind the driver, forming grooved ways for the flexible roof-piece. A stiffening cross-member is provided to these coupling pieces.

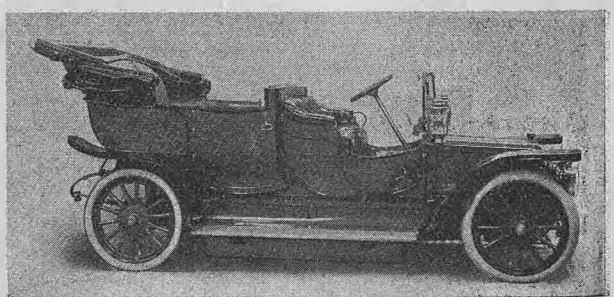
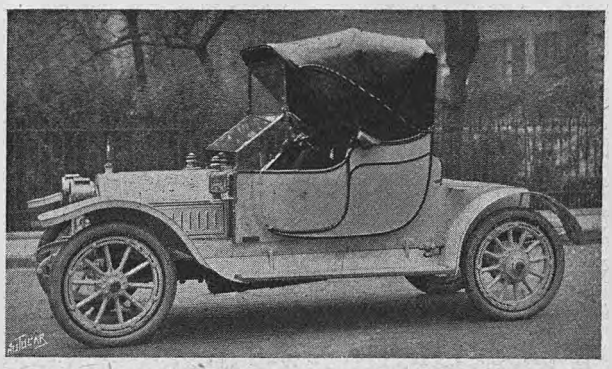


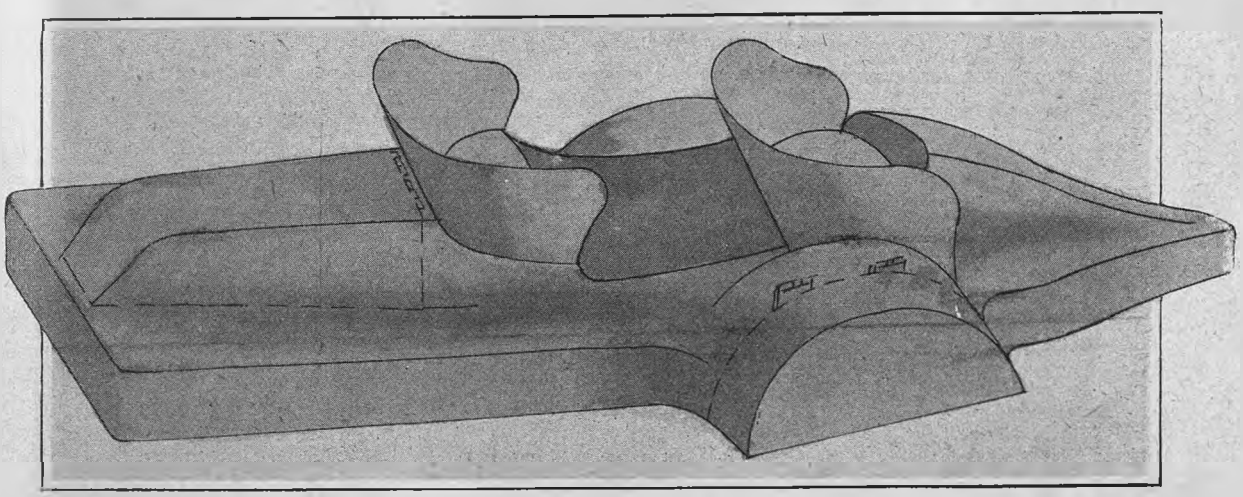
Fig. 3.—The roof-piece, which is made of waterproof cloth material, is mounted on a spring roller in a case on the front of the rear hood. When folded back this extension front becomes invisible. The car thus becomes at will a fully protected or entirely open one.

and I suggest that schoolmasters should be informed that, to use their own jargon, "*tempora mutantur, et nos mutamur in illis.*" They must learn that what was useful to them in their youth is of no value now whatever, that new industries require new methods, and that unless public-schoolboys have some knowledge of the things that are going on in the world outside they will only be fitted by their training to become schoolmasters—teaching the same uselessnesses—professional cricketers, or civil servants (indoor branch). The Admiralty has seen which way the wind is blowing, and has realised that the sailor is now a skilled mechanic and the naval officer a scientific specialist. Some day the War Office will come to the same conclusion, and it will cease to be bad form to talk shop and to know the details of one's job. I often think how very much simpler motors and motoring would have been to me had I ever been instructed in the elements of electricity and mechanics. I expect the school prospectus—if it had one—talked largely of scientific extras and such like, and it is certainly true we had a science master. But all we learnt from him was how to compound evil smells—which was chemistry—and how to tell one part of the inside of a dead animal from another—which was physiology. The last lecture on the latter subject each year was an event, and as a whole rabbit was dissected we used carefully to arrange to pretend to faint one after another. Well rehearsed it never failed to be an immense success, and perhaps the jest continues to this day. So much for the scientific side of public school education. I can remember no other efforts to attract our attention. Now if these things go on still—as I greatly fear is the case—it is evident that present day schoolboys will only obtain useful knowledge during their holidays, and the twelve weeks of term will undoubtedly cause them to forget the motor information they may have acquired at home. Even to-day it is necessary (and certainly in the near future it will be even more so) that all men should know why a motor goes or does not go, what it and its running ought to cost, and how to diagnose faults and drive—if only to be independent of experts and to be able to gauge the reputed knowledge of their chauffeurs. Smaller boys should be instructed how to clean cars, and girls and elementary scholars should be taught to look up and down a road before crossing it, not to throw stones at, or their caps under, a car, and that the purpose of a highway is for traffic and not for a playground.



A 12-15 h.p. Peugeot, supplied by Messrs. Pike, Berwick, and King, to Mr. G. P. Neison, for use in India. The body is by Million-Guiet.

If my advice were asked concerning the *curriculum* of a modern school I should counsel that the classical staff should be reduced by two-thirds, and that its place should be taken by engineering and mechanical professors. The (reputed) admiration that the head of the sixth form now gets should, if I had my way, be shunted on to the head of the boy who is nimblest at detecting the causes of breakdowns and putting them straight. Instead of inviting some antiquated don to give away prizes and make speeches, the school should ask Mr. Knight, Mr. Edge, or Mr. Rolls to honour it with their presence and deliver a lecture. The opportunities for enlightenment are unlimited, and not the least of the good results would be that boys of an engineering bent would no longer be laughed at by the masters as "cranks" and "greasers," but would take the place in the ranks their modern ideas and receptive brains entitle them to. Because I have tried to be interesting I shall probably be accused of not being serious. There are so many Latin quotations bearing on this subject that I refuse to quote any for fear of spoiling my argument. OWEN JOHN.



The word "torpedo" as applied to motor bodies is not quite so new as some people imagine. As a matter of fact the original torpedo body was more like a torpedo than the new high-sided or boat-shaped body. The illustration we give was registered as far back as January 31st, 1905, by the Rex Motor Mfg. Co., Coventry. The body was made for a tricar, and quite a large number on similar lines were manufactured. At the date it was designed it was a remarkable improvement on its contemporaries in point of appearance and comfort, and if it had had high sides between the two seats it might almost have been regarded as the precursor of the modern torpedo car body in form as well as in name.

Grumbles.

By the Grumbler.

Brake Rods and Motion.

THERE are few things more annoying than rattling brake rods. There seems to be a tendency to replace the old-fashioned wire cable by complicated rod work, which is often claimed to be compensating. The wire cable, in my opinion, is preferable, and, if properly supported, gives quite sufficient compensation and does not wear appreciably.

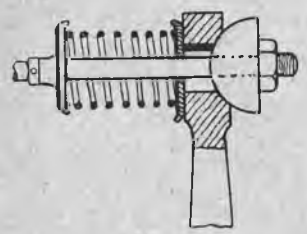


Fig. 1.

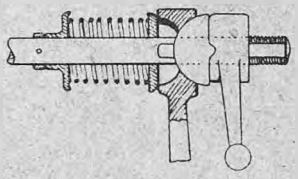


Fig. 2.

It has its faults, but they are small compared with those of the innumerable pin joints employed with rod work.

Candidly, I am not fond of pin joints as usually fitted to cars. If they are to be satisfactory they must

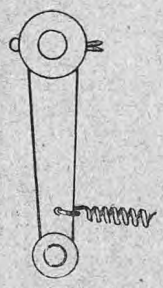


Fig. 3.

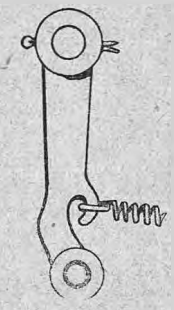


Fig. 4.

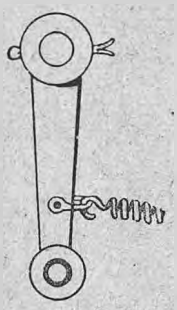


Fig. 5.

be very accurately made and should be hardened. Unless this be done they wear oval very quickly.

If motion have only to be transmitted in one direction (pull), there is nothing to beat the ball and cup joint held together by a spring (fig. 1). This does not rattle, and accommodates itself to any angle (in two planes) within limits. If it be desired to make this joint easily adjustable and self-locking, a flat should be made on the rod and the bore of the ball piece formed to correspond (fig. 2). I have purposely not shown a thumb-screw in fig. 2, as I do not like the type usually fitted. The ears are always made too short and weak, and in consequence they are very hard to operate, and occasionally break off in use.

Release springs at the various points of brake motion are often very badly fitted. A hole (usually much too small) is drilled in the lever, and the poor owner is expected to "wangle" the hooked end of the spring through it (fig. 3).

The lever should be formed with a suitable slot (fig. 4), or else provided with a substantial bent link and pin (fig. 5).

Mudguards—Design and Material.

It appears to be an open question whether the mudguards, or "wings," as some prefer to call them, of a car should be made by the chassis manufacturer or by the coachbuilder. Only too often one meets with examples of a very poor description which reflect credit on neither party. Some wings and their fitments fall short in the matter of appearance, others in utility, or, maybe, ease of detachment.

Mudguards—back as well as front—should be easily detachable and also capable of rapid and secure attachment. This entails some kind of mechanical joint, and seems to come more in the province of the chassis maker, especially as it requires fitting to the frame.

The mudguard stays — "wing-irons," in coachbuilder's *parlance*—are very often made far too heavy, and this by reason of bad design or wrong material. A light steel pressing would answer the purpose much better than ½in. diameter wrought-iron stays, which, in addition to their excessive weight, seem particularly sensitive to vibration and liable to break at most inconvenient moments.

It is very difficult to specify the best material of which to make the wings. Good "patent" leather sewn on to a metal frame makes a type which is most excellent in use and free from rattle, but is somewhat expensive if well made, and seldom fitted unless specially ordered. This type also requires a certain amount of care and "elbow grease" to keep the leather in a good condition.

Metal wings are cheap to make, but have their disadvantages. The paint on the inside invariably chips off; they are easily dented, not only accidentally, but also by stones thrown up by the wheels, which in addition make an unpleasant noise.

Steering Gears Criticised.

In *The Autocar* some while ago "Runabout" very rightly pointed out that few speedy small cars are comfortable or safe when driven at their maximum speed on account of their poorly-designed steering gear. "Runabout" refers more particularly to the 8 h.p. single-cylinder "racer," but my grumble is directed towards the average touring car.

With very few exceptions steering gears are poor, and by steering gears I mean the whole mechanism from the swivels to the steering pillar. I do not mean that this vital part is actually unsafe, and that at this point there exists in latter-day cars a danger to life and limb—it is the manner in which the occasionally crude design affects the comfort of the driver and the pocket of the owner to which I take exception.

The steering joints should invariably be of the ball type. This type is, or can easily be made to be, adjustable, but the same cannot be said of the pin joint. It is useless for the makers to assure us that the pin joints will not wear—they all do.

The covers (?) to steering joints are really humorous. They are fastened very often like a man's glove with spring buttons, and keep the dust out just about as well.

I prefer the worm and segment to the screw and nut device, in that there are fewer parts and consequently less lost motion. The trouble with both systems is that in proportion to the load there is inadequate bearing surface, and also that in a large number of cars there is no means of taking up the wear of a worm. An adjusting nut is, I admit, often provided, but this only makes the steering stiff and does not take up the wear.

With the worm and segment the steering may not be theoretically irreversible, but it is so in practice on account of inertia and friction.

Whilst on the subject of steering gears I cannot omit a grumble at the old-fashioned wood and leather-covered steering wheels. I much prefer to see and use the celluloid covered tubular wheels; they are always clean, whereas the other variety is often dirty.

Motor Union Notes.

(Communicated by the Secretary.)

The publication of the new scheme for free legal defence has met with the very hearty appreciation of the membership, and a considerable number of motorists have taken the opportunity of joining the Union. The attention of motor cyclist readers of this paper is directed to the fact that free legal defence is now included in the benefits offered to them in return for an annual subscription of half a guinea. It will not be possible, however, to continue the subscription at this figure, and it will be raised to 12s. 6d. on March 1st, 1910. Those joining before that date will therefore effect an annual saving of 2s. Members are asked to bring to the notice of their motoring friends these additional advantages of membership, for in making the extensions the Union is relying upon the increased support of the individual motorist.

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The Union is anxious that the advantages of the new free legal defence scheme should be extended to the members of affiliated clubs. It has therefore been decided that those members of affiliated clubs who desire to become full individual members of the Motor Union may do so by payment of an annual subscription of 16s. direct to the Union, which with the 5s. received on their behalf from their local club will equalise their subscription with that of the individual members. They will then be entitled to receive a free copy of *The Autocar* weekly and to participate in the free legal defence scheme, in addition to securing the other advantages offered by the Union and the local club.

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The Welsh A.C. (the Union's representative in South Wales) has always been one of the most enterprising and up-to-date of motor clubs. It is now altering its title to "The Welsh Automobile and Aero Club," as its members are becoming actively interested in aviation.

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Earl Russell (chairman of the Touring Committee), Capt. L. A. Kingston (chairman of the Foreign Touring Committee), and the Secretary, have been appointed delegates to represent the Motor Union at the International Road Congress which will be held at Brussels next July.

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The Borough of Luton has made application to the Local Government Board for a ten-mile speed limit on a considerable number of roads in the borough. Objections to the application should be lodged with the Local Government Board and Town Clerk of Luton by the 24th December. The Secretary would be glad of any information bearing upon this application.

The Union has received the following letter from the clerk to the county council of West Sussex:

> "Adverting to your letter of the 24th June, 1909, forwarding a copy of a formal objection to the application of the County Council of West Sussex for a speed limit of ten miles an hour on part of a road at Southwater in the parish of Horsham Rural, I have to inform you that after further consideration the Roads and Bridges Committee resolved to recommend the County Council to proceed no further with the application, and to rescind their resolution passed on the 7th of May, 1909, on the subject.
>
> "The County Council at their meeting held on the 26th of November last, adopted the recommendation of the Roads and Bridges Committee."

The Touring Committee is endeavouring to induce railway companies to provide, at those stations or docks in which motorists are required by the regulations to remove the petrol from motor cars before shipment, an adequate syphon apparatus for this purpose. Such arrangements have already been made in certain stations, but there are others in which no apparatus is provided. Where this is the case not only is considerable time occupied in draining off the petrol by means of the small stop cock, but quantities of spirit are often spilt upon the platform during the operation, with serious risk. The railway companies with whom the Union is in communication have promised to see what can be done to supply the deficiency, and are experimenting with a syphon apparatus, which will be adopted if it prove suitable.

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An interesting speed limit case is being defended, in which a member of the Union has been summoned for driving a car at a speed of 27 m.p.h. over a measured furlong. The car, which is small and of low power, had only travelled 100 yards before entering the control, and it is contended that it could not have attained the speed alleged in so short a space. Moreover, there was considerable traffic upon the road at the time, including two tram cars: both the drivers of these have agreed to give evidence that, judging by the speed at which they were travelling, the motor did not exceed a speed of 16 m.p.h. It will be interesting to see the effect of such evidence.

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Several disputes arising out of road accidents have been settled by the intervention of the Union during the past fortnight. A typical instance is that in which a motor cyclist was knocked off his machine by a horse and cart which were on the wrong side of the road. The facts were placed before the Union, and the member was advised that an action for damages would in all probability be successful. The damages claimed were paid without the matter going into court.

◇ ◇ ◇ ◇

A Motor Union medal, granted to the West Essex A.C., has been presented to Mr. W. M. Gunnett, the winner of the pace judging competition organised by the club. It has been decided that in future the Motor Union medal will only be presented to those who have rendered distinguished services to the motor movement, and not to the winners of sporting events.

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The "Rules and Courtesies of the Road," which the Union drew up for the guidance of motorists, are now being adapted to other uses. A well-known firm of educational publishers have, with the co-operation of the Union, issued them in a form suitable for the instruction of children. They are mounted on a large linen sheet, and are intended to be displayed on the walls of schoolrooms. Another firm, responsible for a publication appealing specially to cyclists, is including the "Rules and Courtesies" amended so as to apply to cycle traffic. The Union itself issues copies of these rules in two forms: (1) On a large board suitable for displaying in a garage (price 6d.), or (2) in small pamphlet form (gratis).

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The General Committee met on Wednesday last.

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The Motor Union. Chairman: W. Joynson Hicks. M.P.
Albemarle Street, London, W. "Speedway, London." 9090 Gerrard.

A Simple Heating Apparatus.

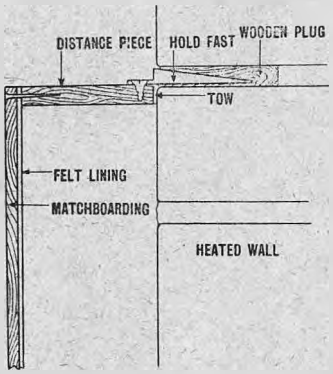
Initial Outlay the only Expense.

THE following description of a simple and inexpensive method of heating a garage has been applied by the writer with much success.

One very good point in its favour is that when once constructed it costs nothing for heat or fuel, but utilises heat from the kitchen range which would otherwise be dissipated.

Many garages are situate near the dwelling house, and as a rule on the kitchen side of the house. If so, the application of this method of heating is much easier. Two considerations are necessary: First, that the kitchen fireplace shall adjoin an outside wall; second, that the roof of the garage shall be between four and five feet above the level of the same fireplace.

It is generally known that the wall outside the house and at the back of the firegrate radiates a considerable amount of heat into the atmosphere. This brickwork, however, gets very much hotter if it is covered over.



SECTION
Fig. 1.

It is not necessary that the garage should adjoin the house; in fact, it is quite applicable if it should happen to be as much as 50-100ft. away.

The method adopted is as follows: For a space of, say, 10ft. by 5ft., or an area equal to that where the heat is felt, the outside wall in rear of the fireplace is covered in with matchboarding. The hottest part should be as near as convenient at the lower part of the covering. The matchboarding should stand away from the wall some three or four inches, held so by distance boards placed at the edge of the matchboarding as shown in fig. 1.

These distance pieces are fastened to the wall by hold-fasts driven into the brickwork courses, holes having been first made and plugged with wood. Between the distance pieces and the wall itself is a layer of tow, which is rammed or caulked after fixing to make the joint as airtight as possible. In fact, throughout the whole construction the aim is to make all joints as airtight as possible. By reference to figs. 1 and 2 the general design and arrangement of the whole apparatus will be seen. The bottom part A A is open to the atmosphere, *i.e.*, there is no distance piece here, and this is the only place where any air from outside can enter.

As everyone knows, hot air rises, and here it will be as well to mention that no portion of the top line of the conductor and heating chamber (see fig. 2, B B) should be horizontal, but always with an upward rise towards the highest point where it enters the garage.

From the dotted line C to the garage is a wooden conductor conveying the hot air. The sectional area of this conductor should be at least half the area of the opening at A, otherwise it will restrict the circulation of air, and particular attention should be paid to this important point where it is found necessary to conduct the heated air passage round corners and angles. The whole of the inside of this conductor should be lined with carpet felt to prevent radiation of heat.

The apparatus is best made of matchboarding, as the tongue makes a comparatively airtight joint. The felt can also with advantage lie between the joint of the matchboarding and the distance pieces previously referred to.

At the point D where the conductor enters the garage is a talc air valve to prevent any air passing or driving the hot air back through the apparatus.

It will be readily seen what takes place. The air inside the covering or heating chamber becomes heated, and then rises and travels towards the garage, and a further supply of air enters through the opening at A, and thus a constant supply of warm, dry air is carried into the garage.

It might at first be thought that, the hot air accumulating in the roof, there would come a time when no further air could enter, but in practice the writer has found that the cooling of the hot air is always taking place, and therefore is always displaced by the hotter air coming in from the apparatus.

The garage should be made comparatively draught-proof, though not airtight, or a "lock" will occur.

It has been found that the heat of the brickwork at 10 p.m. is at its highest, and that, although from soon after that time until 7 a.m. there is no fire in the kitchen grate, the heat is retained by the brickwork through the greater part of the night sufficiently to keep the temperature up.

The writer has generally found that the lower the temperature of the outer atmosphere the greater is the difference between the outside temperature and that inside the garage where this device is in use. As a general rule in the winter months there is a variation of 6° or 8° in this respect, but on one occasion when 11° of frost was registered out of doors the minimum temperature in the garage was 34° Fahr.

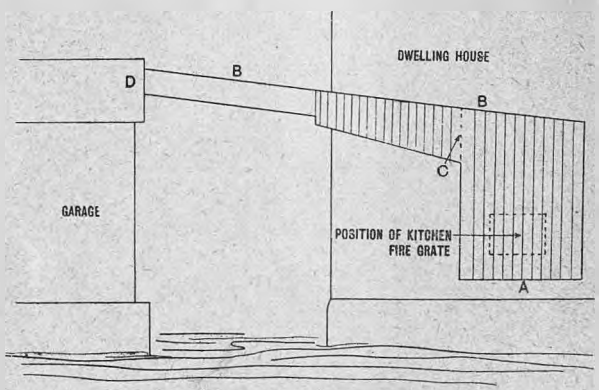


Fig. 2.

An elaboration of this scheme of heating and which improves it somewhat may be arranged by connecting the hot water circulation of the house supply from the kitchen boiler to a coil of pipes in the heating chamber on the outer wall. The connection can easily be brought through the brickwork and the coil formed as a continuation of the pipe in which the water flows *from* the boiler to the hot water cistern. The kitchen fire may be made up and banked last thing at night when a hard frost is expected.

LEONARD JONES.

Power Absorption by Gear Box Lubricants.

Some Instructive Experiments. By Alexander Duckham.

FROM time to time there has been much advice given, both in the technical press and by manufacturers, as to the best lubricant for the gear box. I do not propose to recapitulate these various expressions of opinion, but suffice it to say that they generally emphasise the deadening of noise and the prevention of loss of lubricant by leakage.

Almost without exception a very viscous body is recommended, in some cases mixed with a fibrous material, and in others with sawdust or some such more or less elastic medium.

Noise and leakage appear to me matters of somewhat secondary importance—the question of loss of power coming first, in my opinion.

I have always held that the use of a very viscous lubricant is inadvisable, as it must absorb considerable power in resisting the passage of the moving parts, and lately I carried out a series of experiments to ascertain the varying amounts of power absorbed in accordance with the viscosity of the lubricant, and with the extent to which the gear box is filled.

An up-to-date gear box from a 15 h.p. car of well-known make was used. It had a total capacity of three and a quarter gallons, while two gallons of oil just sufficed to cover the shafts. This gear box was coupled up by a flexible coupling to an electric motor provided with the necessary measuring instruments.

In all the experiments the second gear was in mesh.

The speed of the main shaft was 1,100 r.p.m.

Readings were taken every ten minutes.

Each test was run until the temperature became constant.

In the first place the gear box was well lubricated, and then run empty to ascertain the amount of power required to drive the motor and the gear box, and from this was obtained a basis for comparison, as knowing this constant, all additional absorption of power must be due to the churning action of the gears in the lubricant, or rather to the resistance of the lubricant, in a confined space, to the passage of the gears and other moving parts.

The tables show the figures obtained, and the study of these may be of interest. I will only draw attention to one or two points. The difference between running the gear box dry and running it with only one quart of oil (so that the teeth just dipped into the oil) was practically *nil*, but as the box was filled up to the shaft almost another horse-power was absorbed. With the box absolutely filled with this oil there was further loss of power. It will be noticed that when greases were employed the absorption of power at once jumped up, as did also the temperature. In the case of one well-known grease, which is stated to increase the power and cling to the gears, the worst results were obtained. The makers evidently consider that such adhesiveness is a point in its favour. With the ordinary and less sticky type of yellow motor grease the results were somewhat better.

Taking the extreme cases, it will be noticed that the absorption of power by the lubricant in the box varies from 0.51 to 2.9 h.p. Therefore it seems advisable that motorists, and especially those that have cars of comparatively small power, should be very careful that the minimum amount of power be absorbed uselessly thus. Taking the case of the man with a car of 10 to 15 h.p., it is quite easy for him to expend ten per cent. of the power in churning up a heavy grease.

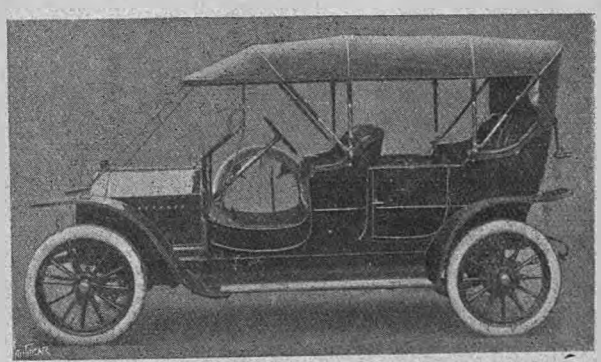
I think the tests show that the use of any form of solid lubricant is wasteful of power, and that the same remark also applies to the use of an excessive quantity.

The difficulty of keeping a thin lubricant in the gear box is no doubt serious, and manufacturers do not seem to pay sufficient attention to the question. The system frequently adopted of using felt or fibrous packing is bad, because, firstly, if no means be used for compressing it on the shaft it soon becomes inoperative, and secondly, if an adjustable gland be provided, and is tightened sufficiently to keep in the oil, a remarkable amount of friction is introduced, and consequently power absorbed. The method which might be adopted more generally is that used on all electrical plant and high-speed steam engines, and on some petrol motors, viz., the provision on the shaft for a V thrower ring, and a catch-box draining back into the gear box.

The other objection to a thin lubricant is that it will not deaden the noise, and of course if the gears are badly cut and out of line this is sure to be excessive. But these are exceptions to-day, and nearly all one's driving, even on small-powered cars, is done on top gear with direct drive, and with no wheels in mesh. If more noise results from the small quantity of comparatively thin lubricant I strap a piece of thick saddler's felt round the gear box to deaden it.

Horse-power Absorbed.	Fahrenheit Temperature.
(A) Box empty, but well lubricated.	
0.7	48.0
0.7	53.5
(B) Box contained 1 quart of light bodied oil. Teeth just dipping.	
0.63	50.0
0.51	55.5
(C) Box contained 2 gallons of light bodied oil.	
1.15	48.0
1.08	58.0
1.02	62.0
1.02	64.0
0.92	75.5
(D) Box contained 2 gallons of medium bodied oil.	
1.4	50.0
1.27	75.5
1.15	88.0
1.12	94.0
1.09	99.0

Horse-power Absorbed.	Fahrenheit Temperature.
(E) Box filled right up and test (D) continued.	
1.2	94.0
1.17	99.5
1.15	104.0
(F) Box contained 2 gallons ordinary yellow motor grease.	
1.75	52.0
1.26	84.0
1.20	102.0
1.29	108.0
(G) Contained 2 gallons of a grease stated to "increase power," and also to cling.	
2.9	78.0
1.78	94.5
1.5	104.0
1.44	110.0
1.4	114.0
1.38	122.5
(H) Box filled right up and test (G) continued.	
1.52	117.0
1.5	127.0
1.5	131.0



One of the new 14-16 h.p. Darracqs, recently supplied to Mr. Frank Ree, General Manager of the London and North-Western Railway.

"The Autocar League."

Inland Revenue Licences—Old or New Scale? Clean Counties.

OBJECTS: TO PROMOTE UNITY OF ACTION AND PURPOSE IN THE MOTOR WORLD, SO THAT ALL INDIVIDUAL MOTORISTS, CLUBS, AND SOCIETIES MAY WORK ON THE SAME LINES TO ABOLISH OR LESSEN GRIEVANCES AND TO HELP EACH OTHER. DISUNION AND INDIFFERENCE ARE THE TWO MAIN REASONS FOR MOST OF THE ILLS IN THE MOTOR WORLD TO-DAY, AND THE AIM OF THE LEAGUE IS TO BAND ALL MOTORISTS TOGETHER SO THAT INJUSTICE AND UNDUE RESTRICTIONS MAY BE OVERCOME. IT DOES NOT AIM TO HELP THE SCORCHER OR INCONSIDERATE DRIVER, AND IT WORKS WITH, NOT AGAINST, ALL EXISTING CLUBS AND MOTORING ORGANISATIONS. IT HAS NO SUBSCRIPTION.

Inland Revenue Licences—Old or New?

A number of members of the League have raised the question of the new car licences which would become due on January 1st had the Budget gone through. They want to know whether they will be better advised to pay the existing licence of two guineas or more according to the weight of the car, or whether they must tender the new and increased licence. We have no hesitation in advising them to pay the old licence, as the new ones are not yet legalised, and cannot be until the new Parliament passes the Budget. So far as we know the authorities will not ask for the increased licences—they will merely make the usual demand for the carriage licence, as they are not legally entitled to do more than this. At the present time the system of horse-power rating by which the proposed increased car tax will be apportioned has not been made public. There is every reason to believe that the R.A.C. rating formula will be employed, but there has been no definite announcement from the Treasury upon this matter. As things stand at present there appears to be very little doubt that unless united protest be made the increased licences will come into force, whichever party be returned to power, but the proposed increased car tax is not one which commends itself to the majority of motorists, irrespective of their politics, and they would therefore be extremely unwise to tender any sum over that which can be lawfully demanded.

Clean Counties.

Last week we published a tentative list of counties to which licences for motor cars, dogs, game, etc., should be paid, and this has furnished the following correspondence, which we think it necessary to publish so that the final list may be above criticism.

We are indebted to an Edinburgh correspondent for pointing out a serious misprint in the tentative list of clean counties published last week. Peebles having been inserted as the address of the Clerk of Linlithgowshire. Linlithgowshire and Peebles are, of course, separate counties, and we have no wish to exclude Peebles from the list, as motorists receive there most fair and just treatment. The correct reading should therefore be: Linlithgowshire. Linlithgow; Peebles, Peebles.

A Somerset correspondent also kindly points out that this year the Somerset licences have been paid to the Controller of Local Taxation Licences, County Buildings, Taunton, and not to Bath, as heretofore.

ANGLESEY.

Anglesey has one main road—that to Holyhead. I have driven across constantly during the last two years, and so have my brother and several friends. I have seen warnings in your paper regarding Gwalchmai and Llanfairpwllgwyngyll, but cannot help thinking that anyone who has been stopped has been driving much too fast through these villages. Once or twice I have wondered if I was going quite slowly enough myself for safety, but nothing was said.

I would suggest that it would be better to have a black list for really bad counties.—N. Wales.

CAMBRIDGESHIRE.

You include in your list Suffolk W. and Bury St. Edmunds. Now this county was the first round here to ask for and obtain a ten-mile limit (Newmarket). At times, when there are no racehorses about, you have a wide, nearly straight road, and to have to crawl for two miles on this is extremely irritating. There are also traps worked on it at frequent intervals, though the police are very fair in their methods. Now you black list Cambridgeshire, where the County Council has twice refused to apply for ten-mile limits (Soham and Chesterton). There certainly are at times traps in the county, but I do not think you are quite fair to Cambridgeshire. West Suffolk upholds ten-mile limits and traps; Cambridgeshire will not go in for speed limits and the traps are in fairly reasonable places. Surely both counties should be treated alike.—M. Harding Newman.

DEVON.

I observe last week that you include Devon amongst the "clean" counties. I doubt if you ought. A trap has just been started between Torquay and Newton Abbot for no particular reason that I know of, and there is always the outstanding refusal of the county council to erect warnings unless the Devon and Cornwall Automobile Club shares expenses.—J. S. Whatton.

FIFE.

Your circular *re* licence fees to hand, but I do not propose making any alteration, as I do not find that the police in this county are unfair in their trapping methods, and I know that the Sheriff in Cupar, Fife, is by no means harsh in his administration of the law. There were a few instances several months ago when the police seemed to him to be trapping to secure convictions rather than to protect the public, and when passing sentence (light fines) he expressed in court the wish that the activities of the police would be directed rather to dangerous places—villages with crooked turnings—than to open roads such as the stretch in question, between Crail and Anstruther. But the traps are all (in East Fife at all events) over a decent distance—three or four miles—with villages *en route*, and since the Sheriff stated his mind I have not noticed any fresh cases in court.

There is no doubt in my mind that many motorists grossly ignore the law, as, for instance, in this burgh, where the ten-mile limit is as a rule ignored and fifteen to twenty miles freely indulged in, so that the police have had to be instructed to warn offenders that if they do not amend their ways they will be proceeded against. It is notoriously different in some of our adjacent counties, more especially Perthshire, and Forfarshire is not so faultless as you believe, as has been shown by court summonses with which more than one of my friends have been served.—John C. Low.

KENT.

On the evidence afforded by the columns of *The Autocar* I earnestly protest against the inclusion of Kent in your list of "clean" counties. The fact that the county possesses an enlightened and up-to-date surveyor does not affect the matter in any way. Neither the police nor the Bench can justly claim possession of either of these qualities, and no amount of special pleading will disguise the fact.—Nicholas Kilvert, J.P. (Cheshire).

With regard to Kent being a "clean" county, I am of a very undecided opinion, so much so that I am at present not quite sure of my own payments with regard to licences.

I have been stopped several times during the last three years by the county police, but so far have never had pro-

ceedings taken against me; at the same time I have had the same experiences all over England. At this time last year I should have said that Kent could fairly be included in the list of clean counties, but several cases quite worthy of Surrey or Kingston have come to my notice this summer. I understand that proceedings are rarely taken unless the speed has exceeded twenty-five miles per hour, and that the traps are in all cases of considerable length; this, however, does not affect the question at all.

At the same time, taking the trap from Charing to Chilham, eight miles about, anyone making this in twenty-four minutes must drive at times over thirty-five, for after the first couple of miles the road is a very winding one, narrow, and with sharp corners, with three schools in the area, making fast driving very inadvisable from every point of view.

Taking the S.E. corner of the county, motorists have been treated very fairly indeed, and I know that in this district especially the natives are very much alive to the benefit which they receive from the motoring public. There is undoubtedly room for improvement. I think that local traps, of which I have seen notice in *The Autocar*, are not worked with any desire for results so to speak. There are police continually about the main road from Deal to Dover. I think that taking the county as a whole, and at the present moment, motorists receive fair treatment. There is, however, a tendency for the eastern and middle portions to become worse. It might help matters perhaps if those motorists who do take out their licences would drop a timely intimation to the authorities, for although no apparent notice would be taken, I am certain it would have an effect. I am, of course, not taking into consideration those portions of the county which are practically London.

The police have been guilty of some very bad acts. On the other hand, I know of considerable forbearance, and I do know that the motorist can use the greatest portion of the county with safety.—KENT.

It is rather difficult to answer for the whole of the county of Kent. I have seen in *The Autocar* and heard elsewhere that there has been trapping in the neighbourhood of Folkestone, and I think Sandwich, by the county police. In this neighbourhood (Tunbridge Wells), however, I do not think there has been any trapping by the county police, unless it was at Hildenborough last summer. Of course, at Canterbury, Bromley, etc., there is bad trapping, but I am told that is not done by the county, but by the urban police.

I think that the roads of the county are so well kept, and that the trapping (if any) is so slight, that it may well be called a "clean county."

You must remember, too, that Kent, with its numerous seaside towns just a day's run from London and back, lets loose on the roads the most objectionable class of motorist—a class unknown in counties farther from London, where the car takes the place of a carriage, trap, or cart for pleasure or business, and there is undoubtedly a good deal of inconsiderate driving, but nothing to what it was a few years ago.—P. LL. NAISH.

As a motorist who lives in and knows Kent well, I should like to say that for so large a county it is, and has always been, exceptionally free from police-traps.

The splendid roads which the county can boast have unfortunately encouraged the reckless and inconsiderate drivers, and it is entirely due to them that the police have been forced to set the traps which are in the county.

Although personally I do not think that the "police-trap" is an effective means of protecting the public, yet I will say, so far as this county is concerned, that the police are very fair where such traps are in operation; and as a body the magistrates are unprejudiced towards motorists, the fines in ordinary cases being quite moderate.

I think it only fair to point this out. I hope that motorists, especially those who live in Kent, will take their licences out in the county.—GRANVILLE M. KENYON, hon. sec. Kent A.C.

OXFORDSHIRE, EAST BERKSHIRE, AND BUCKS.

I notice that Oxfordshire is printed in your list of clean counties in italics as being doubtful. Motoring as I do in that county almost daily, I am of opinion that it would be unjust to exclude Oxfordshire from the list. During the past eighteen months I have never met with a police trap. I read the county newspapers, and very rarely do I find a report of a motorist prosecution. The only traps I have ever heard of have been on one or two of the main roads on the outskirts of the city of Oxford, where, in my experience, the occasional exuberance of youthful motorists partly justifies the enforcement of some restraint, but I believe prosecutions are undertaken only in extreme cases.

On the other hand, East Berkshire is riddled with police traps, and some of the magistrates seem to be over harsh. In my opinion, Bucks is equally "unclean."—F. WILTON.

PEMBROKE.

I beg to inform you that the county police in Pembrokeshire are generally favourable to motorists, and no traps have existed during the past year. The District Council of Pembroke is, however, absolutely impossible in the matter of roads. Miles of main roads have just recently been covered with new stones, and although a petition signed by nearly every ratepayer in this neighbourhood asking that the stones should be rolled in was presented at a meeting held at Pembroke recently, the council entirely ignored the petition, refusing to do any more to the roads than to put the stones down, leaving them to the traffic to be worn down.

Can you recommend anything that can be done to improve such a helpless state of affairs.—W. H. GREENISH.

[The main roads of Pembrokeshire are repaired and rolled by the County Council. The roads complained of above are under the control of the Pembroke District Council, which receives subsidies from the County Council for their upkeep and repair. This latter council is composed, we understand, chiefly of small farmers and others hostile to motorists, who oppose the rolling of the roads on this account, though ostensibly on account of extra expense. The surveyors of the council have explained the fallacy of this excuse, and the local press strongly supports them. So long as the majority of the council is constituted as it is no improvement or redress is likely to come, and we can only suggest that the ratepayers will bear in mind the stupidity of their present councillors, and at the next election in March, 1910, run candidates with sufficient sense to appreciate the unanimous wishes of their constituents.—ED.]

STIRLINGSHIRE.

I have always found the Stirling County Police to be most fair and just, and, until a short time ago, I should most unhesitatingly have placed Stirling in the list of favourable counties.

Lately, however, there has been a trap, or traps, working on the Stirling-Dumbarton road. I have not been able, owing to shooting engagements, to go out and see the trap myself, but I am told that it is a short distance trap, worked over a straight open stretch, with no curves or cross roads. These traps have been set to catch one particular car and driver, and in doing this the police were perfectly justified, as the car in question is not driven with consideration to other road users. Had this trap been set so as to include a dangerous piece of road, this particular car would have been caught just the same, and the considerate driver would not.

Personally, I should be inclined to place Stirling on the favourable side of the list, as there are other stretches of road in the county where every car that can do so exceeds the limit, and yet there has never been any suggestion of a trap there.—C. A. H.

A SIMPLE FORMULA WANTED.

I am against h.p. being used as a base for taxation altogether. Nobody knows what the h.p. of a particular engine may be except experts, and they sometimes disagree. I think that cars and cycles should be taxed on some measurement which can be ascertained and understood by the ordinary man, and I suggest 6d. per unit, the unit to be obtained as follows: $D^2 \times .7854 \times S \times N$ = volume of the spaces swept by piston. Where D^2 = diameter or bore in inches squared, .7854 = a factor, S = stroke in inches, N = number of cylinders; this would work out roughly as follows:

	Units.	£ s. d.
Motor bicycle	85 × 85 = 29 =	0 14 6
8 h.p. single-cylinder	100 × 120 = 61 =	1 10 6
12 h.p. single-cylinder	120 × 170 = 96 =	2 8 0
12-14 h.p. four-cylinder	75 × 100 = 115 =	2 17 6
20 h.p. four-cylinder	90 × 120 = 198 =	4 19 0
45 h.p. Napier six-cylinder	101 × 127 = 384 =	9 12 0
65 h.p. Napier six-cylinder	127 × 127 = 600 =	15 0 0

This would not require experts for the determination of the unit; would depend upon the actual measurements of the engine about which there could be no dispute, no uncertainty, and would be fair. If we are to be taxed let the unit be some definite thing which is easily ascertained.—F. W. KERSHAW.

Three Continentals.

HEREWITH we present three types of the well-known Continental pneumatic tyres, sketched in such wise as to show the methods followed and care and thought evinced in their construction.

In fig. 1 we have a sectional view of the leather pattern non-skid in which the foundation of the cover is formed of seven layers of fabric completely indurated with rubber, and divided at the foot of the cover to embrace the spear-headed black rubber bead, giving the necessary stiffness to the edges of the cover. The actual rubber coating on the flexing portions of the wall is kept just thick enough for perfect weather proofing, but rapidly thickening as it passes over the crown of the tread, where it embraces a double segmental layer of fabric for puncture resisting purposes. Upon this crown is mounted the leather and rubber non-skid, the inner heads of the studs reposing themselves on a layer of fabric, and are fixed in such a way that unless very great and undue stress is thrown upon them they cannot possibly become detached. Also the leather tread is so attached that it will not leave the rubber, but will remain firmly attached until worn quite through on to the original tread.

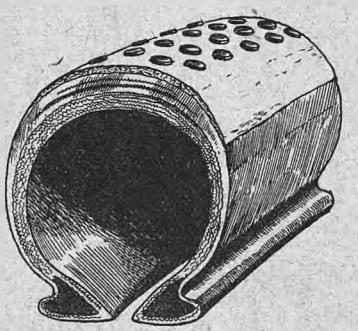


Fig. 1.

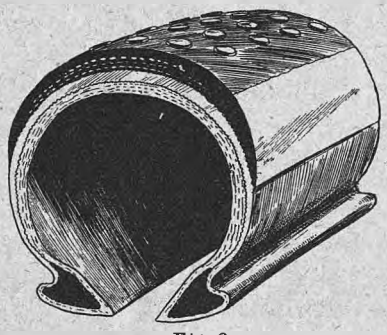


Fig. 2.

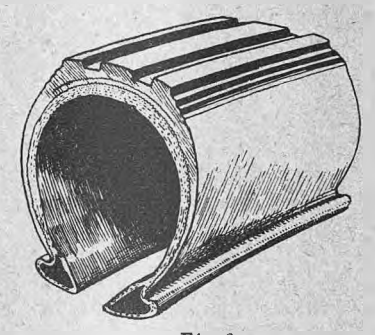


Fig. 3.

The Red-Black rubber non-skid (fig. 2) is a type which the Continental Tyre and Rubber Co. strongly recommend for country roads and touring where rough work is expected. The construction of the body of the tyre is similar to that already described, save that as cover and non-skidding tread being all of rubber, the tyre as a whole is more pliable than the leather tread, and will by fair usage wear right down through the studs without any cuts showing, while the cover loses none of its non-skidding properties, no matter the degree to which the studs are worn. Like the leather tread, this cover can be worn right down to the canvas and can then be repaired.

Although the three-ribbed tyre (fig. 3) has all the advantages of a rubber non-skid, it cannot, of course, be expected to have all the holding properties of a steel-studded cover on all surfaces. This cover is particularly strongly built, and is most suitable for heavy limousine and high-powered touring cars, and can be fitted to all four wheels for country work. These tyres are particularly recommendable for the front wheels of cars used in town when steel-studded non-skids are fitted to the rear wheels. A steel-studded non-skid is then quite unnecessary forward, and the three rubbers under such conditions have a particularly long life.

Referring back to the two first-named non-skids, these are made up with extra strong canvas to allow them to carry loads fully up to the weights specified for the different sizes, while the side walls are left quite pliable. Moreover, they can be retreaded after sufficient service has been obtained from them, provided, of course, that the treads of the covers proper are not cut through below the segmental canvas insertion. The Continental Tyre Co. make a speciality of retreading at their works at Willesden, N.W.

Renfrewshire—Prohibitions and Speed Limits.

An order has been issued by the Secretary for Scotland closing against motor cars the following roads in Renfrewshire:

Mathernock Road (Kilmacolm parish), from its junction with Auchenfoil Road at Chapel to its junction with Auchentiber Road at Mathernock.

Devol Road (Kilmacolm and Port Glasgow parishes), from Auchentiber Road to the boundary of the Burgh of Port Glasgow.

Duglahill Road (Port Glasgow and Greenock parishes), from Auchmountain Road to the boundary of the Burgh of Port Glasgow.

By another order of the Secretary for Scotland a speed limit of ten miles an hour has been imposed on the following roads:

(1) Yoker Road (Parish of Renfrew); at Whiteinch Tramway Car Terminus and Level Crossing, from the county boundary to the west side of Lennox Avenue.

(2) Yoker Road; at the junction of Anniesland (Great Western) Road, from a point fifty yards east of Anniesland Road to a point 150 yards west of said road.

(3) Yoker Road; at Ferry Road Head and School, from a point 100 yards east of Ferry Road to the west side of the railway bridge 200 yards west of said road.

The way in which the law with regard to the lighting of motor cars is turned into an instrument of oppression was illustrated by a case at Altrincham the other day. A motorist left his car standing outside the Free Library for about five minutes, and as the lights from three street lamps were shining directly upon the car he switched off the electric light with which it was fitted, in order to avoid causing unnecessary glare to other traffic. He was summoned by the police for not having a light on his car. Mr. R. Herle Nicholson, barrister, who represented him before the magistrates, submitted that only a technical offence had been committed, really in the public interest; and the case was dismissed on payment of the costs. But why should a man be persecuted in this way simply because he is a motorist? The police do not persecute other people in this way for merely technical offences. If they did, who would escape? There are scores of dormant Acts of Parliament under which most persons might be proceeded against if the police chose to enforce them in the manner that they enforce the letter of the law against motorists.

Change in Design.

Its Advantage or Otherwise to the Manufacturer.

THE advantage which will accrue to the automobile manufacturer due to any radical change in the design of his chassis or any one of the main features of his chassis is usually of an uncertain nature until such time as "the pudding is proved in the eating." Some six or eight years back it was the custom of the manufacturer as each new year came round to see to it that he made some alteration or change of perhaps a radical nature in his chassis for the coming season. He knew well that the public would expect some novelty from him, and if he were to appear at the annual exhibition with precisely the same type of chassis as was exhibited a year ago he would receive scant attention from the public compared with that of his rival the other side of the gangway, who was perhaps showing for the first time an entirely new type of speed change mechanism. It was quite usual for the prospective buyer when visiting the annual automobile show to approach each stand in turn with some such question as, "What are you showing that is new for next year?" And woebetide the salesman in charge if he could not rattle off a string of improvements of sufficient length to occupy some ten minutes of his own and the prospective buyer's time; he would have been unlikely to hold him interested for many minutes.

This craving for novelty is certainly not so strong a failing of the modern purchaser, and it is possible that the manufacturer himself may have had something to do with the change, as in the attempt to satisfy his extortionate public he has, as far as novelties are concerned, come near the end of his resources.

At the present time it is more the exception than the rule for the manufacturer to place any startling novelty before the public, and then only does he do it after assuring himself by a series of trials that mechanically his novelty leaves little to be desired.

Now the effect of any startling innovation on an average public is in the first place that of a considerable "draw," if I may use a slang phrase, and in the second place that of causing a good deal of scepticism, and a manufacturer who is bold enough to break out in some new direction is sure to come in for a fair share of attention at show time, though it will not always be the kind of attention he requires; however, the advertisement should sooner or later act beneficially upon his sales if the novelty be good.

The difficulty which the manufacturer labours under when endeavouring to arrive at a decision as to whether he shall adopt some new device or adhere to his last year's design is not alone the uncertain factor of the practical working of the device under the conditions of public use, but, and this is quite as important, it may be questionable how the new device will appeal to the public taste. And here it may be remarked that the automobile engineer has to face a problem which perhaps has no parallel among the other branches of engineering; he must be sure that any appliance he introduces will appeal to a somewhat unmechanical public, or in any case to a body of buyers who are not trained engineers. In other branches of engineering, in most cases the purchaser is himself an engineer, or is in a position to receive the opinion of a trained engineer before effecting a purchase. The average show visitor is at a disadvantage when he has to form an opinion as to the practicality of some new contrivance, though he may be able to ask the advice of some experienced friend. He is fortunate, however, if he have a friend who is not prejudiced one way or the other by the fact of his owning a car of well-known type, with which he may be exceedingly well satisfied, or by the fact of his being connected with some well-known firm of car builders.

Then again some few people hold the opinion that whenever a manufacturer alters to any great extent an important part of his chassis, he may be considered to have admitted error of design of that particular part on the previous year's chassis. This may have the effect of causing some amount of loss of faith in the manufacturer on the part of the public. The loss of faith may not be merited, however, as there are several reasons which may cause a manufacturer to change his designs. He may change, as before suggested, principally to engage public attention: he may change in order to introduce some innovation which was not even in existence at the time of last exhibiting; it may be essential for him to change in order to meet some new public requirement—such as, for example, a demand for a more roomy body; and, finally, he may change in order to reduce cost of manufacture in some way.

It may be remarked that the large amount of extra expense entailed in getting out a new design, such as cost of the designs themselves, of new patterns, of new jigs and tools, and perhaps a considerable amount of reorganisation in the works generally, is a sufficient guarantee to the public that the innovation is worthy of their most serious consideration. I am inclined to think that the public are prone to expect too much of a new device—for example, a new engine—and they are not aware of the extreme difficulties to be encountered before even a small *genuine* advance can be made in matters engineering. For a manufacturer to secure the patent rights of any device which can claim to be really very much in advance of other devices of a similar nature is, in these days of keen competition.

almost an impossibility. The more successful devices on the market may, perhaps, eb superior mechanically to their rivals by some five per cent., if one may be permitted to describe their superiority in this way. Good workmanship and god management are responsible for the greater part of their success.

The British manufacturer has always been considered somewhat conservative, and not at all willing to change, though in automobilism this cannot be considered to have been the case, for the Britisher has shown himself quite as ready to produce new types as the foreigner, though the latter, as wel as the Britisher, is now more inclined to be content with small detail improvements. Seeing the very satisfactory nature of the 1909 automobile this is perhaps not much to be wondered at.

The Knight engine, in paving the way for itself, has no doubt paved the way for others also, and has accustomed the public to regard new types of engines as not necessarily of the "freak" order, but as engines having possibly well tested improvements embodied in their design, and therefore to be regarded with respect. The day for novelties in design is not likely ever to pass from us altogether, for does it not always offer an opportunity to th emanufacturer to attract public attention in a manner which is perhaps not so easily done by other methods? B. C. J.

The Storage and Transport of Motor Spirit.

THE general body of motorists will be greatly interested in learning that strenuous efforts are being put forward by the large motor spirit importing firms in order that the familiar two-gallon tins of petrol may reach the consumer at the most reasonable price possible. *The Autocar* has pointed out previously that the storage and transport of motor spirit in this country are carried out under most drastic regulations, which add very materially to the retail price of the spirit. Various representations have been made from time to time with a view to endeavouring to get the more drastic of the regulations rescinded, and a specially appointed committee has been sitting for several months past at the Home Office taking evidence both for and against. On Tuesday last the committee had before it two important trade witnesses, both being representatives of the interests responsible for the importation and distribution of Shell motor spirit. They were Çapt. Coundon and Mr. John D. Wardrop. The first mentioned gentleman argued that the powers that be should make an arrangement whereby ocean-going tank steamers laden with motor spirit should be allowed to proceed up the Thames as far as Purfleet, instead of, as now, having to discharge their liquid cargoes at Thames Haven, from which place the motor spirit is brought up to London by barges in lots never exceeding 150 tons at a time. It was pointed out that at Rotterdam, Hamburg, and at Blexen (Germany) motor spirit was allowed to be brought almost in the midst of the cities by the ocean tankers, and then discharged into shore tanks. The witness contended that there would be less danger if the bulk of motor spirit cargoes were allowed to be brought up to Purfleet, for the present fleet of motor spirit barges which now pass between Purfleet and Thames Haven would then be done away with.

Mr. Wardrop pointed out that he was in favour of the establishment of such a central authority in connection with the administration of the Petroleum Acts as would ensure a reasonable amount of uniformity and knowledge in dealing with the subject on the part of local authorities. While on a whole he thought the local authorities had carefully protected the public interest, it would be to the advantage of the trade that experience and knowledge of the subject should be at the disposal of the local authorities, so that they should not propose absurd restrictions that oft-times were not a safety but a danger. The witness was questioned as to the advisability of motor spirit being retailed in two-gallon tins made of thicker metal, but he said that that would be impossible. He admitted there was a danger in the fact that the tins sometimes leaked, but this was really the fault of the consumer, who not infrequently opened one tin of motor spirit with the bottom of another. He had tested an ordinary double-seamed motor spirit tin used for Shell spirit, and found that it withstood a pressure of over 70 lbs. per square inch, bursting round the top when a pressure of 80 lbs. had been obtained. He did not consider it necessary in the interests of public safety to license or otherwise control the various vehicles which delivered motor spirit either in tins or drums. With ordinary care no accident would result.

Hastings and St. Leonard's Section of the Motor Union. Local Activity.

IF every local centre of the Motor Union performed work as good as that accomplished by the Hastings, St. Leonard's and District Centre—the first to be formed after the severance from the R.A.C.—the gain to motoring would be marked. The first annual report presented at the annual meeting, held under the presidency of Dr. N. Ticehurst, affords testimony to the valuable results which can be achieved by a local centre.

In almost every matter taken up with the local authorities the Centre has shown a regard for the public interest as well as the interest of motorists, the secretary (Dr. Allford) being able to bring to bear on the points at issue the views of other local organisations. Notably was this the case in the task of inducing the Town Council to approach the Tramways Co. with a view to the improvement of certain sections of the track. Another matter to which the same remark is applicable is the increased use of tar on the roads. The cordial relations with the authorities is further shown by the remark that the Hastings, Bexhill, and Rye Councils have shown great courtesy in co-operating with the Centre in erecting fifteen road signs at dangerous places, chiefly on country roads. Two of these signs were placed near the Silverhill schools, St. Leonard's, on the main London Road.

Two applications for reduced speed limits were opposed at the L.G.B. inquiries, the hon. secretary supporting the case presented by the M.U., with the result that the ten-mile limit was imposed on only two short stretches of road in the village of Robertsbridge, on the London Road. An application for a five-mile limit between Little Common and Pevensey, on the Hastings-Eastbourne road, was opposed, and a compromise was arrived at for a ten-mile limit for certain sections of the road included in the original schedule.

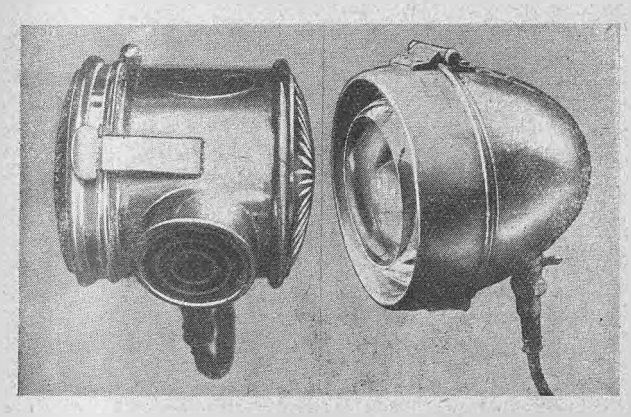
During the year the membership of the Centre has increased about fifty per cent.

The Polkey Electric Lamps.

A Marked Improvement Shown in Many Details.

WE have during the past week been afforded an opportunity of inspecting a new set of electric lamps for cars introduced by Messrs. John Polkey, Ltd., of Birmingham. The outstanding features of these lamps are their simplicity, efficiency, ease of cleaning, and lightness.

Taking the head lamp first, this, it will be seen from the accompanying illustration, is designed on rather novel lines. No lenses are used in its construction, there being a simple parabolic reflector behind the incandescent electric lamp and a plate glass lid in front. The lugs, by means of which the lamp is attached to the head lamp-bracket, are secured to the body of the lamp in such a way as to offer the minimum number of projections, so that the cleaning of the outside is rendered much easier than in the case of the majority of lamps.



The Polkey electric rear and side lamps.

The door carrying the glass front is hinged at the top instead of at the side, so that in the case of its being inadvertently left undone it will soon shake itself into position under the retaining clip. The front glass is composed of a number of separate pieces of plate glass. The electric lamp for use in this lamp is of eight candle-power, and works at a pressure of eight volts. Thus the use of these lamps does not necessitate carrying on the car enormous batteries of accumulators, the weight of which has been a great drawback to systems using a high pressure. The glow lamp itself is of a very special type, and is notable for the very small size of its metallic filament.

The lamp is held in a bayonet socket of the usual pattern, but provided with a safety locking ring, which entirely obviates the likelihood of the lamp coming adrift. This socket is also adjustable from the outside as regards its focus with the parabolic reflector, and thus the quality of the beam of light delivered can be altered to suit individual tastes.

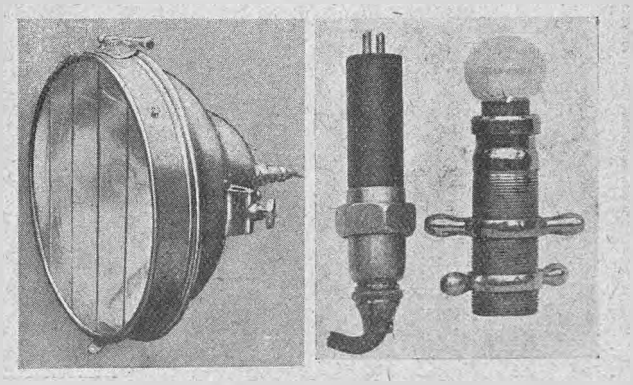
Messrs. Polkey inform us that they have found the ordinary double plug adapter generally used with electric lamps on cars to have certain drawbacks, the chief amongst which is its liability to get dirty. The plug used with the new lamps is of a new sort. In the threaded tube, which terminates at one end in the lamp socket and at the other is fitted with a lug nut for securing it to the body of the lamp, fits a vulcanite cylinder carrying a couple of spring plungers, which are connected up to their respective wires and then pushed home in the tube and secured there with a union nut and lock nut, thus delivering current to the lamp.

When not in use or when the lamps are detached the plug may be unscrewed, and, if desired, carried in a housing similar to the threaded tube in which it normally fits, but in this case simply a dummy, secured in a convenient position close by the lamp bracket.

These headlights, in view of their low voltage, give a remarkably efficient and useful light. When the lamp is properly focussed, a powerful central beam of light is projected a great distance ahead, whilst there is also considerable illumination for the sides of the road. At no time does the light strike the eye with that piercing glare which is so intolerable from the point of view of other road users.

The side lamp and tail lamp belonging to this set are illustrated together, and it will be seen that the former model especially is built on most pleasing lines, and forms an ornament to any car. The lamp is similar in general construction to the one already described, except that it has a dioptric front lens, which furnishes a combined light. One portion—the central beam—penetrates a considerable distance ahead, whilst another portion illuminates the sides of the roads and the foreground.

This lamp is exceedingly well and strongly made, and we should imagine that a pair could hardly be improved upon as headlights for a small car. The plug used for both this and the tail lamp is the same as that already described, as is also the electric bulb. As shown in the photograph, the tail lamp is fitted with glasses at each end as well as the regulation red lens. The object of one of these is, of course, to illuminate the number plate, but the other serves as an ingenious and simple form of tell-tale, which casts a fan-shaped ray of light to the off side of the car, and the forward portion of this comes within the view of the driver without his having to turn his head. He is, therefore, immediately made aware of the working or non-working of the tail lamp. Another advantage of this arrangement is that the road on that side of the car on which an overtaking vehicle must pass is thoroughly well lit up.



The Polkey electric headlight, and the contact plug and lamp holder.

We have no hesitation in predicting much popularity for these lamps. Apart from the fact that their price is most reasonable, they are all of them extremely well made, and either separate or as a full equipment would add considerably to the appearance of any car.

The A.A. and the General Election.

ON another page we have indicated the attitude of the Royal Automobile Club with regard to the lending of cars at the forthcoming General Election. On this subject the Automobile Association has issued the following circular to its members:

The Automobile Association Committee does not propose to attempt to influence members in the matter of lending or declining to lend their cars for the assistance of candidates.

That subject is, in the committee's opinion, entirely one for each motorist to decide for himself, according to the measure of his interest in politics.

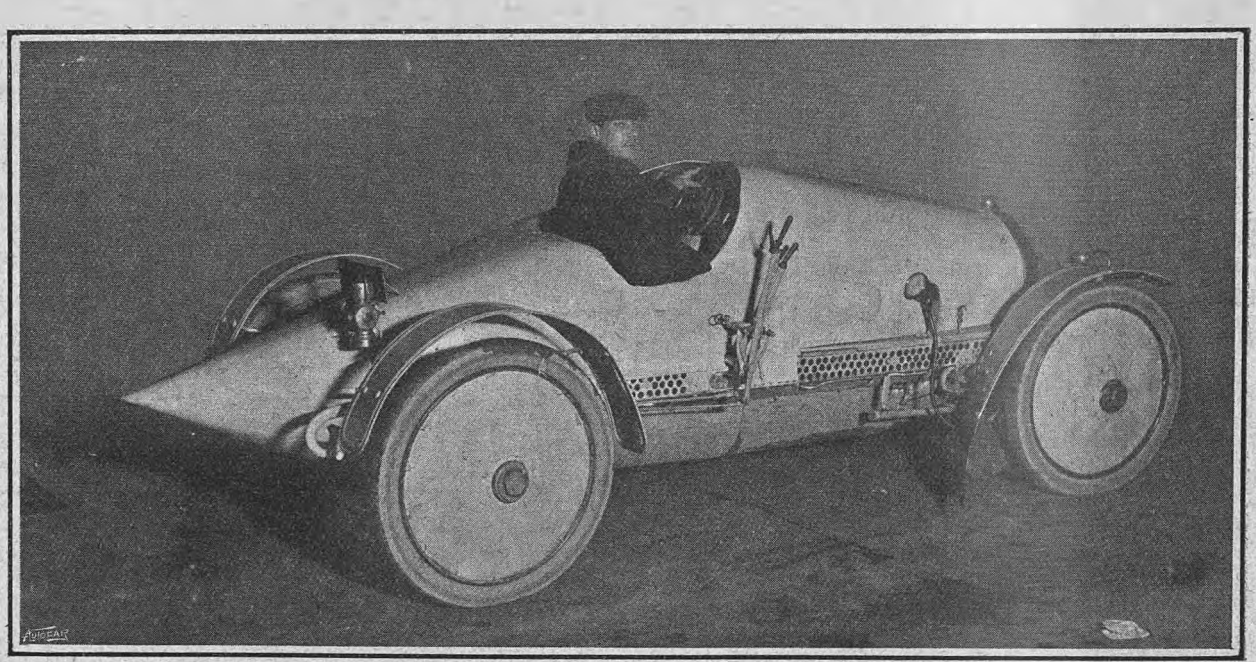
The association will, however, take advantage of the forthcoming election to obtain an expression of opinion from the hundreds of thousands of voters who will undoubtedly ride to the polls in motor cars.

The association will bear the whole expense of supplying, collecting, and collating the cards after signatures have been obtained from passengers by the owners or drivers of cars. Members and motorists who are not yet members are cordially invited to assist in the work, which should commend itself to all reasonable owners and drivers of whatever shade of political opinion.

Cards will be sent free on application by telephone to Mayfair 1430, Manchester 7505 Central, Glasgow 6861 Royal; by telegram to Fanum, London, Manchester, or Glasgow, or by postcard to the Automobile Association, Whitcomb Street, Coventry Street, London.

Northern offices, 30, Cross Street, Manchester. Scottish offices, Gordon Chambers, Mitchell Street, Glasgow.

We must say that we think the A.A. plan is a practical one. It recognises that it is quite impossible to make any suggestion that its members should only lend their cars to candidates who are willing to express their friendly attitude towards automobilism. On the other hand, it very properly feels that the election affords an opportunity which should not be missed, and it therefore takes advantage of the fact in a way which cannot possibly interfere with the political aspect of the matter. Of course it does not mean that motorists should lend their cars to rabidly anti-motor candidates, or that they should not attempt to obtain reasonable answers to reasonable questions with regard to the candidate's attitude towards automobilism, and we think in every instance an attempt of this sort should certainly be made, but whatever is done in this line it in no way interferes with the carrying out of the excellent suggestions of the A.A. After all, every General Election is a demonstration to a large number of voters of the safety and easy control of a motor car, and it is a very great pity that this demonstration should not be turned to good account, and we hope all motorists who lend their cars, whether they be members of the A.A. or not, will adopt it. To make the matter easier for them, we have given the London, Manchester, and Glasgow addresses of the Association.



A flashlight photograph of a 15 h.p. Star car, driven by Mr. R. Lisle, on the way from Wolverhampton to Brooklands. Next week the Star car is to meet the Vauxhall. It will be remembered that this Star has already distinguished itself both in hill-climbing and at Brooklands. It has a 3½in. x 5in. engine, and although Mr. Lisle has altered one or two adjustments, the car we show is on the original chassis, the only difference being in the racing superstructure, which has taken the place of the two-seater body. The present shell is of the canoe type, and will only hold one.

Mr. R. L. Jefferson, the well-known traveller and frequent contributor to the pages of *The Autocar*, has resigned his position as foreign and colonial representative of the Rover Co., Ltd. Mr. Jefferson has for many years been associated with Rover productions, and has represented the company in world-wide travel in Europe, Asia, Africa, and America. On the sporting side of cycling it is not uninteresting to note that Mr. Jefferson in 1895 rode a Rover bicycle from London to Moscow and back, thereby creating the longest distance record of the world. In 1896 he rode a bicycle from London to Irkutsk, in Siberia, and in 1898 he emulated Col. Fred. Burnaby's horseback feat of 1873 by riding a bicycle to Khiva. As a motorist Mr. Jefferson has been almost as energetic. In 1905 he drove a motor car from London to Constantinople. In 1906 he made an extensive tour on his car of India, Burmah, the Straits Settlements, Java, and Ceylon, and in 1907 made the unprecedented journey on a motor car from coast to coast of South Africa, starting from Durban and *viâ* Johannesburg and Kimberley, reaching Capetown.

The Ten Mile Speed Limits.

What is being done to prevent their multiplication.

RECENTLY several correspondents have drawn our attention to the large number of new ten-mile speed limits which are being imposed in different parts of the country, and particularly in the southern counties. It has been suggested by more than one that the Royal Automobile Club and the Motor Union could not be opposing all of the local applications for these limits, as they were multiplying at such an alarming rate. On the other hand, there is no doubt that the average opinion is that the Club and the Union oppose every application on principle. To obtain the exact facts of the matter, we wrote to the secretaries of the R.A.C. and the M.U., and below we give their replies:

December 11th.

Dear Sir,—I regret the delay in replying, but this has been occasioned owing to the absence from town of our solicitor, who, as you are probably aware, deals with all speed limit applications, under the directions of the Legal Committee. He tells me that the procedure which he is instructed to carry out with regard to speed limit applications is as follows:

A formal notice of opposition is given to every application for a ten-mile speed limit which is advertised in the *London Gazette*. The merits of the application are then looked into, and in most cases the *locus in quo* is inspected by the solicitor. He then makes a report to the Legal Committee, and informs them what the bulk of the opinion of local motorists is as regards the application. In practice, it is generally found that even when the reasons for a limit are such as would cause the Local Government Board to make an Order, the length of road scheduled is too long. In some cases it is possible to have this length cut down to a proper length by means of negotiations with the authorities applying for the Order. If these negotiations are successful with that end in view, then in such cases the notice of opposition is withdrawn. If, however, the application is an unreasonable one, or where the length of road is too long and the negotiations for a reduction have broken down, the matter is then pressed to a Local Government Board inquiry, and opposed *in toto*.

Yours faithfully,
J. W. ORDE, Secretary R.A.C.

119, Piccadilly, London, W.

December 9th.

Dear Sir,—In reply to your letter of the 3rd inst., the Motor Union is offering as vigorous an opposition to ten-mile speed limit applications as at any time or any previous period, and with as much success. The success which attended its earlier efforts to resist undue multiplication of speed limits has, however, had the effect that the applications now put forward are of quite a different character from those which were made to the Local Government Board at the time when the Motor Car Act was passed. Then it was the practice for a town to apply for a speed limit on the whole of the roads within its area. During the last eighteen months only one application of that kind has been put forward, viz., the city of Oxford, and although it has been under consideration for many months the Local Government Board has not yet ordered any inquiry.

The applications that are now put forward are generally for short lengths of road which, if they come within the provisions of Section 9, the Local Government Board invariably grant. But even short sections of road are opposed by the Motor Union when they are not of a reasonable character. For example, on Friday last the Motor Union was represented at an inquiry at Three Bridges, where an application had been made for a length of about threequarters of a mile near the station. On the following day it opposed a short length at Partridge Green, and I have every reason to hope that both of these applications will be refused.

An inquiry was also held at Southwick on the Brighton-Chichester Road on the 6th November in respect of about half a mile of road which had been scheduled. This also the Union opposed with every expectation of the opposition being successful.

The Union does not, however, offer a purely fractious oprosition when it is obvious that the application is clearly within the provisions of the Act, and it is certain that the Local Government Board will grant the application. The fact that it acquiesces in applications when they are reasonable gives its opposition far greater weight in those cases where the application is one which, in the opinion of the Union, cannot be brought within the scope of the section. In two cases recently the Union has acquiesced in a speed limit, viz., one at Colnbrook on the Bath Road, and the other in respect of a short length of road at Harlow in Essex. The wisdom of this policy has been justified over and over again by the manner in which the Local Authorities and the Local Government Board meet the views of the Union in those cases where the application is one of the character to which the Union, in the interests of motorists, offers opposition.

Yours faithfully,
W. REES JEFFREYS, Secretary M.U.

1, Albemarle Street, Piccadilly, London, W.

It will be seen from the above that substantially the same attitude is taken by both the Club and the Union in regard to these ten-mile limit applications. We have no doubt that some motorists will regard it as a little unsatisfactory because strenuous opposition is not offered to every application for a ten-mile limit. Of course, there is no doubt that every ten-mile limit is an absurdity, but it is an absurdity permitted by law, and as that is so it is no good the Club or the Union raising fruitless opposition to speed limit applications in places where the Local Government Board is almost bound to grant them, especially as by prior agreement with the local authorities the motoring representatives often succeed in getting a very long limit reduced to less unreasonable length. At the same time, it certainly does seem desirable, if only for purposes of local education, that every speed limit application should be formally opposed and the Club and the Union represented at a Local Government Board inquiry, because, whatever the law may be, there is no commonsense in restricting motor cars to lower speeds than horse carriages or bicycles. Above and beyond all this there is never any certainty that a ten-mile limit, once obtained, will not be used as a trap. If ten-mile limits were merely local indications that the authorities thought their districts particularly dangerous we should not mind, but every ten-mile limit is a potential trap, and we have the notorious case at Newmarket to remind us of this, though it is only one of many examples which might be cited. Here was a place in which the motoring organisations recognised special conditions, and they therefore offered no opposition to a ten-mile limit over two miles in length, which runs not only through the centre of Newmarket, but right out into the suburbs. What is the result? At hours of the day when one may drive through the town without seeing a single racehorse the police are working 220 yard traps, not through the centre of the town, but at the suburban end of the speed limit, which is continued so far out that a man who does not know the place is likely to imagine with reason that he has got outside the limit area.

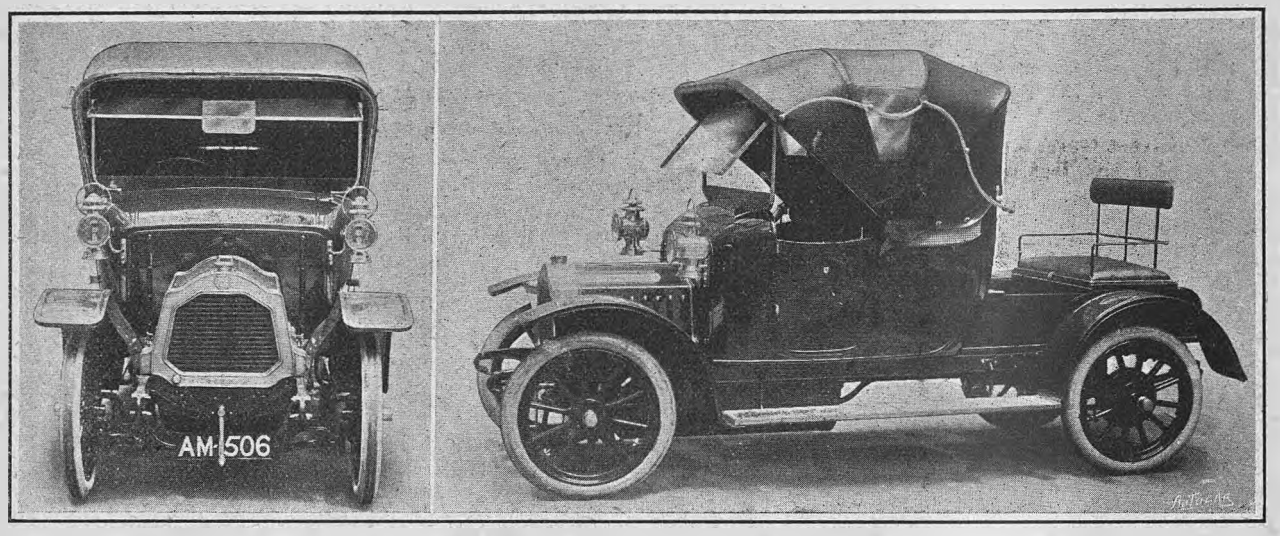
Undoubtedly a number of speed limits which have been granted would never have been permitted had local motorists strenuously opposed them. In too many instances, however, motorists have waited till the limit has been granted before protesting against its injustice.

A ten-mile limit came into force on Monday last week on the main road through Bettws-y-coed from the south-east boundary of the old post office to the Elsi Lake, Jubilee Path, and on Mill Street, Bettws-y-coed, from the bend under Tanybryn to the main road.

Body Design and Construction.

A High-sided Single Phaeton.

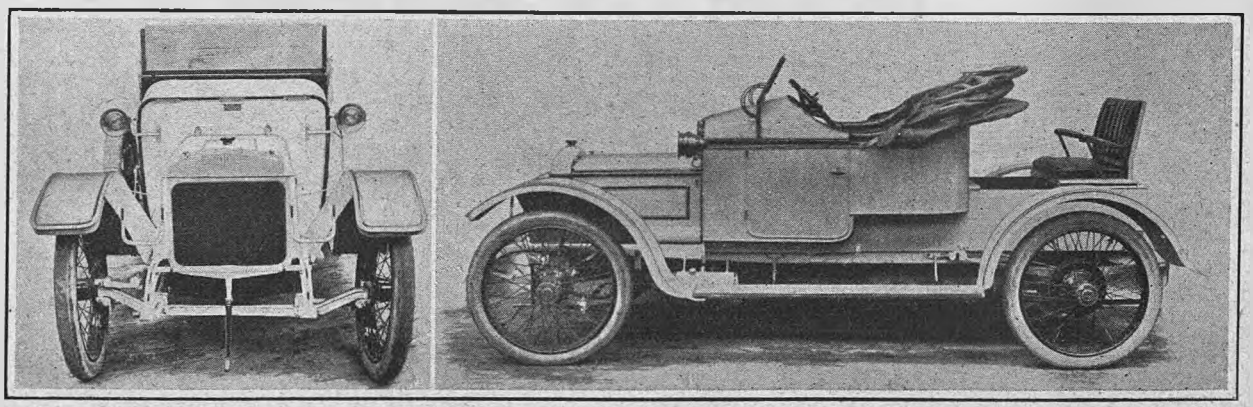
MESSRS. CANN, LTD., Miller Street, Camden Town, N.W., have built a number of two-seated phaetons for medical men and others with high side doors and a large torpedo protector dash. The one we illustrate is fitted to a 14 h.p. De Dion chassis. It will be seen that it has a double dickey seat at the back, which folds up into the box when not required. While referring to Messrs. Cann, we may say they have a magnificent four-storey factory built on the most modern fireproof principle. We should say it is the largest carriage factory in London devoted entirely to motor body construction. They have specialised on all the latest designs of high sided deep seated bodies, as our readers no doubt will have gathered from the illustrations published from time to time in *The Autocar*. These are none the less but a tithe of their output, as they design and build all sorts of closed bodies, from the humble motor cab type to the most luxurious limousines and landaulets, which are superbly appointed and finished.



A type of body built by Messrs. Cann, Ltd., specially suitable for doctors.

A Large Car with Scuttle Dash.

The four views show a 22 h.p. Daimler which has been fitted with a body on very similar lines to those of Mr. Eric Walford's car, which we described and illustrated on July 24th last. The car is primarily intended for use as a two-seater, but the boot at the rear can be opened up as shown, disclosing a folding seat. The doors to the front seat are very high, and over them is a sheet steel lid or "scuttle," which is hinged so that access to the seats or dash-board is easy. On the scuttle is a hinged screen, and the car is completed by a hood and side curtains. Nothing cosier for two can well be imagined. The original design was Mr. Walford's, and both his body and the one we now illustrate were built by Hewer's Motor Bodies, Ltd., Coventry. We should add that the vertical panel of the back seat is a feature of this "straight line" design. The idea is that it shall harmonise with the vertical lines of the radiator and dash; also that it shall leave room for an exceptional depth of sprung and stuffed seat back at the lower part to thoroughly support the small of the back, and to insulate the spine from all shock and vibration. Of course, a very similar body could be built with raking and curved lines if preferred.



A 22 h.p. Daimler chassis fitted with an uncommon type of body by Hewer's Car Bodies, Ltd.

The French Reliability Trials.

Progress of the Event.

THESE trials, which commenced on December 5th and will be completed on December 19th, had on Saturday last reached the 7th round. Originally there were twenty-nine starters, of which the following is a complete list:

		No. of cylinders.	Bore and stroke.
1.	Sizaire-Naudin I.	1	120 × 140
2.	Sizaire-Naudin II.	1	120 × 140
3.	Sizaire-Naudin III.	1	120 × 120
4.	Grégoire I.	4	80 × 110
5.	Grégoire II.	4	80 × 110
6.	Grégoire III.	4	80 × 110
7.	Delage	4	75 × 120
10.	Hurtu I.	1	100 × 120
11.	Hurtu II.	4	80 × 120
12.	Fouillaron	1	100 × 130
13.	Barré I.	4	75 × 120
14.	Barré II.	4	75 × 120
15.	Barré III.	4	75 × 120
16.	D.F.P. I.	1	100 × 130
17.	D.F.P. II.	4	65 × 120
18.	D.F.P. III.	4	70 × 120
19.	Corre-La Licorne I.	4	66 × 100
20.	Corre-La Licorne II	4	70 × 120
21.	Corre-La Licorne III.	4	80 × 100
22.	Turicum I.	4	75 × 110
23.	Turicum II.	4	75 × 110
25.	Alcyon I.	4	75 × 110
26.	Alcyon II.	4	75 × 110
27.	Alcyon III.	4	75 × 110
28.	Zénith	4	80 × 110
29.	Demeester	4	75 × 110
30.	Rolland-Pilain I.	4	80 × 110
31.	Rolland-Pilain II.	4	80 × 110
32.	Rolland-Pilain III.	4	80 × 110

During last week several competitors suffered minor mishaps which will prevent them qualifying for a premier award.

First day (Sunday, December 5th), Evreux and back, 186 kilometres. Three vehicles only lost marks, viz., No. 16, Doriot-Flandrin-Parant I.; No. 17, Doriot-Flandrin-Parant II.; and No. 13, Barré I.

Second day (Monday, December 6th), Chartres, 168 kilometres. The Sizaire-Naudin, driven by G. Sizaire, was the only vehicle on this run which lost any marks. The firm making the Doriot-Flandrin-Parant car lodged a protest against the penalisation of the previous day, as they considered the tightening of an inlet pipe did not constitute a mechanical stop.

Third day (Tuesday, December 7th), Compeigne, 184 kilometres The whole of the competitors accomplished this day's journey without a single hitch.

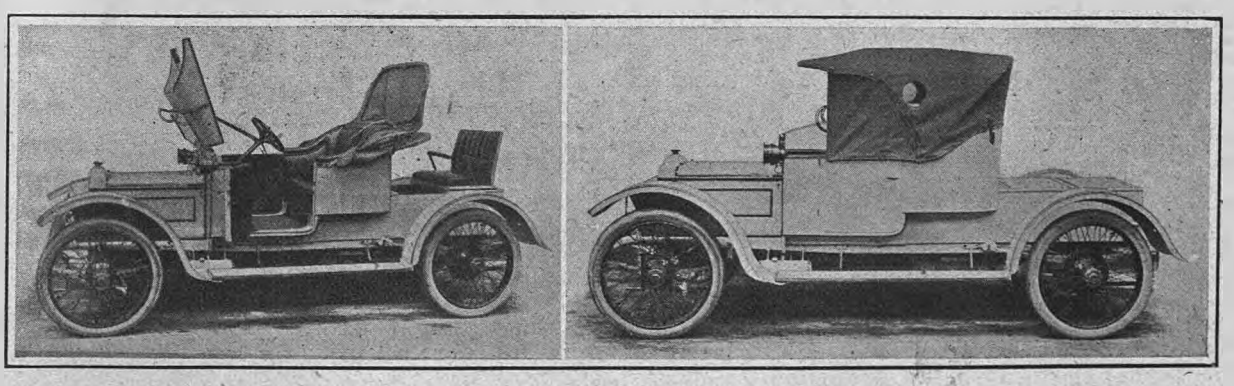
Fourth day (Wednesday, December 8th), Beauvais, 168 kilometres. The only loss of marks on this day was the Turicum II., which broke a brake lever in collision with another vehicle.

Fifth day (Thursday, December 9th), Chartres, 168 kilometres. In this day's run the Sizaire-Naudin I. retired, and the Barré I. lost marks through a mechanical derangement. The committee reinstated the Doriot-Flandrin-Parant car which was penalised on the first day, as they thought the observer had misinterpreted the regulations.

Sixth day (Friday, December 10th), Evreux, 186 kilometres. The first accident which has occurred during the competition took place to-day. No. 32, Rolland-Pilain III., turned over at a bad corner, and although neither the driver nor observer was injured, the car had to be withdrawn, owing to the fact that one of the wheels was smashed. No marks were lost by any other competitor in the running for the first place.

Seventh day (Saturday, December 11th), Compeigne, 174 kilometres. The Grégoire I. suffered a broken spring, and the Hurtu II. broke a petrol pipe. The necessary repairs *en route* occasioned a loss of marks which put these two vehicles out of the running for the first prize.

A very gratifying feature in connection with the recent Blackpool Aviation Week was the manner in which the Automobile Association was enabled to work with the Blackpool authorities in regulating motor traffic. The Chief Constable, who has consistently refused to allow a speed trap to be worked in the area over which he exercises jurisdiction, accepted the Association's offer to supplement the work of his officers by placing special patrols on duty, and his appreciation of their assistance is shown by the following letter to the chairman of the A.A.: "November 3rd, 1909. Dear sir,—From the police reports sent in to me I find that the motor scouts which you were good enough to send down here during the aviation week were of the greatest possible service, and I have only now to thank you most sincerely for the kind help you voluntarily gave me, and which assisted the police very materially in regulating the motor traffic to and from the aviation ground. Faithfully yours, (signed) J. C. DERHAM. Chief Constable. To Colonel Bosworth, chairman the Automobile Association, Coventry Street, London, W."



Two additional views of the special body illustrated and described on the preceding page.

R.A.C. Certified Trials.

The test to destruction of a discarded cover fitted with a Challenge reinforced inner tube and of a standard cover and tube, both entered by the Challenge Reinforced Inner Tube Co., Ltd., of 218, Shaftesbury Avenue, London, has come to an end with a mileage of 1,847.5, the Technical Committee judging that the repairs carried out constitute a reconstruction of the tube, and that it has therefore been run to destruction in accordance with the terms of the entry form.

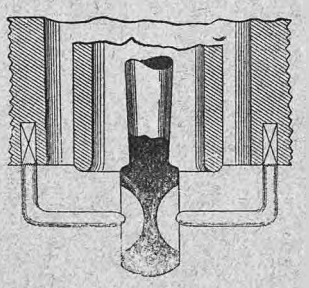
Messrs. Torkington Tyres, Ltd., of 4, Percy Street, Tottenham Court Road, London, W.C., have entered for another 4,000 miles trial on the road a set of Torkington solid rubber tyres. A set of these tyres which had been running in the first 4,000 miles test has been withdrawn after the completion of 1,225 miles, the entrants being dissatisfied with the condition of the front tyres, which condition they attributed to over-vulcanisation of the particular tyres submitted for trial.

On October 23rd a set of Torkington tyres was subjected to a 100 miles high speed test on Brooklands track. The tyres were fitted to a 38.4 h.p. (R.A.C. rating) six-cylinder San Giorgio car. The weight of the car was 4,076 lbs.; two passengers and ballast, 406 lbs.; total running weight, 4,482 lbs. The wind area of the car was 17.8 square feet. The weather was fine; a strong wind was against the car for about one-third of the circuit of the track. The distance covered was 71.94 miles, which was run at an average speed of 48.7 miles per hour. This distance was covered without a stop. The certificate of performance states that at the conclusion of this distance it was found that a piece of the tread, 18in. in length, had become detached from the near rear tyre, exposing the central chain. The off side front tyre was also found to be much heated, and semi-liquid rubber was issuing from its walls.

Another 100 miles test was made on Saturday, November 27th, 1909, of a set of Torkington tyres fitted to a 40.9 h.p. six-cylinder Simms car. The weight of the car was 4,009 lbs.; two passengers, 367 lbs.; total running weight, 4,376 lbs. The wind area of the car was 16.8 square feet. The weather was fine. The distance covered was 102.38 miles, which was run at an average speed of 43.78 miles per hour. This distance was covered without a stop. The certificate states that three of the tyres were the same size before and after the trial; the fourth (the off front) was .25in. less in circumference or .08in. less in diameter. There was slackness in the bearings of the off front wheel during the trial. The tyres when tested by hand after the trial were warm, but not hot.

The Cup Sparking Plug.

This plug, which is now being put upon the market by the Low Accessories and Ignition Co., Ltd., of 15, Great St. Helens, E.C., presents novel features from the point of view of plug construction, which it is claimed are based on proven scientific principles. The sponsors for this plug suggest that all the numerous forms of sparking plugs at present upon the market really fall short of the plug under consideration, inasmuch as the latter gives a spark possessing the greatest rapidity and heating power, while being both cheap and simple.



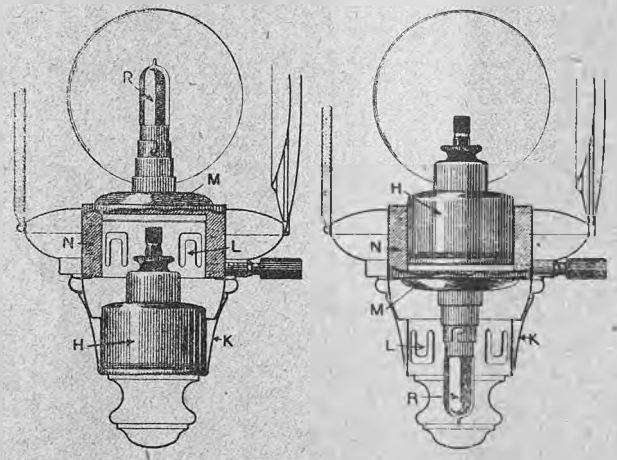
It is claimed that if one electrode of a sparking plug be made in the form of a hemisphere, the other being a point placed approximately at the centre of the concave side, the whole character of the spark given is altered, for while retaining, nay increasing, its calorific properties, it becomes detonative. It is said that the nature of the spark is therefore such that heat is generated much more rapidly thereby than would otherwise be the case. The electrodes are of specially hard steel, and by reason of their shape, as mentioned above, the spark given off is of much larger cross-section than ordinarily.

It is claimed that they will not soot or crust up in the foulest engine, that the spark burns its way through everything, and that users will find a distinct improvement in the pulling and flexibility of the engine to which they are fitted. At the present moment we are quite unable to endorse this, although on first sight and consideration the claims made for the plug appeared to have theoretical grounds.

We hope shortly to be testing four in one of our own engines, and will report on their behaviour.

The Mixt Lamp.

Illumination by electricity for all the lamps on a motor car will be agreed a sweet boon, but always behind the comfort and convenience of the system lurks the fear of spent accumulators, shorts, and other failures. A. M. Desponts, of 57, Rue de Chateau, Paris, has designed a lamp with which electricity will be used, but which will burn paraffin should the electricity fail. The novelty is in the means employed to achieve this desirable end. When electricity is in the ascendant the paraffin using portion of the apparatus is completely enclosed and concealed in the pendant base K, where it is held securely by the springs L. When it is required to use the paraffin portion the base pendant is detached, the paraffin well withdrawn and placed within the collar N, the electric bulb and its fitting being set upside down within the base pendant, as shown.



H, paraffin well and burner
K, pendant base
L, springs securing the paraffin lamp in position
M, base of electric bulb holder
N, fibre ring
R, electric lamp

On the Track. By H. C. Lafone.

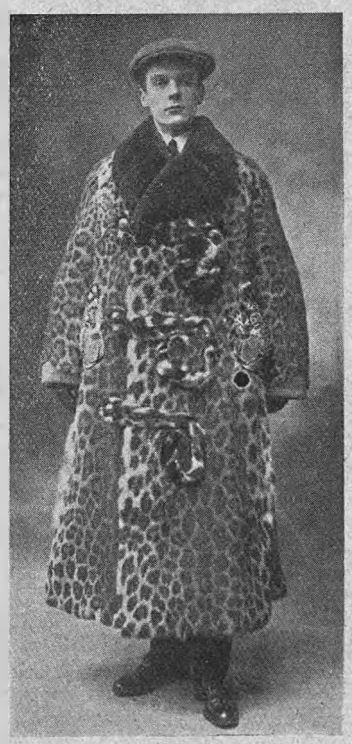
MY sincerest congratulations to Colonel H. C. L. Holden and Major Lindsay Lloyd on the result of the International Automobile Conference in Paris last week. The decision of the delegates to accept the electrically-timed records at Brooklands implies due appreciation of Colonel Holden's genius as the inventor of the track timing apparatus, while their fiat that, in future, all the short-distance records *must* be electrically timed with an instrument like Colonel Holden's is further evidence of the value which they attach to an Englishman's clever invention. To Major Lloyd congratulations are due because he has worked hard to get the Brooklands records officially recognised, and because the delegates to the Conference would not have been so ready to accede to the wishes of the British representatives if they had not been pretty sure of the man behind the tapes and fine scale ruler. Certainly it is good for the prestige of the B.A.R.C. that performances on the Weybridge course shall be acknowledged abroad, and I hope that the decision of the Conference will imply that in future Brooklands will be regarded as the natural and obvious venue for attacks on all world's records.

It is highly gratifying to find that since the introduction of the aeroplane at Brooklands the application for B.A.R.C. membership has been most satisfactory. When I wrote a week or two back that I should not like to guarantee a two guineas subscription to new members after the end of this year, I was only giving my own private impression of what was likely to be the result of the new attraction at the Weybridge track; but the course of events since I touched on this matter has been such as to strengthen my opinion that before long applicants will find the financial barrier to membership rather less easy of negotiation than it is at present. While on this point I would like to make it quite clear that the old system, under which a member had the right to register one car only, and to drive only that one machine on the track, has been abandoned in favour of an arrangement by which any member can take in any car at any time.

There seems to be a feeling abroad in the motor trade that the ordinary two guineas subscription should entitle a firm to send down its cars with any one of its employees in charge. This is not allowed, for firms—in the firm name—are not admitted to ordinary membership, and the personal representative of the firm to whom the membership badge is issued cannot transfer his badge to any of his drivers. At first sight it does seem rather hard that a managing director, say, of a motor manufacturing company should have to be present in person when he wishes to test one of his machines, but it must be remembered that the subscription is extremely low, and that one cannot have everything for almost nothing. I think that the B.A.R.C. might do worse than offer membership at five guineas to firms, the badge to be available for use by any of the firm's employees. At the present moment a firm has to buy books of admission tickets at prices which, if much use be made of the track, very soon absorb more than the sum suggested by me as the amount of the transferable membership subscription.

That the track is rather terrifying to newcomers was proved one day last week, when Mr. Tate brought down a sporting friend on a big Mercédès. The friend was accustomed to high speeds on Continental roads, but the track frightened him to death. It was rather amusing! He told me he could not get over the tilting on the banks, and I inferred from his conversation that he would have been more at home skidding round the corners on the flat. I fancy that a number of motorists imagine that the object of the banking is to afford a spectacular display to onlookers, instead of being, as it is, the only safeguard by which really high speeds are at all possible. There has not been very much doing lately among the aviators, but Mr. Neale has made several more short flights, and seems to be getting the hang of the thing in quite a satisfactory manner. I was afraid that the sewage farm would prove unduly attractive to some of the intrepid bird-men, and was, therefore, not surprised to hear that one of them had made a landing acquaintance with its delights a few days back! Aviators will be pleased to hear that the triangular piece of the farm which sticks out into the flying ground is likely to be done away with. Mr. Moreing's biplane is now ready for trials, and its owner will probably have made his first essay before these notes appear in print. Messrs. Lane's and Wickham's monoplane left last week for Pau. Mr. H. J. D. Astley's small monoplane seems all ready now except for its propeller.

A Leopard Skin Coat.



Our readers will admit that the coat illustrated herewith has decided claims in the way of novelty of appearance. It is of a type which the Bariquand and Marre Engine Co., of 10, Poland Street, Oxford Street, London, W., have introduced. Made of leopard skins, with heads for pockets, tails for buttoning, and equipped with beaver collar and buckskin cuffs, it should keep the wearer warm and comfortable on the most "biting" days. It is specially designed for motoring, being sufficiently "roomy" to be comfortable when the wearer is sitting down. Coats made after this manner can be supplied by the above named company for both ladies and gentlemen.

At a meeting of the Royal A.C. committee on Wednesday last week the members expressed their great sympathy with those who had suffered bereavement in the sad disaster to the *Ellan Vannin*, and directed that a contribution of ten guineas be made to the fund now being raised by Lord Raglan, Lieut.-Governor of the Isle of Man, for the relief of the widows and orphans of those who lost their lives in the wreck.

Correspondence.

EDITORIAL NOTICES.

No letters from members of the motor industry will be published when they deal with subjects which may be regarded as advertisements for the writers' or their business interests. At the same time as many of the most practical suggestions come from those engaged in the motor industry, their letters will be inserted when possible, though the names of the firms they represent may be expunged, and the initials of the writers substituted.

Letters of a personal nature will be withheld.

The Editor, although accepting no responsibility for the opinions expressed by correspondents, reserves the right to publish a portion of a letter, and to omit any part which he does not consider interesting or essential.

All communications under a *nom de plume* should be accompanied by the name and address of the writer, not necessarily for publication, but to assure the Editor as to good faith.

Enquirers who ask for the experiences of private owners with specified cars, parts, or accessories, are requested to enclose a stamped addressed envelope, so that replies which space will not permit us to publish may be forwarded to them. Circulars or letters from interested parties will not be forwarded.

HOW TO PRESERVE THE LOCAL CLUBS.

[15039.]—The Motor Union is still pursuing its policy of ineptitude. I am not far wrong if I state the Motor Union is primarily responsible for the present internecine war in motordom, and undeniably the inspiration of the "powers that be" to increase the taxation of motorists.

Not content with these achievements, the Motor Union is now attempting to wipe out of existence the provincial clubs. A circular letter has been issued to all clubs affiliated to the Motor Union, inviting the members to send their club subscriptions direct to the Motor Union, and the specious plea is urged that this will relieve the secretaries and treasurers of much uncongenial work. Further, it is asserted in this precious circular letter that the 5s. fee for affiliated members entails a loss to the Motor Union. Now I can only speak for my own club. We pay the Motor Union about £40 a year, and receive the Year Book and Journal quarterly; a few members have been assisted under the badge scheme to the amount of £10 or thereabouts, leaving a considerable balance in favour of the Motor Union, and yet the affiliated member is a loss. The controllers of the Motor Union can lay this flattering unction to their souls—they shall not suffer loss longer than is possible, at least so far as my club is concerned.

Now it is difficult to write calmly with reference to the proposal that club members send their subscriptions to the Motor Union. This body may be a wonderful organisation, in the opinion of some, but this is not unanimous, and still less likely to be so when the provincial clubs realise the insidious attempt to extinguish them as such and consolidate the Motor Union as the governing body of motorists in the United Kingdom.

We small fry in the provinces, who are such a financial loss to the Motor Union, are to have our thinking done for us, refer to headquarters on all and sundry matters, our expenses are generously to be paid; in fact, we are to shut our eyes, but pay our guineas, and the angels up aloft, *i.e.*, the Motor Union, will watch over us with the tenderest solicitude, and the peripatetic organiser recently appointed will doubtless occasionally bestow upon us the light of his countenance to see we are behaving ourselves.

For the information of the Motor Union, the provincial club to which I belong, and which originated in the early days of motoring, is not going to merge into that body, nor lose its identity. We shall act quite constitutionally, and ere long not only save our individuality, but £40 a year also.

My reason for writing under the veil of anonymity is because of my club, the present time being inopportune to subscribe myself otherwise than FOREWARNED.

[A proof of the above letter has been submitted to the Secretary of the Motor Union, whose reply is as follows.—ED.]

Sir,—Tennyson has told us that "a lie which is half the truth is ever the worst of lies," and his warning is amply illustrated in the anonymous and misleading communication you print above.

What are the facts? Some of the local clubs are finding increasing difficulty in maintaining their organisations. Hill-climbs, gymkhanas, and social events have ceased to attract. One club has written recently to the Motor Union saying that it is about to dissolve, another has dissolved already, and several have intimated that unless something is done a similar fate will overtake them.

The Motor Union, which has from the first appreciated the need for efficient local organisations, views this situation with dismay, and has been considering for some time how it can preserve them. If they cannot be maintained in one form then another must be tried. It has resolved, therefore, that in any case it will continue to support the local committees as active agents for carrying on the public work necessary to the motor movement. Their expenses will be paid, and the routine work done as much as possible at headquarters. The name and form of a club will be maintained when desired. A travelling organiser has been appointed to assist the local organisations, and additional efforts will be made to secure their efficiency.

If the existing conditions can be maintained so much the better. The Union will be the last to interfere with the present arrangements where they are working well and satisfy local requirements. The local clubs will decide their own future—all the Union has done is to provide a means for preserving those clubs which feel they cannot continue much longer on the lines on which they have been run up to the present. There is no "insidious" object in view, only a very genuine wish to maintain effective local organisations which will watch our local interests and co-operate with the Union in protecting national interests.

W. REES JEFFREYS.

TYRE PROBLEMS.

[15040.]—In my letter to *The Autocar* of November the 13th [No. 14935], I maintained that a motor or bicycle wheel is carried by the lifting pull of the tyre walls above the wheel. The wheel is pulled up, and not supported by being pushed up, so that a car or bicycle hangs from its tyres. Your correspondents in letters 14983, 14984, and 14985 contest this view. Some time ago I explained my contention to a well-known professor of physics, and also to a senior wrangler and mathematical lecturer at Cambridge, who both agreed that it was quite sound, though the latter told me it would take ten years to make most men believe it—a statement which I am inclined to think is not far from the truth.

Perhaps the problem will seem easier if I present a more simple case. Let us consider why a soft hollow air inflated rubber ball stands up. Obviously it is kept up by the pressure of the air within it. But the pressure of the air on the lower half of the ball acts downwards. The ball keeps up, therefore, by the pressure of the air upon its upper half, and the lower half is pulled up by the upper.

An inflated ball, as in the fig. 1, standing on the ground, has a small flat base C D, and is kept up by the column of air A B C D thrusting on the ground at D, and on the vault of the ball at A B. Air pressure at G is balanced by the opposite and equal pressure at H. That at F and that at I, and so on. The pressures at F and G tend to lift the ball, but are balanced by the pressures at H and I, which tend to depress it, so that the resultant free pressure is the upthrust at A B.

Now suppose a set of weights K L, etc., were hooked on to the ball round its equator, as shown in fig. 2. What supports them? The area of surface C D flattened against the ground will be increased, and the column of air A B C D thrusting up the vault will be increased in proportion. It will now be more difficult to get A B to come down than before. The weight of K and L is not supported by the walls of the ball below their attachments. The walls beneath can no more resist pressure than the spokes of a wire wheel can resist pressure. K and L obviously pull on the walls of the ball above their attachments, and tend to drag down the vault which is thrust up by the column at A B.

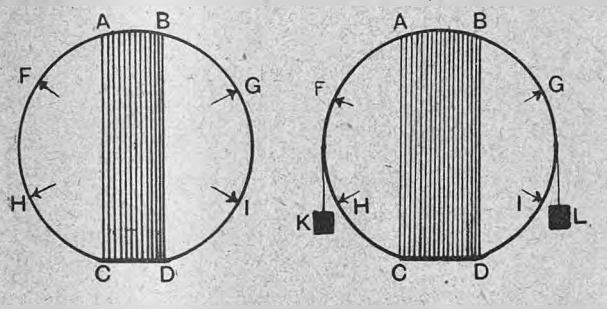
Exactly the same thing happens with a wheel and pneumatic tyre. The vault of the tyre is thrust up by the air pressure in the tyre. The wheel is but a frame hanging in a flattened bladder pumped up hard.

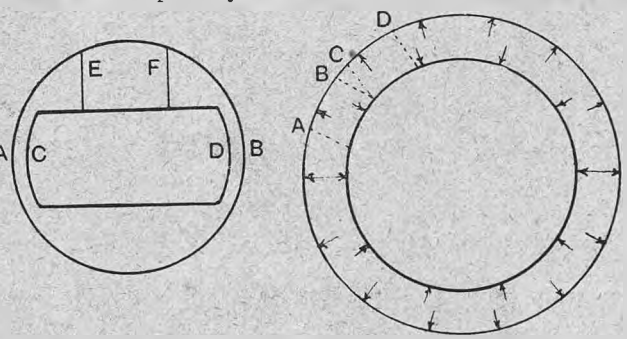
Next let A B be a round football, and C D a solid cylinder with rounded ends hanging in it by two cords E F (fig. 3). However hard the football be pumped up, C D will fall if the cords suspending it be cut. The pressure of air, however great, on the under surface of C D will not support it for the simple reason that the same pressure is exerted on its upper surface as well. Let C D lengthen and reach to A and B, and let the round ends stick to the adjacent walls of the football. Now the supporting cords can be cut, because the football walls will themselves support the cylinder sticking to them. The cylinder obviously will hang from the walls, which are doing duty for the cut cords. But C D has now become a wheel in a pneumatic tyre, and it is suspended by tension from above, and not carried by direct pressure. Pressure holds up the hollow ball or tyre in which the cylinder or wide wheel hangs.

Again, let fig. 4 represent a motor wheel and its tyre. The arrows are drawn to show the direction of the air pressures in the tyre. One set press inwards perpendicularly on the

rim, the other set press outwards perpendicularly to the tread of the tyre. Now the arrows are drawn at equal distances, and it is obvious that there are more arrows directed outwards than inwards. Likewise the dotted parallel lines A B C D in the figure show a V-shaped gap cutting off B C in the tread which has no equivalent at the rim. That is, there is a greater air pressure on the tread forcing it outwards than there is on the rim forcing it inwards. The tread being part of a larger circle than the rim has in consequence a proportionally larger surface. It contains more square inches, and under a pressure of, say, 70 lbs. per square inch the tread obviously receives a much greater out-thrust than the rim does an in-thrust. The tyre, therefore, pulls outwards (centrifugally) on the rim with far greater force than the rim is pressed inwards (centripetally) by the air. A wheel consequently is stretched, not compressed, by a pneumatic tyre. It is trying to burst, not collapse, and it is nonsense to talk of it as being directly kept up by air pressure. The tyre is directly kept up by air pressure, but the wheel itself is held by the tyre in a state of tension and supported by tension.

When a tyre with its wheel is put on the ground some of the tyre tension is taken off the wheel on its under side. The pressure on the rim remains much as before, for it does not increase by 3%. The tyre now receives support from the ground. The air thrusting on the ground, through the tyre tread at the surface of contact with the ground, balances an equal thrust against the vault of the tyre, the thrust being transmitted by the two air columns passing up in front of and behind the wheel, as shown in my letter of November 13th. The wheel itself is dragged in every direction except





downwards—why should it therefore come downwards? It is forced downwards by its own weight and the load it carries, until this force is balanced by the lifting drag it is receiving from above. The tyre vault cannot readily follow the wheel downwards, and only comes down by being dragged down by the wheel fastened to it, which thus receives its support.

The air pressure under the wheel proper does not appreciably increase though the load on the wheel is doubled, as the use of a pressure gauge will show. What does appreciably alter is the tyre tension between the wheel and the ground, for the tyre fabric which dragged downwards on the wheel is pushed up towards it, and the wheel has no longer to transmit that tension through itself to the tyre above, which now can pull effectively against the wheel instead of against the portion of tyre opposite it below.

If, as your correspondents claim, the wheel be supported by the pressure of air on the under half of the rim, what do they suppose the pressure of air upon the upper half of the rim is doing? The air above the rim presses on the upper half of the rim as truly and as forcefully as the air below the rim does on the lower half, only the pressure is exerted downwards instead of upwards. If the wheel be lifted by pressure it is with equal truth depressed by pressure. Turn the wheel half round and the half tyre which was pulling downwards is now pulling upwards, while its contained air, which was pushing the rim opposite it upwards, is now pushing it downwards. The air pressures on the rim balance, and always balance and neutralise one another; it is only the tensions of the tyre fabric on the rim which vary.

The air compressed within a tyre forces upwards on the lower half of the wheel rim, and on the upper half (or vault) of the tyre, and downwards on the upper half of the wheel rim and on the lower half of the tyre. The opposite pressures on the rim balance one another, thus destroying any lifting effect; while the opposite pressures on the upper and lower halves of the tyre similarly balance one another till the wheel is put on the ground. Then the air thrusting on the ground on the one hand exerts an equal and opposite resultant thrust on an equal and opposite area of the tyre vault, and it is by this resultant free thrust that the tyre is forced up, dragging the wheel with it.

I have deferred replying directly to the adverse criticisms of your correspondents, as it seemed more profitable to restate my case, which appears misunderstood. From this cause most of the objections seem to me to arise.

D. W. SAMWAYS, M.D., D.Sc.

Mentone, France.

[15041.]—The pressure per unit of area of air in a tyre being the same in all directions, and the rim being rigid and always presenting the same area to the air, obviously the rim cannot be supported directly by the air in the tyre, because the air pressure against the rim is the same all round and forces the rim as much in one direction as another—as much down as up.

The rim of the wheel is suspended from the top by the tyre cover or canvas jacket. The pull of the canvas cover on the edges of the rim is less where the tyre rests on the ground than it is at other portions of the tyre. Besides, the pull of the canvas there is more in a horizontal direction on account of the bulging of the tyre at the ground.

It is well-known that the bursting strain or tension in the walls of a cylindrical steam boiler, or a water pipe, is in proportion to the steam or water pressure and the radius of the boiler or the pipe. The same laws apply to a pneumatic tyre.

In a 3in. tyre, internal diameter, pumped to a pressure of 75 lbs., the bursting strain or tension would be $75 \times 1\frac{1}{2} = 112\frac{1}{2}$ lbs. in each lineal inch of the tyre cover. The pressure is multiplied by half the diameter because both sides of the tyre cover resist the internal pressure. If the tyre cover were cut crosswise into strips one inch broad, a pull of $112\frac{1}{2}$ lbs. on each strip would represent the bursting strain in the cover.

If the portion of the tyre resting on the ground were flattened or forced upwards to the extent of one inch the sides of the tyre at that part would bulge and be of a sharper curvature. It would be the same in effect as if the diameter of the tyre were reduced to two inches and the strain or tension of the cover at the ground would only be 75 lbs. per lineal inch. That would be the result of the pressure multiplied by the radius. The difference in the tension of the canvas on and off the ground would be $37\frac{1}{2}$ lbs. per lineal inch, and this would have to be multiplied by the average lineal inches of the tyre on the ground, and then doubled so as to represent the pull on both edges of the rim. The difference between the pull of the canvas on both edges of the rim where the tyre rests on the ground and the pull on the rim for a like distance above would according to this calculation be over 300 lbs. The pull of the canvas upwards at the top of the rim would be nearer the vertical than the pull of the canvas downwards at the ground where the tyre bulges. The latter difference has also to be taken into account in making calculations.

The compressed air in a tyre may be compared to an elastic hoop under compression. The expansive force in a three inch tyre with a compression at 75 lbs. per square inch is 530 lbs. This force has no effect in lifting or supporting the wheel until the tyre is flattened on the ground. If the tyre were perfectly flat on the ground without pressing on the rim, the elastic hoop of air would be carrying a load of 1,060 lbs. Although the air presses equally in all directions the internal area of the outer half of the tyre is greater than the area of the surface of the rim and inner portions of the tyre. Therefore the air presses the tyre more outward than it presses the rim inward. It is only when the tyre is pushed in towards the rim at one place and the area of the outer half of the tyre at that place becomes reduced, or nearer to the corresponding area of the rim, that the balance of pressure is disturbed.

J. B. DUNLOP.

Correspondence.

[15042.]—Though I hesitate to enter into a field of discussion which lack of scientific training unfits me to intrude upon, I must say that I think many unscientific people will see the weak point in Mr. R. D. Mothersole's letter [15031] in your issue of the 11th inst. Mr. Mothersole slates Dr. Samways unmercifully, and at the same time propounds a "proof" of the latter's error in argument which is manifestly absurd. The only difference in a tyre fitted with Mr. Mothersole's patent partitions is that the weight is supported by the tops of the partitions instead of by the top of the tube.

Let Mr. Mothersole make his suggested arrangements, pump up his tube, and close his partitions. Then let him fit pressure valves to his partitions after having removed the upper part of the tube entirely. Then let him take observations of the result. UNSCIENTIFIC.

[15043.]—I have not had the pleasure of reading Dr. Samways's paper, but I should be interested to hear the result of the following further experiments on the rim which he has already sacrificed. Let him beat out the flanges of the rim so that the rim is of rectangular channel section, rendering it incapable of acting as a hook. Bolt together the two halves and put on an air tube and an entire cover and inflate them, and observe whether the rim will now subside to the ground when loaded.

If the beating out of the flanges be too much trouble, leave them alone. Put together the two halves with inner tube and cover. Leave the two halves disconnected and inflate the tyre. Now load the lower half only. Observe whether it will subside to the ground.

Dr. Samways attempts to prove his theory by bringing about an impossible state of affairs. Were he to drive up to my door with his tyres severed in twain, I should be glad to discuss with him the possibilities of his achievement. His Salters balance was merely a clumsy way of transmitting to the upper half of the cover the strain which the cover itself is designed to transmit. When the cover is rendered incapable of transmitting that strain through bad fitting, wear, or the knife of Dr. Samways, that strain may, and will no doubt be taken up for a time by the flange of the rim. The strain will be little at first, but gradually more, and will be terminated by the well-known sigh of relief with which the imprisoned air will regain its freedom. One word more. "Action and reaction are equal, and contrary in direction," or

TO EVERY PULL THERE IS A PUSH.

MOTOR CAR BODIES.

[15044.]—Your correspondent [letter 15019] possibly did not visit Olympia. A most comfortable closed-in body for the private owner-driver by Vanden Plas was exhibited on the stand of the Métallurgique agents, but the price asked (£500 for body only) was prohibitive. On the stand of Mulliner, of Long Acre and Northampton, was a magnificently luxurious open or closed double cabriolet, exactly what your correspondent wants, the price being not more than £250, and superior, if anything, to the Belgian body. On the stand of the Connaught Co. was also a most comfortable waterproof hooded and yet quite closed-in car when required, and with the private owner's driving seat quite *en famille*, and this body was about £150.

All the prices given were in answer to direct questions I put to the attendants. I have two Vauxhall cars with very comfortable closed-in (or open) bodies, made by Palmer, of Dover, but these have only two seats for my wife and self, and being very roomy there is a small drop-down extra seat.

PRIVATE OWNER AND SELF-DRIVER.

[15045.]—I do not think "S. T. C." [15001] can have spent much time at the Lanchester stand at Olympia when he complains that no standard car fulfils his three essentials of a useful comfortable body, namely, comfort in the seats, protection from wind, and luggage-carrying capacity. I venture to contradict his statement, and assert that the Lanchester Co. provide a standard body fulfilling all three.

Dealing with his first objection, I may say that Lanchester seats are well sloped back and broad. They are mounted on auxiliary springing which is one of their latest features. I myself ride in a 20 h.p. of last year's model, and should not have thought they needed it. For a man of small stature the driver's seat can be readily shortened by attaching an extra cushion to the back.

As to his next point, Lanchesters have always had high doors from their first model with a side entrance body. The large flap that can be provided gives ample protection from wind and rain.

Although Lanchesters have their petrol tank under the front seats, and do not avail themselves of lockers under the running boards, yet there is plenty of room to spare on them owing to their engine position. The spare wheel can be carried under the back seats, and if one chooses the old Lanchester control, there are no hindrances to one getting in at the driver's side, and if one has the wheel-steered and gate-change type, the lever is placed in a comfortable position at the back of the door, and one can enter with the same ease as before. J. H. S.

ROADS AROUND EXETER.

[15046.]—The information given in *The Autocar* of December 11th, under "Week-end and Touring Notes," advising motorists how to avoid Exeter, is somewhat misleading. The route indicated is a very dangerous one for motors, as the roads—or, to be more correct, lanes—are extremely narrow in places, where it is quite impossible for two vehicles to pass. Beyond this, there are several dangerous cross roads to be encountered, and it is difficult to see any traffic approaching on these roads through the high hedges on either side. Motorists journeying west or south of Exeter should certainly keep to the wide main road leading into the city, and although a portion of the principal High Street is somewhat narrow, it can be negotiated quite safely, and is to be preferred to the narrow, winding bylanes advised in your route. ERNEST GOULD.

ROAD METALLING.

[15047.]—Mr. Alan Bradbury can have sympathy on the bad cases he quotes of Dorsetshire. But there are parts of Middlesex that quite eclipse his part of the world. Only ten days ago, whilst the main road to Harrow was in an awful state of disruption owing to the tram-laying mania, the only other good road from Sudbury to Harrow was laid with large heavy unrolled metal right across the whole road, and one was forced to go over it at all costs.

Not many months ago I ran through Rickmansworth at a part where the road was wide enough for four or five vehicles abreast, yet every inch of this road was laid in unrolled metal, and of such depth and softness of underbed that my car actually bogged in the loose metal, and I had to get the steam roller itself to tow me across many yards length of this piece. It seems to me that all the roads that lead out of Harrow and Pinner and thereabouts are shockingly made and kept at all times of the year, but all the winter they are quagmires of mud. Between Morden and Cheam on the main Epsom Road was for many days last summer laid in rough large loose flints and gravel right across the whole width of the road, where there was ample room for doing it in halves. And curiously also on that particular stretch of the Epsom Road tar is never used, whereas after the Cheam turning the Ewell Road is almost always splendid, and the London side of Morden is very fairly kept. In fact, one very often finds this shocking manner of metalling roads for long lengths, and the whole width of road left to destroy the tyres of motor cars. If we could only get damages against those responsible it would be a good thing.

J. KINGSTON BARTON.

[15048.]—I have read with interest the letters [15006] in *The Autocar* of December 4th *re* Dorset roads, and would like to say something on the subject. I know the county well, but until last August I had not driven a car there for some four years, and was then surprised to see the improvement that had been made in the roads. Being a native of Dorset I naturally asked my employer, who was with me at the time, what he thought of the roads, and his reply was "Very good surface but not very wide."

When one takes into consideration the fact that the county in question is an agricultural one with large flocks of sheep, cattle, heavy traction traffic, etc., on the roads, the county authorities are to be congratulated on the way in which the roads are kept. Personally, I think it is a pity to run down the state of the roads in Dorsetshire, as it might be inclined to keep visitors away from a county where, if there were nothing else in its favour, one is at least free from that pest of the roads, police traps, and in the Chief Constable of Dorset they will find a gentleman.

The magistrates are also not by any means anti-motorist, and it appears to me that if Dorset motorists take out their licences in Gloucester it might be inclined to rouse feeling against motorists in their own county, and would perhaps eventually lead to trapping, so that I trust Dorset motorists will look before they leap.

PAID DRIVER S.A.M.D. 499.

[15049.]—On reading the letters on this subject in your paper, I have been moved to envy of the happy lot of motorists in other counties. We read of stretches of road metal being left, presumably for a day or so, for the steam roller to come and roll them in. In Cambridgeshire the constant practice is to lay down patches or continuous strips of metal, as in other counties, but with this difference, that the steam roller never does come along, etc. Last winter the whole of the main roads out of Cambridge were unusable for several months, as they were simply almost continuous stretches of raw metal, granite, or slag, which was dumped down wherever the road showed signs of wear, and left to be rolled in or otherwise removed by the traffic. The same process has begun again this autumn. The result is that motoring is practically impossible in Cambridgeshire in the winter months, unless one can afford to be absolutely regardless of the tyre bill. I heard bitter objurgations from motoring friends who were misguided enough to visit this county. One can only suppose that this is considered by the county council as a cheap and effective method of discouraging motor traffic. It must, in fairness, be admitted that the roads are excellent in the summer months.

M.A. CANTAB.

RENARD TRAINS AND ROAD WEAR.

[15050.]—The prospect of a dozen Renard trains in Kent, apart from the matter of road wear, cannot be viewed with satisfaction by those who do much driving in the county. To meet such a cumbersome string of vehicles on any of the numerous corners on Kent roads would be the reverse of pleasurable.

Again, if a stop occurred it might result in a serious hindrance to traffic, especially if trouble occurred on a hill or narrow road. A van or lorry can be shifted to the side of the road or stowed away, but with seven or eight waggons this would be a difficulty. The possibility, too, of one or more of the waggons becoming uncoupled and getting away on a steep hill, also a *panne* in towns or on tramlines, must be considered. In any case, the proposed service would meet with opposition from practically all road users, if not the actual road authorities.

KENT ROADER.

THE HEWITT ENGINE.

[15051.]—With reference to letter 15022 on the Hewitt engine, I should much like to know whether this engine has been put to any thorough and searching tests in the hands of any other than its inventor? I myself examined this engine at the show, and although in theory the principle seemed a sound one, it seemed to me that in practice there were many difficulties which would make themselves apparent. Owing to the extra weight in the moving parts, it strikes one that this engine must necessarily have a somewhat restricted range of speed, and would probably be slow in picking up a load. Again, what is the advantage of such an engine when it cannot boast a spherical combustion chamber by the doing away with valve pockets? The lubrication of so many pistons is a matter to be thought of.

I believe the smaller model of this engine is termed a 12-24 h.p. What does this mean, I should like to know! Does it only develop 12 h.p. at normal engine speed? If so, seeing that this engine has a 90 millimetre bore the normal speed must be very low.

I am not in any way ridiculing this engine, but I am merely asking for further enlightenment.

G. L. B. FRANCIS.

CHAUFFEURS' QUALIFICATIONS.

[15052.]—A new car of moderate size arrived at our station. The chauffeur appeared on the scene to take it over for his master. I passed and saw him trying to start the engine, and with the interest of a motorist I stayed to watch.

He described the car in lurid terms as the ugliest machine that he had ever set eyes on, explaining that his master already had a 40 and a 60 h.p. ——, and that "nothing on the road could touch them!" That he had driven a good many cars, "but never anything to beat the ——," and so on in pretty tall style.

I watched his methods. The engine refused to start. I asked him if he knew what was wrong, and he said that there was no accumulator, although he had found the coil. I pointed out that there was a magneto on the car, and suggested that he should try to start on the magneto alone. This seemed a bright idea which had not struck him before, but, unfortunately, it was unavailing, and he resumed his search for the accumulator.

At last he triumphed, and produced a small accumulator from the tool-box, and exultantly cried, "Now we shan't be long," tearing the brown paper off it. I mildly observed that the accumulator was empty, containing no acid. It was, in fact, brand new, and had never been filled, let alone charged! His ardour, however, was not damped, and he replied, "I expect it is one of them dry cells," whereupon he proceeded to wire up the empty and unfilled accumulator to the coil, turned the switch, and proceeded to crank with renewed energy.

At last the sight of his perspiring efforts overcame me, and I humbly offered him the loan of a well-charged accumulator, but my offer only evinced the retort, "If she won't start on her own accumulator, she won't start on yours"!

This is an authentic chronicle of the behaviour of a highly paid chauffeur, at a moment when he was sober. Comment seems unnecessary!

CRANKSHAFT.

[15053.]—In letter No. 15015 I think I recognise a criticism of a letter of mine in reply to his advertisement. It may interest "A Disgusted Chauffeur" (and certainly yourselves as showing the merit and circulation of *The Autocar*) to hear that in the next issue of *The Autocar* I advertised. The response—244 replies! Certainly two-thirds of the applicants were disengaged—out of work; further, several left wages an open question if they could only get something regular for the winter; and, what is more to the point, the driver I have engaged fulfils all my requirements as criticised, has served an apprenticeship to motor work, and been driving hired cars. I do not imagine garage proprietors send out any but steady, competent men with their hired cars.

This man, accepting a moderate wage for the winter, when evidently many cars are laid up and drivers paid off, will get a rise in April, with a permanent post if he goes on well and drives carefully. He is a willing handy man, not one of those who spend spare time lolling on the car in the motor house reading trashy novels.

If "Disgusted Chauffeur" has any other trade to fall back upon it would seem that he might be wise to leave motoring alone.

A WINTER MOTORIST.

FRONT WHEEL BRAKING.

[15054.]—This, of course, puts extra strain on the front tyres, but not to the extent that it relieves the back tyre of strain. The effect of applying a front wheel brake [letter 15018] is to increase the pressure on the front tyre, and increase the adhesion between the tyre and the road surface, and make the slip take place on the proper braking surface provided. With a back brake the converse is the case; the action of applying the brake tends to lift the back wheel from the road, thus decreasing its adhesion to the road, so that when the brake is employed hard the slip may take place between the tyre and the road surface instead of between the braking surfaces.

JOHN V. PUGH.

COUNTRY OF ORIGIN.

[15055.]—I notice that Bedford Motors carefully refrain from answering the letter of "Justice" [14986]. I have had some experience of Buick cars in the United States, and if the Bedford car is not a Buick, then it seems the most slavish copy. I wrote and asked them if it was a Buick; they ignored that letter. They have since bombarded me with letters, saying that the cars are turned out 10,000 at a batch. I should like to know if these cars come from the factory at Flint, Michigan, or from some English works; if from some English works, where are they?

In fairness to the British public, I think that the claim that these cars are British made should be investigated, as there are no doubt people, like myself, who wish to buy a British-made car, and do not wish a foreign one.

I trust that Bedford Motors will answer this letter, as if they do not they practically admit that the United States produces the cars.

NEW YORK.

WANTED, A SPORTING CAR.

[15056.]—With reference to letter 15014, your correspondent has evidently overlooked or does not know of the existence of those wonderful small cars, the Sizaires. I adjudge them entirely in a class by themselves, and am convinced that after a run in one of the new 1910 pattern your correspondent would agree this is the ideal sporting car he is in search of. These wholly delightful small cars are not only speedy, but extraordinarily free from vibration, and quite as silent as many four-cylinder cars. The design throughout is astonishingly clever and ingenious, and they are reliable to a degree. The only pity is they are not made in England; nor has any maker here troubled to evolve a similar type.

Correspondence.

Knowing the success they have achieved in the past, I was more than surprised to find at the recent Olympia Show they still had no rivals, and for their particular type reigned supreme. The only fault I have had to find in the past was the fact that the material was not all it might have been, but a higher standard has been attained in the 1910 model. Its claims have long been acknowledged, and if your correspondent after a trial run of the new model be not more than pleased I can only say he will have to wait a long time for his ideal sporting car. J. WILLIAMS.

POINTS IN INSURANCE.

[15057.]—Your correspondent "C 2008" [letter 14994] apparently thinks £300 offered by the insurance company an inadequate sum for his 1907 car, run 10,000 miles. It seems to me a very fair valuation, as insurance companies only undertake to pay the value second-hand at the time of the fire. I think "C 2008" will find very little difficulty in replacing his car for that sum. It is a mistake frequently made of insuring cars over their intrinsic value, and so paying higher premiums than necessary A. CLARKSON.

[15058.]—With reference to "C 2008's" letter in your issue of 4th inst., let me advise him in future to insure his cars at Lloyds.

Under their policies they pay the full amount in cash if the car be destroyed by fire. When I first insured I went through the policies of various companies, but found their contents most unsatisfactory, so I went to Lloyds and have been insured there for some years.

ROBERT H. C. HARRISON.

[15059.]—Referring to letters 14993 and 14994 in *The Autocar* of December 4th, I think Mr. Boake raises a most important point, and your editorial note quoting from *Truth* doubtless shows a very strong argument in favour of being covered by one of the wealthy and old-established companies now undertaking this class of business.

A large class of car owners when considering the item of insurance only seem to study one fact, and that is the lowest premium. Surely this is penny wise pound foolish. What is the use of saving, say, 5s. on a yearly premium of £10, if when they get a claim for hundreds they find trouble and delay in getting it settled; better by far go to an expert in the business and place their business with him. A good broker sees that his clients' interests are fully protected and claims promptly settled. I have never had a dispute over a claim yet.

Taking the second letter, the assured has every reason to complain on the facts as stated. He could easily have obviated this if he had had a cash replacement value stated in the policy. Naturally each year he would reduce this amount; at the same time his premium would also be reduced.

I always advise the latter clause, as it gets rid altogether of "present market value" clause.

CAR INSURANCE BROKER.

THE PETROL TAX.

[15060.]—Now that the Budget has received a set-back, and the obnoxious petrol tax is in abeyance, it will be interesting to many in the motor trade to know whether the various societies and clubs (who claim to be working for the "trades'" especial benefit) are going to do anything to get it abolished, or at least applied in a manner that is workable. I maintain that the tax as at present applied falls most heavily and aggravatingly on the small retailer. Take, for example, the man who runs a garage on the riverside: he sells spirit (first) to motor boat, (second) to a commercial vehicle, and (third) to a car owner. How on earth is a small trader of this description, and there are many, to keep a set of books that will enable him to get the various rebates on an article primarily costing the same amount of money, but which the State says he must sell at different prices according to the class of purchaser? I maintain that nine times out of ten it would be impossible. And with what result? Loss to the small trader.

A tax on petrol may or may not be necessary, but if it be why make a discrimination in users? If one purchases brandy for medicinal purposes one does not expect to get it duty free, therefore I say let 'em all pay. But let it be a moderate duty, not 25% and more, such as has been levied. One penny per gallon paid by the importers would, I am sure, bring in to the Exchequer more money than the present system of preferential prices, as the latter must mean an endless amount of clerical work for the Government, and needless worry to the seller. The clerical work must entail a big expense, and likewise a greatly diminished nett amount available, whereas the collection of a moderate duty from the importers (with no rebates) would simplify the whole business for the seller and the Government.

I venture to think that the matter ought to be taken up on these lines, and I shall be glad to hear other members of the industry's views upon the subject.

JOHN J. LEONARD.

PLAIN *V.* BALL BEARINGS.

[15061.]—I am rather surprised that your contributor "B," in *The Autocar* of December 11th, page 983, expected that it would be in the long run rather than at the start that the ball bearings would score.

I think most of us who have had to push cars about with plain bearings will realise that the car when stationary eliminates the film of oil between the axle and hub, and is practically dry until it has been running some distance. It is in these early stages that the plain bearings are so bad. The tests have been carried out so well that it is a pity a little more data has not been given.

What we want in order to thoroughly estimate the relative effect of ball bearings and plain bearings is to know the actual height of the points A B C and D above the lowest point of the road; in fact, it is so imperative that it would be desirable to have the whole of the contour of the road surveyed. It would also be desirable to know the complete weight of the vehicle; from this, really correct results would be obtained. Whether on evidence of this kind the case for the ball bearing could be established I do not know. My own view is that the ball bearing scores over anything else by its good performance under bad conditions, and its practical permanence when water is excluded and the bearings kept lubricated, as an example of which one has only to consider the modern bicycle.

JOHN V. PUGH.

[Mr. Pugh's letter has been submitted to the writer of the article, and the following is his reply.—ED.]

Sir,—I am sorry that I am unable to provide the information sought by Mr. Pugh on the above subject. Since writing the article which was published in *The Autocar* last week (page 983) I have removed to a part of England far away from the road on which the tests were carried out, and the whole of the particulars obtained were embodied in the article, so that I have nothing to add. At the same time, surely the fact that the tests of both types were carried out under identical conditions should make up for the absence of such details as exact weight of load, gradient of road, etc.

THE WRITER OF THE ARTICLE.

BRITISH JUSTICE IN WORCESTERSHIRE.

[15062.]—My chauffeur—a Frenchman, unable to speak much English—was summoned on November 4th last by the police at Great Witley, Worcestershire, for having driven a car without a licence on October 14th.

He had omitted to renew his licence which had lapsed by one month, being under the impression that the English driving licence was similar to that in France, which lasts for ever. He has an absolutely clean licence both in France and England, and has never been summoned before.

I sent him down to Worcestershire—130 miles from London—to appear in answer to the summons, directing him to plead "Guilty," and to hand to the magistrates on the bench a statement, which he swore to, as to the reason why he had not renewed his licence. These British "sportsmen" fined him £7 4s., costs included. A more outrageous piece of injustice I have never heard of. £7 4s. for the petty offence of being one month late (through ignorance) in paying a tax of 5s.

I have applied to the legal department of the Royal Automobile Club, but they are utterly helpless to remedy in any way this state of affairs. THOS. A. SCULLY.

SUMMARY OF CORRESPONDENCE.

HOTELS.—"Cerise" asks if any reader can recommend a good hotel or restaurant in London where he can get a meal and put up his car or leave it in safety without having to pay exorbitant garage fees. Our correspondent says he generally avoids entering a big hotel in knickerbockers, which he finds most comfortable for travelling, and then there is nowhere to leave a car in safety. Clubs, he considers, have all the disadvantages of big hotels.

Flashes.

Writers in the French papers have been reflecting on the greater number of automobiles in circulation in England than in France, and statistics show that the French car is considerably in vogue in England itself, for Mr. Consul-General Inglis certifies in his recent report on French foreign trade that during 1908 sales of automobiles for the United Kingdom not only amounted to £2,442,240, but formed forty-eight per cent. of the total exports thereof.

* * *

The Canadian Automobile Show will be held in the St. Lawrence Arena, Toronto, under the auspices of Ontario Motor League, from February 24th to March 3rd, 1910. Mr. E. M. Wilcox, secretary of the League, will be manager. He states that the show will be the largest of its kind ever held in Canada, as there is an unprecedented increase in the sale of automobiles in Canada at present, and the number of automobile and accessories firms in business in Canada is double that of last year.

* * *

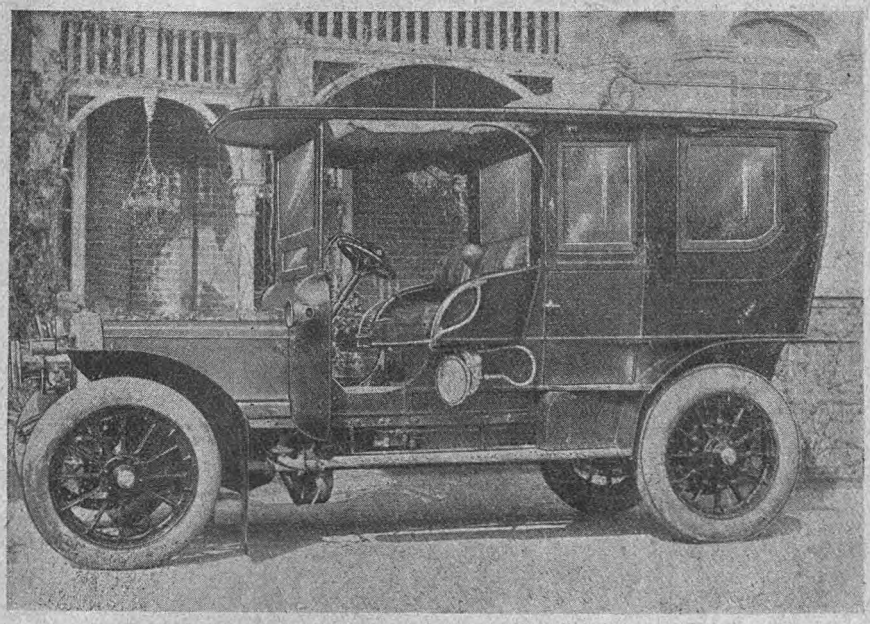
With the approach of the new year Messrs. Charles Letts and Co., whose name is a synonym for diaries, are again catering for the requirements of all who from any cause whatever find it necessary to keep a diary. The range of choice this year is wider and more varied than ever, and the individual would indeed be most fastidious and hard to please who could not be suited from amongst the hundreds of varieties issued. Attention is called to the Peerless combined pencil and sharpener—a refinement which will be found a great acquisition to any pocket diary—and the self-opening memorandum tablet. The insurance policy which may be obtained in connection with each of these diaries holds premier position as being the most liberal of its kind. Messrs. Charles Letts's art metal calendars are also useful and attractive. The house has a reputation extending over a century, and is the only firm of the name now in the business. Motorists will find that their necessities have been thoughtfully considered.

MOTORING IN THE TROPICS. A Wolseley-Siddeley car in a cocoanut plantation in Teluk Kerau, Singapore.

Last week in dealing with our experiences of the 14-20 h.p. Wolseley-Siddeley we mentioned that the first radiator with which the car was fitted was not quite satisfactory, and that it was replaced by another. The unsatisfactory radiator was not a Marston Megevet; in fact, it was not a true honeycomb at all, and we give this information so that there can be no possibility of misunderstanding, as all the higher powered Wolseley-Siddeley cars are fitted with Marston Megevet radiators.

* * *

The accompanying illustration depicts a 28 h.p. Daimler car, which was purchased in January, 1906, by Mr. Stanford Brown, of Bromley, Kent, and which has been in regular use since that date. The total distance covered amounts to considerably over 60,000 miles. It has been used for several tours in many parts of Scotland and the West of England, and has been within a few miles of both John-o'-Groat's and Land's End. Before the car came into possession of Mr. Stanford Brown it was owned by the Collier Tyre Co., and used by them in the official road trial of their tyres. We believe that the owner when he first purchased the car could hardly be called enthusiastic on the subject of motoring, and that the same remark applies to members of his family, but judging from the use which has been made of the car during the past four years, the pleasures and advantages to be obtained from a reliable touring car soon became apparent.



A 1905 28 h.p. Daimler car, with a record of 60,000 miles to its credit, owned by Mr. Stanford Brown, of Bromley, Kent.

Flashes.

The Pneu Tyre Grip, which was illustrated and described in the last issue of *The Autocar*, will in future be manufactured under royalty by the Motor Accessories Co., Ltd., 55, Great Marlborough Street, London, W., who will also act as selling agents for this simple but ingenious device.

* * *

The seventh annual exhibition, trials, and races of motor boats, organised by the International Sporting Club of Monaco, under the rules of the International Automobile Association, will commence at Monaco on April 1st, 1910, finishing on April 14th.

* * *

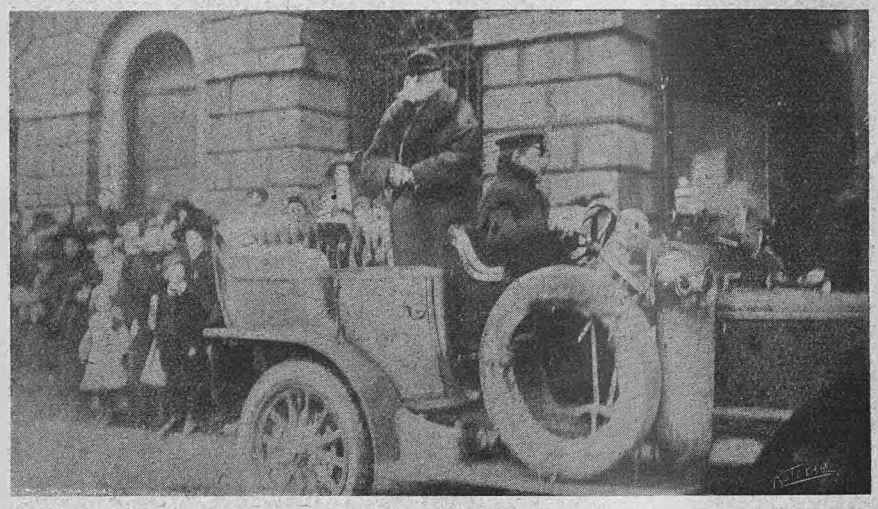
On Wednesday last week 212 candidates were elected to ordinary membership and ten to "new" life membership of the Royal Automobile Club. This brings the number of members on the register up to 5,107. As applications are still being received, it has been decided that in the case of applications for membership received on or before the 31st December the present entrance fee of twelve guineas shall apply.

* * *

The County Council of West Sussex some time ago applied for a speed limit of ten miles an hour on part of a road at Southwater in the parish of Horsham Rural, but upon further consideration, and in view of the objections raised, they have resolved to proceed no further with the application.

* * *

The following automobile item recently appeared in *Le Figaro:* "At the corner of the Rue de la Chaussée d'Antin and the Boulevard Haussmann, an auto-taxi passes to be lost amidst an interminable throng of other vehicles. At first sight it seems to have nothing about it to make it distinguishable from the other taxis. But when it comes close a little metal plate of unusual form thereon catches the eye. This plate bears the still more unusual inscription, 'The conductor speaks Esperanto.' Esperantists have recently made a conquest of one of the most distinguished dramatists, M. Paul Bilhaud, and are justly proud of the fact. But here is another equally sensational achievement.



Earl Harrington, M.F.H., arriving at Newark in his Daimler for the annual meet of his hounds in that town. The meet is held in the Market Place on the morning following the hospital ball.

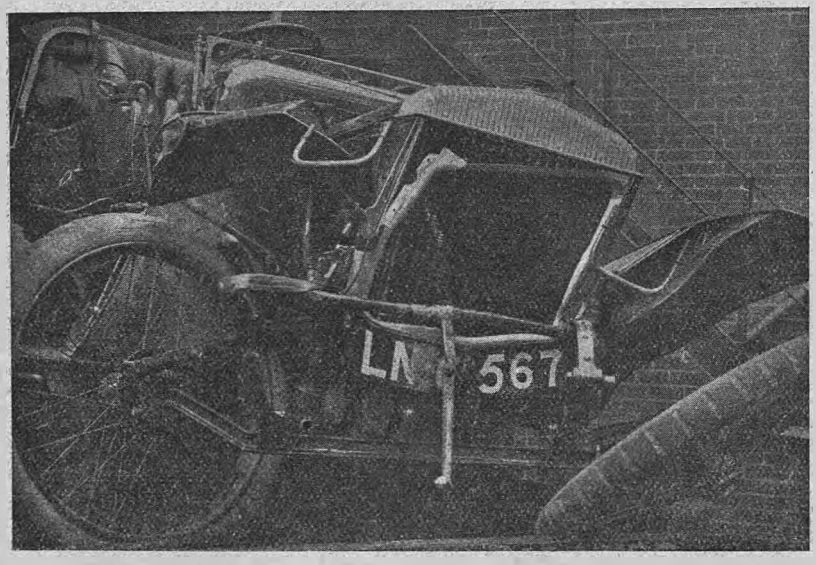
The modern sport and the new language are in unison. Both are universal, or, at any rate, the sport is unquestionably established and the language pretends to be so. But will the Esperantist car encounter passengers worthy of it?"

* * *

Last week Mr. Frederic Coleman gave us a lift in his White petrol car with Cann boat body. Our experience was a short one, but we were particularly struck with the life of the car. It answered most readily to the throttle, and, however suddenly it was opened or closed, no staggering or spitting could be provoked, and Mr. Coleman certainly did his best to provoke it, as he frankly admitted that he could not get out of the way of driving it as if it were a steamer. This chassis, by the way, looks very smart with a flush-sided body, as the bonnet stands up to it well.

* * *

A correspondent expresses surprise that the Folkestone Road has been represented by one of the motoring organisations as dangerous from Swanley to Hythe. Certainly more than ordinary care is necessary at Swanley, Farningham, and Wrotham, but he does not see why the whole road should be termed dangerous. Last week there was no vestige of timing on the Maidstone side, the alternate route to Maidstone *vid* Bromley and Sevenoaks being most favoured. This avoids Farningham and the long-distance trap occasionally worked thence to Wrotham.



A front view of the Hon. Ian A. Gordon's car after the cross road accident near Winchester. This gives some idea of the force of the collision and forms a warning to all drivers to cross or enter into a main road slowly. It is interesting to observe that neither of the Rudge-Whitworth front wheels is broken. The back wheels also escaped, though the wooden wheels on the other car were badly damaged, one being completely wrecked, the spokes breaking off like carrots.