

THE AUTOCAR

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

EDITED BY H. WALTER STANER.

No. 384. Vol. X.

SATURDAY, MARCH 7TH, 1903.

(PRICE 3D.)

THE AUTOCAR.

EDITORIAL OFFICES:

COVENTRY.

PUBLISHING OFFICES:

3, ST. BRIDE STREET, LUDGATE CIRCUS, LONDON, E.C.

CONTENTS.

	PAGE
NOTES: THE NUMBERING OF CARS—THE SPEED LIMIT IN IRELAND	
—SPEED OR ECONOMY	281-283
THE 20 H.P. BELSIZE CAR (Illustration)	282
THE IVEL AGRICULTURAL MOTOR DRAWING A PLOUGH (Illustration)	283
USEFUL HINTS AND TIPS. ON DRIVING A CAR	284
SHIVERING SOUTH ON A CHENARD (Illustrated)	285-286
THE 1903 ARGYLL CAR (Illustrated)	287-289
A MOTOR FIRE TENDER (Illustrated)	290-291
THE 10 H.P. LOCOMOBILE (Illustrated)	292-293
CONTINENTAL NOTES AND NEWS: A PALACE OF SPORTS—A NEW TRIAL TRACK—100 H.P. MOTORS—AUTOCARS IN THE ARMY	293-294
CORRESPONDENCE: MAGNETO IGNITION—CHANGE SPEED GEAR—NON-SLIPPING TREADS THE EFFECT OF TEMPERATURE ON TYRES—A QUERY—DUCELLIER LAMPS—THE RELIABILITY TRIALS—MOTOR BICYCLES AND TRAILERS—BRITISH CAR DESIGN—EASY STARTING—PETROL CONSUMPTION—LUGGAGE ON CARS	294-298
THE AUTOMOBILE CLUB GENERAL MEETING	298
FLASHES (Illustrated)	299-302
2.8 MILES PER HOUR—A KILOMETRE IN 27S. (Illustrated)	303-304
RECENT DEVELOPMENT IN THE MODERN AUTOMOBILE... ..	305-306
CLUB DOINGS: SCOTTISH A.C. (Western Section)—LINCOLNSHIRE A.C.—MANCHESTER A.C.	306
QUERIES OF GENERAL INTEREST: LUBRICATION—THE AMPERE HOUR—VALVE TIMING AND WIRING—ARTILLERY WHEELS—AIR PRESSURE IN TYRES	307-308
PATENTS	308

COLONIAL AND FOREIGN EDITION.

IN ADDITION TO THE USUAL EDITION OF "THE AUTOCAR," A SPECIAL THIN EDITION IS PUBLISHED EACH WEEK FOR CIRCULATION ABROAD. THE ENGLISH AND FOREIGN RATES WILL BE FOUND ON THE LAST PAGE. ORDERS WITH REMITTANCE SHOULD BE ADDRESSED "THE AUTOCAR," COVENTRY.

The *Autocar* can be obtained abroad from the following:
 AUSTRALIA: Phillips, Orinonde, and Co., 533, Collins Street, Melbourne.
 NICK: Levant & Chevalier, 50, Quai St. Jean Baptiste.
 UNITED STATES: The International News Agency New York.
 PARIS: Neal's English Library, 248, Rue Rivoli.
 MELBOURNE, Victoria,
 SYDNEY, N.S.W.,
 BRISBANE, Q.L.D.,
 PERTH, W.A.,
 WELLINGTON, N.Z.,
 CHRISTCHURCH, N.Z.,
 CAPE TOWN, S. Africa,
 DURBAN, Natal, S. Africa

Messrs. Gordon and Gotch.

Notes.

The Numbering of Cars.

To-night (Friday) the discussion on the proposed legislation with regard to automobile traffic takes place at the Automobile Club. The discussion is, of course, open to members only, but their views on the matter, if the meeting is at all a representative one, may be taken as fairly indicative of the feelings

of automobilists at large. So soon as motor vehicles were permitted to run upon British roads the agitation for numbering was commenced, but at that time the club was absolutely opposed to it, and it was never expected for one moment that its attitude would be changed. When its circular manifesto was issued to the County Councils of England and Wales in 1901 it had the support of ninety-nine per cent. of automobilists when it set forth the following arguments against and objection to numbering:

(18.) English gentlemen have the greatest repugnance to having their private vehicles identified and disfigured by numbers, and this objection is equally strong whether their carriages are drawn by horses or propelled by motor power. The numbering of a gentleman's private carriage would be such a departure from the accepted conditions of life in this country that it would lead the public to believe that a man who prefers to use a vehicle propelled by an engine to one drawn by a horse is, in the eyes of the authorities, a person who is likely to misconduct himself. The stigma implied would prevent gentlemen from purchasing motor vehicles if the numbering were insisted upon.

(19.) The driver of a numbered motor vehicle would be subject to continual prosecution, since any idler or prejudiced person might, irrespective of the truth of the complaint, state, without warning or notice to the party informed against, that the vehicle was being driven at an excessive speed. It would rest with the driver of the motor vehicle, although taken unawares and thus prevented from obtaining witnesses, to prove to the contrary. In view of the opposition which has always existed in this country to the introduction of a new form of locomotion, the number of persons who are prejudiced against motor vehicles must for some time be considerable, and the continual oppression to which the driver of a motor vehicle would be subjected would probably lead him to abandon the use of motor vehicles for private passenger traffic upon highways.

(20.) There is no just reason why the proposed compulsory numbering should apply more to motor vehicles than to dogcarts and other light vehicles drawn by horses, which are frequently driven at a speed of at least fifteen or sixteen miles an hour, and cannot be stopped or directed with the same facility as a motor vehicle.

(21.) Motor vehicles pay the Inland Revenue tax required of other vehicles, and owners of motor vehicles have a right to claim the same privacy in respect of their motor vehicles as is permitted in the case of other private vehicles.

(23.) The committee also have been informed by several intending purchasers of motor vehicles that, if their carriages are to be labelled with numbers, they will decline to adopt a method of transport which would be subject to such an unfair and offensive regulation. This is incontrovertible evidence of the damage which would be done, if this proposal were adopted, to what otherwise must be a valuable and important industry.

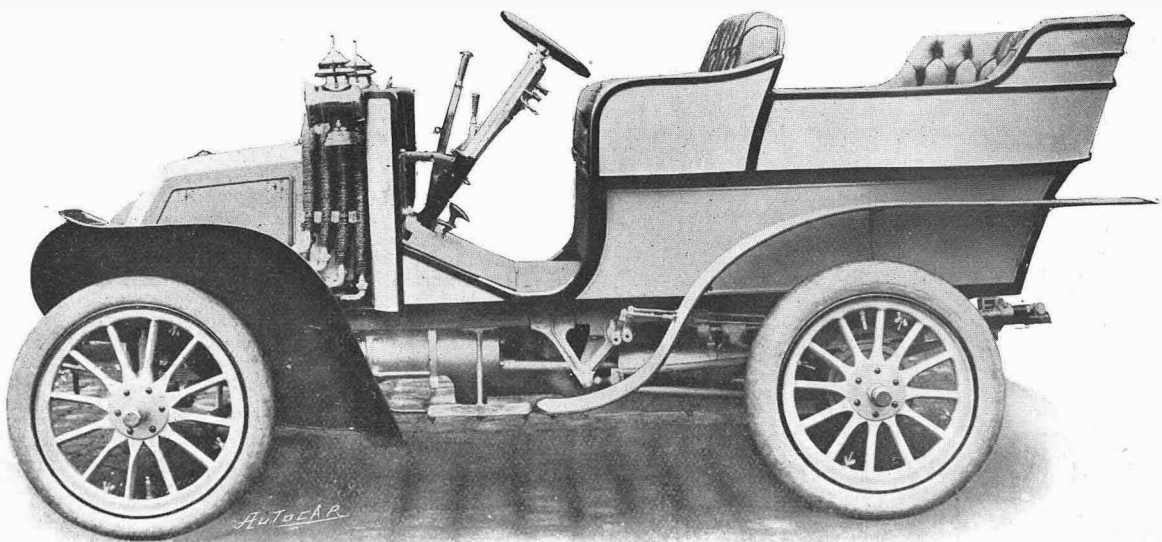
We reprint this portion of the manifesto referring to the numbering proposals, which, of course, applies equally to the naming or any other system of labelling, because it is as representative to-day of the general feeling of automobilists throughout the land as it was less than two years ago. We do not propose to repeat the many other objections which have been cited in our pages which are inseparable from numbering. No one wants such a system

except the more prejudiced amongst the police and county authorities. It will bear very hardly indeed on the vast majority of car owners, and it will put the police in a position with regard to the automobilist which they do not occupy towards any other section of the community. Even ticket-of-leave men do not have to publicly exhibit numbers, and it will be conceded, even by the most rabid anti-autocarist, that the average criminal is far more dangerous than the autocar and its driver. It is also well to bear in mind a point which is practically never urged, and that is, cars are not constructed as battering rams and cannot be recklessly driven without the occupants suffering physical hurt. It would be imagined from the talk of a good many people that cars were armour-plated, and constructed with the sole intent of doing injury to other traffic without the motor vehicle or its passengers suffering. If the number is to be contemplated at all, it should be applied to all vehicles without distinction. What is wanted is the abolition of the speed limit, but if this can only be obtained by the institution of numbering, by all means let things remain as they are. On the other hand, in case any attempt is made to alter the law by Parliament, it is indispensable that the Automobile Club, as the representative body, should be ready with a bill which will represent the requirements of automobilists at large, and as far as possible reconcile them to those of the authorities generally. This bill should be very much more comprehensive than the incomplete one hitherto fathered by the club, as that deals with one section of automobile traffic only. The heavy lorry and the motor bicycle, not to mention the trailer of the latter, are entirely ignored. The discussion this evening should be provocative of good, but we cannot forget that had it not been for the congested state of Parliamentary business the club would have overridden the desires of automobilists, and its very incomplete bill, which provided for practically nothing but the abolition of

the speed limit and the introduction of numbering, would have become law, provided always that Parliament had not cut out the speed limit abolition clause and endorsed the numbering proposals. At the moment, by far the safest plan is to leave legislation alone as long as possible, though, as we have said, we must be prepared for eventualities by having a bill ready as soon as Parliament shows a disposition to take the matter up. More than this is mischievous and unnecessary. There are only two things wrong at the present time; one is the prejudice of some of the authorities, and the other the recklessness and inconsiderateness of a very small percentage of car drivers. Neither the one nor the other will be bettered by numbering.

The Speed Limit in Ireland.

It is semi-officially announced that at the end of the present month the legal limit of speed for light locomotives in Ireland will be increased to fourteen miles an hour—the maximum limit allowed by the Light Locomotives Act of 1896. The fact that the Chairman of the Irish Local Government Board is an autocarist is doubtless responsible for the concession, and the Board is to be congratulated on taking a step in a direction that common sense dictates. The increase in the speed limit has been accompanied by other regulations, a summary of which will not be without interest. It is provided that no locomotive, or motor cycle, shall be driven at any speed greater than is reasonable and proper, having regard to the traffic on the highway, or so as to endanger the life and limb of any person, or to the common danger. In towns and villages the speed must not exceed six miles per hour—a regulation which should be also applied in common fairness to horse vehicles. There is also a provision that drivers shall not leave their machines without taking precaution against them being started in their absence. The difficulties that have arisen with regard to trailers are provided for in the new regulations. It is enacted that a trailer attached to



One of the specially interesting cars in the recent Crystal Palace show was the new 20 h.p. Belsize. This is fitted with a three-cylinder motor, and the drive from the change speed gear box to the back axle is by a single central roller chain. The back axle is provided with a differential, round which the chain ring is fixed. The chain is specially strong, and is entirely covered in, so that the whole of the transmission is protected from dirt. The car was sold on the second day of the show to a gentleman in the Midlands, whose name we are not at liberty to publish.

a bicycle shall have a brake, but a bicycle drawing a trailer is not to be considered a light locomotive in the sense implied by the Act of 1896, and consequently the speed limit of six miles an hour will not be applicable. Ireland is indeed fortunate in possessing such an enlightened Local Government Board, as it would appear from its latest action that it has gone as far as the Light Locomotives' Act will permit it in ameliorating the restrictions imposed by the regulations made under it. It sets an example to Great Britain, which we hope will not be lost upon the authorities; and incidentally it shows that a good bit can be done without going to Parliament at all. For those who do not know the history of the Act, we may remind them that when it was passed in 1896, the limit was set at fourteen miles an hour; but the Local Government Board was given power to make regulations under the Act, and one of its regulations which is still in force is that twelve miles an hour should be the maximum. It would seem reasonable that the full fourteen miles an hour should be allowed before requests for greater freedom are made. In fact, the Local Government Board might do a good bit for automobilists by easing the regulations as it is fully empowered to do.

Speed or Economy.

For some time we have been urging that far too much importance is attached to pace. The majority of new cars are designed with a view to speed, and power is being continually increased. The situation is somewhat peculiar, inasmuch as the more powerful and faster vehicles appear to have been built entirely in response to the demands of purchasers. On the other hand, there is a very large class who are far less ambitious, and in support of their desires we think we cannot do better than quote the substance of a letter which we have received from a valued correspondent on the subject. He says: "The average person who wishes to replace his horses by a motor car does not want to tear about the country in a 12 h.p., 16 h.p., or 20 h.p. vehicle. The best, simplest, and cheapest car in the end for work is a two-cylinder engine of the Daimler type with solid tyres and electric and tube ignition. The present craze for pneumatics is simply absurd, and we are just as far from a puncture-proof tyre as ever we were. What can be more irritating when starting for a train, or for business or a social engagement, than to have a puncture *en route*? One either goes on at a loss of £15 or else is delayed for fifteen to thirty minutes in fitting a new air tube. Solids on a moderately speedy car suitably built are excellent and never give trouble. Tube ignition should be fitted to all cars as a standby, especially where a servant is employed to look after a car at all. Of course, in conjunction with electric ignition, one can see at a glance, before a long night journey, if the tubes are going well; but it is not altogether a pleasant sensation to hunt for a short circuit in the dark or in pouring wet, and short circuits do occur in practice, though not in theory." The writer of this letter is a private owner who has had some years' experience, and one who may be fairly taken as typical of a large class, and we think his requests are perfectly reasonable, though there is no doubt that the tendency of the

present moment is entirely away from the lines he upholds. The manufacturers maintain that their experience shows that the general desire is for more speed and more power, and, of course, it goes without saying that, if they found it otherwise, they would endeavour to meet it. At the same time, there is undoubtedly a very large number of people who are waiting for cars with the attributes mentioned by our correspondent, though they should also be very much quieter in running than the well-tried two-cylinder Daimlers ever were, and this, of course, is easy of accomplishment nowadays. The worst of it is that this class do not make their wants known, and we have already pointed out the reasons for this. Meantime, there is no difficulty in obtaining solid tyres; but quite a number of engines cannot have tube ignition fitted, as there is no demand for it, and the majority of makers are opposed to it on account of its danger in careless hands—though undoubtedly it gives a sense of certainty—till such time as electric ignition has become practically infallible and needing little attention. It has very nearly reached that stage, but at the same time it may be deranged, and the want of a little technical knowledge may make it very difficult to put it right, and then the lamp ignition is so much appreciated as a standby. It is not without significance, however, to point out that Great Britain's first automobilist, His Majesty the King, has had his latest car fitted with solid tyres and both electric and tube ignition, the latter, of course, being used as a standby, and not, as was at one time the case, simultaneously with the electric.



The level agricultural motor drawing a plough. This is only one of the many uses to which it may be put, as it is capable of taking the place of horses in the field for such work as ploughing, mowing, reaping and binding, etc.; in addition to which it acts as a traction for road work, and a stationary engine for grinding, chaff-cutting, etc. The motor is a 10 h.p., governed one of the simplest type, and the upkeep we understand is particularly low. The machine has been designed and made to stand the roughest work.

USEFUL HINTS AND TIPS.

On Driving a Car. (Continued from page 257.)

We concluded our first instalment of these instructions with the engine running, and our next duty is to take steps to see that it is running to the best advantage. We must presume the reader knows which way to move the ignition lever to advance or retard the spark, and the necessary movement of the air lever to give more or less air; also how to actuate the accelerator lever or pedal, if you have got either or both.

x x x x

Advance the ignition until you hear the governor cutting the engine out, *i.e.*, reducing its speed when it begins to race. Then play a bit with the air lever, if you have one, or the ring cap opening and closing air ports to the carburetter, until your ear tells you that the engine is getting the mixture it likes best. If your ear does not inform you of this at once, you will very soon discover its proper note, which signifies that the engine is quite satisfied with the quantity of its alimentary mixture. There is a ring and a rhythm about an engine performing properly which no really soulful man can mistake, and as we presume you come within that category you must rely upon yourself for this. The resonant beat might be conveyed to you through the agency of two kettle-drums and a bass-viol, but, lacking these, cold type will not serve, and in this matter, as we say, we must leave you to your own resources. May you get up now? No, not just yet. If your circulating pump is friction driven off the flywheel, as many pumps are, look at it and see that it is running properly. Assuming you have no pressure gauge, press any rubber connection in the water-circulating system between pump and cylinders to test by the pulsations there whether your pump is delivering properly or not. (We will hope it is, for at the present stage of your novitiate you could not put it right if it was not.) Now have a look at your cylinder lubricators, and see if they are feeding properly. The maker's catalogue should tell you how many drops a minute should be served; few catalogues do, but all should. With the car upon which these necessarily voluminous instructions are based, each drop should feed not less than five to seven drops per minute. Yes, now you may get up. No, not that way; it is easier to take your seat from the left than to squeeze in past the levers. Now sit down well and squarely before the wheel. Great Scott! do not take off your side brakes and let in your clutch suddenly like that. Before you touch your side brakes lever, put your left foot on to the clutch pedal, and depress it. It is all right as it happens, as you had your gear level in the free gear notch; but it is a bad habit to get into, for one does not always pull the gear lever back to zero when stopping with the engine running, and then, if you let your clutch in with a bang like that, you are likely to do some teeth-stripping in the gear box.

x x x x

You have got your foot on the clutch pedal, and it is pressed down as far as it will go. Good! Now your clutch is withdrawn from driving contact with your flywheel, and cannot return thereto until you raise your foot. So keep the pedal pressed down and take your side brakes off. See the lever is right back! Now move your gear striking lever

forward, so that the V-piece, or the trigger, whichever it may be fitted with, slips into the first slot or groove made to take it on the sector. Now your first speed is in gear, and if you are wise and wish to keep your car out of the repair shop, you will never try to start on any other. Still got your clutch pedal down? Well, keep it down yet, for if your engine is fitted with an accelerator, it may be necessary to move the same to quicken the engine somewhat. You will find out whether this is necessary after a trial or two. Should the engine slow audibly, and grunt and snort more or less when moving the car away on the first speed, it is not running fast enough, and must be accelerated. Just how much you will soon find out. Now raise your foot gently—*very* gently!—and allow the clutch to engage with its driving portion sweetly and easily. There, now the car begins to draw away. Good! that's as it should be. An automobile should move away from rest just as the expert engine driver loves to take his flier away from a station platform—that is, so that his passengers cannot possibly say when the train began to move. Thus are we still further preserved from the repair shop, with all its exasperating delays. Keep your own side of the road, but not too close in as yet. Now feel your steering, swing the car slightly from side to side, and learn how much of your lock a proportionate movement of your steering wheel controls.

x x x x

Take a few corners on your first speed. They will teach you just how much it is necessary to move your wheel to negotiate them. Now to try a change of speed. With a governed engine, it is not necessary to touch the ignition or throttle or accelerator levers. Seize the handle portion of the gear-striking lever, and squeeze in the trigger lifter, if the lever is so fitted. Now press the pedal clutch right down to withdraw the clutch, and take the driving force off your gear. With clutch so held out, move your gear lever forward until your trigger is past the first speed notch. Now release the trigger lifter, which you have hitherto been holding close to the handle of the gear lever, and let the trigger drop on to the smooth surface of the sector. Now slide the lever forward until you feel the trigger drop into the second speed notch, release lever, and raise your clutch pedal so as to let the clutch in gently. What was that? Well, the less you hear of that noise the better. Horrid row, isn't it? Sounds like the dragon of Wantley gnashing his teeth! Well, that trouble arrived because you did not do as you were told. Instead of letting your trigger fall into the second speed notch *before* you let in your clutch, you slightly reversed the operation, with the result that the teeth of the driven toothed wheel of the second gear were trying to dodge into the spaces between the teeth of the driving toothed wheel when the latter was going the faster, and spoiling their nicely tooled entering edges in the attempt. That's what made the noise below, and it's not to be wondered at. Oh, don't get discouraged; you're sure to do it several times yet. We did it once, so why should you escape?

(To be continued.)

SHIVERING SOUTH ON A CHENARD.

Edinburgh to York in a Silver Thaw.

Edinburgh to London (non-stop) even in mid-winter presents no sort of difficulties, as discussed from the depths of an armchair; but on the road, running south through a biting ice-laden wind, blowing over a dreary, desolate, and rime-hung landscape, the business wears quite a different aspect. The roads are rutted as though innumerable batteries of artillery and trains of ammunition waggons had policed over them in company with a few score of traction engines just in time to allow of the frost setting a permanent seal upon their tracks. One realises that those whom the gods design to make uncomfortable, they must first make sufficiently mad to contemplate such a trip in the depths of winter. But the Chenard-Walcker was a new car to the British public, and the enterprising gentlemen concerned with its introduction opined that such a run as above performed in such weather as obtained at that time would be equivalent to half a dozen in summer. That was why the writer found himself outside the G.P.O. at Edinburgh at ten minutes to nine aboard a 10 h.p. tonneau body Chenard-Walcker, in company with Mons. Walcker (who was to drive) with Messrs. Cohen and Gutman forming living and lively freight in the tonneau. The overnight resolutions had been to get away at daybreak—somewhere then about 7.30—but numerous little delays as to lunch, packing, etc., together with the herculean task of casing Cohen in no less than three coats, had set these resolves at naught. Never was the tonneau of a light car so crammed and jammed with material for the consumption of men and motor. When Cohen—who, triply swathed, was reduced to a more or less helpless roll—had been hoisted into the back of the car (no derrick being available, this always took time, for he invariably stuck in the door, and had to be pulled in front and butted in rear before he would pass), there seemed no room in the crevices between the petrol cans, tins of lubricating oil, and packets of lunch, for the limbs of his companion; but to judge by the maledictions and objurgations which poured without ceasing from the tonneau passengers through half Scotland and England, it was evident that they had lost all consciousness of their nether limbs. Somewhere south of Musselburgh, Gutman, goaded to desperation by such pins and needles as man never before suffered, heaved up the spare cover, and amidst vociferously plaintive objections, hung it round his companion's neck, and there it remained through all that jogglesome journey, giving its wearer somewhat the air of a stuffed and fatted troubadour. Now and again weird gurglings announced that, unnoticed, it had shaken round until it hung round his neck and outside the car, and was apparently throttling such wire-drawn induction as the three overcoats still permitted him. His arms being incapable of flexion, the undesired

necklace was reluctantly readjusted just in time to rob death of a victim. Never did man pay so dearly for keeping warm.

Clad in a redoubtable Hoare auto-coat, with a Dunhill leather jacket beneath, and encased as to the nether extremities in a "Drimosit" rug, the writer was proof against Scotia's wildest blasts; whilst Mons. Walcker, enveloped in a Strom *paraphice* over warm clothes, and feet encased in huge felt shoon over thick boots, expressed himself as *bien chauffée*, or words to that effect.

Keeping a sharp look-out for open manholes, we ran out over the tramlines to Portobello; and it was up the hill to the right, after the irons had been left behind, that we first remarked the gallant manner in which the powerful two-cylinder engine drove the overloaded car. For overloaded she undoubtedly was. When weighed next day on the pub-



Prepared for the worst.

lic weighbridge at York, her total ran out at 1 ton 1 cwt. 0 qr. 3 lbs., and then Mr. Cohen's lunch—a more than considerable item—was not aboard. The roads were rough but dry, and the landscape, as far south as Haddington, was innocent of snow. The tricky passage of Musselburgh and the dodgy twists in Haddington were successfully negotiated, and when Dunbar hove in sight, we felt we were working south. But it was cold; the wind blew hard off the Forth on our port bow, and searched every cranny for entry. A mile or so beyond Dunbar, the snow was found lying thickly, and as luck would have it, a light rain had set in with the thaw, which was already beginning to make the roads heavier than was at all desirable. The mutual re-creminations of the jammed humanity in the tonneau alone gave the journey colour. The rawness which came with the thaw seemed intensified as we threaded the hills which guard the approach to the English frontier, and even the thrice-encased one, when he could speak for the cover, admitted that it *was* cold. It had been explained to Mons.

Walcker that we were about to enter England, and as we passed through the town gates of Berwick he stopped the car. The overcoats chokingly demanded the reason. "La Douane," replied the Frenchman, whereon he was informed that we did not worry with such things, at least upon our internal lines of communication, and so we slithered down the dreary streets of Berwick, now streaming with water. The roads, once over the bridge, were found particularly bad and holding, and it was evident that the contemplated non-stop run to town was fading into the impossible—at least within a measurable distance of the scheduled time. The country now was swathed in mist, and the drizzle drizzled continuously. At times, when valleys sloped away on either side of the road, we seemed to be running along a causeway raised high out of the sea, until we dropped to a lower level and found ourselves enveloped in the clinging vapours. It was cold! On through Belfort we went, passing again into a region where the thaw had not obtained strength and where the roads were hard and frozen into heavy ruts. In the attempt to scale Alnwick Hill came our first real moment of excitement. At least two-thirds of the steep had been surmounted, and Mons. Walcker had come down to his first. Slower and slower rose the car, while the engine gave no signs of speed diminution, and we found the surface of the road a glassy sheet of ice, upon which the driving wheels, finding no grip, were whirling madly. When the good car, ceasing to move forwards, began to slide back, still with the engine driving, the moment had come for lightening ship, and the overcoats were levered complainingly from their niche. Even then the icy surface was too much for her, and she was permitted to slither to the bottom of the hill to return light. Just before running down, the overcoats were rendered bitterly reproachful. In slowing the engine, Mons. Walcker lifted the accelerator lever one notch too high, and the sound which had accompanied us all the way from Edinburgh incontinently ceased. The overcoats cried stiffly and despairingly that all was *perdu*, and fini-ed and busted, whereupon Mons. Walcker remarked, "Mais oui!" and left for the bottom in figures of eight. When the car returned and the overcoats had once more been butted and hauled into position, wedged in safely with cans, and girt again with the tyre cover, the road was taken for Newcastle, through Felton and Morpeth. It was dark when we ran into the Novacastrian capital, but the establishment of Messrs. George and Jobling, South Street, was found without difficulty, and two two-gallon tins of Pratt's taken aboard. The boy ordered to be on the north side of the High Level Bridge at midday had remained gallantly at his post until four o'clock, and had then given us up as a bad job. The sloppy, greasy trammed and setted steep from the bridge on the Gateshead side was successfully climbed, and we continued our way southward. The thermometer had sunk with the sun, it was freezing hard, and it was cold. A mild reference to comfortable hotels astern was met with a faint but firm cry of "à York!" from the recesses of the overcoats, and on we sped. Those triple garments enclosed the very spirit and essence of a Turpin. Beyond Chester-le-Street, Mons. Walcker tackled a loose wire in a plucky and effec-

tive manner. Lying prone over the dashboard and along the top of the bonnet, he essayed to secure the connection. A wild waving of the felt shoon in too close proximity to the writer's face to be enjoyable announced each receipt of the high tension current; but by rapid switching on and off, the handy Gaul made good the loose wire, and all was well. Mr. Guttman later did wild gymnastic feats round the frame of the car, after the manner of an express fireman wandering free around his engine with an oilcan while his driver makes up time down a bank. He was trying to fettle up the "Phare" which had most inconsiderately petered out, but his gallant efforts were of no avail; for upon returning to his crowded tonneau by way of the dashboards, he found that the gas tube from the generator had been strangled by the skirts of those overcoats, and said so! The remainder of the run to Durham was punctuated by his comments upon the over-clothed, and upon that city being reached, the voice which had declared for York announced that the Rose and Crown there stood second to none as an old English hostelry. We did, were particularly well done, and made the remainder of the trip to York next morning over shocking roads in time for the writer to catch the 12.30 train south, while the car with its three remaining passengers pushed as far south as possible, saving sixpence for every mile travelled. They ultimately fetched Doncaster, and would have got still further south before resorting to the train but for dense fog. Before quitting the car the writer went carefully into the car's petrol consumption since quitting Edinburgh, and found that a total quantity of $7\frac{1}{2}$ gallons had been consumed for the journey, equal to an average of 27.2 miles per gallon—a remarkable performance over such untoward roads with a vehicle weighing 1 ton 1 cwt. 3 qrs.

Henri Fournier, who has gone back to the States after a short visit to Europe, has been interviewed about his new racing car, and is reported to have said: "It is short in front, like a fish's head, and then long, like its tail. After you break the air, it rushes in behind and pushes you, so you must have the car short in front and long behind. The seat is just a bicycle saddle on the rear axle. It will have four speeds and drive direct on the highest. What will it do? Oh! 32s., 33s., or 34s. to the mile." The machine—presumably a Mors—is stated to be of 120 h.p.

* * *

The accompanying drawing illustrates a device which is being fitted to sparking plugs by Messrs. Panhard and Levassor at their English repair works. The brass cap on the plug porcelain is provided with a pointed screw, on to which a block of vulcanite is screwed. At the top of the block is another pointed brass screw, to which the high tension wire is attached. A hole is drilled through the vulcanite, by means of which the points may be seen and their adjustment regulated. By means of the special brass cap this external gap may be fitted to any plug.



THE 1903 ARGYLL CAR.

(Concluded from page 262.)

The Clutch.

The clutch usually forms part of the flywheel, but in this case it is of the enclosed type; that is, the pressure from the clutch spring exerts itself on to a coned ring bolted to the flywheel rim, so that the end thrust upon the crankshaft is entirely overcome.

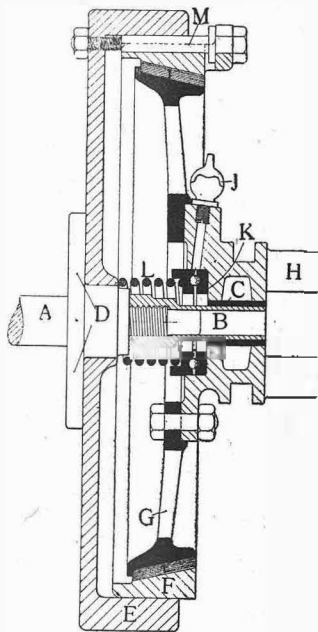


Fig. 1—Section of the clutch.

- A, engineshaft.
- B, friction clutch journal.
- C, clutch bearing.
- D, flange on A to which E is fixed.
- E, engine flywheel.
- F, clutch ring.
- G, male clutch cone.
- H, coupling.
- I, clutch leather.
- J, lubricator to thrust bearing.
- K, thrust block ball bearings.
- L, clutch spring.

The latter is provided with a phosphor bronze bush C and a ball thrust bearing K. This thrust bearing only comes into action when the clutch is withdrawn, and permits of the male portion of the clutch G revolving without causing any twisting strain upon the clutch spring L. Lubrication to this part is assured by the lubricator J. When withdrawn the clutch quickly ceases to revolve, by

reason of the pressure of the actuating fork upon the sides of the groove in which it works. From the clutch, power is transmitted to the change-speed gear by a short shaft working in a universal joint H. The principal points in this clutch are that the conical ring F can be very quickly removed, so that the leather face of the clutch may be cleaned or renewed when occasion requires, and that as the leather wears the clutch automatically adjusts itself. Needless to say, this is a very important item.

The Change-speed Gear.

The change-speed gear is of the type which has been associated with the Argyll cars for some time, and is the subject of one of Mr. Govan's patents. This year's pattern shows several improvements in detail, though the principle remains the same. The gearing gives three speeds forward and a reverse, driving direct on the top speed. The photo-engraving (fig. 2) gives an idea of the general arrangement of this gearing. The left-hand view shows the gear with the gear box lid removed, and in the top of the latter will be seen the reversing pinion. To explain the gear briefly, the shaft connecting the clutch to the gear wheel engages in the second universal joint (seen in the illustration), driving on to a short shaft carrying a pinion of small diameter. This engages with a gear wheel mounted upon a countershaft, and upon which is a spur wheel engaging with a second spur wheel on the main shaft. It must be clearly understood that the main shaft is divided in the gear box; that is, the one end of the shaft carrying the universal joint and the opposite end carrying the brake drum and universal joint for the propeller-shaft are two shafts, one of which has its end bored out, the other one being turned down at the opposite end to fit into the counter bore, so that a central bearing is obtained. The gears are changed by means of positive clutches, which lock the wheels in series to give the speeds required. For the first speed the small pinion seen at the bottom end of the gear box engages with a spur wheel upon the countershaft, which is of square section, and carries a pinion sliding backwards or forwards as the gear is required.

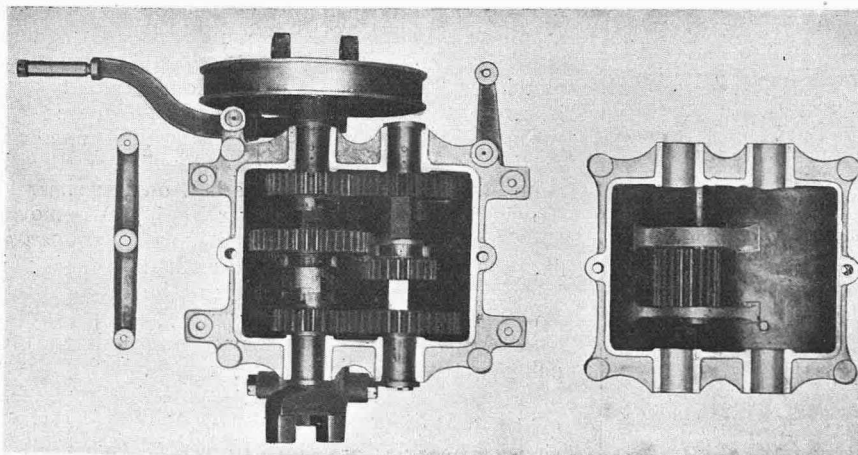


Fig. 2.—General view of the change-speed gear.

To engage the first speed, the large central spur wheel on the main shaft is locked through its clutch to the second part of the main shaft, which drives the propeller-shaft, and the pinion upon the countershaft is slid into engagement with it. To obtain the second speed, the first is, of course, withdrawn, and the pinion (seen near the brake drum) is locked to its shaft, so that the gear is now driven through the small pinion (seen at the bottom end of the gear) on to the large gear wheel on to the

countershaft, and thence through the gear wheel on to the opposite end of this shaft to the gear wheel, which is now locked to the propeller-shaft. To obtain the top speed, the big gear wheel on the main shaft engages by a clutch upon its face

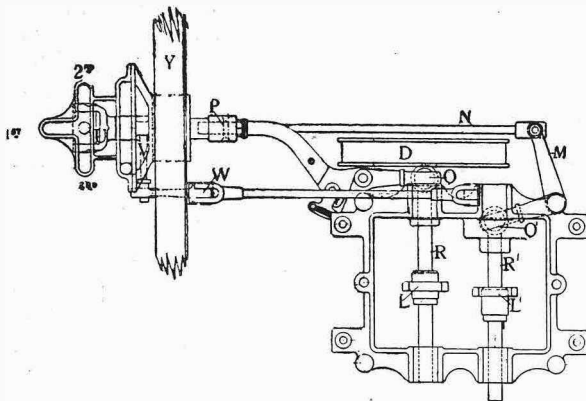


Fig. 3—Plan of the gear box and changing gear.

- 1st, first speed position of gear changing lever.
- 2nd, second speed position " " "
- 3rd, third speed position. " " "
- D, brake drum.
- L, speed changing fork, mainshaft.
- L¹, speed changing fork countershaft.
- M, first speed bell crank.
- N, connecting rod.
- O, second and third speeds bell crank.
- P, second and third speeds connecting lever.
- Q, sliding pivot.
- R, main speed changing shaft.
- R¹, countershaft speed changing shaft.
- Y, car frame.

with a clutch on the first part of the main shaft, thus driving direct through to the propeller-shaft. In this case the gear wheels upon the countershaft run idly. The principal alteration to the gear is the arrangement of the side change-speed lever. The actuation of this is very simple, and one cannot under any circumstances make a mistake in changing the gear. For the first speed the lever, being in its central and neutral position, is simply pushed outwards, as is shown in fig. 3. To obtain the second speed the lever is pulled towards the driver back to its limit; while to obtain the third or top speed the lever would simply be brought as far forward as possible. The reverse is obtained by a separate lever, which brings the reversing pinion into operation, as will be described later. In order to overcome all possibilities of missing gear or stripping the teeth, a spring arrangement (shown in fig. 4) has been introduced. The action of this is very simple. When the gear is changed, unless the clutches are directly opposite one another at the moment of changing, the spring is extended by reason of the lever being pulled back to its position, and as the gear revolves the clutches

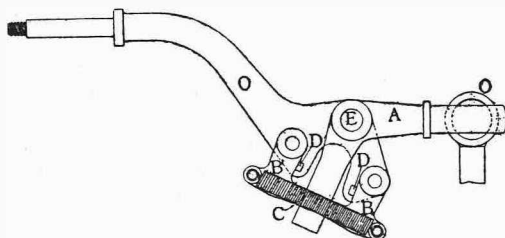


Fig. 4.—Details of the change gear spring.

- A, actuating bell crank.
- B B, spring links
- C, link spring
- D D, spring link stops.

are pulled into engagement with one another by the spring. In this way all the ripping and grinding which previously occurred when one missed the Argyll gear are now entirely overcome, and it is practically impossible for even the merest novice to damage the gearing. This is a point which, we are sure, will appeal to a large number of motorists who are passing through the novitiate stage. The drawings figs. 3, 4, and 5 will help to make clear the action of the change-speed gear. Fig 3 is the main shaft, R¹ being the countershaft, while L is the fork actuating the larger gear wheel upon the main shaft, and L¹ is the fork actuating a small pinion upon the countershaft. D is the brake drum upon the second part of the main shaft.

To show how the gears are slid, it will be necessary to follow the movements of the change-speed gear by means of figs. 3 and 5 in combination. X is the change-speed lever, working in the three-position guide on the side of the frame Y. To this

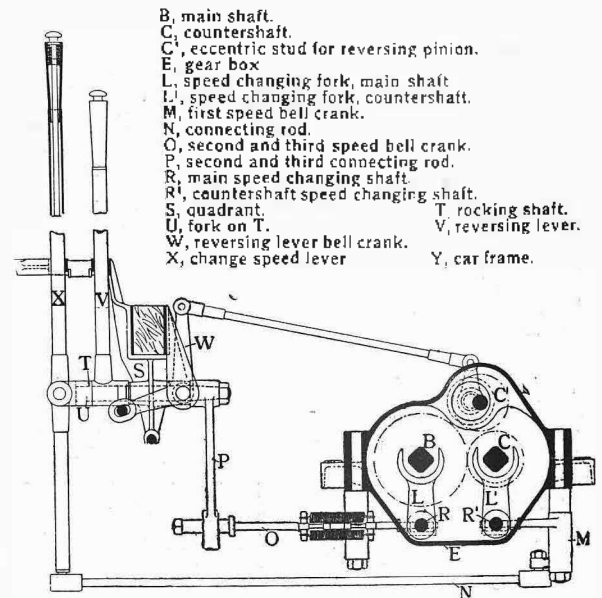


Fig. 5.—Elevation of the change-speed gear.

is connected, by a bell-crank P and rod N, a second crank M, working the clutch I¹ upon the shaft R¹; and working in conjunction with this is the spring clutch actuating device, which is shown in detail in fig. 4 (its position being easily located in both figs. 3 and 5). In this A is the short arm of the bell-crank O, actuating the second and third-speed clutches. This crank is pivoted on the point E, as is also a short arm, which is carried between the spring links B¹ and B², these links being connected by the spring C. At the end Q the bell-crank A is connected to the actuating fork L on the shaft R. To obtain the reverse, the lever V (fig. 5) is moved back, and so revolves the reversing pinion (seen in fig. 2) upon an eccentric stud, interposing it between the gear wheels giving the first speed. From the change-speed gear power is transmitted to a live back axle by a universally-jointed propeller-shaft and by bevel gearing upon the back axle.

The Back Axle

(which is shown by fig. 6) is a particularly good design. The axles are made from a special grade of steel, and are of ample dimensions. They run in

four roller bearings, which are clearly seen in the illustration, these working in hardened steel bushes. contained within the axle tubes, which are shown above the axle proper. The bevel wheel and pinion are both made of steel, and are well hardened. The former wheel is mounted around the box containing the differential gear, which is of the usual type. The hubs are securely attached to the main axles by being mounted upon square shoulders formed thereon. Ball thrust bearings are provided in the bevel gear, and oil-retaining washers are fitted throughout the axle and the bevel gear box, the whole being well stayed together. The principal points in connection with this part are the exceptionally large diameter of the bevel driving-gear and the roller bearings and their method of construction, which provides hardened steel cages and wearing surfaces, and a bearing for the bevel pinion upon both sides, thus distributing the thrust between two bearings instead of over the end of one, as is more usually the case.

The Steering Gear

The next point worthy of note is the steering-gear (fig. 7) and its method of adjustment. The steering bracket A is bolted to the main frame of the car, and carries the steering bell-crank B. This crank has two arms, which engage by means of connecting links D with the steering screw nut C. On the sides of the screw nut C flats are milled, which

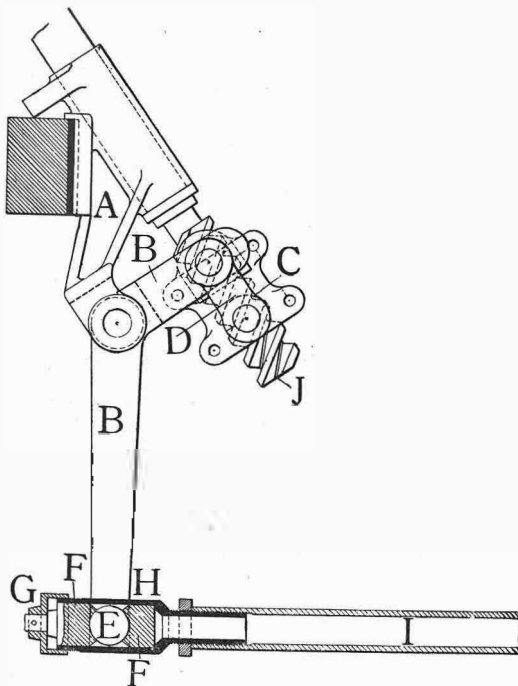


Fig. 7.

- A, steering column bracket.
- B, steering bell crank.
- C, screw nut.
- D, screw nut connecting links.
- E, steering ball.
- F F, steering ball bearings.
- G, adjusting nut.
- H, casing for steering ball.
- I, connecting tube.
- J, steering screw.

fit between the jaws of the bell-crank B, to which motion is given by means of the connecting links D. The steering connecting rod I has ball joint, which is adjustable by means of the nut G. H is

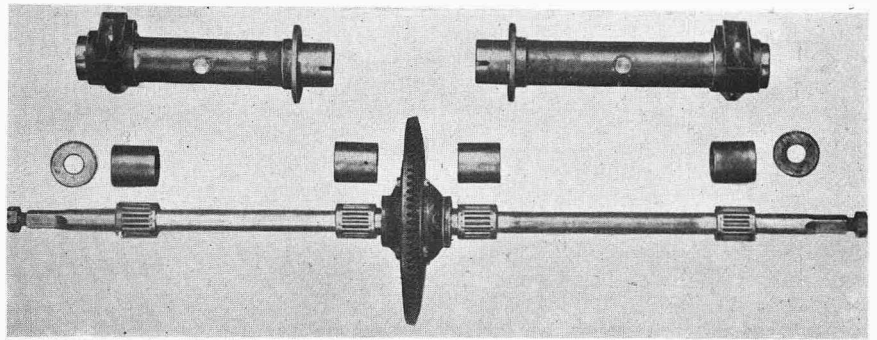


Fig. 6.—The back axle, bearings, and tubes.

the casing enclosing the steering ball E, which is upon the end of the bell-crank B, while F F are the adjustable bearings for the ball E. J is the steering screw upon the end of the steering column on which the nut C works. This nut is split, and by means of adjusting screws wear is taken up on this part as required.

The Front Axle

is of tubular construction, and carries the usual single steering arms at each end. The steering arms in turn carry the steering axles, which are set at such an angle that the central line of the wheel meets the central line of the vertical steering axle at the point of contact with the road. The advantages of this arrangement are already too well known to need recapitulation. The front axle is well stayed, and the whole construction is very strong without being unduly heavy.

The Complete Car

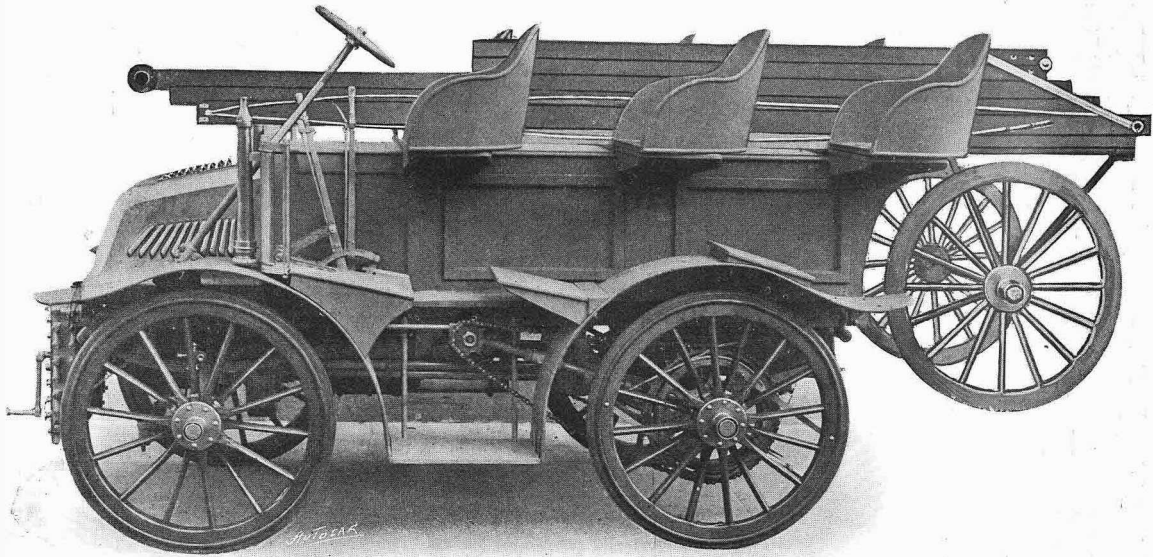
is very pleasing in design, and the arrangement all round is particularly good. The thermo syphon system of radiation is still used, and electric ignition of the high-tension type is employed. The speeds usually fitted are of a ratio giving eight, sixteen, and twenty-five miles per hour, the engine running at its normal speed. The speed may, of course, be accelerated up to about thirty miles per hour. The wheelbase is 6ft. 4in., track 4ft. 5in., and the weight 12½ cwt. approximately.

We learn with pleasure that Messrs. A. W. Gamage, Ltd., have been commanded to fit their spark intensifier to His Majesty the King's 20 h.p. Daimler.

* * *

The police are picketing the Esher Road, and Mr. F. R. Bircham tells us that a few days since several cars were stopped between Esher and the first railway bridge towards Kingston. It may be useful if we suggest that those who wish to avoid the trap should swing to the right at Ditton Green and go on *via* Weston and the north side of Sandown Park to Esher. They would thus not only avoid the picketed area, but would also find the route a pleasant change from the main road.

A MOTOR FIRE TENDER.



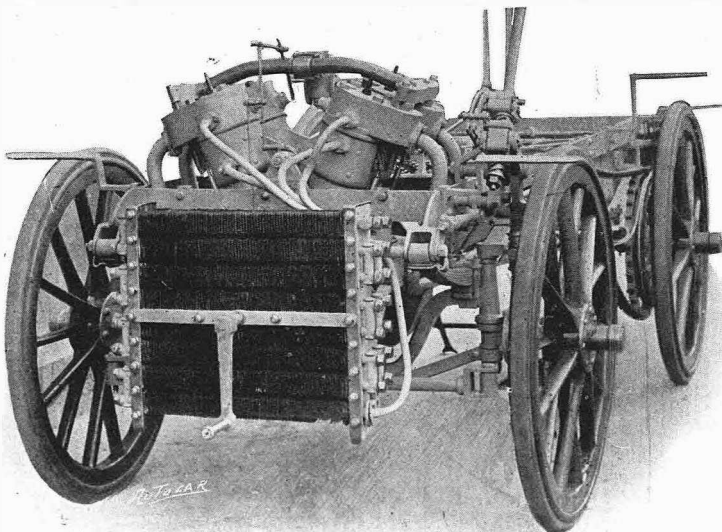
The Leamington Spa Corporation fire tender.

Towards the end of last year we mentioned that Mr. C. T. Crowden, of Leamington, had secured the contract for the supply of a motor fire tender for the Leamington Fire Brigade. This machine was designed and constructed by Mr. Crowden—who has had an exceptionally wide experience in connection with such works as apply to fire extinguishing—in his own works. The vehicle has been specially designed, and as it is the first vehicle of its type in this country, it will, no doubt, come in for considerable criticism. The considerations for an engine of this type are many, and all appear to be well met in Mr. Crowden's design. In the first place, as will be seen, the vehicle accommodates a crew of six effective members, the driver not being required to look after horses. The escape carried is of the usual design, thirty feet in length, in addition to which scaling ladders are carried.

The body of the carriage accommodates a chemical engine, by means of which carbonic acid gas is used to combat fire in enclosed areas. Three hundred yards of hose, together with the necessary nozzles, branches, etc., are also carried.

As to the motor and its mechanisms themselves, these are on accepted lines, with certain additions and modifications to suit the circumstances under which the vehicle is likely to be used. As will be seen by the front view of the vehicle, the engine is of the four-cylinder type, with the cylinders in pairs and opposite one another, the power developed being 20 h.p.

A notable constructional feature is seen in the method of connecting the connecting rods of the opposed cylinders to a common crank-pin. This will best be understood by reference to the line drawing, which shows the big ends of the connecting rods in section. It will be noticed that the end of the first cylinder connecting rod has a bearing upon the full width of the crank-pin. The second connecting rod end takes a bearing over the first one, this being recessed, as shown, to get the greatest bearing surface possible. By this means the off-set on the connecting rods is reduced to three-eighths of an inch, a practically negative quantity, while the thrust upon the crank-pin is the same from both pistons. There is, of course, a slight rubbing action between the big ends, but this only amounts to the small difference of the cylinder angle from the central vertical line. Substantial oil-ways provide for efficient lubrication to both working surfaces. As the connecting rod big ends are solid on account of their overlapping, a built-up crankshaft is used, the method of construction being clearly shown. The water jackets to

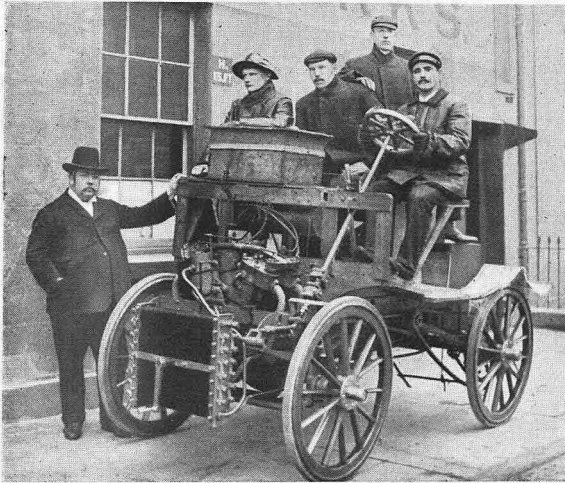


Front view of the tender chassis.

the cylinders are constructed on a system for which Mr. Crowden holds a patent. This covers the separate jacketing of the cylinder and head, the connection between the two being made by copper tubing. The carburetter is of the Daimler type, and the ignition is, of course, electric.

Another feature is a central sliding bearing to the change-speed gear shafts. These shafts are in the first place particularly short, but as the work will be heavy, it was considered expedient to add the extra bearing. The result has been the elimination of all tendency to "chatter" by the springing of the two shafts. The change-speed gear itself is on the sliding principle, and gives four speeds forward and a reverse. The usual side chains transmit power to the road driving wheels, the chains being, of course, extra strong.

The steering-gear is unusual in more than one respect, as in the first place the steering wheel is placed on the left-hand side, and in the second place it acts directly on to the steering arm, thus



The tender with rough test body.

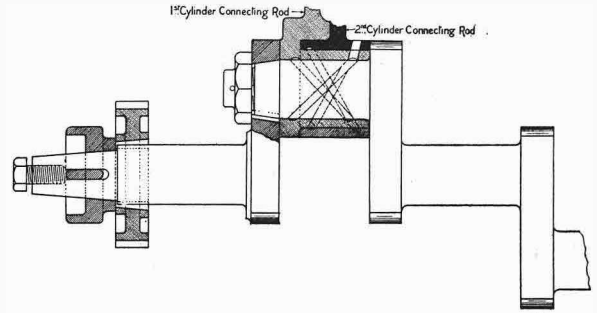
doing away with all connecting rods, with the exception of the distance rod connecting the steering road wheels

The framework is of plain bar iron, built in accordance with Bury locomotive practice, and well braced up. The back axle and springs are carried in a supplementary frame sliding within the main frame to admit of a ready and equal adjustment of the driving chains. The road wheels are built on Mr. Crowden's patents, which cover the double dishing of the wheel, a system which secures remarkable lateral stability without any increase in weight. This is a wheel which we should like to see more generally adopted, as it is eminently suited to its purpose. The tyres used are solids, extra long springs being fitted to take up road shocks.

The vehicle has just undergone its first road tests, covering a distance of forty miles in good style. The small photo reproduction depicts the vehicle with a test body, or, rather, a rig up, which gives it a very remarkable appearance.

Great praise is due to Mr. Crowden for the enterprise he has displayed, as he was undoubtedly the first one to produce the modern motor fire engine

when he converted the Norwich Union's (Worcester) engine into a self-propeller, and he has now made

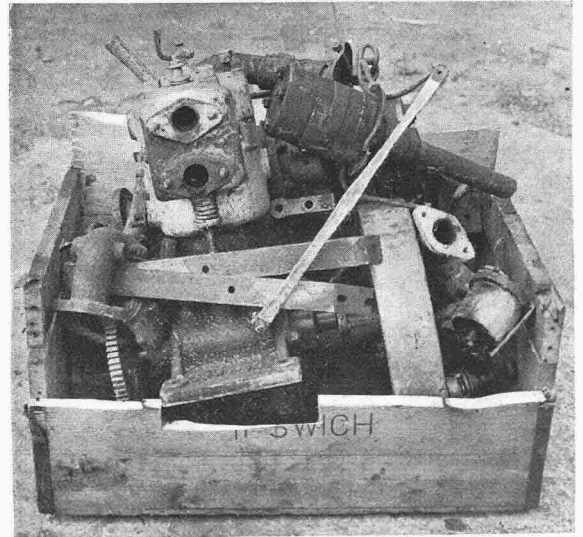


Crowden's connecting rods and crankshaft.

another mark in history by the production of a fire tender. The Leamington Corporation also deserve their meed of praise for the enterprise they have displayed, which has given their townsman a further opportunity, but it must not be forgotten that the contract was secured in open competition.

Just before going to press, we are advised by wire that Mr. Crowden has secured an order from the Leicester Corporation for a motor fire tender and chemical engine.

We have been somewhat amused to notice that our Transatlantic contemporaries have, with one or two exceptions, reproduced our description of the discovery of the outside sparking gap without acknowledgment. It is a matter which seems to have interested the entire motor world.



As an example of how not to pack we cannot do better than reproduce a photograph which was taken recently of a 6 h.p. Simms launch engine. This engine had done two years' good work on the Broads, when the skipper, who had been attending to it, took it into his head to have the engine done up, so he pulled it to pieces, threw all the parts into a champagne box, and sent them to the Simms Manufacturing Co. The engine appears to have been fairly wrenched out of the boat, and it will be a costly matter to put it in order. It carries an example which should not be missed by some automobilists, whether it be those who will not let well alone, and are given to pulling their engines to pieces without cause, or the other and much larger section which takes absolutely no care of engine or car, and is very much inclined to crumble at any expense necessitated through neglect of simple adjustments.

THE 10 H.P. LOCOMOBILE.



Mr. G. A. C. Phillips driving his 10 h.p. Locomobile.

The fine 10 h.p. Locomobile shown in our illustration is the property of Mr. G. A. C. Phillips, of Bedford, Middlesex. This is the second Locomobile that Mr. Phillips has had. The first was one of the small ones, and it gave such satisfaction that he soon went in for the larger touring car shown above. After receiving full instructions from one of the Locomobile engineers, Mr. Phillips took charge of the car himself, and never has the least trouble in keeping it in the best running trim. He is particularly struck with the steaming qualities of the car, as he can easily make from twenty-five to thirty miles an hour and keep 230 lbs. to 250 lbs. of steam, which, as steam carists know, is not only enough, but gives a fine reserve always at hand. The car has proved most reliable, and is never stopped involuntarily, except for water every forty miles. The car is a particularly good climber, and very fast up-hill. We do not give the times which have been accomplished on it, as they might result in the owner of the car receiving undue attention from the local police. It will suffice to say they are fast enough for any reasonable person, and very much faster than the average tourist wants to go.

The latest 10 h.p. Locomobile is in many respects an advance upon the type shown above. The car itself is somewhat different from the illustration.

although it retains the advantages of design which have done so much to make the light steam car popular, and is of a much stronger and more solid construction than anything hitherto built on these lines. With the lengthened wheelbase, a frame has been designed which is of great strength and rigidity, and is carefully braced to withstand thrusts and strains in all directions. There is increased capacity for carriage both of water and petrol, while the improved type of superheater used economises the consumption of both in a very marked degree. There is ample seating accommodation for four people, and by an ingenious device a commodious rear seat is so arranged that it can be folded down out of sight, leaving ample room for the storage of luggage. This is an arrangement which has been hitherto impossible on cars of this class. The wheels are of artillery pattern, and are equipped with very strong, though light, double-tube tyres. It is, however, in the engine and gearing that this car shows the most marked and satisfactory development. The engine is made at the Locomobile Company's own works, and represents the highest type of engineering practice as applied to steam cars. The bearing surfaces are all unusually large, and the bearings themselves are of the best roller type. The slides are roller instead of stationary, and the piston and valve stem glands are fitted

with a special ratchet device for tightening and adjusting. The whole of the engine is cased in aluminium, and runs in an oil bath. The stroke is 4in., and the bore of the cylinders is $3\frac{3}{8}$ in. There is a specially powerful chain, and the differential gear is of a new and improved pattern. By an ingenious device the bevel wheel can, by tightening a nut, be faced up to the pinions if any wear or loosening should take place. Wheel steering is

adopted, the lever controlling the throttle being fixed on the stem of the steering column; while a specially large and strong reversing lever, mounted on a notched quadrant, provides ample facilities for economy of running by "notching up." A pilot light to the burner is employed, and the newest method of forced lubrication for the cylinders ensures both certainty of action and economy of lubricant.

CONTINENTAL NOTES AND NEWS.

A Palace of Sports.

Various proposals have been made for some time past in favour of creating a permanent exhibition of autocars and sporting requisites in Paris. The idea was started by M. Paul Meyan, of *La France Automobile*, who wanted to convert the Palais Royal into a Palace of Sports, and it was very strongly supported by some of the leading journals. The Palais Royal is, in fact, a magnificent desert in the midst of a busy city—a place which ceased to become a fashionable rendezvous when traffic was diverted by the Avenue de l'Opéra, and is now given up as a playground for children. The jewellers who took possession of the Palais Royal are now deserting it, and a scheme has been put forward for converting all these abandoned shops into showrooms and using the gardens for trying cars in the presence of purchasers. It is hardly likely, however, that the Municipal Council will allow the palace of the cardinals to be used for this purpose. As an alternative it was hoped to convert the huge Galerie des Machines into a palace of sports, where there is room for laying out a splendid track for cars such as is possible in no other covered building. Unfortunately, this project has again been rejected by the Municipal Council, who have decided to pull the machine gallery down, and now a number of councillors are agitating either for the transference of the Galerie des Machines to another site or the erection of a new building somewhere in Paris devoted exclusively to a permanent automobile and sporting show and trial ground. If the question of funds does not stand in the way Paris will certainly have its permanent exhibition, and this cannot fail to have an excellent result in creating a mart where the autocar business will be centralised.

A New Trial Track.

The Dourdan mile stretch is very useful for speed tests, and would doubtless meet the needs of manufacturers if they could only use it when they liked, but while being somewhat out of the way the road is only open at rare intervals, when it is necessary to get permission of the local prefect. The Automobile Club of France sees that this does not entirely fulfil the requirements of the trade, since makers not only want to engage in periodical speed tests on a mile and kilometre stretch, but they desire to try cars when they like on a convenient track near Paris. It is for this reason that the club has for some time past been looking out for a property sufficiently large to permit of the laying out of a track, and it is said that it is in negotiation for the

renting or purchase of a property on the other side of Villiers-sur-Marne, to the east of Paris, where it will be possible to lay out a track as well as a straight stretch thirty metres in width and three kilometres in length. There is, however, nothing more uncertain than the carrying out of projects of this kind.

100 h.p. Motors.

One of the features of the present season will be the appearance of the 100 h.p. motors which will be employed on several of the cars if only makers succeed in their experiments to bring down the weight within the necessary limit, but it will not be surprising if some of the manufacturers find that with these huge powers they will be cutting down the margin of safety to a dangerously fine point. In the Paris-Vienna race we found that the 60 h.p. engines were fully as much as could be put into cars as then constructed. Armoured wood frames buckled and shafts broke, and many of the cars arriving in Vienna were perfect wrecks. If makers are able to use their 100 h.p. motors in the forthcoming races it will be a splendid test of the pressed steel frames, as well as of the improvements carried out in the mechanism generally. It is obvious that nothing can be left to chance in a car propelled by a 100 h.p. engine at the maximum speeds possible over such roads as those to be met with in Spain. It would seem as if Mors will have 100 h.p. motors on some of their cars, for they are building engines of this type for motor balloons, one of six cylinders and the other of four cylinders, the latter for M. Jacques Lebaudy. A motor that is light enough for a balloon will evidently suit the requirements of an autocar.

Autocars in the Army.

The military authorities in France are extremely dissatisfied at the smallness of the grant which has been voted in the Chamber of Deputies for the purchase of autocars, as they are almost unanimously of the opinion that the time has come when something should be done to equip the army with an efficient service of motor vehicles. For some years past they have been employed in the manoeuvres for all kinds of transport, and owners, when doing their thirteen or twenty-eight days, enjoy special privileges if they place their cars at the service of the military authorities. They, of course, drive the vehicles themselves, and the work is of a much more interesting character to the automobilist than the ordinary soldier's routine. The officers have invariably reported favourably upon the services rendered by the autocar in transporting the staff

rapidly from one place to another, or in scouting work, this being done chiefly by petrol tricycles, and in view of these excellent results it was fully expected that the Chamber would vote the full grant of 100,000 francs asked by the Minister of War for the purchase of autocars. This sum, however, was reduced by one-tenth, not because the Parliamentary representatives had any doubt about the military value of the motor vehicle, but simply because it is necessary to reduce expenses in every possible way. The sum of 10,000 francs is, of course, utterly useless, and it would have been better to suppress the grant altogether. This action is naturally being unfavourably contrasted with that of Germany, which has just devoted a sum of 100,000 marks to the purchase of military automobiles.

Correspondence.

The Editor is not responsible for the opinions of his correspondents.

MAGNETO IGNITION.

[2850.]—Your interesting article on Eiseman's magneto igniter begins with the somewhat inaccurate statement that Eiseman's is the first "high tension" igniter producing a jump spark and using ordinary sparking plugs. We have a patent on ours, dated July 11th, 1900.

This patent is so nearly the same as the igniter described in yours, that with every credit to the ingenuity with which our details are worked not by equivalents in Eiseman's, it remains practically impossible to state a difference between the two, with the exception of the timing arrangement shown by Eiseman, which is the same as Simms's method. With this exception it would be describing both to describe either unless drawings were added to show the different forms given to really the same things.

It is also a remarkable coincidence that the Eiseman patent emanated from Stuttgart shortly after some of our igniters were shown at Cannstatt, about three miles off by tram.

HENRY T. DAWSON.

CHANGE SPEED GEAR.

[2851.]—The two letters on the above subject enquiring "Why sliding gears have been so universally adopted?" will most probably meet with the answer, "Survival of the fittest!"

For racing cars, with expert drivers, sliding gear may give slightly better results; but even experts at times miss their gear, and usually at an inconvenient moment, while in the dark, to find the notch on quadrant is by no means an easy matter, especially in a very hilly district where gear may require changing every few minutes.

The Dion friction clutch is deservedly popular, and much of the early success of the car was no doubt due to it. Hundreds of these gears are in use in England, and also an English made one—the Champion friction clutch—as used so largely by the Progress Co. This is self-adjusting to a great extent, and compensates for any slight wear.

To put four of these clutches, as your correspondent suggests, in a gear box, would no doubt be a great improvement, giving three speeds and reverse, all friction clutched—a boon to many drivers. This, however, would cost twice as much as sliding gear to make, and be much heavier; and offer great resistance with such large masses running in oil, reducing efficiency of the gear considerably.

If, however, made with direct drive on top speed, for convenience of working together with freedom from trouble in changing, it would take a lot of beating, being as simple to work as a pump handle.

The average buyer as a rule is not a mechanic, or an expert at gear changing, and jams the lever home regardless of anything but getting in that notch somehow or perishing in the attempt. Many persons would prefer a gear that could be changed every time with dead certainty, even at the cost of slightly reduced efficiency, and there are plenty of other things about a car to worry the novice

without adding sliding gear with its wear and tear to his other troubles and expenses. That cars can be made without, with a decided gain in freedom from noise, we have only to look at the Lanchester and Duryea, and judge from outsiders' remarks whether people appreciate this kind of thing, and if it does not sometimes help to sell a car.

MONTY.

NON-SLIPPING TREADS.

[2852.]—Having more or less done away with the unreliable and slow old carriage horse, and having replaced it by the much-hated motor car, and living as I do in the country and six miles from any railway station, I became aware last September that if I did not wish to miss my train or to be too late for the morning's gallop with foxhounds I must adopt some form of non-skidding tread. I accordingly went for advice to my friends in the motor and tyre trade, and great was my surprise to find that they knew little or nothing on the subject, and some went as far as to say that there was no such thing as a non-skidder in the market, and the only way was to drive slowly on the grease, not to use the brakes, and to let the car go when it skidded!

On reflection one can see that the "trade" care little or nothing for non-skidders. Engines, speed, and gold medals are their aim, and they leave it to us poor country folk to work out our own non-skidding salvation, and to keep ourselves out of the ditch and other peoples' carts and horses as best we may.

I will preface any further remarks by saying here in North Wilts we have better roads to test a non-skidding tyre than any in England. Our local stone is a yellow grey limestone; Bristol rock, which is a hard limestone, is also used on the main roads, and on the Downs we get a great deal of chalk, so after a thaw, or a good shower of rain, you have the most greasy, side-slipping, nerve-trying surface that your most inveterate enemy to motor cars could wish you to have. The heavy rains and frosts have made the roads bad this winter, and the ruts have worn more and have been left longer unattended than usual, but as I see our County Council are giving their surveyor a motor car, I hope this will all be altered by next winter.

But to go back to my non-skidders. More by good luck than anything else I at last settled on a pair of treads from Messrs. Wilkinson, Princess Street, Huddersfield, and I have to thank them for their most excellent tread, which has carried me safely and pleasantly through my winter's work.

On the 2nd November last, I put one tread on one hind wheel of my 10 h.p. Wolseley car, and on the 3rd November ran twenty-six miles on very bad roads, and I was delighted to find I could run quite safely in the grease, jam my brakes on down hill, and go around corners in perfect safety, and without the least idea of side-slipping.

Fearing that we might strain the differential gear, we put on the other tread on the other hind wheel, and since then and to the 24th February last (sixteen weeks and three days) we have run 2,168 miles, in November, December, January, and February, with one pair of treads. These treads are nearly done for now, and I have taken them off the hind wheels, and shall wear them out on the front ones. The outer covers are as good as new, and when the treads are quite gone I shall use them as ordinary tyres for summer work. This is the one great advantage which the Wilkinson tread has over any other tread that I have seen in use; I am also told that you can put three to four Wilkinson treads on one outer cover, which if true is a great saving.

As one pair of Wilkinson treads cost £7 8s., and mine have run 2,168 miles, the cost of the treads has been 3d. to 1d. per mile, and taking this as a basis, I should be very much obliged if your readers could inform me through your paper or privately whether they know of any other treads which they have worked at a cheaper rate. Of course we must take into consideration the weight of the car, but that is very easily calculated. My 10 h.p. Wolseley is about 18 cwt. empty, and so under a ton with two to three people.

Several of my friends have been using the Gallus and Chameroey treads. The former costs £16 per wheel, so would have to run 8,000 miles to equal the Wilkinson, and the Chameroey costs £5 10s. per wheel, and so would have to run about 3,000 miles, and from what I hear they would

not run these distances, and when their treads are worn out the outer cover is also useless owing to the tread being fixed on with bolts.

I think that the Wilkinson treads can be improved, and my humble opinion is that they should be at least two inches wide on the hind wheels, and that on the front wheels you should have three rows of pins on the outside of each cover just to let the wheel bite in the grease, as I find in a very rounded road, when passing a cart or going round a bad corner, the front wheels run away with you down the incline, and as the hind wheels hold they push the front ones along sideways. When this takes place one has only to throw the clutch out, and the steering gear comes round at once.

From my experience I find you cannot slid, slip, or skid in the least with the Wilkinson treads, provided the pin heads are above the rubber. After running in a frost the pins wear down, and the best thing to do is to peel two inches of rubber off and leave, say, four or five inches, and then take out another two inches. This will hold you well in any mud, and the rubber that is left will wear out and come away gradually.

If the roads are soft and spongy after a frost, there is no doubt these treads slow the car down—about one quarter I should say—but if the roads are fairly good they will make little or no difference.

Just one word in praise of my 10 h.p. Wolseley. My average runs per day in the last four months have been about twenty-two miles. I have no trouble with the wheels, engine, or sparking. I have never missed a train or a meet, and the only thing that I have broken is one radius rod. I think your readers will allow that this is a good reliability trial, and better than anything you can do in September from the Crystal Palace

ARTHUR COTES.

THE EFFECT OF TEMPERATURE ON TYRES.

[2853.]—Reverting to the question of the effect of change of temperature on tyres mentioned in the last number of your paper, I may say that some time back when in the employ of the Dunlop Pneumatic Tyre Co. we had occasion to manufacture some large tyres which were intended to be used by the Government in the Soudan, and I tried one or two experiments with them as follows:

By placing a tyre inflated to 5 lbs. pressure in water of a temperature of 35° and increasing the temperature to 110° I found the pressure increased 4 lbs. I also found upon inflating a tyre in a temperature of 60° to 15 lbs. and increasing the temperature to 180° the total expansion of air was 7 lbs.

W. A. TURPIN, A.M.I.M.E.

A QUERY.

[2854.]—I shall be grateful if any of your readers can tell me whether they have used an eleven-toothed pinion on a 2½ h.p. De Dion motor tricycle for any length of time without its breaking. I want the lowest possible gear for taking a trailer up very steep hills.

FRED EDWARDS.

DUCELLIER LAMPS.

[2855.]—Replying to Mr. Boyle Lawrence's assertion in his letter to *The Autocar* of February 28th, entitled "Practical Experiences," I should like to point out to him that, contrary to what he says, Ducellier lamps are not at all expensive, as if he will compare the prices with those charged for similar lamps of French and English make, he cannot but agree that they compare very favourably, both as regards price and quality. I take this opportunity to point out to him that the prices charged by me in England are the same as those charged in France, without any exorbitant addition for English automobilists.

With regard to his statement respecting red side glass, I beg to say that I have any number of these in stock, as well as for all other spare parts of Ducellier lamps, and his contention that if one breaks a shilling's worth of Ducellier one has to buy an entire new lamp is absurd.

I do not know Mr. Boyle Lawrence, and can only conclude that his application was not sent to the proper quarter, as I make a point of attending to all enquiries re Ducellier lamps, however trifling.

ANDRE A. GODIN.

9, Little James Street, Gray's Inn Road, W.C.

THE RELIABILITY TRIALS.

[2856.]—Last July we entered certain vehicles in the Automobile Club's Reliability Trials, whereupon we were asked for the entrance fees amounting to some £30. After the trials were over we, at great expense and a lot of trouble, gained the award, which was to be a gold medal, and have since waited patiently for the club to make these awards. We think it is rather unsatisfactory that, after all this length of time, no awards should have been made. On Saturday morning last we received a letter from the club saying the medals were not yet to hand, and as soon as they were they would be forwarded.

Surely this ought to have some attention.

C. FRISWELL.

MOTOR BICYCLES AND TRAILERS.

[2857.]—Referring to a letter in your last issue from a correspondent who is afraid that pulling a trailer will wear out the motor of his bicycle, the following personal experience may be of some service.

I have a 2½ Excelsior motor bicycle which towed a full sized trailer and 11 stone passenger nearly 3,000 miles last year, and the engine now runs as well as ever. During that period the only repair necessary was a small end pin which broke straight through the centre. When another thousand miles or so have been reeled off the big end will need a new bush as a slight knock is just perceptible.

Driving with a trailer is an acquired taste and quite a distinct art from driving a motor cycle alone. The "motor-cum-trailer cyclist" must not be chary of assisting his motor with the pedals uphill or against the wind.

Special attention must be given to the supply of lubricating oil. It will generally be found that the engine is short of oil when it suffers from "that tired feeling."

Attention must be paid to keeping the valves well ground in to maintain high compression, and until some experience has been gained the correct mixture and volume for the increased load may be hard to find.

Still I would not be without my trailer.

TRAILER.

BRITISH CAR DESIGN.

[2858.]—Under the above heading your correspondent Mr. Sturmev mentions two firms who never used tube ignition at all, e.g., the Benz and Durvea. I think if anyone should have the credit for electric ignition as an advance it is F. C. Blake, who in 1897 and 1898 adopted the principles used by most of our leading firms to-day. The fact that dozens of Benz cars were altered at that time to his method proved his advance on their principle of short circuiting the secondary. A still further advance made by Blake in '98 was to switch the secondary—in conjunction with the primary—current, using only one coil, hence only one trembler to look after. An engine ignited by this method undoubtedly runs sweeter than when fitted with double or quadruple coils. Another thing in car, or rather engine, design which deserves far more attention than most firms seem to give it, is the accessibility to the connecting rod big ends. This is a special feature in the Blake engine; also in the Maudslay, whose makers have even done better, providing for the removal of any one piston and connecting rod without disturbing any part of the others. Another good point in the design of the Maudslay is the fact that the inlet and exhaust valves are interchangeable, and are more accessible than in any other engine.

T. EMMERSON.

[2859.]—I regret that through absence from England I was unable to write earlier in answer to Mr. Edge's letter on the subject of British car design which appeared in your issue of 21st February. I do not wish to enlarge upon his letter, but only to answer his questions, as they are either from the result of great forgetfulness on Mr. Edge's part or owing to his want of knowledge.

With regard to Mr. Napier's car on which he has won a race (the merits of which I do not wish to discuss), I most strongly deny that it was the lowest built car in the Paris-Vienna race. If Mr. Edge challenges this, I will tell him the names of lower ones.

As regards the more important points as to what has been brought from English makers, and, as Mr. Edge points out, more particularly from the "Napier"—

First. Ball thrust bearings.—These were fitted to an old Mors car that I had in 1898. It was a trial on their part, and I believe was afterwards set aside by the makers, as the bearings did not work well.

Second. Easy access to valves.—I would remind Mr. Edge of the existence of such an engine as the De Dion engine, in which one obtains access to the valves by unscrewing one nut. The old Mors six-cylinder did the same thing. The Gaillardet had exactly the same, and I can name a host of other motors in which access to the valves was obtained by the undoing of one nut, all of which motors were made before the Napier Company ever made a single motor, or before such company was in existence.

Third. Enclosed valve gear.—Has Mr. Edge ever seen a De Dion engine which has been otherwise? Does Mr. Edge remember the first vertical Mors engine, in which the whole of the valve gear was enclosed inside the crank chamber? Does he remember the first Renault in which the same thing existed? Does he remember the first Gaillardet engine in which the same thing existed? Can he not, if he thinks a little, remember a dozen engines in the whole of which the valve gears were enclosed? The above-named firms, together with many more that I could mention, did this before the Napier Company existed or ever built a motor car.

Fourth. Aluminium water jackets to engines.—I do not know of any firm, barring the Napier Company, who fitted this very questionable and so-called improvement. What I call an improvement is in reality a necessity. Whether Mr. Edge feels inclined to use aluminium or any other material is his own inclination, but this has not been universally adopted, and therefore cannot be called an improvement. Apart from which, I should remind Mr. Edge that modern Continental motors are not made the way he makes them, but the cylinders are now bored out of the solid, with copper water jackets—in other words, the system that the present Continental makers apply is just about one quarter the weight that Mr. Edge uses by employing his aluminium water jacket.

Fifth. Elimination of tube ignition.—This is about the most extraordinary part of Mr. Edge's letter. Mr. Edge claims that because he did away with something that did away with itself in the ordinary course of progress, he has invented something.

Apart from this I would like to ask Mr. Edge if he ever saw a De Dion engine with tube ignition, whether he ever saw a Mors with tube ignition, whether he ever saw a Gaillardet or Benz with tube ignition, or an Aster? Now all these engines were fitted up, practically as far back as 1894-1895, with electric ignition. I suggest that the Napier Company did not exist in 1894-1895.

Sixth. Elimination of water joints to cylinder heads.—I would again ask Mr. Edge if he has ever seen a De Dion, Gaillardet, or Renault engine with water joints? If I am not mistaken, the first De Dion engine water cooled was made in 1899. I do not think at that time Mr. Edge had ever built a motor car, or if he had, that he did not have a water joint—in fact, the first Napier built was as near as possible the exact copy of the, at that time, Panhard engine, with the usual water joint as then applied by that firm.

Seventh. The use of roller bearings to reduce friction.—Messrs. Lemoine, the greatest firm of axle makers in the world, were fitting racing cars in 1898 with roller bearings. But since then the danger of using such bearings has been so great that they have been done away with. I have myself imperilled my life on two occasions by their use, so that instead of this being an improvement it is the reverse, and I look upon it, and all the Continental makers look upon roller bearings, as a most dangerous thing.

I would suggest to Mr. Edge one or two improvements that he still has to make to be up to date with the Continental maker.

These improvements are mechanical improvements, and not simply a one man idea, or the application of a nut or bolt, which are in reality the points raised by Mr. Edge. I will make a short list without comment.

- (1) Mechanically-operated inlet valves.
- (2) Hand regulation for mechanically-operated valves.
- (3) Self-generating ignition appliances.
- (4) Beehive coolers.
- (5) Hydraulic compressed steel frames.
- (6) Mechanically applied clutches (in place of the wedge clutch).

(7) Direct driving on top gears.

These are the modern improvements put forward by Continental makers. Can Mr. Edge tell me of a single appliance or improvement in the construction of modern motors, or any of the above things I have mentioned, that have been introduced by an English firm?

As regards Mr. Austin's letter in *The Autocar* of 31st January I do not really feel inclined to reply. The article he refers to is so very much out of date that, without desiring to be impolite, I would suggest that it might be the ideas of the grandfathers of the present Continental manufacturers.

Mr. Edge may question some of the modern improvements of the Continental car, but he always has questioned them, pending his being able to dispose of his stock-in-hand, and I prophesy that within twelve months Mr. Edge will adopt all such improvements as above stated.

It is regrettable that the English manufacturers show such little gratitude to their French and German fellow workers, and if they continue there is very little doubt that after a few years time Mr. Edge and Mr. Austin will claim to have invented the motor car, and the names of such men as Daimler, Levassor, Benz, De Dietrich, Bollée, Mors, Krebs, Clement, Bouton, etc., will have been forgotten, while those of Edge, Napier, and Austin will reign in their stead.

D. M. WEIGEL.

[2860.]—When I read Mr. Cohen's letter in *The Autocar* for February 14th I thought: "This is a nice opportunity for Mr. Edge to get a cheap advertisement, and I guess he won't miss it."

Surely enough, he did not! The idea of Continental manufacturers copying the Napier is in itself too funny, as they have, rightly or not, the greatest contempt for any thing American or English in connection with motor car building.

But this is not the point, and I write to ask whether Mr. Edge is the great ignoramus he pretends to be, or whether he takes the readers of *The Autocar* for his laughing stock, when he gives his entertaining list of Napier "improvements?"

I should wrong your readers myself if I stopped to discuss it.

But you say yourself in your leader, Mr. Editor, that "the motor car of to-day contains features which have originated in Great Britain, France, Germany, and America."

As I myself contend that the motor car of to-day owes nothing to America and England, and everything to France and Germany, I shall be glad if you will *seriously* point out the American and English "features."

Of course this is an arduous work; but I think your readers will be thankful for it, as I understand not a few are getting tired of idle statements of certain advertising firms.

D. YZELEN.

[The following are a few items of British and American invention or design which have been followed by Continental makers, or have not up to the present been attempted by them. These are only a few which come to mind at the moment. Research would undoubtedly bring to light many others: Separate water jacket to cylinder, taken from the Crossley gas engine; three port induction valves; built-up double arm front axles; commutator on dashboard; float feed and jet carburetter, patented by Butler in May, 1890, No. 6,990; magneto ignition, employing induction coil and sparking plug; the bevel wheel balance gear; magneto ignition in which the generator is incorporated in the working parts of the motor; the adaptation of the top layshaft to modern car motors; three-cylinder engine; two-cycle engine; new system of body springing; and steel tube artillery wheel. The Americans have made the light steam car practically their own, and hold the field in this respect. It must not be inferred that we claim that all the best practice is British or American, as no one can dispute the fact that the majority of present day automobile designs are Continental. It is by observing and copying, if necessary, other country's productions that the best vehicles are produced to the benefit of the universe. All we desire to do is to give credit where credit is due, and not to despise anything appertaining to automobiles which is produced elsewhere than in France or Germany.—ED.]

[2861.]—I beg leave to reply to the letters appearing in last week's issue of *The Autocar* by Mr. S. F. Edge and "Patriot" respectively. I will deal with them in the above order.

Coming first to Mr. Edge's personal indictment concerning the mention I made at the outset of my letter of the fact that I was interested in the importation of foreign cars, I think this is scarcely fair, since I did this in order to prevent any misunderstanding or the possibility of my appearing in a false light. I hope, sir, you will admit that my action in taking every precaution not to sail under false colours was prompted solely by the reasons which I gave at the time. Moreover, unless I am very much mistaken, I believe Mr. Edge is himself interested to a very large extent in the importation of foreign cars. Possibly, however, I may be in error on this point.

The question of the number of vehicles produced at the present time is really no factor in enabling one to arrive at a proper decision on the question at issue, which I endeavoured to point out in my last letter, to which I would refer Mr. Edge.

I cannot quite see what the extent of the membership of the Automobile Club, which Mr. Edge is at pains to bring in, has to do with the matter at all. Perhaps he will explain a little more concisely?

With regard to the result produced by the reliability trials, I have all along admitted that on the score of solidity, good workmanship, and reliability, the British maker need cry second to none, yet I hold that it is possible to attain these results and a great many other resultant advantages by a better mechanical design and, in other words, a better general disposition of the various working parts. This is a point I wished to emphasise all along, and it appears that I did not make my meaning quite clear.

Mr. Edge taxes me with having confused mechanical or manufacturing advantages with fashion changes. Of course, it is easy when a manufacturer does not adopt, or has not devised, an undoubted improvement on which his competitor has scored a point to turn round and simply state that it is a "fad" or a change of fashion; but this, sir, will scarcely go down with the British motoring public very much longer, when it becomes more educated in automobile matters, as is the French public to-day; and, consequently, in a more favourable position to estimate the true mechanical value of an invention, as against a change merely for the purpose of "being in the fashion."

I should be very glad to know what particular class of work demands a car which is high from the ground, and if Mr. Edge would kindly specify this, the information would be highly interesting. French manufacturers used to build cars high off the ground, but they have learnt by experience and by a few serious accidents to reduce the height of the car from the ground year by year as the speed capabilities of the machine were augmented, and this is absolutely necessary in the best interests of the safety of the automobile-using public.

I have still to learn that the British maker has distinguished himself so remarkably by adaptability to the special requirements of the British public, or that as a matter of fact the French maker has not on an average satisfied British requirements at least as well as the home builder.

With regard to the mechanical features taken from "Napier" practice, of which Mr. Edge has been kind enough to embody a list, and which he claims to be mechanical improvements that have been copied abroad, whilst thanking him for these, I think it is rather a sweeping assertion of his to claim that many of these have either been first introduced in this country or that any of them are what I termed "epoch-making mechanical improvements."

I would not take upon myself the awful responsibility of taking up Mr. Edge's challenge in giving the salient mechanical points of the ideal vehicle which the British manufacturer should produce, neither, sir, do I feel in the least qualified to do so, whilst such an action would be quite outside the scope of this correspondence; though, nevertheless, I scarcely think that you will hold that this reluctance on my part disqualifies me from holding an opinion or giving vent to same on the broad question at present being so interestingly discussed in the "Correspondence" columns of *The Autocar*.

With regard, now, to "Patriot's" letter, I cannot help taking exception to that gentleman's accusation that I have attempted, in joining in this correspondence, to use your valuable "Correspondence" pages as an advertising medium. I would answer this gentleman in almost the same terms as I have answered Mr. Edge; and, moreover, I beg to state that I never mentioned the name of the carriage with which I am connected; consequently, I think the accusation should, in common fairness, be withdrawn. In self-defence, I may state that, unlike several other correspondents, I at least never mentioned a single mechanical feature of the carriages in which I am interested, but merely entered into the correspondence on general principles from a purely impartial point of view.

I am sorry to say that I am unable to grasp what "Patriot" wishes to convey in his paragraph dealing with tubular frames, otherwise I might possibly answer it.

Coming now to the question of the mechanically-operated inlet valve, I think that this knotty point has been sufficiently thrashed out already, and fear you would scarcely permit me to re-open this discussion within the scope of this letter, but I am quite content to allow another twelve months' experience of the two valves to elapse, when I am convinced that "Patriot," together with all advocates of the atmospheric valves, will be speedily converted to admitting the unquestionable superiority of the former.

I should like to point out that, though my remarks might not have been quite clear, I never intended to suggest that English makers were providing for a narrower track in front than in the rear. What I wished to convey was that by making the front part of a chassis narrower than the rear (the intention being only to enable the steering wheels to turn in a narrower space) some English makers were following the French practice, which has been abandoned these two years on account of weighty mechanical reasons. A. E. COHEN.

[We are anxious to give as much space as possible to this subject, but we cannot permit the discussion to continue if the writers also deem it necessary to explain their own and discuss each other's motives.—Ed.]

EASY STARTING—PETROL CONSUMPTION.

[2862.]—Being the possessor of a similar car I was interested in Mr. Copland's letter *re* trembler coil.

My engine, which is fitted with the usual trembler and platinum screw, as a rule starts off first pull, but occasionally takes a bad fit.

I recently had a particularly bad turn, and after spending some hours and trying every imaginable remedy without result I altered the wiring on the coil so that the terminal marked "+ pile" was connected to the contact breaker and the one marked "allumer" to the positive of the accumulator instead of *vice versa* as before. As a result the engine went away immediately at every attempt, and there was no apparent difference in the running.

After running the engine so for a short time I put back the wires to their original positions and have since had no trouble in starting. I shall be glad to know if there is any explanation for this, and whether a coil requires the current reversing occasionally.

Mr. Savill's letter *re* sixty miles run on a 6 h.p. De Dion is interesting, so far as it goes, but he does not say how much the petrol tank holds, so that one cannot arrive at the cost.

I find with very careful driving I cannot do more than twenty miles on a gallon with the 8 h.p. engine, which in face of the recent "Full Consumption Trials" appears to me rather extravagant.

The carburetter is the genuine De Dion pattern, known, I believe, as the "Viet," in which the air intake is unalterable. Possibly some improvement may be made in that direction, and I shall be pleased to have the opinions of yourself and any of your readers who may be drivers of an

8 H.P. DE DION.

LUGGAGE ON CARS.

[2863.]—In your interesting "Continental Notes" last week you say truly that in France there is no need that a touring car should be a luggage carrier, since luggage is so easily transmitted from place to place. One would not like to prophesy that English railway companies will ever study

the convenience of tourists in the same way. Meanwhile, for touring in comfort in this country it is absolutely necessary that a car should be able to carry a considerable amount of luggage. Yet at the present time there is, I believe, only one car which does this satisfactorily—the Lanchester. I have just returned from a ten weeks' tour among friends with my wife and daughter, and often a fourth passenger. We carried with us luggage sufficient for all our needs. There is one slight drawback with the Lanchester "luggage deck"—if it is necessary to get at the engine the luggage has to be removed from the car. But on the Lanchester one seldom needs to trouble one's self about the engine, so this disadvantage is really unimportant. On this (my first) trip I had only to take off luggage twice on the road—on both occasions to remove and replace an igniter, which, had I been more expert, I could have done through the "air scoops" without removing luggage.

One other point suggests itself to me as indispensable in a touring car—at least if its owner is, like myself, a man of moderate means—it must be possible for the owner to look after the car himself, and keep it clean with the assistance of an ostler or a friend's coachman. To take a man on tour means not only expense but often inconvenience. Although a novice I have never had any trouble in this respect with my "Lanchester," but I know several cars, excellent in other respects, which it would be impossible to take on tour without an experienced man to clean them and keep them in running order.

H. GEORGE MORGAN.

Several letters on interesting subjects are unavoidably withheld till next week.

THE AUTOMOBILE CLUB.

Annual General Meeting.

On February 27th the annual general meeting of the Automobile Club of Great Britain and Ireland was held at the club premises, 119, Piccadilly, W., Mr. Roger W. Wallace in the chair. The most important features of the meeting were the following:

The Chairman announced that His Majesty the King had graciously consented to become a patron of the Automobile Club.

The income of the club for the year was nearly £13,000, the expenditure £7,670, and cash balance in hand £12,588 odd, while the value of the club premises and other property of the club exceeded £15,000.

The proposed testimonial to Mr. Johnson, the retiring secretary, was referred to by the Chairman, who announced that the club would head the list with one hundred guineas. He said "You all know the work that Mr. Johnson has done, and I do not think it needs any particular words of mine to emphasise the great services he has done for the cause of automobilism." This was heartily seconded by Mr. Alfred Bird, who said he knew how much the club was indebted to Mr. Johnson, as he (Mr. Bird) was one of those who took part in its early struggles, and he felt if it had not been for Mr. Johnson the club would not have been in its present powerful position. The Hon. John Scott Montagu and Sir David Salomons also paid well-deserved tributes to the retiring secretary, and the proposal as to the club subscription was carried unanimously.

As so many ladies have been anxious to join the club, and as the accommodation was insufficient, it was decided that a ladies' automobile club should be formed to work in harmony with the Automobile Club. A number of influential ladies had promised to join, and the preliminary arrangements were in the hands of Lady Cecil Montagu.

At an extraordinary general meeting, held immediately after the general meeting, the rules were dealt with, and a number of alterations, for which Lord Russell was mainly responsible, were made. Among those of general interest was one prohibiting any car travelling over the Gordon-Bennett course after the start of the race and prior to its close.

At the conclusion of the meeting the result of the ballot for the new club committee was announced, and the following are the names of the members: Mr. W. Worby Beaumont, M.I.C.E., Mr. Alfred F. Bird, Professor C.

Vernon Boys, F.R.S., Mr. T. B. Browne, Mr. Frank H. Butler, Mr. R. W. Buttemer, Mr. E. R. Calthrop, M.I.C.E., Captain Kenneth R. Campbell, D.S.O., Mr. George Cornwallis-West, Mr. E. H. Cozens-Hardy, A.M.I.E.E., Mr. J. S. Critchley, M.I.M.E., Colonel R. E. B. Crompton, C.B., Mr. S. F. Edge, Mr. Henry Edmunds, M.I.C.E., Mr. T. W. Staplee Firth, Mr. W. G. D. Goff (Chairman of the Irish A.C.), Mr. J. M. Gorham, M.I.C.E., Professor H. S. Hale-Shaw, LL.D., F.R.S., Lieut.-Colonel H. C. L. Holden, R.A., F.R.S., Mr. H. E. Sherwin Holt, Mr. J. Ernest Hutton, Mr. C. Jarrott, Mr. W. J. Leonard, Major F. Lindsay Lloyd, R.E., Mr. Edmund Macrory, K.C., Mr. Edward Manville, M.I.E.E., Mr. Mark Mayhew, L.C.O., Hon. John Scott Montagu, M.P., Mr. George Montagu, M.P., Mr. Henry Norman, M.P., Mr. R. E. Phillips, M.I.M.E., A.M.I.C.E., Mr. E. K. Purchase, Dr. Boverton Redwood, D.Sc., F.R.S.E., Hon. C. S. Rolls, Mr. Lionel de Rothschild, Mr. W. E. Rowcliffe (Chairman of the Manchester A.C.), The Master of Ruthven, D.S.O., Sir David Salomons, Bart., Mr. J. Lyons Sampson, Mr. E. R. Shipton (the Secretary of the Cyclists' Touring Club, *ex officio*), Mr. J. D. Siddeley (Chairman of the Midland A.C.), Mr. Paris E. Singer, Mr. E. Shrapnell Smith, Mr. Stanley Spooner, Hon. Arthur Stanley, M.P., Mr. Henry Sturmeay, Sir John I. Thornycroft, F.R.S., Mr. Roger W. Wallace, K.C., Mr. Hugh Weguelin, and Mr. A. F. Yarrow, M.I.C.E.

After the close of the business of the evening, Mr. Claude Johnson was called on. In some very interesting remarks, he mentioned that when he joined the club the membership was 163. It was now 2,262, and in addition to that they had 800 members of Scottish, Irish, and provincial clubs affiliated. The income then was a little over £500; now it was £13,000. He was glad that, in referring to those to whom the club owed gratitude, the name of Mr. Alfred Harmsworth had been mentioned, because it was well known by the older members of the club that the 1,000 miles trial in 1900 had had a great effect on the movement, and if it had not been for Mr. Harmsworth placing his purse at the disposal of the committee—who, at that time, had very frail finances to administer—it would not have taken place till a year later, and then they would have been a year further back than they were now. He referred to the Gordon-Bennett race and the road fund, and said with regard to the proposed testimonial to himself: "It is rather a delicate matter to speak of, but I do think the proposal ought to be dropped. My feeling is that there is no reason why members of the club should be asked to subscribe to a testimonial. I should be quite satisfied with their signatures to a written testimonial: that would be all that I could possibly desire. In November last I discussed in Ireland with Count Zborowski the formation of a road fund for the Gordon-Bennett race. It was discussed with Mr. Edge and Mr. Jarrott on January 14th in Ireland, and it was eventually brought before the committee. I lay claim to the fact that, acting on the suggestion made by other gentlemen, the committee have already placed before the members of the club an appeal for funds, and I do not wish, having some pride, that there should be any opposition appeal placed before members of the club, especially as it is an appeal of a personal nature, and I shall be only too pleased if you will only make up your minds to allow any financial testimonial to me to rest simply with the sum which the Finance Committee can see their way to vote to me in recognition of my services; that will be quite sufficient for me; and I must say, although you are all so very kind to me, the fact of the hat being handed round to the club on my behalf does not appeal to me at all. I should much prefer to see it handed round on behalf of the Gordon-Bennett Road Fund."

Railway motor cars, the first to be used on the Continent, are now running on the Arad-Czanad Railway, Hungary.

* * *

Though not in any way giving up her keen interest in horses, Lady Warwick is now constantly to be met in the Warwickshire lanes driving her powerful autocar, and generally accompanied by her baby son.

Flashes.

A MODERN JAPHET.

"Great Scott!" cried bothered Montagu,
 "This noise is most confounding;
 From Thurso unto Killaloo,
 Discordant horns are sounding.
 "Yes! I will shelter from the din—
 I really would much rather.
 Poor little Bill! Your next-of-kin
 Should be another father.
 "Those numbers, Billy, filled the cup,
 Not much delight affording—
 So now the Club must bring you up,
 And 'prentice you according."

* * *

The latest Salisbury list has just come to hand. It is of a most comprehensive character, and deals with all the lamps made by the firm, from the smallest cycle type up to the largest size "Flario," a giant with lenticular lens, and costing £18 in its largest and most highly-finished size. Lamp irons and accessories of all kinds are also included in the list. Among other items we find a little thing of which we wish the use was compulsory. It is nothing less than a small lamp for hanging to the stirrup iron. All those who have driven at night and have come across unlighted horses will, we are sure, endorse our wish.

* * *

At Ruishton, Taunton, last week, a wedding party were conveyed to church in motor cars. After the breakfast the guests spent their time in motoring about the neighbourhood.

* * *

A sequel to the Automobile Club reliability trials held last September was heard on Friday last week at the Kent Assizes at Maidstone before Mr. Justice Lawrance and a special jury. Mrs. Wainwright, of Tonbridge, sued the Wolseley Co. for damages sustained through the loss of a horse. The case for the plaintiff was that on September 5th, between Tonbridge and Hildenborough, the defendants' car ran into the horse, which was being ridden. The animal, which was on its near side, sustained a broken leg, and had to be shot on the spot. The defence was that the horse was prancing about in the middle of the road, and that it collided with the car. A number of witnesses were called on each side, and the case was exhaustively gone into. The jury found for the plaintiff, assessing the damages at £75. During the course of the hearing, the Judge remarked that the collision occurred during the "reliability trials," and they were now engaged in a "liability trial." Of course, the Court was convulsed with laughter at such an original and humorous suggestion.

Last week, in describing the ingenious combined carburetter and governor of the Brooke car, the address of Messrs. J. W. Brooke and Co. was given as Ipswich. We need hardly say it should have been Lowestoft.

* * *

The Automobile Club of Belgium intends to give a great *fête* in the Parc du Cinquantenaire on Easter Monday. Half the proceeds of the gate money, which is always very large in this building, are to be devoted to charity. Very interesting tests of single and collective driving will be gone through, and twelve motor cyclettes of the "Red Star" make will also perform some complicated evolutions.

* * *

The question of motor transport is coming to the front in Portugal. The country lacks a proper network of railways, and as these would be too expensive, and motor traction will satisfactorily solve the problem, a motor company, with a capital of £150,000 has been formed. Its object will be to transport men and goods in Lisbon and other towns, and connect local lines.

* * *

What we believe is the first free garage in the provinces has been opened by Messrs. G. G. Reed and Sons, of the Regent Iron-works, North Road, Brighton, a firm which was established in 1750; so if its origin is ancient, its methods certainly are not. A special staff of motor mechanics has been engaged, and all motor

requisites are kept.

* * *

We understand that a private company has been formed with the nominal capital of £800 to take over the business of Messrs. Bolsover Bros., Eaglescliffe, R.S.O., Co. Durham, the well-known makers of flash generators for steam cars. The firm will carry on business at the old address under the style or firm of Bolsover Bros., Ltd., and the first directors will be Messrs. R. H. Bolsover and H. W. Bolsover. For the convenience of motorists passing through Yarm-on-Tees or Eaglescliffe, the firm is stocking petrol.

* * *

The makers of the Lanchester cars are engaged on designs for a smaller, lighter, and cheaper form of vehicle. Approximately, this carriage will be rather more than half the price of the 10 h.p. Lanchesters. It will, of course, be a far less luxurious carriage, and the main aim will be simplicity, combined with sound engineering, as it is recognised that the majority of purchasers of the moderately priced vehicle wish to look after it themselves, and the aim throughout will be to make it as easy as possible for the amateur to keep it in best running trim. It will be some months before the machine is ready.

"THE AUTOCAR" DIARY.

- March 6.—"Discussion on Legislative Proposals.
- " 7.—Yorkshire A.C. Run to Wetherby (Angel Hotel).
- " 7-15.—Nancy Automobile and Cycle Show.
- " 7-15.—Marseilles Automobile Week.
- " 8-22.—German Automobile Exhibition, Berlin.
- " 9.—Buffalo Automobile Show.
- " 9.—Motor Show at Brighton Aquarium opens.
- " 9.—Scottish A.C. (Western section) Paper, "The Possible Developments of Automobiles and Automobilsim." By Mr. W. Weir.
- " 11.—Scottish A.C. (Western section) Annual Meeting.
- " 13.—Paper, "The Motor Problem a Road Problem." By Mr. W. Rees Jeffreys.
- " 17-30.—Austrian Automobile Exhibition, Vienna.
- " 17-30.—Competition of Automobile Transport Cars, Vienna.
- " 18.—Manchester A.C. Annual Dinner.
- " 19.—Criterium des Transports Automobiles (La France Automobile).
- " 21-28.—Messrs. Cordingley's Show at Agricultural Hall.
- " 21-25.—Paris-Monte-Carlo Delivery Van Trials (1095 kiloms).
- " 26.—Nice A.C. Competition of Brakes.
- " 29-April 6.—Nice Automobile Week
- April 10.—Eliminating Race for Gordon Bennett Cars (British).
- " 11.—Competitive Test " " " " (American).
- * Automobile Club of Great Britain and Ireland fixture.

The driver of the Prince of Wales's Daimler is named Shirley. He is a retired seaman; and, strangely enough, he served under the Prince on *H.M.S. Dreadnought*. He is a native of Coventry.

* * *

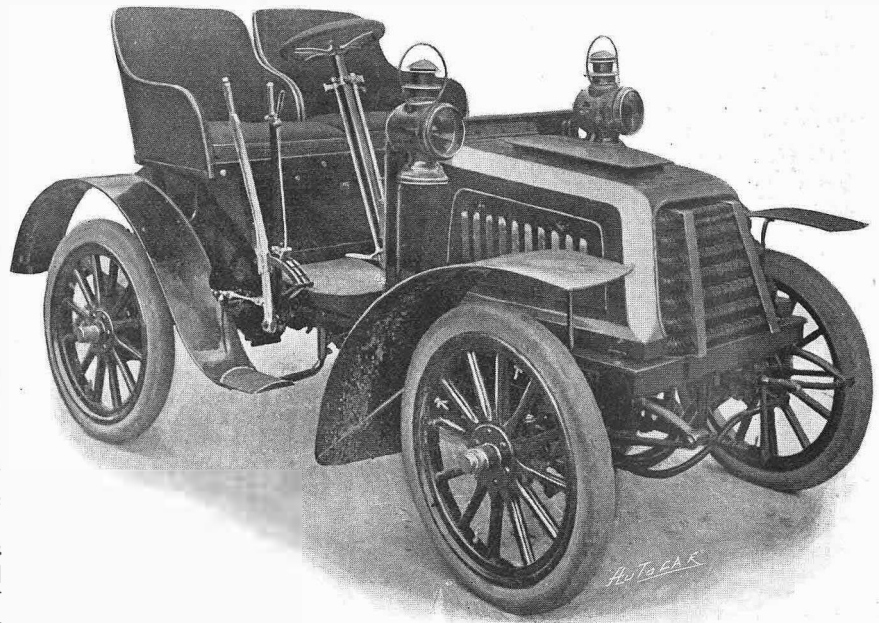
Mr. Henry White has just ordered a 22 h.p. Daimler car from Mr. Oliver Stanton. Mr. White is first secretary to the American Embassy, and a personal friend of the King's. In a few months he will be the American Ambassador at Rome.

* * *

On every hand the motor car looms larger. Corporations are testing motor fire engines. Cricket clubs are having motors fitted to their rollers and mowers. The good people of Antwerp are having their street scavenging done by automobiles, and in Lincolnshire the motor hearse has been already well patronised. In this latter capacity the motor car is spoken of highly, and it is admitted to be a cheaper and more expeditious method of conveying the departed to their last resting place than the horse-drawn vehicle, and in some districts it is preferable to the railway.

* * *

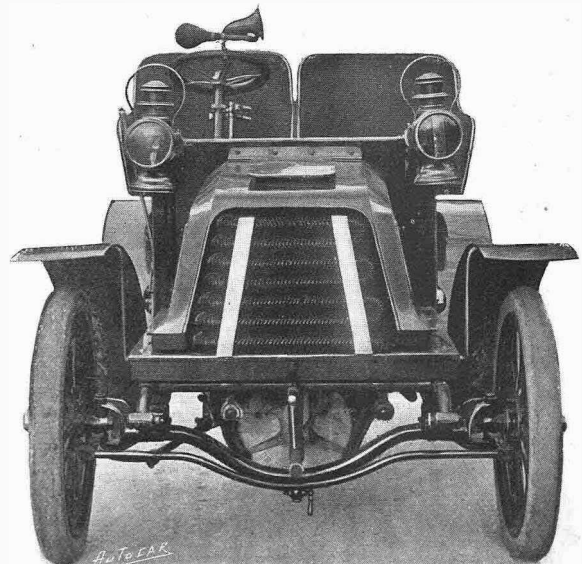
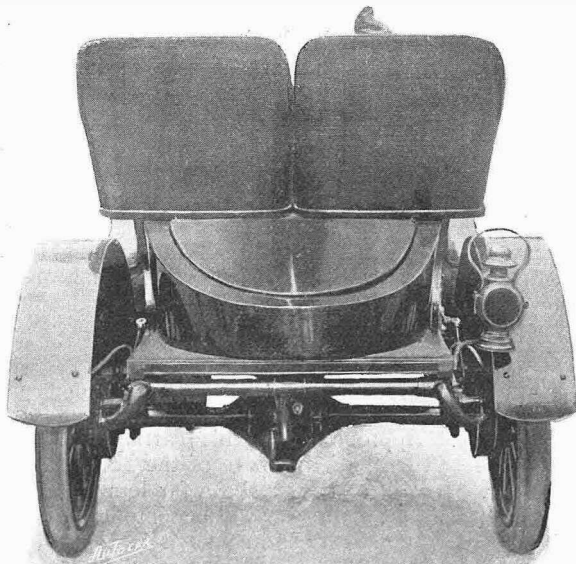
The Hon. C. S. Rolls has entered for the Paris-Madrid race. His name was not included in some of the lists of entrants, as he will drive a Panhard car, and his entry was consequently sent in by the firm and published as one of the Panhard entries.



A novelty is reported from Geneva in the shape of an automobile launch, which possesses the peculiarity of having its propellers in the air.

* * *

In reference to our recent remarks about a trial track for a motor works, Mr. C. R. Garrard points out that the Clément firm at Levallois has long had a permanent asphalt track all round the works, which is used for trial purposes. This is shortly to be covered by a glass roof, so that it will be available for use in the worst of weather. Mr. Garrard also tells us that the new Clément Talbot works in London will have a permanent trial track, and that the road will enclose some four acres.



The three views on this page give a good idea of the small double scooped type of body, with pointed tool-box at the back, which was first introduced for racing cars, and is now the fashionable seating arrangement for small two-seated vehicles. It not only provides comfortable seating accommodation for the driver and his companion, but there is also plenty of room in the compartment at the back for luggage or spares. The particular machine we illustrate is a 9 h.p. Regal, which is a sister machine to the 10 h.p. we illustrated last week, though, of course, it is smaller. There is a still smaller edition of 6 h.p. The transmission is by gear throughout.



Count Louis de Bire has just arrived at Nice on his new Charron, Girardot, and Voigt tonneau.

* * *

At the Sudbury Petty Sessions on the 23rd ult., Oswald Bamford, of Uttoxeter, was summoned by Superintendent Burford, of Ashbourne, for driving a motor car to the common danger. It was proved, however, that there was no traffic on the road at the time, and the evidence was more amusing than convincing. The summons was very properly dismissed.

* * *

Mr. G. H. Smith sends us an extremely interesting letter which was sent to the United Motor Industries from France, and which we reprint, merely omitting the name and town of the sender: "I beg to inform you I will sell a splendid tourist motor car which I can send a photograph. I suppose this vehicle very interesting for English market that requires big cars for family while French market requires small vehicles as fashionable. The characteristics of my horseless carriage are: Delahaye system made end of 1900, motor two balanced cylinders, type 14 h.p. 17 h.p. effective, electric ignition, automatic grease box, three speeds (seven, sixteen, and thirty miles), back wheels 1020 mm. x 120 mm., front wheels 810 x 90, Michelin tyres, carriage building Kellner, break, three benches for eight or nine seats, footboard for 200 lbs. of luggage, windows and curtains, weight 3200 lbs. I have accomplished beautiful tours with this car in the South of France, Cannes, Nice, Normandy, environs of Paris."

Messrs. Julius Harvey and Co., of 11, Queen Victoria Street, E.C., recently received an order from Spain for a six-ton steam lorry, the order being secured in competition with foreign makers. The firm has already sent out a steam omnibus and a two-ton lorry.

* * *

The following notice was published in the London Gazette last Tuesday evening: "War Office, March 3rd, 1903. Memorandum.—His Majesty has been graciously pleased to approve of the formation of a volunteer corps to be designated 'The Motor Volunteer Corps.'"

* * *

Mr. Charles Jarrott has had good luck in the drawing of places for the Paris-Madrid race, as he is down to start as No. 1. He will drive one of the new 80 h.p. De Dietrich racers. This, of course, applies to the Paris-Madrid only. In the Gordon-Bennett he will drive a Napier, as already announced.

* * *

Visitors to Nottingham that favourite centre of automobilism—may like to know of the fine new garage recently opened by Messrs. Evart Hall, Ltd. It is most centrally situated, being close to the Market Place, theatre, and Clarendon Hotel. Petrol and lubricating oil are supplied at most reasonable prices, and the premises are open day and night. The courteous manager, Mr. Binks, gives personal attention to motorists. A large number of cars can be stored, and a special feature consists of a well-appointed reading-room, bath-room, and lavatories. A register of cars for sale and exchange is issued once a month, and owners desirous of disposing of their old vehicles will find this an excellent means of doing so. In short, the facilities offered by this fine garage for bringing purchaser and seller together bid fair to supply a want long felt in the Midlands. Once the firm is thoroughly installed, it is safe to predict that they will do a large business.



A few days since some members of the Midland Automobile Club drove to Malvern with the idea of taking their cars to the summit of the Beacon Hill, which is 1,350ft. above the sea, and is the highest point of the range. Six Lanchester cars, driven by Messrs. Millership, Lanchester, Spriges, Lawrence, Pinsent, and Hemming, took part in the run. The line of cars excited great interest in Malvern, especially when it was known that it was the intention to climb the Beacon. The start was made from the Foley Arms Hotel, and the cars climbed up Lion Bank, past Stony Valley, zigzagging up Table Hill by the historic well of St. Anne's, and hence they went up on to the Sugarloaf and Beacon. The top of the hill was shrouded in clouds and mist, and the last part of the ascent was made over a very rough track indeed, dying away into boulder-strewn ground. The ascent was certainly a good demonstration of the climbing capabilities of the Lanchesters, and the fact that it was done in a heavy storm of wind and rain makes it all the more meritorious. It will be remembered that some years ago the Hon. Evelyn Ellis drove his Daimler up on to the ridge, but we believe the last climb was to a slightly higher point than he attained, though his feat was no mean one, considering the early date at which it was performed and the weight of the car he drove.



One of the first firms in this country to bring before the public a "disrupture" or external spark gap was Messrs. C. S. Rolls. From the accompanying drawing it will be seen that this is of very neat appearance and is easily adjustable. Its leading feature, however, is that the "gap" is enclosed in a glass tube inserted in the vulcanite body, thus making it safe to use under any conditions.

* * *

The Germain cars did exceedingly well at the Brussels exhibition, and were awarded the highest award gold medal for motor cars, silver medal for a bus, and silver medal for lorries. The car specially noted was a single brougham suitable for doctors, $7\frac{1}{2}$ h.p., the sale price of which is £500. The bus was constructed to carry twenty-two passengers to the order of Charles A. Madore, of Durban, South Africa. On trial, this bus with twenty-two passengers up, covered sixteen miles in one hour, and proved itself a very good hill-climber. The lorry is 15 h.p., and constructed to carry four tons, and in trial, loaded to this weight, it climbed a hill one in six. It was stopped halfway up and restarted, and then with the same load came down the hill backwards.

* * *

The sequel to a charge of alleged excessive driving on the part of a motorist was enacted in the City Police Court, York, yesterday week, when Arthur Robinson, until recently a member of the York Police Force, was committed for trial on a charge of perjury. From the statement for the prosecution, it appeared that prisoner in the course of evidence against a motorist said he timed the car with a stop watch to cover a distance of 150 yards in 12s., and that the driver applied the brake, but could not pull up under 25 yards. When cross-examined with regard to the description of watch used, he described it as a stop watch, but the chief constable who saw it noticed that it did not even possess an ordinary seconds hand. Further evasive replies were given by the prisoner, who subsequently purchased by proxy a metal stop watch for 4s. 6d., with the view of substantiating his sworn evidence. When questioned by the chief constable on the matter, he confessed that he had procured the metal stop watch specially, and expressed regret for his conduct. As a result, the Watch Committee dismissed him from his position on the force, and proceedings were taken against him as stated. When formally charged he pleaded not guilty, and reserved his defence. Bail in £30 was accepted for his attendance at the assizes.

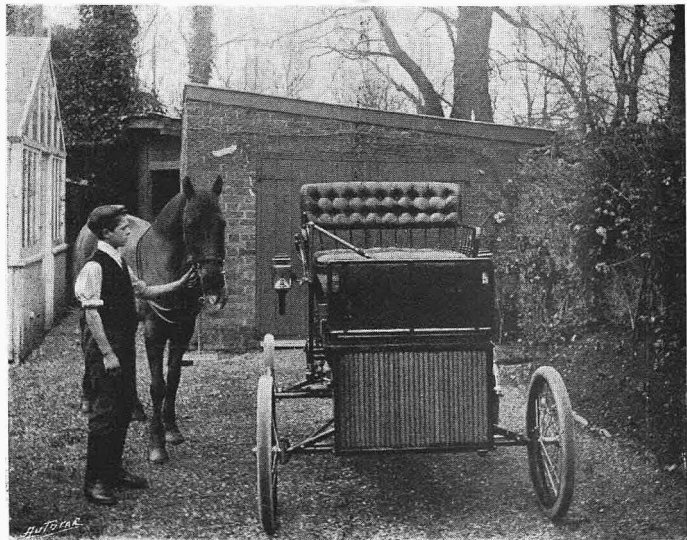
* * *

The Singer Motor Co. has been registered with a capital of £1,000 in £1 shares to carry on the business of builders of automatic light wheel and other carriages, motor car and cycle manufacturers, manufacturers of articles required by motor manufacturers, coach-builders, etc. The first subscribers are: G. Singer, J. C. Stringer, W. Hewitt, J. Griffiths, G. Webb, S. E. Mason, and A. Barnett.

As we are receiving enquiries from new readers asking for detail particulars of the 6 h.p. De Dion voiturette, the new 1903 pattern with engine in front, we may say that the vehicle was described with illustrations in *The Autocar* of December 27th, 1902.

* * *

The British Automobile Commercial Syndicate has sold such a large number of Clement cars that they tell us they are forced at the present moment to repurchase some of these cars from their agents, to whom they have to pay a pretty high premium. At the present time, £600 is being quoted for 12 h.p.'s for delivery in March, £800 for the 18 h.p.'s, and £400 for the 9 h.p.'s. As regards the latter, the British Automobile Commercial Syndicate, Ltd., are not able to supply these, we understand, until August next. Perhaps the best proof of the satisfaction these machines have given is the number of people who, having used the 1902 pattern, have now ordered the latest type, and among those who have done this are the following: Capt. B. Corbet (late First Life Guards), Capt. Eyre (Second Life Guards), Capt. Tisdale (Irish Guards), Lieut. Vesey (Irish Guards), Lord Castlereagh (First Life Guards), Capt. Woods (D.S.O.), Major Little, Commander Sharpe (of H.M.S. "Jackal"), Mr. Walter Jones (the well-known polo player), Mr. Guy Hargreaves, Mr. W. E. Harrison, Mrs. Claude Paine (who drove her last year's Clement over 7,000 miles), Mrs. Copeland, Mr. Holt Thomas, Mr. H. W. Spiller, and Mr. W. H. Gladstone.



The cob in the above illustration is the property of Mr. T. Winter-Wood, ex-M.F.H., of Paignton, South Devon. Mr. Winter-Wood has possessed the animal for upwards of eighteen years. As can readily be imagined, "Bobby" bitterly resented the introduction of a Locomobile by Mr. Wood's son, Mr. E. J. Winter-Wood, on his manor. After so long and faithful a service, during which he has traversed considerably over 30,000 miles, it will be readily realised what his feelings must have been. However, he has become perfectly reconciled to the intruder, and he may now be constantly seen either trotting along by the side of or behind the car, whilst he also has discovered it to be a great help to him, inasmuch as he finds that his work is much reduced thereby, for now he often gets a "day off" which he rarely if ever did before. The photograph is by Mr. Carslake Winter-Wood.

We understand that the Wolseley Co. made a profit on their last year's business which amounted in round figures to £20,000.

82.8 MILES PER HOUR.

A. Kilometre or 1093.62 Yards in Twenty-seven Seconds.

For some weeks past the Hon. C. S. Rolls has contemplated an assault upon Mr. Chas. Jarrott's Panhard-made flying kilometre time of $28\frac{1}{5}$ s.; but circumstances, luckily for Mr. Rolls, had caused the postponement of the attempt until Thursday last week, when resource was had to the stretch of private road at Clipstone, loaned by His Grace the Duke of Portland for automobile speed trials. Records made upon this course cannot be compared with those secured upon the official French course, for the reason that, while the French track is quite level, that at Clipstone is on a falling grade for the whole running distance. Indeed, the finishing three hundred yards or so is a pretty smart decline. Therefore, the Clipstone figures must stand by themselves, and comparisons can only be with each other.

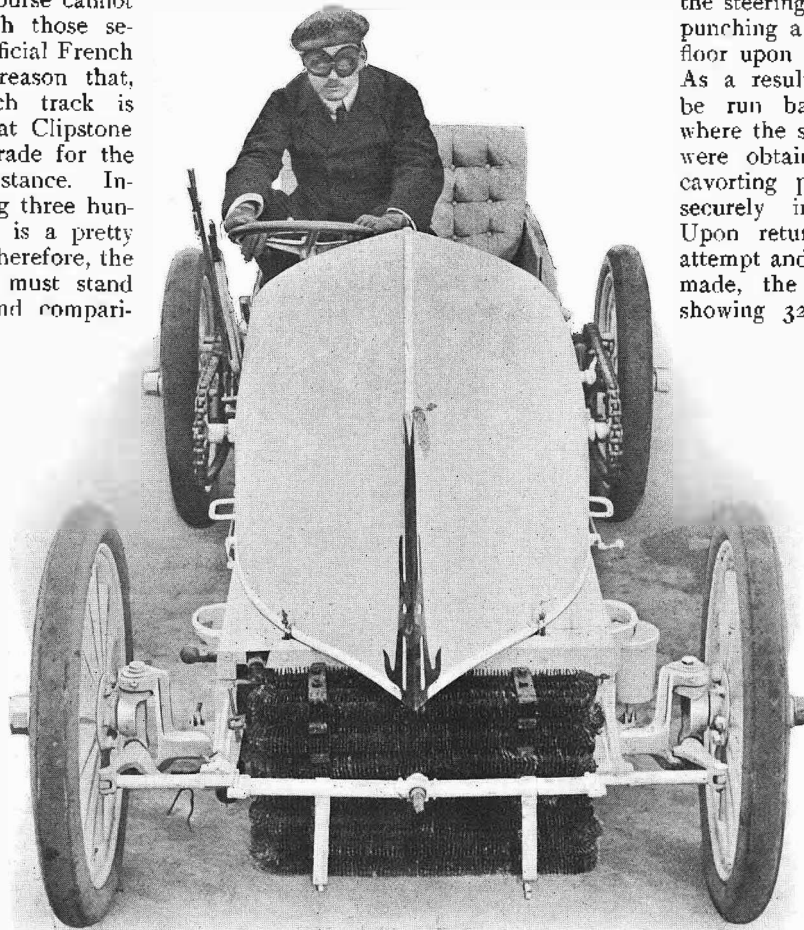
The car so successfully driven on the Thursday by Mr. Rolls was the identical 80 h.p. four-cylinder magneto ignited, boat-bodied Mors which many of our readers will recall as one of the distinguishing features on Messrs. C. S. Rolls and Co.'s stand at the late Crystal Palace exhibition. Mr. Harry J. Swindley (the hon. official time-keeper to the Automobile Club) and Mr. G. P. Coleman (an official timekeeper also) were engaged by Mr. Rolls to clock his attempts.

The weather overhead was all that could be desired on the Thursday, and by the time the successful attempt was made, the strong wind, which blew straight down the course all day, had made the road surface as dry as a bone. Although the course favours speed, it is, on the other hand, a very baulking one to drive, and demands something like an entire absence of nerves on the part of the man who steers one of these hurtling road projectiles at more than railway speed down this course. There are at least two points upon approaching which the average driver of an average-powered car would most assuredly unclutch, and the grit which enables a man to keep full steam ahead when approaching

them at a speed exceeding that of any express train must be more than considerable.

To help to keep his driving wheels upon the road, Mr. Rolls carried 56 lbs. in quarter hundred-weights beneath the afterpart of the upturned boat cover; but these were found to be insufficiently secured, for before he reached the first clocking point on his first attempt, they broke adrift, upset the steering, and were nigh to punching a hole in the slight floor upon which they rested. As a result, the car had to be run back to Mansfield, where the services of a joiner were obtained to box these cavorting ponderosities more securely in their stowage. Upon returning, the second attempt and first run over was made, the time comparison showing $32\frac{1}{5}$ s., or but $\frac{1}{5}$ s.

faster than did the old Gordon-Bennett 50 h.p. Napier in its five miles in 4m. $44\frac{2}{5}$ s., as timed by Mr. Swindley on the Paris-Chartres road in 1901. But this was only a feeler. At the third attempt, and again just before reaching the first clocking point, Mr. Rolls's off-side driving tyre burst with a report like a gun, causing the car to make a frightful swerve, and to only just clear the hedge by inches. The on-



Argent Archer, Photo.

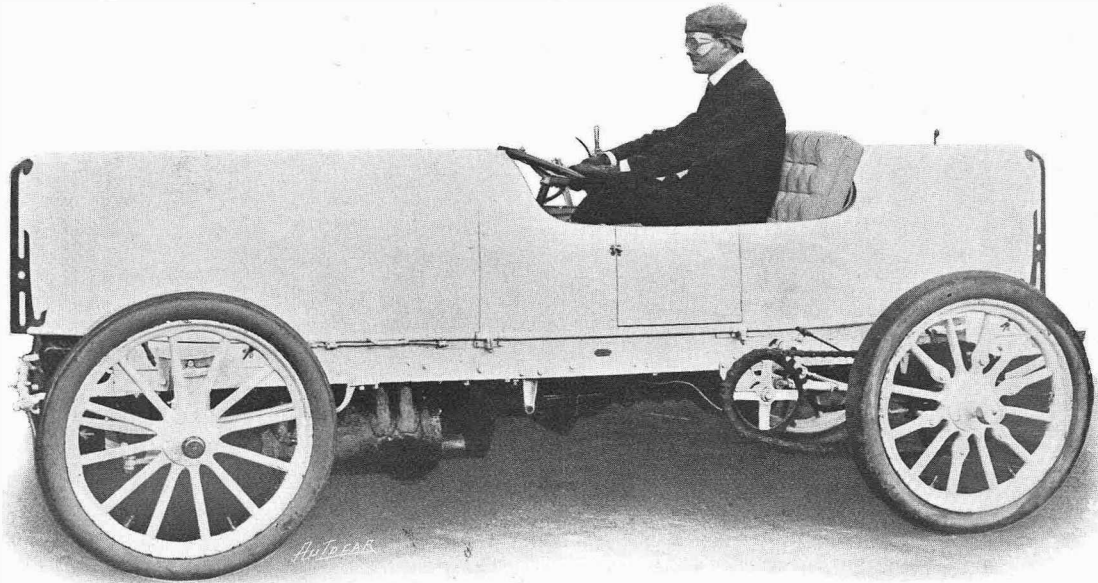
High Street, Kensington.

lookers who witnessed the *contretemps* were convinced that both driver and car were going into the field, and nothing but consummate driving skill averted what, seeing the car was very nearly at full speed, would in all probability have been a very nasty spill. However, "all's well that ends well," and a new cover having been fitted, Mr. Rolls tried again. This time he succeeded in getting the whole course, and upon times being compared, it was found that the kilometre had been covered in $28\frac{3}{5}$ s., or $\frac{1}{5}$ s. slower than Jarrott's time made last summer. Upon being informed of this, Mr. Rolls remarked that he would cut it next time, as from the top of the descent to the finish his petrol tap had been shaken off, and his engine was not driving at its best in the last three hundred yards. On the final, and successful,

attempt, the speed down the hill towards the writer was something appalling. Long before the car viewed, the increasing roar of its exhaust heralded its wild and fearful approach. The upturned boat body is enamelled white, and the sinking sun glinting upon this as the car came over the brow, just made one streak of light from top to bottom. Hurling the air to each side so that it struck the face like a whiplash, the car tore past in one blinding flash, while the ear was rent by the shriek of the driven demons within. The car seemed veritably to spurn the road behind it as it came on with steering wheels lashing under it as though the myriad strokes of its engines maddened it to mighty leaps. The expression upon the comfortable face of the Duke's head keeper as the car whirled on to the bend, its brakes squealing like griddled fiends, expressed more than can any words. The subsequent comparison of watches showed that the 1,092.96 yards had been covered at a speed of 40.5 yards, or 121 $\frac{2}{3}$ feet, per second, equal to 27s. dead

for the full distance, and the fastest rate of travelling at which man has yet been checked to drive a vehicle on roads since roads were made.

It will be interesting to add that the car, which was originally one of the Paris-Vienna type, has been modified considerably by the Hon. C. S. Rolls. The cylinder heads are new, while the transmission, chassis, and body have all been improved, with a resulting increase in efficiency and speed. The weight of the car is 1,000 kilogrammes, and its behaviour is another demonstration of the fact that the limit has been about reached with regard to power, and that the practice adopted in the racing cars of Darracq and Mercedes will probably have to be followed if these comparatively light but enormously-powered vehicles are to be kept upon the road at all. That is to say, the engine will have to be brought further back, and approximately centrally placed, so that the weight shall be distributed as equally as possible over the four wheels.



Argent Archer, Photo.

A side view of the 30 h.p. Mors racer, with the Hon. C. S. Rolls at the helm.

High Street, Kensington.

Mons. Paul Meyan, of *Le Vélo*, is particularly severe upon the position now being taken up by the Minister of the Interior with regard to automobile racing in France, and significantly remarks: "I have but just returned from Brussels, where I made a careful inspection of the cars shown at the late exhibition, and particularly noticed six different makes of cars which have no origin in France. These were the Germain, Pipe, Vivinus, Herstal, Deschamps, and Gobron-Nagant—all of which give the greatest satisfaction to those who have experience of them. Therefore," continues Mons. Meyan, "this is not the time to discourage French industry and enterprise." If Mons. Meyan had visited the Crystal Palace Show, he would assuredly there have described further writing upon the wall, in the shape of the Napier, Ariel, Belsize, Woiseley, Brooke, James and Browne, Century, Maudslay, Humber, and several other cars.

Given a good car, the weather does not make much difference, and as an example of this we may instance a week end run, particulars of which have been sent us, which was made by a party of three, one a lady, on a 9 h.p. Dennis. They started from Kensington in the dark and in driving rain and reached Guildford. On Saturday they went to Winchester, again with heavy rain, wind, and roads exceedingly bad, then on through Romsey, the New Forest, and Lyndhurst to Lymington. Next day the weather was about the same, and the route lay through Christchurch and Ringwood to Salisbury. After lunch Andover was made, then on through Blackwater and Egham to Staines, where the night was spent. On Monday the return was made to town. This is roughly a 250 miles run, and the only troubles were some punctures due to an old set of tyres being used, and one stop to couple up the spare battery.

RECENT DEVELOPMENT IN THE MODERN AUTOMOBILE.*

By A. R. Sennett, A.M.I.C.E., M.I.M.E., M.I.E.E.

In opening his paper at the post-prandial meeting held at the Automobile Club last Friday, Sir David Salomons presiding, Mr. Sennett referred to the subject of the evolution of the modern automobile as of such great magnitude and importance that he could not hope to do it justice in the short time at his disposal. He would therefore confine his remarks to the petrol car. Mr. Sennett continued: Biologists have taught us beyond a shadow of doubt that evolution in animate mechanism is invariably brought about by and undevitably follows the exigencies of changing conditions. It is not subject to spasmodic progress, nor to retrogression due to fallibility on the part of the designer; nor is it in any way swayed by fashion. If on the other hand we closely study evolution in inanimate mechanism we shall always detect unnatural fits and starts, inutile phases, unprofitable changes, and time-wasteful reversions to previous types.

I remember a remark of George Robert Stephenson *apropos* in this regard. He said, "Half an engineer's life is spent in undoing that which he ought never to have done." The engineer invariably gives to the primary forms of his mechanism a complexity, and then spends years in their simplification.

The Present Position.

The automobile has now arrived at that state in its evolution when it is shedding the scales of complexity, and consequently appreciation has set in, which in a manner is destined to last.

In attacking a new problem the prudent worker for two reasons first spends reasonable time and thought upon the study of the work which has preceded his. He desires to put himself *au courant* with things as they are, but (and this is far more important) also to be able to form a correct view—I might almost say prophecy—of which of the evolutionary phases are to become permanent. It is for this latter purpose I propose briefly to touch upon the phases of evolution in the modern automobile for the purposes of discussion. The course of development has not proceeded so naturally as it usually does in matters mechanical, as, for example, in regard to the railway locomotive. There the engineer strove to the utmost extent to fulfil the exigencies referred to, being entirely unhampered by extraneous pressure. With the automobile matters have been different. There have been such things as fads; the fact that one manufacturer has been successful with one type of vehicle has caused the untechnical to think that *per se* must be the correct type, and lastly the influence of fashion has made itself felt to the prejudice of equally meritorious but non-conforming vehicles.

By development of the automobile I mean the changes of the last six or seven years—a development so rapid that it might be thought to correspond to a period of spasmodic progress were it not that we know perfectly well it represents but the commencement of healthy progress as regards our own country.

This progress was forcibly brought to one's mind in visiting the Crystal Palace Exhibition recently, and endeavouring to grasp all that had taken place since I, in the same building, had held the appointment of honorary commissioner to the exhibition held therein in 1896, and to reflect upon the immense difficulty I then experienced in making any show at all.

Standing last month upon Mr. Roll's stall was a carriage built in 1895, yet now venerable and superannuated, which I will take as a starting point. It was a wondrous contrivance, with a big black wooden box in the front, containing the motor destined to revolutionise common road progression, and mounted upon four wooden wheels fitted with iron tyres. Its whole appearance conformed to that of a horse-drawn phaeton, and it was steered by a tiller bar. Nevertheless it was the high flier of its time—victor in the Paris-Bordeaux contest, which it accomplished at an average speed of fourteen and a half miles an hour. This was the sire Panhard.

A year previously had run—from Paris to Rouen—a wiry looking vehicle with bicycle wheels shod with solid rubber tyres, and tiller steered. This was the sire Peugeot.

I have mentioned these two because they are typical of the two then prevalent types—the vertical and the horizontal cylinder *genus*.

In the same race also ran a jumpy contrivance, propelled by a single-cylinder Benz motor with belt transmission.

In the internal economy of these three pioneer carriages was comprised all the inanimate organs upon which the whole evolution has been wrought.

The Process of Evolution.

I will now review such evolution in order that we may ask which if any of it has come to stay. We might answer in regard to one, much in the same way in which men have been heard to speak of their livers, *viz.*, that they would rather be without them. I refer to the change speed gear. This is the least satisfactory functionary of the automobile. It is one which gives rise to the greatest surprise when we reflect upon the enormous amount of cerebral force and monetary expenditure only to find that practically evolution in its regard has progressed not one *iota*. The two sire vehicles referred to above embodied the device—still almost universally prevalent—the *train balladeur*, supposed to have been invented by the late Monsieur Levassor. This is not the case; it was invented for use upon a steam carriage by James Watt. Watt's original sketch is still in existence. It is precisely the so-called Panhard gear, and shows a method of lubrication by drilling a hole longitudinally through the shaft and leading the oil out by lateral holes.

Levassor tried other expedients, including friction, and no one was more dissatisfied than he with his change-speed gear. I believe his own exclamation was, "*C'est brusque et brutal*," but *il marche*. This compromise does work with more or less satisfaction, but always with a fair degree of reliability, and hence its continuance. Despite the labour which has been fruitlessly expended upon the search for something better, I trust designers will not grow faint-hearted, for had we a better change-speed gear, and did designers but give greater attention to the silencing of their motors, the automobile would make more rapid progress in the appreciation of the public.

What would be the best form of change-speed gear, and what has the future in store in this regard?

The best form of gear is "no gear at all." I do not suggest that that is the solution of the problem, because I feel that this is a greater step than is necessary. But what I do feel is that the *brusque et brutal* change-speed gear will be entirely superseded by the substitution of a simple half-speed or, better still, a lower ratio gear in which the epicyclic principle is embodied and no positive disengagement of teeth resorted to.

The Americans so far are well behind us in road automobilism; but in many cases they have surpassed the Panhard gear, though somewhat inadequately, by failing concurrently to increase the power of their motors.

But in the transmission beyond we see evidence of beneficial evolution. In the earlier carriages the power was eventually transmitted to the road wheels by side chains. These are members of automobiliary anatomy which should be dispensed with. The live axle would seem to ring their death knell. There are many advocates for the retention of the side chains; also they are advocated because they just now suit manufacturers, but in their inner consciences they probably intend to do away with them shortly.

The production of a live axle which will not "give" and can be kept in correct alignment is not an exactly simple matter, but experience with live axles has already proceeded so far as to entitle us to prognosticate that side chains will soon be permanently dropped.

In wheels we see no startling development, save the general transition from the wire suspension to the timber spoke—a transition likely to remain.

Wheels and brakes are allied, and in most of the more carefully-constructed modern automobiles internal ~~brakes~~ have been very properly made use of, and the crude and wasteful practice of allowing the weight of the brake straps to lie upon the revolving drums is dying out and being replaced by extraneously-supported brake blocks.

A notable feature is the pertinacity with which the "Jack-in-the-box" still sticks to his post. This functionary in form—substantially the same as when it was first in-

* A paper read before the Automobile Club of Great Britain and Ireland on 27th February, 1903.

vented independently by Pecqueur in 1827 and Richard Roberts in 1829—still obtains, but in a few carriages the bevel satellites have been replaced by parallel pinions, thus obviating side thrust.

Modern evidences of simplicity are found in the latest form of "live" axle carriages, wherein the automobile consists of three essential organs—the motor, the change-speed gearing, and the live axle.

Herewith manufacturers have come to appreciate, in its true value, the necessity for efficient articulation, and now discard any further attempts at efficient alignment by rigidity.

To be thoroughly efficient, this articulation should be universal not only in name but in fact; it should provide for the requisite degree of vertical and lateral displacement in combination with a telescopic action suited to endwise shortening or elongation, and so avoid stress upon the springs. Whether the latter should sustain the thrust of propulsion is not yet universally decided upon by makers, and is worthy of discussion.

Modern Autocar Details.

The steering-gear is too important a functionary to be more than touched upon here, but I am pleased to observe a tendency towards the principle of arranging that the tread of the wheel shall fall upon a vertical line turning through the centre of the articulated joint or gimble pin. That is, the articulated axles shall move about a centre falling within the hubs of the wheel.

With regard to framing, the transition through which this has passed is interesting. For beginning with timber construction, we find an almost universal reversion to this mode, which, to my mind, will prove but temporary. The majority of the more modern carriages have composite frames of metallic fitch plates, with an apology for a flange on the top edge only of the medial portion. Not only is the width of this flange inadequate, but the length of plain fitch plate left projecting at either end is too great. This flange should extend the whole length of the plate. A difficulty presents itself in the necessity of employing special plant. This, however, is merely temporary. Tubular construction is gradually being discarded. It is suited only to the very lightest types of cars, and requires great skill in manufacture. Firms originally cycle manufacturers are responsible for its introduction.

For weighty vehicles the hydraulically-pressed-up frames produce the best job. A plant is now at work in France. One is being prepared here, and frames will shortly be procurable.

Perhaps the most scientific form of frame yet introduced is the aluminium rectangular or box girder, reinforced by a core of ash, as used by Messrs. Charron, Girardot, et Voigt, and the steel one of similar construction by Messrs. Maudslay.

In regard to the motor, no startling phase of evolution has presented itself, but there is evidence of healthy progress. Quite recently, however, it has entered upon a change, which, I have not the slightest doubt, will prove a serviceable and a lasting one, viz., mechanically-actuated admission valves. Other notable modifications are improved methods of cooling and of increasing the effective range of its speed and, *par suite*, power with regard to the former.

The bonnet louvres are now discarded, and the motor is enclosed hermetically within the motor bonnet, and air is aspirated into this closed chamber by means of a centrifugal fan. All this represents commonsense progress, but in connection with it we detect the imprint of the faddist. The cellular or so-called "honeycomb" cooler, by means of which the circulating water is divided up into thin films, constitutes a correctly scientific process of refrigeration, analogous indeed to certain other cooling processes, such as that of beer. But among things to be avoided on motor cars are joints. Now, the up-to-date cooler may be said to be built up of joints—a vast expanse of soldered joints fairly difficult to make in the shops and almost impossible to repair on the road. The ideal water cooler should only have two joints—those of the induction and eduction pipes. Now, the difference in weight of a well-designed cooler practically free from joints and one dependent upon such soldered jointing is negligible in regard to ordinary vehicles. These remarks anent water cooling, lubrication, and motors apply only to ordinary cars, and *not* to racers.

For the system of placing the fan behind the motor instead of immediately behind the cooler I have nothing

but condemnation. It seems to me like soldering one's watch case and debarring one's self the opportunity of adjustment and inspection whilst at work, for if the motor be run with the bonnet removed, a few minutes will suffice to overhear it.

However, one is led to feel that, whilst still keeping a watchful eye towards simplicity, water cooling, especially now that the later coolers enable us to carry so small a quantity, is likely to prove serviceable for some time to come. We find an interesting recrudescence of air cooling, however, in one modern automobile.

If we ask ourselves what the future may have in store in regard to cooling, I would say that probably the injection of water into the cylinders for the dual purpose of cooling yet facilitating combustion has great potentialities.

The discussion on Mr. Sennett's paper is unavoidably held over until next week.

CLUB DOINGS.

The Scottish Automobile Club (Western Section).

The committee have now issued a list of runs for the season, among the more important being the inter-club run with the Eastern Section to Callander on April 25th; the two days non-stop run Glasgow to London; the joint hill-climbing competition on Kirkfieldbank Hill with the Eastern Section; and a week's tour in Ireland on the occasion of the Gordon-Bennett Cup contest. The complete list is given below. In all, save the closing run, the time given is that at which members are expected to reach the hotel at the destination. On the occasion of the closing run cars will meet in Glasgow in time to start at noon.

Saturday, March 28th.—Opening run, Ayr (Station Hotel), 3 p.m.

Saturday, April 25th.—Callander (Dreadnaught Hotel), 2 p.m. Joint meeting with Eastern Section.

Wednesday and Thursday, May 13th and 14th.—Glasgow to London. Non-stop trial run.

Saturday, May 23rd.—Lanark. Hill-climbing competition jointly with Eastern Section on Kirkfieldbank Hill.

Saturday, June 13th.—Tarbert, Loch Lomond (Hotel), 3 p.m.

Saturday, July 4th to 11th.—Ireland, Gordon-Bennett Cup race (provisional).

Saturday, August 8th.—Biggar, 3.30 p.m.

Saturday, September —Aberfoyle, 3.30 p.m.

Saturday, October —Dunblane (provisional). Anniversary and closing run.

The Lincolnshire A.C. and the Trade.

The adjourned special meeting of the Lincolnshire A.C. was held on Saturday at the Saracen's Head Hotel, Lincoln. In the absence of the club chairman, Mr. C. W. Pennell, Dr. J. H. Pim took the chair. The principal business was to decide as to whether the club should admit members of the trade to the committees. It was decided by a large majority that it would be best to continue the policy heretofore adopted, and to keep the club an entirely amateur organisation. The members were placed in the unenviable position of having to lose their chairman and Mr. J. R. Richardson from the committee because they had entered the trade by having taken prominent positions in a new motor manufacturing company. Mr. C. Nelson, the hon. solicitor to the club, had also to come off the committee, where he is an *ex-officio* member, he being the secretary of a company engaged in the industry. In each case the members had no other alternative but to accept the resignations with regret, and which, in every case, was, we believe, real. Captain Boothby and Mr. Parsons Wright, an original member of the committee, were elected to the two vacant places, and in order to retain the services of Mr. Nelson it was agreed that he should remain hon. solicitor, but relinquish his seat on the committee. Captain J. A. Cole, J.P., one of the vice-presidents of the club, was unanimously elected chairman. It was agreed that the definition of trade should include directors, managers, secretaries, and all others directly or actively engaged in the manufacture or sale of automobiles and their parts, but not to include shareholders.

Manchester Automobile Club.—Condemnation of the Galloway Obstruction.

At the annual general meeting, held at the Albion Hotel, Manchester, on the 26th ult., the Hon. Sec. read the

report, from which it appeared that the membership had reached a total of 140. Nine runs had been held during the season with an average attendance of fifteen cars.

On the proposition of Mr. Rowcliffe, seconded by Mr. Higginbottom, the following resolution was carried: "This meeting deprecates the conduct of Mr. W. Galloway, M.P., on the second reading of the Light Locomotives (Ireland) Bill, and feels that his conduct is worthy of condemnation in attempting to retard the passing of a measure which must tend to foster the motor industry, and from which immense benefit must accrue to the people of Ireland, which in Ireland has received on all hands unanimous support and approval. This meeting is further of opinion that the proposed bill will tend to increase the friendship between the English and Irish people."

At a meeting of the North Eastern Automobile Club, held at the Hotel Metropole, Newcastle-on-Tyne, on Feb. 24th, the secretary, Mr. R. Benson Smith, was instructed to write to the local M.P.'s soliciting their support to the movement in favour of the international automobile race for the Goron-Bennett Cup being held in Ireland, and asking them to vote for the Bill introduced to Parliament by the Hon. Scott Montagu, M.P.

Answers to Correspondents.

QUERIES OF GENERAL INTEREST. LUBRICATION.

Q.—Kindly let me know if there is any harm in using, say, Lucas-Wells (or Wells-Lucas) air-cooled engine oil in a water-cooled engine?—BLAIRGOWRIE.

A.—There is no particular objection to using the oil made for an air-cooled engine in a water-cooled one. The lubricant for the former is, of course, much thicker and heavier than that for the second type, and, in consequence, it will probably not distribute itself to the bearings and over the cylinder walls so well as the mineral oil specially made for a hotter cylinder.

THE AMPERE HOUR.

Q.—What is meant by ampère hour? The word is used to me to express the capacity of my battery, but it conveys no sense to me either of the time the battery will last or the distance which it will run.—W. G.

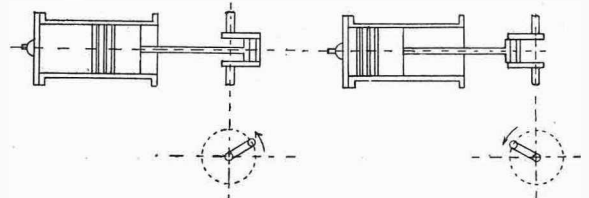
A.—The ampère is a unit of quantity of electricity, just as gas is measured by the cubic foot, or water by the gallon. Ampère hour denotes the duration of time that one ampère of current will last. This is best explained by taking as an example a ten ampère hour accumulator. This description denotes that the accumulator carries sufficient current to discharge it at the rate of *one* ampère for *ten* hours, or obversely at a rate of *ten* ampères for one hour. Supposing a coil to use $\frac{1}{2}$ ampère per working hour, then the total time for the discharge would be eighty hours, so that, travelling at fifteen miles per hour, the accumulator would last a distance of 1,200 miles. The volt is the unit of *pressure* at which the current is discharged.

VALVE TIMING AND WIRING.

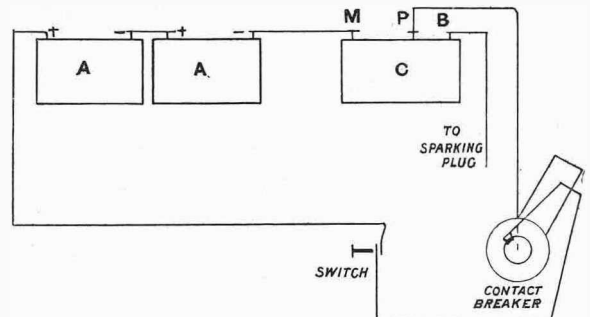
Q.—I have a Benz $3\frac{1}{2}$ h.p. two-speed and another Crypto, making three speeds in all. I can climb any hill on the Crypto, and most ordinary rises on the second speed; but I cannot drive it on the least gradient on the top, or sometimes on the level. I have tried it all ways, and later I was asked if the exhaust closed properly, and was advised to

allow nearly $\frac{1}{16}$ in. clearance from the top of valve nut to the lifting rod. This I did, and was still the same. Next, I was advised to fasten the valve at the end of the cylinder up, and still I am no nearer. I have put three two-volt accumulators on, and it will work with them = six volts, but it makes much more noise. I have enclosed a rough sketch as to how I am wired up, also explaining where the explosion takes place and the time the exhaust valve commences to open, and when it is full open. I shall feel obliged if you can give me any advice.—J. H.

A.—The exhaust opens much too late, hence it also closes too late, so that the full charge of explosive gas cannot be taken in. Low power is the result. Probably the half-speed gear wheel has been at some time taken out of gear with its driving wheel on the crankshaft, and has not been replaced with the correct teeth meshing. See if the wheels are marked on their faces, and if so



they must be engaged so that the marks are together, when the working of the engine should be satisfactory. The wheels should be so geared that the exhaust valve closes just at the moment that the piston reaches the end of its travel inwards at the exhaust stroke. The exhaust valve will then open a little distance before the end of the working stroke is reached. Most induction coils are only made to use with two two-volt batteries in series



A A, accumulator C, coil. P, positive terminal. M, negative terminal. B, sparking plug terminal.

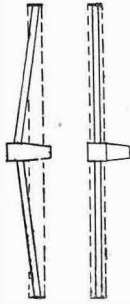
connection, as in sketch, so that you are liable to damage the coil by overheating it if six volts are used. The wiring, as sketched, should give correct sparking.

ARTILLERY WHEELS.

Q.—I have always looked upon artillery wheels as a sort of automobile term for wooden wheels, but I am told I am wrong in this, but I cannot find out what an artillery wheel is. I think it will be of general interest if you will be good enough to explain, also saying whether an artillery wheel is necessarily a wooden one.—C. B. B.

A.—The automobile wheel probably derived its designation of artillery wheel on account of the length of hub employed in its construction: also to

differentiate it from the ordinary carriage wheel.



As a matter of fact, it differs in one important constructional feature from the true artillery wheel, inasmuch as the wheel is invariably undished. The two diagram sketches given herewith show an artillery and a motor wheel side by side. That on the left is the true artillery pattern, as will be seen by the "dishing" or off-setting of the rim. That on the right is the usual type of motor wheel, in which the spokes are practically vertical, there being only a very small amount of off-

set, and that simply in the placing of the spokes. Strange as it may seem, the dishing of a wheel greatly increases its lateral and vertical stability, and it is for this reason that all wheels for especially heavy loads are so constructed.

AIR PRESSURE IN TYRES.

Referring to the reply to W. S. R. on page 280 of our last issue, a scientific correspondent sends us some further information on the subject which we give herewith, as the question is one of great interest: When air is contained in a vessel which does not allow of expansion, as is practically the case in a tyre, its pressure is proportional to its absolute temperature. Temperature centigrade is reducible to the absolute scale by adding 273° , and temperature Fahrenheit is similarly reducible by adding 460° . Thus for the rise of 60° F., say from 40° F. to 100° F., suggested by W. S. R., the pressure would increase in the ratio of 500 to 560. For instance, if at 40° F. the gauge shows 35 lbs. per square inch, i.e., if there is a total pressure of 50 lbs. per square inch, including the atmospheric pressure, the total pressure at 100° F. will be 56 lbs. per square inch, and the gauge will show 41 lbs. per square inch.—J. E. M.

We publish a selection from time to time of the questions we receive and our replies which are of general interest; the others are dealt with by post. Correspondents are asked to be good enough to bear in mind that they should write on one side of the paper only and should send a stamped addressed envelope for reply. Information as to how to address letters will be found at the end of this page.

Our thanks are due to the following correspondents for letters, items of news, various topics of interest or photographs. These will be dealt with in due course, and, when possible, published. In the meantime the senders will kindly regard this as an acknowledgment: F. Howard Mercer, F.A.W., and J. Beach.

New Patents.

This department is conducted by Mr. G. Douglas Leechman, consulting engineer and registered patent agent, 18, Hertford Street, Coventry; 32, York Street, Dublin; and 9, Exchange Chambers, New Street, Birmingham; from whom any further information respecting patents, designs, and trade marks may be obtained.

The following specifications were printed and published on 12th February, 1903. All notices to the oppositors to the grant of patents on the several applications should be filed not later than 28th March, 1903.

1902.

2,065.—W. L. Wise (Maschinenfabrik Oerlikon). Worm gearing for electrically-propelled vehicles.

2,490.—A. Tinson. Variable speed gear, comprising sets of friction discs coupled by gripping wheels.

5,587.—W. G. Wilson and Wilson and Pilcher, Limited. Commutator with spring brush, and one or more contacts according to the number of cylinders.

5,606.—P. L. Huskinson, A. Bates and J. C. Johnson. Electric and catalytic igniting device for internal combustion motors.

23,518.—H. Tenting. Two-cycle motor, with fixed and moving pistons.

The following specifications were printed and published on 26th February, 1903. All notices of oppositions to the grant of patents on the several applications should be filed not later than 11th April, 1903.

1901.

21,956.—A. Vogt. Internal combustion motor, in which the piston works up to the end of the cylinder and the charge is compressed outside the cylinder.

1902.

2,736.—G. Honold. High tension magneto ignition.

4,296.—W. Radford and E. Gifford. Variable speed and reversing gear of Swift voiturette.

5,143.—A. Oates. Rotary fluid motors having flexible tubular tyre-like working chambers.

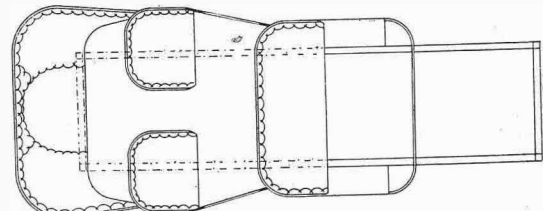
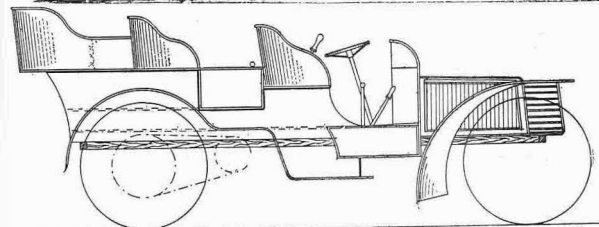
6,882.—V. R. Nicholson. Oil or spirit feeding device, operated by the suction of the motor.

6,883.—V. R. Nicholson. Motor having an auxiliary chamber connected with the combustion chamber by two passages, one of which contains the igniter.

7,025.—F. W. Dalton and F. R. Wade. Exhaust valve mechanism of internal combustion motors.

26,581.—W. P. Thompson. (La Société Mutel et Cie.) Throttle regulating device for internal combustion motors.

28,530.—F. Charron. Detail construction of explosion motors.



Last week we illustrated the 22 h.p. Daimler which Mr. Stanton had just obtained for the Prince of Wales. The elevation and plan, courteously placed at our disposal by the Daimler Co., show the arrangements of the seating very plainly. We can say from long experience that this plan provides one of the most comfortable arrangements that is possible for a five-seated car as well as for a seven. Of course with a five-seated design, the two middle seats shown in the plan of the Prince's car would be the driver's seats. This was the arrangement of the seats on the old John-o'-Groat's car, but in that historic car the front seats were not so comfortable as they might have been if they had been of the modern scolloped type. To make room for passing between the two front seats to the semi-circular back, it is of course necessary to have the footboard wider than is generally the case, but there is no objection whatever in this. In fact it is an advantage, and if it is fitted with side doors it is as snug as possible, and the extra width enables the occupants of the back seats to pass in and out without in any way incommoding the driver.

NOTICES.

HOW TO ADDRESS LETTERS.

EDITORIAL matter and general queries should be addressed "The Editor, *The Autocar*, Coventry."

ADVERTISEMENTS and Business Communications should be sent to LIFFE & SONS LIMITED, Coventry, or 3, St. Bride Street, Ludgate Circus, E.C.

Communications to the Editor should be written on one side of the paper only, and must be authenticated by the names and addresses of the writers—not necessarily for publication, but as a guarantee of good faith.