THE AUTOCAR

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

EDITED BY H. WALTER STANER.

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THE AUTOCAR.

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COLONIAL AND FOREIGN EDITION.

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Notes.

Economy.

Those who wish to pursue their motoring on the most economical lines should always bear in mind that, broadly speaking, the slower the car the less expensive will be its upkeep. The letter which we publish in our correspondence columns to-day on the cost of upkeep is an excellent example of this fact. Not only is the vehicle far less strained and knocked about if it is driven at a very moderate rate, but, still more important from a monetary point of view, is the fact that the tyres suffer so much less. It is astonishing how very small the expenses for renewals are with low-powered machines, particularly when solid tyres are used. We are convinced that many who are most desirous to indulge in motoring are forcing the manufacturers of low-priced vehicles on to entirely wrong lines. That is to say, while they want a car at a very moderate price, they also demand fairly high speeds. This is all very well so far as it goes; but it must mean that the upkeep and renewal charges will be higher than they like. If they would be content with a pace of fifteen or sixteen miles an hour, they would find there was no difficulty whatever in meeting their requirements as to very moderate expenditure; but, as it is, the demand for fast pace is such that the makers are almost compelled to gear small light cars higher than is desirable. Then, again, as the first cost must be considered, the tyres are none too large for the work they have to do, and what the buyer saves in first cost from these small tyres, he very soon loses, as he finds that it is necessary to carry a spare cover besides two or perhaps more air tubes, and he also discovers that his back tyres, at any rate, are not long-lived even then. If he would face the extra cost at the beginning of large tyres he would be far better off in the long run. In fact, with many light cars and voiturettes now being built, there is no doubt that the purchasers would do far better if they would make up their minds to specify a gear giving a low top speed and to go in for large tyres. For instance, if 3½in. tyres be used on a car which weighs from 5 cwts. to 8 cwts., they have a remarkably long life, as these same tyres are not infrequently fitted to cars of 12 cwts. and even 18 cwts. Of course the same remarks apply to larger cars; that is to say, there is no better plan than to fit light car tyres to a voiturette and heavy car tyres to a light car. At least three-fourths of the tyre repairs are entirely due to overloading the tyres.

Graduated Fines.

At the meeting of the Cheltenham and Gloucester A.C. last week to discuss the impending legislation, a very practical resolution was passed. After deciding that it was desirable that the present speed limit be removed, and that means of identification be affixed to motor-driven vehicles, the additional proviso was made: "That fines for excessive speed should be proportionate to the horse-power of the motor vehicle, and that the present limit of the fine of £10 is excessive for persons of moderate means." This appears to us to be in many respects one of the most practical and most satisfactory suggestions

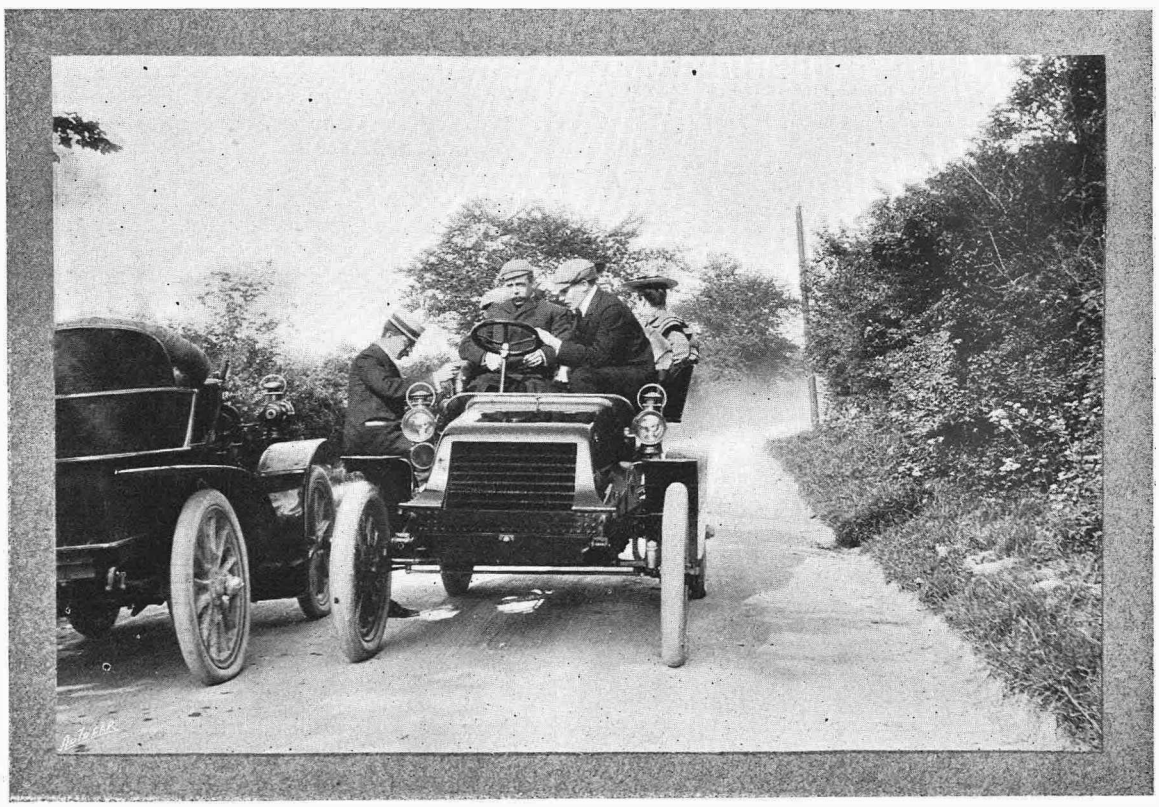
that have been made in connection with this matter. There is a very general feeling among magisterial and other authorities that the present fines are in many cases absolutely unnoticed by those who pay them, *i.e.*, the owner of a high-powered monster is, in the vast majority of cases, a very rich man, and is little affected by the £10 maximum fine. At the same time it is exceedingly hard and unfair that the driver of a little machine which may have been purchased second-hand for £150 or less, should be fined the same sum as the owner of the 40 h.p. or 50 h.p. car, as it is a very serious tax on him, and is a real punishment, whereas the rich man is not touched at all. When it is recollected that in many cases the owner of a low-priced car has had to make a very severe effort to purchase it, and, moreover, that its maximum speed is very much less than that attainable by the costly high-powered vehicle, we think it will be admitted by all that the suggestion of the Cheltenham Club is a good one. In fact, the greatest objection to the legislative proposals as they stand is that they appear to be made on the assumption that every automobilist is wealthy. Everyone knows that this is not the case, for while there are many wealthy men who own and drive cars, there are far more who are by no means well off, and who find their automobilism costs them quite as much as they can afford, and if it were not for its fascinating and health-giving properties, they would in many cases feel themselves unjustified in sustaining the expense. However, the graduated fines on horse-power are sound. They will enable the authorities to feel that an adequate punishment is inflicted upon the wealthy, and that without any hardship on those less richly endowed with this world's goods.

Motorists when in difficulties in the neighbourhood of Beddingham, Lewes, on the main road to Eastbourne, have frequently been assisted by Mr. W. Killick, a resident farmer, and we have pleasure in recording the fact.

* * *

Mr. C. A. Smith, of the White Lion Hotel, Cobham, writes us that Messrs. Carless, Capel, and Leonard have further increased the price of petrol, their latest quotation to him being 1s. 3d. per gallon in London.

AN INTERVIEW ON THE GORDON-BENNETT COURSE.



Mr. Alexander Winton, who is driving his eight-cylinder car in the Gordon-Bennett race, arrived in Dublin on Saturday last. On Saturday afternoon we met him on the course, and had a few moments' conversation. He was driving one of his 20 h.p. touring cars, which, by the way, ran with remarkable smoothness and quietness, and we were most favourably impressed with this quality, as the engine was running during the whole time we were chatting with him. Mr. Winton expressed himself as delighted with the course, so far as he had seen it. In fact, he seemed surprised to find the road as good as it was. The narrowness was the only objection in his mind. He was under the impression that, considering all things, his eight-cylinder car would be better than Mr Owen's four-cylinder. The speeds of the two machines were not very different, as the extra power of his own eight-cylinder was very largely discounted by the greater weight, consequently Mr. Owen's four-cylinder machine was nearly as fast; but he thought that with the slight deviations from the straight which occurred on some of the fastest stretches, it would be easier to keep the heavier car in the road. Of course, he was not discussing the sharp corners, for which everyone will have to slow, but rather those longer bends which can be taken at fairly high speeds. Mr Owen was in a second Winton, close behind Mr. Wi ton's car, and so not visible in the photograph, while our trusty Wolseley, on which we had been inspecting the course, is to be seen upon the left. We may add that Mr. Mooers the Peerless driver, and third American champion, is not expected to reach Ireland for a few days yet.

USEFUL HINTS AND TIPS.

How to Use Tools.

(Continued from page 652.)

Removing a Bolt.

Another instance where a hammer should be used carefully is in dislodging a bolt which fits somewhat tightly in its orifice. When the nut is completely removed, careful aim should be taken with the hammer and one sharp decisive blow given to the bolt directly upon the top and with the centre of the face of the hammer.

It is, of course, perfectly clear that, if the bolt be struck at all sideways, the screw thread will be burred and prevent the nut being again replaced until the thread has been restored by means of a triangular file, or by the edge of a square file, methods which do not conduce to the satisfactory working of the screw thread. Where possible, it is far better to slack off the nut until the top is level with the top of the bolt with at least one-eighth of an inch intervening between the top of the nut and the face of the piece, when so much care need not be exercised, as there is no danger of spoiling the thread. In some cases it is even advisable to screw the nut half way off the bolt and deliver the blow on to it rather than spoil the thread itself, but it will be understood that it is injudicious to deliver heavy blows in this instance, as the force of the blow would be borne by three or four threads only.

Straightening a Rod.

This is another operation where it is inadvisable to use a hammer alone. It would be far better to place the rod between two pieces of hard wood, into which a groove has been cut, for preference. When the blows are given direct to the rod the surface is left indented with the hammer marks, which, if the part has to work through a guide, is liable to cause it to bind; and, even if it is not working through such a guide, it is at least unsightly, and an evidence of bad workmanship to see such marks on any part of the car.

Riveting.

In riveting two parts together, or where the end of a bolt is riveted to prevent the nut working off, the face of the hammer should not be used. The ordinary hammer is provided with what is termed either a ball or flat pane. The ball pane is, of course, the spherical face, while the flat pane is more of the blunt wedge form. For riveting, the ball pane is preferable. The rivet should be held up tightly by the head, while the opposite end is riveted over. To commence the process, the edges of the rivet should be gradually worked over, going all the way round with the ball pane, and working up to the centre so as to leave the form of a half round head, from which the indentations may be removed by means of the flat face of the hammer so as to leave as neat a finish as possible.

The Chisel.

This is a tool which does not figure in every automobilist's outfit, yet it is one of those tools which when it is wanted is wanted badly. The usual "cold chisel" is made of octagonal cast steel in sizes which vary from ½in. to 1in. in section and about 6½in. long. To get a thoroughly reliable tool, it should be forged, hardened, ground, and tempered by an experienced toolmaker. Though it looks a perfectly simple job to use a chisel, when the novice comes to handle it, unless care is taken, sore hands and barked knuckles invariably follow. All that is required is a steady hand and eye. Put the edge of the chisel where the cut is to commence, and strike a deliberate blow fairly on the head. The chief thing to observe is to hit the chisel squarely upon the head, so that the full force of the blow is delivered to the cutting edge. If the blow is struck the least bit sideways, the force is at a greater or less angle to the cutting edge, the result of which is the tool jumps from the work, and a piece of skin frequently flies off the left hand, or the edge of the chisel is broken off.

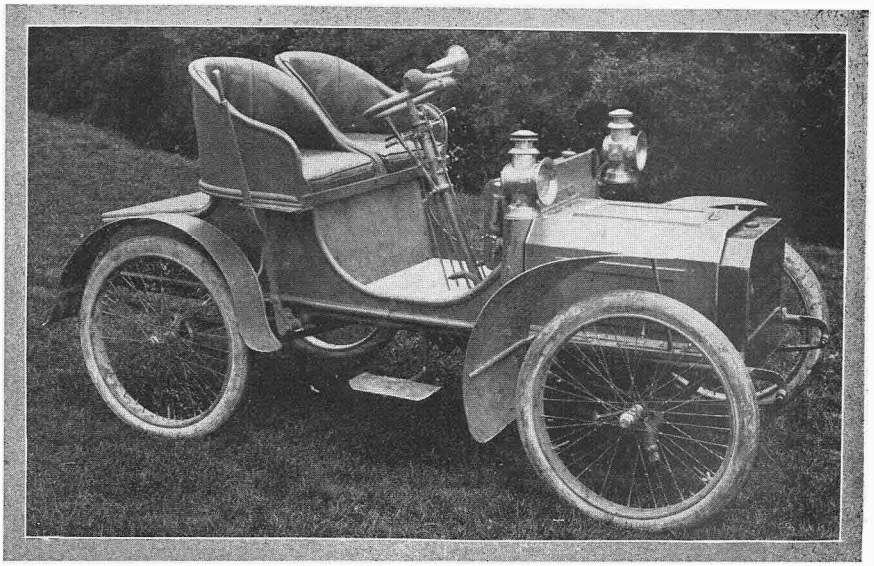
Files.

Two or three of these indispensable tools should be included in the outfit of every motorist, whether he use a 2 h.p. motor bicycle or a 70 h.p. racing car. Generally speaking, the most useful sizes to carry are 6in. long and of flat and half-round section, of a "cut" known as "bastard," this being between the rough and smooth files. There is really an art in using a file, more so than would be imagined, for the mechanic who can file flat has something to be proud of. As it may happen that a flat surface has to be filed up at times, the method of arriving at this will be of interest. If an appreciable amount of metal has to be removed, the file should be used across the metal at an angle of 45°, first in one direction and then in the other, so that the file marks make a right angle to one another. When almost sufficient metal has been removed, the final touches must be given by "draw filing," preferably with a fine-cut file. This is done by taking the file in both hands, and, holding it at a right angle across the piece, draw it backwards and forwards along the surface, using a gentle pressure. It will be noticed that the first file marks invariably show in the centre of the surface, and work down until they reach the edges. If a fine file is not at hand, it is better to reduce the cut of the "bastard" by filling the teeth with a little chalk and oil. In filing flats on spindles for keys, the above method is always employed. In reducing the diameter of a short rod, or spindle, by filing the "drawing" action, should always be used. For instance, suppose an exhaust valve stem has to be reduced to fit the guide. The way this should be done is in the following manner: Over the vice jaws should be placed lead or copper clamps, so that the cutting on the jaws cannot mark the stem. Place the jaws at such a distance apart that, while the stem is not actually held between them, it is sufficiently wedged in by the pressure placed upon the file to hold it in position. Obviously, the greatest care should be exercised in filing up such parts. The most difficult of all files to use is the round one, and when a perfectly round hole is required, it should never be touched with a file, but reamed out, only the roughest of work being touched with a file, so far as enlarging holes is concerned. A file which should be carried is a flat watchmaker's for truing up platinum contact points.

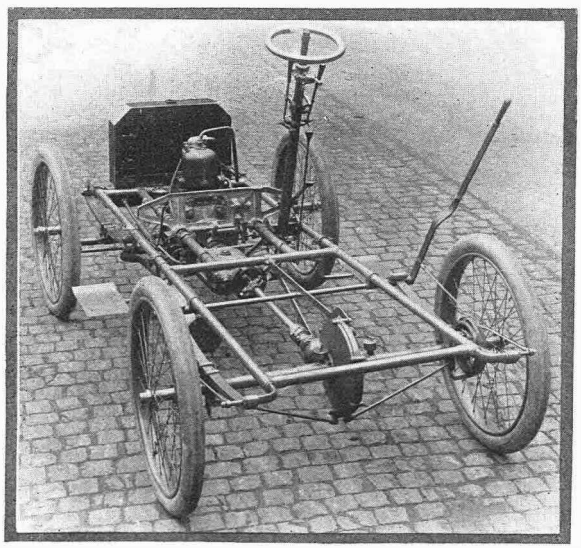
(To be continued.)

THE HUMBER VOITURETTE.

Some weeks since we announced that Messrs. Humber, Ltd., were bringing out a little two-seated car at a popular price. The experimental vehicle has been run over 1,600 miles, and arrangements are now being made for building the type in numbers. This machine is not the growth of a month or two, as Humbers have been experimenting with voiturettes, quite apart from making larger vehicles, since 1897. It will be seen from the illustration of the complete vehicle that it is a very smart looking little car indeed, while the small illustration gives some idea of the thorough manner in which the car was dismembered for our inspection, so that we could satisfy ourselves that the wearing parts were in good condition after the trial to which they had been subjected. We examined these carefully, and found them to be in an excellent state, the signs of wear being very slight, and showing plainly that the design and its execution had been thoroughly well considered. The only troubles with the experimental machine were due to the large bevel gear on the live axle being scarcely stiff enough, and a slight overheating at the cylinder. Both these have been rectified, and there is no doubt that the vehicle is a thoroughly practical little car that will meet a very general demand. The vertical engine, which is placed in front, has a bore of 3⅝in. and a stroke of 3⅝in., and at 1,500 revolutions per minute is stated to develop about 5 h.p. The transmission is by a friction clutch of ample diameter—so ample, in fact, that it shows scarcely a sign of wear. The clutchshaft is universally jointed. The two-speed gear is of simple construction, and provides a direct drive on the top speed, and there is also a reverse gear snugly ensconced in the box. Thence the drive to the live back axle is by universally-jointed propeller-shaft and bevel gear. The engine, of course, is water-cooled, and the whole of the water is carried in a very smart combined radiator and tank in front of the bonnet, the circulation being maintained by a friction-driven pump. The battery and coil are contained in a small box beneath the bonnet, on the front of the dashboard, so that, while most easily get-at-able, they are as near as possible to the engine, and the wiring is consequently reduced in length to the utmost possible degree. Two brakes are provided—a band brake (pedal-applied) on the propeller-shaft just behind the gear box, and a double band brake working on drums on the back axle, operated by a hand lever in the usual manner. The petrol is carried in a tank behind the dash, as also is the lubricating oil. By the side of the latter is a transparent pump for lubricating the engine. The change-speed gear runs in oil, and only requires refilling at long intervals, while four transparent lubricators serve the back axle, bevel, and balance gears. The carburetter is a Longuemare, and the throttle and air levers, as well as the ignition and change-speed levers, are fixed upon the steering standard. The single arm Humber steering wheel is employed, so that these levers are particularly accessible, and the control of the car is exceptionally simple. Two pedals are provided—one for actuating the countershaft brake and one for the clutch. The main frame, as well as the secondary frame, which carries the engine and gear box, is of tubular construction throughout, while the skeleton of the body is made from D-section tubing. The wheelbase is 5ft. 3in., and the gauge 3ft. 6in., the dimensions all over being 7ft. 10in. length and 4ft. width. The wheels are 28in. in diameter, with 2½in. Clipper-Continental tyres.

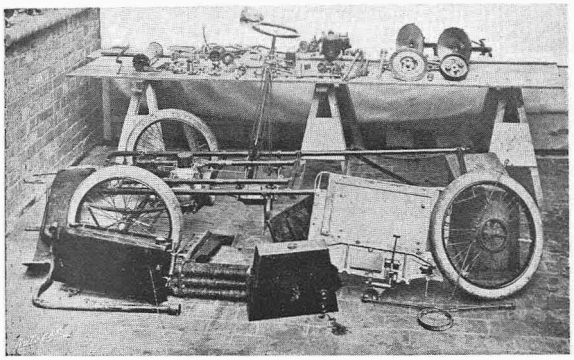


The Humber 5 h.p. voiturette.



Chassis of the 5 h.p. Humber.

The total weight of the car is 5¼ cwts. It will be made in two patterns—one with an undivided front seat, but otherwise as shown in our illustration, and the other with bucket seats, side doors to the dash-board, a governor on the engine, and several other small refinements. This type will be turned out at Beeston, and will be sold for £150, while the other pattern will be made in Coventry, and will be £25 less. We made a short run on the car, and found it extremely comfortable, the springing being very good (2ft. 6in. springs for the back and 2ft. 3in. for the front), while the action of the engine, though it



The 5 h.p. voiturette in pieces for our inspection.

had not been carefully balanced on the particular car we tried, was by no means unduly apparent. All ordinary hills can be taken on the top speed, and it is only when starting or climbing exceptionally severe grades that the first speed is required at all. Altogether, we were extremely pleased with the little machine, and we believe, if the makers experience any difficulty at all with it, it will be in turning it out fast enough.

A ROUTE TO THE NORTH.

We frequently have enquiries from residents in the North and in the South asking how they can go one way or the other without getting such a large share of the Black Country, or of the almost interminable granite setts and tramlines round about Manchester. For their benefit we give a simple and easily found route which enables the automobilist to avoid a great number of miles of bad roads, the longest stretch of tramlines being about four miles. Facing North, and taking Lichfield as a convenient starting point, we proceed in the following order: Rugeley, Stone, Trentham, Newcastle-under-Lyme, Holmes Chapel, Knutsford, Warrington (about three miles of tram lines, part setts all over and part macadam at sides), Rainhill and Prescot (about four miles of trams, wide strip of good macadam at sides), Knowsley, Rainford, Ormskirk (about half a mile of setts), Burscough, Rufford, and Preston. If any of our readers know a better route, we shall be glad if they will send it to us. At the same time it is necessary to bear in mind that the road must be easily found, as a stranger to a district rarely has the time or the inclination to undertake what are to him complicated explorations, necessitating frequent enquiries of people who very often seem to know but little about it, and the road which cannot be found from place to place by asking at one town the way to the next is not of much service for the through traveller.

A STEEL-BAND TYRE.

A company, named the Steel-band Tyre Co., Ltd., having works at Back South Chester Street, and registered offices at 14, Castle Street, Liverpool, has been formed to manufacture and place on the market the steel-band solid tyre invented some five years ago by Messrs. Smith and Tipett, of Liverpool. The following are some of the advantages claimed for the tyre:

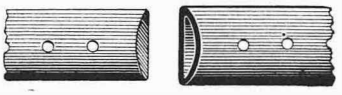
"1. That the rubber of the Steel-band tyre, before being placed in the channel, is compressed on to a steel band, so that when fixed it is under compression, and gives greater resiliency to the tyre, and entirely obviates the ill-effects so frequently caused by the rubber cutting through coming in contact with obstructions in the roadway.

"2. That the tyre, being fastened in the channel by a new and patented device, cannot creep, stretch, or become slack.

"3. That the tyre is not held on by wires (which cut through the rubber), but by a flat band of specially-tempered steel, having one side convex, which, when fixed in the rim, is perfectly rigid, thus preventing all friction.

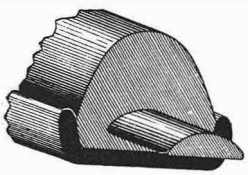
"4. That by this improved method of fixing the tyre it may be taken off and replaced at will.

From the illustrations we now give, the position of the steel band in the rubber and the method of securing the ends will be seen.



The steel band fastening.

On one end of the band which runs through the rubber is attached a short metal socket. This end of the band is fixed to the wheel first, by means of a screw, which is placed through the underside of the felloe of the wheel, and also through the steel channel of the rim and the convex band running through the rubber, the screw being of just sufficient length to fully penetrate the convex band without cutting the rubber of the tyre. After the rubber and band have been pressed into the rim, the opposite end of the band is slipped into the socket referred to above, and secured to the rim by a screw in the same manner as the socket end of the band, the hole for the screw in this case, however, being drilled and tapped after the tyre is in position. When the opposite ends of the tyre are brought together, the length of the rubber contained in the tyre, owing to its being compressed, is considerably greater than the circumference of the wheel. The tyre is further secured to the wheel by means of holding-down screws placed around the wheel at suitable distances apart, the number of screws required for a tyre and wheel of average size being about six.



Section of the tyre showing the steel band.

It should be clearly understood it is not claimed that the compression of the rubber is a novelty in itself. This is a very old idea. We do not know who originated it, but tyres were made in this way some twenty years ago, and many are still fitted under compression.

THE REX SINGLE-CYLINDER GOVERNED ENGINE.

We recently had an opportunity of inspecting in detail and of observing in running the 10 h.p. Rex single-cylinder engine now being fitted to the Rex car. The accompanying illustrations depict the governor motion fairly clearly, and this will be fully understood by reference to the lettering thereon. As will be seen, the governor is of the ordinary centrifugal force type, placed upon the half-speed shaft, the weights being mounted upon the two to one spur wheel E. This is provided with a sliding sleeve E^1, with which engages a fork upon the end of the spindle C^1, shown in fig. 2. When the velocity of the half-speed shaft attains a given speed, the governor weights fly out to such an extent as to bring the governor lever C^2 into operation, by reason of

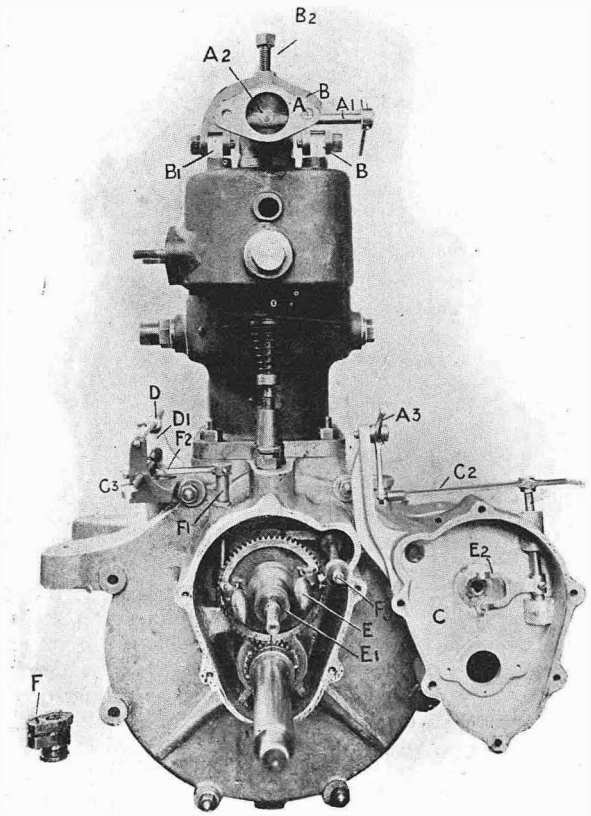


Fig 1.—Half the governor box removed.

A, induction pipe elbow
A^1, throttle valve spindle
A^2, throttle valve
A^3, bell crank lever operating throttle valve
B, hinged bridge over A
B^1, hinges to B
B^2, bolt holding down induction pipe
C, aluminium case, enclosing the governor
C^1, spindle operating throttle valve
C^2, lever carried on the end of C^1, operating A^3 and D
C^3, sliding rod connected to C^2
C^4, governor spring
D, accelerator rod
D^1, stop fixed to the rod D
E, half-speed gear wheel
E^1, sliding sleeve of the governor on the half-speed shaft
E^2, fork engaging with E^1
F, exhaust and compression relief cam
F^1, spindle operating compression relief cam
F^2, lever connect to F^1
F^3, spindle carrying rocking arm interposed between exhaust cam and valve plunger
G, contact breaker
G^1, contact cam

the sliding sleeve E^1 being forced outward along the shaft. This communicates movement through the lever C^2 and bell crank A^3 to the butterfly valve A^2, located in the induction pipe A, through the lever A^1. On the left of the governor box will be seen a vertical spindle F^1, which has at its lower end a fork engaging in a collar on the exhaust cam, which also carries a half compression cam. Movement is given to this spindle by a lever F^2. The cam F is moved slightly along the half-speed cam, so as to bring the

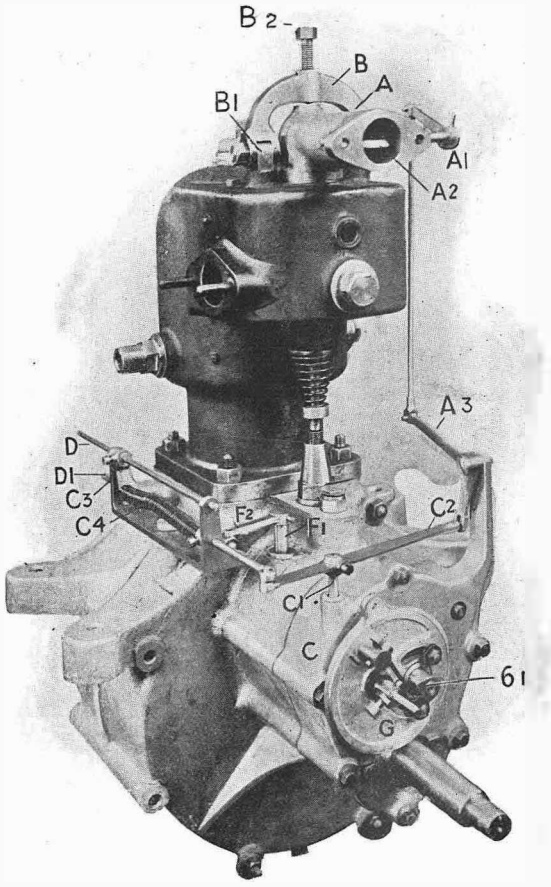


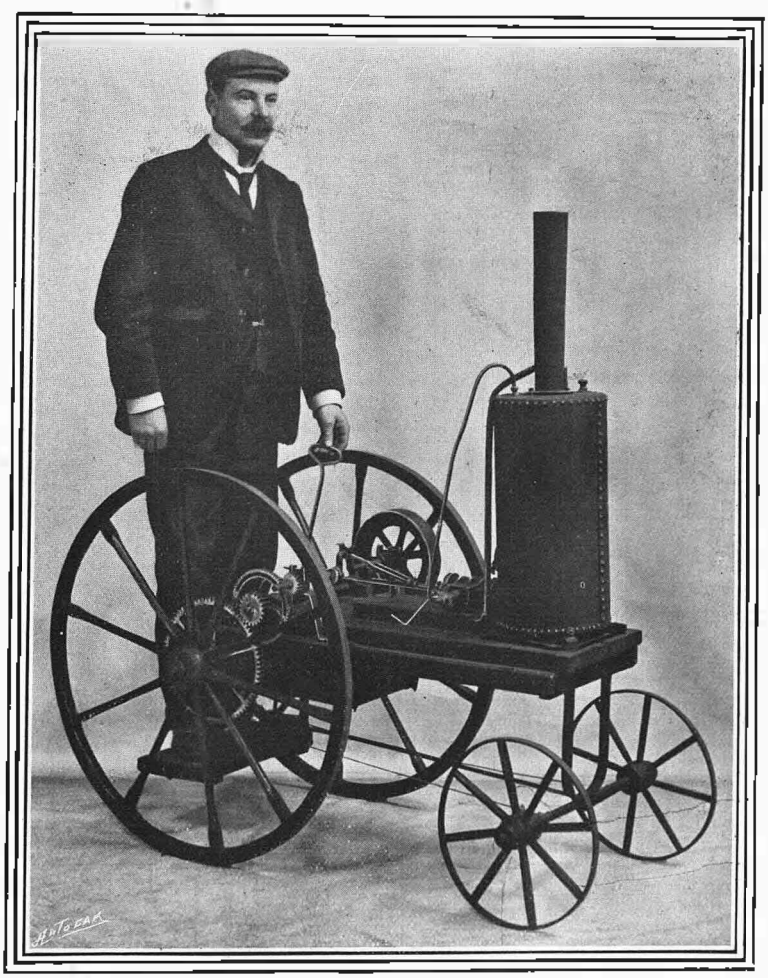
Fig. 2.—The governor box complete.

compression release cam into operation. Thus the exhaust valve is slightly lifted during the time of compression, so that, while this is not at its highest point, it is sufficiently high to start the engine, and that without part of the explosive force escaping from the cylinder, such as would be the case with a compression tap, or, in some cases, an exhaust valve-lifter. F^3 is a spindle upon which is hinged a lever interposed between the exhaust cam and the exhaust valve plunger. It will be seen that the governor spring, instead of being located in the box in the usual way, is carried on a guide rod C^3, connected to the lever C^2, the spring C^4 being placed over the rod, and contained between the arms of a bracket. It is further provided with stops, whereby the tension of the spring may be adjusted to alter the timing of the governor. The rod D is connected through suitable levers to a pedal projecting through the footboard. By depressing this pedal, the governor is held out of action, and the engine thereby accelerated. The pedal is provided with a rod running through a guide on the steering column. This guide is provided with a pinching screw, so that the speed

of the engine can be regulated by depressing the pedal, and by tightening the screw the rod is held, and through it the pedal and governor spring. The time of governing is therefore at all times under the command of the driver. The compression release is also actuated by the rod D, which is connected to a lever placed on the steering column. As soon as the engine is fairly started, this lever is pushed over, the compression cam is moved along, so that the release cam is put out of operation, and the engine at once starts up to its full speed. Considering that the governor is controlling a single-cylinder engine of its size, it works very smoothly indeed, unless the governor is set for the engine to work at a very low rate of speed, when the hammering upon the engine is naturally noticeable. Therefore, it is advisable not to decrease the speed at which the engine is set when sent out by the makers.

THE DUMFRIESSHIRE STEAM CAR.

The quaint machine we illustrate belongs to Mr. J. J. Clark, of the Market Hall, Dumfries, and has been inspected by a good number of automobile tourists in Scotland. It was made twenty-seven years ago by a gardener at Townhead, in the parish of Glencairn, Dumfriesshire. The bicycle of that day did not suit him, and he thought he would see what he could do with the assistance of the local blacksmith and joiner. The whole machine occupies a space 5ft. × 2ft. 9in., and is firmly bolted together. The base, or body, consists of two planks of wood. The boiler, which is tubular, was made to order at Sunderland, costing about £10, and was capable of a good pressure. The engine was acquired at the Dumfries Foundry, practically as scrap, and the other fittings were made at the smithy or joiner's shop, under the direction of the designer, Mr. David Dorward.



The steering is of the most crude style. An iron rod rests in a hole or socket of the footboard, by twisting which a cable of stranded wires guides the front wheels and axles, these moving on a common bolt and nut as a centre. The mode of throwing the engine out of gear was simply by pushing out of mesh the small toothed wheel.

The driver stood on the platform, with guiding rod in left hand, while he could control the inlet of steam and feed the fire with his right hand. The L-shaped handle at the side of the cylinder is the steam controller.

Coals were kept in a small box under the rear of the platform, and had to be in small lumps to enter the little door of the furnace. The smoke from the funnel was driven right in the face of the motorist, and he presented the appearance of a sweep when driving.

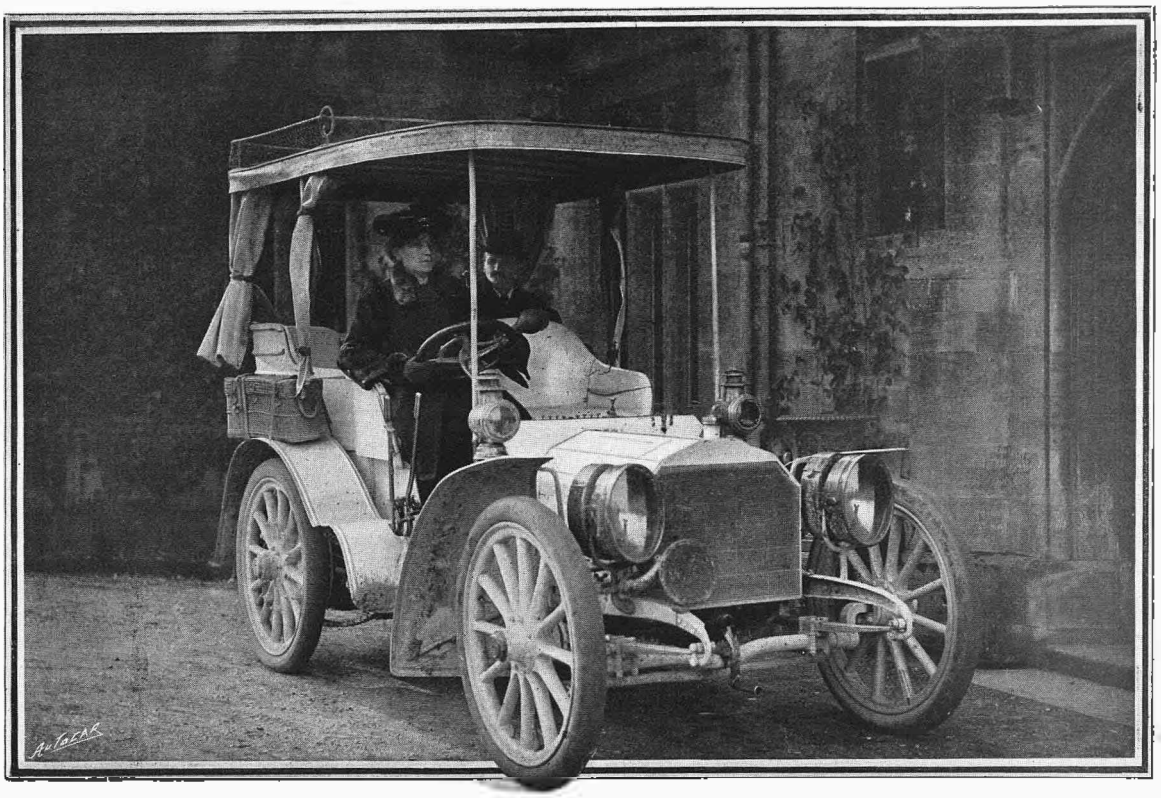
In the district where the steamer was mostly used, and which is around the renowned Maxwelton Braes, the gardener and his car were a familiar sight, until an accident happened through a horse shying and bringing a trap to grief. Following upon this, on the occasion of a visit one evening to Moniaive, a village a few miles distant, some wags made off with and hid the steamer while its owner was refreshing the inner man.

This led to the intervention of the police, and enquiries brought out that the article was a "locomotive" within the meaning of the then existing Act of Parliament, and required two men in charge of the engine and one red flag man in front.

Dorward thus had to relinquish the idea of using it, and the fate of his hobby was sealed. In sympathy with the genius thus foiled, a prize drawing was held, and the engine raffled, and in a few weeks it came into the possession of Mr. J. J. Clark, who has had it for over twenty years.

The spirit of invention of road vehicles seems to have pervaded his district, for, curious to relate, it was in the next parish of Keir, at Courthill, five miles distant, that Kirkpatrick Macmillan made the first bicycle, about 1839. He died in 1878, just when Dorward's creation was being made.

A NOTABLE MOTOR TOUR.



Mrs. Woodhull Martin on her 20 h.p. Mercedes in which the tour was made.

One of the most notable motor tours ever accomplished by ladies has just been made by Mrs. Victoria Woodhull Martin and her daughter, Miss Zula Woodhull. Mrs. Martin—who as Victoria Woodhull was famous as a pioneer of Woman's Rights and a social reformer in America a quarter of a century since—married, on her arrival in England, the eminent London banker, Mr. John Biddulph Martin. This gentleman, who died a few years ago, left his large fortune entirely to his wife, including the beautiful estate of Norton Park, Worcestershire, one of the "stately homes of England."

Mrs. Martin, who now resides largely at Norton Park, with occasional sojourns in London and on the Continent, has become well-known in the motor world as one of the most enthusiastic lady motorists in England, and Miss Woodhull shares, equally with her mother, a devotion to the delightful pastime which has lately found its laureate in the English poet, Mr. Henley.

Both ladies are expert drivers and thoroughly versed in the mechanism of the motor car. They believe that its advent will completely revolutionise modern life, and it is characteristic that Mrs. Martin, who was ever a pioneer, should, with her daughter, have been the first lady to make an extended tour in England on a motor car, just as she has now again led the way across Europe. The English tour was some years ago, when motoring was in its infancy, and the route taken ran through England from east to west. Motors were then a curiosity, and the appearance of these two intrepid ladies, guiding the then unfamiliar car through the rural districts, excited an unusual amount of public interest. Now many ladies have taken to the road.

At Norton Park Mrs. Martin has quite a little flotilla of motor cars, but the 20 h.p. Mercedes Simplex is her car *par excellence*. It was on this car that Mrs. Martin and Miss Woodhull recently accomplished a notable tour. Just as they were the first ladies to motor through England, so now they have been the first ladies to motor from England through France and back again.

The Start of the Tour.

On a cold but bracing day in the middle of March last, Mrs. Martin and Miss Woodhull on their Mercedes left the door of their beautiful country mansion of Norton Park *en route* for Paris and the Riviera.

We may notice in passing that the car is so conveniently constructed that all the luggage they wanted for the extended journey was strapped on the top, and they, therefore, had no worries on that score.

First they ran to London, a distance of over one hundred miles from their Worcestershire home. The next day they proceeded to Dover, passing through some of the most beautiful country in England. At Dover they rested a night, and the next day went on to Folkestone, shipped their car, and voyaged across the Channel to Boulogne. Here the car was unshipped, and all French formalities settled without difficulty. After a few hours

sojourn in the quaint old seaport town, the ladies again boarded their car and set out for Paris. In *la ville lumière* they rested some days, visiting and shopping, and then set out on the longest part of their tour, and drove their car down the route of the French Touring Club (of which they are members) to Cannes. This route, though admirably adapted for motoring, and with every convenience for cars at the towns and villages along the road, is not, perhaps, very picturesque until the South of France is reached, and then in that land of sunshine, of blue sky and sea, of grey-green olive groves, and the feathery gold of the mimosa trees, one seems to motor through an earthly paradise.

Cannes was our lady motorists' first stopping place for any time, and then, the car being in beautiful order, they proceeded along the Mediterranean coast, breaking their journey at such places as Nice, Beaulieu, Monte Carlo, Mentone, and so on.

After exhausting the beauties of the Riviera, Mrs. Martin and Miss Woodhull faced north, and set out on their homeward way. But in this case they varied the route, and avoiding the beaten track, passed through some of the most beautiful country in Europe. The 20 h.p. Mercedes Simplex climbed the Alpes Maritimes like a bird, only unlike a bird it was never tired, and always ready to plume its wings afresh for another flight.

After passing through most picturesque regions, but little known to the ordinary traveller, our voyagers reached the main road, and returned to Paris *viâ* Dijon. Here they remained some little time, using their car for excursions to the beautiful environs; and, finally, they ran back to the coast, put their car on board, and crossed the Channel.

Arrived in England, the car was unshipped again and the return journey made to London. Here, after a night's rest, the untiring motorists set forth again, and after an easy run, found themselves once more gliding up the avenue of Norton Park, Worcestershire, after an absence of some six weeks.

Thus concluded one of the most notable motor expeditions ever undertaken by ladies, which was performed from first to last without a hitch.

Once more Mrs. Woodhull Martin has demonstrated the independence of woman, and has shown what her sex can do, if they have only the necessary energy and ability.

GOOD RUNNING ON A CHENARD.

One hundred and three miles and a quarter is not a drive of prodigious length as non-stop runs go, but it speaks well for any car that accomplishes it, particularly when the odd century lies between Gloucester and London, by way of Cheltenham, Andoverford, Witney, Oxford, Stokenchurch, and High Wycombe, which offers two big climbs—the first over the Cotswolds, the road being practically on the rise from Cheltenham to Pussdown Inn, nine and a half miles, in which the engine raises car and its freight over 650 feet; and the second over the Chilterns, commencing from a point ten and a half miles from Oxford, and rising 660 feet or thereabouts in six and a quarter miles. This drive we effected on Whitsun Tuesday last on a 14 h.p. Chenard and Walcker, with four up and a goodly allowance of baggage, without hindrance or stop of any kind, the car running in a most satisfactory way from start to finish, although the trams along the Ealing Dean Road, where the standards are placed in the centre of a narrow fairway, made driving very tiresome at times. Except for running the engine free down hills and changing speed, we never unclutched, the speed of the car being most conveniently varied by the use of the valve governing pedal alone. This control, as soon as it is mastered (and that is readily done), appeals to one considerably, and the use of the valve-controlling pedal soon becomes second nature. It is particularly valuable for silencing the engine when passing horses which show any signs of restiveness. Excellent hill-climbing qualities are claimed for the Chenard-Walcker cars, and not without foundation, as anyone who knows Gloucestershire will admit when we say that with five up the car took us most successfully from Gloucester to the Speech House in the Forest of Dean *viâ* Little Dean and Cinderford. We do not recommend this route, but would suggest the longer route *viâ* Newnham and Blakeney to any automobilist who desires to come at the heart of this most picturesque forest from Gloucester. The climb just referred to is 725 feet in three and one-third miles. We made no attempt whatever to economise petrol, but drove down all slopes where the car would not run fairly fast unclutched, so that, with the climbing above referred to and the long drive to town against a north-easterly gale, a consumption of six gallons for 140 miles at least, with a car weighing 17 cwts. and carrying five people on the Speech House day, was certainly very satisfactory.

The Dunlop non-slipping tyres with which this car is fitted gave no trouble whatever from start to finish, although the roads in parts were in a very puncturesome condition.

Turning a sharp curve near Leicester, a motor car ran into a performing bear, in charge of a foreigner. Fortunately the driver had slackened speed, but before he could pull up the car caught the bear and rolled it along the roadside. Naturally, Bruin developed a violent objection to the autocar and its occupants, but the foreign proprietor of the bear intervened.

Automobilists having complained of the inconvenience they are put to while driving in the country by the antics of dogs, a notification has been issued calling upon dog owners to do all in their power to prevent accidents, and threatening them with punishment if they refuse to look after their dogs. To avoid misunderstanding, we haste to explain that this is in Vienna.

THE WELLER TWENTY HORSE-POWER CAR.

(Concluded from page 661.)

The connecting rod (fig. 6) is of special and unusual design, whereby the brasses of either big end can be withdrawn and renewed through holes in each base chamber without disturbing any other part of the mechanism. We would draw attention to the thought which has been given to the design of this connecting rod, particularly to the form of the holding bolt marked 2 in the drawing.

The rear end of the crankshaft, where it issues from the base chambers, carries a heavy wide-rimmed flywheel weighing 84 lbs., in the rear portion of which the friction clutch is formed (see fig. 3). The bearing subtending the base chamber is of great length, and the clutchshaft G G is carried as to its forward end by a thimble bearing on the crankshaft.

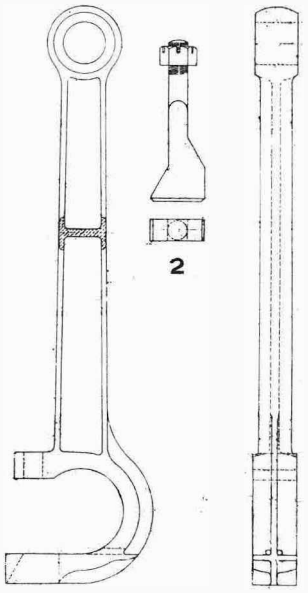


Fig. 6.—Connecting rod details.

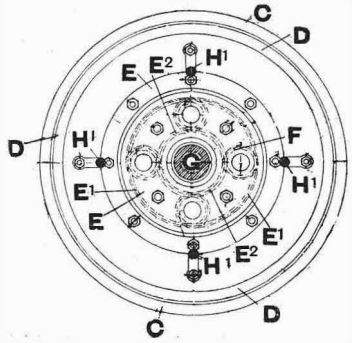


Fig. 7.—End view of the flywheel, clutch, and reversing gear.

C C, flywheel.
D D D, clutch, metal to metal.
E E, casing fixed on the clutchshaft, enclosing the reverse gear.
E^3 E^3, internally toothed ring bolted to E E.
E^2 E^2, centre pinion fixed to the flywheel web
F, one of four pinions for the reverse gear.
G, clutchshaft.
H^1 H^1 H^1 H^1, four arms attaching the clutch collar to D D.

The clutch is metal cone to metal cone, provided with an ample ball thrust bearing between the flywheel boss and the crank chamber, and yet another between the sliding clutch collar and clutch spring. The clutch fork collar H H (fig. 3) is connected to the web of the male portion of the clutch D D by four arms H^1 H^1 (fig. 7), within which is a sleeve casing E E fast on the clutchshaft G G, which contains the epicycloidal reversing gear. By means of this ingenious arrangement, the car can be driven astern on any of the four forward speeds without striking the gear. It is only necessary to depress the reversing pedal, which has the effect of withdrawing the clutch much further than when merely declutching, and bringing the same hard up against a clutch brake (not shown), by which it is held immovable. The epicyclic train then comes into action, and the car reverses. The reversing gear is so low in ratio that the engine has no difficulty in driving the car backwards on the fourth speed.

The change speed is very compact, with long bearings and short shafts, as may be seen by reference to the vertical section (fig. 8). The gears afford forward speeds of ten, twenty, thirty, and forty miles per hour.

In the vertical section of the gear box is seen the specially-designed change gear cam plate, which is self-locking when in position, thus avoiding all annoyance from the slipping of gears.

The drive from the upper, or secondary, gearshaft I I passes by means of a bevel pinion J meshing with a bevel wheel K keyed to the right-hand differential gear box sleeve. The driven bevel wheel is provided with a ball thrust bearing, as is also the driving bevel pinion; but this thrust bearing is seen to be removed to the forward end of the gear box. The gear box is provided with a large inspection cover M^1. The brake drum on the countershaft is recessed for water-cooling, and the bands thereto are contracted thereon

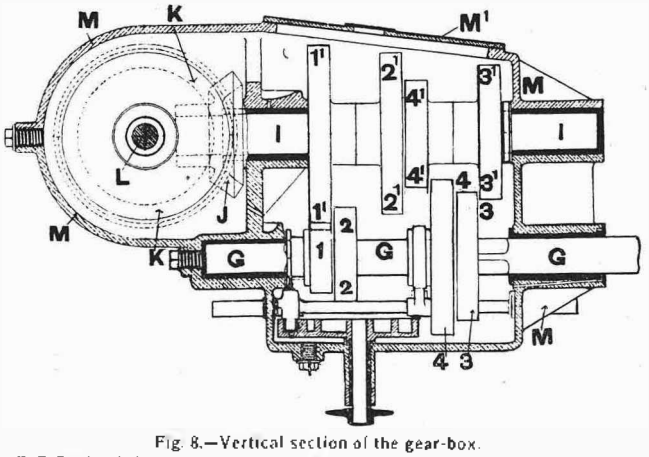


Fig. 8.—Vertical section of the gear-box.

G G G, clutchshaft.
I I, secondary gearshaft.
J, driving bevel pinion
K K, driven bevel wheel
L, countershaft carrying chain sprockets.
M (repeated) aluminium gear-box.
M^1, inspection cover.
1, slow speed pinion.
1^1 1^1, slow speed gear wheel.
2 2, second speed pinion.
2^2 2^2, second speed gear wheel
3 3, third speed gear wheel.
3^3 3^3, third speed gear wheel.
4 4, fourth speed gear wheel
4^1 4^1, fourth speed gear wheel.

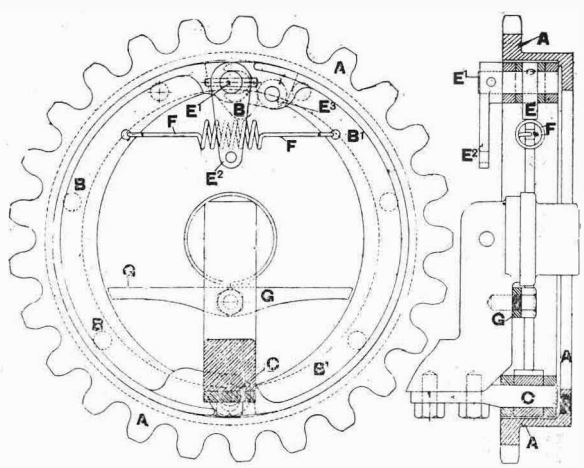


Fig. 9.—Details of the expanding brakes.

A A, steel sprocket wheel.
B B B^1 B^1, expanding segments.
C, pivot on axle to which rotating ends of segments are attached
E, brake cam.
E^1, brake cam spindle.
E^2, cam lever.
E^3, cam roller.
F, brake draw off spring
G G, brake rest.

in a like but reversed manner to the expansion brakes within the chain rings (fig. 9). A glance at the figure and its reference is sufficient to show the manner in which the brake rings B B, B^1 B^1, are expanded against the inner periphery of the chain ring A A and the method adopted for holding the rings clear and free from rattle when not in use.

Returning for a moment to fig. 3, it will be seen that the rear of the gear box and the bearing blocks to the countershaft are all carried on the transverse member of the underframe, which in its turn is hung from the side members of the main frame. The silencer fitted is of unusually large dimensions, being no less than 25in. in diameter. With regard to lubrication, the engine base chambers are fed from a pump lubricator set upon the dashboard, each base chamber being separately served. The camshaft, like the rest of the engine mechanism, depends upon splash lubrication.

The change-speed gear and gearshafts in the gear box are served by a rotating bucket lifting oil from the oil well in the bottom of the gear box to a distributing trap in the top of the case (not shown).

The details of the connecting rod ends, and the inclined steering spindles, are sufficiently explained by the diagrams. In all the details of the Weller car, there is food for much reflection and also congratulation that so ingenious and carefully-designed

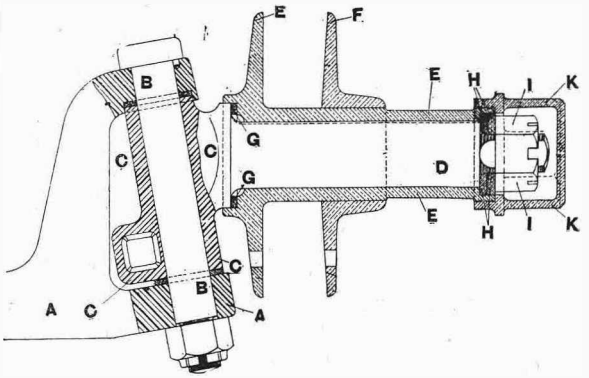
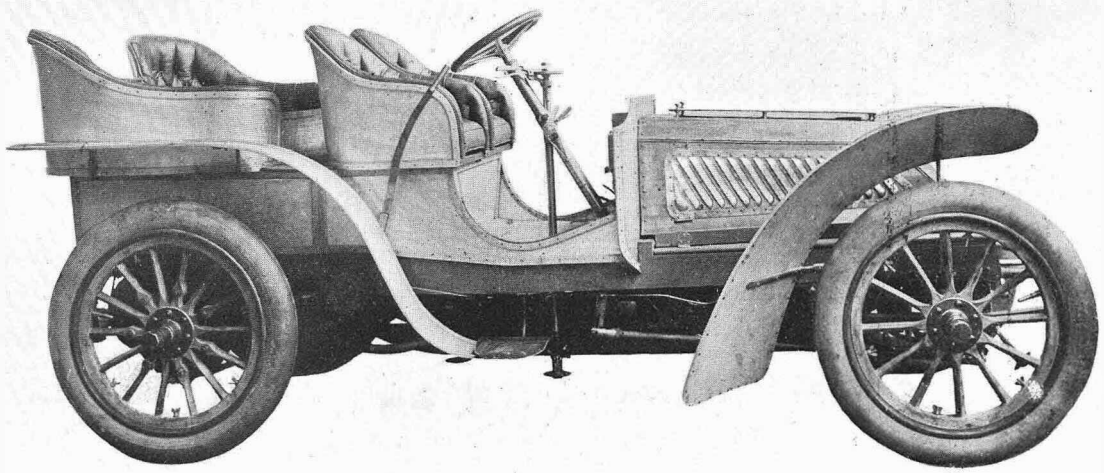


Fig. 10.—Longitudinal section of a steering wheel axle.

A A, front axle.
B B, inclined pivoted pin for steering axle.
C C, steering axle in part section
D, hardened axle.
E E E, steel hub.
F, removable flange of hub.
G G, bearing washer on inner end of the hub.
H H, bearing washers on outer end of the hub
I I, Castle nut holding the hub on the axle.
K K, cap cover the nut I I.

a mechanical automobile economy is the outcome of English brains. We foresee a brilliant future for the Weller car and its talented designer.



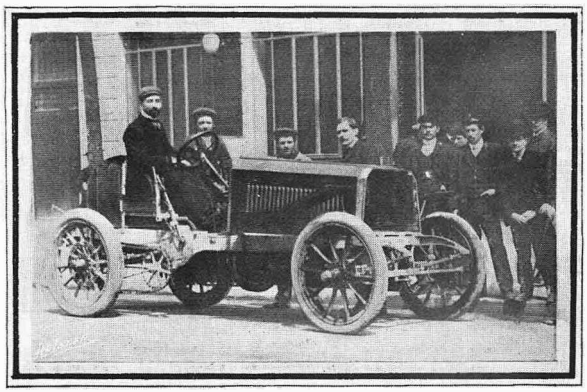
The complete 20 h.p. Weller touring car.

On Friday last there passed through Birmingham a Merryweather motor fire engine on its way to Liverpool, for which brigade it has been built. Since September last the brigade have been in possession of a motor fire tender and chemical engine—an illustration of which was given in *The Autocar* of January 31st—and this was in attendance upon the steamer on its journey from London to Liverpool. Superintendent Thomas, accompanied by several other gentlemen, journeyed to London in the tender from which the chemical engine had been temporarily removed, for the purpose of observing the steamer on its journey north, and in the course of a brief interview he informed us that up to the present they were extremely pleased with its running. In one or two places, where circumstances permitted, the steamer was sent forward at its best speed, and accomplished eighteen miles per hour easily and smoothly. The motive power is obtained from the pumping engine, which for the purpose is disconnected from the pump plungers, and the driving gear put into action. The engine has two equal sized cylinders developing 50 h.p. The boiler is of the usual vertical Merryweather type, heat being supplied by a Clarkson paraffin burner. The oil tank has a capacity of thirty-two gallons, while a hundred gallons of water are carried, sufficient for a distance of ten miles. The total weight of the vehicle is about five tons, and the wheels are shod with Clincher solid tyres, which carry the weight well. We were particularly struck with the smooth running and easy manipulation of the vehicle. In a distance of over ninety miles the party with the fire tender were passed by a large number of autocars and motor cycles, but not a single "panne" was observed.

THE 80 H.P. RACING PANHARD.

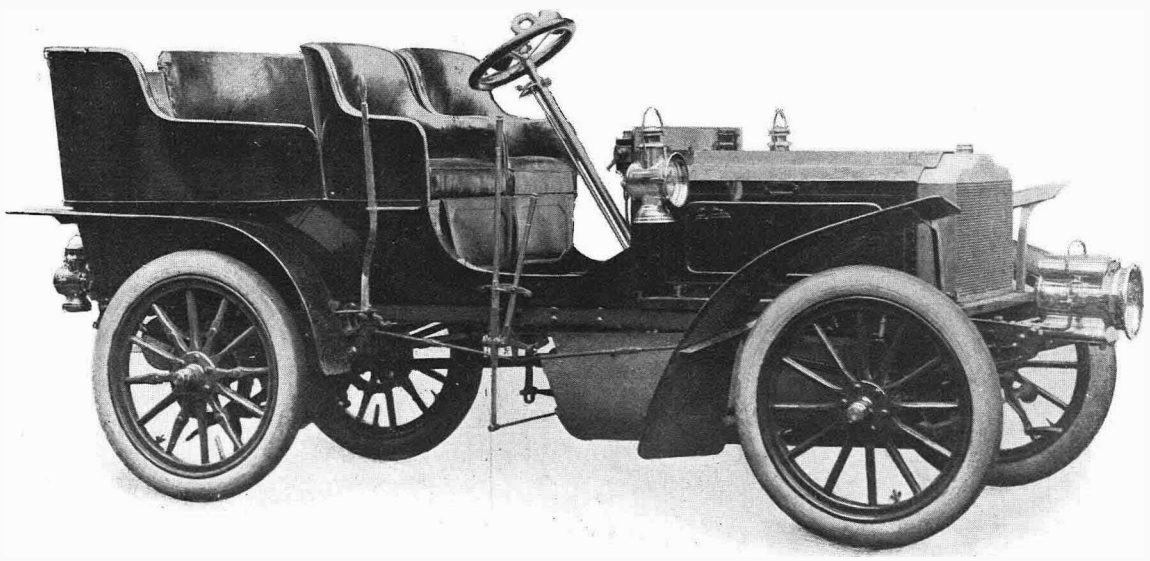
The 80 h.p. Panhard, built by Messrs. Panhard and Levassor for Mr. D. M. Weigel to drive in the Circuit des Ardennes, is a remarkable-looking vehicle, being for the most part motor bonnet, and fitted in rear of the two insignificant seats with two tanks for the carriage of petrol and water. The engine, the bore and stroke of which are unknown, is set with a dip forward, and is slung by strong eyes to transverse rods across the frame, this, as our French correspondent has already stated, being done to allow of a very large-sized flywheel being used. Both induction and exhaust valves are mechanically actuated, the glands for the exhaust lifting rods being of considerable length. The water space around the upper part of the cylinders, which are each separately bolted to the crank chamber, is formed of a convoluted gun-metal sleeve, but the cylinder heads and valve chambers are formed with water spaces of their own. The walls of the pistons are lightened by each having four large holes drilled in it, and the four connecting rods are made hollow for the same reason. There is a long bearing between each crank, and the crank chamber is divided internally into four compartments by diaphragms to retain the oil, which otherwise, owing to the forward tilt, would only serve the front crank bearing. The cylinders are fed from one hot water jacketed Krebs carburetter having one jet only. Each cylinder has its own separate exhaust pipe, delivering into a horizontal exhaust box, which is not a silencer.

The half-time induction shaft has a sliding rod within it, which so acts upon the induction valve cams when drawn out that compression is largely reduced for starting the engine. The flywheel is not coned on its rear face, as usual, but has a parallel rim, on the interior periphery of which are cut four deep slots. The clutch is formed of two members, one running loose on the clutchshaft, with feathers



Mr. D. M. Weigel on the 80 h.p. Panhard which he will drive in the Ardennes Circuit.

engaging with the flywheel slots already mentioned, and coned internally to take the driven member which slides on, but is fast to the clutchshaft in the usual way. The pressed steel frame has been formed with all necessary brackets, and is carried on 920 × 120 driving and 870 × 90 steering wheels.



The latest pattern four cylinder 16 h.p. Argyll. This machine, which is built for Mr. E. E. Pearson, of Hertford, was the first of its type turned out by the Hozier Co. Driven by Mr. Alex. Govan, it made a non-stop run in the Glasgow-London trial the other day, and went right through without losing a single mark. The gearing and axle are of the same design as used in the two-cylinder 10 h.p., but all the parts are strengthened to transmit a higher power. The wheelbase is 7ft. 6in. and gauge 4ft. 3in., while the body is built on very commodious lines. The total weight of the car is 16 cwts., and as the engine will develop 20 h.p. on the brake, it will be understood that it is a remarkably good hill-climber and able to take the majority of up grades without changing speed.

CONTINENTAL NOTES AND NEWS.

The Touring Car.

The discussion which is taking place upon the future of the sport of automobilism is centring around the opinion that if the sport is to be revived it can only be done by giving prominence to the practical type of touring carriage. There, of course, is nothing to be gained by shutting one's eyes to hard facts, and trying to convince the authorities, who are not open to conviction, that such racing as we have had in the past is still possible on the public highways with the huge racing machines which are built specially for speed, and cannot be used for any other purpose. So far as this kind of racing is concerned, the sport is dead, and no one ventures to say that with the terrific speeds attained by these big cars it will be possible to run them except upon roads which to all intents and purposes are motor tracks. In discussing this question, it is necessary, first of all, to make a distinction between racing as a sport and as a test of mechanical efficiency. At one time the sport existed, when the different provincial clubs were in the habit of organising races for private automobilists, who had no other object in view but the glory of winning races; but during the past two years the sport from this exclusive point of view has entirely ceased, and the only events sanctioned have been those organised specially for the benefit of the industry, when makers have been able to test their cars in long-distance speed contests. Of course, the sporting element was still there, and from the public point of view entirely eclipsed the commercial and technical interest of the events; nevertheless, they were organised primarily as a means of testing the cars, and when it was found that these interests could no longer be served by indiscriminate racing it was clear that the authorities would not allow themselves to be influenced in any way by an appeal to their sporting instincts.

Limiting Power.

The question is, therefore, whether anything can be done to secure the use of the roads for speed tests by entirely separating the sport from the industry, the sport itself being confined to enclosed tracks, so that, as it would be no longer under control of the public authorities, automobilists would be able to indulge in racing as much as they pleased, when the sport would be given a recognised status. Racing on the road would be restricted to touring cars—that is to say, chassis with motors designed for their normal load and no more—and, if necessary, the cars would be fitted with their usual carriage bodies, and carry their full complement of passengers. A maximum cylinder capacity would naturally be fixed, according to the load to be transported. In this way the cars would not be driven at dangerous speeds, and as the size of cylinders would be limited, makers would aim at getting as much as possible out of them, with the result that such races would distinctly aid in the development of a highly efficient type of touring car. If the public highways cannot be utilised in this way, then it would appear to be carrying the prohibition a little too far to refuse the clubs permission to hold circular races in parts of the country where a course can be mapped out without taking in towns and villages, such as the one proposed for the Circuit de l'Argonne. The course would be practically a motor track, where every possible precaution could be taken, and, at the same time, as the cars would be designed for every requirement of the tourist, there would be no fear of their attaining excessive speeds, for the simple reason that such speeds are not needed by the average automobilist. The buyer would be able to judge of the speed performance in relation to the power and load, and after the race he could buy the car which most particularly took his fancy, with the certainty that he was getting good value for his money. Such racing is perfectly logical and devoid of danger, and, while doing much to develop the touring car, must at the same time greatly facilitate business. The makers themselves, instead of having costly racing machines on their hands which they have no hope of selling, would enter the latest and most efficient types of touring cars in such races with a very good chance of disposing of them at satisfactory prices. This idea is not a new one, as it was put into force down at Nice last spring, and subsequently by the Automobile Club of Touraine, and though the speeds attained on those occasions were appreciably above the legal limit, there was not the slightest danger, and no complaint was made about the fast driving of the cars.

Trials of Touring Cars.

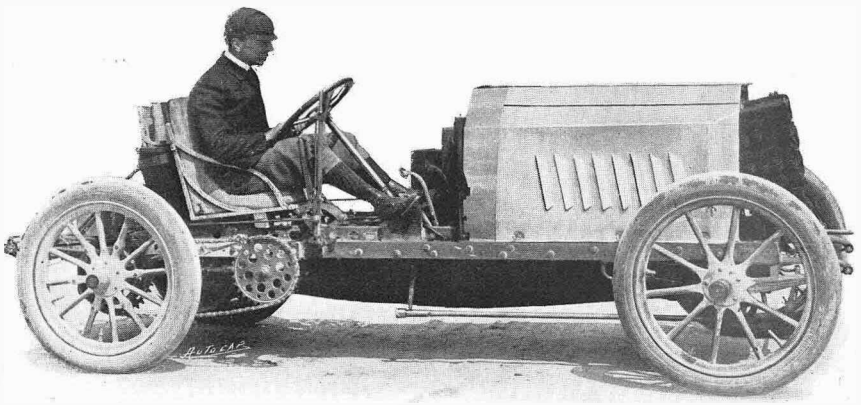
The suppression of racing has compelled clubs who had included speed events in their programmes to replace them with trials of touring cars, and thus the three days' racing at Aix-les-Bains has had to be modified in this way, so that the prohibition of racing has brought with it a certain compensation. It only remains for these trials to be carried out on the lines indicated, so that makers may be induced to enter experimental touring cars, in which they strive after efficiency as represented by the relation of engine power to load, combined with a good average speed. If this be done, we do not think that there would be any difficulty in organising trials of touring cars, in which speed is a recognised factor. So long as the cars are assumed to travel within the legal limit, no permission, of course, is necessary to organise trials; but in tests of this kind the legal limit is something of a fiction, and the local prefects are not disposed to interfere when the speeds are not actually dangerous. It is fairly certain that automobile contests on the public roads will develop upon these lines in the future, but so far as concerns the racing machines, it is obvious that they will have to be confined to enclosed tracks, of which several are now under consideration. The sport will thus be carried on much more actively in the future than it has been in the past, and, seeing that the sport will be unfettered on its own particular tracks, while more attention will be given to the touring vehicle on the road, it does not seem as if the suppression of racing on the highways is altogether an unmixed evil. In fact, automobile racing seems likely to be classed with horse racing in the attractions it offers to the public, who will be able to enjoy the sensation of witnessing the struggle of huge machines without danger to themselves, and under much better conditions than on the road.

The Tarring of Roads.

Among the many lessons impressed upon automobilists by the incidents of the late race is the absolute necessity of doing something to suppress the inconvenience, and sometimes danger, arising from the clouds of dust which follow in the wake of fast cars. This drawback is particularly serious in France, where the stones on first being laid are freely cemented with wet sand, and though the roads are beautifully smooth and hard after being treated by the roller, the binding material oozes up in wet weather, and covers the road with a thick and often greasy mud. Under these conditions, it is easy to imagine the state of things at such a time as the present, when no rain has fallen for weeks. On some roads we have been over recently, the dust is more than an inch thick, and a fast car fairly obliterates the landscape. The tarring of roads has consequently been receiving a great deal of attention, though opinion is divided as to whether the experiments so far made have been altogether satisfactory. When at Nice, we inspected a stretch of tarred road under the rain, and found that, except for the sides where it had not been cut up by the horse traffic, there was little to distinguish the tarred surface from the rest of the road. The other day we had a look at another tarred stretch in the neighbourhood of Paris, at a moment when the absence of rain for some weeks had left the roads generally in a terribly dusty condition. Here again, we noticed that the tarred surface in the middle of the road had been broken up, leaving only the sides intact; but, despite this, the dust, of a dark tint, still seemed to be incorporated with the tar, and was not of such an impalpable character as the dust on the road which had not been treated. Nor was the dust laying anything like so thick, and the particles being heavier, they did not rise so conspicuously on the passage of the car. To a large extent, therefore, the tarring seems to have been successful, though we do not know how long this stretch had been treated, and it is still a question whether the cost of tarring will allow of its being carried out on a considerable scale, in the event of its being found necessary occasionally to repeat the treatment. The experiments in different parts of the country have been lasting for more than twelve months, and are still being continued, several other stretches at Fontainebleau and elsewhere having lately been treated. It is true that at Monte Carlo the tarring process is claimed to be a success, but what is wanted is an impartial report upon the state of the roads that were tarred about a year ago, especially around Paris, where they are subjected to greater variations of weather.

Paris-Madrid Results.

The sporting commission of the A.C. of France have decided that as the race was terminated at Bordeaux by the prohibition of the Government, it is not desirable to make any classification of the cars, and they merely publish the official times of the cars reaching the end of the first stage. For the same reason, none of the prizes are awarded, except those offered to the winning competitors at Bordeaux, the prize of the City of Bordeaux going to Gabriel, the driver of the Mors, and the Alcohol Cup, presented by Prince d'Arenberg, being given to Rigolly, who piloted the 110 h.p. Gobron-Brillie car. The Automobile Club of Spain, however, has announced that the prize it intended offering to the winner at Madrid will be awarded to the Mors of Gabriel. No decision has yet been come to concerning the prize offered by President Loubet, who has been asked if he will hold it over for some future event. It appears that the collapse of the race almost proved fatal for the Royal Automobile Club of Spain, which had been formed specially to carry out arrangements for this event, and the expenses of the organisation and reception were so heavy that the interdiction of the race brought it to the verge of bankruptcy. It is understood that the Spanish club has only been saved from dissolution by the financial assistance given to it by a few French automobilists, as well as by some wealthy members in Spain, who saw that if the club came to an untimely end it would prove disastrous for the automobile movement in the Peninsula.



M. Rougier on the 45 h.p. Turcat-Mery which he drove in the Paris-Madrid. This graphically shows how speed has been made the chief consideration, and to what lengths weight cutting has been carried. As a purely speed machine, it is not without special points of interest.

The Ardennes Circuit.

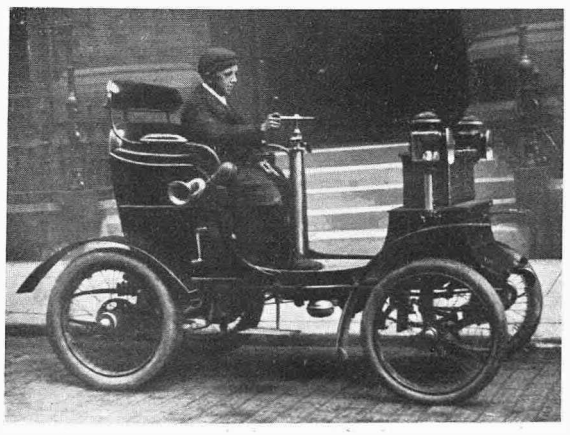
We stated last week that the Circuit des Ardennes was likely to be postponed to allow of a new set of regulations being drawn up, so as to diminish as far as possible the risk of accident. It is now officially announced that, in view of the changed conditions brought about by the Paris-Madrid disaster, all the speed contests on the programme of the Automobile Club of Belgium have been cancelled. This may be taken as meaning that all the races in Belgium have been suppressed, with the exception of the Ardennes Circuit, for which the sporting commission are drawing up a fresh lot of regulations on the lines already indicated—that is to say, the course will be enclosed the whole of the way by ropes, and only a limited number of cars will be allowed to compete, while those that travel so slowly as to necessitate frequent passing will be ordered

to leave the course. The sporting commission is in negotiation with M. Deutsch for oiling the entire course, and thus preventing any danger of accident through dust. If the enterprise is not too expensive, this will be done. The club has come to see that it is not only necessary to make regulations, but also to enforce them; and as a means of keeping touring cars off the track, it will be decreed that any member of a club found driving his vehicle on the course on the day of the race will be fined £20. A refusal to pay this fine will be equivalent to his resignation as a member. As it will take some time to draw up the new regulations and to carry out the measures necessary for the security of the competitors and the public, it is probable that the race will not be held before September. It will be observed that it is the intention of the A.C. of Belgium to convert the Ardennes circular route into a temporary motor track on which nothing will be allowed except a limited number of racing cars, and under these conditions the Belgian Government has informed the organisers that it is quite disposed to sanction the race.

[BY TELEGRAPH.]

At the moment of going to press, we learn that the Ardennes authorities have protested against the postponement of the race. The Belgian Automobile Club held a special meeting, and decided to hold the race on the 22nd and 23rd inst., subject to the new rules being approved in time by the Government.

We understand arrangements are being made by the Colonial authorities for the purchase of one hundred or more motor cars for shipment to the Transvaal and the Orange River Colony. These are to be employed for mail purposes, pending the completion of the various new lines of railway, and they are to be attached to stations on the main line, whence they will take the mails and other postal matter daily over districts which are now being mapped out for new lines.



The police at Preston can scarcely be complimented—one of their latest feats being the stopping of Mr. Walmsley's little three-year old 3½ h.p. De Dion. This has been driven at a uniform and entirely inoffensive pace for the last three years, and at intervals has been used to tow a lawn mower. The boy who drives it is barely in his teens, and has always driven steadily and well. The trap was of the usual order, two policemen skulking behind a hedge and rushing out upon the boy as he drove by.

Correspondence.

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

LEGISLATION.

[2999.]—It appears to me that the best suggestion yet made for controlling autocars if the present speed limit is abolished is that outlined by Colonel Daniell on the occasion of the club run to Hertford, and also referred to by Mr. E. P. Amphlet in your correspondence columns last week. "Black-listing," as suggested by these gentlemen, would, I am sure, have a far greater effect on scorchers—to whom more especially numbering would apply—than the wholesale numbering of cars. If careful and considerate motorists were allowed to drive without numbers on their vehicles, a large number on a car would advertise the fact to both public and police that the driver of that car was not a man to be trusted to consider the feelings or safety of other users of the roads. The fear that his car might be thus placarded and advertised would undoubtedly have a more wholesome effect on the "scorcher" than mere indiscriminate numbering.

G. P. H. DE FREVILLE.

A NATIONAL AUTOMOBILE UNION.

[3000.]—Since writing you on this subject, I have tried to remember how many clubs we have, and can call to mind some twenty. Perhaps you can add to the list. They are Liverpool, Leicester, Wolverhampton, Reading, Yorkshire, Eastern Counties, Nottingham, Norfolk, Sheffield, Manchester, Derby, Lincolnshire, Midland, Scottish, Irish, Kent, South Wales, Cheltenham, Southampton, and Halifax. I think the whole of the motor cycle clubs ought also to be brought in—indeed, we ought to see every automobilist in the proposed federation. I might say that, though an advantage of the present affiliation is that members of affiliated clubs save a guinea when joining the A.C.G.B. and I., the clubs pay half of that—a disadvantage to the club. As for the *Journal* as an organ of the various clubs and a means of getting out the notices, etc., that may be an advantage, but at present the actual benefits of joining are not very much. I should like to read the opinions of others.

G. J. WILKINSON.

MIESSE STEAM CARS.

[3001.]—*Re* enquiry in *The Autocar* of June 6th, I have been using my Miesse car regularly for the past six months for professional purposes.

I drive the car myself, and am very pleased with the smoothness of running, absence of noise, and its hill-climbing powers. In my district there are some fairly stiff hills, which my 6 h.p. Miesse climbs with ease.

My car is a standard 6 h.p., with tonneau body.

J. WINGFIELD, L.R.C.P., L.R.C.S.E.

[3002.]—Referring to the enjury of G. C. W. (Maritzburg) in *The Autocar* of June 6th, I recently purchased a 6 h.p. Miesse car. My house stands on the top of a hill, approached by a rather narrow and awkward drive, with a gradient of one in six with two sharp bends.

My Miesse climbs this drive without difficulty. It has a tonneau body, and is one of the standard 6 h.p. cars.

I may add I decided on a Miesse after personally investigating and trying four other well-known steam cars, and consider the Miesse, on account of its simplicity and hill-climbing powers, preferable to any petrol or steam car I have yet come across. Ordinary paraffin is used for fuel, and the water and fuel tanks are enough for about an eighty miles run.

I might also add that the appearance of the car has met with universal approval, and its smoothness of running and hill-climbing capabilities ought to satisfy the most particular. It is especially free from unpleasant vibration so conspicuous in the petrol engine car. The brake power is particularly efficient.

The whole car is strongly built throughout, and the workmanship first class. All spare parts can be supplied at once from stock.

MECHANICAL ENGINEER.

VALVES.

[3003.]—It may possibly interest your readers to know that Mr. Mark Mayhew's Napier which ran in the Paris-Madrid race was not fitted with the Napier four-port valve. It was fitted with a single-port valve designed by Messrs. C. S. Rolls and Co.

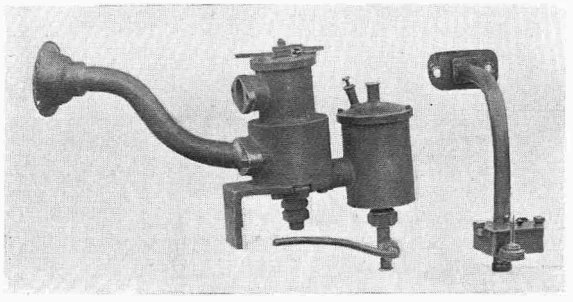
REGINALD A. COBB.

A HOME-MADE CARBURETTER.

[3004.]—I enclose a photograph of two carburetters which I hope with description will interest your readers.

The carburetter on the right is the home made automatic carburetter, weighing seven ounces, and which added from twenty to twenty-five per cent. to the power of the Argyll car to which it was fitted.

The one to the left is the carburetter which was removed



from the car, and which weighed complete ten and a half pounds. On the large carburetter the inlet pipe is shown. On the small carburetter the mixture pipe is shown with a large flange at the upper end for attaching the mixture pipe to a similar flange on the pipe leading to the engine. To the front of the small carburetter is the upper half of a filter and interceptor. On the lid close to the mixture pipe may be seen the small screw for adjusting the strength of the mixture.

There is a flooder to the right of the small petrol tube, and the lid is held on by two thumbscrews.

J. B. DUNLOP.

THE 6 H.P. RENAULT.

[3005.]—I have just purchased a 6 h.p. Renault car, and am anxious to meet a gentleman in Birmingham who drives a similar car who would be kind enough to give me a few words of advice how to clean the engine and keep mechanism in good order.

If any of your readers see this, will they help a novice by communicating with

C. PHIPSON SHOWELL.

GOODYEAR TYRES.

[3006.]—Regarding Mr. A. C. Hills's letter under above heading in last week's issue of *The Autocar*, no reply seems to be necessary except for the fact that in the postscript appears a distinct suggestion that, in giving the distance as 750 miles, I am understating the mileage run.

I may state, therefore, in justice to myself, that the car having previously covered 150 miles test running with test body, was only delivered to me last February.

I started on my Continental tour in March, and the tyres burst during the first ten days in April.

The tyres may have been sent out in June, but your readers will doubtless be able to judge for themselves as to any misstatement in mileage on my part.

As a matter of fact, the mileage record has been very carefully kept, the distance being recorded daily.

It seems a great pity that manufacturers will not accept a plain statement of facts as to their goods, and descend to personalities, just because the experiences of a private individual are not quite favourable to them.

I need not say that I have no particular interest in any one make of tyre over any other, my only object being to find out and use the best and to give others the benefit of my experience, should it be of any use to them.

F. V. WENTWORTH.

THE COST OF UPKEEP.

[3007.]—As before I owned a car I used to search the motor papers for any information as to cost of upkeep, it may interest your readers to hear my experience of the last six months. I have kept a careful record of mileage and all amounts spent on car, which has been used on bad country roads for ordinary country work, with one trip from London and one trip to South Wales and back. The total cost comes to £6 1s. 8d. for 1,843 miles, which is about ¾d. per mile. I have had no repairs to do yet, and bearings and chains show no signs of wear, though doubtless they will need a little attention at the end of another six months. My car is a 7 h.p. Belle, made by Coles, of London, with solid tyres and tonneau body. It is not very fast, but can average fifteen miles an hour on a good road, and I have not met a hill it cannot climb easily. It has never failed me when I wanted to get anywhere, and never delayed me five minutes on the road. I drive myself and give the engine what little attention it needs, and I have a man who washes it like an ordinary carriage. I consider that it is cheaper than a horse and dogcart, and that my £255—which is what the car cost—is well invested.

A MAN OF MODERATE MEANS.

THE GLASGOW TO LONDON NON-STOP RUN.

[3008.]—Our attention has been drawn to the wording of the official report given in your issue of May 23rd on pages 612 and 613.

Besides those cars mentioned in this report as being fitted with Continental tyres, one of the Lanchester Engine Co.'s cars was also fitted with Clipper-Continental tyres, and not the make specified in the report.

Also with regard to cars Nos. 3, 8, and 15, about which no tyre troubles were reported, these were fitted with Clipper-Continentals.

For the CONTINENTAL CAOUTCHOUC AND GUTTAPERCHA CO. (London),

PAUL BRODTMANN.

POLICE NOTICES.

[3009.]—It would not be much trouble for drivers of cars to carry a few, say, ½ lb. bags of red confetti with them. On discovering a police trap, nothing would be easier than to run back a hundred yards or so and empty one of the bags on to the road. This as a warning to drivers would be of more use than the amount of red tape which exists at present.

FAIR PLAY.

RACING.

[3010.]—I have been much astonished on my return from France to read the comments of the English press in regard to the Paris-Madrid race.

The feature which has surprised me the most is that everyone seems to have realised for the first time only that there is, and always has been, an element of danger in motor racing. To read the remarks of many of the writers in various papers, one would almost imagine the Paris-Madrid race to have been the first one in which there was any danger either to the competitors or to the onlookers.

Until this particular race no one had declaimed against motor racing—at least so far as the English press is concerned—and it is interesting to read the comments of many of these papers dealing with the question of the Gordon-Bennett race being held in Ireland, which were written prior to the start of the Paris-Madrid. Why then, because some unfortunate accidents took place, does a howl go forth from the press as to the iniquity of motor racing?

To ascribe the accidents which occurred to the increased speed is, of course, foolish. It matters little whether a car is travelling at fifty miles an hour or seventy; if it collides with another car or the gate of a level crossing it is just as likely to come to grief.

I have only to compare the accident to Mr. Loraine Barrow with that of M. Levassor in 1896, when the latter in driving a car which could not possibly travel at a greater speed than twenty-five miles an hour, swerved to avoid a dog in exactly the same way as Mr. Barrow. The car was upset, and as the result of the accident M. Levassor died soon afterwards—and this took place *six* years ago. I would not say, of course, that fifty miles an hour is not more dangerous than twenty-five, but there is little difference between fifty and eighty.

In the races last year in France in the Circuit du Nord, the Paris-Vienna, and the Circuit des Ardennes, a number of cars were smashed, and whether it was luck or good judgment on the part of the drivers I know not, but anyhow no one was killed, yet a large number of these accidents contained all the elements of a tragedy, with the tragedy left out.

Realising all this it seems particularly peculiar to me that no one seems to have appreciated that motor racing is dangerous, especially to the competitors, and remembering that this danger has always existed I think that the number of accidents which have taken place may be considered as remarkably small. I would not for one moment suggest that motor racing under its existing conditions is possible, but I do suggest that motor racing is under the new rules which have been suggested in France, whereby each car is classified and restrictions are made as to the power of engine and weight of vehicle. An immense benefit would accrue from competitions under these lines, and the evolution of the motor vehicle, which is eventually to come within the reach of every person of moderate means, would be helped along very considerably.

That both drivers and machines in these competitions should have a special qualification is absolutely necessary, as the suicidal policy adopted by the French Club in allowing any monstrosity to compete and anyone to drive, whether he had had previous experience in handling a fast car or not, would not for one moment be tolerated in any other form of sport.

The dangerous element is minimised enormously where the competitors are men of experience and the machines of well-known repute, although, of course, accidents are liable to happen even when these precautions are adopted.

Cycle racing has claimed many more victims than motor racing, although it is carried out on specially built tracks, yet there is no suggestion that cycle racing should be stopped. Nor have I heard any suggestion of an Act to stop steeplechasing, because in this form of sport competitors are sometimes killed.

It seems strange that in this twentieth century, speed, pure and simple, should still be considered a crime. Inconsiderate and dangerous driving, whereby the lives of other users of the road are endangered, should of course be deprecated and punished very severely. At the same time let not the mere fact of travelling faster than a coach be considered a crime in itself.

In conclusion, one plea on behalf of the Gordon-Bennett race in Ireland. In none of the races on the Continent have the conditions been anything like so favourable as those under which the race in Ireland is to take place; picked men, picked cars, a road kept free from the public, and what other precautionary measures are required. Assuming the machines are right, the whole question of possible accidents depends entirely on the drivers, as I have already mentioned, and considering they are the pick of the countries competing, I think it can be safely stated that every measure of precaution has been taken.

CHAS. JARROTT.

THE SPEED FRENZY.

[3011.]—However one may deprecate the strong language used by a horse driver, as reported in yours of the 6th inst, it were idle to deny that there is considerable excuse for same. During twenty-five years' experience on the roads as a cyclist I can safely affirm that no worse specimen of the road hog has come under my notice than the well-to-do gentleman (?) who drives a powerful car at high speeds on the present highways, utterly unsuited for such a purpose.

As a car owner and driver, I wish to enter a strong protest against this frenzy for speed, this utter lack of consideration for the comfort and welfare of others, this contempt for the poorer portion of the community. It was a similar feeling carried to greater extremes which produced the French Revolution, and if we motorists sow the wind we may equally expect to reap the whirlwind.

In your paper you write as if the motorists who drove to the annoyance and discomfort of other road users were in the minority. Such is not my own experience, and I think you would quickly change your opinion if you endeavoured to put yourself in the pedestrian's place and looked at the matter from his standpoint.

There is room for all if mutual consideration is shown, and as much or more enjoyment can be obtained at fifteen as at thirty miles per hour. Personally, I should welcome a limit of twenty or twenty-five miles, which is, I think, the outside limit of safety on any of our present public roads, and should be glad if legislation compelled all cars capable of higher speed to be kept exclusively for private grounds.

Trusting you may be able to find room for this expression of the views of many rational motorists.

H. A. EVANS.

ROAD MAINTENANCE.

[3012.]—I think it is time now that one or two small matters should be attended to by road surveyors for the improvement of roads. Formerly cars were few, now they increase every day. They may be considered the luxury of the rich, but they are also becoming necessaries in many cases. Bicycles also are more common. Even if the rich only use them, the rich pay a very large share of the taxes, and motor cars do not wear the roads. Some day we may expect motor roads, but until we get them surely it is not much to ask where roads are habitually steam-rolled, that firstly, the junction with the old road should not be a sudden descent almost enough sometimes to break an axle; secondly, that where stones are broken alongside the road a screen be provided to prevent the road being strewn with small sharp stones, and big ones too, that no one takes the trouble to scrape together for days; and thirdly, that metal be not placed on roads long before it is rolled in, and, if absolutely necessary, a light at night be fixed. These are not costly matters, and if motorists would only take the trouble to talk civilly to road surveyors and others, and point out the inconvenience, I feel sure that by persistency it could be accomplished, as in more than one instance I have been able by my own endeavours to get it done. Any of these things might cause a bad accident.

G.

SOLID TYRES.

[3013.]—May I be allowed to respond to Mr. Blake's enquiries regarding solid tyres, and, as I have used them now for four years, I have had some experience.

My car is a 10 h.p. Benz, and when I bought it it was fitted with some make of "German solid tyres." These ran some thousands of miles, and eventually wore right down to the iron rim. Being compelled to replace them, I had these wheels fitted with solids by the North British Rubber Company, but these proved quite a failure, as after running some forty or fifty miles, it was not unusual to be almost thrown from the car, and to see one of the tyres bowling into the ditch. This, I think, was owing to them being fitted with canvas, which, after being wet, seemed to rot, and the tyres would spring in several places, causing great jolting. Finding the tyres oftener off than on, I decided to try another make that had been recommended to me—the Sirdar solid tyres—and I may say they have given every satisfaction, and I feel sure cannot fail to satisfy Mr. Blake's requirements.

WILLIAM DUNN.

SLIPSHOD WORK.

[3014.]—A few weeks ago I recommended a friend of mine to purchase an 8 h.p. car of a well-known English make, believing as I did that he would be well served by the firm I recommended. His first trouble arose from the right hand tyre going down. Cause: A 1¼in. screw left in between tube and cover. Second trouble, left side tyre went down. Cause: A leaky valve; but to my surprise when the inner tube was removed it was found that it had on no less than seven different patches. It was an old tube. Again, it was found that the iron rims of the wheels had been painted with the rubber tyres on and there was absolutely no paint inside the rims. The front wheels wobbled badly, the cause being that pins in the connecting rod were one thirty-second of an inch too small. The car was a new one from the works. One wonders what kind of supervision there is in the works of the firm who made the car. The moral to buyers is that they should not take over their cars till they have had the tyres removed from the rims for inspection.

J.C.

THE SPEED LIMIT AND TRADE.

[3015.]—It has been frequently asserted that the present speed limit and the vexatious police persecution consequent thereon are keeping back the industry and acting as a bar to trade, but we do not know that positive proof in substantiation has been adduced. We are now able to supply the deficiency, as a few days since we received a letter from a gentleman in Yorkshire with whom we had been corresponding with a view to business, in which he says: "Have just sold my present car, but do not intend to purchase another until the twelve mile limit is abolished." Comment, we think, is needless.

THE DURYEA COMPANY.

POLICE PERSECUTION IN SURREY.

[3016.]—Why do the police of Surrey, and more particularly in the Ripley district, take so many pains to strain every point of the law against motorists, as witness their action not alone in respect to the speed limit of cars, but also their mean and despicable conduct in summoning motor bicyclists drawing a trailer and exceeding six miles per hour? The constables themselves are a decent lot, not excluding the sergeant in charge, but they are not in love with the work, although thereby currying favour with certain high officials, and perhaps promotion for the more active of the constables.

Captain Sant is the Chief Constable of Surrey; but his superior officer is Captain Terry, the Home Office Inspector of Constabulary, who drives a nice pair of horses, and resides at Ripley House, Ripley. By an extraordinary coincidence this gentleman's residence abuts right on the village street, and on fine Saturday afternoons he can be seen seated above his brick wall (with a view up and down the village) observing the beauties of Nature and other things. C. is N. I enclose my card, and remain

NOT YET FINED.

THE CENTURY TANDEM.

[3017.]—I should be obliged, with your permission, if anyone who has had experience with the above machine will say if, as regards workmanship, reliability, and all-round efficiency, it is equal to, say, an Ariel quad, taking the latter as our highest standard of excellence, as regards such machines.

In common with, I suppose, hundreds of others, I have been waiting the advent of a good and serviceable small car to cost the retail purchaser not more than £150—so far, without success. One or two such machines were made, only to have the prices raised twenty-five per cent. as soon as the public began to ask for them. I take it that if such firms as the De Dion Co., with their great experience and facilities, cannot give us such a car as I speak of, it is almost a hopeless thing for the future of the popularity of the car. That it is possible to make a car at that price I am certain, and I am equally sure that the agent is responsible for the extortionate prices that at present rule and are retarding the progress of the motor car industry.

H. B.

[3018.]—To those who purpose making a first venture in motors I can strongly recommend the Century 5 h.p. tandem because it is easy to work and adjust, and capable of taking two persons up any hill in my neighbourhood. I have had two French quads, a Renault voiturette, and a two-seated Locomobile. The two first I discarded because of their poor hill-climbing powers. The Renault I sold because, being aircooled, it heated, and was very noisy on the low gear (faults which, I understand, have since been cured), and the Locomobile I parted with because of the expense of fuel and the worry of water refills. I now have a Wilson-Pilcher to carry six, which is silent and in every way satisfactory, and the Century tandem for two persons, for station work and as a stand-by. I have a luggage-carrier and basket to take my handbag. The little car romps up nearly all the hills about here on the high speed, and will do forty to forty-eight miles an hour. All the mechanism is visible and easily adjusted, the consumption is low, and if the silencer were duplicated or larger the only fault would be eliminated, as I am fastidious as to noise. What an expense advice of this sort would have saved me during the past five years!

R. C. FLETCHER.

SPEED IN GLOUCESTER.

[3019.]—The driver of a car passing through this city was recently fined £2 and costs for driving past the "Cross" at an unreasonable rate, and for refusing to stop when the policeman held up his hand. It was alleged that he was going at twelve to fourteen miles an hour, and his defence was that he was not going more than six, and that he slowed down when he saw the policeman.

The point is that the magistrates said that they considered four miles an hour quite fast enough to drive past the "Cross," and with this I think most people who know the spot will be inclined to agree.

There is, of course, a rapidly increasing number of cars passing through Gloucester, and I am sorry to say that many of them go through at much too rapid a rate, having regard to the traffic and to the present state of public opinion.

Until now we have had little or no trouble with the police in this district, and I would appeal to visitors to use a little more consideration for the local motorists, who will be the chief sufferers (as being the easiest to catch) in the event of the police being compelled to institute a crusade *à la mode*.

GLADIATOR.

BELT DRIVING.

[3020.]—In these days of high speeds and large powers one is apt to look with scorn on a 16 cwt. *belt-driven car*, but recent experience has convinced me that a car of that description is not to be despised.

A friend of mine bought a car at the Palace Exhibition made by the Pick Co., of Stamford, and being used to cars and a driver of some experience, I have been out with him several times. In fact, I have driven his car some 400 or 500 miles, and I must confess that the smooth running, hill-climbing power, and small amount of trouble it has been have surprised me. I have driven many miles with five people in, and up some stiff hills, without experiencing any trouble, although there are only two speeds. The car will take all moderate gradients at top speed. The 10 h.p., two-cylinder, horizontal engine works very smoothly and has been practically no trouble. I may add that I am in no way interested in the firm or the cars (I have a car of another make myself), but as I have heard some adverse opinions of these cars I felt it my duty to state my experience of them.

J. S. CLIPSON.

PRIMARY BATTERIES.—COMPRESSION.

[3021.]—I should be glad to know if any of your readers, cognisant of electric matters, could give me any information on the use of a Daniell cell for motor car. As far as I can ascertain, to procure a steady current of electricity in the above-named cell, it is only necessary to keep it well supplied with zinc, copper sulphate, and water. Surely if this is the case, could we not produce our own electricity?

In this battery a plate of copper is immersed in a solution of copper sulphate ($CuSO_4$), which is decomposed by the hydrogen forming sulphuric acid (H_2SO_4), thus eliminating itself, and leaving a pure and fresh copper deposit (Cu) on the copper plate. In the first models of this cell plates with their solutions were separated by a porous partition. I understand that sawdust, moistened with the solutions, is sometimes used for this purpose, where fluids cannot be employed as in the gravity Daniell.

If this is feasible, would there be any difficulty in using a specially-constructed Daniell cell for the electro-catalytic igniter instead of an accumulator?

I would also like to know if there is any instrument or method whereby the compression of a working cylinder is measured? An instrument of this sort with a dial could be screwed in place of the compression tap, or could form one with it. This would enable us to see at a glance how the compression was working. We have amperemeters, galvanometers, voltometers, manometers, etc., but nothing that I know of in the practical line wherewith to measure the compression of our cylinders.

It already greatly simplifies matters that one can see an exterior spark with the double jump sparking plug lately invented. If, in addition to this, one can see the working compression of each cylinder, half the time and trouble in locating the faulty part of the mechanism will be saved. I need hardly enlarge on the boom this will be to the motorist.

J. WOOD.

CYLINDER COOLING.

[3022.]—I have been interested to read the views of your correspondents, as they have appeared from time to time, on the subject of the cooling of motors, but so far I have not seen that anyone has touched what seems to me to be the key of the matter, and that is, that after all it is the air that has to be relied on for the ultimate cooling of the engine.

In the ordinary arrangement, the heat given off by the cylinder walls is absorbed by the water contained in the cooling jacket, the water then is passed, either by means of a pump or by natural circulation, through a radiator, in its passage through which it is caused to give up its heat to the air, and is then returned to the cylinder jacket to undergo the same cycle of work again. It is thus clear that, as I have stated, the ultimate work of getting rid of the superfluous heat is done by the air, which cools the radiators.

I consider, therefore, that the problem that has to be solved is, how best to apply air as a cooling medium, and I think it may be done without the intervention of a water jacket.

Much of my own experience has been with a small air-cooled motor, fitted to the 3½ h.p. New Orleans voiturette. The working of this engine convinces me that direct air cooling is perfectly feasible on any motor, and that it depends entirely on the method by which it is carried out as to whether it is successful or not.

I would suggest the following lines on which I think it might be worth making a trial.

The cylinder should consist of the thinnest possible steel shell, having very wide copper gills brazed to it one-eighth of an inch apart, and standing out not less than 1½in. from its surface. In this way, a cylinder of, for example, 4in. bore by 5in. stroke, could be given about 800 square inches of radiating surface. Fitting over the radiators and under the bonnet should be a metal hood or cowl, with a circular opening in front, containing a high speed fan driven from the motor shaft, as fitted on the present honeycomb radiators, and with a similar opening behind the cylinder fitted with a flue to convey the heated air away below the car, discharging at the rear.

In this way a very large volume of air would be forced past the cylinder radiators, keeping them at above the proper temperature for the efficient working of the engine.

The power required to drive the fan would be no more than is needed for the pumps and the cooling fan at present fitted, while the freedom from pump and circulation troubles, to say nothing of water supply, or of frozen water pipes in winter, would be no mean advantage.

In my own experience I have never known the small 3½ h.p. Orleans engine, which is fitted with a very small fan, and in which the air current is by no means effectively applied, to overheat appreciably as the result of its air-cooling arrangements. Incidentally, the air blast being delivered at the rear of the car might help to solve the dust difficulty.

"YORKSHIREMAN."

SIDE SLIP.

[3023.]—Referring to J.B.'s remarks in *The Autocar* of May 23rd, page 606, *re* side slip: There would not be much difficulty in arranging the *rear* wheels of a car so as to make them the *steering wheels*, to swivel on a centre, actuated on rods or chain from the present steering column. The existing front wheel axle could be made a fixture as regards steering, and the engine made to drive the front wheels only; the steering, of course, done by the back wheels only. Almost any existing car could be thus converted at a minimum of expense.

Do you not think that if this arrangement was really as efficient as your correspondent makes out it would have been adopted long ago by makers of motor cars, cycles, and traction engines? All these adopt the well known front steering, no doubt for some good reason, the advantages of which counterbalance its disadvantages.

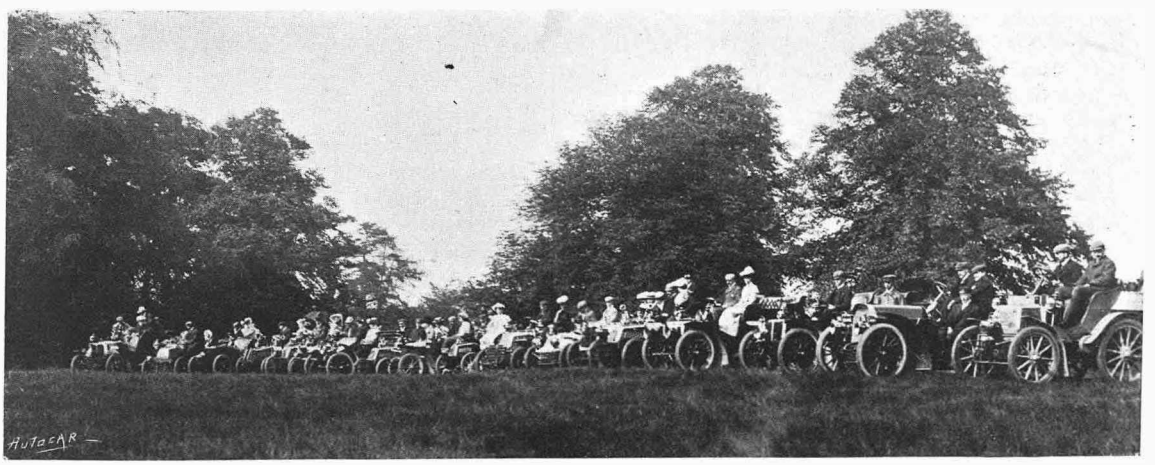
ENGINEER.

SUMMARY OF SOME OTHER CORRESPONDENCE.

THE PARIS-MADRID RACE.—The Continental Caoutchouc and Guttapercha Company write us in reference to the comment published under this heading last week. They maintain their statement that Mr. Charles Jarrott was first to arrive at Bordeaux on his 45 h.p. De Dietrich car in the heavy car class was wholly true. When the announcement was penned no times had been published. They wish it to be clearly understood that Mr. Jarrott actually did third fastest time in his class, as they are anxious that any statement made in their announcement should not be misunderstood. This we know to be consistent with the policy of the Continental company. Mr. Jarrott has also written in regard to a similar statement, pointing out that till the times had been revised by the French Automobile Club officials it was impossible to state definitely how the cars were actually placed, and that for the moment the one thing which was certain was the order of their arrival at Bordeaux.

QUIET TRAVELLING.—For the Société Anonyme des Automobiles Peugeot, Mr. C. Friswell writes that he is fully convinced of the correctness of our note last week expressing the opinion that the car of the future will be a moderate paced vehicle and comfortable at low speeds as well as at higher velocities. He tells us that the Peugeot Co. have been giving special attention to these requirements and to the building of machines which will go at a reasonable pace, climb hills on their high gears, run quietly, and at the same time as nearly as possible automatically, so far as lubrication and water cooling are concerned. Their latest achievement is an automatic air feed on the carburetter which still further enhances the smoothness of running and economy of fuel.

[A number of other letters on various subjects are unavoidably held over till space permits their publication.—ED.]



The Manchester Automobile Club meet at Astle Hall, the residence of Colonel Dixon, Chairman of the Cheshire County Council. The photograph from which our illustration is reproduced was kindly placed at our disposal by Mr. H. M. Lowther. It was unfortunately crowded out of our last issue.

Flashes.

Time's whirligig. A member of the *Kingston* County Bench was fined at Dorking recently for driving an autocar above the twelve miles an hour limit.

* * *

From Messrs. Phillips, Ormonde, and Co., Melbourne, we learn that a 6 h.p. De Dion voiturette recently made a good record for Australian bush roads. This vehicle traversed the distance of five hundred and ninety-six miles between Melbourne and Adelaide in thirty-eight hours running time, consuming only twenty-three gallons of petrol. It cost only 46s. for the trip. The ninety miles desert between Meningie and Kingston, though the car weighed slightly over seven hundredweights, was comparatively easily negotiated by the driver and his friend, Messrs. B. Thompson and A. Day, of Adelaide.

* * *

Much dissatisfaction has been expressed through the columns of the Rickmansworth press at the inadequate service provided between that place and Watford by the railway company, and a suggestion has been thrown out that a motor car service should be established to overcome the difficulty. One of our readers would be willing to find all working expenses during the trial period of a couple of cars, and would probably interest himself further in the scheme, in the event of it proving successful, as there is every reason to believe it would. We shall be pleased to put our correspondent in communication with any others interested in the subject.

* * *

From the booklet issued by the Continental Caoutchouc and Guttapercha Co., "Motor Tyres, How to Treat and Repair Them," we notice that a recommendation is given to every driver to carry at least one back and one front spare tube with him. Great care should be taken with these spare inner tubes, as they are easily damaged, either by nipping or nails, etc. Many drivers have the unfortunate habit of keeping their spare tubes in the tool box, which is the very worst place in which they could put them, as the moving of the tools, etc., when the car is in motion, may easily damage the tubes. To avoid this, the Continental Caoutchouc and Guttapercha Co. have placed on the market a special waterproof bag, as shown in the illustration, made to hold two tubes, which are placed therein deflated and rolled up. This bag looks very neat, and as it takes up very little space we would recommend every driver to invest in one or two, as they will save him much trouble and annoyance.

"THE AUTOCAR" DIARY.

June 13.—Wolverhampton and District. Drive to Rudyard.
,, 13.—Cheltenham and Gloucestershire A.C. Week end Drive to Stow-on-the Wold and Malmesbury.
,, 13.—Scottish A.C. Western Section. Drive to Tarbet.
,, 13.—Manchester A.C. Drive to Nantwich.
,, 13.—A.C.G.B & I Gymkhana at Ranelagh Club.
,, 13. Sheffield A.C. Drive to Wentworth Castle.
,, 15-20.—International Congress on Automobilism at Paris.
,, 18. German Agricultural Society Heavy Vehicle Trials (Hanover).
,, 18.—Mont-Ventoux Hill-climb & Water Consumption Trial.
,, 18-20.—A. C. de France. Three Days' Fête.
,, 18-28. Frankfort Automobile Exhibition.
,, 20.—Kent A.C. Drive to Charing.
,, 20. Midland A.C. Drive to Moor Court, Oakamoor.
,, 25-July 2.—Aix les Bains Automobile Week
,, 27. Manchester A.C. Week-end drive to Llangollen.
,, 27.—Sheffield A.C. Drive to the Snake.
July 2 —**Gordon-Bennett Race.**
,, 2-15.—Irish Fortnight
,, 4 —Wolverhampton and District. Drive to Worcester.

An audacious theft of an autocar belonging to a doctor is reported from Paris. No trace of the car, which is valued at £400, has been discovered.

* * *

We are informed that the Locomobile Company of Great Britain, Ltd., have now been appointed sole agents for the Oldsmobile car in Great Britain. After this date no Oldsmobiles will be shipped to England except to the Locomobile Company of Great Britain. The price of the car, fitted with the new 1903 carburetter, will be £150 nett.

* * *

Judy has an excellent cartoon in its issue of June 10th. Mrs. Railway is shown as an aged person looking at Miss Motor Car, who is apparently something less than sweet seventeen. To her Mrs. Railway says, "Say you're fast, do they? You ought to have heard what they said about me when I was your age." On the wall a portrait is shown which bears a suspicious resemblance to the Prime Minister; but it cannot be he, as underneath we find the legend, "The President of the Scorcher Motor Club."

* * *

The motor car has been held responsible for many ills that flesh is heir to, but the greatest of these has been revealed during a meeting of the directors of the Highland and Agricultural Society. A member said one of his cattle was frightened by a motor car, and falling over a precipice, broke a leg. As a result, the animal was condemned for tuberculosis. Truly, a wonderful development.

* * *

At the annual show of the Ormskirk and Southport Agricultural Society, a special feature was made of a motor car driving competition, in which nearly a dozen cars took part. At the luncheon, Mr. T. T. Scarisbrick (the Mayor of Southport and President of the Society) said in the motor car we had represented the spirit and progress of the age, and that so far as its use for agricultural purposes was concerned it had come to stay.

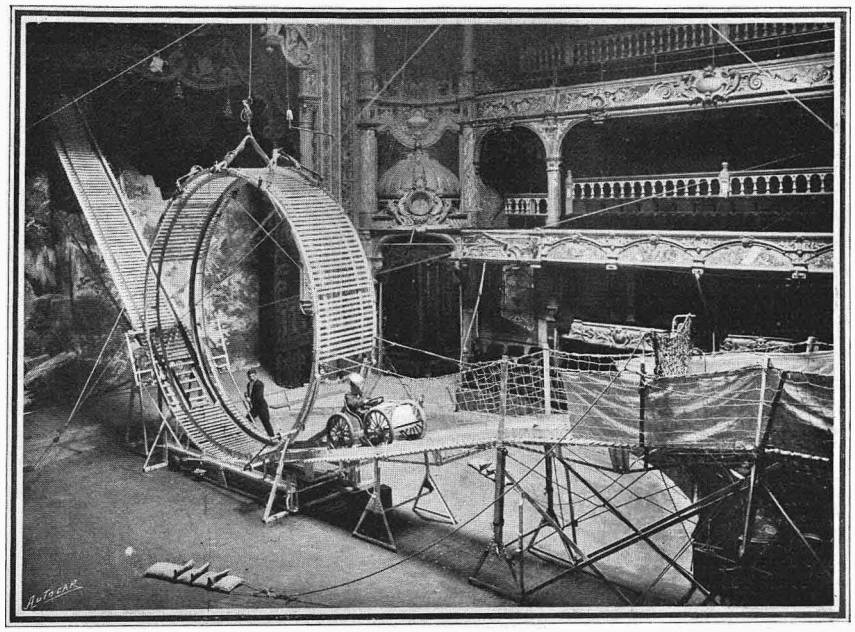
* * *

In a fortnight's time Messrs. Frank F. Wellington, Ltd., inform us they will be opening their new showrooms at 151 and 153, Wardour Street, Oxford Street, their lease at 36, St. George's Square, having expired. They will be exhibiting at these showrooms the Brooke car, Panhards, Clément, and other well-known makes.

* * *

As we are going to press, we learn that the Mercedes factory at Canstatt, Germany, has been destroyed by fire, together with all the finished and partly finished cars, including the Gordon-Bennett racing cars. The damage is estimated at over £100,000. The company state that they still hope to have some cars ready for the Gordon-Bennett race.

A well-known artist whose artistic abilities are only equalled by his musical talents, and who has lately purchased a 10 h.p. Panhard from the British Automobile Commercial Syndicate, has had his sensitive ear so offended by the discordant blare of the average motor horn that he has requested the firm named to procure him one which shall upon pressure of its bulb produce the tone of a chord in which E♭ predominates. Horns were offered him the sounds of which varied from the bleating of a sheep to something approaching the roar of a bull; but nought but the tone of his selected chord, the effect of which was a kind of cadenced wail, would serve. We understand that the staff at 98, Long Acre, are now taking lessons in harmonics, with a view to tuning up exhaust boxes. We learn incidentally that M. André A. Godin has been able to supply a horn furnished with a reed which gives the tone desired. The example of the great artist might well be followed, for, as a rule, the sounds emitted by motor hooters do not add to the joy and pleasure of nations. Those who visited last winter's motor shows still have in their ears the sounds of some of those horns, the continual sounding of which appeared to be the sole object of some of the junior stand attendants.



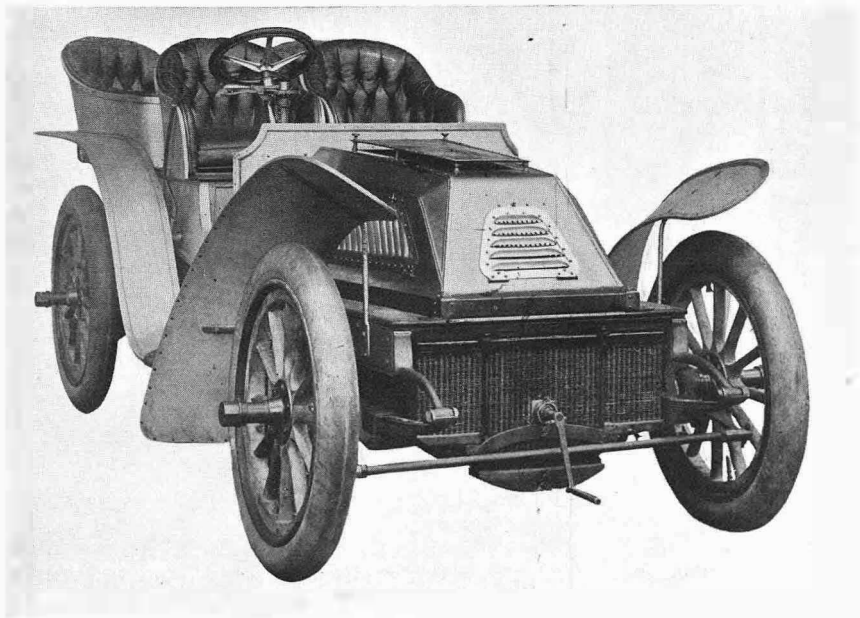
Looping the loop at the London Hippodrome. The latest method of using an autocar, of peculiar construction it is true, for purposes for which it was never intended. The occupant of the vehicle starts high up on the stage, rushes through a sliding opening into the circle, while the man shown standing at the lever closes this door while she is in the loop, and opens the one opposite for her exit. At the moment the photograph was taken this second trap door has just been opened, and the car is rushing into a net. It takes some twenty minutes to erect the loop arrangement.

Our parody on Mr. W. E. Henley's "Song of Speed" is from the pen of a military automobilist.

Reverting to the petrol question, Messrs. Strickland and Co., the motor engineers of Teddington, write us that they stock petrol at .680 gravity, supplied by Messrs. Bowley, of Battersea. This they have used with other makes of spirit while they also were at .680, without any trouble, and Messrs. Strickland have supplied it to many motorists, who have never made any complaints concerning it.

* * *

Automobilists leaving or entering London by the Castelnau and Hammersmith Bridge, now the most automobile-frequented route from town, will find the Ranelagh Motor Co.'s newly-opened depot at 6, Ranelagh Parade, Barnes, nearly opposite the entrance to the Ranelagh Club, a very convenient place for obtaining spirit, oil, or having any adjustments or repairs which they may desire effected. The manager, Mr. Steele, has had considerable experience with all sorts and conditions of automobiles during the past five years, and, moreover, is a tyre expert.



A front view of the 20 h.p. Weller car described on page 688.

One day last week an unusual spectacle was witnessed in a Birmingham street—that of an autocar loaded up with household furniture, evidently a house removal.

* * *

An interesting competition for automobile boats is being organised by the French journal, the *Yacht*, with the co-operation of M. G. de Lafrete and M. Alexandre Leroy. This contest will take place in the course of next month on the stretch of the Seine between Passy and Meulan.

* * *

Valencia has boasted for the last ten years a double line of steel plates over which all sorts of vehicles have run their wheels, gaining, of course, in speed and ease. This track was laid as an experiment, and as at the end of the ten years the rails are in perfect condition, and have, moreover, required no repairs, the steel track is to be prolonged, and a loan is to be asked for to provide Valencia with similar advantages in its principal streets.

* * *

The hill-climbing competitions arranged by the Midland A.C. for the 13th inst., and the Manchester A.C. for the 20th inst., have been postponed.

* * *

The Royal Automobile Club of Portugal has just chosen its committee. The president will be H.M. the King of Portugal; vice-president of honour, H.R.H. Prince Dom Luiz Filippe; perpetual president, H.H. Dom Alphonso; vice-presidents, Jacquitto Parreira and Zeferino Candido; secretaries, Jeronimo Montéro and Joas Cravero Lopes d'Oliveira.

* * *

We have before now referred to the handiness of the Century tandem. A good proof of it has just been given by some gold-mining engineers in Ashanti who have bought one of these machines to use in that roadless region. The only tracks are made by the feet of the natives, and even the smallest voiturette of the side-by-side type is too wide and insufficiently powerful to tackle some of the very steep grades, which, of course, run straight over the face of the country without any attempt at engineering. The Century which is being sent out for the use of the mining engineers is fitted with a canopy to protect the occupants from the sun, so will be quite an uncommon-looking machine.

THE MOTOR CAR.

(After the manner of W. E. Henley).

Hi! Mister Editor,
I am a motorist
Who can write poetry
Just like the other chap
Send you a bucketful;
Print in *The Autocar*.

Capital newspaper;
Full of all *sorts* of "tips,"
Only lacks poetry
Made by a genius.
This will be up-to-date;
Knock out the other man.

Here comes the motor car.
Where are we going to?
Off to Northumberland.
Ram in the petrol cans,
Bang in the luncheon box,
Cram in some wine bottles,
Oh! *what* a day we'll have!

Open the throttle valve,
Gear of the speediest;
Whoop! goes the motor horn,
Now we shall not be long.
Look at the dust she makes
(Bump-et-tee, thump-et-tee).

Oh! what a *frightful* bang!!
Thought some one shot at us;
Only a tyre burst
(Keep up the rhythm, please).
Stuff in some cotton waste,
Bind an old rope around;
Steer for some motor works.

Bump-et-tee, lump-et-tee,
Put in another tube;
Here we go off again,
Hurrah for motoring!
Flying like lightning,
Even as gods are we.

Names and addresses, please?
Hark to the constable;
Stout and perspiring he,
Look at his turnip watch.
He is too much for us;
He is an autocrat.
Better go home again.

What is the matter *now?*
Something dropped out of her;
Only the gear-box,
Oh! great Jerusalem!!
(Nothing like motoring
Ten miles from anywhere).

Shoved by some ragged boys,
Towed by a spavined horse;
Get home at 3 a.m.
(Who'll buy a motor car?)

What do you think of it?
Isn't it beautiful?
Something like Tennyson
(Hope you will pay for it).

C. M.

An international motor car race from Moscow to St. Petersburg, a distance of four hundred and thirty miles, is announced to take place early in August.

* * *

An automobile race of three hundred and fifty kilometres will take place at Udino, in Italy, on the occasion of the Artistic and Industrial Exhibition. The Italian cup, presented by the Minister of Public Works, and at present held by Prince Strozzi, will be competed for at the same time.

* * *

Viscount Bovne has just ordered a 22 h.p. Daimler with limousine body. The car will be practically identical with the one recently delivered to Mr. Henry White, of the United States Embassy.

* * *

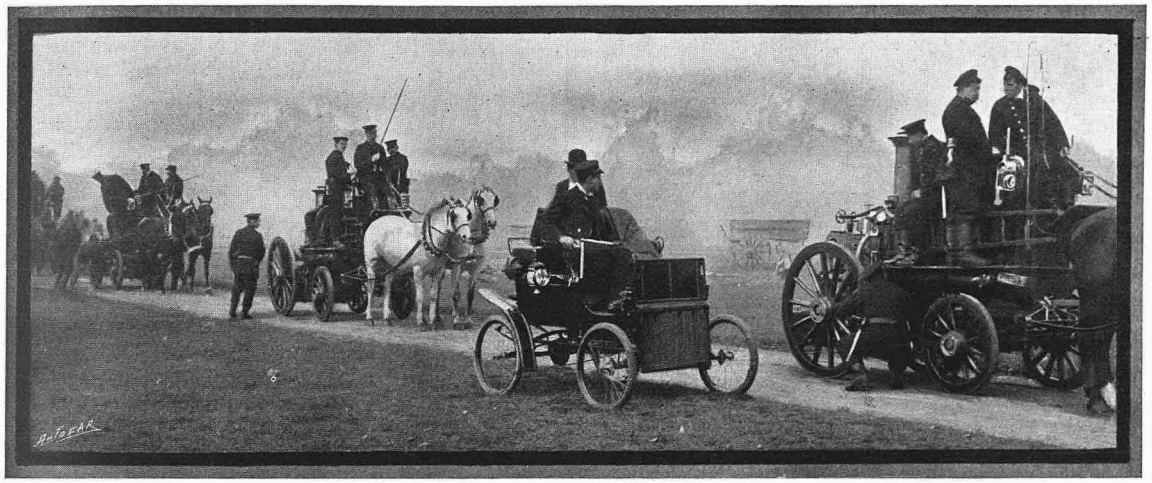
The Star racing car will compete in the forthcoming motor race in the Ardennes. Mr. Joe Lisle will drive it, and is leaving for the Continent this week to acquaint himself thoroughly with the course.

* * *

The Minister of Public Works in France is studying a project for the unification of automobile signals. The Association General Automobile would in this case establish uniform signals all over the French routes, which would supply every indication with regard to hills, turns, embankments, etc., in a plain and visible manner. M. Marejouls, who has already done so much for automobilism, has completely organised the method by which this system could be adopted for the French national roads, and is in active correspondence with the Minister of Public Works on this subject.

* * *

The twentieth report has just been issued, as a Parliamentary Paper, of the Comptroller General of Patents, Designs, and Trade Marks, for the year 1902, from which it appears that the total number of inventions for motors specially adapted for road vehicles remains about stationary, but the number of steam engines so adapted has increased, while electromotors have decreased by about the same number. A noteworthy diminution is shown in class for vehicle wheels, owing to a diminution in the number of inventions for pneumatic and other tyres.



Lieut. Sladen inspecting a section of the Metropolitan Fire Bigade from the seat of his Locomobile steam car.

An enthusiastic motorist, engineer, and competent driver, who is exceedingly anxious to take part in the Irish fortnight, tells us that he would be pleased to take charge of a car without salary, so long as out-of-pocket expenses were paid.

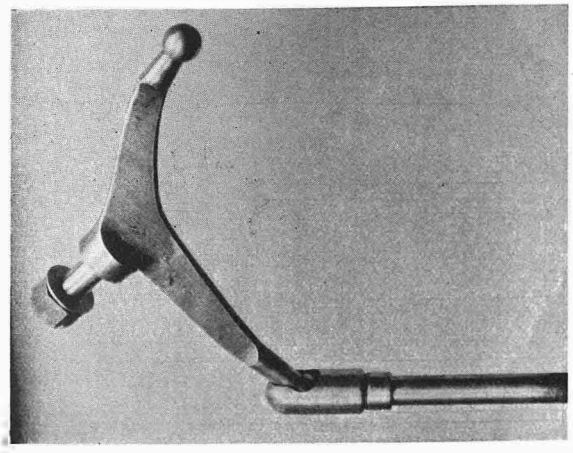
* * *

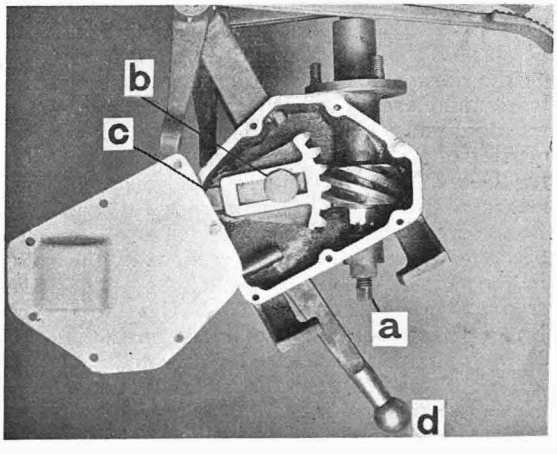
"Wrinkles on the Management of the Darracq Cars" is a very handy little book which has been written by Lieut. W. G. Windham. As the author explains, he gives wrinkles, and not rules, which have been gained by personal experience, and which relate to the management of the Darracq car. Though chiefly directed to the 6½ h.p. and 9 h.p. engines, they apply broadly to the others, including the new 8 h.p. single-cylinder and the 9 h.p. and 12 h.p. two-cylinder cars. The author also explains the differences between the 1901-1902-1903 patterns, and this is very useful to those who own these cars. Although written for the Darracq, there are many sound little practical tips which are of use and of interest to the owners of other makes of cars. The book may be obtained from Barnes, 6, Battersea Rise, London.

A very interesting illustrated catalogue has been published by Messrs. Dennis Bros., Ltd., of Guildford. Some excellent illustrations of the engine and mechanism are given, and the specification of each pattern is, as it should be, very full, so that it is possible to get a really good idea of the car one contemplates without actually seeing it. A useful table of speeds is also given in miles and kilometres per hour, which should be found very useful to the visitors to the Gordon-Bennett race.

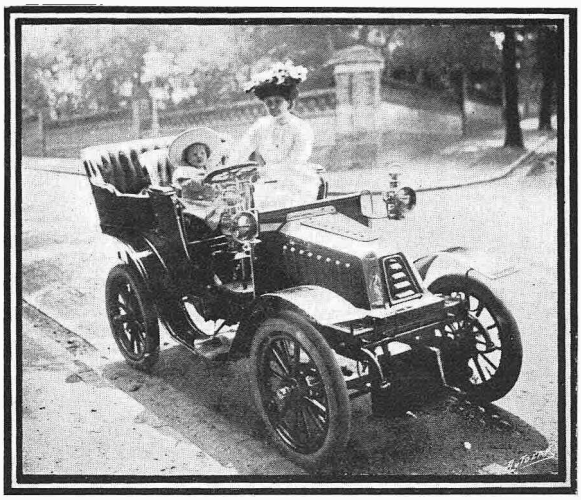
* * *

The Lanchester car which we illustrated last week at Hertford making brake trials against the horse-carriage, took a very important part in the demonstrations before the Hertford Town Council, as, owing to its special form of tiller steering, it made a remarkable demonstration in the ease of manœuvring and figure eight tests, while, so far as we saw, it made the shortest stops in the brake tests. This is somewhat significant when it is remembered that there are no pedal brakes on the Lanchester. The brakes are metal to metal, but are so constructed that oil does not affect their efficiency.





The above illustrations show the details of the Napier adjustable steering gear. The view on the right shows the steering gear box with the cover removed. Longitudinal slackness in the steering column is taken up by the hardened pin *a*, which is secured by a lock-nut, while adjustment between worm and segment is maintained by sliding the latter part along the arm *c*, to take up the slackness, it being held in position by the bolt *b*. The connections to the steering arm on the wheel, seen on the left, are from the ball-jointed arm *d* to the shorter of the two arms shown on the left. The steering radius is confined by means of two hardened stops placed in the steering gear box. When the wheel lock reaches its limits, the segment comes up against one or the other of these stops and prevents further movement, thus preserving the tyres from the danger of contact with the frame. There need never be any backlash or rattle in Napier steering, as adjustment is provided for every working part



A good motorist is proud of his car, and a good parent of his child, so that nothing is more natural than that he should photograph them together at the first opportunity when he happens to be the happy owner of both. This Mr L. M. Waterhouse, of Surbiton, is, and he sends us a photograph which we reproduce showing his two-year old son at the wheel of his 8 h.p. De Dion.

When General Baden-Powell was in Hampshire last week, he was driven about in a car belonging to the Imperial Motor Works, of Lyndhurst. The general expressed himself as much pleased with the running of the vehicle.

* * *

An automobilist passing through Coventry speaks very highly of Mr. Broadhurst, an ironmonger in Smithford Street, which is the main road from Birmingham to London. He had a leak in his petrol tank, and, although the ironmonger had no men at work, he placed his shop at the disposal of the automobilist, and gave him every assistance, so that he was able to effect his repair and continue his holiday trip. For this he was charged sixpence. He thinks this is worthy of note, as, before his tour was completed, he was charged ten shillings for the repair of a puncture.

* * *

Police traps are in no sense on the decrease, and amongst those notified to us are the following in Yorkshire. Between the ninth and tenth mile from Leeds; on the Selby Road there are two traps, both on the down grade; on the same road, between the tenth and eleventh milestones, on the downhill, past the Boot and Shoe publichouse, there is a measured quarter of a mile; nearer Leeds, between the Gaping Goose Inn and Garforth Bridge are two more measured distances; while between Addingham and Bolton Abbey the whole of the distance is measured out, and worked in different sections by the police; in the neighbourhood of Settle, the police have a trap extending from the Lych Gate to the river bridge; further south, the police on both sides of Newbury have been supplied with watches, and traps are established between Theale and Thatcham, and Newbury and Hungerford. Between the top of Godstone Hill and Caterham, and on the Carshalton Road, between Sutton and Carshalton, several motorists have been stopped. "A farmer and friend of motorists" warns readers of a trap between the second and third milestones on the Brighton Road from Lewes, near the Newmarket Inn.

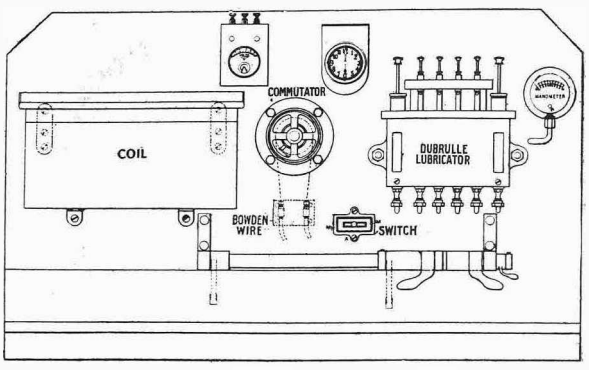
The ignition which we described on May 13th, page 640, which simplifies the wiring very considerably, has been used, we understand, by the Pick Motor Co., of Stamford, for the last eighteen months. It goes without saying that it has given them satisfaction, as they have continued to use it.

* * *

A handy little court plaster case is being issued by Messrs. Lucas, Ltd. It is made of some form of celluloid, and takes up practically no space at all in the pocket. Speaking of this firm reminds us that their list of motoralities is exceedingly good. It commences with their acetylene lamps of the largest size, deals with lamps of all kinds, and then includes many useful sundries in the way of horns, pumps, tyre removers, jacks, oilers, lubricators, and many other sundries of use to automobilists.

* * *

We recently drew attention to the wonderful turn of speed developed by a cycling member of the Leeds Police Force, who had a rooted objection to motorists, and we now learn of other startling feats accomplished by members of the same force. During the evidence in a motor car case, it transpired that a constable had estimated the number of seconds in which the car travelled from one point to another, not by means of a watch, but by counting imaginary seconds. He failed to convince the Bench that it was the most reliable medium for checking the pace of motor cars, and they dismissed the case. In another instance, a further unique method of timing was revealed. A man is stationed at one end of a 220 yards stretch, and a second officer at the other. The first man intently reads a newspaper until "something fast is coming," when he drops the paper as a signal. When the motor gets clear of officer No. 2, he stops his watch, and the two proceed to work out a mathematical problem, which may or may not be to the benefit of the motorist, according to the skill of the mathematicians. Were it not for the fact that the unsympathetic Bench refused to convict, we should have commended this timing method to those responsible for the arrangements of the Gordon-Bennett. It would have obviated the necessity for employing synchronised watches.



The instrument, or dashboard of the Chainless car. The maker, Mr Selbach, believes in placing all the indicating instruments and such parts as should be under the immediate observation of the driver in the most convenient place possible. It will be seen from the above that the commutator, coil switch, and voltmeter, as well as the lubricator and manometer, are so mounted, in addition to a small timepiece.

MOTOR VAN COMPETITION IN AMERICA.

Victory of a British Vehicle.

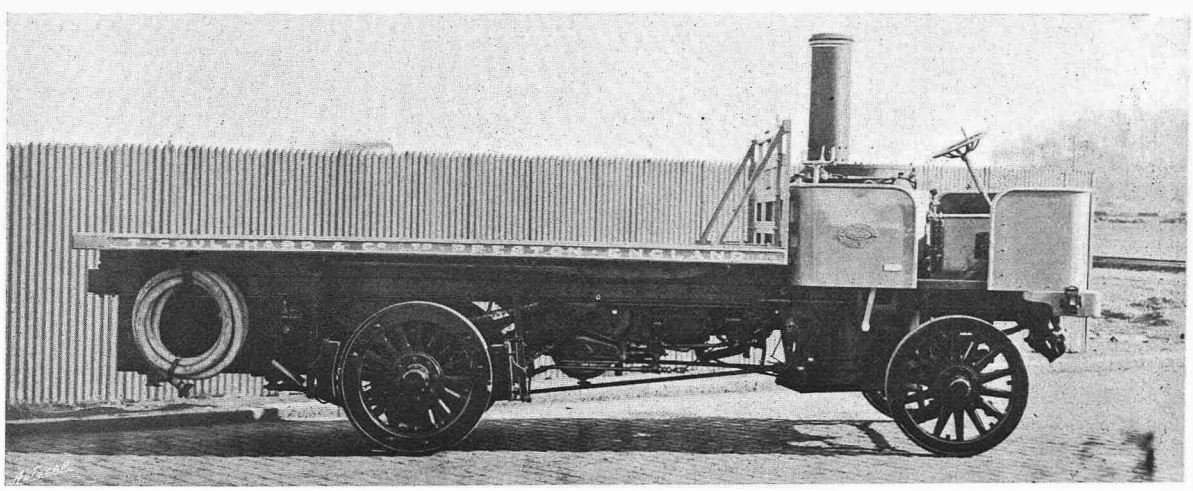
A short series of trials for motor lorries for heavy loads and vans for light loads, organised by the Automobile Club of America, was carried out in New York on May 20th and 21st. Very little interest was shown in the event by manufacturers, there being only fourteen entries, out of which twelve came to the starting point. As this is the first test of its kind held in the country it should prove sufficiently interesting to attract larger entries at subsequent similar events. Another thing which prevented a larger entry was the date of the trials, which was inconvenient to many manufacturers. The course was laid through New York City from the Club-house to the north-east end of Broadway and back by a circular route, distance thirty miles. The following are the vehicles which completed the trials:

No 1, a Coulthard five-ton steam lorry, standard type, was the only British-built vehicle competing, and was awarded a gold medal, the only incident in the contest being the subsidence of the near back wheel into some soft ground over which it happened to stop. Its performance is concisely described in the *Motor World* of May 21st in the following characteristic manner: "Patriotism aside, it is only truth to say that the big, English-made coke-burning steam truck of the Coulthard Co. had the best of the argument on the hill as well as elsewhere. It simply passed the seven per cent. grade and went up it as slick as if that was what it was made for." Messrs. Coulthard are to be congratulated upon their enterprise and the success which followed it.

No. 3, a petrol waggon by the Union Motor Co., was entered originally in the class carrying 1 ton 11 cwts. 1 qr.; but it was found that this load was too great. It was transferred, therefore, to a miscellaneous class, where it was required to carry a load of fifty per cent. of its own weight. The engine fitted to the car has four horizontal cylinders, 5in. bore and 6½in. stroke. Taking it all round, the car made a very good run; but an accident occurred that under other circumstances might have been serious. In running at a slow rate a bolt dropped out of one of the steering knuckles, releasing one of the front wheels. The driver immediately applied the brake, but not before the car had collided with an electric van standing by the roadside. Once the engine stopped, and after some time had been spent at the starting handle, it was found that the petrol tank was empty. Later on a difficulty arose with a hot crank bearing, which necessitated a stop, during which time the opportunity was embraced of putting a further supply of water into the tank. On the second day the car was upset in trying to avoid running over a chicken. The driver turning his car to miss it, and then returning sharply in the opposite direction, the back of the car swung round, and the machine turned turtle, fortunately without serious accident.

No. 4 was a Waverley electric delivery van, the only one in the trials driven by this power. It was originally built to carry a load of 6 cwts.; but to get it into a higher class it was loaded up to 10 cwts. 3 qrs. 26 lbs. The car ran very well on the whole. Two escapes from collisions by skidding were only just averted. The driver had some difficulty in steering the machine over the cobble pavement on account of having so much weight over the front, making it troublesome to hold the steering lever. On the way back again the batteries showed signs of running down, so the car was taken down to a charging station, where two wires had to be connected on to the switchboard in order to reach the batteries without taking them out of the machine. The car ran through the second day of the trials without incident.

No. 6, the Herschmann steam vehicle, made a poor show, which was attributed to the failure of some of the details of the car. The chief reason seems to have been its inability to keep steam, as an appreciable drop occurred every time coal was fed on to the fire. There was also a great deal of difficulty experienced in keeping up the water level. On one occasion it took eighteen minutes to raise the level one and a half inches.



The Coulthard lorry which was awarded the gold medal in the American heavy vehicle trials.

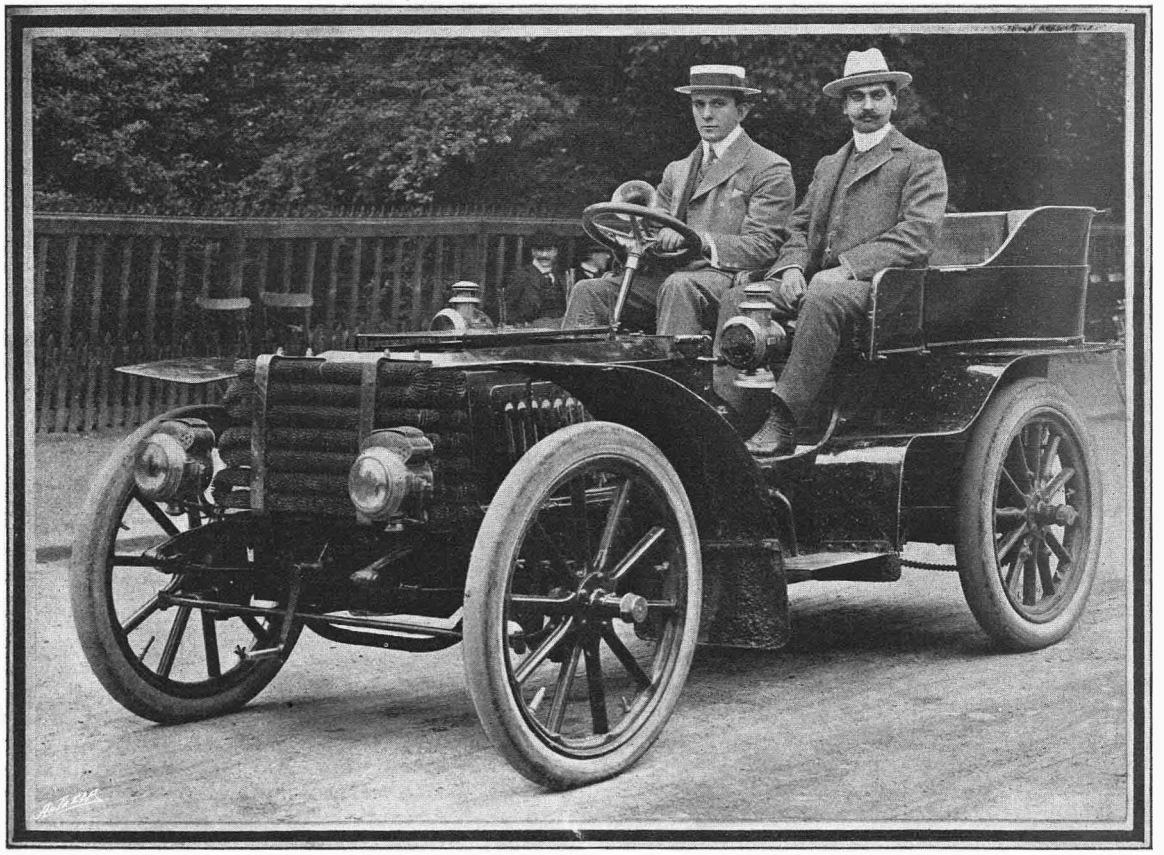
No. 7, another Herschmann steam lorry, weighing four and a half tons, made a very good show. Solid rubber tyres were fitted to the wheels, and they were said to have already covered a distance of 3,000 miles. Most of the power was consumed in propelling unnecessary weight, as its load was only 1 ton 17 cwts. 3 qrs.

No. 9, the Morgan steam lorry, which in general appearance is very similar to the Thornycroft vehicle, did a good performance, the only difficulty being with a piece of bad piping in the feed water system. A temporary pipe was put in, which necessitated cold water being pumped direct into the boiler instead of through the feed water heater in the usual manner. The result was that a very high coal consumption was registered against the vehicle on the second day.

No. 10, the Mobile light delivery van, suffered but few troubles, these being chiefly minor faults, the worst of which was a roaring burner, which was particularly objectionable when a cross wind was blowing. So far as design is concerned, there is one bad feature about the car, and that is the orifice for filling the water tank is very much too small. It did not permit of more than one gallon per minute being introduced, thus resulting in taking nearly an hour to get in sufficient water for a forty miles run.

No. 11, the Knox delivery light van, carrying a load of just over half a ton, and propelled by a two-cylinder petrol engine, made a very successful run through the trials, the only involuntary stop against it being one in which the driver lost two minutes by accidentally throwing in the reverse gear instead of the pedal-operated brake.

Two other Knox light delivery vans, operated by air-cooled petrol engines, ran through the trials without any unsatisfactory incident on both days, carrying a load of 6¼ cwts. each.



The latest pattern 24 h.p. De Dietrich car. It will be noticed that this vehicle is driven by Mr. Charles Jarrott, with Mr. W. M. Letts by his side. Mr. Letts has been so long associated with steam that it will probably be a surprise to some to find him on a petrol car. As a matter of fact he and Mr. Jarrott have gone into partnership, and in future will be mutually responsible for the De Dietrich cars in this country. We need say nothing about Mr. Jarrott, as he has played a very prominent part in motor circles, particularly since he took to racing, but we question whether Mr. Letts's influence upon the development of automobilism is as fully realised. At the time he took up the Locomobile carriage no quiet cars of the petrol type were made, and while steam still has the great advantage of quietude over the petrol car, the gap is not nearly so wide as it was in those days. In fact, many prominent automobilists of to-day were introduced to the pastime by means of Mr. Letts and his steam cars, and over a thousand have been sent out by the Locomobile Co. during his reign as managing director. In fact, the influence of the steam car has been beneficial in many ways, as it has given an ideal after which the makers of petrol cars have striven, and it still holds a commanding lead in smoothness and silence, particularly when it comes to making comparisons between the small types of petrol cars sold at the same price as a two-seated steam car. It is not fair to make comparisons between a low-priced steamer and a high-priced petrol car; at the same time there is no question whatever that many people would never have been attracted towards automobilism but for the silent steam cars. Having once tasted the joys of the sport, they stuck to it, in some cases getting more ambitious vehicles, but always referring to their first car as the ideal of smoothness in running. In fact, when one looks back upon the development of the movement, it would be hard to find two men who have done more for it than Messrs. Jarrott and Letts, the one in the arena of sport and the other in that of gentler driving and touring, so that they are a good combination in every way.

GORDON-BENNETT ITEMS.

The Hon. C. S. Rolls to Drive a German Car.

M. Jellineck has now come to a final understanding with the A.C. of Germany with respect to the drivers of the Mercedes in the Gordon-Bennett cup competition. These will be Baron de Caters, M. Jenatzy, and the Hon. C. S. Rolls, while the reserves are Baron de Crawhez, Degrais, and Hieronymous. Singularly enough, the only German in this list is Hieronymous. The others are three Belgians, one Englishman, and one Frenchman.

Mr. Lionel Earle, private secretary to the Lord Lieutenant of Ireland, on his 20 h.p. Gobron-Brillie.

A French View.

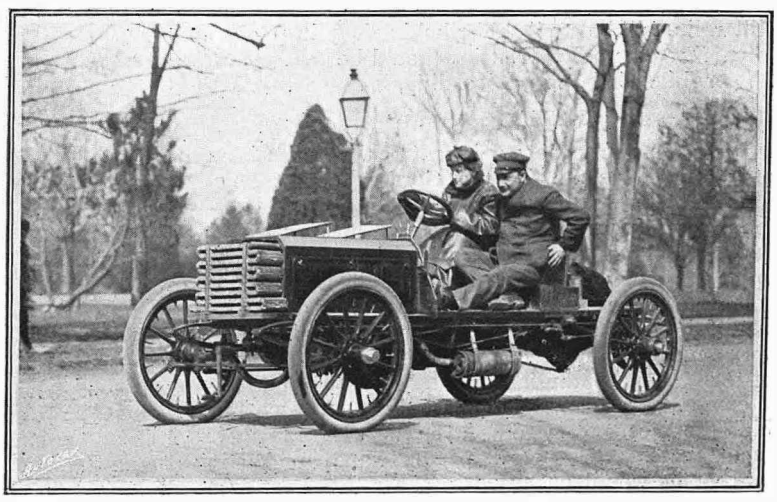
The following letter and comment are published in *La Locomotion* of the 6th inst.: "One of our readers, a member of the Automobile Club of France, writes as follows: 'I am quite certain that all reasonable men will agree with me that it is against our interests for the Gordon-Bennett cup to be held, as the results of the Paris-Bordeaux show that we have every chance of being beaten, taking into consideration the fact that of our three champions (Fournier, De Knyff, and H. Farman) *not one of them has succeeded in reaching Bordeaux.* It would be a hundred times better for our important export trade in motor cars that the cup should remain in England without a blow being struck to win it rather than that it should escape from us in a recognised race. A defeat would be disastrous to the reputation of the French motor trade in foreign countries, and it seems that this is what will happen. Let us then wish most earnestly that the Gordon-Bennett cup race will be prohibited by the English authorities.' This is a melancholy statement—unfortunately, very nearly correct."

Garage Accommodation.

Messrs. Hutton and Co., of Summer Hill, Dublin, invite automobilists visiting Dublin for the Gordon-Bennett race to make use, free of charge, of their extensive garages during the Irish Fortnight; but in order to know where they are, Messrs. Hutton request that those car owners who intend to take advantage of their offer should let them know without delay the date and number of cars for which accommodation will be required. The garages are situated at 115, Summer Hill (factory), and 2, Dawson Street (showroom), Dublin. We can say from experience that the garage is excellently managed and that every attention is given to the automobilist. In fact, the way the cars are kept and the general smartness and cleanliness of the establishment are remarkable, and we have seen nothing to beat it in these respects anywhere.

The New Regulations.

It is proposed by the Automobile Club that the start shall be made with intervals of seven minutes between each car. This will mean that the twelfth and last car will be started one hour seventeen minutes after the first. It is also proposed that, after the first circuit of the course, when it is seen by the watch how the respective cars are running, the time interval may be re-established, so that the chances of passing shall be reduced to a minimum, or, what is probably a better arrangement, a car which is found to be overhauling another will be let



Miss Pomeroy driving Mr. Mooers's 80 h.p. Peerless car.

through at the first control, and put in front of the slower vehicle, so that the passing will take place in a control and not on one of the racing stretches. This, of course, can be easily done so long as a sufficiently able and numerous staff of timekeepers is available; but it will require the most perfect organisation in the timekeeping for it to be successfully carried through. In any case it will undoubtedly be a good thing if passing can be obviated, as the road is not wide enough in many places for one car to overhaul and pass another with any degree of safety. For instance, the straight by the start at Ballyshannon is only fourteen feet wide. This gives ample room for touring cars to pass at touring speeds, but is too little when high velocities are being made.

The French Cars.

A rumour has been circulated to the effect that jealousies had arisen between the Panhard and Mors people which might lead to the French cars being withdrawn from the race. We hear that there is no foundation whatever for this rumour, and that the Mors people have raised no objection to two Panhards and one Mors being selected to represent France.

Motor Speed Trials.

Those who intend taking part in the speed trials which are fixed for the Irish fortnight should send in their entries at once, as they close at noon on Monday, the 15th inst., though late entries will be received up till Thursday, June 25th, on payment of fifty per cent. higher fees. The events include the one mile one kilometre (2853.6 yards) race for motor cycles, touring cars, and racing cars, on July 4th at Dublin; that is the next day but one after the Gordon-Bennett race. On July 7th there will be a four miles trial and hill climb at Castlewellan, with separate sections for the cycle, touring, and racing classes. On July 10th, at Cork, there will be a two miles handicap for touring cars and another for racing cars; while on the 14th, at Killarglin, will be a mile hill-climbing handicap, open to touring cars only. Entries should be sent to the Automobile Club, 119, Piccadilly, W.

Irish Enthusiasm.

We have before now referred to the enthusiasm of the Irish people for the Gordon-Bennett race. Since our previous visit this has intensified enormously, and every class, high and low, rich and poor, and of whatever interest, is as keen as possible upon the race. We came across individuals whose sole interest in life was cattle, or horses, but who were full of the race and anxious to discuss it. One very amusing and at the same time delightful feature of this general enthusiasm is the indignation which is expressed in many quarters at the rule which forbids the racers from going over the course in their racing cars. One horsey person who confided in us that he would not drive in a car for £500 was particularly strong on the subject, and seemed to regard the fact that a man could not have a trial spin over the course on the actual "horse" he would ride as one of the most shameful and unsportsmanlike rules that was ever made. This is a very fair evidence of the general feeling, and it is particularly interesting, as, of course, it is entirely for the safety of the people at large that the regulation has been made. On some parts of the course any car, even if it be of the 6 h.p. single cylinder variety, is regarded as belonging to a competitor in the race, and we have already heard that one or two automobilists who have no connection whatever with the great event have posed as national champions in training in more than one country district.

"The Autocar" Balloon.

It is highly probable that "The Autocar" balloon, which will be used as an aerial observatory in the Gordon-Bennett race, will make its maiden trip to-day (Saturday), on the occasion of the motor car gymkhana at Ranelagh organised by the Automobile Club.

HORSE ACCIDENTS.

Another Two Months' Record.

A further instalment of two months' horse accidents has been very carefully compiled. The enumeration was commenced on August 26th, 1902, at a time when there was a loud outcry against the unreliability and uncontrollability of autocars. It was intended to show that the horse, which is usually accepted as the perfection of controllability, is really responsible for a great many deaths and injuries. All modes of travelling on the highway have their attendant risks, and if the imposition of special legal restrictions is necessary on motor cars, such restrictions are equally necessary in regard to horses and their drivers. If, on the other hand, means of identification are unnecessary for horses, they are equally unnecessary for autocars. During the two months covered by the weekly details given below, there have been 629 accidents, bringing up the total for the nine months covered by the return to 3,011. The number of persons killed during the past two months was 50, and the number of persons injured 398, bringing these totals respectively up to 329 killed and 2,142 injured during the nine months included in the enumeration.

No. of accidents.		Persons injured.	Killed
2,382	Brought forward from *The Autocar* of April 4th, 1903 ...	279 ...	1,744
26	Week ending March 28th, in addition to those previously enumerated ...	1 ...	20
65	Week ending April 4th ...	6 ...	43
71	,, ,, ,, 11th ...	7 ...	41
66	,, ,, ,, 18th ...	8 ...	37
64	,, ,, ,, 25th ...	1 ...	50
72	May 2nd ...	7 ...	39
76	,, ,, ,, 9th ...	5 ...	45
56	,, ,, ,, 16th ...	2 ...	42
74	,, ,, ,, 23rd ...	8 ...	55
59	,, ,, ,, 30th ...	5 ...	46
3,011		329	2,142

The particulars which have been circulated by the Automobile Club to the daily press are also very useful in combating the idea that the autocar is a dangerous vehicle. They show that out of 160 persons killed annually by all forms of traffic in the Metropolis, one only can be traced to the automobile. Of course, in that case, as in many other street accidents, it does not follow that the driver was to blame. Even the light pedal bicycle is responsible for the death of four persons, but all the rest have been killed by horse vehicles.

CLUB DOINGS.

Cheltenham and Gloucestershire A.C.—Discussion on Legislation.

At a meeting of the Cheltenham and Gloucestershire Automobile Club, held on Wednesday night, June 3rd, at the Queen's Hotel, Cheltenham, Dr. H. P. Fernald, the president, in the chair, the following resolutions were unanimously passed after full discussion on the Automobile Club Bill about to be introduced into Parliament: 1. That the present speed limit of motor-driven vehicles be removed. 2. That means of identification be affixed to all motor-driven vehicles. 3. That drivers of all motor propelled vehicles be held responsible as much as the owners. 4. That fines for excessive speed should be proportionate to the horse power of the motor vehicle, and that the present limit of the fine of £10 is excessive for persons of moderate means.

Yorkshire A.C.

The picturesque village of Ripley, three miles beyond Harrogate on the road to Ripon, was chosen for last Saturday's meet of this club. The cars from various towns assembled at Poole Bridge on the River Wharf and travelled *viâ* Weeton, Pannal, and Humphry Bank. After tea at the Star Hotel, a visit was paid to the Castle grounds, and the cars were subsequently grouped around the village cross and stocks for photographic purposes. While passing through Harrogate on the homeward journey the curious spectacle of a horse-driven dogcart on fire was witnessed.

Reading Automobile Club.

The third of a series of five monthly runs in connection with the challenge cup competition for reliability took place on Whit-Monday to Savernake Forest, Wilts., and back *viâ* the main Bath Road (sixty-four miles). The weather and the road were all that the automobilist could desire, and the run was keenly enjoyed by the participants. A picnic was arranged in connection with this run, and the members and friends taking part enjoyed their luncheon beneath the shade of the stately oaks and beeches in the forest, and the homeward journey was reserved for

the cool of the evening. Amongst those taking part were Mr. E. J. Wickens (20 h.p. Pipe), Dr. Claude Truman (9 h.p. Prunel), Mr. G. L. Brigham (Mabley), Dr. Major (Baby Renault). Mr. A. C. Brewerton (8 h.p. M.M.C.), Mr. Skurray (Turrell), Mr. C. H. Dodd (8 h.p. Renault), Mr. Arthur Phillips (Enfield motor bicycle), Mr. Albert E. Newton (De Dion tricycle and trailer), and Mr. A. H. East (8 h.p. Corre) with the club president (Dr. J. H. Walters) on board. The photograph by Mr. A. Newton, the honorary secretary, which we reproduce, shows some of the members picnicing in the forest.

The Kent Automobile Club.

The Kent Automobile Club will have its first run on Saturday, June 20th. Members will meet at Charing, where tea will be taken at four o'clock. The club is meeting with splendid support throughout the country, and the number of members is rapidly approaching one hundred. The committee is now engaged in selecting officers. Gentlemen wishing to join the club should communicate with the honorary secretary at the headquarters—the Star Hotel, Maidstone.

Norfolk A.C.

The Norfolk Automobile Club held its second meet on Saturday last at Sheringham, when perfect climatic conditions prevailed. Notwithstanding the precautions taken to ensure an undisturbed run, the road between Aylsham and Cromer had been ambushed, and one of the leading cars was stopped. Having submitted to the customary interview, the driver returned to warn the other members. At the Grand Hotel, Sheringham, between thirty and forty cars assembled, and a *recherché* luncheon was served to about sixty guests. The president of the club, Mr. G. M. Chamberlin, after proposing the toast of the club, reminded members of the next meet on June 23rd at the residence of Mr. J. J. Dawson Paul, of Eaton Grove.

The Scottish Automobile Club.

A meet of the Eastern and Western Sections of this club took place on Saturday at Philiphaugh, near Selkirk, when over 100 members and friends were the guests of Mr. W. Strang Steel. There was a good muster of cars of various types from Edinburgh, Stirling, and Glasgow districts, over thirty cars being ranged in front of the Mansion House. The bulk of the Edinburgh cars travelled *viâ* Eskbank, Stow, and Galashiels, while the Glasgow cars went *viâ* Lanark, Biggar, Peebles, and the Tweed Valley.

After lunch, which was presided over by the genial host, Mr. Norman Macdonald, the Chairman of General Council, proposed the health of Mr. Steel for his generous hospitality. The health of the president of the club, Colonel Sir John H. A. Macdonald, was also proposed. In reply, Sir John stated that he had journeyed from Edinburgh in company with the Chief Constable, Captain Ross, who had taken care that neither within nor without his jurisdiction was the speed limit exceeded. The party afterwards inspected the gardens and the art and Oriental treasures for which the house is noted. At five o'clock most of the cars left for their several destinations, a number of the Edinburgh cars returning *viâ* Peebles and Penicuik, their total run being about 100 miles. A number of the Glasgow cars returned *viâ* Yarrow, St. Mary's Loch, and Moffat, making a run for the day of about 0 miles. The weather was ideal, and the roads in good condition and free from dust.

THE AUTOMOBILE MUTUAL PROTECTION ASSOCIATION, LTD.

A general committee meeting was held at the registered offices of the association (No. 88, Chancery Lane) on Friday, the 5th inst., at 5 p.m. There were present Mr. J. J. Mann (chairman), Messrs. E. Shrapnell Smith, E. Lisle, Charles Cordingley, A. E. Hodgson, R. Moffat Ford, and F. F. Wellington. Mr. G. R. Helmore, F.C.A., the secretary of the association, was in attendance.

A large amount of business was done, and numerous cases brought before the committee by members arising out of patent and other claims were dealt with.

The Holland Park Motor Co., Messrs. G. T. Riches and Co., and Mr. Alfred Harmsworth were all elected members of the association.

A satisfactory balance sheet was reported, and cheques were signed.

The meeting concluded at 7.15 with a vote of thanks to the chairman.

SOME REPLIES TO QUERIES.

We are always pleased to reply to queries, even if they be of an elementary and untechnical description, under this heading. Only a selection of those which are of general interest will be published, though all will be answered direct through the post, for which purpose a stamped and addressed envelope should be enclosed.

When advice concerning different makes of cars is sought, each vehicle should be given an identifying number.

Letters should be addressed The Editor, "The Autocar," Coventry.

SECURITY FOR DEPOSIT.

If a person orders a car and pays one-third of the purchase money as a deposit and before the car is delivered the vendor becomes bankrupt, what is the purchaser's position?—G.H.P.

If the car is not in existence at the commencement of the bankruptcy the purchaser has no preferential rights and can only prove as an ordinary creditor. If, however, an existing car is purchased and a deposit paid and the vendor becomes bankrupt before delivery of the car then the position is slightly different. In the ordinary course when trade goods are in possession of a bankrupt with the consent of the true owner under such circumstances that the bankrupt is the reputed owner thereof, such goods would pass to the trustee in bankruptcy. A purchaser, nevertheless, might succeed in claiming delivery of a car already made on payment of the balance of the purchase money, on the ground that it is the custom in the trade for a deposit to be made before delivery. There would have to be strong proof of this custom, of course. The only way for a purchaser fully to protect himself is for him to deposit the money with a third party. There is a deposit department in connection with this paper.

PISTON FITTING.

I am given to understand that it is a practice amongst the principal makers to turn the pistons a good fit in cylinders, then slush the cylinder with emery and oil, revolve the piston all the time, drawing it backwards and forwards up the cylinder. Is this correct? If so, what clearance when cold between the piston and cylinder, or, more correctly, how much smaller is the piston left than the cylinder to allow for the undue expansion of the piston? (2.) If the above is not done as I can credit it, do they grind the cylinder out on an universal grinding machine, also the piston, and how much difference between the two (cold)?—J.G.L.

The idea advanced as to how pistons are fitted to cylinders is entirely erroneous. It is, in fact, one of the best methods one could possibly devise for spoiling those important parts. All the best makers bore out their cylinders to a certain size, which is most carefully gauged, and their pistons are also turned to a given size and likewise gauged, $\frac{1}{1000}$th of an inch being the limit of error allowed. After turning the cylinders are placed in a machine and are "lapped out," *i.e.*, a disc of lead revolving at high speed is run into the cylinder, which is fed up with fine flour emery and oil. The emery in this case beds into the lead rather than into the surface of the cylinder, and by this means a high polish is obtained. The piston is also revolved in the lathe and ground down to size with a fine emery wheel. The piston when removed from its lathe is a dead fit in the cylinder, *i.e.*, when the piston is put into the cylinder and can be pushed backwards and forwards by the hand without any great effort and yet at the same time there is no space wasted between them. The limitation of the fit is eventually something under $\frac{1}{1000}$th of an inch. Expansion and contraction are not of such great moment, as there are different weights of metal in the cylinder and in the piston. Therefore, the larger quantity of metal in the cylinder should, theoretically, expand more than the smaller amount in the piston, but as the temperature of the piston is slightly above that of the cylinder on account of the water cooling, the fit remains practically constant at all temperatures. Piston rings, of course, are fitted to maintain a gas tight chamber, the mere fit of the piston not being relied upon. If the piston were made smaller than the cylinder in the first place, a loss of compression would result.

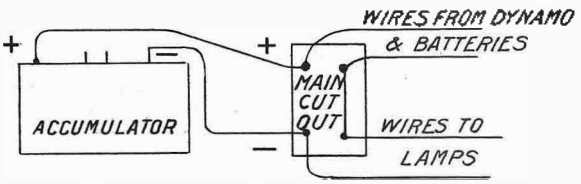
RATE OF LUBRICATION.

I have a 6 h.p. Belle car, made on similar lines to the present Benz. It has a "sight drop-feed lubricator" on dash. Could you kindly give me an idea how many drops per minute each of the four parts lubricated should require, viz.: (1) Crank pin brass of connecting rod; (2) the cylinder and piston; (3) the end of mainshaft bearing, in which half-time can is fixed; (4) the flywheel end of mainshaft?—ALBERT MEATS.

One drop per minute is the usual rate of feeding the bearings of the mechanism on a motor vehicle. You might with advantage, increase the rate of supply to the cylinder. No definite rule, however, can be laid down for these matters, as so much depends upon the driving. It is obvious that when one habitually runs a car fast the quantity of lubricating oil required will be greater than if the car were run slowly.

CHARGING ACCUMULATORS FROM A HOUSE-LIGHTING CIRCUIT.

Sir,—Your querist on page 620 asks for simple instructions. For two years I have been charging my four cells for Benz car, as well as for other people, by connecting one or two cells in the place of one fuse wire of my double pole main cut out. My lamp circuit is fifty volts; therefore, by keeping four sixteen-candle power lamps alight I get four amperes of current running through the



accumulators, or six eight-candle power lamps give 3.6 ampères.

When the accumulators are fully charged, and whilst the current is still passing through, each cell should give 2.6 volts. Of course, a 100 volt circuit will require double the above number of lamps to be lighted for the same charging current.

A piece of litmus paper made damp and the two bare wires laid on it a short distance apart will find the positive pole, which will leave a red mark.

Take the plug out of cells before charging.

If the tops of the plates in the cells are out of the acid, add a little water to just cover them.

THOMAS H. BUSH.

NOTICES.

SUBSCRIPTIONS.

"THE AUTOCAR" is published every Friday morning in Town and Country, and may be obtained of all Newsvendors and Book stalls, or delivered first post on Friday, at the following rates:

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