

THE AUTOCAR

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

EDITED BY H. WALTER STANER.

No. 442.] VOL. XII.

SATURDAY, APRIL 9TH, 1904.

[PRICE 3D.]

THE AUTOCAR.

(Published Weekly.)

Registered as a newspaper for transmission in the United Kingdom.
Entered as second-class matter at the New York (N.Y.) Post Office.

EDITORIAL OFFICE:

COVENTRY.

PUBLISHING OFFICES:

3, ST. BRIDE STREET, LONDON, E.C., ENGLAND.

CONTENTS.

	PAGE
NOTES: SUCCESS OF THE EASTBOURNE MOTOR 'BUSES—TRAMWAY FINANCE—MARINE MOTORS	473-474
USEFUL HINTS AND TIPS: DRIVING OVER STONES—ADJUSTING CHAINS—GOVERNOR SETTING—MULTI-CYLINDER IGNITION TIMING	475
THE WHITE STEAM CAR (illustrated)	476-477
CASUAL COMMENTS BY A. J. WILSON: PREFATORY—THE EXTERNAL SPARK GAP—SPRING CLEANING	478-479
THE NAPIER IGNITION (illustrated)	480-481
THE ARIEL STEERING GEAR (illustrated)	481
OCCASIONAL GOSSIP. By "The Autocrat"	482
JOHN-O'-GROAT'S TO LAND'S END (illustrated). By D. H. Whitehead	483
APPLICATION FOR SPEED RESTRICTIONS REFUSED	483
CONTINENTAL NOTES AND NEWS (illustrated): THE NICE AUTOMOBILE WEEK—THE BATTLE OF FLOWERS—THE MILE RACE AND THE ROTHSCHILD CUPS—RIGOLLY'S GORDON-BENNETT GOBBON-BRILLIE CAR—SPEED TRIAL RESULTS—THE DE CATER'S CUP (HILL CLIMB)—AUTOMOBILE BOATS AT MONACO—A RELIABILITY TRIAL AT BERLIN—A DIPLOMA FOR MECHANICIANS	484-489
CORRESPONDENCE: THE NON-SKID TRIALS—THOUGHTLESS DRIVING—THE RATIONAL CAR—PUZZLING POINTS WITH BEGINNERS—THE FRENCH SHOW—THE CLUB AND THE TRADE—SOME PRIVATE RELIABILITY TRIALS—REPAIR CHARGES—INCOMPETENT EXPERTS—BORON CHARGING CELLS—BRITISH MANUFACTURE—SPEED INDICATORS—THE SHOW QUESTION—THE PROPOSED LAMP TEST—THE STEAM CAR—INITIALED LETTERS—CHAUFFEURS—NON-SKIDDING TRENDS	490-493
FLASHES AND "THE AUTOCAR" DIARY	494-496
AGRICULTURAL HALL SHOW (illustrated): CARRIAGE WORK—ACCESSORIES—IGNITION—CLOTHING—MISCELLANEOUS—STATISTICAL SYNOPSIS OF THE SHOW	497-501
CLUB DOINGS: AFFILIATIONS TO THE MOTOR UNION—SHEFFIELD AND DISTRICT A.C.—NOTTINGHAMSHIRE A.C.—NORFOLK A. AND L.C.—KENT A.C.—EAST SURREY A.C.—GLOUCESTERSHIRE A.C.	503
THE 20 H.P. HUTTON CAR (illustrated)	504-505
THE HARROW AND RYE ACCIDENTS	506
THE GLASGOW-LONDON TRIALS	506
NEW PATENTS	506
ROAD REPORTS	506

"THE AUTOCAR" SUBSCRIPTION RATES.

British Isles, 16s.; Abroad (thin paper edition), 22s. 8d. per annum.

Notes.

Success of the Eastbourne Motor 'Buses.

That motor 'bus services may be made to pay is demonstrated by the experience of Eastbourne. The Town Council there started in a small—very small—way with one vehicle on April 18th, 1903; another vehicle was introduced on June 1st, a third on August 27th, and a fourth on September 18th. The corporation certainly cannot be accused of want of caution in the matter. The report on the financial results of the service to the end of last year shows that 294,922 passengers were carried, over a distance of 36,800 miles, the total cost per car mile (including capital charges) being 1s. 1.6d. The net profit, arrived at after paying interest on capital and the first instalment of sinking fund, was only £67 3s. 11d., but, small as it appears, this was

equal to five per cent. per annum on the cost of the 'buses. For the information of corporations who may be contemplating similar ventures, let us hope on a larger scale, the following particulars from the borough accountant's report may be of interest: "With reference to the item for tyres, £626 16s. 1d., this was calculated on the estimated life of the tyres still running and the full cost of the tyres worn out, including the original tyres on the 'buses as purchased complete, in some instances the mileage they were supposed to run has been exceeded, and the item now included in the accounts, if it errs at all, is in the direction of an over-charge rather than undercharge. It should be borne in mind that this account is for a period which includes the worst part of the year, that there is every probability of a much smaller charge in future for tyres, and more economical working generally when the new 'buses arrive, but, even at the rate of progress as disclosed by the accounts now submitted, the council would be in a position to repay the whole capital expenditure in about seven years. The Local Government Board has granted ten years for the loan." It is scarcely possible to over-emphasise the fact that these satisfactory results have been obtained on an enterprise which is but microscopical so far as the capital outlay is concerned when compared with the immense capital sums which must be expended to install and equip an electric tram service. Not only so, but all experts in connection with public service works are agreed that, speaking broadly, the success of the enterprise is proportional to its magnitude. That is to say, that if such a gratifying result as that of Eastbourne can be reached with only four vehicles, a motor 'bus service in which a large number of vehicles were used would be far more profitable. As we have pointed out before, the motor 'bus, owing to its youth as compared with the electric tram, is at a great disadvantage, as no corporation has yet installed a fleet of motor omnibuses in a large and busy centre. When such a project is launched we are convinced that with proper management the success of the undertaking will surprise even those who are most favourably disposed towards it.

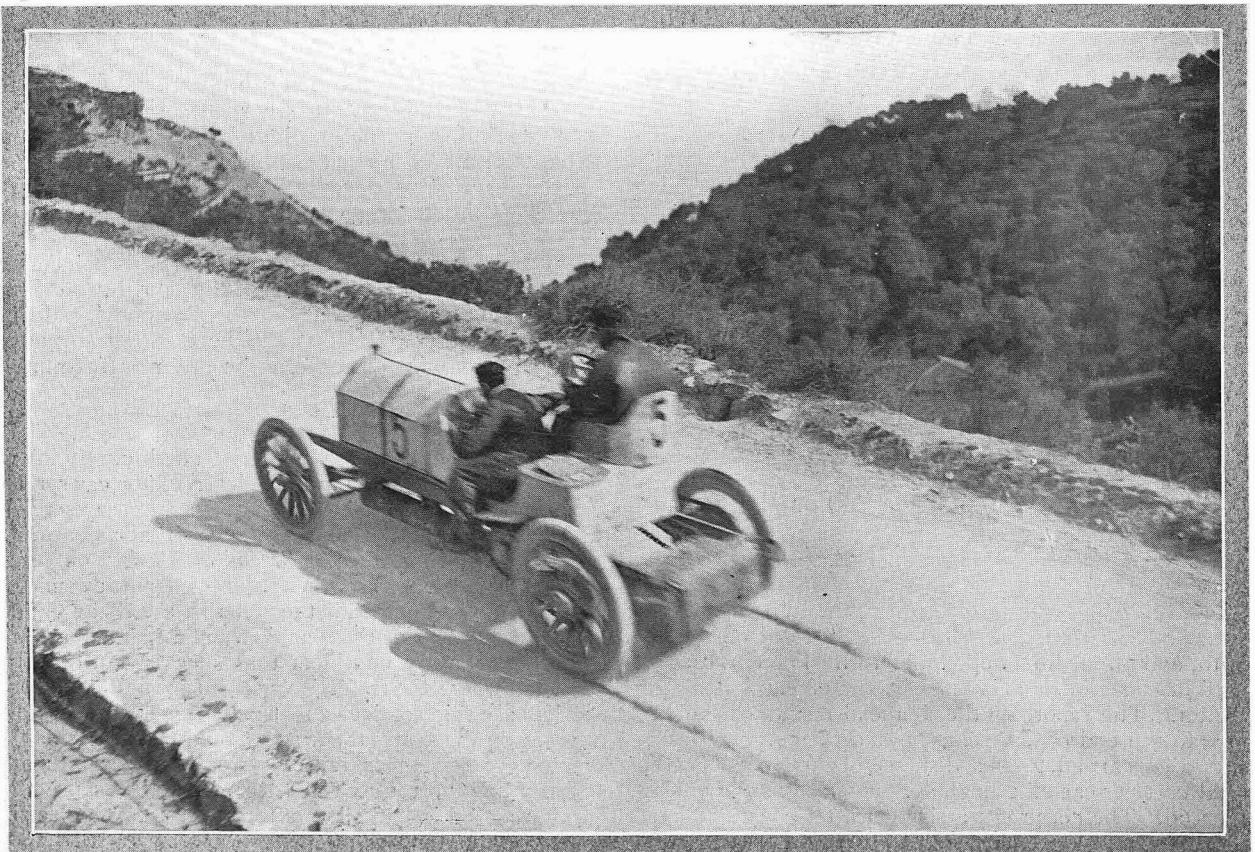
Tramway Finance.

In the foregoing note we have cited our opinions with regard to the advantages which a motor car service would possess in many instances over a tramway service. However, it is well to make it clear that we are not alone in this view, as the *Electrical Review* only last week pointed out that the costs of tramway undertakings are very great, the repairs are heavy, and becoming heavier as the machinery and plant wear out. Our contemporary considers that success can only be expected where the traffic is such as to require frequent services; a thin service cannot pay, because the interest charges on the costly track are spread over too small a number of passenger miles. For this reason mere summer holiday routes will never do well because the earning period is limited to a few weeks. The electric tramcar to be successful must be for heavy constant traffic.

Marine Motors.

The papers recently read before the Institution of Naval Architects by Mr. J. E. Thornycroft and Mr. A. F. Evans on the subject of internal combustion engines for the propulsion of boats will undoubtedly have their effect. Many engineers look upon these gentlemen as visionaries, and from the remarks which were made during the discussion which followed the papers it was quite obvious that some steam engineers are ignorant of the fact that the internal combustion engine of to-day is a very different thing from its crude and not always reliable predecessor of, say, twenty years ago. Without going into the pros and cons of Mr. Thornycroft's suggestion that large craft should be driven by gas engines worked from producer gas made on board, we think it is not too much to say that, despite what has been done in the past in the way of launches and small craft driven by internal combustion engines, the motor launch as we know it to-day would not have reached its present development but for the motor car engineer. Boats like the Napier and the Scolopendra have done more to draw the attention of marine engineers to the internal combustion engine than anything which had previously been accomplished by motor launch builders. Such boats as these, in their turn, would not, in all probability, have been built for many years to come but for the autocar. A really light internal combustion engine was never made commercially till the advent of the motor car. Consequently, in a comparatively few months remarkably successful results have been attained with motor launches, simply because the light but powerful motor car engine was ready to hand, so that the expert designer and builder of launches

had comparatively little to consider but the hull. It must not be imagined by saying this we are belittling the importance of the boat itself; very far from it, but the point we wish to make is that while the boat builder was ready and able to turn out a light hull, the marine engineer had not given attention, with one or two exceptions, to the light but immensely powerful for its weight internal combustion engine, and consequently there would have been no light and powerful engines of this type available but for the motor car engineer. From a naval point of view the motor launch is of immense importance. It has been shown already that boats weighing less than five tons and of some 200 h.p. can be built. These little craft are exceedingly fast, and, provided with a single torpedo tube, they could be carried upon the deck of a battleship almost as easily and with as little inconvenience as two or three parcels are taken in a car. They would be invaluable as attacking units which would be sent from the parent ship. They would cost comparatively little; only three or four men would be required to handle them, so that their loss would be, again comparatively speaking, an unimportant matter. They would not smoke or flame from the funnels, and motor car practice has shown that they could be made quite silent. These boats would be veritable wasps of the sea, and would be invaluable to the ships on which they were carried. The *Engineer* is of the opinion that possibly before long no battleship will be considered completely equipped without such boats, and we go further and say we are firmly convinced that not only will this be the case, but the internal combustion engine will prove a serious competitor with steam for all light high speed craft.



Werner on his 90 h.p. Mercedes climbing the hill on the Nice-Corniche road in the hill-climbing competition for the De Caters Cup.

USEFUL HINTS AND TIPS.

Driving over Stones.

Road mending operations, spring, and the awakening of the automobilist to more extended tours abroad have become—as to the bulk of autocar owners—a simultaneous movement, yet the first mentioned strikes awe into all but the most careless who give not a thought to their tyres. A careful driver, however, becomes much exercised as to how he may do his tyres the least possible amount of harm when passing over a newly laid patch of stones. The more general method is to drop down on to the bottom speed and go over as gently as may be, yet this oftentimes results in the tyres being badly cut.

Now, if when approaching a patch of loose metal the car is allowed to run right up to it at speed, and the clutch is taken out before the front wheels strike the stones, the vehicle will have sufficient momentum to carry it over the average patch of stones. By this method of driving the wheels are relieved of all *driving* strains, and the tyres are less likely to be damaged, as they simply *roll* over the stones and are not subjected to any other severe strains than the dead load. This may seem a daring practice, but we can assure our readers it is an effective one.

If by reason of the length of the newly stoned road or an adverse gradient the car cannot attain sufficient speed to roll over the metal, nothing remains but to drop to the low speed and go on gently. On no account should the clutch be let in so that momentum may be maintained, as immediately the engine begins to drive when the gear ratio speed is above that of the speed of the vehicle the very worst cutting action is put on the tyres.

Adjusting Chains.

When adjusting driving chains care should be exercised that a sufficient amount of play should be allowed to the carriage spring links. As the rear axle is carried backwards in adjusting the chain the length of the movement to the spring links is curtailed and their free action interfered with to a large extent. Adjustments carried to this length will result in no action being allowed the links. The comfort of the car will be diminished to a very noticeable degree, which may be looked for without result if the point above raised is not thought of. When the links incline noticeably rearwards take a link out of the chain and so save trouble.

Governor Setting.

Persistent hunting or racing of the engine is by no means an infrequent source of unsatisfactory running, militating against comfort, economy, and flexibility. The matter is one which it is difficult to remedy, in that the trouble commonly lies in the tension of the governor springs being either too great or too small. Springs with small variations in tension are difficult to obtain, at least in a graduated ascending scale of strengths, and, consequently, it is found that, whereas the original spring permitted the governor to act unduly at the slightest speed variation, the new spring practically obliterates the action of the governor, and the engine is difficult to control, although the difference in the two springs may be apparently very small. In adjusting the governor springs one has, of course, to vary the adjustment according to the location of the spring. In some engines the springs are set across the points of the governor weights and revolve with them.

With other patterns the spring is set between a sliding collar and a stop on the shaft. Sometimes a rocking lever working in a groove in the governor sleeve has the spring attached, though, commonly this method is used for augmenting the strength of the governor springs and accelerating the engine. The most common and the most troublesome way of mounting the springs is between the governor balls, as in this manner there is no possibility of tensional adjustment except by renewing the spring. Recently, however, having occasion to remedy a hunting governor, we discovered an easy way of doing so, which, although only of a temporary nature, formed the basis for a permanent cure. The springs across the weights were retained, but being too weak were augmented by light indiarubber bands until a better result was obtained when running the engine. The springs were then taken off, the number of rubber bands counted, and the same number of similar unused bands sent with the springs to a spring maker of note who returned a set of springs of equal strength to the combined spring-cum-rubber band arrangement.

Multi-cylinder Ignition Timing.

There are still a few makers of four-cylinder engines who adhere to make and break ignition contacts as their standard, and when perfectly adjusted and tuned up, this ignition is quite as satisfactory as the trembler coil and wipe contact; but when the slightest derangement occurs, the trouble is difficult to locate, and often inexplicable. Presupposing that all the platinum contacts are in good condition, and that each cylinder is firing in its turn, it is yet quite possible that anything but the best results are being obtained. The defect arises solely from faulty ignition timing, due to the fact that the points of the platinum tipped screws and blades are not all equally adjusted. Thus, if we suppose our four tremblers to be adjusted with No. 1 set of points 1 mm. apart, No. 2 set 1.5 mm., No. 3 set 1.4 mm., and No. 4 set 1.2 mm., the cam having a 3 mm. eccentricity, each and every trembler will give a spark at its full power; but, if we suppose that trembler No. 1 is firing accurately, No. 2 is firing late, No. 3 late also but earlier than No. 2, No. 4 earlier than either No. 2 or No. 3 but later than the correct No. 1, the terms late or early being, of course, relative to the position of the piston. Thus, in each cylinder the mixture is being ignited at a different period, with the result that, if No. 1 is being fired to its best advantage, the other three cylinders are not igniting efficiently, the balance is gone, and considerable power is being lost. Beyond this, where the firing is late, the combustion is not completed until after the exhaust valves have opened; the burning charge passes out in the form of a flash, extremely detrimental to the exhaust valve heads, and tending to overheat the engine. In order that the best power may be obtained, each cylinder must explode at relatively the same point, and, therefore, when adjusting the make and break mechanism great care should be taken to see that exactly the same distance separates the contact points. The thickness of a visiting card is about right, and the card should be interposed between the points, the screw then turned down until the card is so held that it can be drawn backwards and forwards with just slight resistance. By this method a most accurate test for point separation is afforded with absolute certainty as to the time of breaking contact.

THE WHITE STEAM CAR.

A STEAM CAR WITH THE OUTWARD APPEARANCE OF A PETROL CAR. APART FROM POSSESSING THE SPECIAL ADVANTAGES OF STEAM IN SILENCE, SMOOTHNESS OF RUNNING, AND ELASTICITY OF POWER, THE VEHICLE CAN BE DRIVEN ONE HUNDRED MILES WITHOUT STOPPING FOR REPLENISHMENT OF EITHER FUEL OR WATER.

THERE is no automobile which is driven by steam which so fills the automobilist with leanings towards the steam car as the now well-known and keenly-appreciated White steam car. After a lengthy experience it has gained the favour of so great a steam traction expert as Colonel Crompton, R.E.,

first into the top coil, and is flashed into steam at a point about half-way through the entire length of the tube, receiving as it passes on through the remaining half a considerable amount of superheat, sufficient at all events to entirely preclude cylinder condensation, though not enough to burn the valves, etc. The entire amount of water in the tubes at any time is very small—certainly never exceeding a quart—so that by this fact, and the peculiar construction of the boiler itself, there is absolutely no possibility of explosion. The steel tube of which the coils are formed is of 17-32 in. diameter and about $\frac{1}{4}$ in. bore, and in order that the water may not at once descend to the lower coils, the end of each coil is bent upward to the top of the generator before making connection to the next lower coil. The lower end of the bottom coil is straight, and lies right across the burner. In this straight length of tube is placed the thermostat—a simple instrument which is provided to control the supply of fuel to the burner in accordance with the temperature of the steam.

The normal working pressure of this boiler is from 300 lbs. to 350 lbs. per square inch, and the steam-influenced diaphragm controlling the by-pass, which permits the water to flow either to the top coil of the steam generator or back to the tank, operates in the former sense at a pressure of 325 lbs. per square inch. As a matter of fact, the question of pressure needs no regard whatever when driving, as even so unlikely a thing as a failure

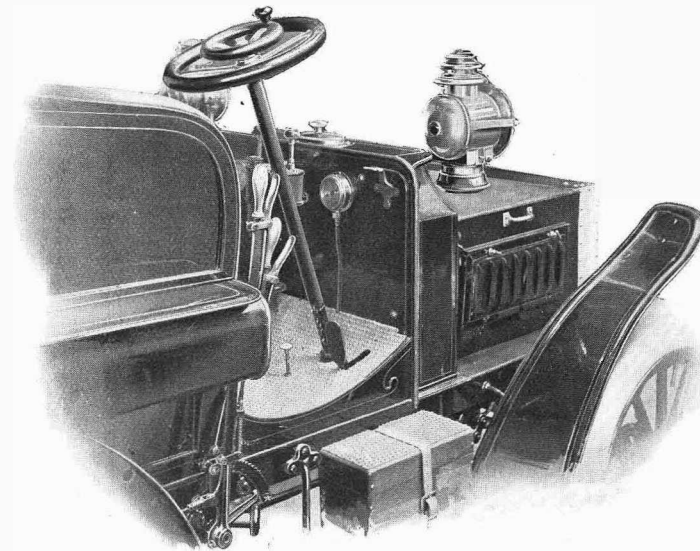


Fig. 1—Control mechanism of the car showing the throttle wheel above the steering wheel, the service pedal, side brake lever, and the reverse lever. A quarter turn of the throttle wheel opens the throttle wide. The plunger by which the air pump is brought into action is seen just in rear of the steering column. On the dash are seen the air gauge and the double mechanical oiler which lubricates the cylinders and crank case.

who now drives it in preference to any other car, which is sufficient to win for it the careful consideration of all intending automobilists.

The original type of White steam car, with its absence of dashboard and lever steering, obtains no longer, for to-day a White steam car as it runs along the road differs but very little from the generally accepted form of petrol car.

The compound double-acting engine is now placed beneath the bonnet forward of the dashboard, as shown in fig. 1, the front end of which is closed by the flanged tubular radiator in exactly the same manner as the radiator of an up-to-date petrol car, while at the rear end of the bonnet, and immediately in front of the dashboard, is placed the water tank, the capacity of which is twelve gallons of water—sufficient for a run of eighty to one hundred miles, according to the road conditions and the skill of the driver.

As in the case of all steam cars, the feature which most excites inquiry is the boiler, or, as the constructors of this vehicle prefer to call it, the generator. It is carried on the frame beneath the front seat, and is enclosed in a thick jacket or shell of asbestos one inch thick, surrounded by a sheet-iron casing. Fig. 2 is from a photograph of one of these boilers with this asbestos shell removed, and, as will at once be seen, it is a water-tube boiler constructed of a series of coils of seamless steel tube, through which the water from the tank is pumped as it is required. The water passes

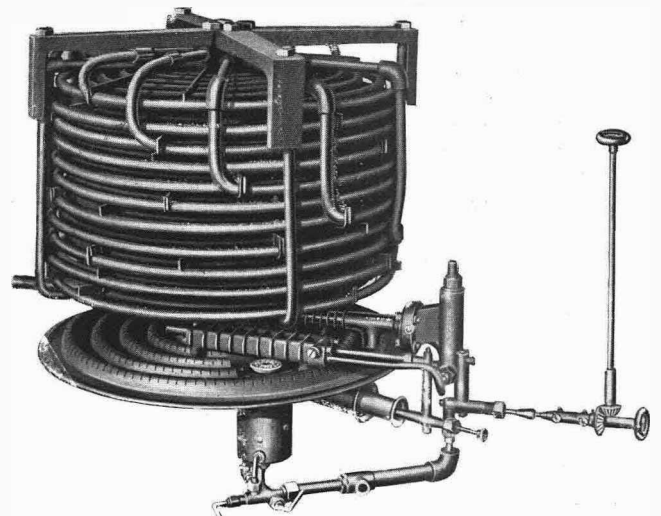


Fig. 2 The White generator and burner shown with the asbestos jacket removed. The outer end of each coil is carried up to the top of the generator before connecting to the inner end of the next lower coil, to prevent the water from running down by gravity and displacing the steam in the lower coils. The straight pipe seen beyond the vaporiser conveys the steam from the lowest coil on its way to the engine. In this pipe is placed the thermostat, which actuates a valve controlling the fuel supply. In this manner the fire is regulated not by the pressure but by the temperature of the steam.

of supply can do no harm to the boiler *per se*, the only result being the stoppage of the car.

The Burner.

Now with reference to the burner, which is also clearly seen beneath the generator in fig. 2. The bottom plate of this burner is of sheet iron domed downwards, while the top plate is of cast iron, formed, as may be seen, with a number of concentric corrugations, with numerous cross saw-cuts through which the mixed air and vaporised oil passes for combustion.

The ribbed member seen lying partially across the burner is the vaporiser, and beneath this, and separate from the burner itself, is the pilot light, by which the apparatus for vaporising the liquid fuel receives its initial heat. This pilot light, once heated, always keeps alight, so that whenever the car is at rest the main burner can be turned completely off, the vaporiser being kept sufficiently hot by the pilot light to ensure an immediate start when desired.

As we have already indicated, the amount of fuel passing to the burner when the boiler is under steam is controlled entirely by the temperature of the superheated steam through the agency of the thermostat. To the uninitiated this sounds a very complicated instrument, but it is in reality a device of the simplest, though of the most ingenious, description.

Referring again to fig. 2, a length of straight pipe will be seen passing right across the centre of the burner, and projecting slightly beyond the bottom coil

on the left-hand side of the picture. This is the lower end of the bottom coil, by which the superheated steam passes to the engine. In this straight length of pipe is placed the thermostat, which is nothing more or less than a length of copper rod, one end of which passes through the stopped end of the tube into the vertical cylindrical vessel seen on the right of the boiler. The expansion and contraction of this rod, acting upon one end of a bell crank lever within the cylindrical chamber, opens or closes a needle valve, through which the liquid fuel has to pass before it reaches the vaporiser. A change of 15° F. in the heat of the superheated steam is sufficient to bring this apparatus into action. Thus the fuel supply is cut down before it reaches the vaporiser. The by-pass valve in the water supply is closed when the pressure falls, and then water passes to the coils, the temperature of the steam is reduced, the thermostat by its movement opens the fuel needle valve, and the fire is again raised. As a matter of fact, and as we have had proved to us by actual demonstration, these functions, by the simple arrangement of the apparatus, go on quite automatically, and need absolutely no attention when driving. When climbing Netherhall Gardens only the other day, the steam pressure, in lieu of falling, actually rose from 250 lbs. at the bottom to 400 lbs., taking the steep initial pitch, and never fell again to 300 lbs. during the whole of this most searching climb, on by Holly Lane to the top of Hampstead Heath.

(To be continued.)

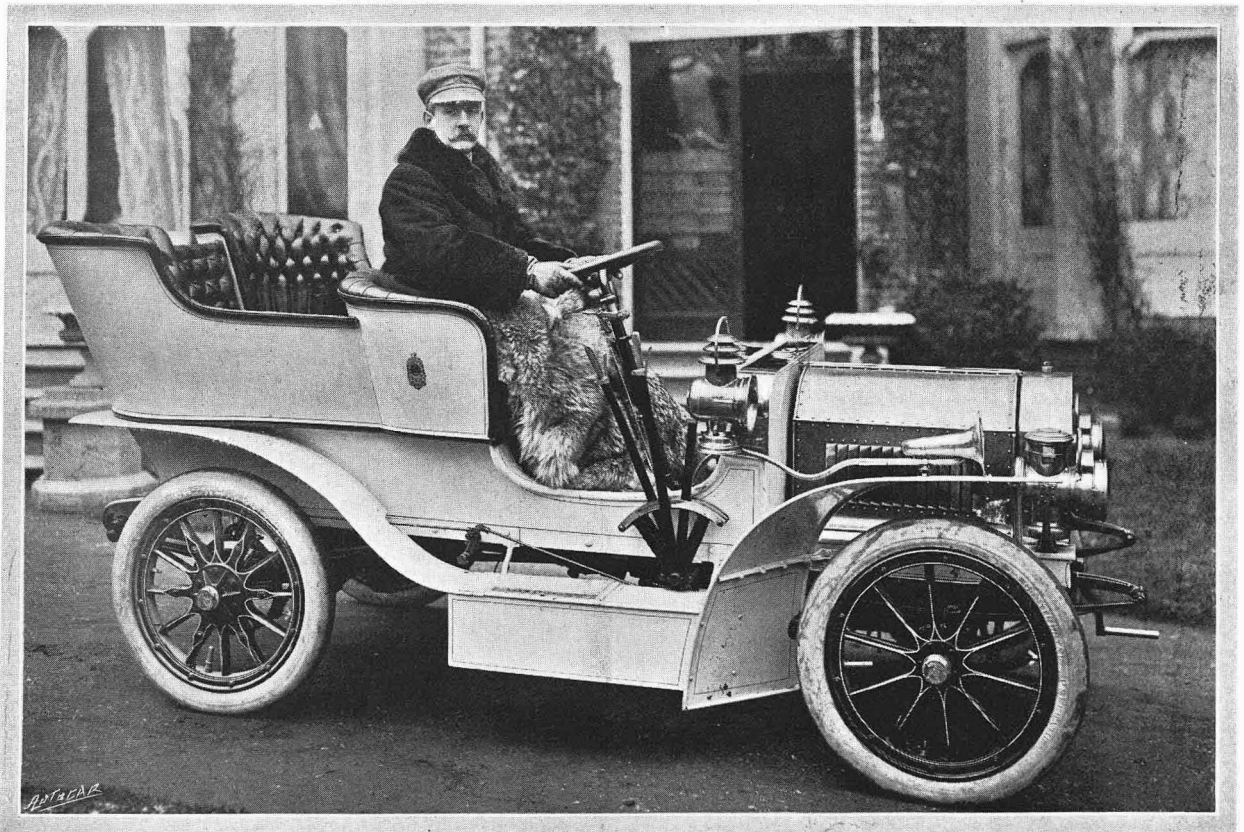


Photo by

Campbell and Gray.

A 12 H.P. EAGLE CAR. The photographic reproduction above depicts a 12 h.p. Eagle car, which, it may be remembered, contains a form of transmission gear peculiar to this make of car. It is of the epicyclic type and has been employed in these cars for some considerable time with every satisfaction. The car illustrated is the property of Mr. Allen, the general manager of the London Hippodrome.

CASUAL COMMENTS. By A. J. Wilson.

Prefatory.

The aspect of automobilism has undergone considerable changes since the time when, upwards of a twelvemonth ago, I was a frequent contributor to the pages of *The Autocar*. I have always contended that the pastime of motor cycling was more cycling than motor-ing, and both, as regards the press, and as regards those exemplary indices to the state of the industry—the shows—developments up to date have abundantly justified my views. *The Autocar* has recognised the fact that the way of the car driver and the way of the motor cyclist have parted, and the trade has followed suit by resolving to disassociate the motor cycle from the motor car at the motor shows, just as the Automobile Club found it expedient, a twelvemonth ago, to organise motor cyclists in a class of their own, distinct from the car drivers. I have never been able to recognise the logic of the small section who affect to draw a line of demarcation between motor cycles and light cars for “men of moderate means,” and large cars for men of wealth. The only possible distinction between any two classes of motor vehicles is the distinction between motor cycles and motor cars; the fact that some motor bicycles are now made without pedals has rendered obsolete the original distinction between the two classes, and for the present it appears inevitable that we must accept the limitation suggested by the Local Government Board, and agree that, until some more logical definition can be evolved, the motor cycle is a vehicle having two or three wheels, and weighing less than three hundredweight. *The Autocar* has pursued the only logical policy, and for a twelvemonth past has ignored the motor cycle, but before taking this step it established *The Motor Cycle*, the only publication of the kind exclusively devoted to the pastime of motor cycling. This departure was contemporaneous with my own partial defection from the minor pastime, and such casual comments as my editor privileges me to publish in these pages will therefore be devoted henceforth entirely to such subjects as interest me as a driver of motor cars, although I still, like many other car owners, retain a large share of affection for the motor cycle.

The External Spark Gap.

How quickly the external spark gap appliance has fallen into desuetude! A twelvemonth ago the market was flooded by appliances for attachment to the sparking plug, as a result of the publicity which I had given in *The Autocar* to the excellent results I had obtained by experimenting with a home-made appliance fashioned in conformity with the described results of the discovery made by the Panhard et Levassor workmen; but at the recent shows there were hardly any such so-called “intensifiers” on view, and I had begun to think that they had quite fallen from popular esteem. But at the Crystal Palace Show I noticed that the four cylinders of the Bollée car—celebrated for its quietness—were furnished with external spark gaps on all the plugs, and I recently came across a high-powered Daimler car which was similarly fitted; and, curiously enough, in both instances the appliances were constructed not upon the lines of any of the numerous patterns marketed by the trade, but practically in exact imitation of the first rough-and-ready appliance which I had experimented with when I used a stair-rod eye with its annular portion filed away to a point. Having met with a lot of trouble during the past winter through misfiring of one or another of my four cylinders, I had

experienced the awkwardness of continually unscrewing my plugs when my coil tremblers failed to indicate the locality of the imperfection, so I determined to try what the external gap would do to help me in locating the faults. I had experienced a good deal of dissatisfaction from the use of the various glass tube covered appliances on the market, and determined that the simplest and most satisfactory appliance was the Phlarix, first marketed by Gamage a year ago. So I bought four Phlarixes and fitted them up on my plugs, but after a few miles use I found that they were more bother than they were worth. Frequent misfires occasioned many dismounts to investigate, and I invariably found that some of the small nuts and screws had shaken loose. It was with sparking plugs of the De Dion and Pognon type that this loosening took place with most irritating frequency, the screw holding the fibre of the intensifier to the plug being a loosely fitting screw destitute of a lock nut; and, moreover, the stem of the screw was much smaller than the hole in the fibre, so that the vibration had the effect of speedily loosening the screw. To secure a sufficiently firm connection between the fibre plate of the intensifier and the end of the sparking plug, a lock nut was evidently essential. The brass mount of the end of the Pognon plug also was liable to shake loose in the porcelain, so I determined to discard porcelain plugs, and to use instead the E.I.C. plug, the external stem of which is long enough to carry both nut and lock nut, as well as accommodating the thickness of the fibre plate of the intensifier. Thus the fibre plate can be effectively secured to the sparking plug. But I then also realised that the adjusting screw and lock nut of the Phlarix are complications which provide additional opportunities for shaking loose, so I discarded them and cut off the ends of the brass plate carrying them, filling the brass plate to a point which approaches within the requisite distance of the E.I.C. lock nut. This point can be bent with pliers, or even with the fingers, to any distance to which it may be desired to adjust the gap, and the lock nut that I removed from the adjusting screw I placed over the small nut securing the secondary wire to the brass mount of the intensifier. Thus I have a perfectly secure and rigid attachment which does not shake loose, and I find that, apart from the knowledge that the existence of the intensifier will force the current to jump across the business ends of a foul plug, the visible tell-tale effect of the external sparking gap is a very considerable advantage in detecting instances of misfire, caused by either imperfect connection of a primary wire at the commutator, or imperfect adjustment at the coil trembler points.

Spring Cleaning.

I am a man of moderate means, and I have aforetime experienced the fierce joy of paying over £50 to have my car overhauled—and left very little better than before the operation. So that when the sweet spring dawned upon us, and I realised that it would be pleasant to enjoy the comforting assurance that my car was in good working order after knocking about during the winter, I determined that I would try the experiment of doing my own overhauling. Having furnished my motor house with a commodious pit and electric light, including an electric torch, which can be carried about at the end of a long flexible wire, I find it a source of considerable comfort to know, every time I take my family out for a drive, that my car is in apple-pie order. Hence it was for the two-fold purpose of economy and

the personal satisfaction arising from the consciousness that every nut and every bolt in the car is secured, and that every part is in a state of perfect adjustment, that I determined to take my car to pieces, examine, adjust, and set it up again with my own hands. But to a man who is obliged to toil in the City day by day, this programme would have involved the sacrifice of evening leisure for several weeks, and yet I did not want to place myself at the mercy of the "motor expert" or the professional "shuvver." So I procured the services of a competent mechanic, a "fitter," who freely acknowledged that he knew nothing about motor cars, but was willing to learn something. By the aid of this worthy workman I accomplished my desire within a week. My programme was to go into the motor house of a morning, and commence to take one part down, explaining to the man what he was to do in the way of completing that particular part of the operations during the day, while I went to the City; my man then carried out my instructions, being not a motor expert, nor having any opinion of his own as to how a thing ought to be done, so that he was content to do just as he had been told. Then, when I returned from the City in the evening, I had another spell of work with him, and thus day after day we progressed systematically over the engine and the chassis. Every nut and bolt was examined, and where necessary tightened or renewed. Every part of the engine was carefully cleaned and adjusted. The springs were unbolted, the car jacked up, and grease was inserted between the leaves of the springs. Rusty

places were carefully cleaned and painted. Missing nuts, of which there were several, were replaced. Every bolt was taken out, and, where found rusty, cleaned and greased before being replaced. Worn places here and there were detected and made good. Such things as piston rings, crank bearings, pump wheel leathers, brake joints and pins—in fact, every part that was liable to have suffered from wear was carefully examined, and where necessary adjusted and made good. Tyres were taken off, examined, and repaired, rims were varnished, worn security bolts replaced by new; indiarubber water pipe joints were renewed, side baskets taken off, cleaned, and varnished; and the car was, in short, thoroughly overhauled to perfection, with the result that it now goes better than it ever did, and the cost has been infinitesimal, compared to what would have been charged had I sent it anywhere for professional attention. The only part that we could not manage in our home workshop was the renewal of the leathers on the pump wheel, so that I had to send the car to the repair shop of one of the most celebrated makers in England, with the result that after they had "settled" the pump to their own satisfaction, before I had gone thirty miles my engine fired hopelessly through the pump failing to force the water through the radiators, and I spent two hours and a quarter in travelling seven miles, only reaching home eventually by dint of the expedient of removing the bonnet completely, so that the air would to some extent cool the cylinders—a most irritating experience.



A WAR OFFICE LORRY. The lorry illustrated above is one of two which the Milnes-Daimler have supplied to the War Office for transport service. Petrol engines supply the tractive power, the transmission being on the company's now well-known system.

The Board of Agriculture has lately issued two further sheets of Nos. 33 and 267 of their tin. to a mile survey. Sheet 33 deals with the district round Stockton-on-Tees, and extending from Kirk Levington on the south to Greatham on the north, and from Normanby on the east to Darlington and Aycliffe on the west. This sheet includes that portion of the classic London to Edinburgh route which lies between Croft and on

towards Durham, passing through Darlington and Aycliffe. Sheet 267 is a more interesting production from the tourist's point of view, its name title being Hungerford, including as it does so much of the Bath Road as lies between Thatcham and a point four miles east of Marlborough. The area north and south takes in Upper Lambourn and Compton, and south, Shalbourne, Ham, and Woodhay.

THE NAPIER IGNITION.

All consistent followers of the doings of the automobile world will be aware that a single coil synchronised ignition is employed in the latest Napier cars—the four and six-cylinder patterns. Hitherto no detail particulars of this ignition have been available for the information of the automobile public, but we are now able to give such particulars, together with illustrations, as will clearly show the component parts of the apparatus. The principle of the ignition is that one coil only is employed for any number of cylinders. This is, of course, an ideal form, and one which many designers have been at work upon for some time past, having in one or two cases anticipated the general principles of the Napier.

of the distributor 2. This is plainly shown in fig. 3. Around the distributor 2 are pieces of metal placed equidistant around the circle, these corresponding in number to the cylinders. These collect the high tension current and convey it to the respective sparking plugs through the usual high tension wires, which in the instrument in question are attached two to each of the three collector pieces. The commutator 5 has around its periphery four or six projections as at 6, according to the number of cylinders to be fired, and a spring contact blade and platinum tipped screw 7, through which the low tension circuit is completed each time a projection lifts the blade into contact with the screw 7 at the moment the current is required.

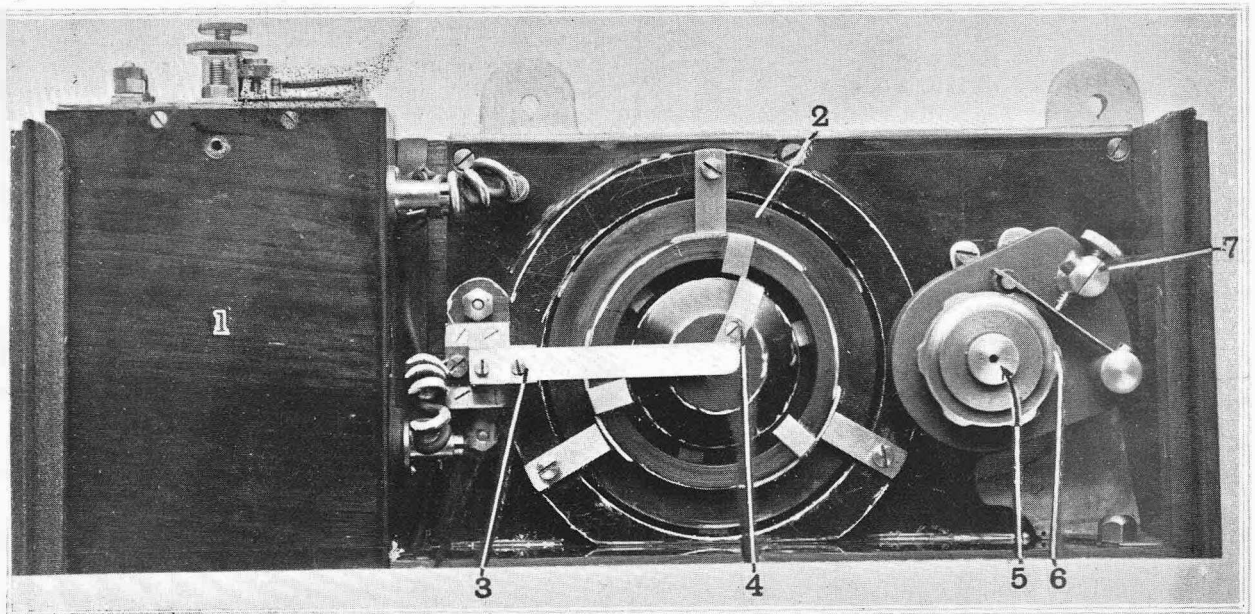


Fig. 1.—Elevation of the Napier synchronised ignition apparatus.

The secondary feature is the simplicity of the work- Fig. 3 is a plan of the Napier ignition timing, which necessary, as the trembler of the coil may be constantly and commutator respectively. A chain from the kept at work, the high tension current being distributed engineshaft drives one gear-shaft, while the other chain to the sparking plugs in the engines as each cylinder is wheel on the opposite gear wheel actuates the pump. fired in its turn. This, however, would be a somewhat The quadrants 10 and 11 advance or retard the spark wasteful method as to current consumption, and, therefore, a commutator is employed. This commutator permits of the passage of current from the accumulator around the primary windings of the coil each time a cylinder has to be fired, and it is, therefore, a much simpler matter to synchronise the firing of the whole of the cylinders than with a multi-coil arrangement, as any variation in the adjustment of the magnetic tremblers on the coils results invariably in one or more cylinders lagging behind the others, and thus setting up engine vibration and causing a loss of power. With the single coil arrangement every cylinder must fire equally in its turn. Therefore, any one cylinder can not fire in front of the other cylinders.

Turning to the illustrations, fig. 1 depicts the apparatus in front elevation, that is, the side which is facing the driver. The single coil is numbered 1, while 2 is the high tension distributor, and 3 a spring blade which is in rubbing contact with the centre metallic piece 4

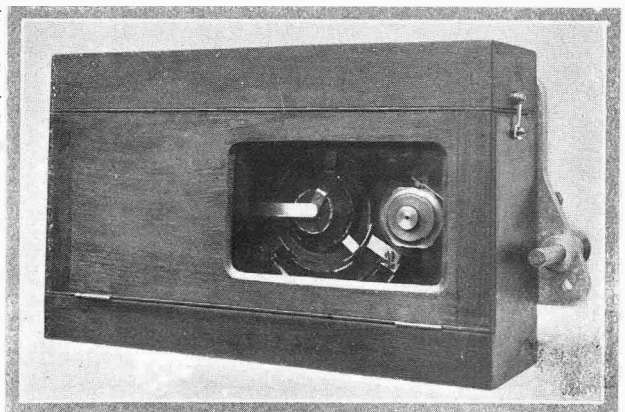


Fig. 2.—The Napier ignition box, as seen from the front seat.

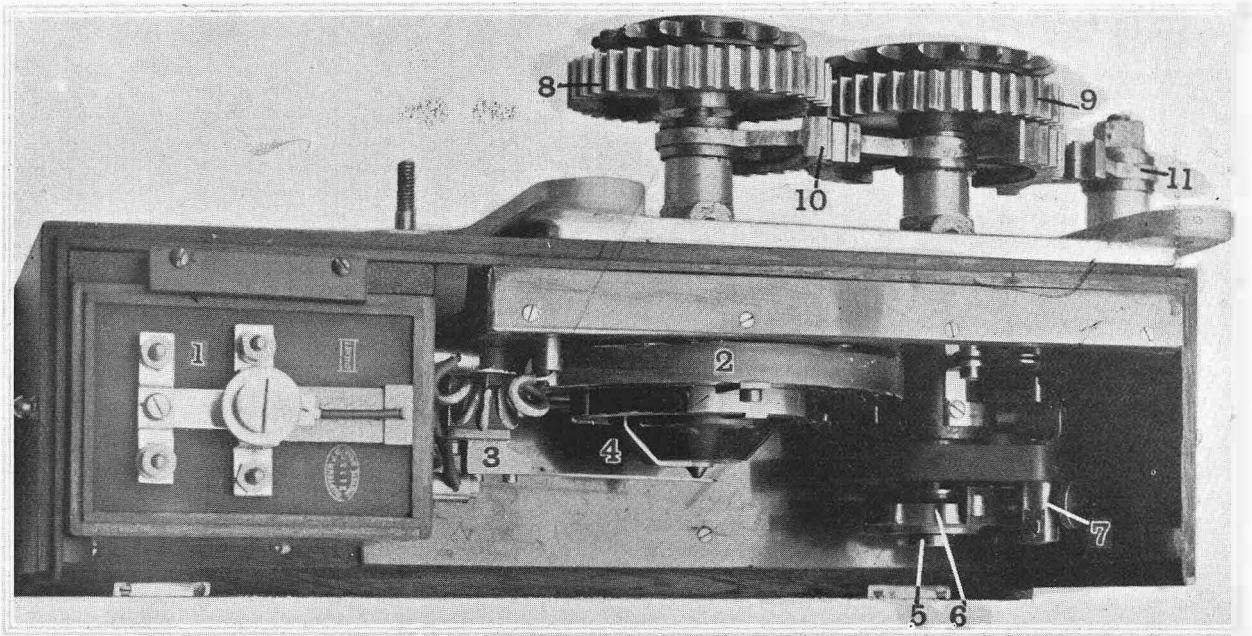


Fig. 3.—Plan of the Napier ignition apparatus.

as desired. All these gears are in front of the dashboard and beneath the bonnet. The illustration fig. 2 depicts the whole apparatus enclosed, the window seen being provided so that the commutator may be readily

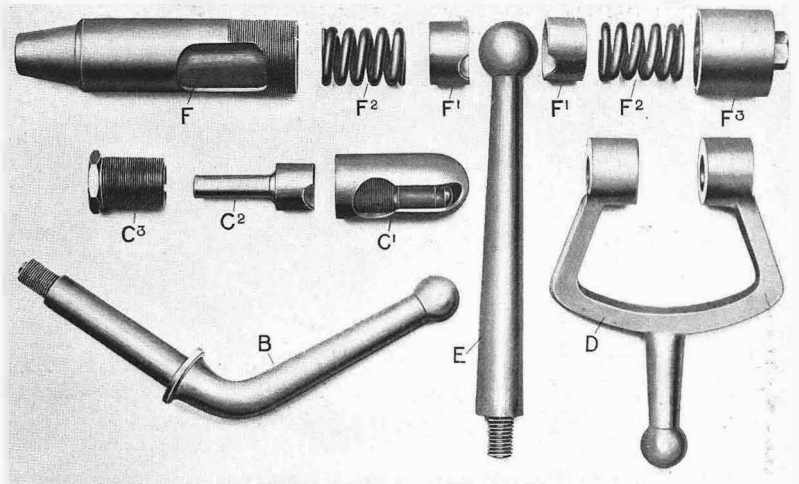
observed by the driver. Those interested in the ignition device will be pleased to know that it may be seen in operation at 14, New Burlington Street, London, W.

THE ARIEL STEERING GEAR.

Many motorists know how their steering gear works and what it looks like externally, but there are a great number who do not thoroughly comprehend the actual internal arrangements. In order to acquaint those of our readers who thirst for knowledge of their cars, we illustrate the steering rod ball joints, etc., dissected to show clearly the constructional details of the Ariel cars, taking it that the Ariel gear fairly represents the British practice.

In this F is the casing of the ball joint belonging to the lower end of the steering lever E, depending from the worm and quadrant casing. F contains the spring F², the divided ball cap F¹ F¹, another spring marked F², the whole being retained by the cap nut F³. Thus, the ball cap F is sandwiched in between two springs, the effect of this being to effectually deaden any shocks from the road, preventing them from either affecting the driver's hands or steering mechanism. D is the arm to which the other end of the steering rod, with its ball joint C¹ is pivoted. D is rigidly fixed with the steering knuckle, and enters the body of the joint C¹, passing through the hole, which is just large enough to receive it, and then sliding back in the slot, which is sufficiently large to permit free

motion, but not large enough to allow the ball to come out. Against this ball the piece C² is inserted, this forming the other ball cap. Holding C² in position is



the lock nut C³, which, when in place, entirely encloses the stem on C², the purpose of this arrangement lying in the fact that before the ball can possibly be withdrawn or drop out on the road the nut C³ would have to slack back the whole of its length, long before which the driver would notice the fault in his steering gear.

Messrs. T. M. Mackay and Co., of Glasgow, have opened a motor garage in Ayr for about thirty cars, and have also inspection pits, cell-charging appliances,

and repair shop. The garage is in the centre of the town, convenient to all the main roads. It is fitted with electric light and all appliances for repairs.

OCCASIONAL GOSSIP. By the Autocrat.

As time goes on, the motorist and the user of the motor lorry may be enemies, particularly now that the tare weight, *i.e.*, the weight of the motor lorry without its load, is increased. The lorries which are under the three-ton limit, or, at any rate, only a very little over it, do no little harm to the roads, and when we get the heavier type I am afraid they will be worse still, particularly as I notice the War Office motor lorries are allowed to have fluted wheels like traction engines. So far as my observation goes of the defects of the motor lorry on roads, the harm appears to be done entirely by the driving wheels, even when these are smooth. This is due partly to the fact that the heavier load is carried on this pair of wheels, and on account of the slipping which takes place, so that the wheels have a grinding effect, which is more or less disastrous to the road surface when muddy or wet. It seems to me the only way to overcome these objections is for all four wheels to be driven. I would be the last to propose restrictions in the way of motor haulage, but I should be glad to see a regulation enforced laying down a maximum load for each pair of wheels. This would compel the designer to obtain adhesion by driving four or more wheels, and the better distribution of weight would prevent the lorry from doing any harm to the road. Traction engines are quite bad enough in this respect, and we do not want to have a high-speed variety of the same sort careering round the country and tearing the roads all to pieces.

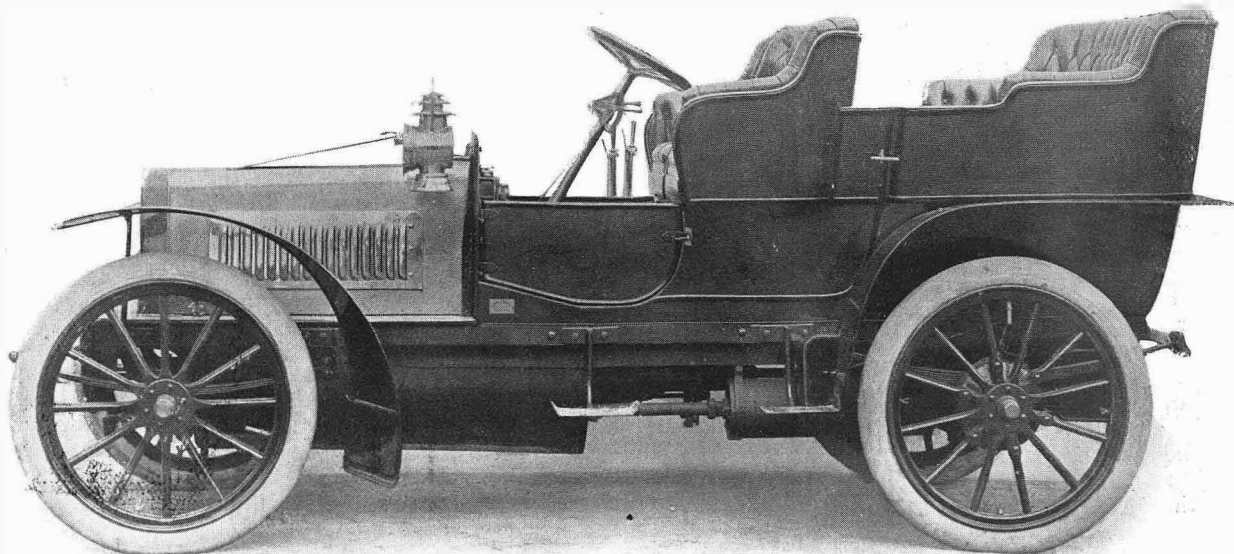
x x x x

The possession of a motor car is regarded by many people as greatly increasing their importance. This attitude of mind is not without its advantages, but I am afraid it leads to a great deal of exaggeration, not to say absolute romancing on the part of those people who always endeavour to appear richer and better than they really are. In fact, for my own amusement, I have divided the class into two sub-divisions; one sort I call the gas-bag and the other the gas-baby. I will give you an illustration of what I mean. The gas-bag is the kind of man who, if he sees one reading a motor paper in a railway carriage, will inform one

that he has a car. He will probably name some well-known make that costs at least £1,000, and then tell one that he bought it practically new for £200 odd. He is blissfully ignorant of the fact that by mentioning the price he paid he has proved himself to be a liar. The gas-baby, on the other hand, may really possess a car, but he is so pleased with himself and his possession that he cannot help telling everybody he comes across. He always manages to introduce "*my car*" somehow, "*my motor house*," "*my chauffeur*," and altogether gives one the idea of being unfeignedly surprised that he should have the good fortune to possess a car. I daresay if one knew all about him, one would be equally surprised.

x x x x

Only the older readers of *The Autocar* will remember that Lieutenant-colonel Holden, the new chairman of the Automobile Club, designed and had made for him some years since a four-cylinder motor bicycle. It was quite an original machine, and was, I believe, in its way very successful. It was handicapped, however, by the fact that it was very costly to manufacture. This was partly due to the system as a whole, but I have always thought that it was also because of Lieutenant-colonel Holden's training. The director of a Government factory is not like his less fortunate brother who has charge of an ordinary works, turning out manufactured articles for a profit. As far as I remember the Holden bicycle, little attempt was made to consider the practical manufacturing side of the question. For instance, the metal plug to the petrol tank was specially designed and made, and everything throughout the machine was more or less on the same individual and costly lines. I do not say that the special petrol plug was no better than the ordinary, but, magnificent though it may have been, it was not practical so needlessly to add to the cost of a machine like a motor bicycle; in fact, it has always struck me there was a strong War Department flavour about that petrol plug, which makes the ordinary taxpayer wonder how far the Royal arsenals and dockyards are run on similarly extravagant lines.



A 24 h.p. four-cylinder Simms-Welbeck car. This particular machine is the property of Mr. J. Mayoh.

FROM JOHN-O'-GROAT'S TO LAND'S END (By D. H. Whitehead.)

Leaving Glasgow on Tuesday, March 22nd, at twelve o'clock, I started to run up to John-o'-Groat's to try and make a non-stop run from there to Land's End, and beat Mr. Stocks's record of 62 hours 32 minutes.

I arrived at John-o'-Groat's on Wednesday night, and left the following morning at 8.15. From there the roads were very good, but plenty of newly-laid stones were found, which considerably delayed us, but the hills, though steep at Berriedale and The Ord, gave no trouble. All went well until 150 miles had been traversed, when a large collie dog jumped over a wall right in front of the car, giving me no time to pull up and so avoid a collision. This accident damaged the steering gear and the radiator, and rendered my companion practically unable to relieve me with the driving, thus making a non-stop run impossible.

The first stop was made soon after Blair Atholl, owing to the railway gates being closed. Two other stoppages of the same description occurred, and two more for flocks of sheep, and a further stop before Glasgow owing to a blockage in the petrol pipe.

The next stop was made on Shap Fell. This occurred through the radiator being damaged by the dog, and we were obliged to fill up with water. I then thought it advisable to stop at Warrington and make the necessary repairs to the radiator. We were again forced to stop at Bristol, for in spite of our delays we were some two hours ahead of our scheduled time,

and therefore no petrol or other supplies were awaiting us.

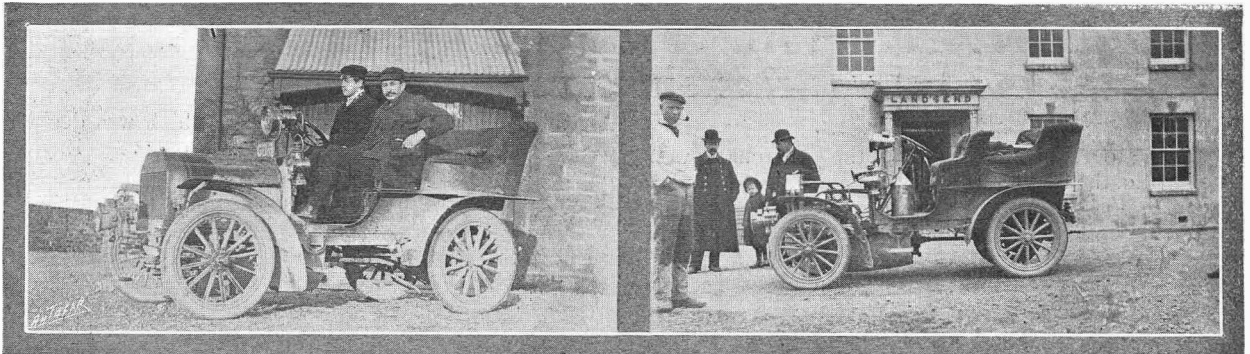
From Bristol we had a series of stoppages on account of my not knowing the road, and, it being night time, there was no one about to direct us.

At Bodmin I resolved to stop the car and sleep for three and a half hours, as I had already driven for over thirty-six hours continuously. I also stopped for food, as owing to the previous stoppages all hopes of making a non-stop run were abandoned, my only object now being to break Mr. Stocks's record. This was easily accomplished, as will be seen by the time. I reached Land's End at 12.30 on Saturday, covering the total distance of 927½ miles in 52 hours 39 minutes, against Mr. Stocks's record of 888 miles in 62 hours 30 minutes.

The only mishaps during the run were the killing of one dog, five rabbits, and running into a churchyard in the dark.

The net running time was 44 hours 37 minutes.

The amount of petrol consumed on the entire journey was 34⅓ gallons. The car I was driving was an ordinary 10 h.p. touring Argyll, which I had been driving for three weeks in Glasgow and through Surrey and Sussex before I had any intention of attempting this journey. The car was, with the exception of the steering gear, one front spring bracket, and the radiator, which were damaged by the dog, in quite as fit condition at the completion of my journey as the first day I drove it.



The start from John-o'-Groat's House

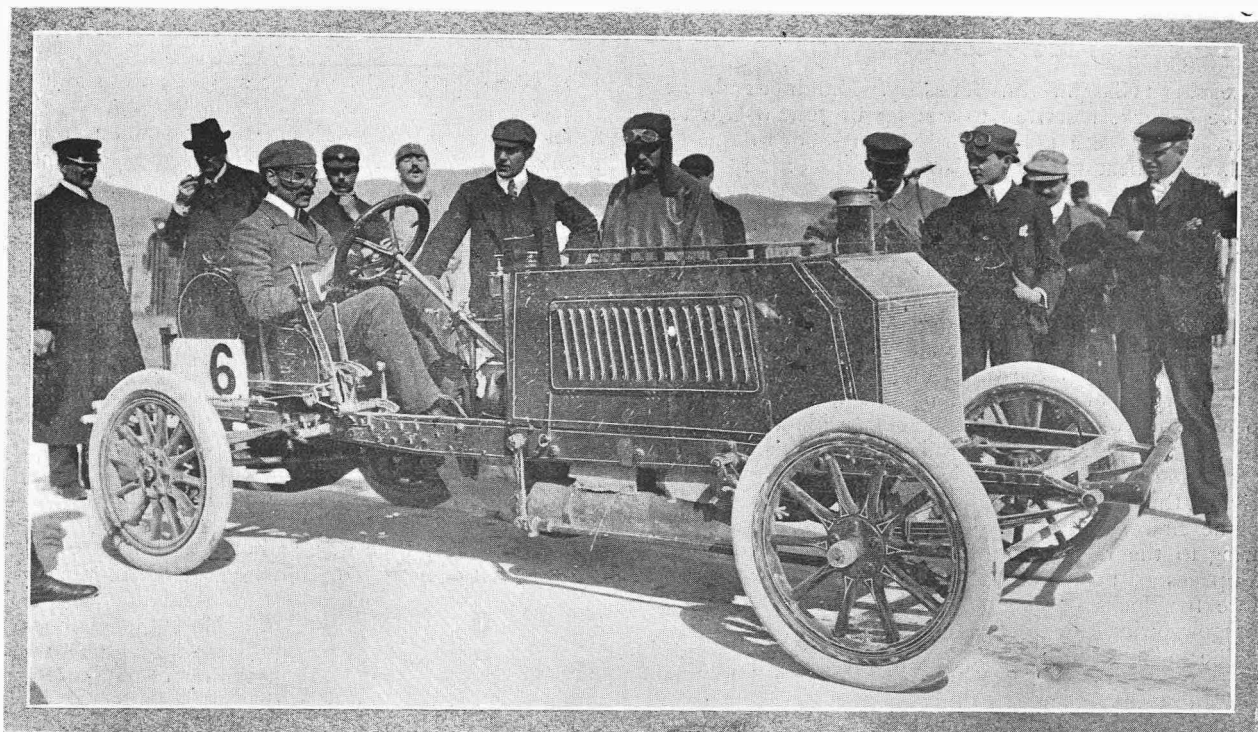
The finish at the Land's End Hotel.

APPLICATION FOR SPEED RESTRICTIONS REFUSED.

The Secretary for Scotland, the Right Honourable Graham Murray—who represents the Local Government Board in the northern part of Great Britain, or, rather, occupies in Scotland for the purposes of the Motor Car Act, 1903, a position analogous to that of the Local Government Board in England—has given his first decision in regard to an application from a local authority for the imposition of a speed limit upon motor cars. The decision is in every respect most gratifying to motorists, and one, we may assume, which represents not only the personal views of the Secretary for Scotland himself, but those of the Local Government Board as well. The local authority making the application was the Stirlingshire County Council, the Western District Committee of which decided to adopt a set of byelaws imposing prohibitions and restrictions on motor car traffic. Having notified the Scottish Secretary of their intentions they received from the Right Honourable gentleman in reply a letter pointing out that it might be better not to proceed with the proposed

restrictions and prohibitions until it was seen whether the other provisions of the Act rendered such a resort necessary. The mere possibility of danger was not enough in itself to justify the restrictions proposed unless from actual experience it was found that there was danger, despite the caution of an efficient driver. Where there was danger a warning signboard would in the majority of cases prove quite sufficient. He trusted the County Council would not consider him unreasonable if he asked them to reconsider the whole matter. Meanwhile, he thought it was against the general public interest to give his approval to the restrictions proposed and would not do so.

Naturally, the county legislators of Stirlingshire are exceedingly annoyed at this rebuff; and they had to content themselves with saying hard things against the Secretary and against motor cars in general. They will now have to turn their attention to the erection of warning notices as to dangerous places in their district.



Mr. Mark Mayhew on his 100 h.p. Napier. This car, which ran third in the Rothschild cup over the flying kilometre, defeated all the Mercedes cars, and was only beaten by the two invincible Gobron-Brilliés. In the hill climb it finished fifth, with the two Gobron-Brilliés and two Mercedes in front of it, and three Mercedes, including Jenatzy's, behind it. This is the vehicle which Mr. Mayhew will drive in the Gordon-Bennett eliminating tests to decide on the British champion cars.

CONTINENTAL NOTES AND NEWS.

THE NICE AUTOMOBILE WEEK.

The Battle of Flowers.

With the touring competition and the paperchase, won by M. Millo, the battle of flowers (organised for Monday last week) and the Concours d'Élégance (organised for the Tuesday following) are but the opening of the Nice meeting, of which the *pièce de résistance* is the speed trials. The battle of flowers had to be put off for a day on account of the rain, but on the following day the sun came out in all the splendour suitable for such a *fête*, and, indeed, it is difficult to find words to describe the joyous spectacle produced in the public gardens of the Promenade des Anglais by the automobiles decked in party-coloured coverings of the beautiful spring flowers for which the Riviera coast is so noted. The scene was one of great splendour, and the battle waxed furious. Motor cars are now much more elegant, much longer, and much more silent, and lend themselves particularly to a *fête* of this kind, for they can glide along silently, and stop and restart without noise and vibration, and the new radiators with their fans prevent the water from overheating. Amongst the petrol cars, which, of course, predominated, there were also the new mixed petrol-electric cars brought out by Kréger, which were particularly interesting from the fact that they came to Nice by road.

Amongst the distinguished spectators were Prince Albert of Monaco, Baron Van Zuylen, Prince Lubecki, the Grand Duke of Lichtenberg, Henri de Rothschild, etc. Amongst the prizes, the principal was awarded to a car belonging to Mrs. Munro and Mr. Schwab, which was decorated with red, white, and blue flowers, and surmounted with French and English flags joined together in representation of the *entente cordiale*. Mr. and Mrs.

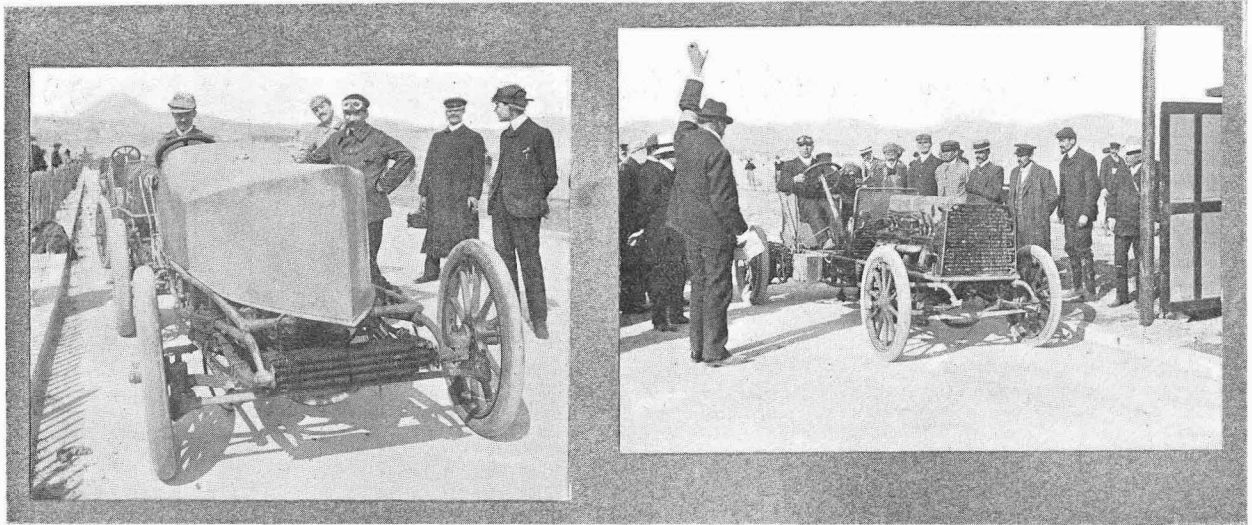
Abaye received a prize for their car, which was decked out as a cradle in flowers, and Baron Van Zuylen received the third prize for his covered car, decked out in narcissus and cornflowers.

The Concours d'Élégance, which followed the battle of flowers, was, of course, a question of appreciation of carriage-work, which is yearly becoming more comfortable and beautiful. The jury for this competition consisted of Prince Albert of Monaco and his aide-de-camp Lieutenant Sauerwein, MM. Balny, d'Avricourt, Camille Blanc, Albert Gauthier, Laroze, Gaudoin, and Padovany. The first prize was carried off by a Mercedes with a Kellner body, and the second by a Delahaye with a Delahaye body.

The Mile Race and the Rothschild Cups.

The day exclusively reserved for speed trials was Thursday, March 31st, when the mile race and the two Rothschild Cups were run off. It was a remarkable day as far as speed was concerned. Records fell before the terrific assaults made upon them by the competing cars. The victory of the day fell without any possible doubt to Rigolly, who began a series of successes last year, winning most of the speed trials on his 100 h.p. Gobron-Brillié car, and who continued these triumphs on his new 110 h.p. Gordon-Bennett type, and won not only the mile with a standing start, but the flying kilometre, in both the Henri de Rothschild Cups.

The details of the day will be interesting to all automobilists. For the first time, the 150 kilometres an hour has been surpassed by no less than two drivers, namely, Rigolly and Duray, both driving Gobron-Brillié cars.



The two Gobron-Brillie cars which carried all before them at Nice. On the left is the 110 h.p. with Rigolly at the helm. On the right is its predecessor, the 160 h.p., driven by Duray.

The first trial was the mile with a standing start, which was competed for on the Route du Var, which is a prolongation of the Promenade des Anglais. The road surface is not as good as was the cement of the Promenade des Anglais, nor is the course quite straight. There were five distinct categories entered for the race, namely, motor bicycles, motor cycles, voiturettes, light cars, and heavy cars, and Rigolly headed the list of all the categories, and made a dead heat with his stable companion, Duray, each of them covering the distance in 53 $\frac{3}{4}$ s., covering at the same time the kilometre at the rate of 150 kilometres an hour for the first time, and thereby creating the world's record.

Not so fast as the Gobron-Brillie cars, the Mercedes showed their quality as regards clutch power—quality which will be very useful on the Taunus course of the Gordon-Bennett race. Behind Rigolly and Duray, the third place fell to Werner on an 80 h.p. Mercedes. Jenatzy, Fletcher, and Braun followed, each on a Mercedes, and then came Mark Mayhew on a 100 h.p. Napier, Warden being last on a Mercedes, he even averaging over 117 kilometres an hour.

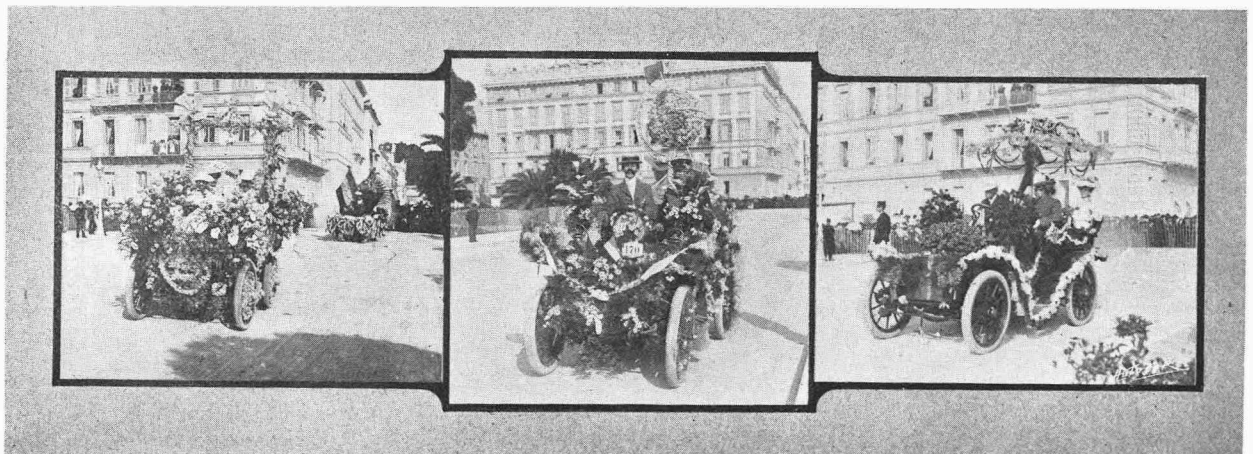
In the two Henri de Rothschild Cups the victory was carried off each time easily by Rigolly, the hero of the day.

The first trial for the third cup was reserved to vehicles with explosion engines, weighing more than 650 kilogs. and less than 1,000 kilogs., carrying two passengers side by side, over a flying kilometre. This race was won last year by Serpollet, who became owner of the cup. This year Rigolly on a Gobron-Brillie, with a longer start, covered the flying kilometre of the Rothschild Cup in the extraordinarily short time of 23 $\frac{3}{4}$ s., which represents an average speed of 152 kilometres 542 metres an hour—practically ninety-five miles. The second Henri de Rothschild Cup fell also to Rigolly. This trial is reserved to vehicles with explosion engines, and took place for the first time last year, and was won by Hieronymus on a Mercedes in 31 76-100s., at the speed of 113 kilometres 328 metres per hour. Rigolly this year pulled down the record by more than 7s., as he accomplished the distance in 24s., at a speed of 150 kilometres an hour.

In the voiturette and light car class no records were beaten, although Durand did fairly well on his Mors car in the light car class.

Rigolly's Gordon-Bennett Gobron-Brillie Car.

It will be interesting to speak of the car which Rigolly drove so successfully, and which he will pilot



Some of the competitors in the decorated car competition which was won by an English lady driving a Gladiator car.

Continental Notes and News.

through the French eliminating trials for the Gordon-Bennett Cup. It is a car of 110 h.p., with four cylinders and eight pistons, which gives it a very steady and regular drive, and seems to point out that this system of a balanced motor has certain advantages.



The car which won the first prize for the best decorated motor vehicle at the battle of flowers at Nice on March 28th. This competition was won by an Englishwoman, Mrs. Walker Munro, of Rhinefield, Brockenhurst, Hampshire. The vehicle was a 12 hp. Gladiator.

Valve chests are dispensed with in this motor, and one cylinder is long enough to equal two, and it has a very large bore, which is a considerable advantage, and renders the cooling much more efficient during the explosion.

The Gobron-Brillie cars will be most redoubtable adversaries in the eliminating trials for the Gordon-Bennett Cup. To say that they will win would be going very far, but it must be admitted that they are very fine cars, and they are really the first French cars in which the *mise au point*—so essential to racing cars—has been completed. Should they win the eliminating trials, the Mercedes Co. will have to turn out faster cars than those presented at the Nice meeting in order to keep the cup in Germany.

Speed Trial Results.

The following is the classification in the speed trials:

MILE RACE (1,609 metres).

With a standing start (1,609 metres), with classification on the mile (the time for the flying kilom. is only given for comparison).

VOITURETTES.				
Driver.	Car.	Time miles.	Time kilo.	Speed per hour.
1. Deletang (Passy-Thellier)		1m. 42s.	55 $\frac{1}{2}$ s.	
LIGHT CARS.				
1. Durand (Mors)		1m. 21 $\frac{3}{4}$ s.	44 $\frac{3}{4}$ s.	80.717
2. Neitham (Decauville)		1m. 33 $\frac{1}{2}$ s.	48 $\frac{1}{2}$ s.	74.376

CARS (600 TO 1,000 KILOS.)

*1. Rigolly (Gobron-Brillie)		53 $\frac{3}{4}$ s.	25 $\frac{3}{4}$ s.	140.625
*1. Duray (Gobron-Brillie)		53 $\frac{3}{4}$ s.	26 $\frac{1}{4}$ s.	135.338
3. Werner (Mercedes)		57 $\frac{1}{2}$ s.	30 $\frac{3}{4}$ s.	117.647
4. Jenatzy (Mercedes)		59 $\frac{1}{2}$ s.	30 $\frac{1}{2}$ s.	119.205
5. Fletcher (Mercedes)	1m.	1 $\frac{1}{4}$ s.	30 $\frac{1}{2}$ s.	118.423
6. Braun (Mercedes)	1m.	1 $\frac{1}{4}$ s.	30 $\frac{3}{4}$ s.	117.647
7. Mark Mayhew (Napier)	1m.	3s.	32s.	112.500
8. Warden (Mercedes)	1m.	3 $\frac{1}{2}$ s.	30 $\frac{3}{4}$ s.	117.647

*Record (dead heat).

SECOND HENRI DE ROTHSCHILD CUP.

Reserved to cars with explosion engines. Distance, one flying kilom.; flying start, 600 metres; holder, Hieronymus (Mercedes) in 31s. (76.100).

Driver.	Car.	Time miles.	Speed per hour.
*1. Rigolly (Gobron-Brillie)		24s.	150.000
2. Duray (Gobron-Brillie)		26 $\frac{1}{4}$ s.	135.338
3. Mark Mayhew (Napier)		28 $\frac{3}{4}$ s.	125.874
4. Warden (Mercedes)		29 $\frac{1}{2}$ s.	122.448
4. Braun (Mercedes)		29 $\frac{1}{2}$ s.	122.448
4. Werner (Mercedes)		29 $\frac{1}{2}$ s.	122.448
7. Fletcher (Mercedes)		29 $\frac{3}{4}$ s.	120.805

* Record.

THIRD HENRI DE ROTHSCHILD CUP.

Reserved to cars of from 500 to 1,000 kilos., with explosion engines. Distance, one flying kilom.; flying start, 600 metres.

*1. Rigolly (Gobron-Brillie)		23 $\frac{1}{2}$ s.	152.542
2. Duray (Gobron-Brillie)		25 $\frac{1}{4}$ s.	142.936
3. Mark Mayhew (Napier)		27 $\frac{1}{4}$ s.	132.352
4. Braun (Mercedes)		29s.	124.137
5. Werner (Mercedes)		29 $\frac{1}{4}$ s.	123.294
6. Jenatzy (Mercedes)		29 $\frac{3}{4}$ s.	121.621
7. Fletcher (Mercedes)		29 $\frac{3}{4}$ s.	120.805
8. Warden (Mercedes)		30 $\frac{1}{2}$ s.	118.421

* World's record.

The winners are therefore—

MILE RACE.

Cars.—First: Dead heat Rigolly and Duray (Gobron-Brillie) in 53 $\frac{3}{4}$ s. (record).

Light Cars.—First: Durand (Mors) in 1m. 21 $\frac{3}{4}$ s.

Voiturettes.—First: Deletang (Passy-Thellier) in 1m. 42s.

Motor Cycles.—First: Tamagni (Marchand) in 1m. 7 $\frac{3}{4}$ s.

SECOND HENRI DE ROTHSCHILD CUP (KILOM.)

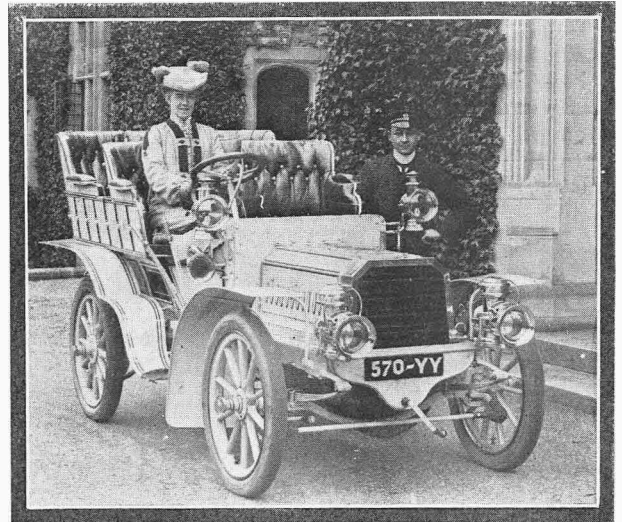
First: Rigolly (Gobron-Brillie) in 24s. (record).

THIRD HENRI DE ROTHSCHILD CUP (KILOM.)

First: Rigolly (Gobron-Brillie) in 23 $\frac{1}{2}$ s. (world's record).

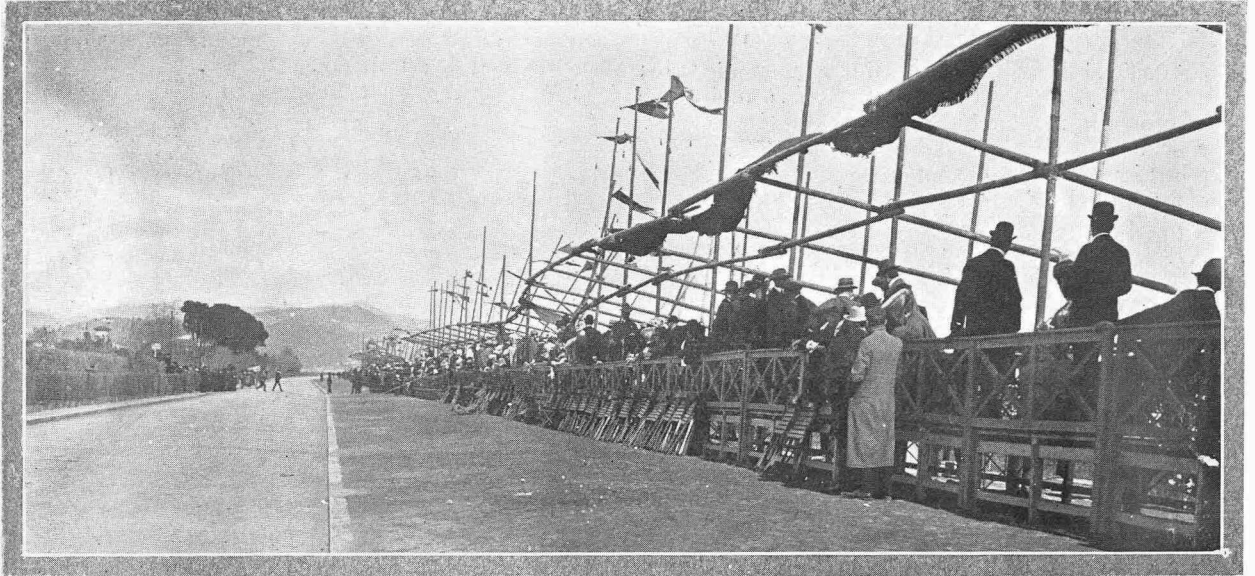
The De Caters Cup. (Hill Climb.)

The Nice automobile week has ended completely in favour of the Gobron-Brillie automobiles, not forgetting their excellent and tried drivers, Rigolly and Duray, for after having brilliantly carried off the mile and the two Henri de Rothschild Cups, and beating the



Mrs. Walker Munro on her 12 hp. Gladiator on which she won the competition at Monte Carlo for the best turned out car without flower decoration. This was the day after her victory on the same car in the battle of flowers at Nice.

records, Duray has once more had a victory in the De Caters Cup, which took place on Friday last week. The competition is open to all automobile vehicles, without distinction of category and without limit of



A view of the grand stand at Nice, from which favoured spectators beheld the racing.

weight, and took place on 500 metres on a ten per cent. hill, with a standing start. The first year this competition was organised it was run off on a distance of one kilometre, and won by Serpollet in 59s. Last year it was won by Rigolly at Laffrey over a distance of one kilometre in 50s., and this year it has been run off on the distance of 500 metres, and won by Duray, the ex-recordman of the kilometre, and also on the same car which was piloted to success at Laffrey last year by Rigolly. This is quite a coincidence, and a unique case where a car has won one of those great competitions two years in succession, and shows that there is undoubtedly something in the Gobron-Brillie principle of the double pistons. Rigolly took the next place to Duray, 1s. after him, for he lost a second in getting away, and was not able to pick it up again on the hill. This is no doubt owing to his having only three speeds, while Duray has four, and, therefore, with the same weight the four-speed car has all the advantage at the start.

The Mercedes cars got away well, but were not quick enough, and Werner was only able to class himself third, 1s. behind Rigolly. Mark Mayhew on his Napier came in fifth, 2s. after Werner, and also beaten by Braun. The following is the classification:

1. Duray (Gobron-Brillie), 26s.
2. Rigolly (Gobron-Brillie), 27s.
3. Werner (Mercedes), 28s.
4. Braun (Mercedes), 28½s.
5. Mark Mayhew (Napier), 30s.
6. Fletcher and Jenatzy (Mercedes), dead heat, 30½s.
8. Warden (Mercedes), 32½s.
9. De Cesti (60 h.p. Mercedes), 36½s.

To avoid the possibility of accident, the 1 in 10 portion of the hill selected for the contest was practically straight. The start was a standing one, but despite this, the winner did an average of forty-three miles an hour for the 543 yards.

The Nice meeting ended with this hill-climbing trial, and though the number of different makes competing was not large, still it was a fight amongst giants.



Jenatzy on his 90 h.p. Mercedes being started for the standing mile.

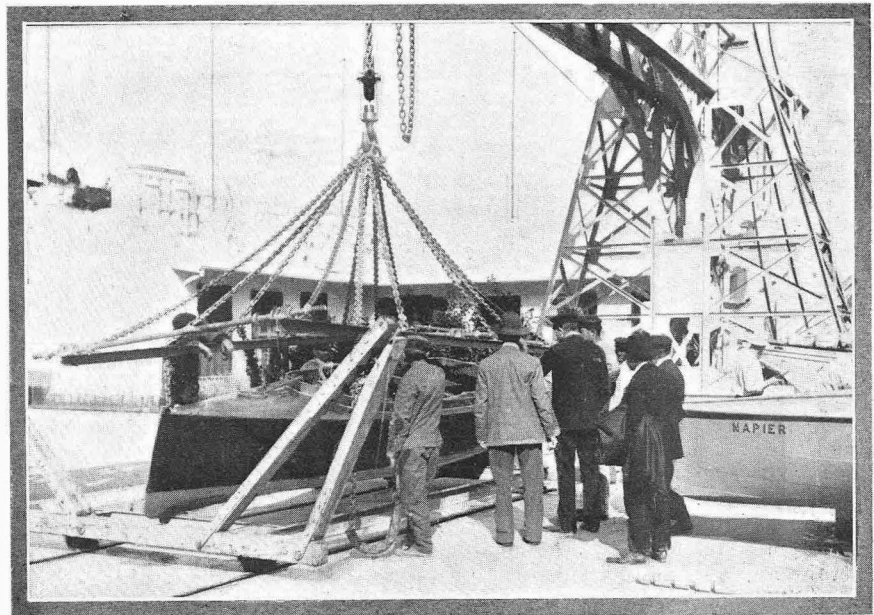
*Continental Notes and News.***The Exhibition and Races of Automotile Boats at Monaco.**

The official inauguration of the Automobile Boat Exhibition by Prince Albert I. of Monaco took place on Wednesday, March 30th. Favoured by splendid weather, this first day of the exhibition was a most brilliant success. The whole sporting Côte d'Azur was present, and Monaco swarmed with motorists and well-known society people. The Prince, as is well known, is a most fervent yachtsman. The very important question of the application of the light motor to navigation, which will perhaps revolutionise the construction of vessels of light tonnage, has particularly attracted him. Still more, he feels interested in cat-head boats and fishing boats. In the course of his visit, the Prince handed to M. Camille Blanc, president of the exhibition, the cross of the order of St. Charles, and to M. Gabirau, the indefatigable colleague of M. Camille Blanc, the cross of chevalier of the same order.

There are five or six racing boats which are attracting special interest in this exhibition. These boats are admirably designed and constructed for the race. The bows are moulded in such a manner as to render the boat capable of the highest speeds with the minimum of resistance; the fine lines continue to the stern, which very often is curved, as in the Napier, the Parisienne II., and the Gardner-Serpellet. In the present racers, the

constructed of steel plates, and propelled by three screws worked by three Mors motors of 70 h.p. It has the lines of a torpedo boat.

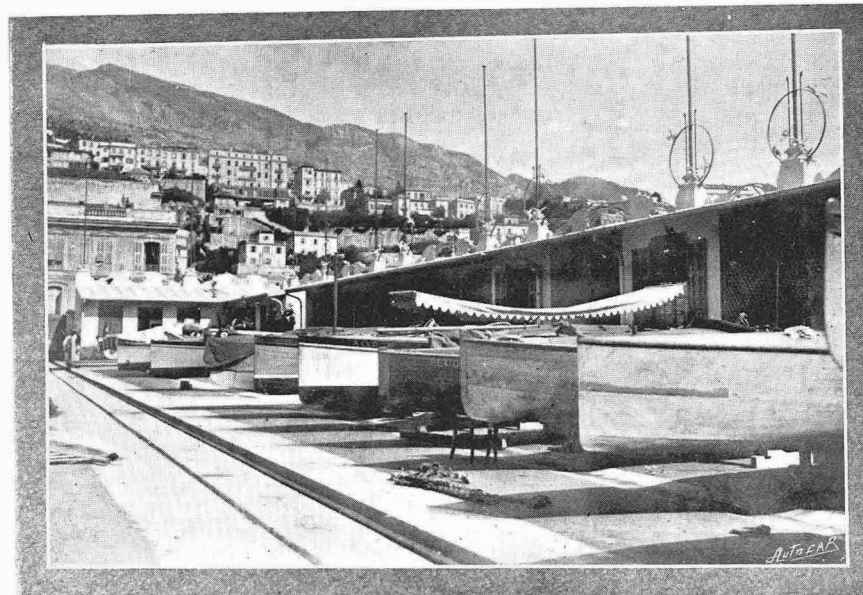
The Napier Minor belongs to the series of the



The cradle in which the launches were placed to be lifted by the crane which conveyed them to the slipway.

12 metre boats. It possesses a motor of 100 h.p., and only one screw. This boat belongs at present to M. Deutsch de la Meurthe.

The Dubonnet, which belongs to M. Marius Dubonnet, has three screws and three motors by Panhard and Levasor—two of 30 h.p. and one of 60 h.p.



Some of the motor launches staged in the exhibition.

hull is almost completely closed, with the exception of two places reserved for the pilot and the mechanician.

We will devote a few words to the most typical of the favourites: Parisienne II. counts amongst these latter. It is a superb racer of 17 metres 99 in length.

Further, there are Mercedes I. and III., with powerful motors, and considered the most dangerous competitors.

The two Panhard and Levasor boats, La Rapée II. and La Rapée III., belong to the first series, and are likewise very rapid boats. The Marsouin II. belongs also to this series, and is worked by a Darracq motor with four cylinders.

Finally, La Trefle à Quatre, belonging to MM. Georges-Richard-Brasier, has been designed with extreme care. It possesses only one screw, and a motor with four cylinders (Georges-Richard-Brasier), of the type that will be used in the eliminating trials for the Gordon-Bennett Cup.

Everybody is now looking forward to the trials, which will have no little effect on the design of motor boats.

The Recope Cup.

The cup offered by the Count Recope for automobile boats, to be competed for this year between France and England, is quite an important affair. Over and above the money prizes which are already offered in this com-

The Automobile Club of Belgium.

The A.C.B. is offering some interesting cups for competition by automobile boats. There is a cup for the kilometre and one for the mile, and the Coupe du Littoral and the Coupe Autonautique. The Coupe du Littoral will be run off at Ostend over a distance of fifty kilometres in the North Sea, starting from Ostend and returning to it. The Coupe Autonautique will be an International cup on similar lines to the Gordon-Bennett. It will be run annually on the River Escaut from Antwerp to Flessingue, over a total distance of 142 kilometres there and back, without neutralisations. It is an annual challenge cup.

The French Gordon-Bennett Eliminary Trials Course.

The course for the French eliminating trials has been visited again by members of the racing committee of the A.C.F., and the report made by M. Tampier (which was given in substance in *The Autocar* last week) has been ratified completely. The Commission have even decided to tar a greater extent of the road than was suggested by M. Tampier.

A Diploma for Mechanicians.

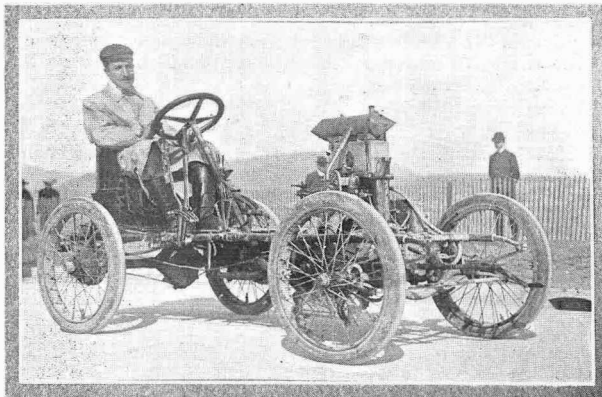
At its last meeting, the Association Generale Automobile decided upon a special diploma, to be given to drivers and mechanicians who already have their official license to drive. The object of this diploma is to enable them to find situations more easily, and, on the other hand, to enable proprietors of automobiles to consult the books of the A.G.A. when requiring mechanicians. The diploma will only be given after strict examination of the candidate and trials in driving, etc. Questions will be set as to the different parts of the car, how to take cars to pieces, and how to fit them up again, and the candidates will be examined to see if they have the required knowledge to make useful servants.

The Lille Automobile Show.

A show for automobiles and cycles was opened in Lille on the 2nd of April. There are a great many exhibitors, and especially makers of heavy traction vehicles. There will be a parade of the vehicles exhibited between Lille, Roubaix, and Tourcoing, under the patronage of the Chambre Syndicale des Transports Automobiles.

petition, the Minister of Marine has just announced that, to mark the interest which he takes in the progress of the sport, he will place at the disposal of the organisers (the A.C.F.) two medals—one of gold and the other silver-gilt—for the winners of the Calais-Dover race. A new special prize has also been offered by the Corporation of Dover. The A.C.F. has also subscribed for a prize of £200, and the A.C.G.B. and I. for a prize of £100.

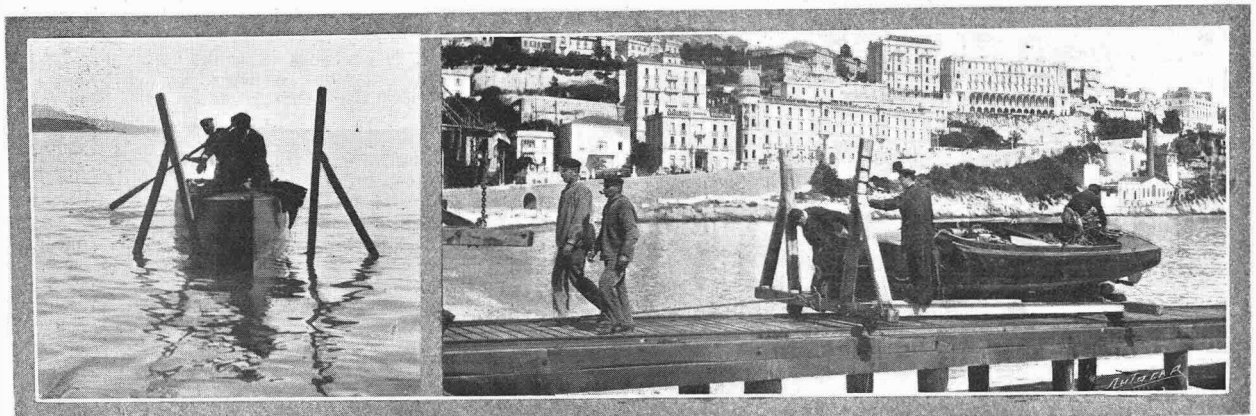
French torpedo boats will be put at the disposal of the organisers by the Minister of Marine, and English torpedo boats will be sent by the English Admiralty to follow the course. It is not decided yet whether the boats will start from Calais or Boulogne.



The Passy-Thellier voiturette. A sister machine to the one which won the mile race from a standing start. It is driven by a two-cylinder, four-piston Gobron-Brillie engine.

A Reliability Trial at Berlin.

The Berlin Automobile Club and the Leipzig Automobile Club are organising a reliability trial for heavy and light cars and motor cycles. The date has been fixed for the 8th of next month, and the distance covered by the big cars will be Berlin, Potsdam, Wittenberg, Bitterfeld, Leipzig, and back—that is to say, about 320 kilometres. The light cars will go from Berlin to Leipzig. The maximum time for the longest distance will be eleven and a half hours, and seven hours for the shorter distance. The minimum time allowed for the 320 kilometres will be nine and a half hours and four and a half for the shorter journey.



When the launches were to be taken from the sea to the exhibition they were run on to stocks mounted on rails on the slip-way. The position of the submerged stocks is indicated by the uprights shown above. The launch was made fast to these uprights, and the whole pulled up out of the water.

CORRESPONDENCE.

EDITORIAL NOTICES.

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

Letters of a personal nature will be withheld.

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

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

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

THE NON-SKID TRIALS.

[8655.]—I presume that these are for the benefit of car owners, so I should like to draw attention to one item which, unless I misunderstand the plan of operations, will make them useless from the really practical standpoint.

I understand that the cars will have to run one thousand miles with the non-skids on before being tested. For devices like the Samson-Hutchinson non-slipping tread this is reasonable enough, because these devices are fixtures. But it is grossly unfair to the Parsons device, and to a certain extent to the La Perfecta, etc. Personally, I use the Parsons. I doubt whether they will last over a thousand miles, for the little chains wear away rather fast, and so do the tyres unless the chains are put on quite properly. I selected the Parsons with this description of them from another user. I chose them because they can be taken off or put on in five minutes easily, and I only put them on when required. To drive them over a thousand miles of dry road when they are not required seems to me ridiculous. It is equivalent to at least ten thousand miles of ordinary wear. Manifestly it is not a fair test.

From observation and what I hear all the non-skid devices are effective. All reduce speed somewhat, and the real question is whether one prefers a permanent speed loss and immunity from puncture to speed loss on occasion only with puncture risks? The only device I have myself tried is the Parsons one. I tested that by driving full speed over a very skiddy bit of road and suddenly jamming on the brake. Nothing happened. The car just stopped as though the road were dry.

Some other device thus tested might make the car skid a few inches, but what does that matter in ninety-nine cases out of a hundred? The owner's point of view is, surely, not the theory of the thing, but the bald practical fact that for a moderate sum he can stop skids. The particular type he goes in for is surely more a matter of taste than anything else. This being so, the question of merit can only be decided by trial of the devices over distances proportionate to the price, and in which removable devices are only used when required. Thus only are their effective "lives" to be discovered. It is probably beyond the wit of man to plan such comparisons even moderately fairly; and even if it were there still will remain the question of speed loss always or only occasionally, which is purely a matter of individual choice.

As I implied in a previous contribution, with many cars non-skids have *raison d'être* only with those who object to having to loiter on greasy roads. I went in for them a month or so ago only because I considered them time savers by allowing third speed on any road. Going from, say, Portsmouth to Southampton, I start with them on, take them off at Cosham, and put them on again after leaving the floating bridge at Southampton—that is, for five miles out of twenty odd. The two operations consume ten minutes, but that or more would have been lost in traffic in either town, so I am at least ten minutes to the good, plus a certain absence of worry. To put on, I always jack up the wheel; it makes the job a cleaner one, and saves time in the long run.

FRED T. JANE.

THOUGHTLESS DRIVING.

[8656.]—I should be glad if you could find room for the following as an illustration of the methods adopted by a few motor car drivers. I was bicycling on the 27th of March between Birmingham and Coventry, and while descending a long slope near Pickford Bridge I was riding on the right-hand (no other traffic in view), as I found the surface better at that point, when I was overtaken by a fast car carrying five passengers. No horn was sounded, or any other warning given of the approach of the vehicle, and had I not been an old and skilful rider I should probably have been killed or severely hurt. Glancing over my shoulder I just heard the hum of the engine as it was close up to me and instinctively

crossed over to my left, perhaps foolishly, but my contention is that warning should have been given of the approach of the car to enable me to cross over to the left before it was practically on the top of me. The speed was about thirty miles an hour.

I have driven cars and motor cycles since 1896, so I know what I am writing about. If a section of car drivers continue to drive so thoughtlessly, cycling for ladies and those not possessed of the best of nerves is at an end on main roads.

Probably some drivers would say cyclists should keep to the left, but with no other traffic in sight a cyclist has the right to pick his way, and the car driver should make him, by sounding his horn, take his proper side before overtaking and passing him. W.F.G.

[We have had similar complaints of this nature, and hope this letter will warn motorists that even a car far from quiet in its running is often inaudible to other traffic if the wind is blowing against the car and the vehicle it is overtaking.—Ed.]

THE RATIONAL CAR.

[8657.]—When, may I ask, is the trade going to recognise the fact that a considerable section of the motoring public is still waiting for the rational motor car?

The requirements are strength and simplicity, solid tyres, a maximum speed of fifteen miles an hour on the level and able to do six to eight up a hill of one in six, a high body, and no ball bearings.

Surely there is nothing impossible about this? F.W.B.

PUZZLING POINTS WITH BEGINNERS.

[8658.]—As a more or less ignorant amateur who remembers not very satisfactory experiences with the original motor tricycle and afterwards with three patterns of bicycles, I have now had in my possession for some five or six months a heavy two-cylinder car of a standard pattern, and as several things have occurred which have puzzled me, their recital and subsequent explanation by those with more experience than I have had might prove of interest to other users besides myself.

(1.) First and foremost is the question of petrol feed to the engine. It is of the pressure type. Now what are the advantages of this system? I have had much difficulty with it. When the tank gets less than half-full troubles begin—namely, difficulties in obtaining petrol feed to the engine before starting—and on the last occasion, after switching off the engine while descending a long hill, pressure failed completely shortly after reaching the bottom, and much trouble was experienced getting the car to start again. Again, I have thought that when the tank gets less than half-full the supply sometimes fails up a steep hill. Other disadvantages are that, if one has to fill up on the road one's passengers have to turn out, and then there is the trouble of pumping up every time after opening the tank. There are so many complications with this system that I am thinking of having a gravity tank slung to the back of the front seat.

(2.) I have sometimes unwillingly found myself running on one cylinder. Would there not be some advantage in being able to do this at times in traffic and when running slowly? There would also be a saving of current. Could one fit separate single-cylinder commutators, to be advanced simultaneously, and what difficulties would arise as regards wiring, accumulator coil, etc.?

(3.) Having been delayed in consequence of a sticking automatic inlet valve, and in view of your illustration (page 438) accompanying Mr. Phillips's paper, it seems to me that with a four-cylinder automatic engine the inlet valves could be made mechanical as far as their opening is concerned, though the closing could be left to the springs as now. In the case of a two-cylinder engine it might be necessary to have a system of levers actuated by additional cams pressing on the inlet valve stems through openings in the inlet valve bridge. In consequence, additional air would probably reach the engine, which might be an advantage. Would there be any disadvantage?

(4.) As regards water circulation, I have a honeycomb radiator, which shows steam either when ascending a long hill or going slowly before a wind for any length of time. I do not think an additional water tank would remedy this. I have thought of a more powerful pump, but in view of some recently published letters it seems doubtful whether a

Correspondence.

pump is of any assistance. I have, therefore, thought of dispensing with the pump, which is somewhat noisy, but am not satisfied that the pipes of communication between the engine and radiator are large enough. What should they be? Also, would it be an advantage to fit a few feet of piping—say under the engine—to receive the water from the radiator and cool it still further before reaching the former?

(5.) Lastly, cannot some inventor design something which could be fitted to the existing sprag which would prevent side-slip? The contrivance with which I should be likely to experiment might be noisy and injurious to the road, and as the summer will soon be with us I will leave the thinking out of this matter to some of the professional inventors in their leisure time, trusting something of this kind may be produced before next winter. BEGINNER.

THE FRENCH SHOW.

[8659.]—"F.F.B." asks in his letter, page 391, "How many makers made six-cylinder touring cars as a 1903 pattern in France?" Fortunately, none. A firm made an eight-cylinder car, obviously for advertising purposes, and I don't think it met with success.

The six-cylinder is no less absurd, and is certainly built for the same reason, unless its makers should be unable to make a well-balanced, vibrationless motor with only four-cylinders.

Look at what *The Autocar* says (in No. 440) of the Hotchkiss, "running with all the quietude and sweetness of an electric motor;" and of the Talbot, "not the slightest vibration from the engine was perceptible;" and judge whether this does not absolutely condemn the bulky, complicated, and high-priced six-cylindered motor?

I noticed some time ago that England was supposed to have ample ground to be proud—at least, so *The Autocar* said—of having built before France chainless racing vehicles weighing more than 650 kilogs.

It is not my intention to expose the childishness of that statement. The intelligent reader has certainly seen for himself that it does not require any genius to build a 900 or 1,000 kilogs. automobile on the lines of a 650 kilogs. one.

I only wish to say that the big De Dion-Bouton lorries and omnibuses are chainless. Of course, they are not speedy but they are powerful and heavy, and as the strain on the live axle increases with the weight carried, I think credit should be given to the old firm for being the first to build heavy and powerful chainless motor cars. D. YZELEN.

[No one ever imagined that the man who applied a live axle to a 1,000 kilogs. racing car was a genius. At the same time, some credit is due to any constructor who successfully introduces a new feature into any type, even if its newness merely consists of making it larger and stronger than before. It must be remembered that French designers did not believe in the direct bevel drive and live axle for high speed cars of over 650 kilogs. till an English designer had shown them that the thing they disbelieved in was practical. Of course, this is speaking broadly, as there are a number of designers, both English and French, who still wholly disbelieve in the chainless car for anything above voiturette weights.—En.]

THE CLUB AND THE TRADE.

[8660.]—I have read and reread the letter of Mr. J. Lisle in your last issue on the above subject, and must confess that I am unable to grasp his ground of complaint. Is it that I utilised the reading of my paper on "The Valves and Valve Mechanism of Internal Combustion Engines" to make known a valve of my own, or is it that I was so business-like as to deal with two subjects in one letter?

If it is the former I would remind him that my new valve was fully described and illustrated, not only in your valuable journal, but also in other papers as far back as last October, and had, therefore, been made public long before my paper had even been thought of. If it is the latter, I think I am entitled to question Mr. Lisle's honesty of purpose. The letter to which he refers is one I addressed to those manufacturers and agents who had supplied me with the particulars which enabled me to compile the interesting tables forming part of my paper, thanking them for the information and assistance they had so kindly afforded me, and enclosing a copy of the paper as some small return for their help. The publication of the description of my new valve in the automobile press last autumn resulted, as you will doubtless remember, sir, in a large number of enquiries both from the trade and private owners. At that time, for reasons which I need not enter into here, I was unable to entertain any

offers respecting the valve, and it is only recently that I have matured my plans for dealing with it, and consequently I embraced the opportunity that presented itself when communicating my thanks to the trade for the assistance rendered in connection with my paper, to set forth the terms on which the trade could use the new valve. Why I should be debarred from doing in one letter what even Mr. Lisle must acknowledge I had a perfect right to do in two passes my comprehension.

Now that I am on this subject I should like to call attention to the fact—very often overlooked—that a professional man does not become a trader because he embraces in his practice consultative work in connection with any new industry that may arise. I have been in practice for nearly a quarter of a century as a consulting engineer and patent agent, and I hold that I am not departing one iota outside the legitimate sphere of my practice in taking up consultative work in connection with automobiles.

ROBERT E. PHILLIPS.

SOME PRIVATE RELIABILITY TRIALS.

[8661.]—In the account of my private reliability trials a misprint occurs. "Cannot do most of Portsdown Hill on the second" should read "Can now do," etc.

Since then, however, I have taken the hill several times, four up, on the second without once slipping the clutch. The reason that I did not do so always was, I fancy, a leak in the high tension wires recently discovered by my happening to hold one on the spot when testing the spark.

I must in fairness withdraw my previous opinion that the car is "not a good hill-climber." Of late I have encountered nothing, save a few big four-cylinder cars, that it cannot walk away from on hills with the fourteen tooth sprocket.

FRED T. JANE.

REPAIR CHARGES.

[8662.]—"S.L.C." has evidently been a victim of the practice called "making a job." This practice appears to find increasing favour with some West End firms, and motorists will sooner or later have to combine against it.

I sent my car a week or two since to a West End firm with orders to take certain measurements for a cover, and took the precaution to call myself that afternoon. I was just in time to stop the engine being taken to pieces.

Unknown to me a friend took his car about the same time to the same firm in the morning, and gave orders for a new cover to be put on one of his tyres. When he went for the car in the afternoon his engine was in pieces.

I should advise "S.L.C." to follow my said friend's example and refuse to pay for that part of the work he did not authorise or order. CANTAB.

[8663.]—I sent my 8 h.p. car to the Motor Manufacturing Co. at Coventry for repairs. By telegram I am informed that the car can be taken away by my driver if the sum of £15 2s. is sent that day. I am given no particulars as to how this sum is made up, and although the money was paid on the 26th ult. I have not yet received car by the 30th. I was never asked for any banker's or trade reference, but my car could not be released until the money was paid.

My car went without any mishap 150 miles to the works, so that there could not have been anything very radically wrong.

Is this high-handed proceeding usual with motor car manufacturers? WM. BURROUGH COSENS.

INCOMPETENT EXPERTS.

[8664.]—Mr. Phillips takes exception to my suggesting that the letters previously published above his name were for self-advertisement. I would then ask Mr. Phillips why, when he did not at first make a direct statement that he was prepared to give his valuable advice for a fixed fee, he subsequently did so by circular? Mr. Phillips forgets that by his letters he casts suspicion on the whole of the automobile industry, and that his suggestions practically imply that those who had taken up the motor car business as their profession and as their living were dishonourable men, and must be governed by gentlemen of his class, who were to be paid for such governing. I took it distinctly as a personal insult, and I believe that everyone in the trade who is carrying on an honourable business also took it in the same light.

I do not care whether Mr. Phillips calls himself a veterinary surgeon and automobile vet. or consulting engineer. I call

Correspondence.

him a motor car tradesman, as the moment he wishes to give advice for a monetary consideration, or to have anything to do with the sale or purchase of a motor car, he becomes a pure and simple motor car tradesman.

I suggest that motor car firms in a big way of business can maintain their businesses honourably and above suspicion, legitimately and fairly, without the intervention of automobile vets., or nondescripts who do their business from small offices without incurring the expenses of large dealers with properly equipped establishments.

Mr. Phillips's idea that the honourable and upright firms should be placed under the government of consulting engineers, automobile vets., or what not, occupying small offices, is beyond argument, and, inasmuch as Mr. Phillips himself is interested in the small office and the small expenses, the deduction is that he has his own axe to grind.

I would suggest that the way to govern possible unfair dealing is for the press to point out to would-be buyers, that before purchasing they should take the advice of a *properly established firm* of repute, as that is what firms are in business for.

It is most regrettable to see the whole of the status of the trade spoilt by outside "dabblers" in small offices and with small expenses, and it would be a good thing if the Trade Protection Society would take this matter up from the point of view of the *protection of the trade* interests and honour, but in my opinion the legitimate traders have no need of the interference of Mr. Phillips and automobile vets. with their small expenses or their small offices.

D. M. WEIGEL.

[The most useful suggestion in this correspondence was that made by Mr. James (see *The Autocar*, 19th March, 1904, page 389). He made it clear that, while there was no need for the "automobile vet." or his equivalent in regard to new cars, he was a most useful, and in many cases necessary, person when buying a *second-hand* car. The average buyer of a second-hand car is not able to tell the difference between the signs of fair wear and tear, and those of undue wear caused by bad work, poor material, or neglect, and to him the services of the honest and capable "automobile vet." are indispensable. The problem is to ensure that the examiner is both honourable and capable. Many are, but the few who are not do a great deal of harm in every way.—Ed.]

BORON CHARGING CELLS.

[8665].—I have often thought of trying a set of these for lighting a motor house in Scotland in the autumn. Could either Dr. Eustace Morgan or any of your readers who have tried them for this purpose give me their experiences?

I am told that there is considerable difficulty in fully charging accumulators from these cells, but apparently Dr. Morgan has not found this the case.

I understand that lamps are regularly used with the cells, but have been unable to meet anyone who has had any experience of this personally.

In Scotland the double use, charging and lighting, would be most convenient.

CANTAB.

BRITISH MANUFACTURE.

[8666].—Supplementing my investigation of cars shown at the Crystal Palace, I made a similar examination of cars shown under British names at the Agricultural Hall. Omitting as before the steam goods waggons, which were all without exception of British manufacture throughout, and ignoring the lesser details of fitment, I found quite a large number of "all British" cars, these, apart from those also shown at the Palace, being very largely new representatives, the net result being as follows:

BRITISH ENGINE, FOREIGN CHASSIS. None.

BRITISH CHASSIS, FOREIGN ENGINE. Bijou, Clyde, Light Car Co. (one), and Richardson 5½ h.p.

ALL BRITISH. Achilles, Alldays, Arbee, British Peerless, Brooke, Brown, Champion, Clarendon, Coronet, Cremore (steam), Duryea, Electromobile (electric), Hitchon-Weller, Horbick, Hutton, Lanchester, Light Car Co. (two), Ludgate, Maudslay, Miesse (steam), M.M.C., National, Putney, Rex, Richardson 12 h.p. and 24 h.p., Royal Enfield, Rulax, Roots, Siddeley, Star, Stirling, Swift, and Thor.

I have to thank several who corrected omissions in my list, and hope that any errors or omissions from the above will be pointed out by any in possession of the facts, as my time was somewhat short.

HENRY STURMEY, F.R.P.S., Hon.M.C.E.I.

SPEED INDICATORS.

[8667].—In reply to the query of Edwin Gray re speed indicators, my experience of Dr. Winter's indicator may be of use to him. I have had mine for upwards of two and a half years, and it has shown itself always reliable and very accurate. The great point in its favour is the gear drive and the very slow movement of the working parts, even at high speeds. The only part which has required repair with me is the worm gear, mine being of the old type, and that required rebushing. It is now, however, as good as new. I find the combination of cyclometer most useful, and by its means keep a daily record of miles run, and am in this way able to estimate the duration of tyre repairs, etc.

ARTHUR E. HOVENDEN.

[8668].—I have used Dr. Winter's speed indicator on a Rochet-Schneider car for close on 2,000 miles, and have frequently tested it, both as indicating the average pace for the past two seconds and recording the distances run.

It is now in perfect order and thoroughly reliable, and forms a most interesting and useful addition to a car.

CHARLES PRODGERS.

[8669].—My attention has been called to a query (letter 8621) by your correspondent, Edwin Gray, in your issue of the 19th March, with regard to the efficiency of the Staunton speed and distance indicator, and I have much pleasure in stating that I had one of them fitted to a Wolseley car in November, 1902, and found that its indications, alike as to current and maximum speeds, and distances run, were absolutely correct; so much so, that I have lately had another fitted to a White steam car, and find it to be equally efficient.

G. DAVIES.

THE SHOW QUESTION.

[8670].—Regarding your remarks as to the holding of next year's automobile show at Olympia made in last week's issue of your paper, I cannot think the same can have been made in seriousness. When I inform you that 37,136 square feet have been definitely booked, and applications have been received for a further 27,156 square feet for the next Crystal Palace exhibition, you will understand that there are very few firms left out, and I do not think that the suggestion of a third exhibition can receive any serious support.

FRED. W. BAILY.

THE PROPOSED LAMP TEST.

[8671].—Referring to Mr. E. Baedeker's letter on the above subject in your issue of the 19th ult., we think his suggestion a capital one and well worthy of the serious consideration of the A.C.G.B. and I., and, writing as manufacturers who have devoted both time and money in the endeavour to produce lamps that would meet the requirements of the motoring public generally, we beg to say that we welcome the proposition, and would do all in our power to support it.

PURROTT AND WILLARD.

THE STEAM CAR.

[8672].—In answer to query 8633 and "The Steam Car" (8654), the Stanley steam car is very similar in build to the majority of American runabouts, inasmuch as one make of light petrol car is very similar to any other of the same class and power in outward appearance. Here, however, the similarity ceases. The Stanley car is as unlike the usual American runabout as it is to a petrol car, the frame, the engine, burner, boiler, pumps, and fuel feed being quite differently arranged and designed.

I have had a small Stanley some six months now, and it has been used nearly every day for a long or a short run. I have lately been to London, Southampton, and back from here (Southport) without trouble of any kind worse than the bursting of two fusible plugs which happened when crossing the Hog's Back on the way to Southampton; this in the middle of the night with a gale blowing and hail at the same time.

The fusible plugs are the life of the whole machine. When the water level is allowed to get too low, through neglect or other cause, the lead plug melts, and saves the boiler from being scorched. The fusible plug is placed in such a position that a new one can be put in and steam raised to full working pressure in twenty minutes. Five plugs have burst in six months on my car with no detriment to the boiler.

The paraffin burner with which these cars are now fitted burns without smoke or smell, and the average mileage run on a gallon of paraffin, including towing another car 150 miles, worked out at twenty miles per gallon, the average cost of paraffin being 7½d. The fastest speed that my car will main-

tain is twenty miles per hour on a flat road, and for short spurts thirty-five to forty. If there is anything further that "Steamer" wishes to know, I shall be pleased to answer.

STEAMER II.

F. Wilkinson, in reply to the same correspondent, writes to practically the same effect as to the superiority of the Stanley steam car, and continues: "There is no car built to-day at the price that can do what the Stanley will in hill-climbing or speed, and I personally shall be only too glad to challenge any car at hill-climbing and speed for a reasonable amount to be placed to some charity on the understanding that such car shall be of equal price, and take the same number of passengers of similar weight.

"The Stanley is certainly the most popular and successful light steam car built in the States.

"Stanley Bros. built and sold over 500 cars last year, and this without spending sixpence in paper advertisements. This year a new factory has been built, and the output will be over 1,000 cars. It is seldom a second-hand Stanley is advertised.

"I think the above facts prove conclusively that the Stanley car does last a long time. It is now possible to use paraffin oil successfully on these cars.

"I should be delighted to give 'Progression' a run on my Stanley, and I think he would agree with me that the car is all right."

W.S., in giving a few particulars of the White car, of which he has had driving and repairing experience, says: "The tank capacity for petrol is eight gallons, and water twelve gallons, and if the car is driven well one can do practically 100 miles on one filling. The White car is a wonder, especially upon hills, where it will beat any petrol car of far greater power. It is well designed and made, and the principal points in keeping it running are to pack the glands, an operation which can readily be performed, as all the parts of the White engine are of reasonable and sensible proportions, and in construction it thus differs vastly from the absurdly designed American steam car engines hitherto shown in this country. One must also keep the condenser, separator, and water tank reasonably clean. Steam can be obtained, and from cold water, in less than five minutes, and once the car is started it runs automatically. The feed of the water to the generator is regulated through the medium of a by-pass valve, operated in conjunction with a diaphragm acted upon by the steam pressure. The fire is controlled automatically and independently, so to speak, of the water supply by a thermostat, which opens or closes a needle valve according to the action of the heat of the steam upon it. In making comparisons between, say, the White car and a petrol car it must be noted that in the former it is possible to use the most inferior petrol or benzoline as fuel, whereas in a petrol car one must use the best petrol to obtain the best results. My opinion is that if the White is used reasonably and carefully, as every car should be, it will be found to be a thoroughly practical and perfect running vehicle. I may mention that I hold no brief for the manufacturers."

As to the consumption of fuel in Turner-Miesse cars, Mr. J. B. Dumbell, managing director of the company which manufactures the cars, writes: "The average consumption of paraffin by our 10 h.p. Turner-Miesse cars works out at one gallon per hour. Paraffin can be obtained from 5½d. to 6½d. per gallon, according to the district. Our new pilot light goes a long way towards the ideal 'Progression' wants, and, personally, we think that when a paraffin burner is produced 'as easily handled as a gas jet,' the petrol car would not remain in fashion very long."

[This correspondence is now closed.—Ed.]

INITIALED LETTERS.

[8673.]—Old Esop tells us of a fox who, having lost his tail in a trap into which he had unfortunately placed it, went around calling for the curtailment of other foxes, so as to bring himself into "the fashion," and "D. M. W.," having had his own "tail" cut off by the editor, is apparently equally solicitous for the welfare of his fellows; but the logic is strained, and were the power you reserve to yourself to be transformed into a rule, as "D. M. W." apparently desires, it would but defeat its own object. In the case he quotes, I take it Mr. Phillips's object—of calling attention to the deficiencies of many so-called "experts"—would have been equally well attained had his initials or a *nom-de-plume* appeared at the foot of his letter instead of his name, and it would have been a "smarter" move of his for it to have been so, for then, when his circular was received, readers

Correspondence.

of *The Autocar* would not have put their tongues in their cheeks, concluded that axes were being ground, and uncomplimentary comments—like those of "D. M. W.'s"—would not have been made. Whilst in the past the correspondence columns of *The Autocar* and other papers have occasionally been abused, I consider that if letters from those in the trade are inserted at all, when they deal with the goods handled by the writers, it is far better and fairer to the general reader and to all parties concerned that the names should be clearly and plainly given. The reader, if he is sceptically inclined, can, if he choose, take the statements with as large a grain of salt as his experience or mistrust dictates, whereas when initials only are given he is—unless he is very well versed in trade names and connections—more than likely to be deluded into the belief that it is an independent opinion. I hold that it is far more honest that traders should append their names openly to their letters than for the identity of the writers to be hidden, and this more especially when the writer is trading in his own name or is well-known as a trader. The opinions of some traders, even upon points in which they are interested, carry weight. In other cases, where the grinding of axes has been too flagrantly apparent, the appending of the name in full will act as its own antidote should any "self advertisement" be attempted. What do readers say? Am I not right? H. S.

CHAUFFEURS.

[8674.]—I am interested in the letter of "A Bas les Chauffeurs," printed in your last issue. Your correspondent seems to be one of the lucky ones who has been fortunate enough to get hold of a "shuvver" (as he writes and probably pronounces it) who can strop razors and groom horses.

I have seen several of these men, whose duties are innumerable, and extend often to being chauffeur, gardener, razor stropper, butler, groom, coachman, valet, hairdresser, plumber, painter, general house decorator, etc.

Handy men these white slaves, but how I pity them, poor devils!

Let us hope that a day will come when competent men will have a chance and perhaps a salary offered to them. W.S.

SUMMARY OF OTHER CORRESPONDENCE.

NON-SKIDDING TREADS. The Parsons Non-skid Co., referring to the letter from Major Arthur Cotes as to the Parsons non-skid, say they think he is a little unjust in the matter of expenses when comparing that with the Wilkinson tread from which he had results equal to one farthing per mile, whereas under his reckoning the Parsons had cost him one penny per mile. The letter continues: "We suggest that Major Cotes overlooked the fact that with the Parsons non-skid the mileage of wear is only relative to the distance driven during which the appliance is in actual use, and supposing that he travelled on dry roads only the same distance as on greasy roads, by removing the non-skid he would reduce his mileage expenses to one half, that is, of course, in comparison with a non-movable tread. Further, a Parsons non-skid can be re-chained throughout for a quarter of its original cost, when it is made as good as new, as there is little or no wear on the couplings, clips, and hoop wires. Consequently, assuming the cost to be 1d. per mile for the first thousand miles, it would be reduced to one farthing per mile for the second thousand, and this process of re-chaining can be repeated several times. We consider 1,000 miles a very short life for a set of chains in use on a car weighing 18 cwt. if the chains have been reversed every 200 miles as advised on the instructions we send with every non-skid. It is pretty obvious that the trouble experienced by Major Cotes's friends arose through the non-skids not being properly fitted. There is ample adjustment with our couplings, and although the chains themselves stretch somewhat through wear in each separate link, the hoop wires do not stretch, and the adjustment provided is ample to allow for the stretching of the chains."

F. C. Willis, who has had a pair of the Wilkinson non-slipping treads put on to old covers during the winter, writes: "In the course of a month many of the centre pins were level with the rubber, but most of the outside ones seemed to keep their position. I have never had a skid, but that may be due to the roads this winter having been too wet. I have been using Clipper-Michelin covers since August, and neither before having the treads put on nor since have I had a puncture, and although I have been over some bad roads during the winter there is not a mark on the Wilkinson treads, whereas the covers of my driving wheels have been badly cut."

Flashes.

Somerset motorists who have not been to the shows in London had a little one of their own in Yeovil last week, as two or three cars and several motor cycles were exhibited in the Princes Street Assembly Rooms by H. B. and H. Petter.

* * *

Six-cylinder cars will soon be comparatively numerous. Mr. A. J. Balfour has his six-cylinder Napier with him for the Easter recess. Three or four more well-known motorists have also just received similar vehicles, and Lord Farquhar has decided to have one.

* * *

Users of Continental tyres will be glad to know that the company is putting down the necessary plant to enable repairs to be effected at the new premises they have taken in Clerkenwell Road, E.C. Of course, hitherto the repairs have been sent to the works at Hanover, so that a lot of time will be saved.

* * *

At the Guildhall Police Court on Tuesday, Mr. Arthur Siddon Watkins, manager to Messrs. Hamilton and Co., engineers, 116, 118, Clerkenwell Road, for allowing a person other than a licensed driver to drive his motor, was fined £5; and John Reeves, the driver in question, was fined 1s. for driving the motor without a license. The license carried was in the name of "A. Mason, Esq.," of Harrow, and belonged to the company's chief engineer. Mr. Watkins explained that he was unaware at the time that it was an offence to give the license to the driver.

* * *

Mr. E. M. Bowden, the inventor of the Bowden cord which is used for transmitting motion in the control system of autocars in place of levers and rods, died suddenly last week. The Bowden brake, which is almost universally used on bicycles, works on the same principle as the Bowden cord used in motor construction.

* * *

Motor car agents are attacking the stronghold of the horse, as will be seen by the following extract from a circular letter sent out to jobmasters by an enterprising firm who are agents for a well-known French car: "Dear Sir, We fancy that at the present stage of your business you must be continually hearing of gentlemen in your neighbourhood who are giving up their horses and carriages and going in for motor cars." [This, we are informed, is from the jobmaster's point of view sadly true.] "We presume that it does not matter much to you how you make money so long as you make it. Consequently, if you are going to lose these gentlemen as customers for your livery stables, why not make them your own motor car customers, and even after making a commission on the sale of a car to them, secure at least the storage and perhaps periodical attention to their cars?" The letter concludes with an offer to do business on certain terms.

Messrs. Rennie and Prosser, Ltd., inform us that their new repair works and free garage are now open at 60, North Wallace Street, Parliamentary Road, Glasgow. The new works, which cover an area of 2,000 square yards, are centrally situated, well lit, and equipped with up-to-date plant and tools, and all motor requisites are stocked.

* * *

We are informed that the arrangement whereby the Lanchester Engine Co. has been placed in the receiver's hands will be of a temporary nature, pending a scheme for reconstruction which is now under consideration. It will be good news for owners of Lanchester cars to know this, as the works are being carried on as usual without a break, so that they will have no difficulties either in regard to old or new cars.

* * *

Our Postal Department might very well experiment along the lines of the French G.P.O. in the matter of conveying letter-carriers by autocar. The men who serve districts at considerable distances from the centres at which they take up their bags, from the centre of distribution to the most convenient point of

their rounds, are driven out in an automobile, and brought back after their deliveries are completed. The French G.P.O. are carrying out their experiments in the neighbourhood of Cambrai, whence every morning at seven o'clock the postmen serving six of the most distant communes will be taken out as rapidly as possible and picked up and brought back again as soon as their work is done. This arrangement will permit two deliveries in the regions affected where only one was possible before.

* * *

The Chairman of the Western District Committee of the County Council of

Stirling objects to Glasgow motor car builders running their new cars over the roads in his district. Why new cars are more repugnant to him than those which have been in use for some time, he does not say.

* * *

The motor car accidents which have occurred during the recent holidays emphasise the necessity for the more stringent enforcement of the law affecting the general traffic on the highways.

* * *

The Duryea Co. recently made a trial of a new form of automatic carburettor on a 15 h.p. car. A run was made from Coventry to London and back, *via* Daventry, Stony Stratford, and Dunstable. With four passengers up, the journey, both going and returning—184 miles—was made on the top speed, without changing gear, the whole way, although during the ascent of Barnet Hill on the return journey the engine was shut off entirely several times, on account of the presence of police. The petrol consumption was under eight gallons for the double journey, and the water consumption *nil*. On a former journey from town with the old carburettor three gear changes had to be made, and the time was much longer.

"THE AUTOCAR" DIARY.

- April 9.—Leicestershire A.C., run to Ashby-de-la-Zouch.
 .. 9.—Herefordshire A.C. run to Rlayader.
 .. 9.—Yorkshire A.C. run to Aberford.
 .. 13.—Entries close, Glasgow to London Trials Scottish A.C.
 .. 15.—Lincolnshire A.C. Annual Dinner.
 .. 16.—Yorkshire A.C., run to Ilkley.
 .. 16.—Examination of British Gordon-Bennett Cars by A.C.G.B.I.
 .. 16-31.—Vienna Motor Car Show.
 .. 17.—Gloucestershire A.C., run to Tewkesbury.
 .. 17.—Coupe Meyan, Motor Boats.
 .. 18.—A.C.G.B.I. Side-slip Trials, Ladbroke Grove.
 .. 18-23.—Paris-Nice-Rome Trials.
 .. 23.—Yorkshire A.C., run to Doncaster.
 .. 30.—A.C.G.B.I. Parade of Motor Delivery Vans, Thames Embankment, 3.0.
 .. 30-May 12, Antwerp Salon.
 .. 30.—Burnley & District A.C. Opening run.
 May 1.—Carburettor Trials, A.C. de France.
 .. 1.—St. Louis Autocar Show opens.
 .. 7.—A.C.G.B.I. 100 Miles Quarterly Trials.
 .. 10.—Gordon Bennett Eliminating Trials, Isle of Man.
 .. 19-20.—Glasgow to London Non-stop Reliability Trial.
 June 17.—Gordon-Bennett Cup Race.
 July 30.—British International Cup for Motor Boats.

On account of increasing business the Forman Motor Co., Ltd., will shortly be removing from Day's Lane to more commodious and centrally-situated premises in High Street, Coventry.

* * *

The substance known as "Westrumite," which was used on the wide parade before the Crystal Palace during the reliability trials last year, and also on parts of the Irish Gordon-Bennett course, has been tried on three kilometres of the road between Monaco and Beaulieu with great success.

* * *

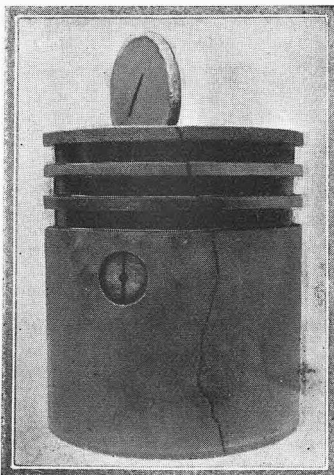
An error crept into the inscription beneath our illustration of the 200 h.p. Bellamy car, given on page 433 of *The Autocar* of March 26th. The wheelbase should have been 9ft. 1 3/4 in. instead of that given.

* * *

As the outcome of the decision of the Court of Appeal, *Sanderson v. Collins* (referred to in *The Autocar*, March 5th, 1904, page 331), which laid down that the defendant (who borrowed from a carriage-builder a carriage while his own was undergoing repairs) was not liable for damage caused to the vehicle by an accident which happened while the coachman had taken out the borrowed carriage for his own purposes without his master's knowledge or consent, the Institute of British Carriage Manufacturers have recommended coach-builders to exhibit on their letters and bill-heads the following notice: "All vehicles let or lent from this establishment are so let or lent upon the understanding that they are returned in the same condition as when received by the customer, fair wear and tear excepted." The notice, of course, incidentally interests motor car manufacturers.

* * *

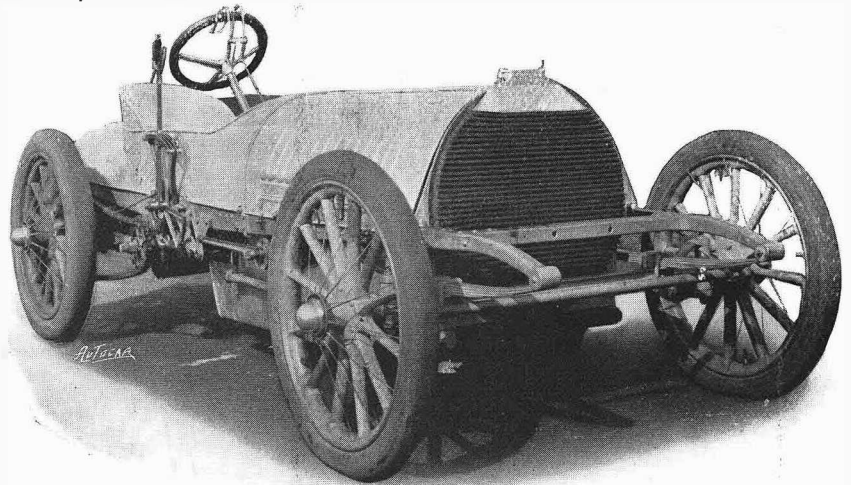
We have received the accompanying interesting photograph from Mr. E. B. Milburn, of Marlborough. It represents the result of an exhaust valve



head breaking off in the cylinder. The fracture occurred, as usual, right at the junction of the head with the stem, and after a severe battering—the effects of which can be clearly seen by studying the edge of the valve and the seating—at last lodged in the position shown, and was driven into the top of the piston, cracking it for the whole of its length and bringing the car to a standstill. A most curious, and at the same time a most fortunate,

thing was that the cylinder head was not injured or the cylinder bore damaged, the result being that Mr. Milburn was enabled to remedy the matter by fitting a new piston and a fresh valve.

Mr. Maurice Egerton has just purchased from the British Automobile Commercial Syndicate the famous 90 h.p. Panhard et Levassor car on which Mr. Weigel broke the flying kilometre record last June. The car is now fitted with a Rothschild body, and is a most luxurious touring vehicle.

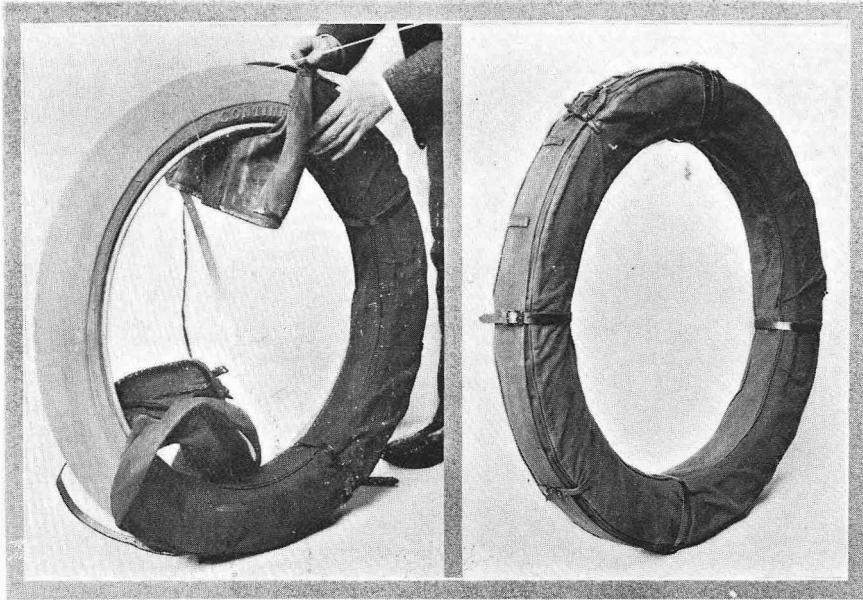


Front view of the 72 h.p. [Wolsley] built for the Gordon-Bennett eliminating trials. We gave a side view of this car and the leading details concerning it last week.

There is no doubt that interest was first taken in the Ariel cars because of the satisfaction their predecessors, the old Ariel quads, gave their owners. We have been reminded of this by an instance which we have just come across, in which an owner of an Ariel quad made four years ago is still using the original valves. Of course, he has duplicates by him, but they have never been wanted.

* * *

In the best interests of automobilism, we hope that Mr. Dudley Truman, who was lately summoned and fined at Beaconsfield Sessions, at the instance of Major-general Upton-Prior, of Gerrard's Cross, Buckinghamshire, will take steps to appeal against the conviction, or approach the Motor Union to aid him in so doing. From the brief report which appeared in Tuesday week's papers, it would seem that Major-general Upton-Prior happened to be promenading with his three dogs at Chalfont St. Peters, when Mr. Dudley Truman approached on his automobile. The Major-general held up his hand for Mr. Truman to stop, on the grounds, as he alleged, that his dogs might be run over. It is asserted that Mr. Truman did not obey the signal, there being no reason that he should do so, and that one of the dogs was knocked head over heels by the car. For the defence, the allegation of recklessness was denied, it being said that the dog backed into the car, and that Mr. Truman gave warning of his approach by sounding his horn. Nevertheless, and although it would seem that it was only the Major-general's word against Mr. Truman's, the Bench fined the latter £2 and 10s. 6d. costs for reckless driving, that portion of the charge relating to failing to sound a horn or bell being dismissed. If major-generals and their errant canine pets are to have the monopoly of the King's highway, the Beaconsfield Bench were right. But if, as may be, this is not the case, it would be well that this fact was brought home by an appeal to Quarter Sessions.



FOR CARRYING TYRES. We mentioned some weeks ago the canvas tyre bag of the Continental Caoutchouc and Guitapercha Co. We are now enabled to illustrate it. As may be seen, it consists of an annular-shaped canvas sheeting closed over the tyre by means of straps. It protects the tyre from sun, mud, and water, and is useful when despatching a tyre by train. The bag is quite cheap, and keeps the cover in good condition—a point that, considering the high price of tyres, is worth attention.

A distressing fatality occurred the other day at Eastbourne to a little girl, who was knocked down by a motor car. Two girls were together in the Upperton Road, when, to avoid an approaching motor car, they separated, one rushing in one direction and the other in another. They seem to have lost their heads, and the driver of the car in trying to steer clear of one child wedged the other between his car and a wall, with fatal result. A great outcry is consequently being raised against the speed at which motor cars enter the town, and all motorists will be well advised to moderate their pace when approaching this borough. At the inquest on Monday, the jury returned a verdict of "Accidental death," and expressed the opinion that the driver of the car committed a slight error of judgment. Had he stopped, they believed the accident might have been averted. They added a rider that the Corporation should do something to regulate speed within the borough.

* * *

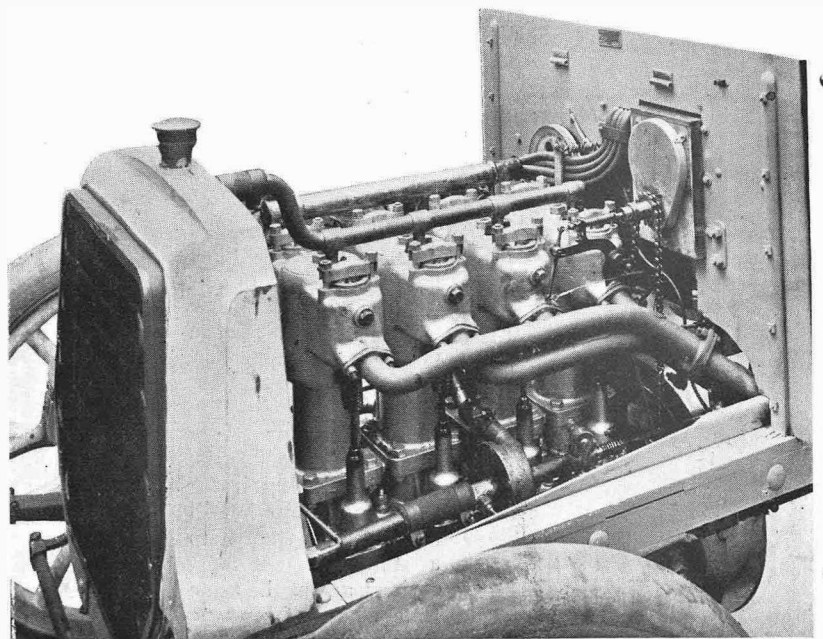
Since the introduction of the internal combustion engine many attempts have been made to obtain as constant a torque as is given by the steam engine. One favourite method is to explode a gaseous mixture in a closed chamber, and to convey the pressure so obtained to an engine of the steam actuated type. Quite a variety of this unworkable method is to be found in the Patent Office records, and another has just been added by a Nottingham inventor. The gas engine and those of its kind, including autocar engines, are essentially heat engines, and any loss of thermal units is attended with loss of power; thus it follows that the engine would be more efficient if it could be run red-hot, but it is obvious that other considerations would prevent this, hence water-cooling.

The Birmingham Motor Car Co., of 256, Corporation Street, Birmingham, inform us that they have worked out a scheme so that purchasers of standard cars can tell exactly what will be the cost of upkeep. For instance, the Birmingham firm undertake to overhaul once a week, clean, oil, renew worn parts, recharge accumulators, do all necessary repairs to cars and tyres, as well as storing the vehicle, for £2 15s. a month. The particular vehicle for which this rate is required is a 10 h.p. two-cylinder Argyll; other sizes are in proportion. The great idea of the scheme is that every running expense except petrol shall be included for the inclusive monthly charge. The cost of petrol for a 10 h.p. car is, roughly speaking, £12 for 5,000 miles, so that a prospective purchaser can very soon see exactly what his motoring will cost him, if he has no storage facilities and if he wants to be relieved of all

responsibility in the way of attending to the car. The scheme is a good one, and we hope to see it taken up throughout the country. The first motor engineer to do anything of the kind, so far as we know, was Mr. Simpson, of Margate, who adopted a somewhat similar system with great success a good while back.

* * *

There is a likelihood that the Chancellor of the Exchequer will impose a tax of 1d. per gallon on petrol and on petroleum and petroleum products generally. Another argument in favour of alcohol fuel.



The engine of one of the latest pattern Panhards. It will be noticed that the four cylinders are entirely separate, each being independently bolted to the crank chamber. This practice was originally introduced for racing machines, but has now been adopted for all the Panhards, except the 7 h.p. two cylinder. It greatly facilitates any important repair to the engine. Both the inlet and exhaust valves are mechanically operated from separate camshafts.

AGRICULTURAL HALL SHOW.

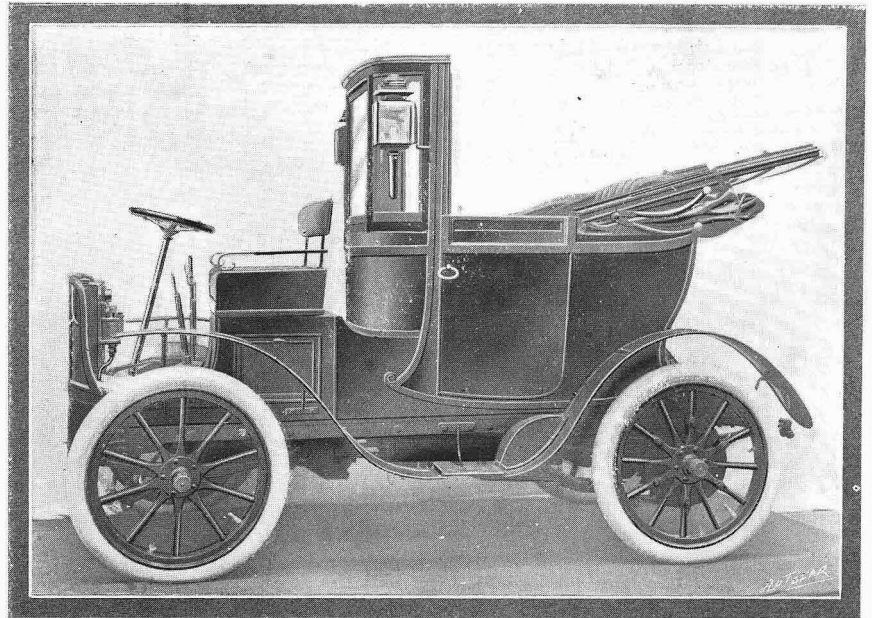
A Review of the Principal Novelties. (Concluded from page 457.)

CARRIAGE WORK.

THE visitor interested in special bodies could not fail to examine the Lonsdale body shown on a 16 h.p. De Dietrich chassis by the Burlington Carriage Co. For passenger work there was nothing in the show that struck us as being more delightfully comfortable and waterproof. The swinging roof of the waggonette is so excellently pivoted and balanced that ladies occupying the back of the car can easily swing it into position. The Roi des Belges body, also on a 16 h.p. De Dietrich, was a magnificent example of its class, painted and upholstered in blue. Attention was also attracted by the small double brougham body fitted to an electric chassis.

The ingeniously constructed heavy motor wheel, in which the web is formed of sections of wood placed tangentially to the hub, and the periphery or wearing surface built up of metal flanges, and V-shaped wood plugs insulated with rubber, shown by the Gare Patent Wheel and Tyre Co., attracted the attention of those to whom the problem of wheels for heavy motor traffic particularly presents itself. The Gare resilient tyre was also interesting. It is formed of a splayed channel rim with outer wood periphery, supported by triangular rings of rubber, carrying above all a steel tyre with a central insertion of fibrous rubber. The tangent spoke wheel was also interesting, the butt ends of the spokes running tangentially to the nave. A tyre setter for fixing flat or channel rims, whilst cold and perfectly true, was also shown.

A new means of giving side entrance to the back seat was found on Messrs. Salmon and Son's exhibit. The two front seats are made to slide sideways, and when access to the back seats is required the front seat is simply pushed bodily sideways. It did not strike us as a particularly good method,



An 8 h.p. three-cylinder Panhard, shown by the Lancaster Motor Garage.

though it is excellently carried out, and is preferable to some of the hinged left side seat devices.

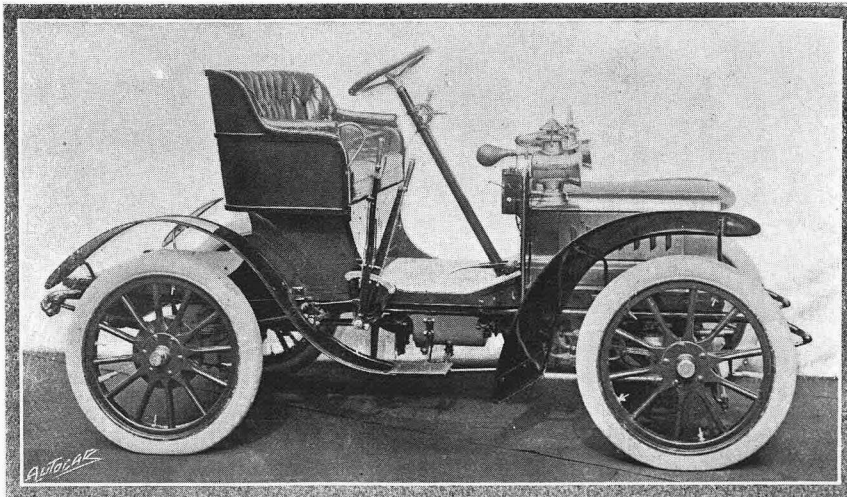
ACCESSORIES.

BEYOND the novelties which were shown by Mr. Andre A. Godin, of Red Lion Square, Holborn, at the Crystal Palace, there was a pump operated from the motor for inflating the tyres. The pump is normally out of gear, this being obtained by sliding out a gear wheel.

The pump is of an oscillating pattern, having a valve in the centre of the cylinder bottom, to the outside of whose casing the tube to the tyres is connected. The tube has a pressure gauge, and safety valve incorporated in it. On the same stand the Dinin accumulators were found, and it was claimed that

these cells have a very large capacity, both for their weight and cubic contents. A new lamp which should be extremely popular with motorists is the "Populaire," of Messrs. Welden and Bleriot, of 54, Long Acre. It is a double lens lamp, being complete in itself, although a similar pattern is made with separate generator. It is designed to work with ordinary carbide, but the firm recommend that their special cartridges be employed. These cartridges consist of a tin case containing carbide, and having two thin brass closing pieces. The centre one is punctured for the admission of water, and the second one pierced to permit the gas to escape. Other novelties shown included the Combination lamp and horn, in which the bell of the horn is made by a space between the body of the lamp and the lens holder.

Amongst a mass of accessories shown by J. C. Meredith, Ltd., of Birmingham, we noticed an exceedingly well-made and substantial tail



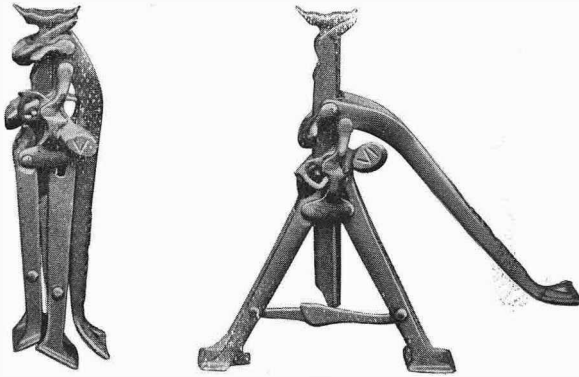
The 6 1/2 h.p. Richardson voiturette. (See page 426, March 26th.)

Show Report—Accessories.

lamp, which has special arrangements for preventing air currents that would extinguish the flame. Another product of this firm which will be welcomed by agents and others wishing to charge accumulators was a charging board, in which the recording instruments read the actual voltage employed in place of the voltage delivered from the main.

A full assortment of lubricating oils, grease, and chain lubricants were shown by the County Chemical Co., Ltd., Moor Street, Birmingham. This firm make a speciality of a protected calcium carbide, which is so treated that the decomposition is gradual, and a steady evolution of gas obtained. Another useful thing for the motorist is the celluloid cement which this firm sell.

The Cinderella folding jack shown by the Duryea Motor Co. is one of the lightest and most ingenious forms of axle raisers that we have yet seen. The raising member is lifted by means of a lever and swinging toggle clip, a smaller clip serving as a ratchet pawl to retain the lifting member in position as it is raised at each successive stroke of the lever. Although it weighs but 2 lbs. 15 ozs., the jack is said to be



The Cinderella one-ton lifting jack closed and opened for use.

capable of lifting a ton, and when out of use folds up into an extremely narrow compass—so narrow, indeed, that it might almost be carried in an overcoat pocket without inconvenience. The appearance of the jack and its construction will be easily grasped from the accompanying illustration.

Where a motor stable is not fitted with electric light, it is often dangerous for car owners to make adjustments, etc., after dark. For this purpose, Messrs. Carlless, Capel, and Leonard showed a patent benzine lamp, made on the lines of the Davy miners' safety lamp, which should be a great boon to automobile owners so situated. This lamp was first exhibited at the Richmond Show in 1899, but is not so well known as it deserves to be.

Motor timepieces with electric light attachment, chronographic speed indicators, and the improved speed indicator, which now appears to be somewhat necessary in view of police movements, were shown by those well-known watch and clock makers, Messrs. S. Smith and Son.

The various lubricants of the Vacuum Oil Co., which have so greatly grown in favour of late years, are not only remarkable for their quality but for the very neat manner in which they are put up for automobilists' use. The oil tins are provided with a most convenient pouring lip—a detail which might very well be imitated by other vendors of lubricants. Owners of steam cars should examine the improved pony Rochester lubricator, for which the Vacuum Oil Co. are sole agents, and which was shown at their stand. It has a positive pump feed, which can be regulated down to a drop a minute, and, the oil reservoir being free of pressure altogether, can be easily got at for replenishing and cleaning.

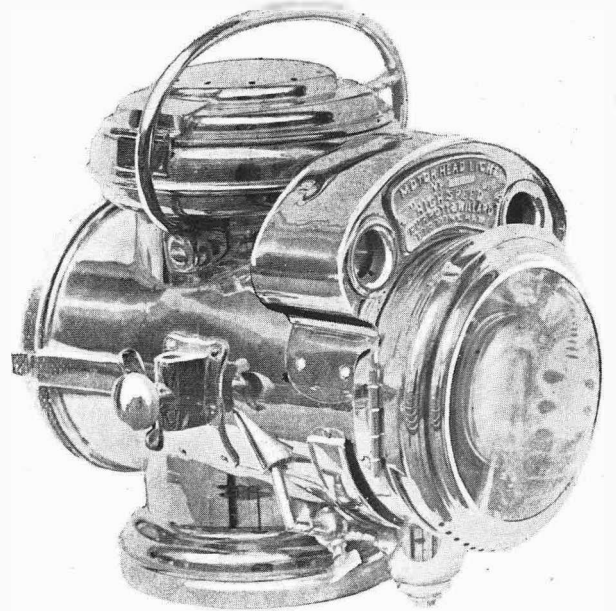
As might well be expected, the great firm of Gamage had a huge and most interesting exhibit of accessories of all sorts, many of which we reported upon as novel in our report of the Crystal Palace Show, but since then this house has introduced several new features which we propose to touch shortly upon. The first of these is a neat light attachment in steel plate for the front mudguards of motor cars with depending chains for the purpose of extracting nails or thorns which may become partially inserted in the tyre during travelling. Another item is a smart form of horn-sided goggles which in lieu of closing centrally fold upon one another, and can be safely carried in the pocket. A cheap form of non-slipper is provided in the shape of a strap cut broadly over the tread of the tyre and there furnished with twelve metal studs *à la*

Samson. Six of these on each driving wheel will undoubtedly form most effective non-slippers. The license holder, upon which we commented at the Palace, has been further improved, and now takes the shape of a neat leather case lying flat and comfortably in the pocket. Another neat fitting is a detachable lamp bracket for rear lamps, the lamp plate of which can be turned at any desired angle.

In view of the recent pronouncements of the Local Government Board, Messrs. Salsbury were showing their new Salsbury Ovalite lamp, in which the long axis of the reflector is placed horizontally, and the beams of light thereby prevented from rising into the eyes of drivers of carts which may be met on the road. These lamps are made with independent generators. Numerous samples of Salsbury's well-known lamps and accessories were also shown.

Brown Bros. showed a fine range of lamps, including Salsbury's, Ducellier's, Dietz, Helios paraffin headlight, etc. Messrs. Brown Bros. inform us that they are having great success with the last-named lamp, the simplicity of which recommends it to a large number of automobilists over the more complicated and occasionally irritating acetylene headlight.

One of the most interesting exhibits of motor lamps to be seen in the show was that of Messrs. Purrett and Willard. Their acetylene headlights were to be seen in three sizes, ranging from one suitable for use on a motor cycle forecar and a voiturette size to a big car headlight as depicted in the accompanying illustration. These lamps are full of good points from a user's point of view, everything possible having been done to simplify them in use. For instance, the gas bag is made with three orifices, the two opposite ones across its diameter being connected to the inlet and outlet gas pipes, while the bottom orifice is connected to a drain tap, which permits of any water which may have accumulated in the gas bag being emptied therefrom without breaking any joints. For the purpose of cleaning the gas passages throughout the lamp an attachment is provided, whereby a foot pump may be connected directly



to these passages, and strong air pressure passed through these pipes, thus cleaning the walls of any matter liable to cling thereto. The principal feature, however, in the designing of the lamps is the generator. This is on the simple diving-bell principle, which admits of the rate of generating the gas being automatically controlled simply by the pressure of the gas generated forcing the water away from the carbide, thus preventing its too rapid decomposition and generation of gas to a high and dangerous pressure. The ordinary carbide which is used in these lamps is made up in cartridges, having a capacity of two or three hours. So that if one requires to use a lamp for two hours it is only necessary to insert one cartridge into the generator. For a period of four hours two two-hour cartridges are inserted, while for six hours two larger three-hour capacity cartridges are used. It is obvious that other combinations of time limits for the lamp can easily be arrived at. Among other exhibits we noticed a well-designed lamp for rear

illumination. This, it is claimed, is the only lamp which will remain alight upon a car travelling at high speeds, and a careful inspection of its constructional points leads us to believe that in this respect no extravagant claim is made. Altogether we consider that this is a lamp which will come into extended use when its features become fully appreciated.

The Polkey paraffin head lamp is improved by the addition of a larger lens and the projection of the front lens rim, thus materially adding to the already good appearance of this most satisfactory lamp. It carries in the back of the lamp a couple of spare chimneys.

Show Report—Accessories.

A shutter for attachment to acetylene lamps was shown by Dunhill's. It comprises a screen, which, on a wire being pulled, is lowered in front of the acetylene burner.

The combined lamp and number plate shown by Gamages provides for the effective illumination of the numerical distinction. Another lamp has a simple and useful provision of a second white light opening, so that the driver can see at a glance by the light shining on the side of the road whether his lamp is burning or not—a very useful arrangement, as it saves dismounting to see if the back lamp is alight, and is also useful for driving backwards.

IGNITION.

IF we remember rightly, one of the first people in England to design an apparatus for firing more than one cylinder by means of a single coil was Mr. F. C. Blake, of Kew Gardens, S.W. An improvement upon his original device was to be seen on his stand. In this there is a commutator for the low tension ignition, and a distributor for the high tension current. The single coil shown has a high speed trembler, the trembler blade being supported on a brass bracket through the medium of a thin steel spring, thus allowing of the necessary motion and the high speed which is so desirable.

As usual, Messrs. Peto and Radford exhibited a most comprehensive stock of accessories, but beyond those dealt with in our Crystal Palace Show report, the only novelty was a magneto designed to take the place of the present batteries and deliver a steady current at either four or six volts to the usual standard coil. In order to do this it is made with six poles in place of the usual two. This multipolar arrangement obviates any dead centre and consequent irregularity of the current. The polar arrangement is obtained by having three sets of treble horseshoe magnetos arranged round a spider casting, between the ends of which the armature, having six coils, revolves. There is no commutator, the machine delivering an alternating current, which is picked up by a spring bearing against an insulating point carried on the end of the shaft. This magneto is an exceedingly pretty and ingenious piece of mechanism, supplying a long felt want on the part of many motorists.

The E.I.C. selling agency for the whole of the United Kingdom has been taken over by Messrs. Brown Bros., Ltd., and at their stand a full range of E.I.C. ignition apparatus was displayed. An interesting testing set might there be seen, in which the E.I.C. commutator, coil, accumulator, and switches are all made up. The E.I.C. ignition apparatus, however, was particularly dealt with in connection with this company's special exhibit.

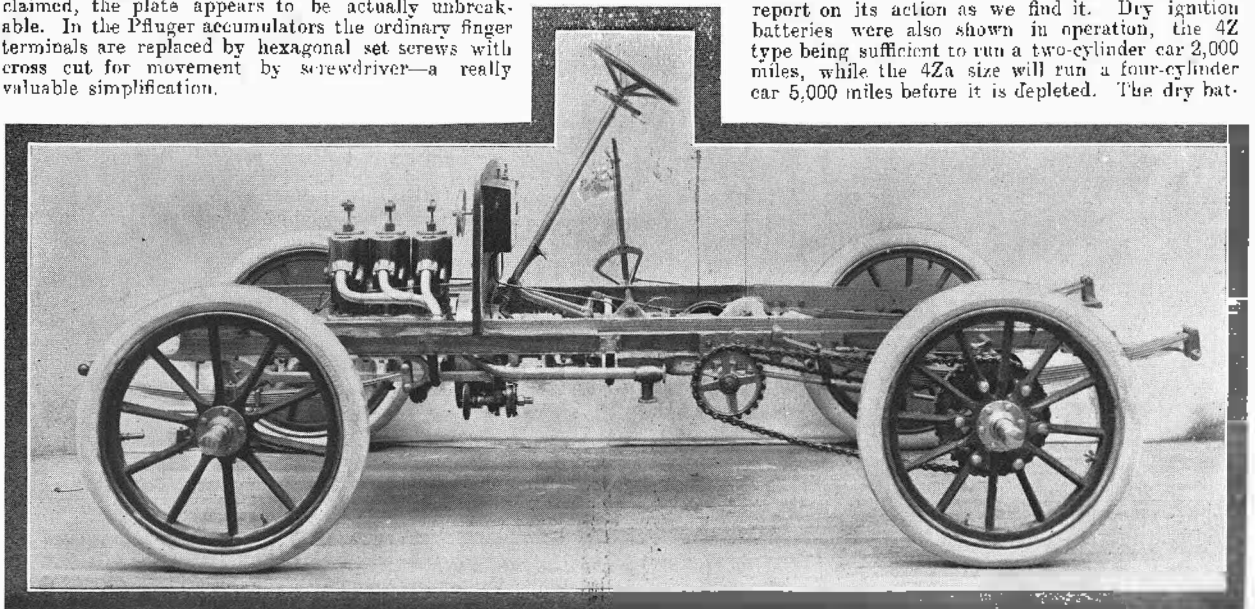
In the Pfuger accumulators the unbreakable plate was an item to be remarked. In this plate the paste is forced into the unbendable grid by hydraulic pressure, and, as claimed, the plate appears to be actually unbreakable. In the Pfuger accumulators the ordinary finger terminals are replaced by hexagonal set screws with cross cut for movement by screwdriver—a really valuable simplification.

A voltmeter shown by Van Raden and Co., Ltd., is marked in writing, as well as in figures, so that it can be easily read by the merest novice. A feature of interest was a set of four coils, similar to those being supplied to the Wolseley Co. for their Gordon-Bennett cars. A combined high and low tension contact breaker suitable for single coil multiple cylinder engines was shown, and also a new form of switch.

The Vulcan speed indicator was the special feature for note on Messrs. Giepel and Lange's stand. We have one of these instruments undergoing tests, and hope to give our report upon it in the course of a week or two. In addition to this instrument an Odometer was shown attached to the wheel cap. This records the distances travelled in any one journey by simply setting the index back to zero. The Auto-trembler ignition coils and plugs were also exhibited.

On the Lacoste stand we noticed a very original accumulator, which, it is claimed, cannot possibly short circuit by the plates buckling. The positive and negative plates are arranged in three rows—the negatives on each side of the cell and the positives down the middle. Thus if a positive plate should buckle it would merely touch the neighbouring plate, and no internal short circuiting would take place. In addition, it is claimed that the high internal resistance resulting from this arrangement effectually prevents leakage when the cell is out of use.

The student of ignition could not omit visiting the very interesting exhibit made by Messrs. John C. Fuller and Son, who showed their well-known mercurial bichromate charging batteries, which we have ourselves had for some time in use. Another feature of the stand was the new Fuller coil, with its synchronic high-speed trembler, in which the armature is suspended on two short lengths of piano wire, which are tuned together to give a musical note, making at least 10,000 vibrations per minute. By the exhibit on the stand it was noticed that the arc between the trembler screw and the trembler is hardly visible, so that the platitudes of both trembler and trembler screw should last a very long time. We hope to have shortly a four-cylinder coil of this description in actual use on one of our cars, and will then report on its action as we find it. Dry ignition batteries were also shown in operation, the 4Z type being sufficient to run a two-cylinder car 2,000 miles, while the 4Za size will run a four-cylinder car 5,000 miles before it is depleted. The dry bat-



The chassis of the 15 h.p. three-cylinder Minerva

Show Report—Ignition.

tery will remain in working order for two years. The accumulators shown by Messrs. Fuller have an ingenious improvement, in the shape of a concentric vaseline column enclosing the terminal where it makes junction with the plate. This entirely prevents corrosion at the positive terminal, which is known

by automobilists to be a considerable source of annoyance and trouble. A very neat form of test lamp was also shown. The lamp itself is enclosed within a black ebony tube, is very light and portable, and is capable of being used by daylight, owing to the black nature of its casing.

CLOTHING.

THE question of motor servants' liveries has always been a difficult one, but from the point of view of appearance and neatness Messrs. Hoare and Sons have done much to solve it by the introduction of their unlined livery slip-overs, which are made in various styles and which can be worn over the ordinary unsightly chauffeur's leather suits. Automobile owners casting about for some form of clothing which will give their servants a neat appearance would do well to give attention to these garments.

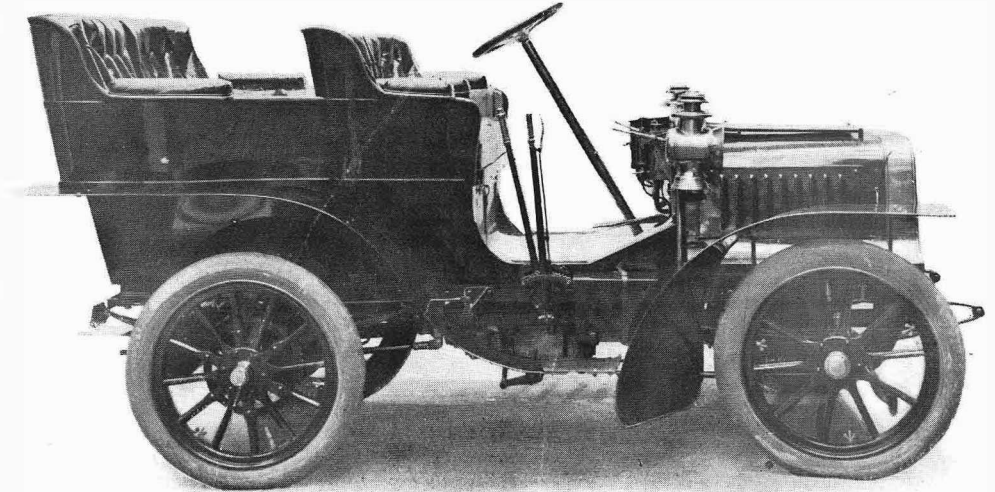
The D.B. ulster in homespun or Harris tweed, with a specially deep double-buttoned flat collar, is a garment newly introduced by the celebrated tailors, H. J. Nicoll and Co., since the Crystal Palace Show.

Since the Palace Show Messrs. Salsbury and Son have introduced a smart leather-lined tweed coat to range with their other Komilfo patterns. This coat is lined with chrome leather of any desired tint, and is made with well-designed wind cuffs. They also showed a new light water-proof overall for wear in the car over ordinary clothes.

Abbotts were showing a legging held together top and bottom by a spring, and secured by a single strap at the top. It is very quick in attachment and detachment. A very efficient form of cap cover was also to be seen on this stand. The Delta coat is of material which is rubber-proofed on both sides, and is both light and neat in appearance. A novelty was a coat, trousers, and cap of oilskin, all made in one piece.

Lewis's were making a speciality of leather-lined clothing suitable for chauffeurs. A novelty on this stand was the seal-skin ladies' motoring coat, with ventilated sleeves.

A new face mask, shown by Dunhill's, is of horn moulded to shape, and edged with fur. Another novelty on the stand was a lined waterproof sack to cover steering wheel and operating



The new 9-11 h.p. Swift light car.

levers on the steering-pillar to protect the hands from wet and cold. The Freer rug is shaped to the legs and hands in the positions taken when sitting, and gives great freedom for pedal operation.

The Aquascutum motor garments were found in the Arcade in the various patterns upon which we commented at the Crystal Palace Show. The most remarkable coat amongst them was that made with a detachable wool lining, which enables the coat to be worn all the year round.

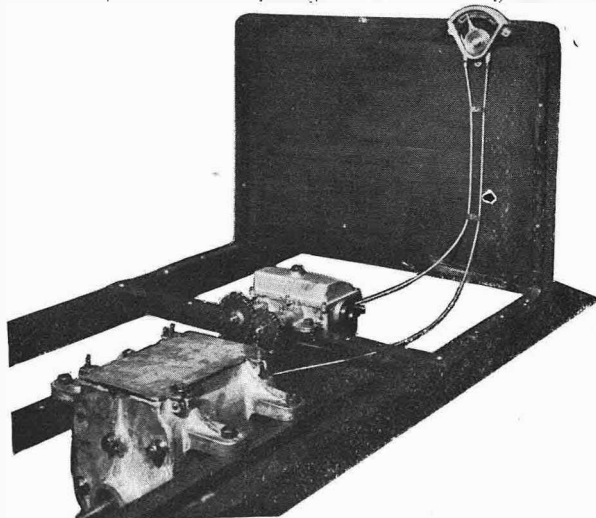
MISCELLANEOUS.

A SEA-GOING launch driven by a two-cycle petrol motor was shown by J. King and Co., 3, Colt Street, Limehouse, E. The piston is formed with a sloped top, so that the passage of the exhaust gases, when

the port is uncovered at the end of the stroke, is facilitated. An automatic valve is provided to admit the mixture from the carburetter. The propeller is of the reversing type, so that the pitch of the screw can be varied. A couple of collapsible hoods are fitted—one forward and the other amidships. A very light six-foot dinghy was also shown.

The Newman speed indicator indicates on a dial attached to the dashboard the correct time when any two pairs of gear wheels in the gear box should be put in mesh. A further novelty was a flexible coupling in one or two forms, which is adjustable for wear.

Madame Lockert not only represented her own journal, *Le Chauffeur*, but also had the latest type of Longuemare carburetters, including the new automatic, which by means of flap valves gives extra air when the speed of the engine demands it. This was illustrated in the Crystal Palace Show report (see *The Autocar* of February 20th, page 261).



The Newman change speed gear indicator.

A case was heard at the Marylebone Police Court before Mr. Curtis Bennett on Thursday, March 31st, the Motor Transport Co. having been summoned under the Act of 1878 for not consuming as far as possible their own smoke. The alleged offence took place on the 24th February last. The prosecution was conducted by the London County Council, and the case was defended by Mr. Staplee Firth on behalf of the Motor Van and Waggon Users' Association. After a long hearing the magistrate found that the vehicle in question was a light locomotive under the Act of 1896, and was exempt, and that the Act of 1878 did not apply. He therefore dismissed the summons.

STATISTICAL SYNOPSIS OF THE AGRICULTURAL HALL SHOW.

By H. Hewitt Griffin.

Excellent and interesting as the exhibition in the Agricultural Hall was, it was disappointing in the actual number of cars, complete and in chassis form.

Last year's figures at the Hall—443—came very near those of the Palace—534—which shortly preceded it, while the Hall exhibitors, both general 238 and car 122, actually exceeded the Palace—189 and 115 respectively. The Palace figures rose this year to 255 general and 122 car. The Hall figures in the "all on" section reached the record of 284, while the car exhibitors were practically the same—116. If those who showed motor boats (6) and motor mowers (2) be added, they become 124, or, with those who only showed motor cycles (11), 135, against 136 at the Palace. Indeed, it is really a dead heat, as in one case two firms of manufacturers at the Hall were represented by a single agent, so that we have once more the singular fact of two shows having, in the motor section, the same number of exhibitors—136.

It was otherwise with autocars, which fell away from complete cars 362 to 287, and from a total of 443 to 382—a decline in numbers of, say, twenty-two per cent, and fourteen per cent. The reason is not easy to see, save that the exhibitors were generally content with a smaller display.

A singular and regrettable feature at both shows was the absence of cars which derive their power of propulsion from alcohol. This is all the more extraordinary considering the efforts that are being made to promote the production of suitable alcohol in this kingdom, more especially in Ireland.

It will be seen that petrol almost sweeps the board—90.998 per cent. at the Palace and 90.311 at the Hall—but even these (inclusive) figures do not represent the entire case, as nearly all under the head of "steam" apply to lorries and the like. As a matter of fact, there were only five or six actual (passenger) autocars in the Hall—only just over one per cent. Electricity, too, seems on the decline—say, three per cent. at both shows, or less than half the proportion it showed the previous year.

Only two forms of gear demand serious consideration—the chain drive and the propeller or Cardan shaft, direct central transmission. The rise into favour of the latter is shown by the statistics. There is a marked difference between last and this year. At the Palace 1903 show, chains claimed fifty-five per cent., shaft nearly thirty-seven per cent., while at the Hall forty-nine per cent. and under forty-three per cent. represented the state of affairs. At this year's Palace show the chain was in a very decided majority—fifty-six per cent., shaft only forty per cent. This year's Hall show brought about a complete change, and for the first time a notable date for historians of the future—the shaft (187 in numbers and 47.812 per cent. in proportion) beat the chain (175 in numbers and 45.812 per cent. in proportion), the two forming 93.194 per cent. of all.

Cheap Cars and Imperfect Catalogue Descriptions.

Low price was a feature of the show, but the exhibitors of cheap cars seemed chary of saving anything about them. To give but meagre details, with the entire absence of prices, in the official catalogue was a very short-sighted policy on the part of the exhibitors.

In connection with steam cars, several use petroleum as fuel. Out of the twenty-two steam motors in the show, fourteen or fifteen were heavy vans or lorries

burning coke, etc.; nearly all the remainder of the passenger cars used petroleum.

Included in the "chain" cars were many, mostly of the lighter description, with a central chain drive.

Explanation of Classification.

The classification we have adopted in tabulating past shows has been again followed, with some improvements in detail.

CHAIN DRIVING is so reckoned where the chain is used in any way for driving.

PROPELLER SHAFT is reckoned where the chain is not used at all.

ELECTRIC DRIVE (direct) is used on nearly all electric cars.

FRICTION DRIVE is separately distinguished—even where the chain is also used.

GEAR WHEELS are mostly employed in tractors or heavy steam vehicles in lieu of chains.

Statistical Synopsis of Six Motor Car Shows.

A, Palais, Paris, 20 days in December, 1901.

B, Agricultural Hall, London, 19th to 26th of April, 1902.

C, Crystal Palace, London, 30th January to 7th February, 1903.

D, Agricultural Hall, London, 21st March to 28th March, 1903.

E, Crystal Palace, London, 12th February to 24th February, 1904.

F, Agricultural Hall, London, 19th March to 26th March, 1904.

CLASS, DIVISION, ETC.	A	B	C	D	E	F
Light and Heavy Cars (open)	416	171	273	241	218	142
Cars with detachable covers	—	—	—	38	74	44
Cars with permanent covers	—	24	40	19	48	32
Racing Cars	—	—	—	—	4	—
Voitures (open)	48	60	118	68	74	60
Motorettes (very small cars)	—	—	—	4	14	5
Omnibuses	24	14	11	2	9	2
Total complete Cars	488	269	442	362	441	285
Vans and Lorries	15	21	24	15	34	22
Chassis	53	39	68	57	97	71
*Tractors	—	—	—	9	15	*4
Grand Totals	556	329	534	443	577	382
METHOD OF PROPELLSION:						
1. Petrol (only)	261	231	438	363	525	345
2. Petrol or Alcohol	210	—	—	3	—	—
3. Petrol and Electricity	2	—	—	—	—	—
4. Electricity (only)	46	32	33	26	17	12
5. Alcohol (only)	22	—	—	—	—	—
6. Steam	15	65	63	49	33	22
7. Liquid Air	—	1	—	—	—	—
8. Petroleum (heavy oils)	—	—	—	—	2	3
Grand Totals	556	329	534	443	577	382
DRIVING GEARS:						
1. Chain	—	—	294	217	323	175
2. Propeller-shaft	—	—	196	189	231	181
3. Electric drive	46	32	33	28	17	10
4. Friction Contact	—	—	1	4	0	3
5. Gear Wheels	—	—	10	3	5	11
6. Belt	—	—	—	2	1	2
Grand Totals			534	443	577	382

The Percentage of Popularity—Power and Drive.

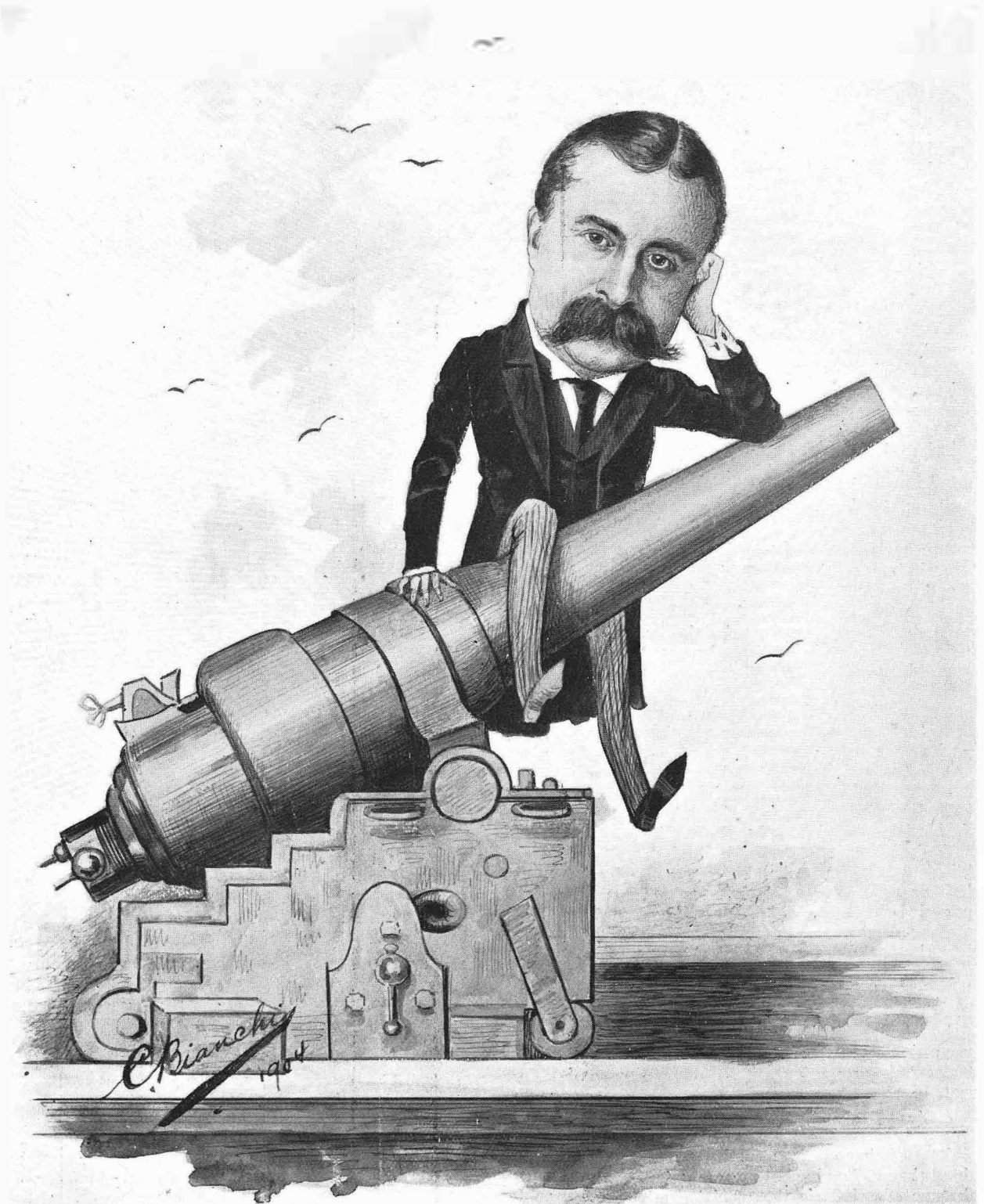
Power.	Cr'st'l	Agri'l	Cr'st'l	Agri'l	Drive.	Cr'st'l	Agri'l	Cr'st'l	Agri'l
	Pal'ce	Hall.	Pal'ce	Hall.		Pal'ce	Hall.	Pal'ce	Hall.
	1903	1903	1904	1904		1903	1903	1904	1904
Petrol	82.022	82.618	90.988	90.311	Chain	55.056	48.984	55.980	45.812
Steam	11.798	11.061	5.719	5.760	Propeller shaft	36.704	42.663	40.035	47.392
Electricity	6.180	6.321	2.946	3.141	Electric Friction	6.180	6.320	2.946	2.61
Petroleum	—	—	347	785	GearWheels	1.188	903	678	466
					Belt	1.872	452	1473	524
	100	100	100	100		100	100	100	100

Some Special Statistics and General Figures.

CLASS, DIVISION, ETC.	A	B	C	D	E	F
Total (Catalogue) Exhibitors	—	248	189	238	255	284
Exhibitors of Motor Cars (only)	—	111	115	122	118	116
Exhibitors of Farm Motors, Motor Mowers, etc.	—	—	—	—	4	2
Exhibitors of Motor Boats, etc.	—	—	—	—	4	6
Number of Motor Boats, Launches, etc.	—	—	—	—	5	9
Firms showing Airships and Aero static Apparatus	—	—	—	—	—	6
Total Firms showing Motor Cycles	—	—	—	—	—	24
Exhibitors of Motor Cycles (only)	—	9	14	6	15	11
Number of Motor Cycles (only)	115	42	111	41	106	46
with Forecars	—	—	—	—	17	12
with Sidecars	—	—	—	—	3	—
with Trailers	—	—	—	—	—	—

*TRACTORS—separate from and drawing vehicle or vehicles.
 + "Catalogue exhibitors" include various and sundry, dealers in details, accessories, plant providers, eyeglass exploiters, motor papers, toy traffickers and the like which make up the advertised "number of exhibitors."

THE BIG GUN OF THE A.C.



Lieut.-Col. H. C. L. Holden, R.A., F.R.S., the newly-elected chairman of the Automobile Club of Great Britain and Ireland. Engineer, soldier, automobilist, and scientist.

CLUB DOINGS.

Recent Affiliations to the Motor Union.

The Lincolnshire Automobile Club and the Southern Motor Club are the most recent affiliations to the Motor Union.

Sheffield and District A.C.

A hill-climbing competition for cars has been fixed for Saturday, June 18th. An inter-club meeting is being arranged at Buxton on June 11th, in which, besides the Sheffield Club, members of the Manchester, Liverpool, Nottingham, and Lincolnshire clubs are expected to participate. On Good Friday the car section of the club met at Millhouses for Bakewell, and on Easter Monday at the Town Hall for Retford.

Nottinghamshire A.C.

It is the intention of the Nottingham A.C. to hold its second hill-climb of the season on Saturday, the 14th May. The climb will be in two classes. (1.) For standard touring cars the property of club members, which must carry their full complement of passengers. (2.) For cars of any type or seating capacity either the property of club members or friends, such friends to be introduced by two members of the club. The first event will be for the most meritorious performance, and the second for the fastest time. The winner in each section to receive the club medal (not badge).

Norfolk Automobile and Launch Club.

The Norfolk Automobile and Launch Club held its opening meet of the season at Cromer, when about sixty members sat down to luncheon at the Grand Hotel. Baron de Barreto (vice-president) took the chair. Mr. Clark, the vice-chairman, in proposing success to the club, said the N.A. and L.C. was in a sound position. The club numbered to-day 114 members. Already the Motor Union had helped one of the members of their club in a legal case, and they were always willing to support a good case for the help of affiliated members. The Chairman responded to the toast, and wished the club every success.

Kent A.C.

The second annual general meeting of the Kent Automobile Club was held at Maidstone on Thursday, March 31st. The president, Sir David Salomons, Bart., was in the chair. The balance sheet, showing a surplus of over £17, was accepted. The financial estimate for the present year showed an available surplus of £157, after deducting the sum of £20 for printing and postage. The somewhat large surplus is accounted for by the fact of the A.C.G.B. and I. affiliation fees having been paid after October 1st last year, so coming under the rule of the parent club, which states that in such a case no fees shall be payable the following year. Votes of thanks to the president and to Dr. Dowding for his untiring and successful work as honorary secretary were carried unanimously. The first meet of the season will be at Tunbridge Wells on Saturday, April 16th, the rendezvous being the Mount Ephraim Hotel.

East Surrey A.C.

The first annual meeting of the above club was held at the White Hart Hotel, Reigate, on the 26th ult. Present: Major Kingsley O. Foster, J.P. (in the chair), Messrs. C. H. Whittington, Gunning Keen, Hughes, Bowden, Makovski, Boulter, Macaire, Mercer, Colonel Robinson, Drs. Hewetson and Wakefield, and Mr. D. J. Barry (honorary secretary). Major Kingsley O. Foster was re-elected president, and the following were elected vice-presidents: Sir A. Rendel, Sir G. Livesay, Captain R. H. Rawson, Colonel Robinson, Messrs. J. Underhill, and H. N. Corsellis. Mr. D. J. Barry was re-elected honorary secretary and treasurer, and Mr. A. W. Makovski honorary auditor. Major K. O. Foster and Mr. J. B. Purchase were re-appointed representatives of the club on the general council of the A.C.G.B.I., and Dr. Wakefield and Mr. D. J. Barry as representatives on the Motor Union general committee. An official repairer to the club has been appointed. It has been decided to admit ladies to membership.

Gloucestershire A.C.

At the first annual meeting of the Gloucestershire Automobile Club, Dr. H. P. Fernald (president) in the chair, the balance sheet showed a balance in hand of £26 16s. 9d. The chief item of revenue was thirty-four members' subscriptions of a guinea each.

The president, who is leaving the district to take up a practice in London, resigned his office, and was accorded a hearty vote of thanks, being at the same time elected an honorary member of the club. Mr. A. H. Wyatt was elected president in his stead.

Mr. F. M. Bostock was elected honorary treasurer, and Mr. A. Arthur Dale honorary secretary, and the following were balloted as a committee, with the officers as *ex officio* members: Dr. Halliwell, Messrs. F. J. Bennett, A. Meats, E. A. Stretton, S. H. Wellington, A. G. Sanders, H. E. Ranken, E. Sims, G. F. Ticehurst, H. Dyer, and W. R. Hughes. Dr. Fernald and Mr. A. Arthur Dale were appointed as representatives of the club to attend the Motor Union meetings.

Mr. Bernard Boyerton Redwood was summoned at the South-west London Police Court on the 28th ult. for driving his motor car at a speed alleged to be above twenty miles an hour. Three policemen gave evidence. One stated that he stood at the commencement of the 220 yards, another at the opposite end with a stop watch, that the first constable signalled to the second as the car passed, and when the car arrived at the end of the 220 yards, the second constable stopped the watch. The third constable swore that he was further down the road. The evidence for the defence was that all three constables stood together at the roadside. After hearing the evidence, the magistrate found for the defence, and refused to accept the sworn testimony of the constables, and proceedings for perjury are contemplated.



AN OPENING RUN. The opening run of the season by the members and friends of the Hertfordshire A.C. took place on Saturday, March 26th. Starting at St. Alban's, the route followed was via Hatfield, where the party was reinforced, to Hertford and Stevenage, and thence back to Hatfield for tea. Considering that the club is one of only recent formation, the event was in every way successful.

THE 20 H.P. HUTTON CAR.

(Continued from page 459.)

The Engine.

Having dealt briefly with the frame itself in our last issue, we proceed now to describe the engine. This is nominally of 20 h.p., has four cylinders, cast in pairs and bolted, as may be seen on reference to fig. 5, to the aluminium base or crank chamber, which is carried on a sub-frame of angle steel 6.6 as shown. This sub-frame is carried elastically on the frame proper by means of substantial spiral springs, moving in sockets

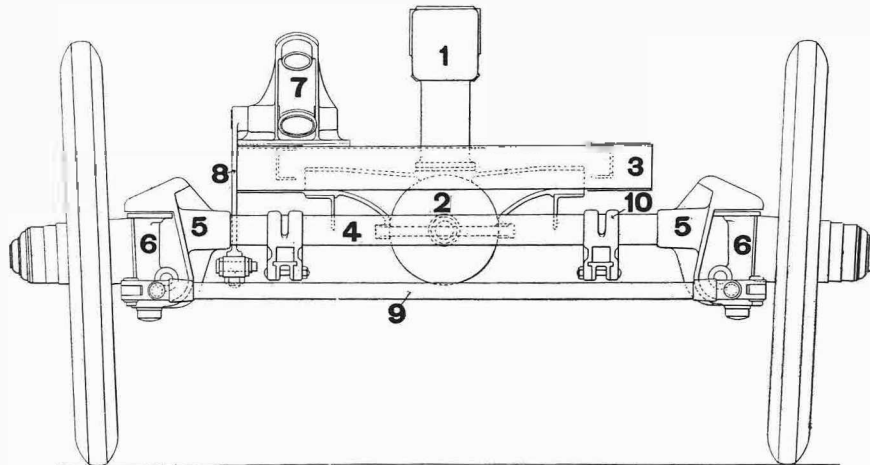


Fig. 3.—The Hutton front axle and steering gear.

- | | | |
|--------------------------|---|---|
| 1, engine cylinder | 5, arms embracing steering pivots | 8, steering arm |
| 2, engine crank chamber | 6, steering pivots | 9, front connecting rod to steering gear. |
| 3, cross member of frame | 7, bracket for double thread steering screw | 10, spring shackles. |
| 4, front axle. | | |

or hornplates. By these means the engine is isolated from stress due to any frame distortion, and the necessity for a flexible connection between the clutch and gear box is thereby obviated. The inlet valves are mechanically operated, a feature of the engine being the fact that there is only one lay or half-time shaft 11, from which the induction valves, exhaust valves, the make and break of the magneto tension ignition, and the rotary magneto itself all derive their motion. Not only is a single shaft used, but as the inlet valves are in the cylinder heads, the only pockets in the combustion chambers are those required for the exhaust valves—a system which has many adherents. At the forward end of this single half-time shaft the governor is mounted, and at the other end the necessary gear wheels for rotating it off the engineshaft 12. The lift of the induction valves can be varied at will from the steering wheel by suitable lever and connections, and in order to effect this result the induction tappets are mounted upon and move about a centre which is eccentric to the centre of the spindle upon which the tappet lever bearings are formed. This spindle is rotated in the bearings, which project from the induction valve dome 10, to carry it by means of the lever 9a. This is in its turn suitably connected up ready to the driver's hand, so enabling him at will to increase or diminish the opening of the induction valves to any degree between the minimum and maximum. The magneto ignition is capable of variation by means of the rocking spindle 17, and the lever 18, by which the right hand end of the rocking lever 13 can be brought earlier or later into contact with the ignition cam on the half-time shaft 11. The

governor controls the engine by the actuation of a throttle collar on the induction pipe.

The Carburetter.

The position of the carburetter 19 is shown in dotted lines on fig. 5, and its construction by the section fig. 6. Its action is directly controlled by the governor, by means of the throttle valve already referred to, the effect of which is automatically to vary the richness of the mixture in accordance with the engine speed and the power required. This is accomplished in the following manner. The body of the carburetter contains an annular float 7, surrounding the jet chamber 4, which is in the centre of the induction tube. The induction tube is perforated in the end adjacent to the jet, as shown by the ports 3, and projects into the main induction pipe of the engine 18. Sliding on the induction tube is the air regulator 5, already mentioned, operated by means of a rocking lever 17, which is coupled to the governor. As shown in the diagram, this regulator must shut off all access of the air to the induction tube 18, through the ports shown at 3, at the same time leaving a full passage for air to the main induction pipe 18, as shown by the arrows.

This is the position which the air regulator would assume when the engine tends to race, or when set by hand, to cause the engine to run at its minimum speed. When the engine is started, the governor raises the regulator 5 to its highest position, and air is then prevented from passing directly into the main induction pipe 18. All the air

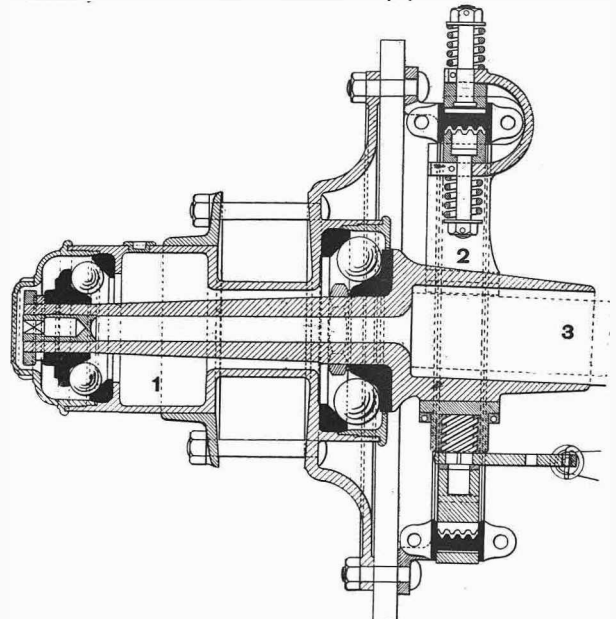


Fig. 4.—Section of the Hutton rear hub and expanding brake
1, hub shell. 2, expanding brake. 3, rear axles.

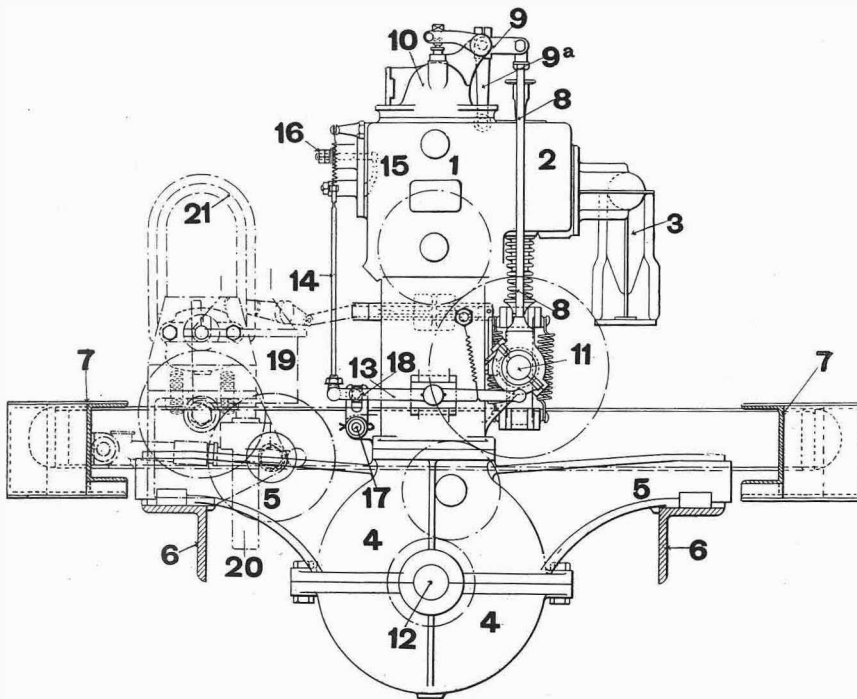


Fig. 5.—End view of Hutton engine.

- | | |
|--|--|
| 1 1, cylinder | 12, crankshaft |
| 2, valve chamber | 13, rocking lever actuating ignition make and break |
| 3, exhaust pipe | 14, ignition make and break rod |
| 4, base chamber | 15, make and break tappet inside cylinder |
| 5 5, base chamber brackets | 16, mica ignition plug |
| 6 6, angle steel underframe | 17, rocking spindle for variation of ignition |
| 7 7, pressed channel steel frame | 18, lever arm carrying rocking spindle of ignition lever |
| 8 8, induction tappet striking rod | 19, carburetter |
| 9, induction tappet | 20, filter to carburetter |
| 9a, lever for rotating eccentric bearings of tappet levers 9 | 21, permanent magnet on magneto machine |
| 10, induction valve dome | |
| 11, half-time shaft | |

which can then gain access thereto through the air inlet pipe 19 passes through the induction tube 4 by the ports 3, and supplies the cylinders with a rich explosive mixture for starting, as additional air is shut off by the regulator 5 being against its top seat. As the engine speed increases, the action of the governor lowers the regulator, and air is then admitted directly into the main induction pipe 18, so that the richness of the mixture is gradually reduced until the correct proportions of petrol and air are obtained for the speed and power required. Thus we have in the Barber carburetter another device which attains the desired end in a manner totally different, yet equally effective, from other carburetters already fitted to other cars.

The action of the governor can be cut out from the dashboard in the usual way. Below the carburetter is placed a filter 13, or water separator. The petrol is fed into this near the top, and passes upwards through a gauze strainer. Particles of water and dirt are thus intercepted by the layers of wire gauze 14, and fall to the bottom of the separator by gravitation. By the screw plug at the bottom this separator can be cleaned and discharged when desired. Hot air is furnished to

wheel spokes sit down into this recess and are held in the usual way by a flange.

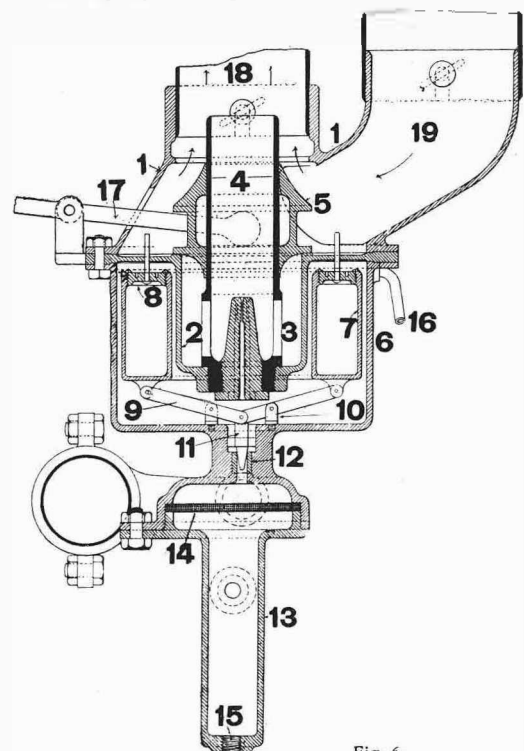


Fig. 6.—Sectional elevation of the carburette

- | | |
|---|--|
| 1, dome to the carburetter | 11, petrol supply valve |
| 2, jet chamber | 12, seat for 11 |
| 3, induction ports | 13, filter tank to carburetter |
| 4, jet chamber | 14, wire gauze strainer |
| 5, air regulating valve | 15, screw plug in bottom of filter |
| 6, float feeder chamber | 16, overflow pipe from carburetter |
| 7, float | 17, rocking lever operating the throttle valve 5 |
| 8, guide to float | 18, induction tube |
| 9, pivoted lever giving movement to petrol feed valve | 19, air inlet pipe |
| 10, fulcrum to which 9 is connected | |

Fig. 6.

(To be continued.)

THE HARROW AND RYE ACCIDENTS.

Wide publicity has been given to the accident at Harrow, which occurred at Grove Hill, the same decline on which poor Sewell and Major Ritchie met their death in 1899. Fortunately, the accident last week had no fatal termination, though seven people were more or less injured. It has been stated in the daily papers that the driver lost control, and there is no doubt that it was either this or that he lost his head. The hill is a dangerous one if taken at high speed, but no good driver with his brakes in proper order would experience the least anxiety in descending it, and the smash seems due either to grossly careless driving or to inattention to the brakes. There is absolutely no reason whatever why Grove Hill should not be descended in perfect safety, although people who use their eyes take the alternative route, which is a much easier one. On the other hand, if drivers approach an unknown hill at too high a speed, with the brakes out of order, they jeopardise their lives and those of the people they are driving.

As to the Rye accident, we reserve any expression of opinion for the moment. Offhand it would appear that there has been culpable negligence somewhere. In all probability it will be found that the motorists are far less to blame than would appear from the reports which have been published. At the same time it is difficult to excuse what is practically running down from the back, and unless some better explanation is given than has been afforded up to the moment, we shall be regretfully compelled to admit that the motorists were mainly in the wrong. In any case, all drivers should take the utmost care. Very strong action will be taken by the authorities if it is felt, however unwisely, that the present restrictions are not having the effect which their framers anticipated.

THE GLASGOW—LONDON TRIAL.

We understand from the Scottish Automobile Club (Western Section) that the entries for this reliability trial, which takes place on the 19th and 20th May, have been very satisfactory. They close next Wednesday, the 13th of April, so that intending competitors who have not yet entered should make a point of doing so at once. The hon. sec., to whom entries should be made, is Mr. R. J. Smith, 59, St. Vincent Street, Glasgow. It will be remembered that last year this event was a most successful affair in every way, and it bids fair to be even more successful this year.

REVIEW.

A new edition of "The Darracq and its Management," by Archibald Ford, general manager of the school of motoring connected with Mr. William Lea's motor depot, 16-18, Berry Street, Liverpool, has been issued. The instructions given are founded upon the single-cylinder 9 h.p. Darracq, and where there is any material difference between this and larger and later types, such variation has been pointed out so as to bring the present issue up to date. The descriptions of the mechanism and its working are clearly written, though their clearness is somewhat discounted by the fact that many of the illustrative diagrams are French with all the references in French. True a glossary is supplied at the beginning of the book, but the labour involved for a novice to get at the inner meaning of the matter must be somewhat distressing. Otherwise the book is very creditable, and will undoubtedly be welcomed by users of Darracq cars.

New Patents.

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

The following specifications were printed and published on the 31st March, 1904. All notices of opposition to the grant of patents on the several applications should be filed not later than the 16th April, 1904.

1902.
27,059.—J. F. Pease and E. Schumacher. Stamped road-wheel with oval spokes.
1903.
5,150.—R. W. Sanders. High-speed trembler for ignition coils.
5,473.—A. Collett. Portable engine with wheels adapted for running on road or rail.
5,706.—H. Heatly and W. Hunt. Motor car with horizontal engine and special type of transmission gear.
5,729.—H. S. Hele-Shaw. Corrugated disc clutch.
5,730.—H. S. Hele-Shaw. Clutches, brakes, and dynamometers.
5,875.—J. Jackson. Wheel with radially-arranged spiral springs.
6,142.—T. S. James. Double opposed engine without crank or connecting rods.
10,612.—W. Starley. Car with single front steering-wheel and three rear wheels.
13,406.—W. A. Lloyd's Cycle Fittings, Ltd., and F. Howles. Air-cooled motor cycle engine.
14,473.—C. Nielsen. Tyre pump driven by the motor.
23,246.—H. H. Lake (I. H. Reynolds). Piston inlet valve.
28,392.—A. E. Brillie. Heavy car fitted with gear for hauling, winding, lifting, etc.
1904.
114.—P. Duflos. Sparking plug with single piece porcelain.
1,296.—A. J. Postans. Ignition gear.
2,302.—C. L. Schmitt. Tubular water-cooler for cars.
2,839.—A. A. Longuemare. Automatically adjustable air intake for fitting to carburetters.
3,129.—F. A. Gardner. Car with two frames—one carrying the body, the other the gear, etc.
3,225.—C. A. Ouvrard. Acetylene headlight for cars.
3,259.—J. A. Lloatti. Wheel with radial or tangential spring tongues to prevent side-slip.

ROAD REPORTS.

We shall be glad to receive reports from correspondents under this heading as to the condition of the roads—both good and bad—in various parts of the country.

The terribly rough setts in Chorley are not so bad as formerly. Certainly at one time no man could possibly exceed the present legal limit unless he suffered from suicidal mania.—L.

"THE AUTOCAR" COLONIAL AND FOREIGN EDITION.

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

The Autocar can be obtained abroad from the following:

AUSTRALIA: Phillips, Ormonde, and Co., 533, Collins Street, Melbourne
NICE: Levant & Chevalier, 50, Quai St. Jean Baptiste.
UNITED STATES: The International News Agency, New York.
PARIS: Neal's English Library, 248, Rue Rivoli.
MELBOURNE, Victoria,
SYDNEY, N.S.W.,
BRISBANE, Queensland,
PERTH, W.A.,
WELLINGTON, N.Z.,
CHRISTCHURCH, N.Z.,
CAFETOWN, S. Africa,
DURBAN, Natal, S. Africa.

Messrs. Gordon and Gotch.

"THE AUTOCAR" SUBSCRIPTION RATES

British Isles, 16s.; Foreign, 22s. 8d. per annum.