

THE AUTOCAR

A Journal published in the interests of the mechanically propelled road carriage.
EDITED BY H. WALTER STANER.

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THE AUTOCAR.

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COLONIAL AND FOREIGN EDITION.

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

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Messrs. Gordon and Gotch.

Notes.

Motor Goods Transport.

As we pointed out last week, there is at the present time a growing tendency for the importance of motor goods transport to be more fully recognised than has ever before been the case. As a number of people are investigating the question of motor transport who have only recently taken an interest in the subject, we think it will be of service to them

if we mention the report of the Liverpool Self-propelled Traffic Association trials. The last of the series was held in June, 1901, and it, as well as the two which preceded it, were most exhaustively dealt with in the report which Mr. Shrapnell Smith, the hon. sec., compiled. Every vehicle running was described in detail, and the observer's reports for every run given in full. Valuable tables, setting forth the weights carried, fuel consumed, and all other important particulars, are included. In fact, the costs of working are the most complete which have ever been compiled. Last, but not least, there is the judges' report based on their careful following of the trials and perusal of the observers' log sheets as well as a most minute examination of the lorries taking part in the trials. A particularly interesting point in connection with these trials, and one which greatly enhances the value of the report, is the fact that the conclusions arrived at by the judges in 1901 have been fully borne out by the practice of the Road Carrying Co., which has, we believe, moved considerably over 20,000 tons of goods during the last few months by motor lorries. We should add that the report can be obtained from Messrs. Lloyd and Walker, of 5, Castle Street, Liverpool, and there is no question that those who are interesting themselves in motor transport would be well advised to obtain it.

Hastening Development.

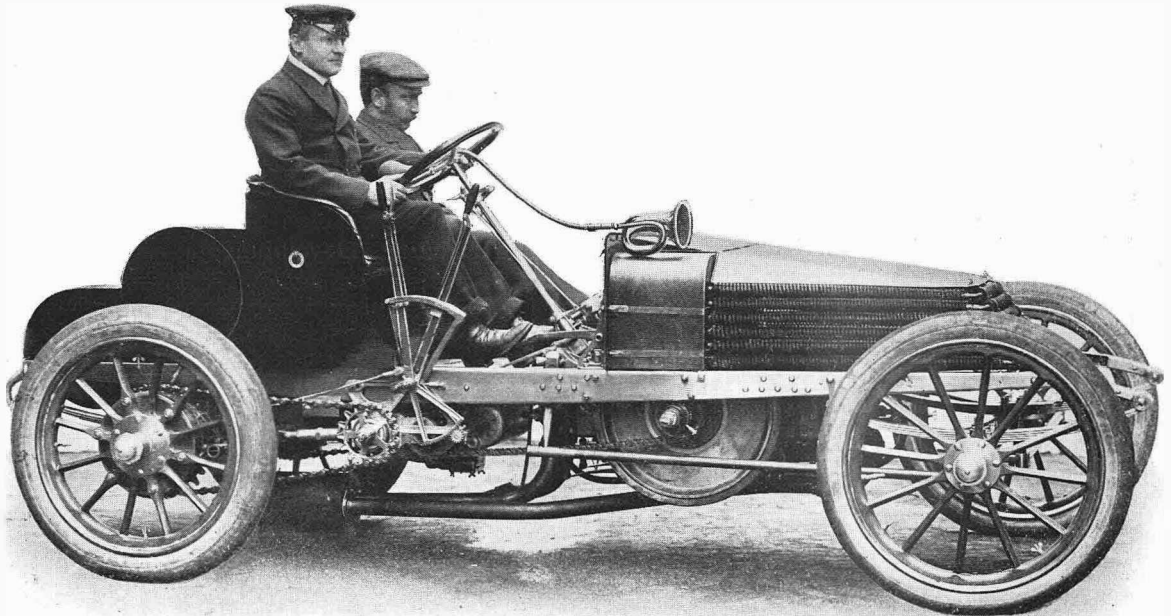
In one of the morning papers a discussion has been taking place as to the effect of motor racing upon the evolution of the car. It is maintained, on the one hand, that racing has resulted in the auto-car being much more rapidly improved than would have been the case had there been no speed competitions. The opposition hold that if manufacturers had given as much attention to the improvements of the touring car as they have done to the racing car it would have arrived at its present state just as soon. Of course, it is easy to theorise in things of this kind, but as motor racing has taken place from 1894 onward it is impossible to say what would have been the conditions of affairs to-day if there had been no speed contests; but we think there is little doubt that the automobile would not have reached such an advanced stage of design and construction as it has now done but for the races which have been held upon the Continent. It should be clearly understood that we are not speaking in favour of high speed driving, but are merely referring to properly-organised races upon a given date, with the route policed in an efficient manner to safeguard the public. To a large extent, the matter has been one of expediency. At the beginning, the races were trials of endurance rather than of speed, and were held to demonstrate that the motor car was better than the horse. Then it advanced to the

stage of being faster than the bicycle, and somewhere at or before this the participants became anxious to prove that their car was the fastest of all cars, and from this stage power has gone on increasing and weight decreasing, until we have the wonderful machines capable of attaining railway speeds. It was found out by manufacturers that orders followed victory; in other words, the cars which made the best scores in the races were in the largest demand by private buyers, and, although there is necessarily a large difference between the racing car and the touring vehicle, yet up to the present it must be admitted that in the vast majority of instances those who have made successful racing cars have also turned out thoroughly sound touring vehicles, and, of course, it is a generally recognised fact that a very large number of the everyday features of the modern car were tested and proved in the first instance on a racing machine, so it would appear that while we might have arrived at the present stage without racing, such conditions were not possible, as there was no direct incentive held out to the makers like that presented by speed competitions. In this country things are different, for, despite the many who desire speed, those who want reliability are still more numerous; and it is obvious to anyone who studies the conditions closely that those makers who have done well in the reliability

trials have almost invariably been the fortunate recipients of a very large number of orders soon after the trials.

Road Maintenance.

In a paper recently read before the Society of Engineers upon "Road Maintenance and Administration," by Mr. R. J. Thomas, the County Surveyor of Buckinghamshire, it was suggested if new roads or the widening of existing highways was considered necessary, the expense might well be borne by the State, which would recoup itself by a tax per horsepower being levied upon cars. We would be the last to quibble at motorists paying their fair share of taxation, but it should be borne in mind that they already pay taxes as ordinary citizens as well as a separate motor car tax, despite the fact that they do vastly less harm to the road than horse vehicles. As this is the case we cannot regard any suggested form of additional taxation fair unless it is borne equally by all other road users. Probably the fairest tax would be one according to the weight of all carriages, though then the horse owners would have by far the best of the bargain, as the hoofs of the animals and the metal tyres of the wheels necessarily damage the roads, while rubber-tyred machines, whether they be bicycles or cars, do the roads no harm, and positively benefit them at times, as any observer of the wheel tracks can see for himself.



The 60-70 h.p. Wolseley racer purchased by Lieut. Cummings, R.N. The owner intended entering the car for the Gordon-Bennett eliminating test race, but the conditions prevented his doing so. However, we understand that he intends running the car in some of the leading Continental races. The engine has four cylinders, having a bore and stroke of six inches, and developing its power at 900 revolutions per minute. There are four changes of speed ranging at present from 22 to 87 miles per hour, but we are told that the top speed is to be reduced to 74 miles per hour, and the others in like proportion. Twenty-five gallons of spirit are carried and nine gallons of water, which is sufficient for cooling purposes. The wheelbase is 8ft. 9in., and track 4ft. 6in. The weight is just under 1,000 kilos.

It is said that three men in an autocar recently mounted the steps of the Capitol at Washington. At the sixteenth step the chain of the vehicle snapped and the car ran backwards into the street. The riders were not hurt, but the police arrested them in view of "further steps" being taken.

The General Purposes Committee of the Bermondsey Borough Council are considering the advisability of employing motor vehicles for the heavier work of the borough. A German invention which sweeps the streets and collects the mud at the same time is particularly advocated by one councillor.

USEFUL HINTS AND TIPS.

A Good Clutch Dressing.

For the benefit of fellow automobilists, I may say that I have found an excellent clutch dressing is to be made up by mixing castor oil and commercial glycerine in equal proportions. This requires to be thoroughly well mixed by placing the ingredients in a large stoppered bottle and well shaking up from time to time. It should be applied to the leather as thinly and as evenly as possible. It appears to keep the leather nice and soft, and yet prevents it from screaming when the clutch slips, and at the same time it retains the full gripping power necessary to drive the car. I have found that with this dressing it is perfectly safe to slip the clutch to admit of the engine picking up a little when negotiating gradients, thus enabling my car to overcome them without the necessity of changing down to a lower gear, the latter being necessary only when attacking more than ordinary hills.—W. J.

A Useful Water Strainer.

A useful and easily-made water strainer may be made in the following manner: Take a metal ring or piece of wire bent into a circle, and stitch on to it a long conically-shaped bag made out of old linen. The ring should be sufficiently large to rest upon the edge of the water filling pipe, the bag dropping well down into this. If circumstances permit, it may be left in position, simply screwing the cap covering the filling pipe into position on top of it. Thus one has the strainer in position, and it will obviate all possibility of any foreign matter being taken into the water tank or the circulating system. It is a simple thing, but it guards against all possibilities of getting the pump choked, the water circulation stopped, and the engine overheated, and consequent damage and delay.

Asbestos Washers.

When remaking a joint where it is necessary to use an asbestos washer to secure a perfect joint, a good tip is to have a selection of washers which have been previously cut to correct sizes and then soaked for some six or eight hours in olive oil, this being allowed to drain off the washer, the remainder drying upon it to a certain extent. After remaining for some hours for draining and drying purposes, these washers should have a quantity of fine black-lead rubbed well into their surfaces, when they will be ready for use. The advantage of so treating asbestos is that when it is necessary to break the jointing the washer comes away from the surfaces perfectly clean, thus doing away with the necessity for scraping off the fragments remaining, and is fit for use over and over again, so that the treatment facilitates the remaking of a joint, and at the same time is economical, even though it be a petty economy.

To Stop a Leak.

An excellent method of repairing a leak in pipes or joints in the water-cooling system of a petrol motor is to bind around the part leaking a length of string which has previously been soaked in oil to make a satisfactory temporary repair by this method. The string should first be soaked in oil—boiled linseed for preference, if one happens to be in a locality where this can be obtained from a blacksmith or carpenter, or, failing this, thick lubricating oil—and

then winding round the joint the string, keeping the coils as close together as possible. The start and finish of the coil should be some little distance on each side of the point at which the leak occurs. The winding should consist of two or three layers of string, if as much of this very useful material is at hand. In the case of a leak occurring in the tank, if the fracture is sufficiently large, some tow can be made by picking a piece of string, soaking it in oil, and packing it into the joint by means of a chisel or a strong blade of a penknife. White lead, of course, is at all times preferable to oil, where procurable, and if a piece of tape can be used in conjunction with this a satisfactory and permanent repair can be effected.

Storage of Tools.

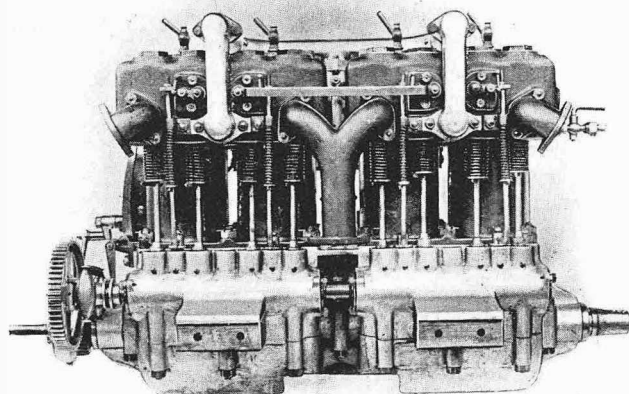
The stowing away of tools so that they will be noiseless and yet be easy to reach and put back into place again is one of those small problems in which every motorist is more or less interested. There are many ways of carrying one's tools, the most unsatisfactory of which is the indiscriminate mixing up in a drawer located beneath any one of the seats in the car. In the first place when even a small tool is required it means a complete dislodgment of the passenger in order to get at the drawer, and he has for the time being to assume a more or less uncomfortable position. A better method than this is the leather case in which each tool has its own place, the whole being wrapped up into a roll and bound with a strap and placed in any convenient part of the car. An excellent method, and one which we have not yet seen adopted on any car, is to make a case fitting on to the face of a door, or inside the door of one of the cupboards beneath the seats. This case would simply consist of a piece of light wood, about three-quarters of an inch thick, in which recesses have been cut out right through the wood to fit every size spanner or tool which one carries in the ordinary way. One or two swinging spring clips should be fitted to press upon the tools when they are in position to keep them from falling out or from making a noise, though enabling the motorist, when any tool is required, to find and withdraw it readily. When the tool or tools have been finished with they are just as easily replaced and clipped in position. If a tool be found to be missing, it can at once be looked for and restored to its place. This is certainly a much more satisfactory method than travelling a few miles, and then finding that in the process of packing up one or more tools have been left in some unremembered spot.

The arrangement suggested has, of course, the same disadvantage of disturbing the passenger, unless the tool casing is made to fit upon the dashboard, or in any other convenient place, and to our mind a nicely polished mahogany casing with a shutter door on it would add to the appearance rather than detract from it.

The Birmingham Water Department is stated to be about to purchase an automobile for the use of one of its resident engineers, who will have charge of a long section of the aqueduct and conduit in connection with the Welsh water supply.

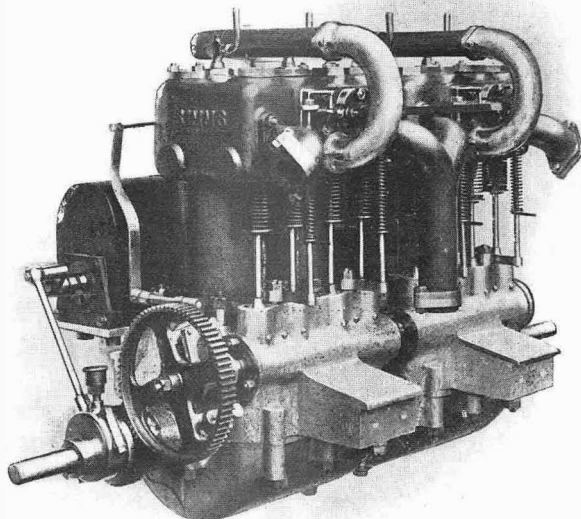
THE SIMMS FOUR-CYLINDER MOTOR.

A high-powered motor has recently been put upon the market by the Simms Manufacturing Co., illustrations of which are given herewith. So far as the general design is concerned the motor does not differ from the majority of such engines, and details peculiar to the lower powered Simms motors are still retained. The motor develops 35 b.h.p. at about 1,500 revolutions per minute. The cylinders are cast in pairs, but with no connection between the cylinder barrels, as will be seen from the illustration below, the junction between the cylinders being effected at the head and the base. The com-



bustion chambers and valves, of course, are water-cooled. The cylinders are of equal dimensions, having a bore and stroke of 110 mm., the compression used being 90 lbs. per square inch. The engine, of course, is fitted with the well-known Simms-Bosch magneto ignition with the usual oscillating sleeve. Both inlet and exhaust valves are mechanically operated from the same camshaft, the removal of one cotter and washer being sufficient to enable the valve to be lifted from its chamber. Lubrication is automatic, dispensing entirely with the usual drip feed lubricator and attendant connec-

tions. The governing is of the centrifugal ball description, acting upon a butterfly type of throttle valve, which is controlled by a hand accelerator in the ordinary way. The spray type float feed carburetter is used, but a notable feature is that a carburetter capable of producing gas from ordinary petroleum can be fitted. The total height of the motor is 23 in., width 16 3/4 in., and length 41 1/4 in. The weight of the motor complete in itself is approximately 308 lbs., the flywheel giving an addi-



tional weight of 56 lbs. Every part of the motor is made on the interchangeable system, and the high standard of work associated with the Simms product is well maintained. A smaller type of motor on precisely similar lines, but developing 20 b.h.p., is also being turned out. The measurements of this are, of course, somewhat less than those of the large size engine, as is also the weight. Both are adapted for either car, launch, or stationary purposes.

The electric postal service in Milan, which is performed by vans propelled by Thomson-Houston motors of 6 h.p., rotating the wheels directly through spur gearing, is giving great satisfaction to the postal authorities. The accumulators suffice for a run of thirty-six miles on one charge.

* * *

Warne's hotel at Worthing is undoubtedly the automobile holiday centre of the South coast. On Easter Day no less than eighty-two cars called at the house, while from last Thursday to Monday the house and garage were filled by well-known automobilists and their carriages. All four days of the holidays cars were continually arriving, and the house and garage staff were very hard put to it to meet the demands upon their resources. It is generally admitted that Warne's hotel is the most luxuriously fitted and best managed hotel on the South coast.

Crossing the line. The Glasgow coachbuilders complain that the cabinet makers are making motor car bodies in violation of trade union principles.

* * *

Mr. Fletcher's new yellow Siddeley car was much admired at Worthing during the past holidays. We understand that Mr. Owers has ordered an 80 h.p. Weller car for racing purposes.

* * *

An autocar was passing slowly through Thornton Heath, when the motorists observed with consternation a runaway horse approaching them in full flight. But, while the occupants of the rear seats were meditating a hasty exit over the back, the "uncontrollable" slackened pace, and pulled up dead a few yards from the car. Being an uneducated horse, he was not motor-proof, and before he had made up his mind as to the proper course to pursue under the circumstances, he was incontinently captured.

INDIARUBBER. By Mervyn O'Gorman.

The motorist should know a few facts about this most important substance. It occurs with seven appliances which he uses.

- (1.) On the insulated wires.
- (2.) In the footmat.
- (3.) In the hose connections in the water circulating system.
- (4.) In the tyre inflator pipe.
- (5.) In the bulb of the horn.
- (6.) In the driver's waterproof apron, coat, etc.
- (7.) In the tyres.

In none of the above applications is *pure* india-rubber used, nor would the enormous stretching quality, the stickiness, the rapid deterioration under air and light or when in contact with certain metals, the great variation of properties which it exhibits with temperature changes, and lastly, the very high cost, render it suitable.

The rubber of commerce ought to be called "vulcanised rubber compound," for it invariably contains more compound than rubber.

Electrical Wires.

(1.) *Electrical wires.*—In this case the quantity of wire used is so small that the finest quality of covered wire should be purchased. Ignorance in this matter and kindred electrical trifles have led to more troubles with automobiles than any one single cause whatever, except tyres.

By contrasting the cost of the cheapest possible covered wire with that of the best possible it will be found that on a car costing, say, £300, a saving of five shillings at most might be made, and this saving will, perhaps, in the very first year of the car's life cost its user hours of worry, pounds in damaged accumulators, in the purchase of new coils under the idea that the coil is bad, in repairs generally effected by persons who, even if good mechanics, are hopelessly ignorant of the elementary tests and devoid of the simple instruments, the training, or the spare material needed to make a sound job.

The rubber-covered wires of the low tension circuits should be of 600 megohm grade, or, better still, 1,200 megohm grade, and wires can be bought under that title having any size of copper conductor required, but for cars a core consisting of a large number of fine copper wires is to be preferred (*i.e.*, flexible insulated wires, such as 70/40, where great flexibility is wanted; or 35/28, where no moving part is connected).

It is highly important that the rubber should be guaranteed by and bear the name of a good manufacturer, *viz.*, Siemen's, Silvertown, Henley, Telegraph Manufacturing, Glover's, etc. It is not possible, of course, to get less than one hundred and ten yards from the makers direct. Besides being of the right grade electrically, the rubber should stand the following test.

Mechanical test.—Remove the braid and tape and pull out the copper wires, stretch the rubber tube which remains till the length of the piece is doubled, fasten it to a board in the stretched condition for twenty-four hours, cut it free after that time, and note that it should return to within ten per cent. of its original length in one hour. If it will not stretch without breaking, or will not return after being cut free, do not accept it, or, at least do not allow it to be made a fixture in your car, even if you are reduced to use it for temporary purposes.

High tension wires are very much more thickly covered with rubber, but are not made in large enough quantities to correspond to any grade. The above stretching test may with advantage be applied to the rubber of these wires. High tension wires should not be taped over or braided, as the moisture absorbing and retaining quality of the tape and braid conduces to leakage.

On good insulated wires, such as I suggest, the mixture of substances called the rubber compound should contain about thirty-five per cent. pure rubber (or more); the sixty-five per cent. remaining consists of mineral powders euphemistically called pigments and sulphur.

Footmats.

(2.) *Footmats.*—The rubber used in these is of very much lower quality than that on wires, but here again the universal ignorance of the purchasing public prevents their getting the right thing. The amount of rubber in the compound may be much less, for resiliency is not required, nor is excessive flexibility, nor the power to withstand great vibration without cracking, nor electric insulation. If, however, the amount of pigment is increased to an enormous extent (and there is every inducement to do so, as long as rubber costs, say, five shillings a pound, and the pigment about one halfpenny a pound), the mat becomes worthless, the celluloses in the structure of the rubber are gorged with chalk, etc., and other pigment, so that the surface of the mat crumbles with the gentle chafing of the feet of the driver.

Being gorged to repletion, the indiarubber proper is (though the fact is invisible) already in a state of stretch, which allows of no further stretch without tearing. A mat of this kind, therefore, will only stand being taken over the pedals of the car some dozen times, after which the splits extend and tear till the whole is in shreds. Nevertheless all mats *must* come off pretty frequently to allow the mud and dirt brought in by the rider's boots to be cleaned away from under the perforations which are invariably cut in mats, and which are necessary to keep the feet dry. There is an important difference between mats for motor cars and other rubber mats, *viz.*, the necessity for light weight. A large trade in door mats exists already, of course, and as the perforations make it difficult to estimate what quantity of rubber the mat will require, the purchase is usually effected at so much per pound of mat. There is here an obvious inducement to the maker to use for his pigment the heaviest mineral he can find. It did not take him long to find it in barytes, or heavy spar, a mineral as heavy as cast iron and nearly as cheap as clay.

This may enable us to guess why it is that mats are often so fragile and of such a prodigious weight.

Evidently, the car mat may with advantage be made more expensive per pound without being more expensive as a mat, provided it is made with much lighter compound which costs no more per unit of volume. With a little more expense it may be much stronger, more elastic to the feet, and less easily torn.

The Hose Connection.

(3.) In hose connections rubber is used, and there is again no call here for expensive, highly elastic rubber. The canvas of the hose withstands all the pressure and most of the bending, so that the rubber is merely called on to fill the interstices. A closed and complete rubber lining should be made to the tube to keep the internal water from rotting the canvas, and a complete external rubber sheath for the same reason. With hose, as with mats, old material, that is to say, rubber that has been manufactured and stocked for over a year, should be scrupulously avoided, no matter how cheap. Owing to the small amount of rubber present in the compound and to its gorged condition, a large surface of rubber is exposed, in a thin layer, to the air, light, and moisture, consequently these low grade rubber goods are highly perishable with time alone, and whether they have been used or not. Old hose and ultra-cheap hose are characterised by their brittleness, when roughly handled and bent or kinked, and they should be avoided. There is also some indication to the expert in their smell and in the way the rubber cuts with a knife. Once the closed sheath of rubber (which gives the glossy look to the outside of the hose) is broken, the end is approaching. The evil day may be delayed by employing very stout three-ply delivery hose. This is so thick that it is difficult to kink it; a crack therefore starts less easily, and though it is expensive, the amount used is so small that the extra cost of a shilling or two is quite negligible compared with the trouble and labour of fixing a new one when on the road.

The Bulb of the Horn.

(4.) The bulb of the horn ought to be of very different quality; it should on test show an elongation and resiliency comparable with that for insulating wires.

It is most unfortunate that a black colour has been allowed (probably because it shows off the nickel-plating of the horn proper) to become the standard

thing. The black in the indiarubber bears no relation to its useful qualities—it is an index of nothing, neither of strength, resiliency, endurance, percentage of rubber in the compound, nor anything else saving only that the manufacturer has added one or two per cent. of lampblack to the mixture of pigments. This lampblack is always coming off on the driver's hands, gloves, and clothes as the bulb wears. The undyed and natural pale grey rubber is much superior from this point of view.

Waterproofs.

(6.) *Waterproofs.*—Rubber dough worked into the cloth and vulcanised cold with sulphur chloride is used to waterproof cloth, and is present on the clothes as a rule in rather small quantities (except in the glossy rubber aprons with a surface like goloshes, etc., to which I am not now alluding). If an oil stain be removed from such clothes with petrol the rubber will be removed in a considerable measure also, and with it the waterproofness. The ring, or spot, where the petrol was allowed to act will also have an ugly dark fringe where the extra rubber has collected.

General.—In all cases, including tyres, of course, it is well known that lubricating oil, paraffin oil, petrol, grease, and battery acid must be scrupulously kept away from any indiarubber that is wanted to last. It is not so well known that copper also acts as a carrier of oxygen to the rubber, and tends, where in contact with it, to perish it. The copper oxidises in air, and yields its oxygen to the rubber. Nickel and iron are not so objectionable. For this reason the part of the horn which is in contact with the bag should be nickelled or tinned, and the part of the brass tube to the radiator to which the hose is connected should be tinned.

Vulcanised rubber compound should not be exposed to a temperature of more than 130° F., though the limit at which rubber softens completely is the vulcanising temperature of about 280° F.

The Chemin de Fer du Nord and the London Chatham, and Dover Railway have notified the Automobile Club of France that they will issue first class return tickets from Paris to London to club members attending the Gordon-Bennett race at second class rates.



A halt on the Col de Braus.



One of the gradients for the brake trials.

(See "Trials of Touring Cars," *The Autocar*, April 11th, page 441.)

SOME 1903 DEVICES AND FITTINGS.

A Water Circulating Pump.

Where the cooling water of a petrol engine is circulated by a pump so that two, three, or four cylinders are in series, it must be the case, of course, that the cylinder temperature varies according to the number of jackets through which the water has passed before reaching the last cylinder. The effect of unequal temperature, especially where two

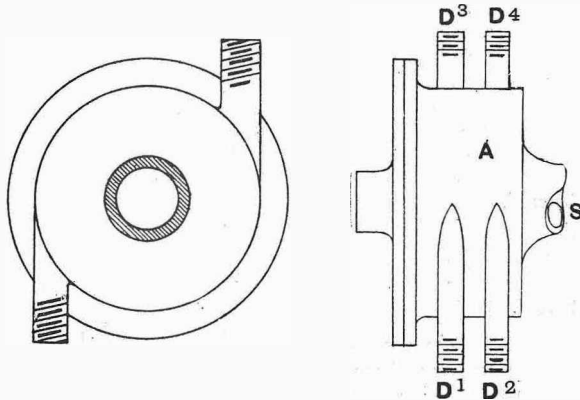


Fig. 1.—The Holcar four-way delivery pump. A, the pump body. D¹ D² D³ D⁴, water outlets. S, water inlet.

or three cylinders are in one casting, may be detrimental, causing possibly unequal expansion with irregular form of the cylinder itself, tending towards loss of compression, and causing necessity for increase of lubricant. Another possible trouble is imperfect clearance of any steam generated. In the "Holcar" vehicle, by the United Kingdom Inventions Association, possible trouble under the above heads is obviated by providing, as seen in fig. 1, four distinct deliveries from the pump D1, D2, D3, and D4, each leading direct to one of the cylinder jackets, whilst a large diameter inlet S, common to all four, leads into the centre of the pump body A.

A Rolling Commutator.

A new form of low tension contact maker, by Lacoste and Co., appears in fig. 2. The essential feature is the provision of a rolling instead of sliding contact, and capable of running in oil. Either two or four contacts can be arranged for, the current being conducted from each of the terminals C1, C2, C3, and C4, to earth. The life of this contact maker should be very great, for it will be seen there are no spring blades to break. The spring D is of sufficient strength to ensure electrical contact of roller and plate, even in the presence of oil. The collar F is fitted to the camshaft E, and carries the lever and roller, and a good point of this contact maker would be that, in the case of an early fire with consequent reversal of rotation of the engine, no harm could possibly ensue to delicate parts.

Accumulators.

The list of improved accumulators is continually being swelled, and some cells by the Max Accumulator Co. are very interesting. They are made for all duties, such as traction, lighting, ignition, etc., and their feature essentially is that in place of the usual lead plates there are provided vertical rods, which carry the paste or active material, each rod

being surrounded or clothed with an asbestos preparation, which is fully absorbent for the electrolyte, and which effectually prevents disintegration of the paste. The rods are a small distance apart, and a number are attached to top and bottom plates, so forming an element. In some cases perforated ebonite sheets are used between the rods, but the effective capacity of the cells can be increased by doing away with most of the space usually provided at the bottom of the cell, there being no possibility of pieces separating and falling to the bottom.

Live Axles.

There can be little doubt of the steady growth of the live rear axle as opposed to side chains not only in cars of light type where it is becoming almost universal, but also in larger vehicles. It is very interesting, however, to notice the different standpoints from which makers approach the problem of the strains set up by the driving and braking actions upon the springs and frame of the vehicle. We need perhaps at this time scarcely refer to the fact that upon the engine transmitting its turning moment to the bevel pinion which gears with the bevel wheel on differential, the resistance of the car to motion sets up a re-action, causing a tendency on the part of the bevel pinion to run round or to climb up, so to speak, upon the teeth of the large bevel, the effect of this being to cause a turning movement around the live axle case. In some cases no provision is made to meet this, but the springs of the vehicle are allowed to afford the ultimate resistance. In so far as they allow slight flexibility, the arrange-

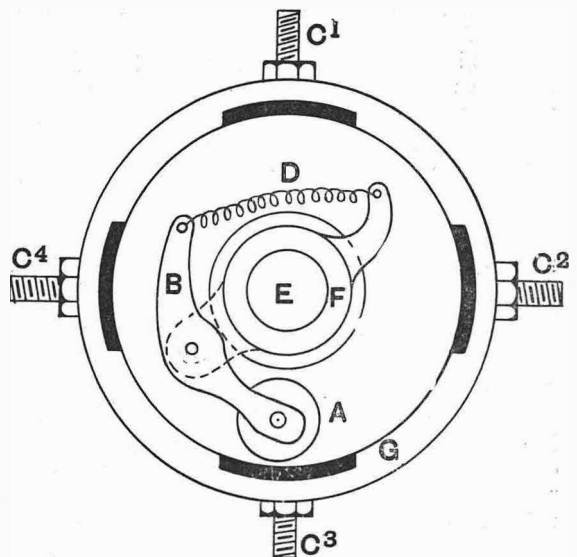


Fig. 2.—Lacoste commutator.

- A, rolling contact.
- B, lever carrying A.
- C¹ C² C³ C⁴, contact plates.
- D, spring holding A in contact with G.
- E, half-time shaft.
- F, collar on E.
- G, body of the commutator.

ment does all that is necessary, but a good deal depends on the springs themselves; and with longer springs finding favour, quite a number of firms have lately adopted means for transferring these strains to members specially provided therefor. A plan adopted on several well-known cars, both Eng-

lish and foreign, consisted in taking either one or two tubular radius rods from the differential case, where they were rigidly attached to a bracket or brackets fixed to and depending from a cross member of the frame, and providing a fulcrum for these rods or tubes at a point approximately coincident with the swivel joint behind the gear box. If then, as was sometimes done, springs were provided at this point, allowing certain limited movement of the forward end of these radius rods, a yielding resistance to the upward strain is provided, and a flexible drive procured in effect.

As, however, there must always be certain small lateral movement between the frame and wheels, provision has to be made for this. In one or two cases where the foot brake drum was attached at what would appear to be the better position in a live axle car—that is, just in front of the

(To be continued.)

live axle casing enclosing the pinion, at which position there is, of course, no braking strain thrown upon the universal joints—the above-mentioned radius rods or tubes form the points of attachment for the band or blocks which act upon the brake drum. A very ingenious method of meeting the conditions alluded to above is found upon the Belize car of Messrs. Marshall and Co., the particular feature of which is that the live axle casing is not attached at the centre of the radius of the rear springs, but at a point about one-third from the rear end of the springs, which point provides, of course, the thickest portion of the leaves in this instance. The springs themselves are so proportioned that they give the flexible drive referred to by purposely allowing a certain amount of rotation of the rear axle case about its centre axially, the front portion of the springs really representing flexible radius rods.

BROOMFIELD HILL, RICHMOND PARK.

The Test Hill.

This short, sharp, and generally badly-surfaced rise is so conveniently situated for automobilists in the west and south-western suburbs of London, and so easily get-at-able from all the automobile depots, that we have had an independent survey thereof made, and the section plotted by our own surveyor. This ascent was brought into notice some years ago by Mr. Swindley, and was by him always referred to as the "Test Hill," for the reason that he made, and still makes, use of it for cycles submitted to him for experimental and testing purposes. At his suggestion it was selected as one of the climbing tests for the motoring volume of the Badminton series of sporting publications, and a section thereof appears in that work. But as the hill conveniently serves a useful purpose for a large number of automobilists and vendors and intending purchasers of automobiles who may not see, or who do not possess, a copy of the above-mentioned work, we have included the hill in our series of sections of well-known hills, and now give the result of our surveyor's work. The limits of the section coincide with those of the Badminton contour, but there are slight differences in ratios of the gradients and in the extent of these. The total rise is, however, the same in both sections, and the incline of the severest grade coincides to one-hundredth of an inch. Tracing the ascent upwards it will be seen that the climbing car first negotiates an incline of $66\frac{2}{3}$ yards of 1 in 20.2, followed by two stiffening lengths of 30 yards of 1 in 11.13, and 20 yards of 1 in 8.02 before the "knobbly" bit of the hill is encountered. This is a length of $41\frac{1}{2}$ yards trending smartly upwards

with the very respectable inclination of 1 in 7.81, after which the hill eases off in the following lengths and grades: $23\frac{1}{3}$ yards of 1 in 9.9, $33\frac{1}{3}$ yards of 1 in 10.45, $33\frac{1}{3}$ yards of 1 in 11.84, and $33\frac{1}{3}$ yards of 1 in 13.37. The ascent then eases down for 50 yards of 1 in 41 and $20\frac{1}{2}$ yards of 1 in 68.8, to a point opposite the N.C.U. danger-board on the right, which is esteemed the summit. The car will then have raised itself 79.76 feet in $320\frac{2}{3}$ yards, up an average gradient of 1 in 13.3. To arrive at this hill the Park should be entered by either the Roehampton Gate at the end of Priory Lane, a turning to the left off the Upper Richmond Road at the end of Barnes Common, going westwards, or at Robin Hood Gate, through which the park is gained from the Putney-Kingston main road. Once within either of these gates the first turning to the left should be taken, and the hill will be reached in due course. The following table, taken from the Badminton Book, shows the times taken by cars travelling at average speeds of from four to twelve miles per hour respectively up this rise between the large oak whose boughs overhang the road on the left-hand side of the road (marked A on plan and section) and the dangerboard at summit, similarly marked with the letter K:

M.	S.	equal	4 miles per hour.
2	25	equal	
1	55	"	5 " "
1	36	"	6 " "
1	22	"	7 " "
1	12	"	8 " "
1	4	"	9 " "
	57	"	10 " "
	52	"	11 " "
	48	"	12 " "

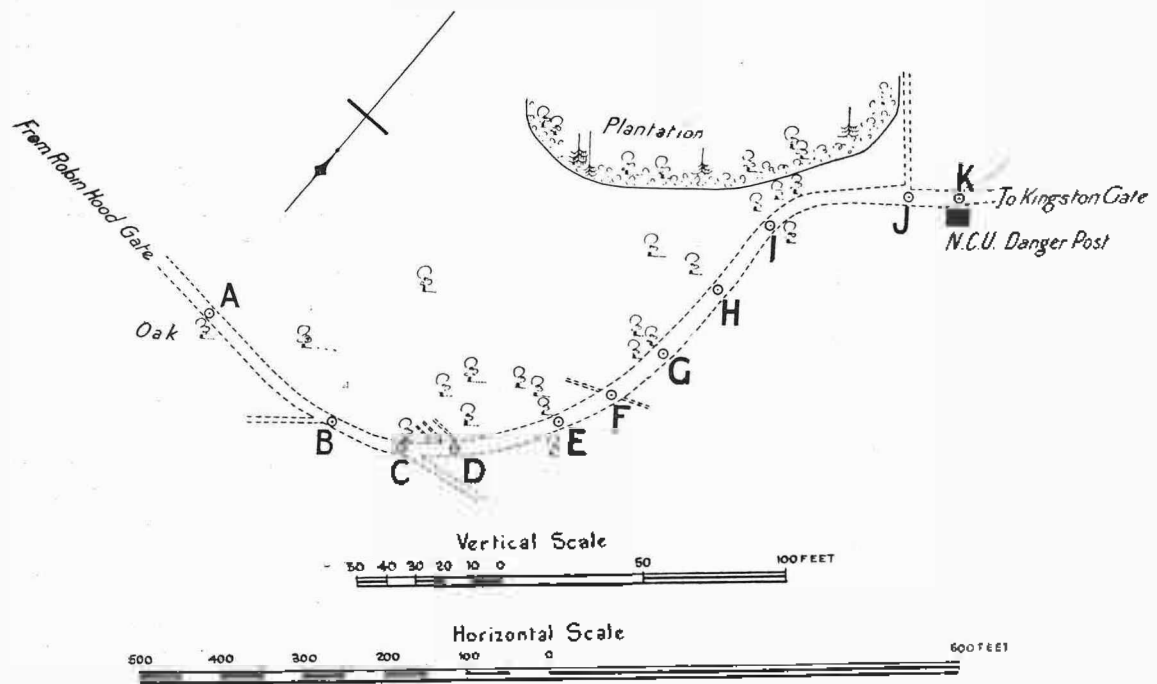
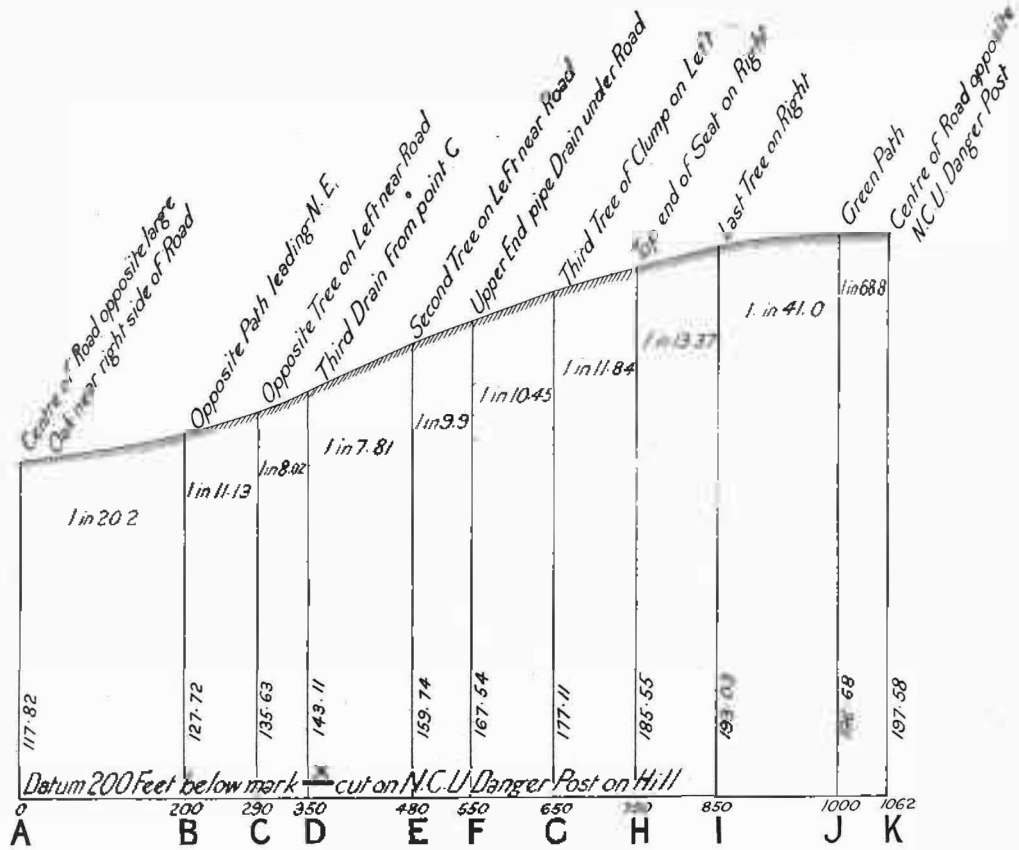
The Vulcan Motor Manufacturing and Engineering Co., of Bolton and Southport, inform us that their new works at Hawes Street, Southport, are now fully equipped. They will hold there a large stock of sundries, lubricants, and petrol. They also have storage for one hundred cars. This company hope to have on the road this month a new type of geared car at a moderate price. We hope to be able to give details and diagrams of this vehicle at an early date.

En route for Ireland, the Hon. C. S. Rolls drove his 7 h.p. Panhard from London to Holyhead in thirteen and a half hours running time. The distance is two hundred and eighty miles, so that it will be seen that this particular type of Panhard, which is regarded by many as underpowered, can maintain a very good average indeed. Of course, the Krebs carburetter has resulted in an improvement since last year, but even then the performance is well above what would have been expected by some people.

BROOMFIELD HILL, RICHMOND PARK.

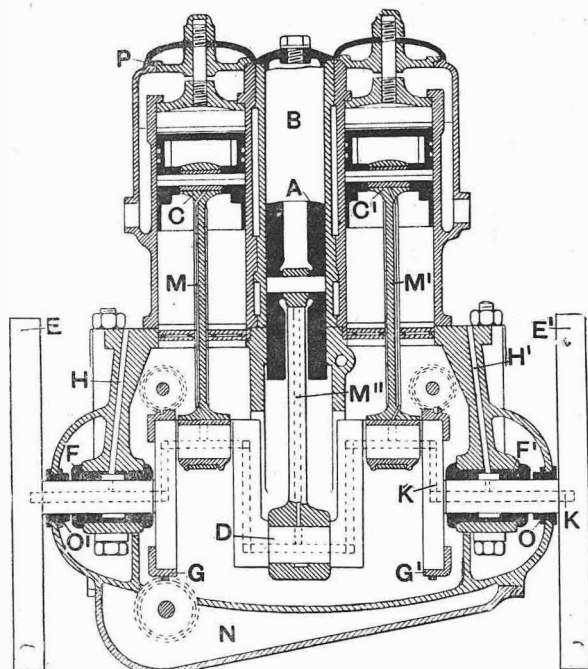
"The Test Hill."

SECTION AND PLAN SHOWING DISTANCES AND GRADIENTS.



A BALANCED MOTOR.

At the Salon Automobile of 1901 Messrs. De Dion and Bouton showed a single-cylinder engine, with an auxiliary cylinder and idle piston therein, which it was understood was provided to balance its working fellow. There was a good deal of pleantry flying round about this engine at the time, but from the current issue of our contemporary *La France Automobile* it would appear that the two French engineers have protected a design of two-cylinder petrol engine, in which a third but smaller cylinder containing a double-trunked piston is placed between the working cylinders, and has its piston joined up by a connecting rod to a central crank on the crankshaft set at 180 degrees to the outer or working cranks. The balancing effect is obtained



Sectional elevation of the De Dion balanced motor.

- A, balancing piston
- B, idle cylinder
- C C', motor pistons
- D, balancing piston crank
- E E', flywheels
- F F', crankshaft bearings
- G G', crank discs with worms on their peripheries
- H H', oil leads in walts of crank chamber
- K K, oil leads in crankshaft and crank discs.
- M M', motor connecting rods
- M', balancing piston connecting rod
- N, oil well
- O O', oil guards

in connection with the movement of the central piston by causing the working cylinders to fire alternately. The weight of the balancing piston A and its connecting rod is equal to the combined weight of both the motor pistons and their connecting rods. When the balancing piston A ascends or descends in its cylinder B, and its connecting rod is moved out of the vertical plane by the rotation of the crank to which it is attached, the movement of the twain is exactly opposite to the movement of the motor pistons and their attachments. Accordingly, the rectilinear movements of the motor pistons and the reciprocating forces of their connecting rods are balanced by the opposed movements of the central piston and its connecting rod. For more completely

taking and storing up the power stroke of the engine, two flywheels E E' are fitted, as shown. The exhaust valve camshaft and half-time shaft in this engine, as well as the pump, are actuated by worms formed on the peripheries of the two crank discs G G' gearing with the worm wheels shown by dotted lines. The oil is forced by the pump through the leads H H' on to the top of the crankshaft in each bearing, and finds its way to the three big ends by means of the leads drilled in the shaft, cranks, and crank-pins, and indicated by the dotted lines. From the crank-pins the oil reaches the gudgeon pins of the pistons, and thereby the cylinder walls by leads up the centre of the connecting rods.

GLASGOW TO LONDON NON-STOP TRIAL.

Up to the date of going to press, the following entries had been received by the Scottish Automobile Club (Western Section) for the non-stop trial which takes place on the 13th and 14th of May. A half-distance compulsory stop takes place at Leeds for the night, the run being divided into two non-stop sections.

DESCRIPTION.	Approximate Weight Unladen.	
	B.H.P.	Cwts.
Delahaye tonneau (Delahaye Chief Depot)	12	16
Roobet and Schneider (Captain H. H. P. Deasy)	22	20
Peugeot (Glasgow Motor Car Co.)	9	6 1/2
Argyll (Henry B. Hemmons)	9	12
Argyll (Hozier Engineering Co.)	10	13
12 h.p. Argyll (Hozier Engineering Co.)	16	17
24 h.p. De Dietrich (Chas. Jarratt)	30	19 1/2
Four-cylinder Elswick tonneau (Wm. H. Kingsbury)	14	17
10 h.p. Lanchester (Lanchester Engine Co.)	18	19
10 h.p. Lanchester (Lanchester Engine Co.)	18	19
Gladiator (Miss Dorothy E. Levitt)	12	13 1/2
12 h.p. Georges Richard light car (Mann and Overton's)	13	13
12 h.p. Georges Richard light car (Mann and Overton's)	26	16 1/2
Four-cylinder Sunbeam car (John Marston)	10/12	16
Four-cylinder Sunbeam car (John Marston)	10/12	13
Six-seated double phaeton, steam (Middleton and Townsend)	12 (nom.)	32
Arrol-Johnston dogcart (Mo-car Syndicate)	12	24
Six-seated Arrol-Johnston carriage (Mo-car Syndicate)	12	26
10 h.p. Wolsley tonneau (Rennie and Prosser)	10	19
Tonneau car (J. R. Richardson and Co., Lincoln)	14	14
10 h.p. Wolsley tonneau (Thomas Shaw)	11	18 1/2
De Dion-Bouton (J. W. Stocks)	10	15
Three-cylinder tonneau (F. F. Wellington)	14	20
14 h.p. Chenard and Walcker tonneau (Weston Motor Syndicate)	17	17 1/2
F.A.C. (Farman Automobile Co.)	24	20

The tyres are all pneumatics, with the exception of those fitted to the six-seated steamer of Middleton and Townsend, which has compounds, and the two Arrol-Johnston cars, which have solids.

MOTOR COACHES IN IRELAND.

The Earl of Leitrim with commendable enterprise has made arrangements whereby tourists in the north-west of Ireland this summer will be able to travel with comfort and pleasure in a most picturesque district which is badly served by railways, though, of course, if it were well provided in this respect the motor would still be a far preferable means of seeing the country. The route to be covered is about thirty-eight miles in length, starting from the Strathbane railway station and finishing at Rosapenna, which is a fine golfing district, and is provided with a good hotel. The three cars, which are being built by Stirling's Motor Carriages, Ltd., are to carry fourteen passengers and their luggage, and will be easily capable of climbing the mountain roads they will have to cover. We hope in an early issue to give further particulars of these vehicles.

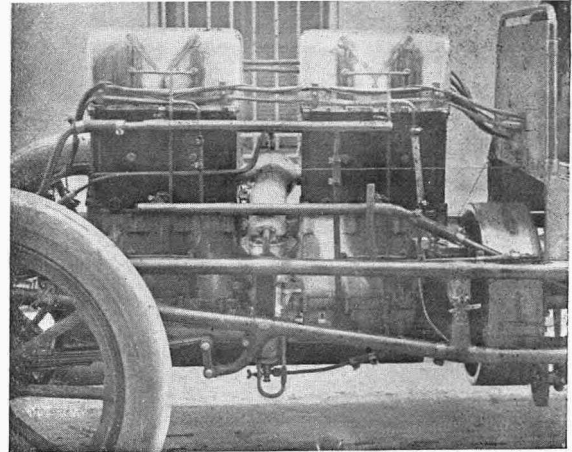
CONTINENTAL NOTES AND NEWS.

The Automobile Week at Nice. (Continued from page 449.)

The 120 h.p. Gobron-Brillie Car.

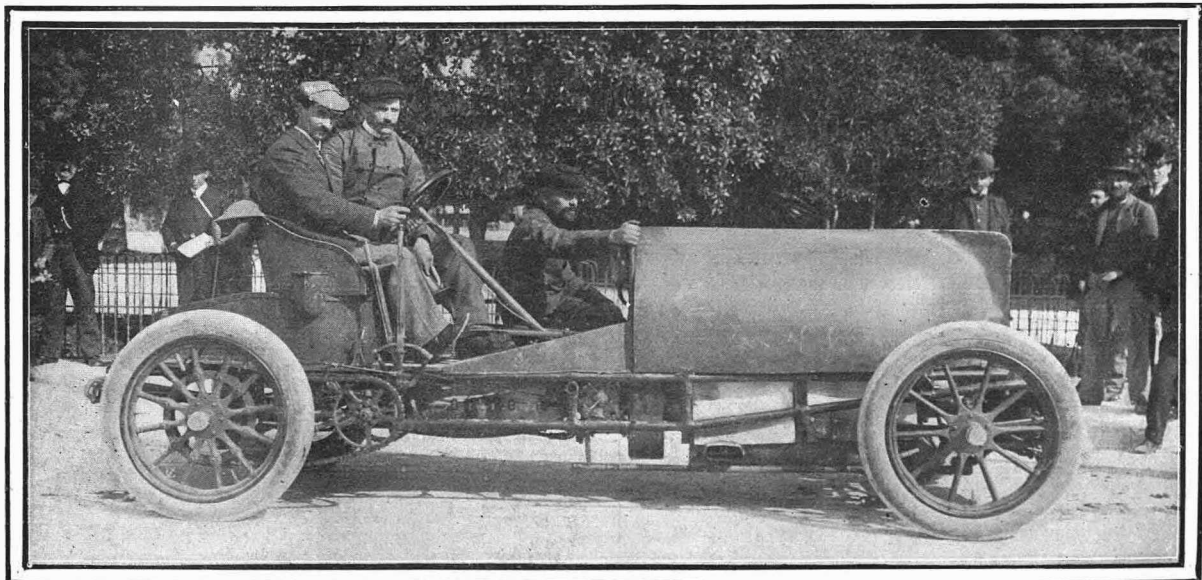
What is known as the 120 h.p. Gobron-Brillie car made a sensational entry into Nice on Thursday fortnight. Just imagine a vehicle more than 13ft. in length, and having a wheelbase of 9.84ft., and a huge semi-circular bonnet tapering from the dashboard to a point in front, giving it the appearance of half a shell of some monster gun. The frame is built up of tubes girder fashion, the horizontal tubes on each side being attached to vertical brackets which carry the arms of the engine bed and the gear case. The only things recognisable about the engine are the two vertical cylinders and four pistons, enclosed in square vertical cases forming part of the engine bed. All the rest has been changed. Both the induction and exhaust valves are operated mechanically by the same camshaft. The old positive carburetter has been replaced by one of the constant level type, and the gases are conveyed to the other side of the engine by a pipe passing between the two cylinders. This pipe is jacketed, so as to be warmed by the water from the engine, this arrangement being particularly necessary in the event of its running with alcohol. The throttling valve is in the pipe just in front of the carburetter. The length of the engine is about 4ft., and the height is probably 3ft. 6in. It develops from 100 to 110 h.p. With such a huge engine, it has been found necessary to adopt a system of double friction clutch, allowing of the engine being put into gear gradually. The variable speed gear is of the usual type, with direct drive to the countershaft on the top speed. The car was in charge of Rigolly, who informed us that it had only just been turned out from the works, and no test of its speed capabilities had yet been made, so that it is impossible to give an idea of what this wonderful vehicle can do. When being driven along the Promenade des

Anglais, we were particularly struck by the smoothness of running of this huge car. Rigolly appeared to have it under perfect control, and drove it at any speed up to the legal limit, the noise being far less than in certain cars fitted with engines of two-thirds

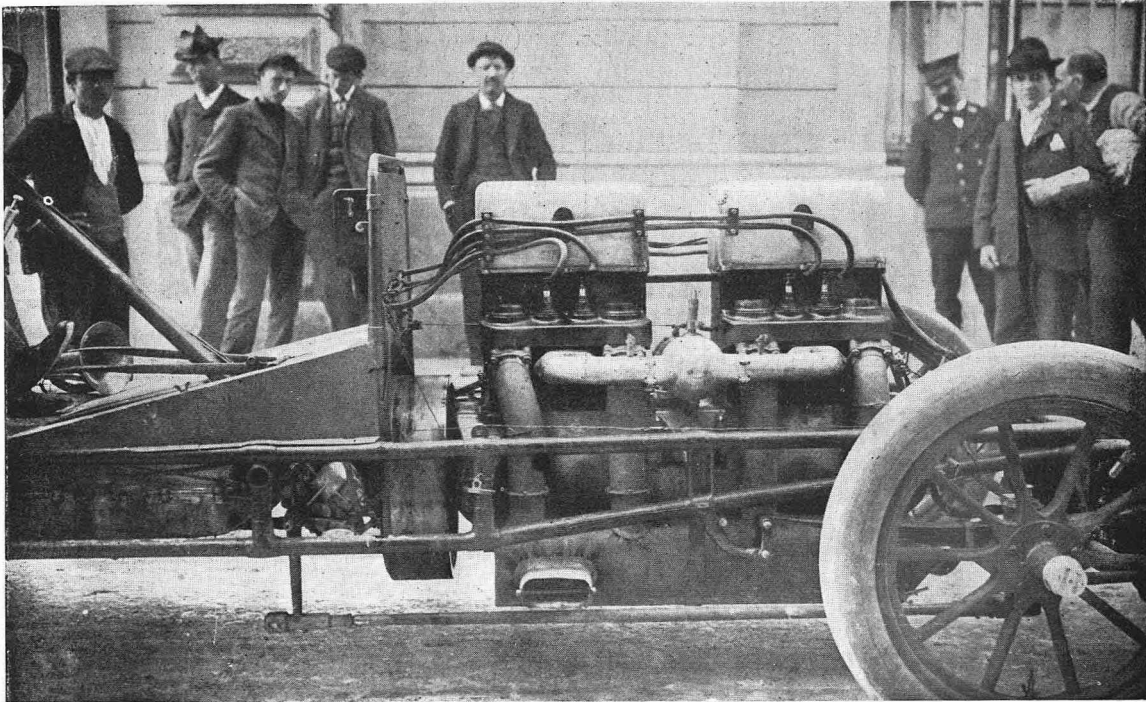


A view of the Gobron-Brillie engine from the left side. It will be remembered that the explosion takes place between the pistons, and each engine is fitted with four cranks, the top pair of pistons engaging with their pair of cranks by means of a cross-head and long connecting rods. The aluminium cases on the top of the engine contain the cross-heads of the top pair of pistons, etc.

the power. The motor has to be started by a long straight lever, which brings the gases to compression by quarter turns, and then a good deal of knock seems to be necessary to start the engine with the next turn. It is a pity that no opportunity has yet been given of testing this car, for its appearance conveys a wonderful impression of speed, and it would probably go quite as fast as human skill could drive it.



Rigolly on the 120 h.p. Gobron-Brillie.



The 120 h.p. Gobron-Brillie with bonnet removed showing right hand side of cylinders.

The Brake Tests.

So far as concerns the touring vehicles, the two days' runs in the mountains last week were a sufficiently severe test of the holding power of brakes, but this in no way detracted from the interest of the special trials organised on the Col de Braus by MM. Gallice and Marconnet. The Col de Braus is a mountain pass from which a magnificent view is obtained of the snow-covered Alps on the other



Mr. Alfred Harmsworth's 60 h.p. Mercedes on the Promenade des Anglais.

side of a wide valley, but to get there is not an easy matter, and we were glad of an opportunity of being driven up in a 16 h.p. Rochet-Schneider double tonneau. With five passengers on board this splendid car was soon passing other vehicles and giving them the benefit of the dust. Leaving Nice far behind, the road wound continually through picturesque valleys, and then the grade began to increase; still, the car continued to run on the fourth speed. The speed was subsequently checked not by the gradients but by the turnings. These were simply perpetual. At every hundred yards or so the road bent at an acute angle, when the car had

to turn almost upon itself in its own length; and to make matters worse at each turning there seemed to be a further rise in the grade, when the car had to pick up just at the moment it had slowed down to a crawl. This, however, seemed to offer no difficulty for the Rochet-Schneider. About half-way up the mountain there was a succession of eight turnings with straight stretches of less than a hundred yards, and so sharp were the turnings in this narrow road that the greatest skill was necessary to take them successfully. The thought of coming down this road at anything more than a crawl made one's flesh creep. Higher up the leading cars stopped, and the passengers had a fine view down the mountain with the road directly below them,



M. Serpollet making a trial spin over the mile course for the Rothschild cup.

and it was very curious to see the other vehicles—looking very small in the distance—slowly crawling around the corners like insects around the teeth of a saw. The De Dietrich driven by Stead came up remarkably well, and all the cars got safely to the top, which fact speaks volumes for the climbing capabilities of the vehicles. The total length of the gradient is about sixteen miles, with an average incline of eight to ten per cent., some parts rising even to sixteen per cent. Unfortunately, the number of vehicles competing in the brake tests was not so large as had been expected, only five of them taking part in the trial; but, with one exception, the results were extremely good.

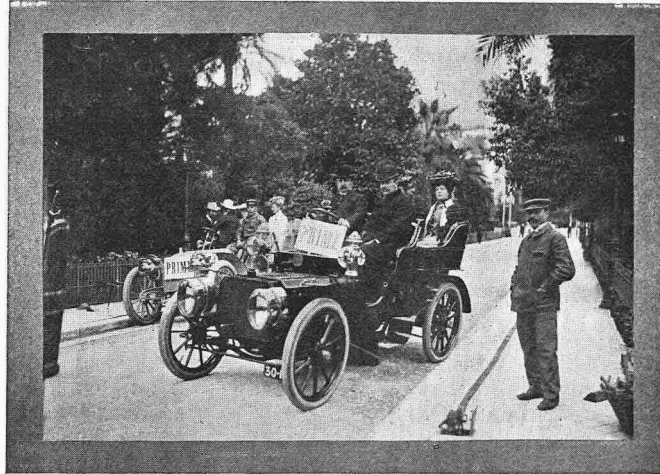
At the Col de Braus the foot levers were tied and sealed, and the cars had to descend by their own weight, and stop at given signals with the brakes on the rear wheels. These signals were given on four different stretches with varying gradients, and the cars had to be brought up within a distance of twenty metres. On the first occasion the Rochet-Schneider car was stopped in less than two feet—almost instantly, in fact, but as a rule the distances covered from the moment of applying the brake were from four to five metres, the speed being regulated so that the cars had to descend seven kiloms. in fifteen to twenty minutes. The vehicles competing were two Rochet-Schniders, a Georges Richard, and a Dar-

raq, and the trials proved conclusively that the wheel brakes are alone sufficient to stop the cars on any gradient. Once off the mountain, where the descent had to be made very cautiously, the Rochet-Schneider travelled back to Nice along the winding and awkward roads at a good twenty-two miles an hour, and altogether we found it a very comfortable vehicle and, what is more, thoroughly reliable. The makers had four or five racing cars at Nice of what are called the 24 h.p. type, but developing up to 40 h.p. One of these will be illustrated in our next issue.

Interdiction of the Races.

The great event on Sunday was to have been the annual mile

competition on the Promenade des Anglais, but after the lamentable death of Count Zborowski the Government ordered the Prefect of the Department to prevent all racing in any shape or form. The interdiction of the Turbie climb was bad enough, though it was partly expected, and it is useless to conceal the fact that with the huge engines now constructed it is impossible to drive the cars at their maximum speed on the mountain roads, and thus any question of relative safety depends upon the judgment of the drivers, who must know the highest speed at which they can take the corners and be careful not to exceed it. Nevertheless, it may be feared that this judgment may sometimes



Mr. Frisbie's Rochet-Schneider

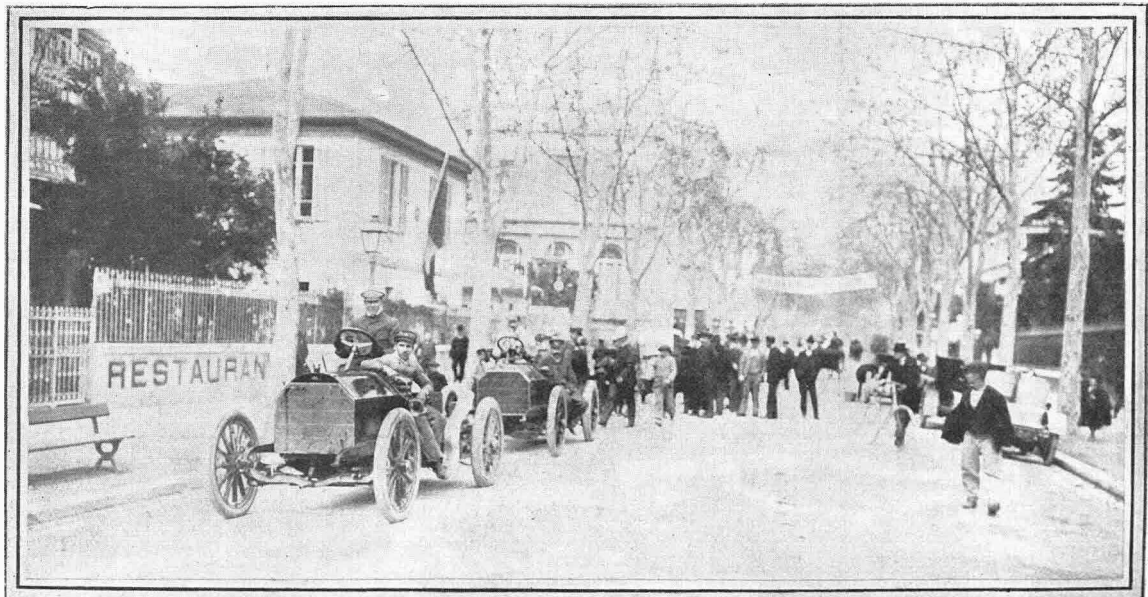
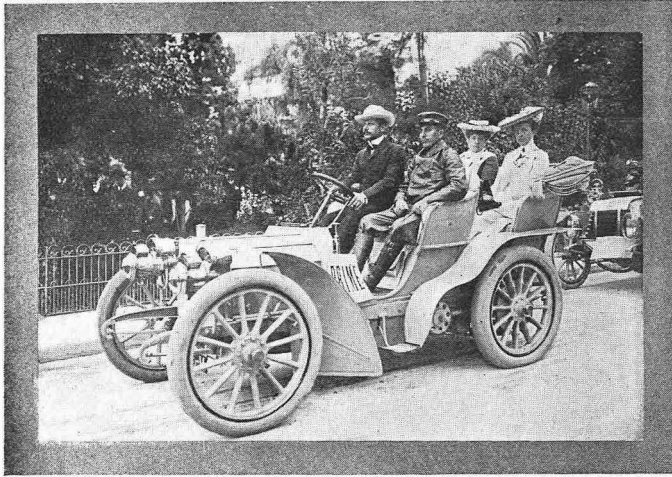


Photo. Botak

An assemblage of cars outside the garage at Nice.



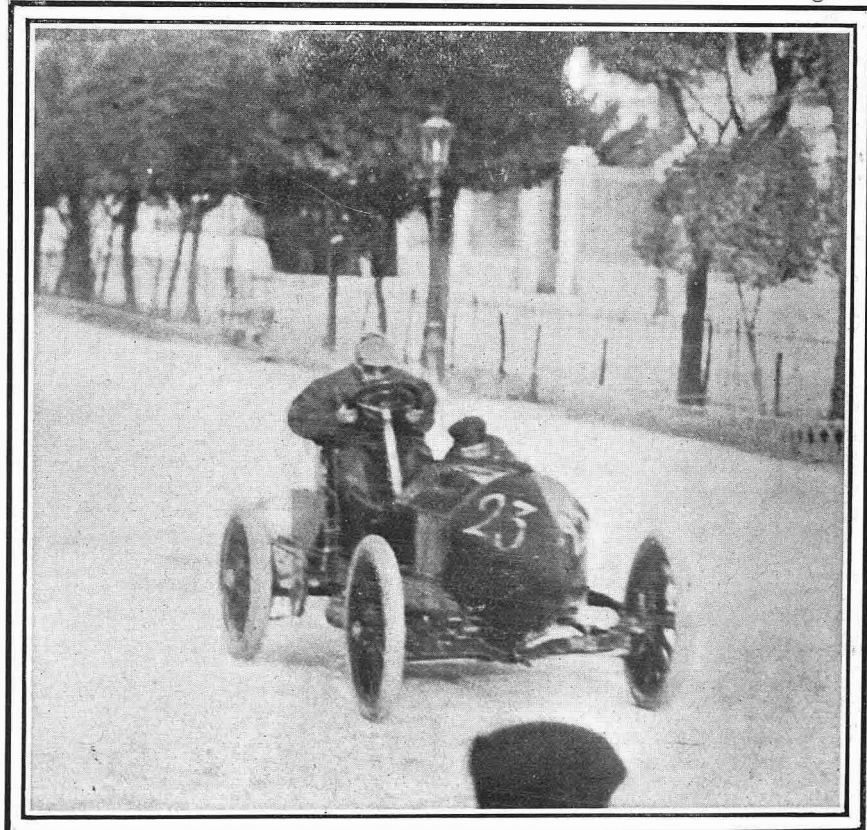
Count Zichy driving his Mercedes phaeton.

be at fault. What at one time involved merely ordinary racing risk has now become highly dangerous, and it is practically certain that no more speed tests will take place on La Turbie. This, however, does not seem to be the case with the kilom. trial for the De Caters cup, which was to have taken place on a kilom. stretch on La Turbie, since the course may be selected to eliminate all dangerous corners. Baron De Caters even offered to reduce the distance to 500 kiloms. This, unfortunately, was not approved of by the Government, who absolutely refused to allow this event to be run off on the mountain road. To make matters worse, an order came that no speed tests were to be allowed on the Promenade des Anglais. This filled the cup of bitterness to overflowing, for the makers had spent thousands of pounds on the construction of new racing machines for the Nice contest, and if this interdiction were maintained it meant the loss of an enormous aggregate capital. Feeling ran very high, and the automobilists at Nice even went so far as to threaten to boycott the inauguration of the new road along the Esterel, which has been constructed by the Touring Club de France. They had been invited to place their cars at the disposal of the ministers and others who were to be present at the inauguration, but after the interdiction of the mile competition each owner solemnly struck his name out of the list as a sign of protest, until it seemed as if the autocars would be conspicuous by their absence.

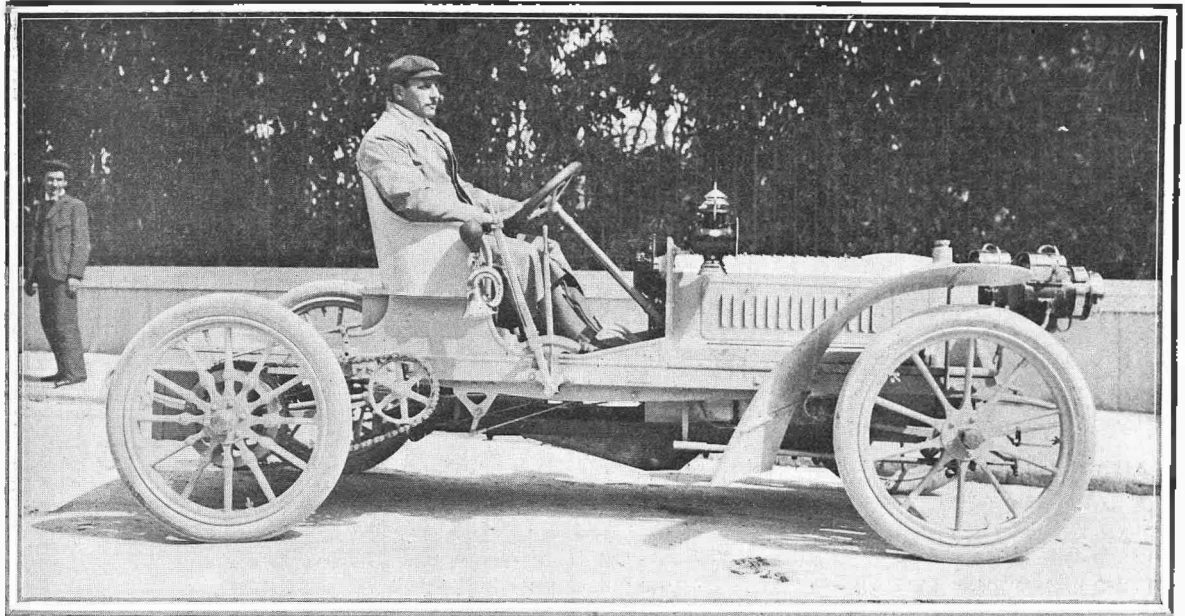
The Mile Competition Authorised.

After long negotiations, the Minister of the Interior consented on Monday to allow of the tests taking place on the Promenade des Anglais the following day. Starting at five o'clock in the morning, the A.C.N. had just two hours and a half in which to run off the various speed events on the Promenade des Anglais, and it was announced that exactly at half-past seven the military and police who guarded the road and kept the public back in the side streets where they could see nothing would put a stop to any further racing. The honours of the day were carried off by the Mercedes and the Gardner-Serpollet, but no records were broken, and, though M. Serpollet again won the Henri de Rothschild cup, he explained that he did not utilise the full power of his engine—developing for a few seconds as much as 200 h.p.—because his friends, who were impressed by the accident to Count

Zborowski, had implored him not to run unnecessary risk. It will be observed that the following times were taken to the hundredth of a second by the Mors electrical apparatus, but though extreme accuracy is thus obtained there were serious complaints as to the delay in calculating the times. Unfortunately, however, several of the cars had already left Nice. The Rochet-Schneiders had gone back to Lyons, and Rigolly had returned to Paris, so that the famous 120 h.p. Gobron-Brillié was not competing.



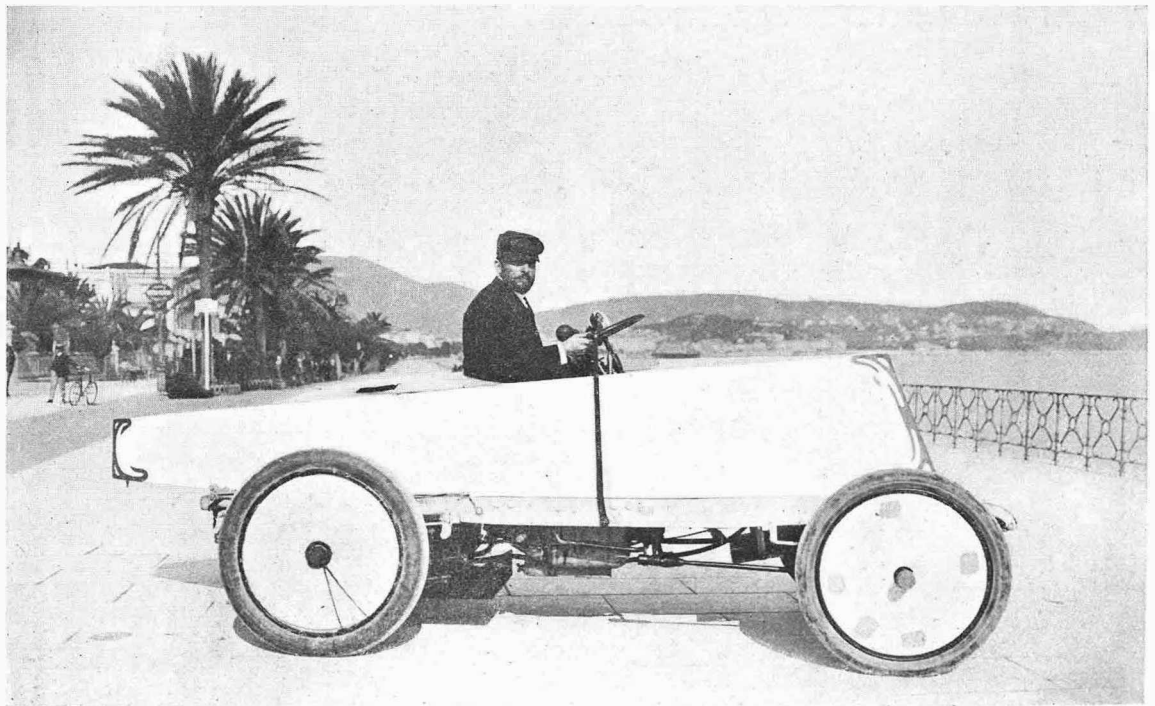
Baron De Caters in full flight on his 60 h.p. Mercedes. Photographed during the speed trials on the Promenade des Anglais.



One of the Rochet-Schneiders which did so well during the Nice automobile week.

The results of the mile races and the first and second Rothschild cups are as follow: In the mile for cars of from 650 to 1,000 kilogs. (standing start)—1st, Braun (Mercedes), 1m. 3.72s.; 2nd, Werner (Mercedes), 1m. 4.35s.; 3rd, Rigal (Mors), 1m. 5.32s. The fastest time over the measured kilometre on the mile track was done by Leblon on a Serpollet car in 31.53s. In the race for light cars from 400 to 650 kilogs., Baras, on a Darracq, covered the course in 1m. 8.2s., beating his previous record of 1m. 10.80s. For the first Rothschild cup, which was

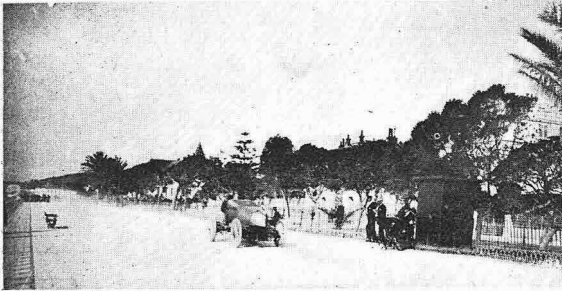
for cars of all descriptions over a kilometre, with flying start, Serpollet proved the winner, covering the course in 29.19s. Leblon was second in 30.55s., on another Serpollet, and the third position was taken by Werner, on a Mercedes, in 32.30s. The previous record by M. Serpollet was 29.80s. The second cup was given for vehicles having internal combustion engines only, and was over the same course, with a flying start. The first place was secured by Hieronymus (Mercedes) in 31.76s.; second, Werner (Mercedes), 31.90s.; third, Braun (Mercedes), 32.73s.



M. Serpollet in his racer which won the flying kilometre.

The Argonne Circuit.

The Chambre Syndicale de l'Automobile has fixed July 19th as the date of the Circuit de l'Argonne, which will be run off without neutralisation over a circular course between Sedan and Vouziers, starting and finishing at the little town of Flize.



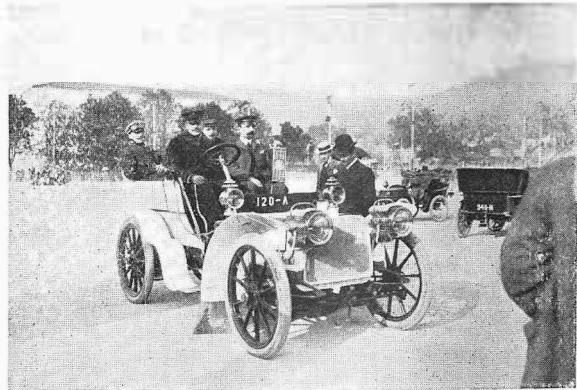
A snap shot of Gabriel on the 80 h.p. Mors passing the starting timekeepers in the flying kilometre on the Promenade des Anglais. A side view of this car with its extraordinary wind shield was given last week.

The cars are divided into nine categories, four according to the usual weight classification, with entrance fees of 100 francs up to 50 kilos, 200 francs up to 400 kilos, 300 francs up to 650 kilos, and 400 francs up to 1,000 kilos, and five categories according to the new classification based upon the cylinder capacity of a maximum of 1.5 litre, 2.5 litres, 3.5 litres, 5 litres, and 7 litres, the entrance fees for the first two being 200 francs and for the others 300 francs. After June 15th these fees will be doubled, and competitors entering before April 15th will

ballot for the order of starting. Entries must be sent to M. Lemoine, Trésorier de la Chambre Syndicale de l'Automobile, 21, Rue de Lappe, Paris.

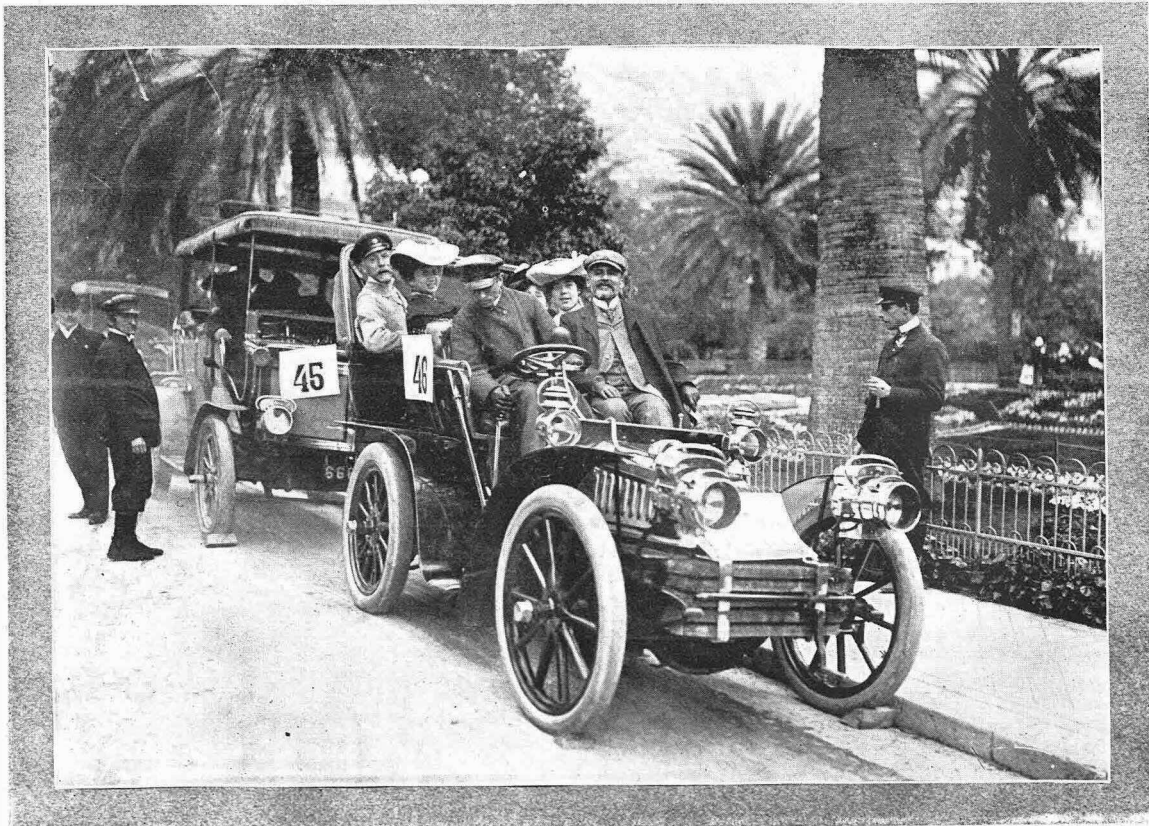
Taxing Petrol.

The selling price of petrol is a source of never-ending worry to the French automobilist, not because he has to pay more for it than he thinks reasonable, for we believe that the cost of petrol in the provinces is less even than it is in England, but



M. Jolliot's 16 h.p. Rochet-Schneider at the Consumption Trial. See *The Autocar*, April 11th, page 448.

because the regulation of this spirit has become a question of party politics, and it seems to be only too clear that the increasing burdens being put on petrol are leading to an issue that may not be altogether favourable to automobilists. The refining



Mr. Schwab in his Mors. The French call him "le roi d'acier."

of petroleum is in the hands of a few concerns who possess a virtual monopoly, and as the business is remarkably profitable, and is being centred in the hands of millionaires, those politicians who look after the finances of the country think that the resources of the refineries are as inexhaustible as the widow's cruse of oil. When in want of funds a few years ago the Minister of Finance imposed fresh charges on the refiners, and, as a natural result, this money came out of the pockets of the consumers, for it may be taken for granted that when a rich monopolist is required to pay more for his privilege he must be possessed of extraordinary self-restraint if he does not make it up by a small addition to the selling price of his product. This experience is now being repeated. The Government is in need of more than a million

sterling to provide for the special grants which have been voted by the deputies in the interests of their different constituencies, and as a means of helping to make up this deficiency, the Minister of Finance has induced the Chamber to vote an additional tax of 1fr. 25 per hectolitre of petroleum—one shilling per twenty-two gallons—going into the refineries.



A nearer view of one of the zigzags of the Col de Braus.

This is certainly not much, and the burden is not a heavy one, but this continual raising of taxes is a matter of great significance. Fortunately, it does not affect the consumer so much as formerly, since alcohol has become a regulator of petrol, and the



Zigzags up the Col de Braus, a part of the route for trial of touring cars. See page 468; also *The Autocar*, April 11th, page 441.

refiners do not dare to advance the price of petrol for fear that they may give an advantage to alcohol which may never again be recovered. The only hope of the refiners lies in the economy of petrol, for so long as this spirit is relatively cheaper they have nothing to fear from the active propaganda being carried on in favour of alcohol.

But the action of the Government makes it rather doubtful whether the refiners have yet come to the end of their troubles. As the old projects for making the refining of petrol a state monopoly are impracticable the Government is consistently adopting a policy which will inevitably result in the course of time in an augmentation of the selling price of petrol and a diminution in the cost of alcohol. The Chamber is just now discussing a project for creating a state monopoly of alcohol. If this is done the Government will have things its own way, and will be able to give special advantages to the agricultural spirit, since by drawing a much larger revenue from alcohol than at the present moment it will be able to sell the spirit at a lower price. The new fiscal proposals are, therefore, of considerable importance to

the automobilist as pointing to the gradual substitution of alcohol for petrol. In this respect there is no question that France is far ahead of England, though alcohol will be used as fuel in both countries eventually.

Correspondence.

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

A QUERY.

[2918.]—Can any reader of *The Autocar* supply me with the address of Rough, the maker of the carburettor bearing his name?

A letter sent to his old address in Hereford has been returned to me endorsed "gone away." S. W.

DOGS.

[2919.]—Is it possible for anything to be done to stop the danger that dogs cause to motorists?

I have been often able to prevent myself driving over one, and, on the other hand, often cannot help but run over them; from so doing you can damage the car, as everyone knows, a lot, not to speak of what may happen to the occupants, and what does happen to the dog. Then comes the motor cyclist; of course, he can be wrecked altogether.

I find there are two kinds of dogs to avoid—one that goes for fun on account of the noise from the engine, the other the independent slow dog that judges the pace according to an ordinary carriage or cart, and who, I believe, misses the horse being in the front, which causes the dog to misjudge.

How a certain number of the public study their lives against motorists; but how motorists have to study their lives and motors against the public's dogs. Cannot the public be induced to keep dogs from roaming about?

D. R.

BRITISH CAR DESIGN.

[2920.]—May I ask you to be good enough to require Mr. Jarrott to keep to the question, not to enter into heroic or patriotic expressions as to Briton versus Frenchman or German? I never entered the discussion of Mr. Jarrott's letter, "A Racing Man's View of the Paris Exhibition"—it was not sufficiently interesting. A racing man can have what views he likes; he may race backwards for all it would interest me. But I did take up the question of "British Car Design" (a different question entirely), and I gave proofs—proofs that have not yet been denied by Messrs. Edge and Jarrott—that the claims of Mr. Edge as to new introduction into the art of motor construction were incorrect, and I am still awaiting a reply.

Mr. Jarrott is pleased to call me names—says I am a "little Englander." What does it matter if I have two legs or one—or three eyes? That is not the question. Let Mr. Edge or Mr. Jarrott, or anybody else in the employ of Mr. Edge (for he brought them all in), give something tangible, some *dates*, to prove that their statements were true—never mind my politics.

Mr. Jarrott casually remarks in reply to my questions:

1st. That the first engine that the Napier Company built had ball thrust bearings before Mors built one. I say Mors fitted them in 1898 and that the first Napier car was not built before the end of 1900. A date, Mr. Jarrott, please?

2nd. High tension ignition. What utter nonsense Mr. Jarrott talks, and further I say, and say distinctly, that he makes an assertion that he cannot substantiate. Can you give me a date before these, Mr. Jarrott, please (I only mention one or two): Gobron and Brillie, shown at the Richmond show, 1899; Lynx, shown at Richmond show, 1899; Ducroiset, shown at the Richmond show, 1899? Can you cap these with an earlier date. Mr. Jarrott (remember the Napier did not then exist)? If so, let us have it; if not, then Mr. Edge, who *had seen* all these cars, made a wrong statement. Here are some *cars*. Mr. Jarrott, as you try to get round the case by introducing side issues and saying I only mentioned motor cycles.

Re water joints. What do you call a gas jet. Mr. Jarrott? Why don't you mention the first designed Napier shown in the patent taken out by Napier?—It shows the water jacket. Further, my memory seems to be better than Mr. Jarrott's or he would remember a few of the other proofs positive. I repeat that the first Napier engine had the ordinary water joint as on the Panhard Phoenix engines. Let Mr. Edge deny this; *he dare not*.

But, Mr. Jarrott, what has become of the other claims?

Where is the answer about the valve gears being enclosed? Is that not a false statement? Aluminium water jackets: I say they were built by Mors and passed through my hands into that of a Mr. Whitehead in 1899. As the first Napier with aluminium water jackets was not built till 1901, why be so childish as to write a lot of rubbish without giving *dates* and *facts*, or admit that the statements of Mr. Edge are incorrect?

Why, when Mr. Jarrott makes a statement, does he *not* go to Somerset House? If he did, he could then write as to facts, which are what we all want. Why say the Napier Company existed before my birth, simply to blindfold the public by leading them on the wrong tack? The truth and dates, Messrs. Edge and Jarrott, please. Don't appeal to the readers of *The Autocar* by patriotic calls on behalf of the British designer. Are you not above sympathy. Mr. Jarrott, and cannot you maintain your position without crying out in pain for the sympathy of your readers? Here are my *dates* and *facts* once more, Messrs. Edge and Jarrott. Answer them bluntly like men, or admit you are wrong like men.

1st. High tension ignition on *motor cars* and motor cycles by De Dion, Gaillardet, Renault, Lynx, Ducroiset, Gobron Brillie—1899 and before that date—all seen by Messrs. Edge and Jarrott at the Richmond show.

2nd. Enclosed valve gears. De Dion 1895; Gaillardet and Renault, 1897; Mors, 1896; Aster, 1898—all seen by Messrs. Edge and Jarrott.

3rd. Ball thrust bearing. 1899 by Mors.

4th. Aluminium water jackets. 1899 by Mors. Perhaps Messrs. Edge and Jarrott were suffering from blindness this year or they would have seen them.

5th. Direct drive. Mors, 1901, Paris, Berlin. Mr. Jarrott admits this. Can't I induce you, my dear Mr. Edge, to do likewise?

6th. Lower cars than Mr. Edge's last year. Mercedes in the same race.—Please, Mr. Edge, just a wee little "yes."

7th. Date of registration and liquidation of Napier Motor Co., Ltd. Please admit, Mr. Jarrott, I am more than three years old.

One last word, and I claim it as my due. I *demand* an answer, in common justice, of *facts* and *dates*. . . I have stuck to my points. I have given facts and dates. I ask Messrs. Edge and Jarrott to give the same, or let Mr. Edge say, like a *gentleman* should, that he was mistaken—at least mistaken.

D. M. WEIGEL.

[This discussion has been of interest, but it has now reached a stage at which we must ask any who wish to continue it to make their remarks as short as possible.—Ed.]

A GOOD WORD FOR THE AGENT.

[2921.]—It is rather the fashion among purchasers of automobiles to abuse the agent—to talk of him as a robber first and foremost, and a man who makes promises but rarely fulfils them. It is, therefore, with considerable pleasure that I record an act of great kindness and generosity. Having ordered a new car through Messrs. Ewart-Hall, of Goldsmith Street, Nottingham, the manager promised me delivery in about a month. Five weeks elapsed, and, hearing nothing of the advent of my car, I ran over to Nottingham in order to vent my displeasure at its non-delivery. Mr. Binks expressed his extreme regret, and assured me the fault was not his, but the manufacturer's. In order to prove his words, he offered to place a new 12 h.p. Darracq double-cylindered car at my disposal. I gladly availed myself of his kindness, for to be careless with the spring coming on is a terrible ordeal to the enthusiast. It may interest readers desirous of purchasing a really good vehicle at a moderate price to know that the Darracq took three of us to London in rare style. The distance was eighty-five miles. Starting at twenty-five minutes to ten, we made a non-stop run to Barnet, where we halted for luncheon, reaching the Marble Arch precisely at two. The next day we returned, and made a non-stop run for the eighty-five miles, leaving at nine-thirty and arriving in time to partake of a hearty luncheon at two o'clock. Although we encountered a raging head wind, which rendered driving extremely unpleasant, the gallant car went from the Metropolis to Northampton entirely on its top speed, with the solitary exception of the hill approaching Barnet, where, being shut in by some carts, the second was put in. As regards petrol, we used slightly under seven gallons for the entire journey of 170 miles. In the teeth of the gale the Darracq maintained a steady

average of twenty-two miles an hour. The engines worked with harmonious regularity throughout; they showed no tendency to heat, and the axle bearings remained perfectly cool. The car is speedy, reliable, and an undeniable hill-climber. I owe the lender a debt of thanks for placing so excellent a vehicle at my disposal. Such conduct deserves recognition, and will surely bring extension of business to a firm whose manager treats his customers so well.

GRATEFUL.

CHEAP CARRIAGE OF PETROL.

[2922.]—I have just received some carbide and petrol (5½ cwt.) by the Rapid Transit Co., Ltd., who are running a new daily service of steamers from Harrison's Wharf, Tower Bridge, E., to such points in Kent as Gravesend, Northfleet, Swanscombe, Greenhithe, Shaerness, Chatham, Old and New Brompton, Strood, Rochester, etc., etc. In my own case I find their charge work out forty per cent. less than the speedy S.E. Railway, without any of the conditions with which we have to comply when in the hands of railway companies. This go-ahead company's head office is at 38, Leadenhall Street, E.C. GEO. W. TALBOT.

SPARK GAP, ETC.

[2923.]—Can any of your readers inform me as to the advantage of a "spark gap," "spark intensifier," or "external gap" to one who is never troubled with a dirty or foul sparking plug?

It seems to me (though I am not an expert in these matters) that the value of the "spark gap" is very much over-estimated. I have tried two kinds, and my experience and reasons for discontinuing their use were because I failed to derive any visible benefit from them. I had occasional misfires when running the engine above normal speed, nor did it run so slow or regular when the car was standing. It may be an advantage in a case where the plug or plugs from carelessness or otherwise become foul. One writer in your correspondence columns of last month evidently thinks that in a letter like the above no mention ought to be made as to the make of car.

I think if you made this rule you would rob your correspondence of its main feature, and readers like myself (not in the trade) would have to guess what make of car was being spoken of. If I held this view I suppose I would omit to mention that the car on which I have no plug fouling and no necessity for a "spark gap" is a Wolseley.

Lately in *The Autocar* a lot has been said about "beehive radiators." I concluded such to be a modification of the "honeycomb" model. A contemporary of yours has been good enough to explain under "Continental Notes" that *nid d'abeilles* means "bees' nest," that "honeycomb" is the proper term for the Mercedes radiator, that Mercedes is the Spanish Christian name of a lady. In all the above I follow him, but I get left when he says Mercedes is the Spanish for Wednesday. I have lived ten years among Spaniards, and have always heard "Miércoles" used as the Spanish for Wednesday. J. T.

OBJECTIONABLE METHODS.

[2924.]—Recent personal experiences have called to my mind the letters on the above subject from the Duryea Co. (Jan. 31st) and the Weston Motors Syndicate (Feb. 14th). It is difficult, however, to see how such practices, so universal in other commercial operations, can be kept outside the motor business; especially as those exercising the methods in question are frequently such as have already served an apprenticeship to the system in other capacities, as coachmen, for instance, in the case of drivers.

As manager of a repair works of respectable dimensions, I am brought into contact with the system in its most objectionable aspect, but far from wondering at its appearance in this connection I should have been surprised had it been otherwise, and I have often doubted whether its extinction is generally desired and not really cultivated (like adulteration) as a form of competition.

The request of a driver for attention in the matter of repairs, etc., is more frequently than not prefaced by a prudent enquiry as to "what we allow him out of the bill"; and if the latter is too small to admit of his participation we are generously invited to "put something on" for him.

I confess to not a little envy of those firms whose magnitude enables them (if so inclined) to treat such enquiries

in the manner deserved, but however much I may be compelled to yield to the request for discount I draw the line there; although the fact of the suggestion being made to add to the account for the benefit of the driver implies that it is sometimes complied with. On the other hand, some traders adopt the secret commission system as a part of their procedure, and I know of one petrol agent who voluntarily offers a five per cent. commission to drivers on all spirit and oils, etc., supplied to their employers—a tax, of course, which is paid by the latter.

When one has learned by actual experience to what insignificant transactions this mean and paltry system will descend one is rather sceptical as to the sincerity of the remark made recently by one of our judges, who, on hearing a case involving the practice referred to, expressed his alarm as to what would happen "if such things became common."

Apparently the only successful method of dealing with the abuse, but one that is scarcely likely to be adopted, is a kind of "boycott" of the importunate drivers by the firms. At present, I am afraid, the ostensibly innocent "tip" is resorted to by some in the motor as in other trades to induce the servant to divert his master's patronage, for the commission question is one very much at heart with the chauffeur. WORKS MANAGER.

POOR PETROL.

[2925.]—Reading the "Hint and Tip" re petrol, I thought it would be just as well to test what I had before starting on the Easter tour, and on applying the densimeter to a fresh delivery of motor car spirit from the Anglo-American Oil Co., bought through a local agent, I was horrified to see it was .710. As a matter of curiosity, I then tested a can of Carless-Capel's petrol which had stood out in the open for over a year, and which I did not expect would be fit for use. It proved to be vastly better than the new stuff, however, for the densimeter read .690, and on using it I found my motor started very much easier than it had done hitherto and there was no misfiring. Considering that the spray carburettors on the French motors are adjusted to run with better petrol than even .690, it is no wonder we experience troubles at .710 or .720. The matter is really very important. G. H. SMITH (Motor C.C.)

[We have received a number of other letters making very similar complaints to those published above. We have forwarded a copy of one of the most emphatic in which specific details are given by Mr. Charles Sangster to the Anglo-American Oil Co. asking them if they would be good enough to furnish an explanation. Up to the time of going to press no reply has been received.—ED.]

A TESTING ROUTE.

[2926.]—If motor car owners are anxious to try what their cars can do in stiff hilly country, I can recommend a road to them near Lancaster which will effectually try the climbing powers of any car made. The road in question is that from Lancaster to Clitheroe, viz Quernmore, the "High Cross Moor," the Marshaw Wyre, and finally the "Trough of Bowland." You may see a profile of it: Route 201 in the "Contour Road Book of England." One of the steepest descents has a sharp zigzag bend in the middle of it, and the ascent on the opposite side of the valley has also a sharp bend at the steepest point. Road surface fair; but there are four or five gates to open on the way. It is a very tough route to negotiate, and if a car can take all the hills both ways (there and back) with even two passengers up it will be good enough for anything. The scenery on this route is very fine and worth seeing.

H. STOREY.

[Our correspondent has indeed picked an excellent test route. We cannot do better than supplement his description with that contained in the "Contour Road Book" of Messrs. Gall and Inglis, which is as follows: "A very poor road with precipitous hills to Whitewell; after that the surface is rather better and is good near Clitheroe. The road is seldom used as a through route. Gradients: Nearly all are very dangerous. At ¼m., 1 in 12; 1m., 1 in 10; 1½m., 1 in 11; 2¼m., 1 in 10 (bad turn); 3¼m., 1 in 11-8 (bad turn); 4¾m., 1 in 12; 7m., 1 in 10; 7¾m., 1 in 10; 11½m., 1 in 12; 12¼m., 1 in 8; 14m., 1 in 11; 17¼m., 1 in 10 (bad turn); 20¾m., 1 in 18."—ED.]

Flashes.

Mr. Alfred Harmsworth's 60 h.p. Mercedes, which made the fastest time at Nice, was driven by Braun, an exceedingly clever, though modest, driver.

* * *

Some months since we recorded the fact that a factory was being built by the Rykniel Motor Co., of Burton-on-Trent. This factory is now completed, and was formally opened yesterday (Thursday), though the experimental and tool department has been running for some time, so that the standard types of cars and all arrangements necessary for their manufacture have been completed in advance of the factory, which is now finished. The models will be a light steam delivery van for carrying up to 30 cwts., and a 12 h.p. vertical two-cylinder petrol car for pleasure purposes, while a 16-20 h.p. vehicle is in hand for next year.

* * *

The annual report of the Continental Caoutchouc and Guttapercha Co., the makers of the Continental tyres, is of a very satisfactory nature indeed. A dividend of fifty per cent. has been declared, which is an increase of five per cent. over last year's dividend. In the course of the report, the increased price of rubber is mentioned, and it is stated that there is every probability of a further rise.

* * *

On Wednesday last week the monthly sale of the Bradford Motor Car Company was held, and was very largely attended. The chief feature of the sale was the offering without reserve of the whole stock and tools and accessories of the Yorkshire Motor Vehicle Company, of Bradford, which is giving up business. There was a good demand for all kinds of tools, accessories, shafting, and so on, and a fair sale for cars in a variety of makes and greatly varying in condition.

* * *

The Ranelagh Motor Co. has been registered with a capital of £1,500 in £1 shares. There is no initial public issue, and the registered office is at 6, Ranelagh Parade, Barnes.

* * *

Several papers which have reproduced a photograph giving a front view of the late Count Zborowski upon his car have stated that it was taken just prior to his setting out on his ascent of La Turbie. As a matter of fact, this is nothing of the kind, as the car shown is one of the 1902 pattern Mercedes; that is, the 40 h.p., not the 60 h.p. type. Nor was the photograph reproduced taken within one hundred miles of Nice. Of course, to anyone who knows the difference between the 1902 and 1903 Mercedes front axle the mistake is evident at once, although there are several other points which would enable the close follower of automobile matters to detect that a mistake had been made.

The latest American combine is the Chauffeurs' Association. They propose to build a clubhouse, and to establish a uniform scale of wages to prevent cutting under £20 a month.

* * *

The times made at Nice in the recent speed trials have somewhat disappointed a good many, as they know that many of the cars competing were capable of eighty miles an hour. As this is the case, it is as well to point out that the Promenade des Anglais, which not long since was regarded as an ideal track for motor speed tests, is now quite unsuitable, as it is not possible to attain full speed in the short distance available. It is also necessary to bear in mind with regard to the mile that the times were clocked from a standing start, and by comparing these with the times made in the flying kilometre some idea of the difference this means can be obtained.

* * *

Mr. Harvey Foster, who has purchased one of the new 50 h.p. racing Wolseleys, intends to compete in all the principal events upon the Continent. Unfortunately, he has drawn a very bad position in the Paris-Madrid, as his number is 225.

* * *

The Police Commissioners of London a little while since ordered two 10 h.p. Wolseley cars. They will be of the waggonette type, and will be used for official work in and around the London district. This is what would be expected, as it is generally admitted that the restrictive regulations are less harshly enforced in London than perhaps anywhere in the United Kingdom. In other words, commonsense is used by the London police, and it is only

now and then that motorists are harshly dealt with. At the present time the police who make the trouble are not those who administer crowded areas, but petty parochial rural busybodies who are steeped in prejudice and horse sense.

* * *

Mr. Ernest de Wilton, who was recently fined by the York Bench for driving at an alleged excessive speed, appealed against the conviction in a Divisional Court of the King's Bench, comprising the Lord Chief Justice and Justices Wills and Channell. It transpired in evidence that the car of appellant on the low gear could not travel at a greater speed than eight and a half miles an hour, and the statement that it was doing sixteen miles was therefore incorrect. It was also alleged that the prosecution was instituted by Mr. T. F. Wood, one of the justices, and that he had wrongfully taken part in the inquiry. Counsel for Mr. de Wilton contended that Mr. Wood was biased, and was practically the prosecutor, and the conviction should be quashed. The Lord Chief Justice said it was plain that the case was one that required to be investigated, but under all the circumstances, and there not being any ground for a charge against the magistrates, the appeal would be dismissed with costs.

"THE AUTOCAR" DIARY.

- April 16-20.—Automobile Club de Touraine, Trial of Touring Cars.
 " 18.—Manchester A.C. Run to Chester.
 " 18-19.—National Sportsman's Exhibition, Norwich. (Special Section—Automobiles.)
 " 19.—Automobile Show, Königsberg, Prussia.
 " 24.—Automobile Club of G. B. & I. Quarterly 100 Miles Trial.
 " 25.—Eliminating Race for Gordon-Bennett Cars (British).
 " 25.—Scottish A.C. Meet of Eastern and Western Sections at Dreadnought Hotel, Callander.
 " 25.—Manchester A.C. Run to Alderley Edge.
 " 27.—Society of Arts. First Cantor Lecture. "Mechanical Road Carriages," by Mr. W. W. Beaumont.
 May 2.—Manchester A.C. Week-end Run to Leasowe.
 " 4.—Society of Arts. Second Cantor Lecture.
 " 9.—Circuit National, A.C. de Belgique.
 " 13-14.—Scottish A.C. (Western Section). Glasgow to London Non-stop Trial.
 " 15.—Last date of entry, at double entrance fee, for Paris-Madrid Race, at A.C. de France and Royal A.C. of Spain.
 " 16.—Sheffield and District A.C. Hill-climbing Competition at Padley Wood.

The new volunteer motor corps will comprise 203 officers and men.

* * *

A veterinary surgeon in the Midlands says he has experienced the greatest difficulty in obtaining a premium pupil. Truly, "Coming events cast their shadows before."

* * *

It is stated on the authority of a daily contemporary that several prominent automobilists are interesting themselves in elaborating a scheme for the construction of a special roadway between London and Edinburgh, which would be used exclusively by mechanically-propelled vehicles.

* * *

Among recent purchasers of 10 h.p. Panhards from the British Automobile Commercial Syndicate are Capt. B. Corbet, Capt. Luturjch, Capt. Clowes, the Rev. Arundel Whatton, the Right Hon. Lord Lovat, while among those who are going in for Cléments is Lady Charles Beresford, who is now having a 9 h.p. *coupé* in addition to the 12 h.p. car she already owns.

* * *

"A few days since," write the Duryea Co., "we received a small order from a gentleman giving his address as West Street, Prittlewell, Essex. We sent the article ordered, but have had it returned marked 'unknown.' As the order was received through the medium of *The Autocar*, we would ask this gentleman, through its columns, to furnish us with a fuller address."

* * *

The illustrated catalogue of the Benz 1903 models has come to hand from Messrs. Hewetsons. It will be remembered that the new types are known as the Benz Parsifal, and we must say that they are extremely well illustrated, both in their two-cylinder and four-cylinder types. A number of detail pictures are also given, making the main items of construction perfectly plain.

* * *

The Scottish Manufacturers' and Traders' Association has been founded to safeguard the interests of *bona-fide* members of the industry and business in Scotland. Mr. John Stirling has been elected president, Mr. J. H. Paterson vice-president, and the members of the Executive Committee are Messrs. Love, Prosser, W. L. Sleigh, Dempsey, Peacock, Kingsburgh, and McLean. Mr. T. M. Sleigh, 1, York Buildings, Edinburgh, was appointed secretary and treasurer.

* * *

The Rochet-Schneider cars came most triumphantly out of the grand touring competition at Nice, scoring first, second, fourth, and fifth places. The two first cars were Rochet-Schneders of 1903 type, as shown by Captain H. H. P. Deasy at the Crystal Palace and Agricultural Hall Shows, the fourth was the 1902, and the fifth the 1901 type. That these cars should so have finished is remarkable, and not the less to their credit is the fact that the first and second cars beat a Mercedes driven by Lubecki, which was third, beating only the 1902 and the 1901 Rochet-Schneders. In the small car competition a 1902 type Rochet ran into second place. Altogether, Rochet-Schneders seem to have had most remarkable success in this competition.

THE PROPOSED LIGHT MOTOR VAN TRIALS.

The Society of Motor Manufacturers and Traders have been giving consideration to the above trials, which the Automobile Club proposes to carry out this year, and it was settled at a meeting of the committee of the members of the society interested in the matter that certain recommendations which represent their carefully considered opinion, should be sent to the Automobile Club. Among the more important of the recommendations are the following:

The route traversed shall be the same for all classes of vehicles.

There shall be four classes of vehicles as follows:

- (a) Vehicles designed to carry 5 cwt. or under.
- (b) Vehicles designed to carry half a ton or under.
- (c) Vehicles designed to carry one ton or under.
- (d) Vehicles designed to carry two tons or under.

Vehicles may be entered by manufacturers or agents only, and the competition to be international.

Not more than two vehicles of the same make may be entered in any one class.

The floor area shall be limited in each class.

The trials shall be over a distance of 1,200 miles, to be covered in four weeks.

The judges not to be members of or interested in the trade, one half of them to be engineers, and one half commercial men.

The official observers to confine their duties to making observations and reporting to the judges, but not to deduct marks on their own initiative, this presumably being left to the judges.

All vehicles to be stored at depots provided by the club in or near London.

All vehicles to carry the full declared load during the whole time.

The working cost per ton mile to be taken into consideration in making the awards.

Selling price to be taken into consideration.

Among other items to be taken into account in making awards are the position of the driver and his ability to see the road, accessibility of gear and mechanism, brake power and appearance.

Every vehicle to be finished in the usual style for its class.

Cars to run five days in each week, but may be overhauled and adjusted on the sixth in the club depot; all repairs and renewals to be noted.

One hour to be allowed each night for cleaning, adjusting, etc., and one hour in the morning. All beyond this to count against the vehicle.

Hill climbing tests to be arranged.



Place des Armes, Nice. The course round which the cars ran for the Bidon consumption test.

SOME REPLIES TO QUERIES.

Under this heading we insert a few selected replies, as space permits, to letters containing queries received from correspondents which are likely to be of general interest.

The bulk of questions dealt with each week are of interest only to the senders, and these are replied to by post direct, and are not published.

We are always pleased to reply to queries, even if they be of an elementary and untechnical description, our object being to help the novice as well as the more experienced automobilist. Correspondents will kindly note that queries should be plainly written upon one side of the paper only, and each question should be separately numbered, (*i.e.*, two distinct questions should not be asked under the same number.

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

A stamped addressed envelope should be enclosed, in order that a reply may be sent direct through the post, in addition to any reply which may be printed.

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

FRONT WHEEL BRAKES.

Will you please tell me if anyone makes brakes for the front wheels of motor cars? On my car the pedal brake alone will lock the back wheels even when the car is going quite fast, and my experience leads me to believe that front wheel brakes would be a great advantage, as they would not only double the stopping power in an emergency but they would, I think, tend to reduce side-slip, besides saving wear and tear of the tyres. Now that front brakes are fitted to the forecarriages of motor bicycles, I really cannot see why they should not be provided for motor cars.—STOPPER.

There are at present, to the best of our knowledge, no manufacturers of motor cars who are fitting brakes to the front wheels of their vehicles. There is no doubt that such brakes would be of the greatest use in connection with high speed and heavy vehicles requiring a considerable amount of power to check their momentum after the engine has ceased driving. As regards the braking power for light cars, the present countershaft and driving road wheel brakes are amply sufficient for all practical purposes, provided they are kept in efficient working order and particular attention is paid to maintaining their correct adjustment. The effect of the front wheel brakes upon side-slip is a question of more than passing interest, and so far as motor vehicles are concerned, there is at present no data to work upon. The same thing applies to the motor bicycle with the forecarriage, though in a lesser degree. We are of opinion that the front wheels on all rear driving three-wheeled machines (*i.e.*, with two front steering wheels) should be fitted with brakes in addition to the single back wheel. It would appear in the case of the four-wheeled vehicle that by checking the front wheels alone the back ones would tend to force them forward, and if they were out of line with their leaders it is possible that it would increase rather than mitigate the tendency to side-slip, though if brakes upon both front and back wheels were fitted which would come into action almost simultaneously, the pressure upon the back wheels being slightly in excess of that applied to the front, the car should by this means be rapidly brought to a standstill, and the tendency to side-slip considerably diminished.

CARBURATION TROUBLES.

I have been experiencing some difficulty with the ignition and carburation on my car. I have solved the directions given in the printed instructions of the maker; those given me verbally by the man from whom I had a lesson are wrong. I find I have been driving the car a month with the sparking advanced and do not think I have ever had a back fire, even when slowing down to four miles an hour in stopping or on a gradient. Does not this tend to show I have insufficient lead? Though tried slowly by hand the spark passes before the piston reaches the dead centre. I took the carburetter to pieces, and find it is of the jet type. The needle valve, worked from the float, can be adjusted by a set screw, but as its lift does not exceed $\frac{1}{16}$ in. I cannot see that it can materially affect the quantity of spirit sprayed into the carburetter, which seems to depend solely on the area of the hole drilled down the spraying nozzle.

There seems to be no way of adjusting this. The throttle valve or cock was a surprise to me. I imagined the engine was throttled by impoverishing the mixture with air, but the contrary seems to be the case. By this cock the opening from the carburetter to engine is always wide open. As the throttle is gradually opened the area of the air inlet increases, and when about half way a supplementary air valve opens admitting air direct from atmosphere to engine. Am I not right, therefore, in assuming that the engine is throttled by excess of petrol vapour in the mixture? If this is so the more you throttle the higher the consumption of petrol, which would explain the large quantity used. When the car is standing the exhaust is far from being either colourless or odourless, and this makes me think that excess of petrol and insufficient air is the fault. —E. SCARE.

It certainly would appear that the advance spark connections or the timing on your motor are wrong, otherwise you could never have run it at so slow a speed without having backfires or a bad knocking therein. The method of testing the timing was given under the heading of "Replies to Queries" in *The Autocar* of March 7th on p. 307. The excessive consumption of petrol points to the fact that the opening in the jet is too large, for as the throttle is closed the suctional power of the motor upon the jet of the carburetter is decreased while the opening to atmosphere admits of pure air being drawn in which would weaken the mixture considerably but still maintain the full cylinder volume. Therefore, this excessive consumption cannot be put down to the throttle, that is if it is working in the correct direction. If, however, when the throttle valve is closed down and the pure air opening is at the same time closed the suction upon the jet of the carburetter would be greatly increased owing to the restricted area of the opening in the induction pipe at the carburetter, as the smaller the induction pipe the greater the suctional exertion upon the spray. This would appear to be the case, as the engine emits a visible and offensive exhaust.

MOTORS FOR RAILWAYS.

Would it be serviceable and practicable to bolt smaller diameter railway wheels inside or outside a heavy motor's road wheels and so fit the railway gauge? A motor might then take the rail or land on transport duty or work country districts for a railway company without unloading. The motor would run on suitable pointed rails and free-wheel behind a train to the desirable station, and then take to land on the road wheels across country and deliver its load.—G. B. LUDLOW.

It would not be practicable to arrange heavy motor vehicle road wheels to run on railway tracks. So far as bolting a rim to the road wheel for running on the track is concerned, this would be quite easy, but it will be recognised that, owing to points and crossover switches, the wheels would never clear, unless they were of smaller diameter than the rims for the rails. This would, of course, necessitate the rims being detached every time the car took to the road, and would therefore make the scheme impracticable.

GORDON-BENNETT ITEMS.

Inspecting and Weighing the Gordon-Bennett Cars.

"April 10th. Gordon-Bennett cars weigh at Humphreys, Ltd., noon." So ran the notice on the club notice board at 119, Piccadilly, and, consequently, we, in company with Mr. E. Peall on the old eggshell 6 h.p. Daimler, Mr. Peall, sen., on the 12 h.p. Daimler, Mr. Harvey du Cros on a Swift



The Star racer on the weighbridge

voiturette, Mr. Leon on a 12 h.p. Gladiator, Mr. H. Tate on his 12 h.p. Peugeot, and sundry other interested people on cars of various description, betook ourselves in good time to Messrs. Humphreys, Ltd., in the Buckingham Palace Road.

Shortly before eleven a.m. the 70 h.p. Star, which we so lately illustrated and described, turned up with Mr. Lisle on board and Mr. J. Lisle at the helm. At Messrs. Humphrey's establishment is found a fine weighbridge, by Messrs. David Hart and Co., with which that well-known hard-working member of the A.C.G.B. & I., Mr. Lyons Sampson is connected, and the Star car was promptly run on to its platform for an unofficial poising, after some of the water and petrol had been run off. The weight returned was 19 cwt. 3 qrs. 7 lbs., somewhat heavier than had been found at Wolverhampton earlier in the week, and no less than 1 qr. 6 lbs. over the official limit of 1,000 kilogrammes.

By noon the three Napiers, built for Messrs. Mark Mayhew, J. W. Stocks, and the Hon. C. S. Rolls, put in an appearance, and very shortly afterwards the testing officials, Messrs. Lyons Sampson and Worby Beaumont, arrived. Mr. Sampson went to the weigh house and Mr. Beaumont presided at the bridge. E. H. Lancaster, the club engineer, was also present to render assistance.

Only one of the Napiers had its tanks emptied, and was weighed less accumulators. For this car the scale showed 16 cwt. 3 qrs. 2 lbs., giving a wide margin within the competition limit. The water and petrol tanks were then replenished, Messrs. S. F. Edge and Mr. Napier took their seats, so that the actual running weight was there or thereabouts attained, and the weight of the vehicle under these conditions came out at 20 cwt. 3 qrs. 22 lbs.

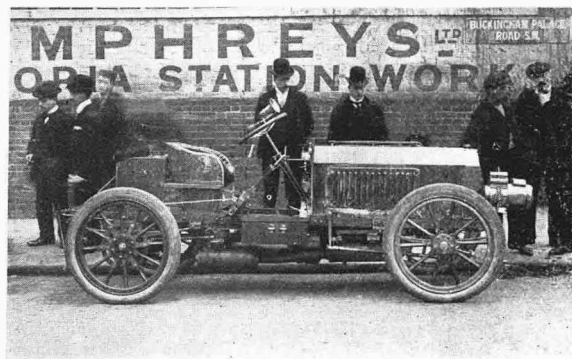
With the front wheels off the bridge, but with the driver and chauffeur still up, the weight on the rear axle was shown to be 10 cwt. 3 qrs. 21 lbs.

The other two Napiers were then weighed all on and came out at 18 cwt. 1 qr. 10 lbs. and 18 cwt. 1 qr. respectively, while the second car with Messrs. Jarrott and Napier up came out at 21 cwt. 3 qrs. The third car was furnished with one bucket seat only, and only a cushion for the chauffeur. This vehicle with Messrs. Edge and Napier on board weighed 21 cwt. 2 qrs. 4 lbs.; back axle weight, 10 cwt. 3 qrs. 4 lbs.

While the Napier weighing had been conducted the Star 70 h.p. had been stripped of all superfluous in the shape of lamp brackets and other such small fry. The water, petrol, and oil tanks and gear box, together with the water jacketing on the cylinders had been drained of their several contents, and the car was then officially returned as weighing 19 cwt. 1 qr. 15 lbs., or 34 lbs. inside the limit of 1,000 kilogs.

With its intended driver, Mr. Joe Lisle, and Mr. George Prew, the Star Works manager, it kicked the beam at 23 cwt. 1 qr. 16 lbs., while its back axle weight was 10 cwt. 1 qr. 16 lbs. Amongst others who watched the weighing were Mr. Frank Butler, the Hon. C. S. Rolls, and Mr. F. R. Goodwin.

Work over at 1.55 p.m., a procession was formed for the return to Piccadilly, Mr. E. Peall on the 6 h.p. Daimler leading, closely followed by Mr. S. F. Edge driving the Napier No. 1, J. W. Stocks driving the Napier No. 2, Montague S. Napier the Napier No. 3, and Mr. Joe Lisle, the Star "crack," and upon arrival at the club the cars were formally inspected. All the four Gordon-Bennett trial cars are shod with Dunlop pneumatic tyres, while all three of the Napiers have Mr. Waterson's high-speed coils. The Star car was weighed complete with wedge-shape tool-box built on at back of the



One of the Napier racers.

bucket seats. The Napiers were absolutely naked in rear of the seats, a good view being thereby afforded of back axle, propeller-shaft, etc.

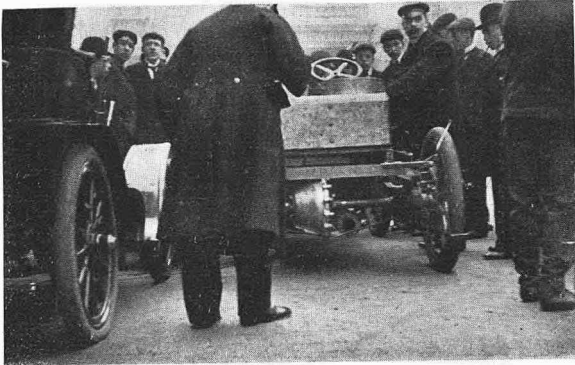
The Official Map.

We understand that the special map of the Gordon-Bennett course which Mr. R. J. Mccredy has had in preparation for some time has been adopted by the Automobile Club as its official map for the race. The map will be ready towards the end of the month, and will be obtainable at *The Autocar* offices, 3, St. Bride Street, London, E.C.

We have received the following letters:

Sir.—I notice on your page of Gordon-Bennett items in last week's issue a letter from Mr. Mansfield Cumming, in which he feels hurt that he is not allowed to chip in at the last moment with his Wolseley racer. He surely knows the rules that were made to govern the entrants for this race, and cannot expect the Star Engineering Company to do anything else but refuse. Does Mr. Edge object to his entering or not? A letter on this point would, I think, clear up a lot of misunderstanding on the part of the public. The onus of responsibility seems to rest very unfairly on the Star firm.

FAIR PLAY.



The Napier back axle.

Sir.—With reference to the letter from the Star Motor Car Company on this subject in your issue of 28th March, what the Star Motor Co. say is absolutely correct, but we think in justice to the Wolseley Tool and Motor Car Co., Ltd., as also to ourselves, that an explanation of the circumstances should be given publicly.

The Wolseley Tool and Motor Car Co., Ltd., received an order from a private customer for one of their racing cars, which car this gentleman entered for the Gordon-Bennett race, and both he and the Wolseley Tool and Motor Car Co. understood that the entry would be accepted by the Automobile Club, although it was admittedly late, and whilst under this impression they sent an order for "Castle" accumulators, specifying specially that they would be for the Gordon-Bennett car. Naturally, we thought we had no better authority for mentioning their name in connection with the Napier and Star cars, from the manufacturers of which we had also been favoured with instructions to prepare "Castle" accumulators for their cars.

It appears, however, that, owing to objections raised, there is now some doubt as to whether the gentleman who has ordered the Wolseley car will or will not be allowed to start in the eliminating race for the Gordon-Bennett cup. There being this doubt, we have withdrawn the name of the Wolseley car from our advertisement for the time being.

For the UNITED MOTOR INDUSTRIES, LTD.,
G. H. SMITH, Manager.

[Our correspondents forward us the letter from the Wolseley Co., which substantiates the explanation they offer.—Ed.]

Sir.—We were extremely surprised to see a letter from Mr. Mansfield Cumming in *The Autocar* last week, under the heading of Gordon-Bennett items.

The first point that Mr. Mansfield Cumming draws attention to is that we took the trouble to correct an advertisement. What he says is perfectly correct; we did. The Wolseley car is not a Gordon-Bennett car, for everybody understands by the advertisement that a Gordon-Bennett car means a car entered for the eliminating test prior to the Gordon-Bennett race. So it is very foolish of Mr. Cumming to try and split hairs on a point like this. We paid our deposit to the Automobile Club, and we entered a car for the eliminating test, and we would ask the public which is the more aptly described as the Gordon-Bennett car—the one that was manufactured for the test, its manufacturers having paid their deposit and conformed with the regulations; or a car which was bought by a private gentleman who paid no deposit at all?

Continuing the other part of Mr. Cumming's letter, we would point out that Mr. Cumming is talking very wildly, as the enclosed letter from Mr. S. F. Edge, in reply to one from our Mr. Lisle will show. This letter will conclusively prove that Mr. Mansfield Cumming is not debarred from entering the eliminating test solely on account of ourselves refusing to admit him.

THE STAR ENGINEERING CO.

To E. Lisle, Esq.,
The Star Engineering Co., Wolverhampton.
Dear Mr. Lisle,

Your letter of the 6th to hand, and I thoroughly agree with your letter. I do not see how the club can possibly weigh in the Wolseley car, as it is not entered, and has no *locus standi* at all.

Yours truly,
(Signed) S. F. EDGE.

Those who are going over to the Gordon-Bennett race will be interested to know that Messrs. John Hutton, Sons, and Co., of 115, Summer Hill, Dublin, have made arrangements for a garage of over two hundred cars. They have a good staff of mechanics always employed, and can undertake practical repairs.

Mr. Roger Wallace, president of the Automobile Club, and Mr. Julian Orde, the new club secretary, left the club premises on Wednesday last week on a 9 h.p. James and Browne car for an Easter tour in Ireland, crossing *via* Holyhead. They propose to run over the Gordon-Bennett course during the tour.

It was reported to the executive committee of the Automobile Club on Monday last week that the subscriptions to the Gordon-Bennett Road Fund amounted to £650. As it was estimated that the road repairs would cost at least £1,000 it was decided that a supplementary subscription list should be opened. The supplementary list was at once headed by Mr. Paris Singer with a donation of £100.

Foreign competitors and visitors will do well to remember that the rule of the road in Ireland is, as in England, to keep to the left—the exact reverse of the custom on the Continent.



Stripping the "Star" for weighing.

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