The Motor—What to See Around Henley.

(See page 1050).

Vol. 25. No. 654.

THE LADY AT THE WHEEL.

"And grace that won who saw to wish her stay."—MILTON.

WHY LADIES SHOULD DRIVE.

The Motorcar and its Management for the Feminine Owner.

By MABEL RICHARDS.

RECENTLY there has been considerable discussion on the question—Should a woman drive a motorcar? Journalists on the technical Press have discussed the matter gravely; leading lights in the motor world have offered the weight of their opinion. This discussion has struck me as being rather funny, in view of the fact that women have been driving ever since such things as motorcars were. Surely the question has been raised rather late in the day!

Long ago, in the early days, the sight of a lady at the wheel of a motorcar aroused a great deal of interest. Although I was not numbered amongst the fortunates who started the pastime in the early days—when adventure was rife, and a motorist's life was one of considerable excitement—I did a good deal of motoring with a friend whose first essay on the road was on a 3½ h.p. De Dion—a quaint little yoke, with tiller steering. Its gear changing was effected by means of clutches, and many an hour we spent upon the roadside tightening and adjusting those clutches, which, if not properly adjusted, had a pleasant habit of failing to take up the drive!

The sight of this little car with a lady in charge never failed to arouse quite frantic excitement in country parts, and often we were surrounded by a huge crowd whilst making some simple adjustment. That same lady has driven motors ever since, cars ranging from little to big; only for brief periods during all those years has she been "off the road." And her accident list is nil. I do not think she has ever killed a dog. There are not so very many men who can claim the same record. She is, of course, only one of many other drivers of the feminine sex, for from the very beginning women took an interest in the self-propelled vehicle, and the earlier reliability trials almost invariably included some lady drivers.

I think this fact is a pretty complete answer to those pessimists who would like to see women debarred from driving. At the same time, I am by no means asserting the right of every woman to drive. Amongst men motorists there is a certain proportion whom, from many points of view, might well be debarred, if this were possible. The same applies to women, but to a greater extent. The difference is that while men do not always recognize their limitations in this respect, many women do. It is no uncommon thing to hear a lady exclaim, "Drive a motorcar? Why, no! I should be afraid."

The actual driving of a car is generally only regarded as a desirable thing to do by women who possess the sporting instinct. Their—shall I say more feminine?—sisters are content to let well alone, and occupy a passenger seat.

A woman who is the least bit "nervy" should leave the wheel to brother or husband, or to a chauffeur. She may drive skilfully and well under normal conditions, but unless she possesses the nerve to act calmly and instantaneously in an emergency, then she may be regarded as "unsafe." This test has been effective in some instances in persuading ladies to relinquish driving, because once having experienced a nerve-shattering incident, they recognize that the game is not worth the candle in their particular case.

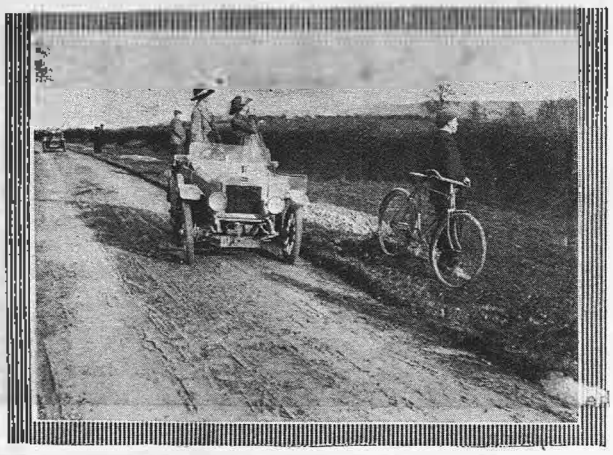
But for the favoured ones who possess the necessary nerve and acquire the skill, there is no more delightful and exhilarating pastime. Familiarity has in many cases bred contempt, and motorists drive a car merely for convenience. Personally, I cannot understand how the sense of complete control which the handling of a motor gives, the pleasure of hearing an engine purr in complete tune, can ever pall.

To get the very best out of motoring, however, I think one must not only learn to drive, but to care for one's car. In the case of a big, powerful vehicle, this is, of course, not possible, and the pleasure of playing with big power must suffice. But where a lady motorist owns a car and looks after its well being herself, then the real joy is there. It is not, of course, every woman who will agree with me in this; but those who do not agree are missing something of which they have no cognizance.

I have a secret conviction that many women would shine in the mechanical line were they given the necessary training. They have a finer sense of touch, an aptitude for dealing with little things, which should stand them in good stead when motor adjustments have to be made. As witness the marvellous things a woman will do in a house with tools absolutely inappropriate.

At all events, the few lady motorists with whom I am acquainted who look after their cars in person seem to manage excellently, and to get a good deal of enjoyment out of it. Personally, I know I do, and I not only look after but wash my car, a proceeding which, given the necessary time, gives one the same feeling of satisfaction as spring cleaning. And everybody knows how a woman enjoys that upheaval! There is a good deal of pleasure in knowing that the car's smooth running and its spick-and-span appearance are due to one's own unaided exertions.

As for the type of car a woman should drive, opinions differ. I am not in favour of big vehicles, although to-day a high-powered car of



Lady motorists watching sport.

WHY LADIES SHOULD DRIVE.—Contd.

good make offers no difficulty as regards the actual driving, and the drawbacks of a heavy clutch which existed in the old days have been got over. But they are awkward, in a way, to handle, and do not lend themselves to touring off the beaten track.

There are to be had at the present time moderate powered cars of from 11 to, say, 20 h.p., which are admirably suited to a woman's use, which are efficient and speedy, and yet absolutely easy to handle. And I must not overlook the light car. This type has, as it was easy to foresee from the beginning, drawn a big influx of ladies into the charmed circle of motoring, and certainly the better class light cars leave little to be desired in the way of efficiency and comfort. They are in every way easy to maintain and manage, and their cheapness brings them within reach of many would-be motorists who have hitherto had to look on and long for such a car unavailingly.

With efficient cars, therefore, of all types and prices the woman of to-day is easily supplied. And in another direction motoring has been much simplified from a feminine point of view within the last few years. Thus, we have the engine starter, a very valuable adjunct on a car of any size. Electric lighting outfits, too, assist in simplifying the necessary work on a car, for oil and acetylene lamps are sometimes a source of much trouble The puncture worry, again, which, in the early days was one which was sufficient to daunt many a stout heart, has been practically laid by the introduction of detachable wheels or rims.

Altogether, motoring to-day is a very simple proposition compared with what it was, say, ten years ago, and women in particular score heavily. To the woman who desires to take up motoring, and who is equipped with the necessary nerve, let me offer a word of encouragement. The driving of a motorcar is not nearly the difficult matter it would appear on the surface. I can illustrate this by a simple example. A lady of my acquaintance, who suffers from that unpleasant complaint known as "nerves," has been afraid for a long time to go out on her husband's car simply because she imagined the happening of a hundred different accidents during a short drive. Her nervousness had, of course, an irritating effect on her husband, who is an essentially safe and careful driver. (It is not a pleasant experience to be continually besought to "Please go slower," or "Do mind that corner," or "Don't go down that awful hill, we shall all be killed!")

Finally I suggested a way out of the difficulty. On a quite straight and wide road, at an early hour of the morning, the lady was put into the driver's seat, and, with the car travelling on low gear, shown by personal demonstration how the pressure on the brake pedal would pull the car up dead. It was not, of course, a good proceeding for the car itself; but a few demonstrations were sufficient to convince her that mere pressure of the foot on the pedal was sufficient to stop the car. And that sufficed. She sits beside her husband now, with some knowledge, slight though it be, of how the car is controlled, and although still nervous, she is able to enjoy her motoring.

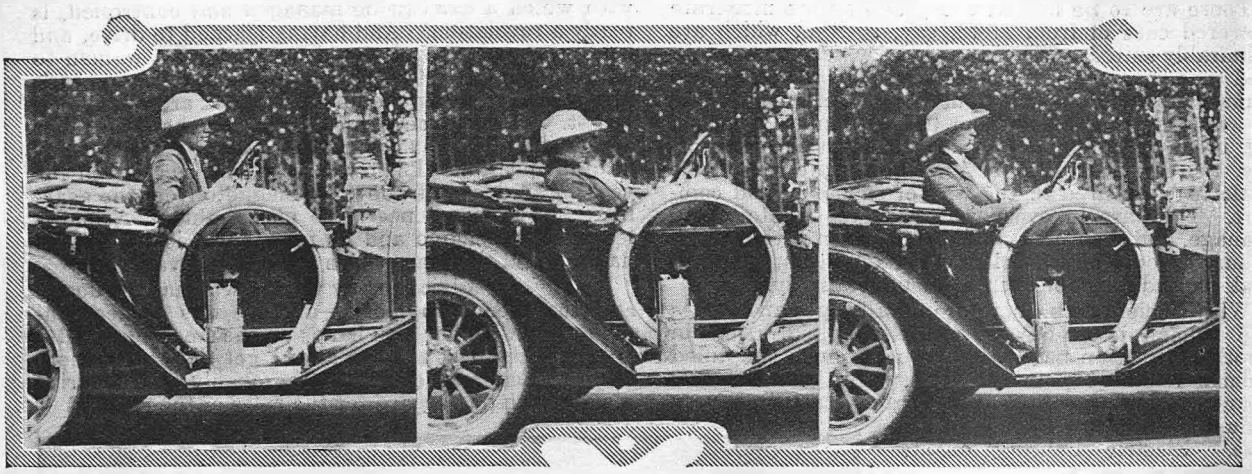
After the first plunge in the driving line, the ease with which a car can be managed and controlled, is really a revelation. And having learned to drive, and learned thoroughly, I would next advise a woman to obtain knowledge on the question of the car's mechanism whether she intends to look after it herself or not. To drive mechanically, without knowing what action the movement of levers is actually performing, is quite possible—I know a lady who has driven for years, and does not know the magneto from the gearbox—but it is not nearly so pleasurable. A knowledge of the engine and its functioning is well worth having, and there are times when it is invaluable.

Finally, my advice to any woman who has the desire and the means to motor—and by this I mean individually with her own hands on the steering wheel—is to buy the best she can afford, get the best tuition, learn to understand her car thoroughly, and to drive always with due regard for the rules of the road.

THE LADIES' NUMBER.
A broad hint is conveyed in this illustration—it is that the Police are not respecters of person or sex.

POSITION AND APPEARANCE ON THE CAR.

Mistakes that Spoil the Action and the Appearance of the Lady Driver. How to Drive in a Becoming Manner, and the Avoidance of Awkward Poses.



The too far forward position, the lolling position, and the correct attitude at the wheel.

PERHAPS the greatest incentive to women to take up a sport or an occupation is to see others doing it and looking well and happy in the occupation. Therefore the right and wrong positions for driving a car should be especially noted and adopted when learning, as we all like to feel that we are driving in a manner to inspire emulation by our sex.

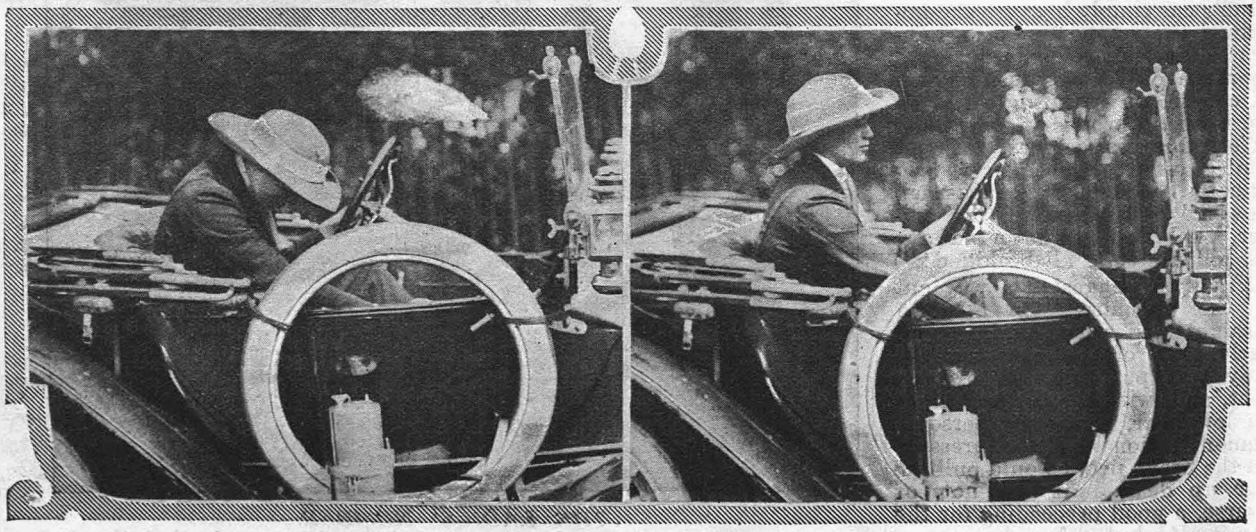
In the series of photographs that accompany this article, Miss Preston, the well-known lady teacher, very kindly acceded to my request and posed to show the excellent effects given by correct positions and one or two of the evil effects of bad positions.

Nobody can look well if the seats and general make of car body are uncomfortable, so the first thing to do is to see that the following general requirements are fulfilled by the car itself.

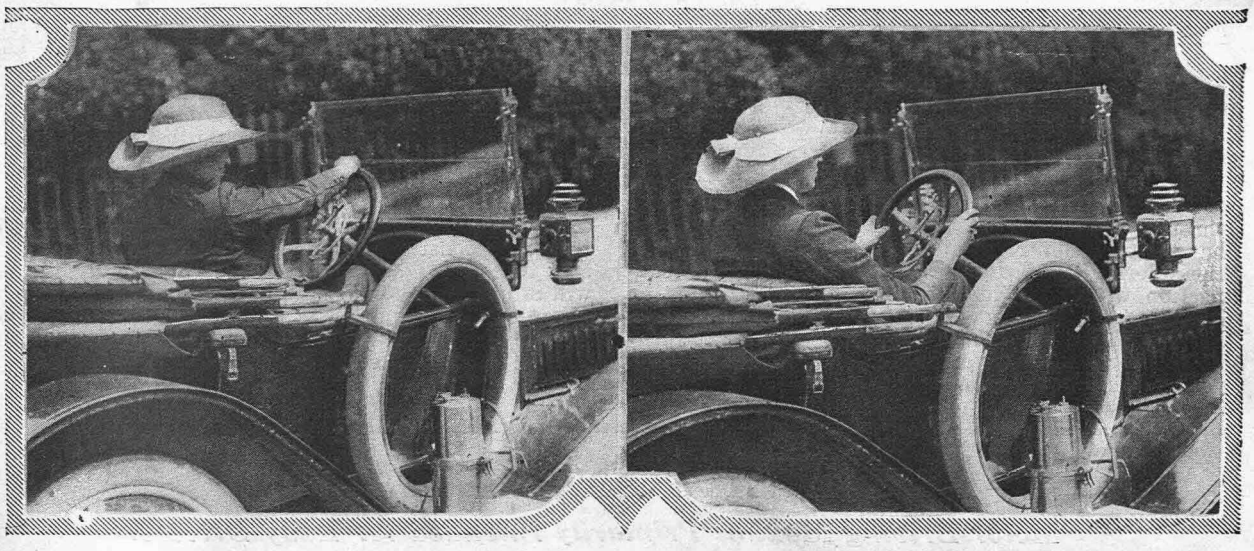
On taking the driver's seat, sit fairly well back, then notice if one has to loll back or be very upright to feel the padding of the upholstery against the shoulder-blades. For long-distance driving a high back at a comfortable angle is far less tiring for ladies, so that if a very low looking body is desired, the seat must be sunk down in proportion.

The next point to be observed is the distance of the pedals from the driver; they should not be near enough to oblige one's knees to be pushed up against the wheel, nor so far away that the toes and not the ball of the foot rest on the pedals, as this does not give enough power for using the clutch and brake effectively. The steering wheel should also be at a convenient distance and angle; in regard to the latter feature some large wheels are tilted so much that they give no room for the driver's knees, or only enough to squeeze oneself under it. Then if trying the car in summer-time with a thin coat it appears just sufficiently comfortable, in winter when wearing a thick overcoat it will be almost impossible to move the knees.

On the other hand it looks very bad to see a steering wheel column very upright, necessitating the driver leaning forward, whatever the position of the seat. Now, supposing the car to be all that is desired, only the driver herself is to be blamed if she



How not to change speed. *The correct and easy way to do so.*



The wrong and the right way to hold the steering wheel.

still looks ill posed. This I am sorry to say is often the case if she has not given any thought to the matter or has been badly taught.

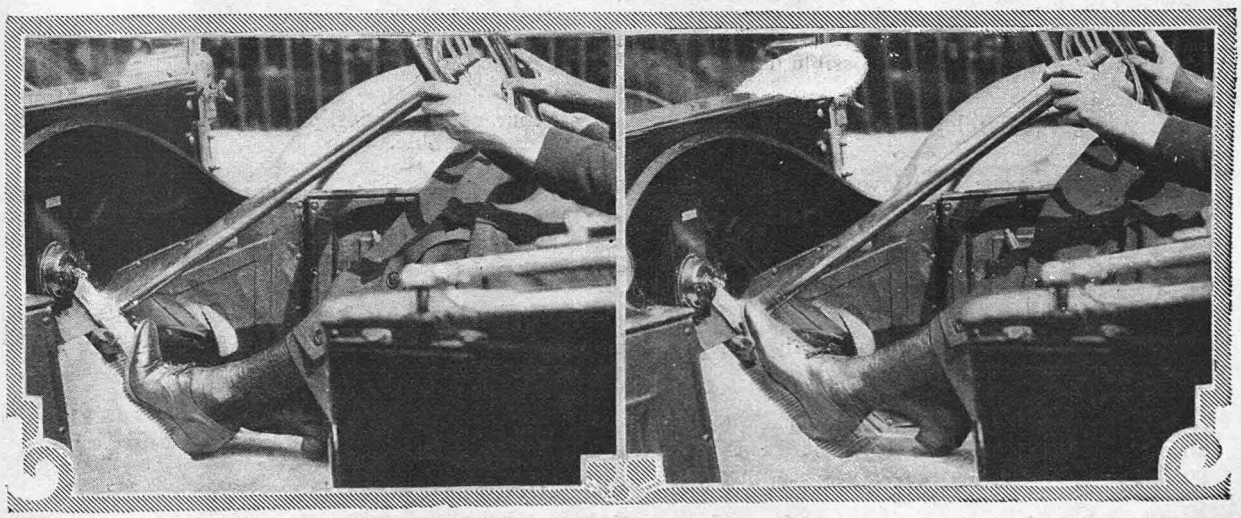
Facial expression is one of the most difficult points to correct, as it is an awkward subject for teachers to touch upon. They cannot tell their pupils that they are looking perfect frights, but in this article I am able to say openly that this is exactly what some lady drivers do look, and it is entirely due to the unfortunate habit of putting on a strained and anxious expression. If they are so worried that their foreheads are wrinkled, and their eyes staring, they should not attempt to drive in districts that give rise to these symptoms until they are thoroughly at home on a car in quiet places, so that when they have to negotiate thick traffic, its conditions only will take up their attention, changing speed, etc., having become almost second nature. There is no necessity for an ugly, anxious look.

In the matter of changing speed the photographs speak for themselves, and it is only necessary for me particularly to emphasise the lesson of the photographs, i.e., that it is absolutely incorrect to stoop over the lever and peer down to see which division of the gate to slip it into. Learn to "feel" the different changes, keeping the left hand clasping the wheel steadily, not with a violent grip, and the eyes on the road ahead.

For the proper use of the pedals, a great deal depends on the original position of the foot, as before mentioned. Keep the foot straight on the centre of the pedal, and do not let it work off sideways; if this happens, it is apt to slip off, and the clutch is of course let in with a very detrimental bang. Similar misfortunes may also happen when the tips of the toes only are used. Whenever the construction of the car allows it—as it nearly always does—keep the heel of the shoe on the footboard for using the clutch, as shown in the photograph. Much the same remarks apply to the brake, but in this case the downward movement has to be a gradual and well-regulated one (except in an imminent collision), whereas with the clutch the movement is upward

The accelerator pedal requires very gentle use, and a delicate touch is wanted, therefore the best part of the foot to keep on it is between the tips of the toes and the ball of the foot. Do not let the foot work upwards until the pedal rests under the instep. Another "Don't" for really good driving, is not to wear boots, but thin walking shoes, which give free play to the ankle, and a good touch of the pedals. If thin-soled shoes are not comfortable to some, it is a good tip to have rubber coverings to the pedals.

An important point is brought forward in the photograph, where Miss Preston is showing the incorrect way of holding the wheel when turning a corner; she illustrates a favourite trick of her pupils, when they



The wrong and the right way to depress the clutch pedal.

POSITION AND APPEARANCE.—Contd.

first start with her, but one which she quickly eradicates. The hand should not be kept in the original position on the wheel for corner work as shown, but slipped down to turn, so that it again resumes, for the moment, the original position in relation to the body. Then let the wheel slip gently through the hand on straightening up. The right hand should never grasp the wheel tightly, most of the steering being done with the left hand. In connection with cornering, it may be well to mention here that another movement which looks absolutely laughable, is that of bending the body over towards the corner being turned, unless circumstances force you to take a corner at speed.

Most lady drivers like to have a windscreen on their cars. Now these are often snares in encouraging bad positions. Sun and shadow cast tiresome reflections on the glass, and drivers are apt to get into the way of leaning forward to "dodge" the light, and obtain a clear vision; others again bend out to the right and look clear of the screen altogether, while those who have a divided screen do not always trouble to adjust it exactly right for the division to come in a line with their vision, and are therefore constantly moving up and down in their seat to get it right. Altering the angle of the screen will often prove beneficial.

Ladies who value their appearance when driving should therefore study seriously the accompanying illustrations to these remarks.

"MECHANISTE."

ALWAYS AND NEVER.

Motor Driving Maxims Primarily Intended for Lady Drivers.

Always keep a cool head.

◇◇◇

Never for a second allow your memory to lapse.

◇◇◇

Always keep your eye on the road ahead, and remember there are possibilities at the most insignificant side road.

◇◇◇

Never take it for granted that vehicles emerging from subsidiary roads will give way to you, even though you have sounded your horn.

◇◇◇

Always sound your horn when approaching every side road, lane or footpath.

◇◇◇

Never pass to the left of any vehicle other than a tram, and only that when all circumstances permit.

◇◇◇

Always regard pedestrians, whether males, females or infants, as uncertain in their possible actions.

◇◇◇

Never allow your feet to stray from clutch and brake pedals, and do not forget your side brake. This applies to cars without acceleration pedals.

◇◇◇

Always keep your hand ready for the side brake if you have an accelerator pedal, and make it a habit to remove the foot from the accelerator pedal to the foot-brake at the first sign of possible danger.

◇◇◇

Never forget to decelerate when you declutch.

◇◇◇

Always bring your gear lever into neutral before you alight from the car.

◇◇◇

Never take it for granted that the other driver will certainly do the right thing.

◇◇◇

Always calculate that it is highly possible the reverse will be the case.

◇◇◇

Never crank your engine over until you have made absolutely sure the gear lever is in the neutral position.

◇◇◇

Always slow down at corners, sound your horn, and keep on your right side of the road when taking them.

Never take it for granted that the road will be clear when you cannot see right ahead.

◇◇◇

Always remember that you have at command every necessary means of stopping in case of sudden emergency.

◇◇◇

Never allow yourself to get flurried in the face of danger, and remember that your coolness may save the situation.

◇◇◇

Always throttle down in good time.

◇◇◇

Never apply your brakes too suddenly, but slow down and keep your car under control well before reaching any danger zone.

◇◇◇

Always let your clutch in gently; thus you will keep your tyre bills down.

◇◇◇

Never do anything that will prompt you to say you "did not dream" that such and such a thing *might* happen.

◇◇◇

Always remember that the safest plan is to be prepared to meet the most unexpected situation.

◇◇◇

Never attempt to engage a forward gear after reversing until the car is practically stationary.

◇◇◇

Always remember that if you have rubber tyres on all four wheels, sideslip on wet and greasy surfaces will be probable.

◇◇◇

Never forget that you cannot place absolute reliance against sideslip upon studded tyres on wood, asphalte and hard, smooth tar surfaces, even when dry.

◇◇◇

Always bear in mind that very sudden application of the brakes on greasy surfaces will result in sideslipping.

◇◇◇

Never drive at a speed on such roads as will necessitate sudden swerves and brake application.

◇◇◇

Always change gear in good time on hills.

◇◇◇

Never push your car unnecessarily on top gear.

THE KINDERGARTEN OF THE LADY DRIVER.

The Working of the Car Explained in Simple Terms.

[The regular reader, if he peruses this article, will find use made of terms by the writer which are very untechnical, and at which he may be inclined to smile. The special object of the article, we think, renders the use of such unconventional terms permissible.—ED.]

HAVING been asked to write a few words to those to whom the mechanism of a car is still a profound mystery, I am going to try and unravel it for them in the simplest and most rudimentary way; therefore, *experts, please do not read the following.*

The motive power of a car lies in nearly every case beneath the bonnet and in the front part of a motor-car, so we will start our explanations here, and work backwards to the "hind" wheels.

The Engine.

The engine is the most important part to understand thoroughly, as in the modern automobile very little else ever goes wrong, and this only from exceptional reasons or from the simplest, which is a paradox, but comforting to the novice when explained.

The engine, as a general rule, consists of two, four, or six cylinders, but for simplification a single-cylinder will be described, the larger engines merely having duplications of the first. The cylinder is a casting of iron, open at the lower end to admit of a rod, called the connecting rod, moving up and down inside the cylinder. On the top of the connecting rod is the piston, which is in the shape of an inverted jam pot, and fastened to the connecting rod by a pin (over ½ in. thick) called the gudgeon pin.

The lower end of the connecting rod is called the "big end," and is split into two parts to allow of it being bolted round the centre shaft of the engine (crankshaft). This big end has to act as a bearing; this means a point where two parts rub or bear one against the other. Where this occurs means have to be taken to prevent the two parts getting heated and "seizing" (stuck together). Now the big end has to revolve partially, and allow of the part of the crankshaft inside it (crankpin) revolving, so that it is lined with a soft metal, which in the case of overheating will melt and prevent it seizing up.

The crankshaft has to receive and give out the work of the cylinders, and is the shaft that at the front end is fastened to the starting handle, at the back of the engine to the flywheel and clutch, to be explained later. The crankshaft is shaped as shown in Fig. 1 (on next page).

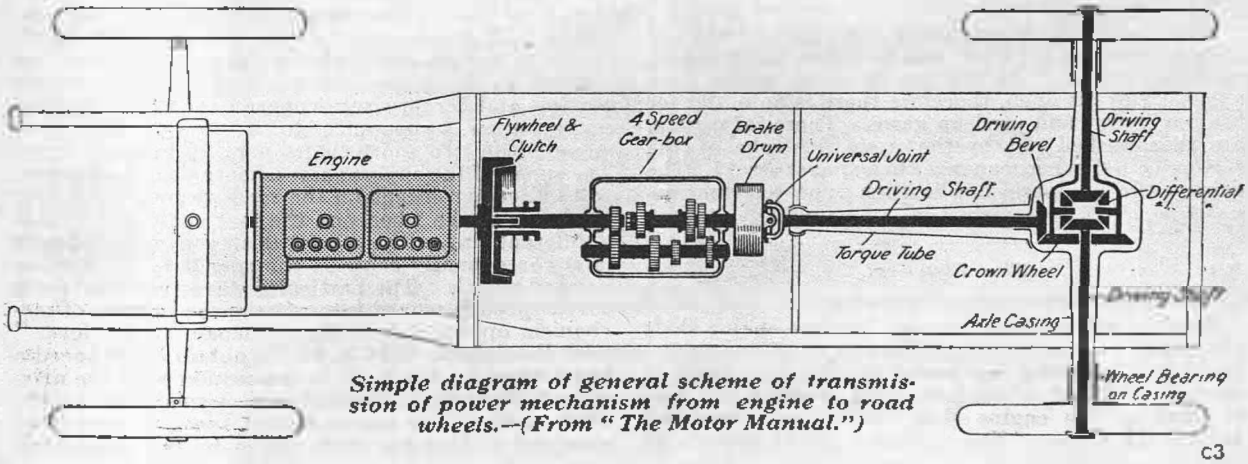
If it is in position as shown in the end view (the arrow showing the direction of rotation), and some pressure is exerted on the top of the piston, the shaft will be forced to revolve; it is this rotary movement that makes all "the wheels go round."

The Explosion.

Before we go farther back towards the road wheels, we must find out how the pressure on the piston is made. It is really the result of an explosion of gas in the space between the top of the piston and the cylinder. This gas is let into this space through "valves," these might be called trap doors, one to admit the new gas and one to let it out when it has been used and burnt. These valves are opened and shut by means of little rods which are pushed up and down by cams (projections on one side of the camshaft). The shaft on which they are fixed (known as the camshaft) revolves at half the speed of the crankshaft. It is driven from this through a series of gear wheels, which cause the difference in speed of the two shafts. This, and the position of the cams, cause the valves to open and shut at the required times.

The Carburetter.

The gas thus admitted is made by the carburetter—the car's "gasometer"—which is a separate attachment outside the cylinder. It consists, as a general rule, of two parts, the regulating and the mixing chambers. Into the first the petrol is led from the petrol tank by a copper pipe, this pipe being fitted into the bottom of the "float chamber," which is a round brass box. Inside is a round float of nearly the same shape but smaller; and through this is a central hole to allow of a little pointed metal rod (the needle valve) to move vertically, the pointed end dropping down into the neck of the petrol pipe—as shown at F in the sketch (next page). This needle valve is fixed to the lid of the box (float chamber) by its two tiny movable arms, on the end of which are weights that rest on the top of the float. These arms being jointed where they are fixed to the lid, allow the needle valve to rise or fall into the petrol pipe opening according to the height of petrol in the float chamber (A), thus the amount of petrol going into the mixing chamber



Simple diagram of general scheme of transmission of power mechanism from engine to road wheels.—(From "The Motor Manual.")

KINDERGARTEN FOR LADY DRIVER.—Contd.

through the tiny aperture (L), called the jet, is automatically regulated.

The designs of the gas mixing part of carburetters are very varied, and some most complicated, therefore, the principle only can be described here. The simple sketch given shows this well. The petrol as it leaves the jet must do so in the form of a fine spray; this is

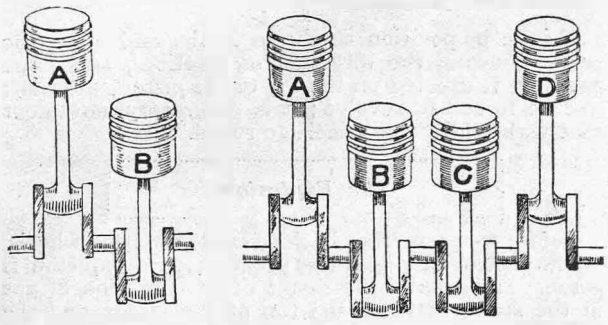


Fig. 1.—The working of an engine with two or more cylinders.

effected by a rush of air passing it. The petrol spray mixes with the air, and this mixture is then an explosive one, ready to be drawn into the cylinders, through the metal pipes arranged to admit it to the cylinder heads. How the air is admitted to mix with the petrol, and the correct proportions of both, cannot be described in this elementary article.

The Four-strokes.

As we have now arrived at the point where the explosive mixture is ready to be admitted into the cylinder, we must understand what the action of the piston does. Engines are usually made to run on what is called the four-stroke principle. This means that first the piston moves down in the cylinder on the suction stroke, drawing in by suction the mixture through the inlet valve, which is now open. The second movement is the compression stroke, in which the piston is pushed up, and as at this time both valves are shut, there is no escape for the gases, which are, therefore, compressed into a small space when the piston nearly reaches the top of its stroke. It is at this period that the mixture is highly explosive, and electricity is used to create a spark which ignites the mixture.

The Exhaust.

This explosion is of great force and drives the piston down the cylinder, and is called the firing or working stroke. As the piston rises again, the exhaust valve is open, therefore there is an outlet for the now burnt and used up gases. These, of course, are thus pushed out by the upward stroke of the piston, called in consequence the exhaust stroke. The same cycle of operations is then repeated continuously.

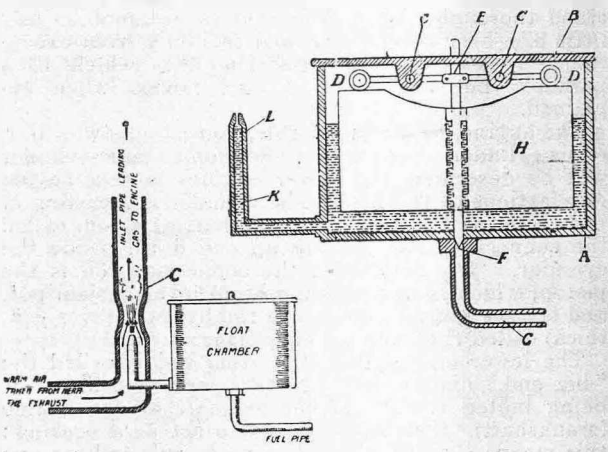
The Flywheel.

Readers will probably wonder how the engine shaft can make two complete revolutions from one explosion; it is here that the use of the flywheel becomes apparent. The flywheel is the large heavy wheel that is fixed on the engine shaft (with few exceptions) behind the engine The explosion stroke imparts to this now revolving weight sufficient momentum to carry on the work of the engine until the next explosion takes place.

The Clutch.

Next to the flywheel is the clutch; in fact, the two are often incorporated. The function of the clutch is to separate or join at will the engine shaft (continuation of the crankshaft) from the gearshaft and driving wheels. It consists of two parts, one of which is fixed to the engine shaft, the other to the gearshaft. When these two parts are kept together by the pressure of a spring they act as one piece, the engine therefore can then turn the shaft connected to the gear wheels.

The shape of a clutch varies in different cars, but the two most usual are called a cone clutch or plate clutch. The former consists often of the flywheel hollowed out to fit the similarly shaped cone on the other shaft, the spring pressure keeping the one firmly fixed inside the other when required. The disc or plate type is made with two series of thin metal plates, one lot connected to the engine shaft, the other to the gearshaft; when the pressure of the spring is exerted on the back of these plates they are squeezed



The arrangement of a self-regulating fuel supply.

together, and thus form a practically rigid whole. The spring pressure is released by depressing one of the pedals on the footboard under the driver's feet.

The Gearbox.

We have now tried to follow the motion given by the engine as far back as the place where the speed of the car can be altered and increased leverage obtained for hill-climbing, i.e., the gearbox. The shaft I have called the gearshaft for simplicity conveys the rotative power to the gear wheels; these wheels are two lots of different sizes—cogged or toothed may best convey their appearance to a novice. They are mounted on two short shafts parallel to each other. The speed of the engine shaft is more or less constant, so to alter our speeds on the road we must slide into mesh one of the wheels on the first shaft with one of a different size on the other, which conveys the power (and consequently controls the speed) to the driving or road wheels. The particular wheel required for a given speed is moved into position by a piece of mechanism operated from the "change speed lever" next the driver's right hand. To obtain a low speed a large wheel on the shaft in connection with the driving wheels must be meshed with a small one on the other shaft. The top or fastest speed is very often arranged so that the shaft driven by the engine and

KINDERGARTEN FOR LADY DRIVER.—Contd.

the other shaft in the gearbox are revolving at the same speed.

The more usual arrangement of the gearbox is for one cogged wheel on the gearshaft continually to drive another on the shaft parallel with it. The changes of gear are then obtained by driving through different sized wheels back to a continuation of the gearshaft. This continuation can rotate in the gearshaft, except on top speed, when they are coupled together, giving a "direct drive on top speed."

To reverse the car's movement, a third wheel at the bottom of the gearbox is brought into action, meshing into a wheel on either side of it, one on each of the two gearshafts. The whole of these gears are enclosed in an aluminium box, hence the name "gearbox."

The Driving Shaft.

The cardan or propeller shaft is the long shaft previously mentioned; it connects from the back of the gearbox to the back axle, thus taking the driving power to the road wheels. Just behind the gearbox the cardan shaft is connected by means of some form of "universal joint"; this is a contrivance to allow of vertical and lateral movement of one shaft in its relation to a more rigid part; in this case the bumps and shocks suffered by the back axle would be imparted to the cardan shaft, and break it without the help of the universal joint.

The Differential.

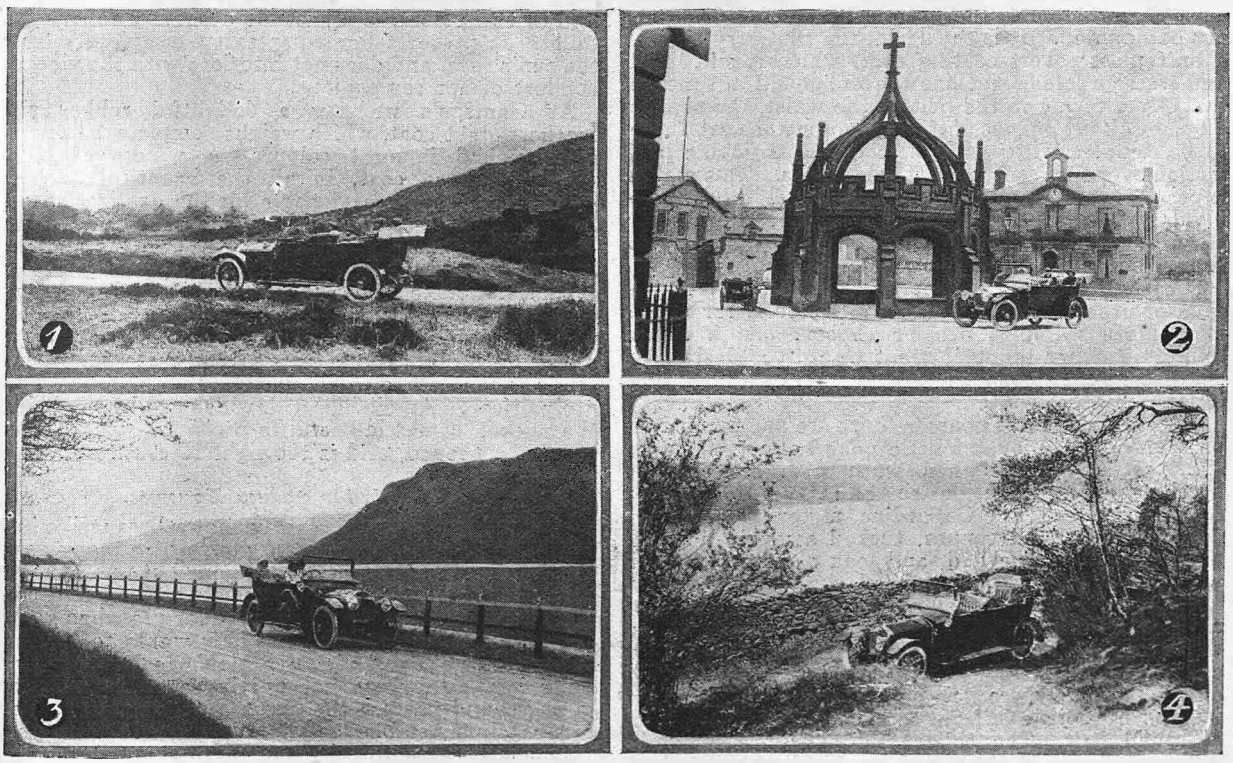
Where the shaft joins the back axle is a small toothed wheel; in gear with it at right angles is a large gear wheel, and to this latter is attached a casing containing the differential gear. I always find this the most difficult of all the mechanism for pupils to understand, and to make it really clear to a novice would require more explanation than there is space for in this article. It consists of a set of gearwheels arranged so as to allow of each half of the back axle running independently when rounding a corner. To turn a corner easily and safely, the wheel on the outside must run at a greater speed than the one on the inside, this one having a small distance to travel in comparison to the large curve covered by the other. When the car is being driven on a straight course, the axle acts as one piece, and the differential gear does not come into action. Each half of the back axle is fixed rigidly to its respective road wheel, forcing it to revolve; these two back wheels, therefore, push the whole car, the front ones only acting as rollers and steerers. These are not rigid with the front axle, which is a solid bar of steel. The movable part affixed to it is the steering gear in connection with the steering wheel. The action of this latter, together with many other details, must be left unexplained, as I have far exceeded the space allotted to me.

The explanation of how the electric spark is formed by a small machine termed the magneto, which really gives the engine its life, I have not attempted to explain, as it would take a chapter to itself.

C. Griff.

NEXT WEEK.

Lady motorists will find in the next issue several articles of particular interest. The subject of the motor picnic will be interestingly dealt with in an illustrated article entitled "Chafing Dish and Other Roadside Cookery." Another illustrated article will deal with "The Light Car and the Lady Driver." Much useful information will be found in the article entitled "The Use and Abuse of Petrol," and there will be an interesting illustrated article on "The Pleasures of the Alfresco Meal." In addition, many useful hints to lady drivers will be included.



A LADY DRIVER'S TOUR IN THE LAKE DISTRICT.
(1) Coniston. (2) Kirkby Lonsdale market place. (3) Ullswater. (4) Windermere.
(The car is a 16-20 h.p. Wolseley.)

LATEST MOTORING MODES.

Fashions of the Moment for the Feminine Motorist.

PROPER and suitable motoring attire has become a necessity for the woman who has adopted this delightful mode of propulsion as a pastime or as a means to an end.

Fashion artists, with the true instinct of their craft, have developed the most practical, sensible, and, at the same time, smart-looking garments imaginable for the use of those who motor.

While, naturally, no extraordinary vagaries can rule for the road, it is astonishing how each season presents something new, something just a little different to what we have become accustomed to and vowed it was just the best thing going and could not be improved upon.

To help the ladies eager to possess the latest thing in motor garments, we have made a tour among the shops which are patronized for their style, the quality of their materials, and are to be relied upon to have studied their clients' needs thoroughly and conscientiously.

A Buttonless Coat.

We went first to Burberry's, in their new palatial premises in the Haymarket. Here we saw at once a most desirable coat, the practicability of which cannot be doubted. It is the Tielocken Burberry model, a buttonless covert coating coat, which is silk lined and waterproofed, and has the delightful advantage that, by drawing in the belt at the waist, the coat is adjusted, tight or loose fitting. No buttons are there to be fumbled with, and this coat has a double protection over the front against cold winds. This makes it possible for the lady motorist to travel in full evening dress without fear of catching cold or injuring her gown, and, with windcuffs in the sleeves as well, no more comfortable garment need be required.

For colder weather, Burberry's recommend a homespun or other soft material, in all colours, for which five different linings can be chosen, one a fleece lining, a leather lining if great warmth is desired, a silk lining for summer weather, a wool or a fur lining for the depth of winter.

Of charming motor bonnets there are any number to be seen here. A quaint little poke bonnet, made in silk, prettily folded, when worn with one of the hand-made silk gradation fringed scarves, looks very fetching. There are Gabardine motor hats, which can be bent to all shapes, tucked away in a small pocket when not needed, and look as smart as ever when again adjusted to the head.

Next we went to Dunhill's, where we were struck by a suiting cloth coat, both light, and warm, and soft to the touch. An extra deep yoke and kimono sleeves cut in with the yoke give comfortable wear over chest and shoulders, where it is most needed. This coat is just cut up a little in front to look dressy, and has an all-round belt. The collar and cuffs are faced in different shades of cloth, and practically every colour can be had. A coloured striped tussore silk coat in saxe, sky, or helio is very smart looking. It is made double-breasted, with deep revers, turn-down collar and cuffs, which are faced in shantung to match the stripe and the revers on the pockets.

Among motor hats and bonnets the choice of a desirable model is difficult. A little Felix model, in white leghorn, edged with cerise moiré and black velvet ribbon, together with a mount of dahlias shaded from cerise into all the deeper shades. and with some more cerise moiré frilling, looked very French indeed. Another model had a tam-o'-shanter crown and a navy-blue Turkish embroidered brim, a veil knotted at the back being carried forward over the cap when needed. A chene silk and straw hat, in dead leaf colour, with the veil gathered into a ruche in front, and with long ends, should look lovely on a brunette. Green is introduced into a great many motor bonnets, and where the use of this colour looked particularly tasteful was in a navy plaited silk straw, with an apple ornament and green straw on the under brim, with a navy-blue veil to be worn over the face.

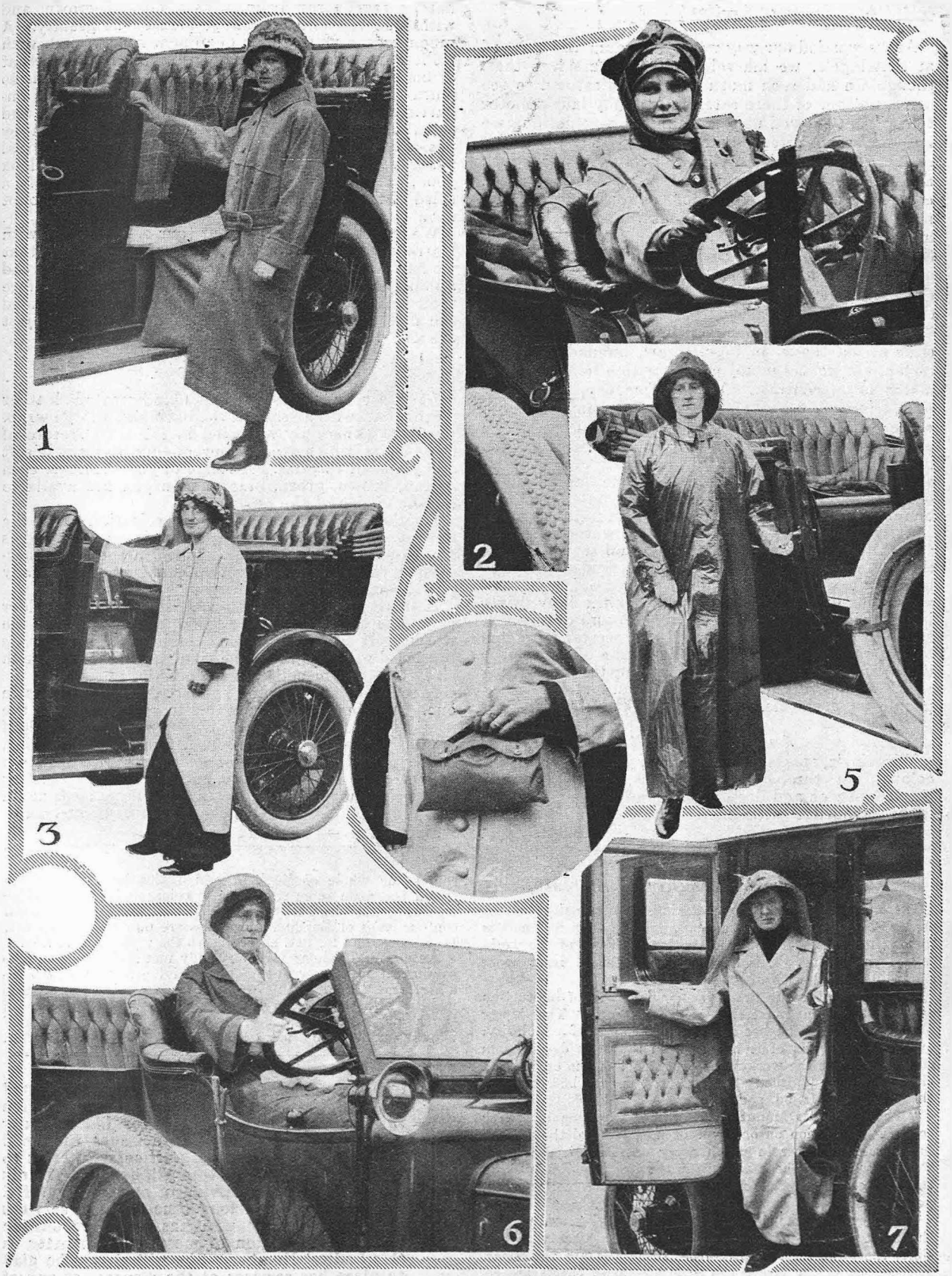
Dunhill's have a variety of addenda to motoring which are the latest fashion. A leather cushion which can be converted into a muff, with a deep pocket in front and another inside the lining, is very practical for both purposes. A collapsable auto umbrella, to fold in two places, is a sensible accessory to a lady's toilet. It protects her complexion completely from the sun's rays, and does not interfere with the view or comfort of her companions.

At Gamage's we saw a delightful rubber silk featherweight coat, which weighs complete 1 lb., and can be had in most colours. A windproof cloth double-breasted coat, in all the beautiful heather colourings, looked serviceable for the dustiest roads. This coat is lined with detachable leather, is wide and comfortable, and will take any other underslip desired. An exceedingly original and pretty motor bonnet in double soft silk merv, fashioned like a skull cap, with long silk ends that cross at the back and are finished with a tassel, should be seen. The Deluge motor waterproof cap is close fitting, fastening with a stud; it can be had in all colours, and is very moderately priced. An oilsilk hood, which can be carried in the pocket, comes in useful to protect a smart motor hat when needed, and is too light to crush it.

Unbreakable Straw Bonnets.

Some very pretty cerise straw motor hats strike just the colour absent from coats, etc., which many complexions need. Gamage's have none but unbreakable straw bonnets, which can be easily packed and carried. Separate veils are sold here for use when going out in the evening, when the hair wants to be protected but not crushed. Eyeshields in Bentine look quite neat; they are not nearly so unbecoming as goggles, and possess the great advantage that they are not inflammable, and fold up without creasing. Chamois jackets for use under single and double-breasted coats look light and cosy, and are to be found in this vast emporium.

(*Continued on page 1014*).



LATEST MOTORING MODES.

(1) A suiting cloth coat and Turkish embroidered toque (Dunhill's). (2) A two-in-one bonnet of original design (Harrod's). (3) A cherry-trimmed motor hat and a convenient tussore silk coat (Gamage's). (4) A holdall for carrying a featherweight cape (Gamage's. See page 1015). (5) An oilskin outfit for fishing and shooting (Whiteley's). (6) A neat maize and brown motor bonnet (Whiteley's). (7) A heavy tussore silk coat and an example of latest motoring millinery (Dunhill's).

D7

MOTORING MODES.—Contd.

As we wended our way westward again and stopped at Selfridge's, we marvelled among ourselves that, though we had seen much and were destined to see more, not one of these caterers for "my lady's motor toilet" but showed us something new, something we had not seen before, and which, with all we had seen, still proved desirable. A new note was struck at Selfridge's with a corduroy velvet waterproofed coat, with deep-set sleeves, for comfort over any garment worn, with a box pleat at the back and in a lovely dark grey colour. A silk Gloria waterproofed coat, to be had in blue, brown or grey, is moderately priced. The leather shell linings, with windproof chest and sleeves, are here sateen lined, and to be had three-quarter and hip length, in any colour.

In motor hats and bonnets the choice is varied. A close fitting toque, in tagel straw, banded in bright tartan, can be had in any colour, with a fold-up veil to match or in contrast. A gendarme cap, in Nattier blue, trimmed striped ribbon, will find many admirers, while others will be drawn to a little turban shape with a rolled-up brim. Cire ribbon, the latest French invention for smart effect, without destruction by inclement weather, looks elegant on one child's motor bonnet, while another, with rosebuds and velvet ribbon on a suitable child's shape looks fascinating.

At Whiteley's we were struck by a waterproof coat and skirt which looked so elegant and serviceable at the same time that we had to feel it and weigh it to believe it was true. This most original, all-round sports costume, specially suitable for the lady driver in a touring car, is to be had in helio and orange. A tango-coloured oilsilk coat and sou'-wester to match look businesslike, and especially as the oilsilk coat is lined and does not show in silhouette everything which is worn underneath, it would strike many people as desirable.

An Attractive Veil.

Whiteley's sports coats, belted, to be had in all colours, in three-quarter lengths, with strapped Raglan sleeves and deep sports pockets, have proved great favourites with their clients. Among motor hats, a tagel straw brim, with a Turkish crown, and with blue veil and trimming, pleased us greatly. A ninon broché veil, with a deep hem run through with ribbon and immediately adjustable on any motor hat or bonnet, and becoming to most faces, pleased us so much that, though conducting our tour with the impartiality of judges, we went back the next day, and each, unbeknown to the other, became the happy possessor of a ninon broché veil. Jay hats in real suede in all colours are very serviceable and look good. When new, the imitation suede, for nearly a third of the price, look quite good too, but we doubt their quality in wear.

We decided to round off our tour of inspection with Harrods Stores, convinced, in our own minds, that we had then done our duty to our readers and spread a galaxy of the most desirable motoring attire before their mind's eyes for them to choose which sounded the most fascinating, and which might prove "just the one thing needful."

Two Hats in One.

At Harrods we saw a double-breasted leather motor coat, with a strap at the back and a large wrap. The best skins only are used in the manufacture of these coats, which are, in consequence, extremely soft and pleasant to wear. A range of good colours, such as tan, brown, green, blue and purple, are available for the choice of the purchaser.

Another leather coat in a good selection of all the newest shades is particularly light in weight, and is made of best Chroe leather. Lined in check weather-all material, this coat is very popular among the lady patrons of this stores.

A smart motor travelling coat, in the long shoulder cape effect, gives a very good appearance to the wearer. It is made in good quality wool velour, is light and warm at the same time, and half-lined with silk. The storm collar is adjustable.

A really original motor bonnet here is two hats in one. A patent catch concealed in each rosette of the pretty toque, which coquettishly frame the lower half of the face, when released form two long silk strips, which give the bonnet a decidedly serviceable appearance for motoring, and, in its way, looks just as smart as when the strings are pulled to form again two rosettes.

LOUISE LEDERER.

Publications for Lady Motorists.

There are two sides to motoring—the practical aspect associated with driving on the road, and the other and no less important one is that concerned with the theory of the working of the engine. This can only be gathered from books amply illustrated with diagrams.

Chief among these is that ever-popular book of instruction on everything in connection with the car, "The Motor Manual." This book has a wonderful record of popularity, over 300,000 copies of it having been sold. It describes in simple language the working of every part of the engine and chassis. It is published at 1s. 6d. net, or will be sent from these offices for 1s. 9d. post free.

"The Light Car Manual" has proved very popular owing to its concentration on one type of machine and the exceedingly simple manner in which every operation is described. For ladies new to the pastime it is the most suitable book on the market. The price of this book is 1s. 6d. net in cloth, post free 1s. 9d.

The question of maps is an important one. Naturally, from the point of view of showing everything as plainly as possible, the large scale map scores. But there are objections. For one thing the larger the scale the more sheets are required to cover the country, and with a quickly-moving vehicle like a car this means that the map has continually to be folded and re-folded. Probably the best scale and the one holding the balance most fairly between the two extremes is that of three miles to an inch. This is the scale adopted for "The Motor" series of coloured contour maps. This series covers the whole of England and Wales in 23 sheets. It shows the main roads very boldly coloured in red, and the various heights are indicated by colours. THE MOTOR coloured contour maps of England and Wales are published at 2s. net, 1s. 6d. net, and 1s. net, according to the style of mounting.

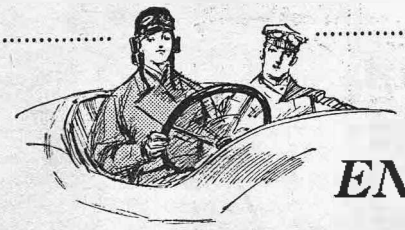
An essential volume for every lady motorist who wishes to attain real proficiency in the art of driving is "How to Drive a Motorcar." This book deals in a most striking and original manner with the various problems of driving as encountered by the present-day road user. "How to Drive a Motorcar." is published at 1s. 6d. net, or 1s. 9d. post free from this office.

LADY MOTORISTS

into whose hands this issue comes are informed that THE MOTOR has always given attention to the subject of motoring for ladies under various headings. In future issues they will find articles and news of particular interest to them, and a special feature will be made of hints and advice on the driving of motorcars. THE MOTOR has for a long time had the services of "Mechaniste," who has been responsible for the compilation of most of the matter in this Ladies' Number. She will always be glad to place her services at the disposal of any of our readers requiring information or advice, and letters should be addressed to her care of the Editor, THE MOTOR, 7-15, Rosebery Avenue, London, E.C. Needless to add, we shall always be glad to receive contributions and experiences from our lady readers.

LATEST MOTORING MODES.

(1) The smart appearance of the Garrick coat with a two-in-one toque and rosettes in place for touring wear (Harrod's). (2) Another view showing the convenience of the two-in-one toque for driving (Harrod's). (3) The Tielocken coat, a buttonless covert coating coat, which is silk-lined and waterproof; it can be worn tight or loose (Burberry's). (4) A waterproof coat and skirt, maize and brown bonnet, and maize veil to match (Whiteley's). (5) Featherweight silk cape and silk motor bonnet (Gamage's). This cape is compactly folded in the holdall shown on page 1013. (6) An oilsilk outfit for fishing and shooting (Whiteley's). (7) A corduroy velvet waterproofed coat (Selfridge's).



WHY I ENJOY MOTORING.

Some Interesting Experiences by Lady Motorists Who Drive Cars of Various Makes and Sizes.

ON being asked by the Editor to write my experiences on the road and track, I felt very uncertain as to whether I could comply with his request, as there did not seem to be anything to write about. However, on being urged to make the effort, incidents long forgotten returned to my mind, and the variety of cars, etc., that I have driven is, I suppose, rather a unique list for a lady motorist.

The first car I ever drove was a 10 h.p. M.M.C., and on this I was given my first driving lesson. The M.M.C. was far from being the easy thing a car of 1914 is to drive, and required a great deal of coaxing to persuade her to face some of the hills she had to be put at. But I never found it difficult even then, which I attribute to having become so familiar with the mechanism before making any attempt at the actual driving.

Experiences of hard work and a thorough mechanical knowledge I obtained at the motor omnibus repair works of the company which was running a large service in the county I live in. Here I learnt fitting and turning, and I was never allowed—for which I now feel grateful, but not always at the time—to give in as finished any bit of work unless up to a first-class works standard. After the M.M.C. I continued my driving experiences on the omnibus, which as a pupil I was allowed to drive, when not on public service. This particular omnibus I hired for a picnic party. The Mines-Daimler type were my favourites for driving, although none of them, Thornycrofts or Wolseleys were really difficult to manage, even round hairpin bends and in narrow country lanes. In fact, for a long while I did not really like light motorcars, but quite missed the buses.

When I bought a car for myself I chose a 12 h.p. Lanchester, as the machinery was delightfully interesting and worth learning. On this car I had several tours, and took my R.A.C. driving certificate on the second day I had ever driven in London traffic and on terribly greasy roads, but I had no trouble with skidding, which speaks volumes for the now despised tiller steering, which I gave up with much regret. I took at the same time my mechanical proficiency certificate, which was an extraordinary novelty in those days. Makers and owners, knowing my penchant for driving all sorts and conditions of motor vehicles, have been very good, and many are the offers I have had to take the wheel of strange machines.

Two of my most amusing experiences were taking a large traction engine through Aldershot and driving a London "General" omnibus in Bushey Park. The latter was on the occasion of the International Road Congress last year, which I was attending; it was when we all went out in a specially reserved fleet of "Generals" to see the wonderful laboratories and Col. Crompton's road testing machine. A prominent member of the committee having given me away by telling the chief driver—whose omnibus the committee and myself were using—that I was the lady motorist who had learned to drive the motor omnibuses, when we arrived at Bushey I received offers to try nearly all the omnibuses of our party. I contented myself, however, by taking the wheel of one, and I thoroughly enjoyed handling again one of my old friends.

When I sold my Lanchester car I was some time before I finally decided what to get. In the meantime I tried a little Sizaire, a Swift, and various other small and medium-powered cars, but they none of them really satisfied me as to power, so then I tried a 40 h.p. Weigel, which was delightful to drive, but something transpired which caused me to give up the idea. I

PRINCESS TAKES TO MOTORING.

Princess Bariatinsky, the producer of Tolstoy's famous Russian drama, "Anna Karenina," which is successfully running at the Ambassadors' Theatre, is taking up motoring as a recreation, and drives a Berliet car.

WHY I ENJOY DRIVING.—Contd.

then progressed upwards to a 75 h.p. Isotta and a 120 h.p. F.I.A.T.; this latter was the one that attracted me, but in those days the cost of tyres for it was too much to use it as a touring car.

In the end I bought a Targa-Florio type F.I.A.T., and have been more than satisfied with it; in fact, she pulls far better now than when I first got her. She is very high geared, but even with this I drive mostly on top speed, in spite of friendly warnings from the F.I.A.T. company that in my hilly district I should never be able to use the fourth speed. They were anxious to reduce the gear to make it more of a lady's car, but, as I told them, I strongly object to driving "ladies' cars," they are too easy and uninteresting. On the Continent one reaps the benefit of the high gear if combined with hill-climbing power, as I found when touring France on my F.I.A.T.

Driving in France and driving for the first time at Brooklands are surely among the most pleasant experiences that can befall the lot of an enthusiastic driver. The first time I saw the track stretching out before my wheels I had much the same feeling as I suppose a released prisoner experiences. Absolute freedom from all the worries of the road, such as children, dogs and pedestrians, is a curious sensation, and real enjoyment is felt at seeing the speedometer pointer moving round towards the last numeral. I have tried several cars on the track, but I think the most delightful from a comfort point of view was a 28 h.p. Sheffield-Simplex. It was simply extraordinary how she held the track when I was taking her round at an easy 60 m.p.h. A friend who was riding in the back seat told me she hardly felt the bumps of the track at all; for Brooklands this is saying a great deal.

During my motoring career I have only had one unpleasant experience and one curious sensation. The unpleasant incident was my first and—so far—only visit to the police court. Through the ignorance and jealousy of a male motorist the police were set on me—not by their wish, however—like a terrier on a rat, to summon me for driving to the public danger, but the charge being proved utterly ridiculous, my eight years licence is still clean.

However, my opinion of "the mere male" is not as fit for publication as my licence. The curious sensation was when I drove a friend's little Swift cyclecar. Having always driven such big cars, I felt I must look as though viewed through the wrong end of a telescope, but I found the tiny thing extraordinarily lively and smart to handle.

As a conclusion to my weird list of the motor vehicles which I have driven, I must not forget to add a prominent municipality's motor tip-wagon.

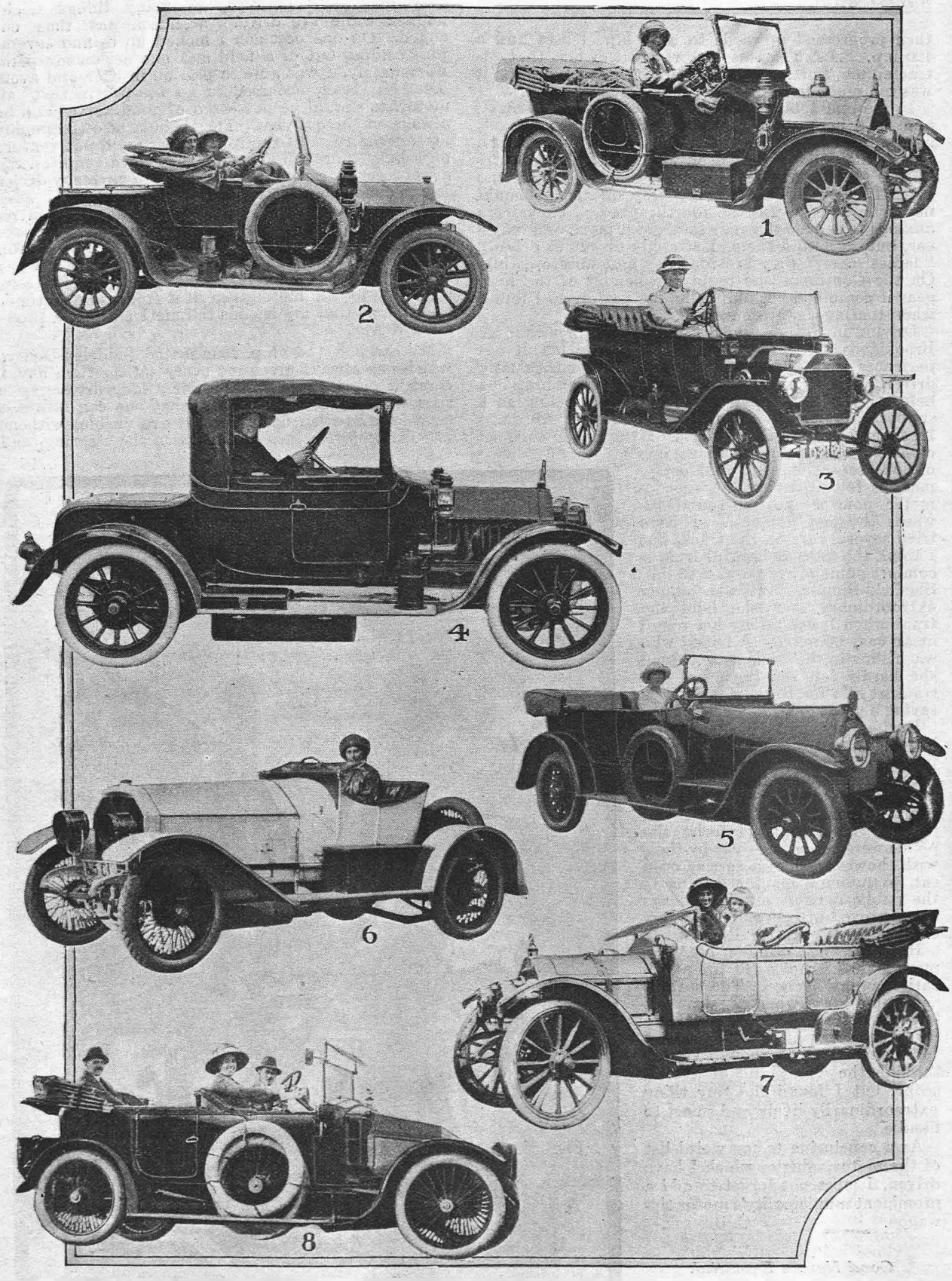
C. BENEST.

Good Nerves Essential.

I commenced driving in 1912, and found my first real difficulty was to change gear without looking down to see in what position the gear lever was. This, of course, is a very dangerous practice, as many things might happen while the driver's attention was thus engaged. On one occasion I looked up to find several pigs coming out of a field and one across my path. Fortunately, I was able to pull up in time and avoid disaster. Such occurrences go to prove that all motorists should be possessed of good nerves and be always on the qui vive. They should also thoroughly master the rules of the road, and should not venture on a busy thoroughfare until they have acquired the art of steering a straight course, as an unsteady driver is a menace to all other users of the road. I have had some very friendly salutes from motorists in recognition of my courtesy in allowing them to pass when they wished to do so. I have read THE MOTOR ever since I commenced driving, as I have always found it very instructive, and I have benefited considerably by the hints given in it from time to time, so much so that my friends tell me I am now a proficient driver.

My car is a 14-20 h.p. four-seated Siddeley-Deasy, which has always given me every satisfaction, and I think it particularly suitable for a lady driver, as it runs so smoothly and silently that one can attain a good speed (when no policemen are visible) without any discomfort. It is very light in the steering, and

Lady motorists off for a day's golf.



SOME LADY MOTORISTS WHO THOROUGHLY ENJOY DRIVING.

(1) Miss W. J. Scott (13-18 h.p. Bedford-Buick). (2) Miss Gladys Carlyon on her Bedford-Buick car. (3) Mrs. Briard, a motorist from the Channel Islands (Ford). (4) The Hon. Mrs. Roderick Douglas on her Bedford-Buick car with Triplex safety glass. (5) Miss Lloyd, Broadway, Worcester (20-30 h.p. F.I.A.T.). (6) Miss C. de H. Benest (20 h.p. Mercedes). (7) Miss Benest on her F.I.A.T. (8) Miss Adele C. Barnett (Siddeley-Deasy).

WHY I ENJOY DRIVING.—Contd.

the gear change is also very easy. I have this spring had a Mira lighting set fitted, which has proved very satisfactory: it is simple to manipulate and gives a perfect light. I think where possible a lady's car should have a lighting set on it, as it is so clean and obviates making oneself dirty with paraffin burners and messy acetylene generators.

I have had one accident, fortunately of a minor nature, which I thought rather amusing. I was travelling slowly through a herd of cattle near Ely, when a cow suddenly walked in front of the car, with the result that one mudguard was bent and a lamp smashed, but the cow practically uninjured. The irate owner immediately rushed up, blaming me for furious driving, and said he had my number, etc., etc. After calming him somewhat, he said that he did not actually blame me, but was down on all motorists, as he had had two horses killed by them. On asking how this calamity occurred, he said that the horses, which were grazing by the roadside, had taken fright at the oncoming car and run on ahead of it for several miles, and while in a very heated condition they drank some water, which caused them to die. This is an instance of some of the things we poor motorists get blamed for.

ADELE C. BARNETT.

London, N.

Through France and Spain After One Month's Experience.

My motoring experiences extend over a period of six months, but during that time I have done 5000 miles in a 15-20 h.p. Studebaker, chiefly in France and Spain. Before purchasing the car I went through Miss Preston's course of instruction, and with no further experience than that obtained by a month's driving about London I boldly decided to take the car to the South of France, and it proved to be one of the pleasantest holidays I have ever spent. The R.A.C. representative met us at Bordeaux, which was our starting point. Together with seven other cars he led us to his garage, I feeling very nervous as to my driving, as my companion kindly reminded me all the time to keep to the right of the street. The next morning we started off for our destination, which was Pau. What with one thing and another, it was dark before we had reached the end of our journey, but after several adventurous experiences with our lamps we were very glad to see at last the lights of Pau. During the following weeks we explored the neighbourhood, and beautiful country it proved to be. We had practically no trouble with the car, but had to be careful as the petrol was such bad stuff. The car being a wonderful hill-climber, we had no trouble, even on the worst hills of the Pyrenees. We never had a puncture, though the roads both in France and Spain were very bad. Fifty miles of the return journey from San Sebastian to Bordeaux was over pavé of the worst description.

S.A.H.

20,000 Miles Per Annum by a Lady.

It is not often that a lady is seen at the wheel of a car of 45 h.p., but it can safely be said that Miss Edith Barrett handles her powerful Napier with the greatest ease. It is interesting to record that Miss Barrett has now driven cars for 15 years, and prefers the six-cylinder to the four-cylinder type. She was the third lady driver to be granted a driver's certificate in the United Kingdom, and her mileage record for the last few years had exceeded 20,000 miles per annum. Apart from being an expert driver, Miss Barrett has a thorough knowledge of the mechanical construction of a car, and can do ordinary repairs. From these figures it would appear that Miss Barrett has driven more miles and for a longer period than any other lady driver.

350 Miles Covered Per Week Professionally.

I purchased a 15-18 h.p. Bedford car in May, 1912. Since then I have run some thousands of miles. During the last three months I have driven professionally, averaging about 350 miles a week in all weathers, and over some of the worst Cornish roads. I have had practically no trouble since the car was overhauled 18 months ago. I find it a wonderful hill-climber, and it is a very rare occurrence for me to drop down into second.

GLADYS CARLYON.

The Value of a Self-starter.

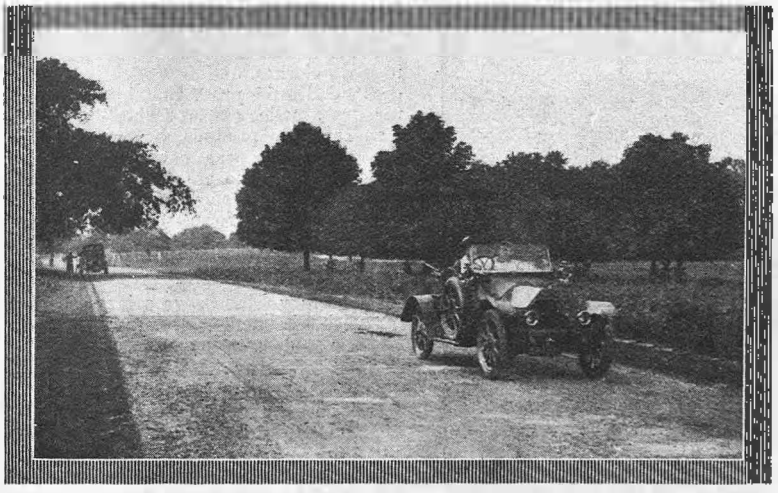
So far my experiences of motoring have not been very varied, as I have driven only since last autumn, and have not yet done any touring; but I can give a few impressions which may be helpful to any lady wanting to start a car. I think any woman with a good head ought to be able to drive—and drive well, but her head and nerves must be steady. There is nothing to be afraid of but fear. . .

I have had two cars. My first was an English car, and my present one is a Ford, so I can speak of both. I find an English car perhaps more interesting to drive, but I think a Ford, for a lady, is the simpler and less fatiguing to drive. The great points about a Ford are the smoothness of its running and its hill-climbing powers. Of course, it has not the smart, racy look of an English car, and no one could expect an expensive, luxurious body for the price charged.

I found it a little difficult to start at first (any 20 h.p. car is for a woman), and as I had no chauffeur, I had an automatic Ever Ready self-starter fixed, which has been eminently satisfactory. If, as sometimes happens, it does not start immediately on a cold morning, the starter can be wound up with a key in the same way as a clock. There is no danger of a backfire, and it is, therefore, much easier and safer for a woman. The starter is operated from the driving seat. I think if the price were not quite so high, no one—certainly no woman—would be without one. It also saves petrol, as one does not hesitate to turn off the engine at every stop, however short. I hold no brief for either the Ford people or the self-starter. I am writing this purely in a friendly way, from a personal point of view, and from my own experience.

MRS. ERNEST BRIARD.

Jersey.



Richmond Park with its 12 miles limit is a favourite learning place with lady drivers.

WHY I ENJOY DRIVING.—Contd.

An Inclusive Tour on a Bedford.

My car is a Bedford, a car in every way suited to the lady driver, and one quite easy to drive, with no tiresome changing of gear, even here in the Isle of Wight, with its innumerable hills and twisty lanes. She runs on top gear till one almost forgets that such a thing as gear changing exists. I have done a great many tours on the mainland, my last trip being last month. We crossed by Cowes to Southampton, which is my favourite crossing, as it is the only one where you run your car straight on to the passenger boat. You know what time to the minute you will start and arrive, and at Southampton you run straight off again on to the pontoon. We went via New Forest, Lyme Regis, Launceston, Falmouth and Marazion to Land's End. At Penzance we left the car, and took the steamer to Scilly. The beauties of the islands somewhat compensated us for the discomfort of a rough 4½ hours crossing, but I for one was glad to get back the following day to my little car, which took us down to that most picturesque spot, Fowey. On the next day we went to Torquay, the "garden city," and on to Chudleigh. The next day we spent at Glastonbury, so as to give us some time to admire its beauties—the abbey ruins, the Tithe Barn (still used as such), the Abbot's Kitchen, and the Tor. Next day on to Wells, Bath and Newland (Glos.). From there we visited Tewkesbury, Chepstow, Gloucester, etc., then to Shrewsbury, and all through North Wales, from Aberdovey to Conway, by the coast road, visiting Harlech and Carnarvon Castles, which are well worth a visit. At Conway there are many places to see—Plas Mawr, the house where Queen Elizabeth lived; Aber Conway, thirteenth century house, still in good preservation; and the castle. From there we went by the only bad road to Holywell to visit St. Winifred's Well, and on to Denbigh, and from there to Bettws-y-Coed we passed through some of the most beautiful scenery, I suppose, in the United Kingdom. From Bettws we made short work of the mountains and the mountain passes, coming by Festiniog and Dolgelly back to Aberdovey. From there to Brighton took only two days, breaking the journey at Cheltenham, and so home again. One of my tours with this car was 2232 miles, with never so much as a puncture nor even a sooted plug. I love motoring, am my own chauffeur, and as long as my Bedford continues treating me well I shall certainly stick to that make of car. She is one of the easiest to manage that I know and very nice to drive, and as I have driven at various times 17 other makes, I am speaking from experience. I have covered nearly 16,000 miles up to the present. (Miss) W. J. Scott.

Isle of Wight.

Motoring as a Profession.

I took up motoring two years ago, and soon became much interested in my car (a Wolseley). Of course, motoring fascinated me, but finding it expensive I went in for touring, etc., professionally. I love the life, and apart from a fair amount of work which one gets when one looks after a car entirely, such as washing, I manage to get an enormous amount of pleasure out of it. So far I have never been in any serious plight on the road, punctures being about my most numerous troubles, but even in these usual motor difficulties I do not think another car has ever passed me without slowing up to see if I wanted help. The freemasonry and general friendliness between motorists is, I think, delightful. For a girl who is strong and who likes meeting new people and going to new places, I think it is quite an interesting life. I have done a fair amount of touring in various parts of England, and also in Wales, my home being now in Anglesey. (Miss) E. Henton Carver.

Five Years Driving.

Miss Palmer, of Dorny Court, Windsor, has driven for five years, taking delivery of her car in 1909, but before this she had tuition for three months, so that she has been able to do all her own adjustments and repairs, and has always driven her car, a 15 h.p. Napier, herself.

Light Cars for Lady Golfers.

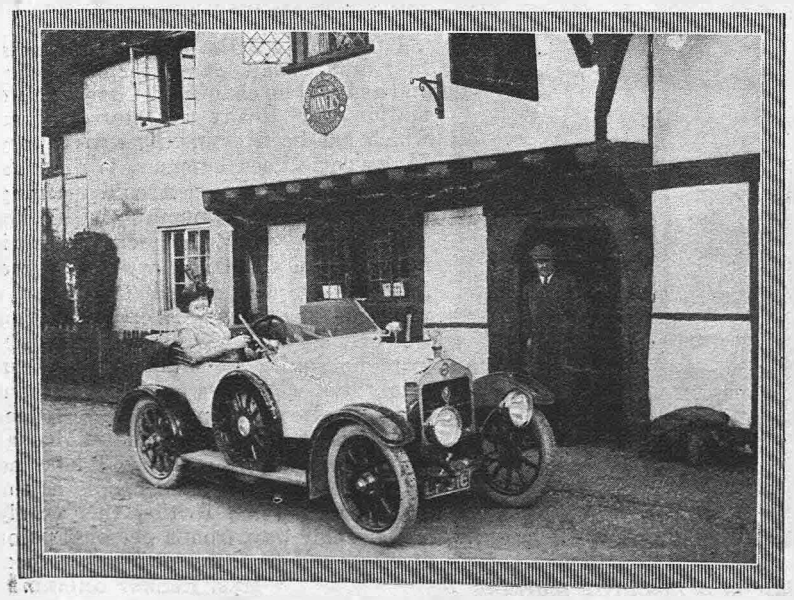
Lady golfers find their cars of great convenience in driving to the links, and among the members of the Stratford-on-Avon club, Miss A. Ashwin is an enthusiastic driver of a water-cooled Humberette.

Dispensing with the Chauffeur.

Mrs. Rhodes has been a driver of a motorcar almost as long as any lady in England. She drives a 15 h.p. Renault, managing the engine entirely herself, and is able to dispense with the aid of a chauffeur.

Learning to Drive at Seventy-five.

In a contemporary we noticed the heading "Never Too Late to Learn," referring to a lady of sixty who had just learnt to ride a motorcycle, but even more wonderful than this is the case of Mrs. Thompson, who was seventy-five before she started driving, and now handles the wheel of a B.S.A. car with much ease.



A lady driver of a Singer light car.

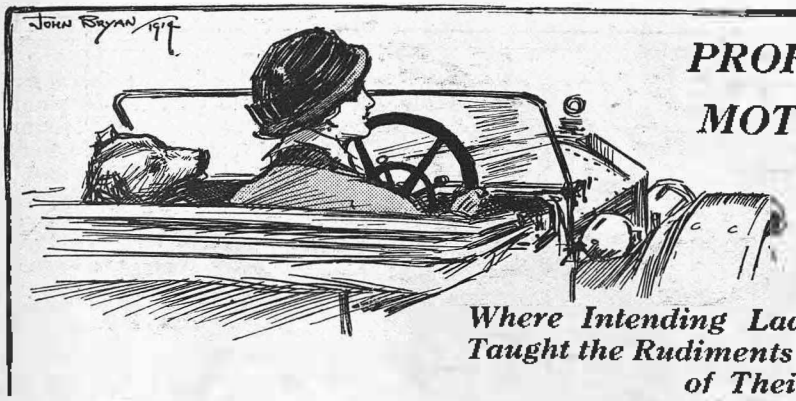
D16

A motorist was recently convicted and fined for refusing to produce his licence when requested. It appears that the policeman who made the "request" was in plain clothes, and defendant naturally demanded some proof that his interlocutor was a police officer. This the policeman failed to produce, but nevertheless the defendant was convicted. There seems to be something wrong, as it is only necessary to show one's licence to a policeman in uniform, or to a plain-clothes constable when he produces his warrant.

Miss Mary Ellis drove a large Spyker car with conspicuous skill at the Essex Motor Club's meeting at Southend.

TO OUR LADY READERS.

Although we have devoted so many pages to matter of interest to lady motorists, we regret to say several interesting illustrated articles are held over. These will appear in the next and in subsequent issues.



PROFESSIONAL LADY MOTORISTS AND ENGINEERS.

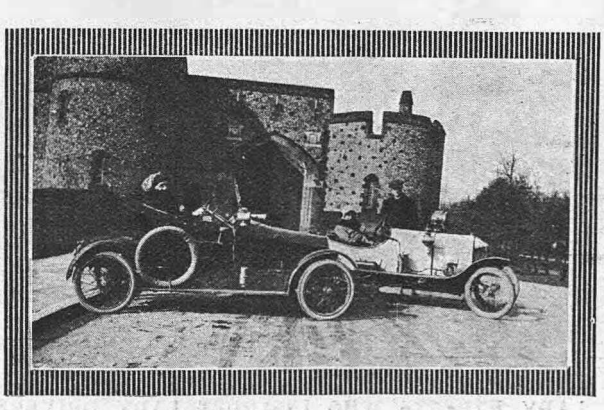
Where Intending Lady Drivers may go to be Taught the Rudiments of Motoring by Members of Their Own Sex.

A FEW years ago there did not seem to be a big opening for ladies to take up motoring professionally, but now the field has become so large that there are various openings for enthusiastic lady motorists. There are two or three ladies carrying on most flourishing businesses in London, and one or two in the provinces.

The first to start a ladies' motor school in London was Miss Aileen Preston. She has a most successful establishment at 2, St. Mary Abbott's Place, Kensington, where she will be found busy with pupils every day in the week from about 10 a.m. until 1 o'clock, and from 2 p.m. until 5 p.m., with the exception of Saturdays, when she is only there for a little while in the morning. Among ladies who wish to learn to drive and manage a car, the idea is very popular to learn from one of their own sex, for what one woman does, so another feels that she can equally well accomplish, and, provided the teacher is as well qualified as Miss Preston undoubtedly is, the scheme cannot be bettered.

Facts support this theory, as the Ladies' School of Motoring is so full up with pupils that Miss Preston has recently taken a partner, and they tell me that even now they are so busy that both their instruction cars are being used all day and every day. This proves what an enormous number of women are taking to motoring for pleasure, and also professionally, for the strict rule of this school is that no male pupils are instructed. Miss Preston's school is under the recommendation of the R.A.C., for whose certificates she prepares any pupil who may want to pass the special examinations.

Those who wish to go in for this are often those who mean to take up motor driving professionally, as many girls are now doing instead of the old-time occupation of governessing. Numbers of ladies who have a car are only too thankful to engage a girl who can take her turn at the wheel, or drive the children out. Those who are wise in their generation will therefore prepare themselves to combine a little book-learning with their motoring, as there is a sure field of occupation opening out in this direction, many mothers not caring to trust their offspring to the doubtful care of a male chauffeur. Respecting terms for instruction, I leave Miss Preston to speak for herself; but readers can rest assured that they are reasonable.

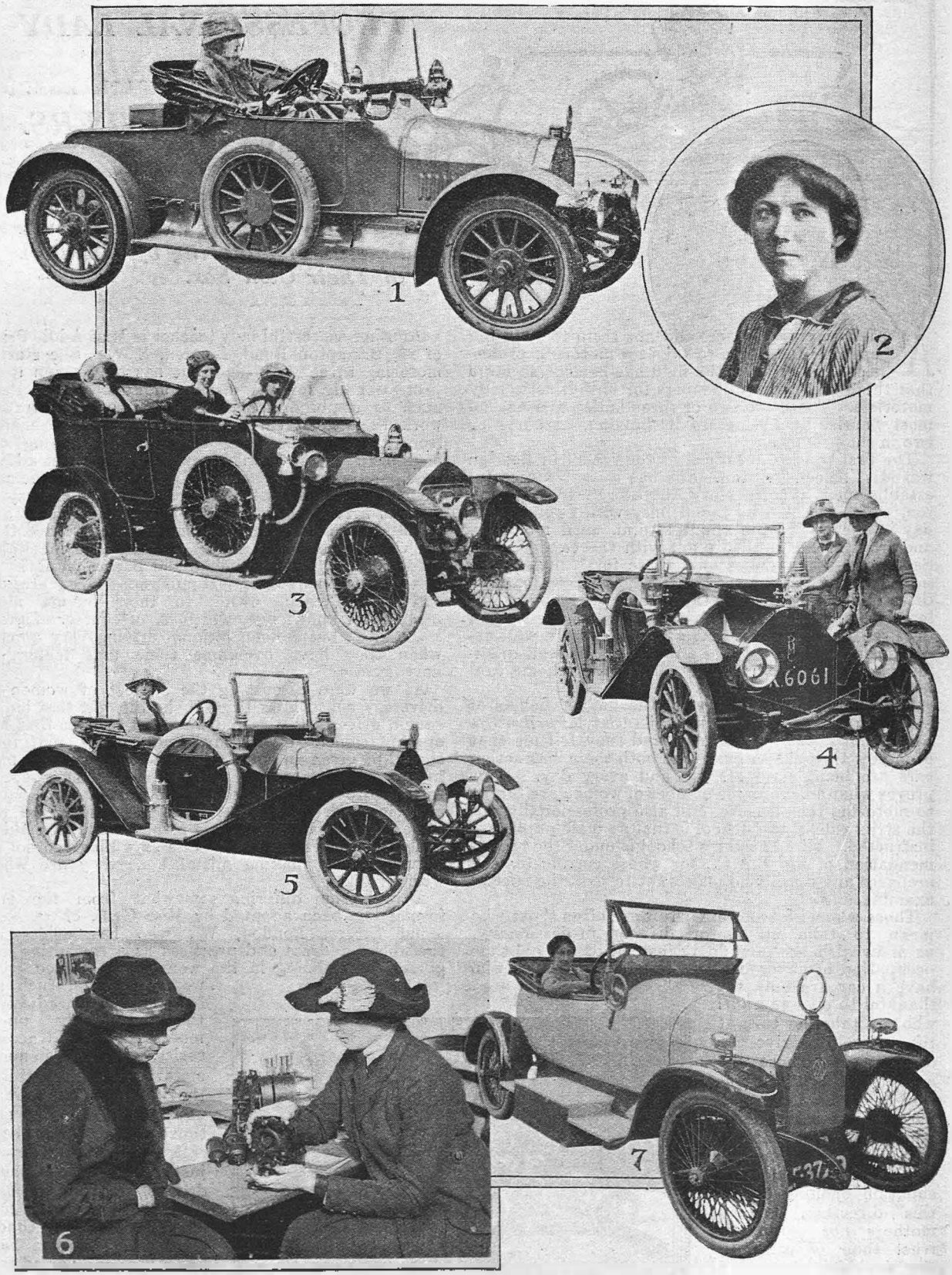


The light car is eminently suited to the requirements of the lady who wishes to drive. Photo. shows two of such vehicles which are driven every day by ladies.

Another successful lady teacher is Miss Addis Price, of 22, Brompton Road, London, S.W. She started motoring three years ago, but has only taken it up professionally for the last 18 months. Miss Price likes to combine her teaching with demonstration work, the latter giving her a rest and pleasant change from the arduous work of constantly taking out beginners. To show off a new car to the best advantage, impressing a prospective purchaser with the particular good points of various cars, is not so easy as may at first appear, and requires good driving and careful judgment. On hearing from Miss Price that she teaches both men and women, my next inevitable question was, "Which make the better pupils?" I was given a sure but just answer: "Men are the easiest to teach, owing to their having more mechanical knowledge, which is, of course, of great assistance; but women pick up driving very quickly when they have overcome their first feeling of nervousness."

As we were discussing the subject of women as drivers, I asked Miss Price if she thought that ladies should drive in trials, and was glad to hear that her opinion coincided with my own, namely, that they should be given an equal chance to compete with men in touring trials, and that there should be a special race at Brooklands, to show that women are capable and clever drivers. Miss Price has also found the same point as Miss Preston in respect to our sex liking to learn from each other. She says they are not so nervous about making mistakes as they are when with a man.

A profession differing somewhat from the two former has been adopted by Miss Griff, of 52, New Bond Street, London, W., who has offices at the above address and practises as a consulting engineer, specializing in the work as connected with women's needs, such as buying and advising them generally upon motorcars and all accessories, etc., and also upon motoring garb, a thing the male engineer cannot undertake. Being an enthusiastic motorist herself, she is able to know just what other lady drivers want. Another feature of her work is the examination of second-hand cars. As she has had a long and varied engineering experience, and holds certificates from the chief London examining boards, she is fully qualified to undertake this work. Now, as buying a



LADY EXPERTS WHO INSTRUCT LADY DRIVERS.

(1) Miss Griff, on a 12 h.p. Swift. (2) Miss A. H. Nevill, who is an expert lady chauffeur. (3) Miss E. Henton Carver on a 12-16 h.p. Wolseley. (4) Miss Preston (on right) instructing a lady pupil. (5) Miss Preston at the wheel of her Seabrook R.M.C. (6) A lesson on the magneto by Miss Preston. (7) Miss Addis Price.

PROFESSIONAL LADY MOTORISTS.—Contd.

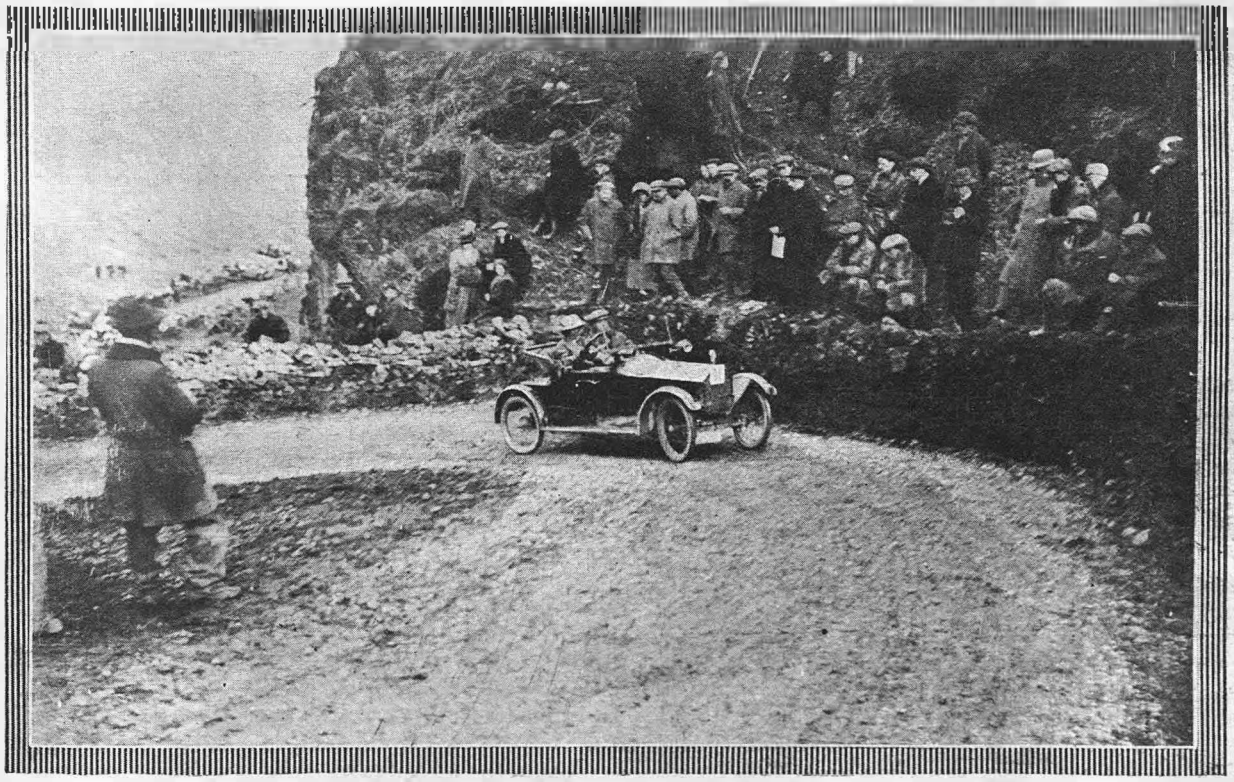
car which is not absolutely new is as tricky as buying a horse when one has not a vast experience of that animal, lady readers should be glad to hear of one of their own sex upon whom they can rely to find out "fakes" for them.

Miss Griff was also telling me about her scheme of arranging motor tours for ladies. For those in England who do not care to have the trouble or expense of a car of their own, but who want to spend their holidays motoring in England or on the Continent, she is able to provide a car with a reliable lady driver, who will also undertake to act as guide. For visitors to England from abroad this arrangement should be a real boon, for I find they can obtain a car at about half the price some of the large hiring agencies charge. However, where Miss Griff's work differs from that of other ladies who have taken up motoring professionally is in the fact that she is a fully qualified engineer in the other two branches, namely, mechanical and electrical work, so that she is consulted by ladies upon all sorts of subjects, such as fitting up their houses with electric light and advising lady farmers what machinery to buy. In fact, she is prepared to give advice upon any of the household points with which the ordinary engineer does not trouble himself, and to pay much attention to feminine requirements.

In the provinces Miss Neville was one of the first ladies to start a motor garage of her own. I paid a special visit to Worthing to call upon her, for it is here that she carries on her very successful venture. Starting with the possession of a little Rover car, she commenced by hiring this out with herself as chauffeur. This was nearly three years ago, and from that small beginning this plucky lady driver has become the possessor of quite a fine fleet of cars. Finding that ladies, old and young, and nervous old invalid gentlemen, liked to be driven by a lady, she soon worked up quite a flourishing hire business, and was enabled to buy the three Hudson cars she now runs. One is for public hire work, and is driven by her head man, another is an open touring car on which she teaches driving as well as using it for hire work, and the other is a large landaulet, which she never allows anyone but herself to touch, and is kept in perfect condition, with the appearance of a well-appointed private car. It was on this that Miss Neville took me for a most enjoyable spin round Worthing, and I must say from my experience I was not surprised to hear that she was busy all day and every day, as she is an excellent driver, and the car is particularly comfortable.

Miss Neville's great difficulty, she told me, was the finding of suitable premises for her cars, as she would like to have a properly arranged garage, in which she could show new models, etc., for she undertakes the sale of these and accessories, but at present has to direct all her business from her own address, viz., 4, The Steyne, putting her cars in two small garages. Some of Miss Neville's success has come to her through her indomitable energy, as she is up nearly every day at six in the morning, getting the cars ready and superintending her man, while in the evening she is constantly out until 11 p.m. and sometimes until 2 a.m., as her services are often required for concerts and dances.

Another lady in the provinces who has taken up motoring as a profession is Miss E. Henton Carver, a late pupil of Miss Preston. She took up motoring two years ago, buying a 12-16 h.p. Wolseley, and finding, as we all do, that motoring had such a remarkable fascination, she decided to take it up seriously, so obtained her R.A.C. certificate and started "chauffeuring." Miss Carver hires out her car for touring and gives lessons in driving and running repairs, in all of which she has met with much success. MECHANISTE.



LADIES IN COMPETITIONS.

Lady drivers have competed recently in a number of competitions, mostly on light cars. The photograph shows a lady driver handling a Humberette with conspicuous skill on a difficult bend in a recent light car competition.

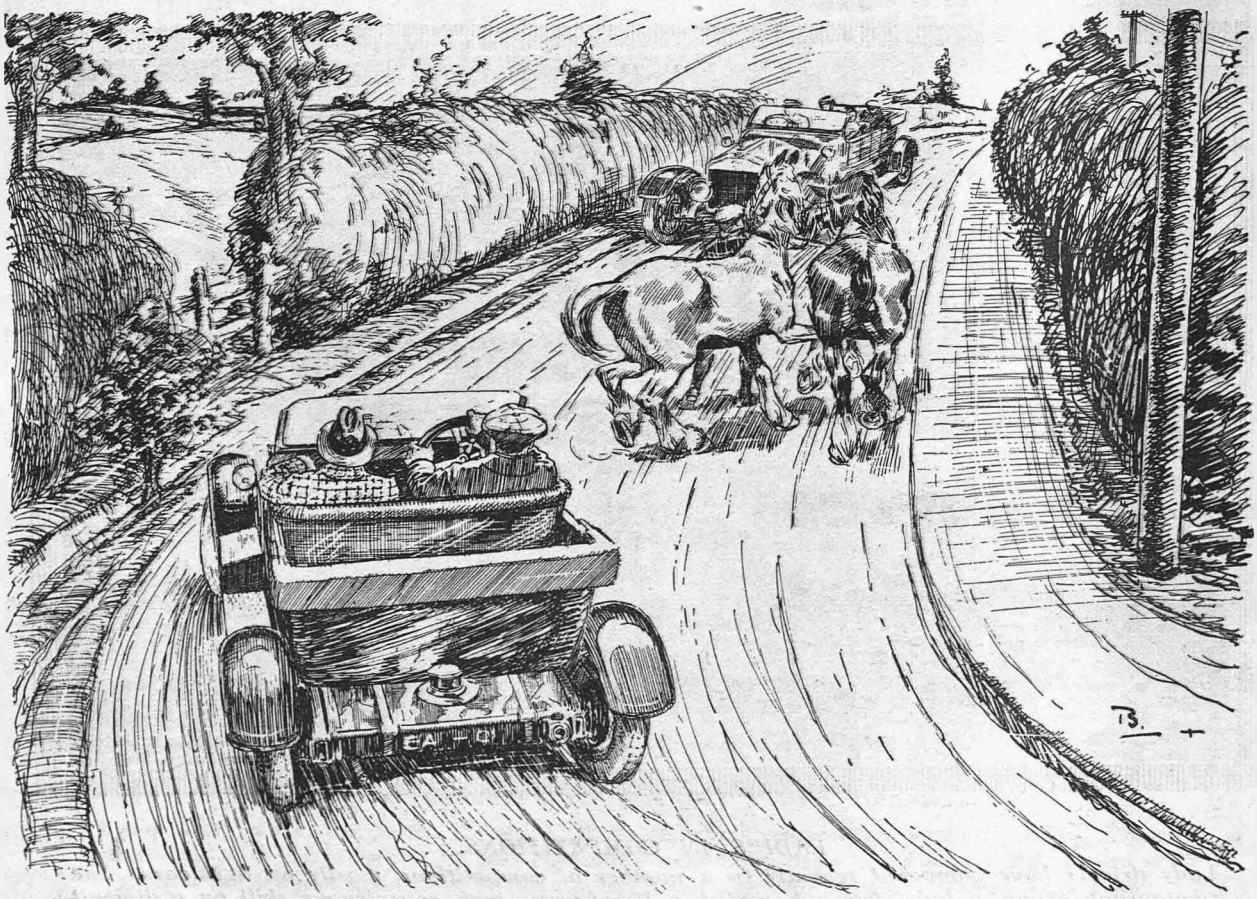
PUZZLE PICTURE PROBLEMS.—No. 1.

THIS number of THE MOTOR is devoted largely to the question of the lady driver, and we deemed it a suitable opportunity to inaugurate a short series of interesting puzzle pictures in the nature of a light entertainment for our lady readers. Thinking the matter over a little further, we came to the conclusion that most of the pictures which we intend publishing are so keenly debatable as to the right course to be pursued, that it would also prove an interesting amusement for many of our "mere-male" readers. Of course, the main object is, to a large extent, of an educative character, as the situations illustrated are all emergencies which have occurred in actual practice, and, of course, many of them are likely to occur again. Consequently, it is distinctly useful for readers to puzzle out the best solution to such an emergency beforehand, as not only is forewarned forearmed, but knowledge held latently in the mind comes more quickly into being when it is necessary to act than any formal scheming out of the order of procedure. We therefore invite our readers to send in either a postcard or a letter addressed to the Editor of THE MOTOR, Rosebery Avenue, London, E.C., stating quite briefly their answers to the queries propounded, and also their reasoning for such an answer. In order just to lend an air of competition to this interesting and instructive pastime, we will present both to the lady and gentleman reader who send in the best series of answers in their respective classes a high-grade luncheon basket as a little souvenir of their success. There are no special rules or regulations: it is the essence of simplicity. The picture is published, the situation explained, and the query put, and all that is requisite is to propound a solution.

The Prize.

Now it is more than likely that some of our readers may have met curious or puzzling situations or emergencies when driving, in which the right course to pursue has proved a knotty point. If so, we shall be pleased to consider any such situation with a view to publishing it.

There is no need for the reader to attempt even a rough sketch of the incident, but we ask that they will relate the occurrence as explicitly as possible. The latest time at which solutions can be received is Saturday morning next.



The Problem:—One car is overtaking and the other meeting led horses—which car gives way and why?

The Motor

The sale of "The Motor" to the public through ordinary newspaper trade channels is claimed to be the largest of any motorcar journal in the World.

Conducted by
EDMUND DANGERFIELD.

Proprietors: TEMPLE PRESS LIMITED
7, 9, 11, 13, 15, Rosebery Avenue,
London, E.C.
Telegrams: "Pressimus, Holb., London."
Telephone No.: 5292 Holborn.
(Four lines.)

THE GRAND PRIX "MOTOR."

The Grand Prix race takes place on the Lyons Circuit on Saturday next, and in next Tuesday's issue of THE MOTOR there will be a FULL, COMPLETELY and GENUINELY illustrated report of this important event. The race will finish at about 5 on Saturday afternoon, and the working staff cannot reach the office till about 5 on Sunday afternoon. These times will emphasize the rapidity with which the whole of the work entailed will have to be accomplished.

Should the Lady Drive? The Qualifications which Precede an Affirmative Answer.

WE devote a considerable amount of space in this issue to the question of the lady driver. The subject is one full of all manner of future possibilities. For once, we feel almost constrained to adopt that ingenious type of editorial in which one carefully argues the point both ways, saying nothing definite in either direction, but so wording the preamble that, whatever the future result, the editorial could be quoted as accurate in its alleged expression of opinion. Although there are undoubtedly two sides to the question, we will not descend to so indecisive and—to the cognoscenti—ludicrous an attitude as that. In the main, then, we consider it desirable that ladies should drive cars. The opinion is bound up with qualifications. It is an extremely difficult matter to contrive that a subject in any way dependent on the question of sex should be quietly considered, *in lumine sicco*, by either the one side or the other. In fact, it appears that genuine disinterestedness is impossible. Consequently one must assume the rôle of the didactician and merely state facts without endeavouring to adduce arguments in substantiation thereof. We are bound to confess that we do not consider the average lady driver so safe as the average man. For all ordinary work she is thoroughly capable, and one may almost say that the experienced lady driver is more considerate for her car than the average male. Nature has ordained, however, such differences in the structure of the two sexes that instantaneity of action is not so general in the female as in the mere man. It is not so much the question of sang-froid: this latter characteristic, in its entirety, is the supreme gift of Nature for the motor driver. So few possess it completely, however, that they are not really worth mention. Even when the lady driver may be blessed with a modicum of sang-froid, it does not follow that she is able to act instantaneously. The whole question resolves itself into one of quick action. A mere man may be "frightened out of his life" in a given case of emergency, but he will nevertheless in all probability do whatever he can to save the situation pretty quickly. In an exactly similar situation, the lady driver might keep quite cool, but still she would not actually act so quickly as the more flurried mere man. In cases of emergency it is, of course, the promptness of action combined with accurate divination which counts. When an accident has to be missed by inches, the tenth part of a second is of vital importance. In a considerable number of cases the lady driver is incapable of saving so many of these valuable tenths of a second as a man—of approximately equal all-round ability as a driver. It is seen, therefore, that the lady driver has an extra burden to bear when driving a car. By all means let her drive, if at all likely to become reasonably proficient, but let her remember that she must exercise a maximum of care at cross-roads, on greasy bends, where children are playing, and so forth. These are the birthplaces of emergency. It is against the lurking dangers appertaining to such conditions that we would urge the lady driver to guard. She must take the action upon herself: none can force her hand, and it is she who will lose most if the advice be ignored.

Accidents and Good Brakes.

THERE is a subtle relation between brakes and accidents which is not generally allowed for. Brakes have been steadily improved of late years until now the proportion of good braking systems is commendably large. It cannot be said that there is a corresponding improvement in driving methods and manners. Indeed, one may go so far as to say that in some cases brake improvement has been a contributing cause to accident. The confidence of drivers in their brakes has increased, and unfortunately this confidence has been shamefully abused by reckless and inconsiderate men. They drive too fast habitually, and they maintain high speed up to the last moment, then averting trouble by vigorous braking. Need we say that this is against all the canons of good driving? On the level the brake is best regarded as an emergency apparatus for checking speed, and the expert driver is as considerate with his brakes as with every other part of his car. The man whose progress is marked by frequent and harsh braking is a bad judge of pace and distance, and a good supporter of the repair shop. Sooner or later the brakes may act too fiercely, or may fail altogether, or the road surface may be in a state to produce a disastrous skid.

EVENT AND COMMENT.

The question "Should ladies drive?" is no longer open to discussion, for the ladies themselves have very effectively closured it. They *are* driving, and as drivers they are performing remarkably well. In this issue we devote a considerable amount of space to matter appealing primarily to the lady motorist, and we feel we shall not be suggesting an unreasonable thing when we put forward the hint that gentlemen readers should bring this particular number to the notice of their lady motoring friends and relations. It is really the first serious effort that has been made by any motor journal to introduce matter of particular interest to the lady motorist.

In making this suggestion, we would point out that the space occupied by the Ladies' Section is additional and the matter does not in any way encroach upon space that would be devoted to general news in an ordinary issue of the journal.

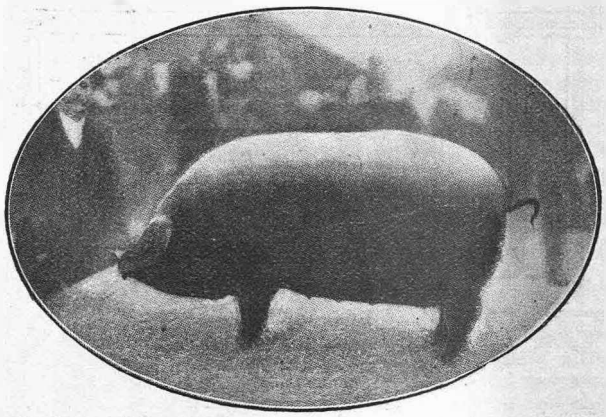
Dealing with Hornsted's remarkable achievement at Brooklands, recorded elsewhere in this issue, "The Westminster Gazette" remarks: "The only uneasiness one feels is lest the knowledge of what a car can do may help to foster the mania for speed which afflicts too many motorists. . ." Our green-hued contemporary is our constant luncheon companion, and we have grown to admire its literary tone, its cautiousness and restraint, but does it know Hornsted's Benz, and does it really seriously imagine that the owner of the average car is ever likely to emulate its performances on the road, or even feel inspired to do so?

Last week we dealt editorially with the question of heavy motor traffic and its effect upon the roads. On Wednesday the President of the Local Government Board spoke sympathetic words on the subject to a deputation from the County Councils' Association. He said the time had come to review the question of heavy traffic. The deputation had made out a strong case for calling on these vehicles to pay a larger sum. He proposed a technical committee to consider the problem. Whenever we hear of a committee, select or technical, we always consider the question they are called upon to consider as shelved indefinitely.

Oxygen has at last become inflammable, at least this is what we gather from a description of a carbon-removing process in a financial daily. All that is required is a cylinder of oxygen, a tube and a taper. Connect the first to the second, place one end of the tube in a sparking plug orifice, and light the gas with a taper. Assuming that the properties of oxygen have sufficiently altered to allow of this being done, the carbon will soon disappear. Simple, is it not?

An attractive looking booklet reached us recently from Mr. S. F. Edge—that is Mr. "Six-cylinder" Edge. Noting, at a casual glance, the word "Vahan" at the top of the cover, it struck us, at the moment, that this was the title of a new car. We were wrong, of course! "Vahan" is the name of a particularly fine herd of large black pigs—the property of Mr. S. F. Edge, and we gather that, as the result of Mr. Edge's interest in this branch of farming, the animals have won prizes and honours galore—we were going to write—at "speed and hill-climbing," but obviously we were forgetting ourselves and must keep to the subject.

We can however hardly be expected to deal with these fine productions of Mr. Edge's farming skill from the point of view of the connoisseur. As motorists we can only see them with a motoring and mechanical eye. The illustration of one of the prize animals that we reproduce from Mr. Edge's booklet, we think, justifies us in saying that it is a really excellent sample of a clean mono-bloc casting. To this opinion some may demur and suggest that it is really a finer example of streamline bodywork! The tail-



New "Vahan" type of body.

shaft, whilst being somewhat diminutive, is doubtless well up to its work and seems capable of withstanding considerable torque, as we gather from its graceful hyperbolic curve.

Judging from the massive connecting rods the stroke seems short, and in view of the large cylinder capacity we should gather that the speed and acceleration were hardly up to the standard of Mr. Edge's six-cylinder days.

The booklet does not give any information as to the fuel Mr. Edge runs these prime movers on. Naturally, the thought occurs to us—has he tried them on benzole?

INDEX TO CONTENTS.

The Index to Advertisements will be found on page 72 and Editorial and Business Notices on page 128.

FINANCE AND BUSINESS.

Business in motor shares during the past week has not been quite so active compared with recent weeks, and, with profit-taking sales in progress, prices generally are all slightly lower. There was a certain amount of speculative buying on the anticipated results of the recent Tourist Trophy race, and as soon as the result was known and the best price thought to be obtainable speculators were naturally anxious to secure profits. This was especial the case with Sunbeams, which fell at one time to 37s. 9d., only to improve again to 39s. as soon as the wave of selling had subsided. Darracqs have been the only really weak spot. The adverse rumours to which we drew attention in our last issue have again been freely circulated, but, so far as we can make out, there is no truth at all in them. The price of the shares, however, was forced down at one time to 24s. 10½d., and although, at the time of writing, they are slightly better at 25s. 9d., the market is none too firm. The preferred have fallen in sympathy to 19s. 6d. Alldays and Onions have improved smartly to 18s. 6d., with few shares on offer, and Argylls are slightly firmer with buyers at 6d. on a small inquiry by a few speculative investors, who were evidently hoping to make a little profit out of the liquidation scheme. Austin Motor preference have changed hands at the slightly lower figure of 2s. 6d. discount, and are a small market, and Star ordinary were done at the lower figure of 9s. 9d. In the latter case, however, the bargain was for a small number of shares only, and they are now buyers at 9s. 9d., and possibly a little more would be given if the shares were offered. Interest in Calcotts seems quite to have subsided for the present, and the shares have been almost a neglected spot and are sellers at 42s., with very few buyers about. Singers, on the other hand, have been an active market but are unchanged on balance at 44s. There has been a fair amount of business in Humbers. Rileys are steady, but Rolls-Royce, on the other hand, are not quite so good with business at 55s. Although Rovers have not changed hands very freely, the market is firm, with buyers at 85s.

The directors of Messrs. D. Napier and Son, Ltd., have declared a further dividend on the preference shares of the company, an interim dividend having been paid in December. Together, the dividends give a return at the rate of 7½ per cent. per annum. The directors have decided to make up the accounts in future to the end of September in each year, as that is the most convenient date for terminating the trading year.

We have seen a draft prospectus of a new concern to be known as Slide Valve Motors, Ltd., and as it is not desirable to offer criticism of a draft document, which is obviously incomplete, we make no comment whatever on the prospectus itself. It is, however, with regard to accompanying circulars that we desire to deal. These set forth in bold type certain references to the successful performance of the Minerva team in the recent T.T. race, and deal with the interest raised thereby in sleeve-valve engines. This renders it desirable to set on record the fact that the coming flotation has nothing whatever to do with Minerva Motors, Ltd., and if any of our readers have received the prospectus mentioned they should make a careful note of this fact.

The total debenture issue of the Rover Co., Ltd., amounting to £50,000, is being paid off at a premium of £5 per cent. tomorrow (Wednesday). This will leave the company with an ordinary share capital of only £138,668, and no prior charges. The record of this concern reflects enormous credit upon its directors.

The offer of £500,000 5 per cent. first mortgage stock in the Wolseley Tool and Motor Car Co., Ltd., has been accompanied by the disclosure of the profits for the past three financial years. They are as follow:—To September, 1911, £90,940; 1912, £121,300; 1913, £162,968. The value of the assets, including the new freehold and additions to be paid for out of the present issue, and a balance of £200,000 which will go to increase working capital, is £1,196,348. The share capital (300,000 each of ordinary shares and 7 per cent. preference shares) is all held by Vickers, Ltd. The price of the new issue is £96 per cent.

As against the criticisms by the chairman at the recent meeting of the Argyll shareholders, it is being asserted on behalf of Mr. J. S. Matthew, the late managing director, that it is grossly unfair to make him the scapegoat, for it was due to him that so large an amount was obtained when the stock of cars and book debts of the old company were realized. His activity in connection with the adoption of a special type of engine and the skill shown by his staff in bringing that engine to a high state of efficiency have proved the possession on his part of wisdom and foresight and a true appreciation of economy in administration. It is also asserted on his behalf that not only have profits totalling to £27,748 been earned in the last five years, but that the earning of substantial profits would by now have been brought very near but for the disturbing effect of the patent law suits in the height of the season and the failure of the board of directors to adopt his proposal to concentrate on two models, the advantage of which would have been the reduction of stock and a proportionate increase in cash capital.

"THE MOTOR" SHARE LIST.

The Prices recorded in the end columns are those ruling on the Stock Exchange at Mid-day on Monday, 29th June.

SHARES.		NAME.	Dividend.		Previous Prices 1913.		Prices 1914.		Prices. 29th June.	
Issued Capital. £	Paid Up.		Last.	When payable	Highest.	Lowest.	Highest.	Lowest.	Buying.	Selling.
45,000	16/-	Alldays & Onions	5%b	Mar./Nv.	—	—	18/3	16/-	18/-	19/-
50,000	£1	,, ,, Cum. Pref. 6%	6%	Mar./Nv.	—	—	22/6	21/-	22/6	23/6
209,802	10/-	Argylls, Ltd.	nil	Nov.	6/3	4/7½	6/7½	6d.	6d.	9d.
73,319	£1	Assd. Rubber Mfrs., Ltd.	—	Mar.	Par	Par	1/- p	Par	21/9	21/6
250,000	£1	Austin Motor (1914) Pref. 7%	—	Jne./Dc.	—	—	2/6 dis	2/6 dis	2/9	2/- dis.
200,000	£1	Belsize Motors	10%	May/Nv.	26/9	20/1½	25/-	20/9	21/9	22/3
767,225	£1	Birmingham Small Arms ...	10%i	Ap./Oct.	50/-	39/3	43/-	41/6	41/6	42/-
75,000	£5	Brampton, Cum. Pref. 6% ...	6%	Oct.	4	4	4½	4	4½	4½
100,000	£1	J. B. Brooks & Co.	10%	Mar./Nv.	36/6	34/-	33/6	32/9	32/6	33/6
100,000	£5	,, ,, Cum. Pref. 5%	5%	Mar./Nv.	5½	5½	5½	5½	5½	5¾
100,000	£5	Brown Bros., Cum. Pref. 6% ..	6%	Ap./Oct.	6½	6½	6½	4¾	4¾	4¾
20,861	£1	Calcott Bros.	5%	Oct.	31/-	18/9	44/10½	28/-	42/-	43/-
207,952	£1	Charron, Ltd., New	15	J/A/J/O.	26/9	24/6	26/9	10/-	11/-	12/-
275,000	£1	Darracq (1905)	nil	Jne./Dc.	33/-	9/6	35/-	24/10½	25/6	26/-
375,000	£1	,, ,, Pref. Ord. 7% ...	7%	Ap./Oct.	£0/1½	12/6	22/7½	19/1½	19/4½	19/7½
159,229	£1	De Dion Bouton (1907) Pref.	nil	Nov.	10/-	5/6	7/7½	5/-	5/9	6/9
105,000	£1	Delahaye & Co.	30%	July	—	—	—	—	3¼	4¼
60,000	£1	,, ,, Pref. 7% ...	10%	Jan./Jul.	25/7½	24/4½	29/9	23/6	1½	1¾xd
300,000	£1	Dennis Bros.	10%	May/Nv.	23/3	21/6	21/6	20/-	19/6	20/-
994,015	£1	Dunlop Rubber Co.	15%	Ap./Nv.	41/6	31/6	44/6	35/-	40/-	41/-
800,000	£1	,, ,, 6% Pref. ...	6%	M.J.S.D.	20/1½	18/-	21/1½	19/9	20/-	20/6
312,786	£1	,, ,, French I. Stock	5%	May/Nv.	19/-	17/3	19/-	17/10½	19/-	19/3
292,904	£1	Humber	nil	Nov.	13/10½	6/9	13/6	10/10½	11/1½	11,4½
331,495	£1	,, Cum. Pref 6% ...	6%d	Nov.	17/7½	10/4½	18/4½	15/6	17/6	18/-
100,000	£5	J. Lucas, Ord.	10%	Ap./Nv.	9¾	9¾	8¾	8¾	8¾	8¾
100,000	£5	,, Cum. Pref 5% ...	5%	Feb/Oct.	110/3	5½	5½	5½	5½	5¾
300,000	£1	D. Napier & Son Pref. 7½% ...	7½%	Jne./Dc.	9d. pm	18/9	19/6	16/3	16/9	17/9xd
624,996	£1	Parent Tyre Co. Cum. Ord. 8%	10%c	May/Nv.	17/9	14/-	18/-	15/6	17/6	18/-
994,990	£1	,, ,, Cum. Pref. 6% ...	5%	May/Nv.	14/9	11/7½	16/6	12/9	14/-	14/9
499,962	£1	,, ,, Deferred	5%	May/Nv.	13/10½	8/-	18/7½	13/6	16/4½	16/7½
31,000	£1	Riley (Coventry) Ltd.	nil	Feb.	7/4½	3/10½	6/6	3/9	6/6	7/-
200,000	£1	Rolls-Royce	20%	Jan./Jul.	54/-	49/9	58/-	50/9	54/9	55/3
133,668	£1	Rover	40%	Nov.	75/-	31/-	86/-	70/-	85/-	85/6
100,000	£1	Rudge-Whitworth	nil	Oct.	25/3	12/6	17/6	14/6	16/-	16/6
100,000	£5	,, Cum. Pref. 6% ...	6%	Oct.	4¼	3¾	—	3¾	3½	4
41,621	6/-	Siddeley-Deasy	8½%	Nov.	12/-	8/10½	14/-	10/3	12/6	14/-
50,007	£1	Singer & Co	nil	Oct.	28/-	15/-	45/3	28/-	43/9	44/3
70,000	£1	Star...	nil	Mar.	17/-	8/10½	15/6	9/9	9/9	11/-
69,157	£1	,, Cum. Pref. 7%	7%	Mar.	17/6	13/4½	17/-	15/-	14/6	15/3
87,550	£1	Stepney Spare Wheel	20%	Ap./Nv.	32/6	26/-	22/-	17/3	18/3	19/3
190,000	£1	Sunbeam M.C. Co.	33⅓%	Nov.	66/-	49/-	65/-	34/6	38/6	39/-
100,000	£1	Swift	10%	Ap./Nv.	29/6	18/-	35/9	25/6	34/6	35/-
100,000	£1	,, Cum. Pref. 6½%	6½%	Ap./Nv.	17/1½	15/3	18/9	16/4½	18/-	18/3
148,500	£1	Thornycroft, J. I. & Co. ...	21%	May/Nv.	27/6	12/6	18/9	8/6	8	8
198,000	£1	,, ,, Cum. Pref. 6%	6%	May/Nv.	19/3	11/-	16/10½	12/3	5	5
80,000	£1	Triumph Cycle Co.	20%a	Nov.	82/-	58/6	74/-	65/6	73/6	75/-
50,000	£1	,, ,, Par. Pref. 5%	6¼%	Nov.	24/6	21/6	23/-	21/9	22/6	23/6

a Plus 10% bonus. b Plus 5% bonus. c Including balance of arrears.
d part of arrears from September 1st, 1909. i Interim.

All the shares are fully paid except Alldays.
Delahaye prices nominal, Paris being the chief market for these shares.
The dividend recorded is the dividend for the whole year unless otherwise stated.

NEWS AND NOTES

Forthcoming Events.

Tuesday, 30th June.—Oxford and Cambridge open race meeting at Brooklands.

Saturday, 4th July.—Grand Prix Race on the Circuit de Lyon. Lancashire A.C. Reliability Run. Sheffield and District A.C. Hill-climb. Mersey (Liverpool) Motor Club open speed trials and races on the Promenade, Colwyn Bay.

Saturday, 11th July.—Saltburn Speed Trials. Somerset A.C. and Bristol and Gloucester A.C. Hill-climb, Weston Hill. Herts. County A. and Aero Club Brooklands Meeting. Middlesex County A.C. Gymkhana. South Harting Inter-Club Hill-climb.

Friday, 17th, and Saturday, 18th July.—R.A.C. Automobile Rally, Nottingham.

Saturday, 25th July.—R.A.C. Light Car Impromptu Trials.

Sunday, 26th July.—International Cup Race Le Mans.

Saturday, 22nd August.—Midland A.C. Hill-climb at Shelsley Walsh.

An Indianapolis Race at Brooklands: Another "Motor" Suggestion.

The enormous success which attends the track meet at Indianapolis has naturally prompted the suggestion that a similar event should be held at Brooklands. The idea has now taken a more concrete form, and we hear that if the project meets with trade approval, a sydicate is prepared to make all arrangements and to put up the prize money. The figure mentioned for the latter is £15,000, which is a sufficient attraction to ensure the success of the race. A 500-mile race with incidents and thrills occurring practically continuously would undoubtedly act as a very strong attraction for the general public, and the meeting should, therefore, be a success from every point of view. As considerable attention is likely to be paid to this project, it is interesting to recall that the suggestion for this race was first put forward by THE MOTOR in the issue of 21st October, 1913, and it is but reasonable to assume that the suggestion then put forward has been the direct cause of the latest developments to which we have referred.

Light Cars at the Shows.

It will be remembered that last year light cars were exhibited at both the car and the motorcycle shows at Olympia, those makers whose chassis weight exceeded the limit of 6 cwt. exhibiting with the big cars. As the weight limit has now been abolished from the official definition of a cyclecar, some uncertainty exists regarding the show question.

In the Cycle and Motorcycle Show light cars can only be admitted if their engine capacity does not exceed 1100 c.c. and their chassis weight 6 cwt. If the frame and the body are inseparable, the inclusive weight shall not exceed 7 cwt. It will be seen that the weight limit has been retained for show purposes, although it has been abolished from the official definition. Light cars exceeding either the engine or the weight limit can only be exhibited at the Motorcycle Show, if they do not exceed £200 in first cost with full equipment, and if the exhibitor is a member of the Society of Motor Manufacturers and Traders. The committee must be satisfied that the machine is a light car. All other light cars can only be exhibited at the Car Show, opening 6th November. The space in the Annexe will be used for the light car and cyclecar exhibits at the Motorcycle Show, two-storied stands in the main hall being employed to provide the necessary office space.

Encouraging the Amateur.

Official trials have so many rules and regulations that the ordinary private owner does not support them. The Royal Automobile Club has recognized this, and has instituted what is known as the R.A.C. Light Car Impromptu Trials. There are several attractive features, the first of which is that entries are received at the starting point. The owner can then decide on the morning itself whether to enter or not. The exact nature of the particular trial will be kept a secret until the morning of the trial. This feature has been introduced to safeguard the owner against unfair trade competition. Until the start, intending competitors will not know whether it is to be a fuel-consumption trial or a hill-climb, to take two examples. There is nothing to prevent members of the trade entering, should they so desire.

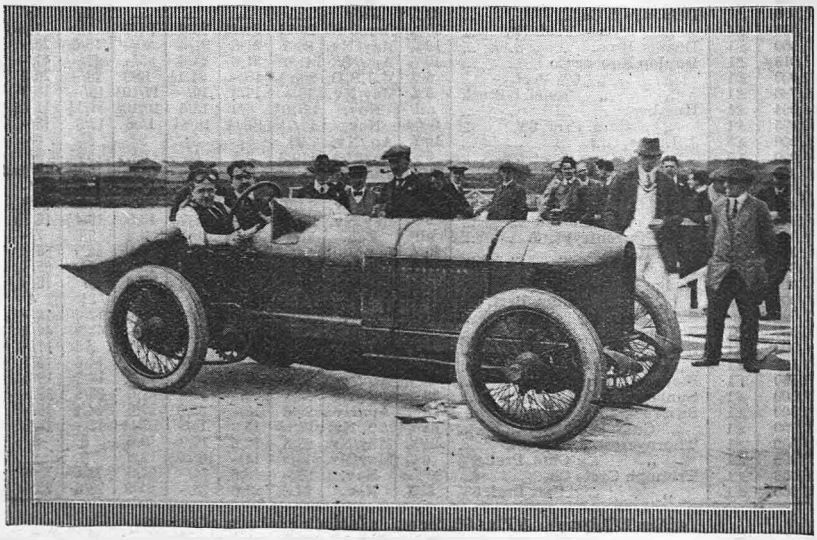
The trials are limited to cars, the engine capacity of which is between 1100 c.c. and 1400 c.c., and weighing not more than 1600 lb. The meeting place will be announced two or three weeks before the event, and the entry fee is £1. Entries will be received between 10 a.m. and 11 a.m. on the morning of the trial. The Club will award a silver medal to the car making the best performance in each trial.

A World's Record at Brooklands.

Last Wednesday, at the Brooklands track, Mr. L. G. Hornsted, on the big Benz, made a successful attack on the world's record for the flying mile, attaining a mean speed of 124.10 m.p.h. This record has stood since November, 1909, when Hemery attained the speed of 115.923 m.p.h. on the big Benz. Under the new International regulations for short distance records, the distance had to be covered in both directions, the mean time being taken. Hornsted's time on the racing Benz the reverse way of the track was 29.93 secs., equalling a speed of 120.28 m.p.h. Travelling the ordinary way round the track, the time was 28.09 secs., equalling 128.16 m.p.h., which is probably the highest speed which has been attained over this distance. The mean time is, therefore, 29.01 secs., equalling 124.10 m.p.h.

Accessories played a large part in the attainment of this record speed. Rudge-Whitworth wire wheels were used, mounting Palmer cord tyres. The springs were assisted in their action by Houdaille shock-absorbers. For ignition a Bosch magneto and K.L.G. plugs were used, Wakefield oil for the lubrication, and Pratt's spirit as the vital fuel.

The Houdaille Hydraulic Suspension Co., Ltd., in the hurry of drafting copy for last week's advertisement, allowed the expression "altered" to appear instead of "adjusted" when describing how these suspensions can be made to fit any type of car. The word "altered" conveys a totally erroneous impression to anyone who knows the simplicity with which these shock absorbers can be adjusted to suit any weight.



Mr. L. G. Hornsted on the Benz which beat the flying mile record at Brooklands last week.

NEWS AND NOTES.—Contd.

The Grand Prix.

One of the leading questions for the average motorist with sporting instincts is how to get to the Grand Prix. It is generally recognized that the present year's race will probably be the finest ever seen, and the number of English visitors is expected to be very large. It is really a much simpler matter to get to the Grand Prix than would be imagined at first sight. The best trains to Lyons take about 7½ hours, and some charming scenery is passed. We append the times of trains from Charing Cross per the South-Eastern and Chatham Railway, to Paris, and also some of the best trains from Paris to Lyons on the famous P.L.M. line.

LONDON TO PARIS.

CHARING CROSS. DEP.	PARIS (NORD). ARR.
9 0 a.m.	4 40 p.m.
10 0 a.m.	5 20 p.m.
2 5 p.m.	9 0 p.m.
4 30 p.m.	11 0 p.m.
9 0 p.m.	5 40 a.m.

PARIS TO LYONS.

PARIS (GARE P.L.M.). DEP.	LYONS (PERRACHE). ARR.
7 5 a.m.	4 39 p.m.
9 15 a.m.	4 53 p.m.
3 45 p.m.	11 8 p.m.
7 0 p.m.	2 57 a.m.
8 0 p.m.	3 21 a.m.
9 0 p.m.	3 56 a.m.
10 25 p.m.	7 10 a.m.

The return journey can be accomplished so that one is back in London for tea on the Sunday afternoon.

Nearly £100 in fines was collected recently by the Southampton County Bench from motorists whose ideas on the question of speed were more enlightened than those of the magistrates.

RESULTS OF ALPINE TRIAL.

The Audis have won with 80 per cent. of cars entered, losing no marks, and fully 100 per cent. non-stop runs. Only Rolls-Royce of the British cars has come out with flying colours. Austro-Daimlers also score for durability and reliability.

All day Wednesday, 24th June, was allotted to the post festum examination of cars, or, as it is styled, the "exam. as to condition" (Konditionspruefung), by experts, in which Mynheer de Jong, of Minerva Motors, Ltd., acted as a representative of the foreign competiors.

The following, which had lost no marks in the trial, and which were found to be entirely in good condition, having sustained not even the slightest break or leakage, were declared winners :—

Radley (Rolls-Royce).
Delmar (Benz).
Horch (Audi).
Graumuller (Audi).
Lange (Audi).
Obruba (Audi).
Hentschel (Austro-Daimler).
Prince von Parma (Austro-Daimler).
Stoll (Austro-Daimler).
Czech (Austro-Daimler).
Lange (Protos).
Bettaque (F.I.A.T.).
De Jong (Minerva-Knight).
Klinkosch (Minerva-Knight).

The following, having previously lost marks, were found to be in faultless condition :—

Baron Steinheil (Graf and Stift).
Lembacher (Graf and Stift).
Count Schonfeld (F.I.A.T.).
Paulmann (Horch).
Sirucek (Praga).
Golliasch (Raba).
Baron Franz (Austro-Daimler).
M. Schneeweiss (F.I.A.T.).
Baron Feilitzsch (Minerva-Knight).
Egon Saal (Wanderer).

Of those hitherto unpenalized, the following cars lost marks in the examination :—

Count Kolowrat (Laurin and Klement).
Dr. D. Strauss (Puch).
Herschmann (Puch).
Muhri (Audi).
Marcellino (F.I.A.T.).
Koch (Opel).
Garcis (Hansa).
Kohler (Hansa).

The following cars having been previously penalized, lost marks again in examination after trial :—

Rose (Benz).
Waterhouse (Vauxhall).
Sak (Braga).
Count Lamberg (Puch).
Skorpiel (Puch).
Austin (Austin).
Berbst (N.A.G.).
Kappel (Hansa).

The examination after trial was thus successfully passed by :—

Austro-Daimler (5).
Audi (4).
F.I.A.T. (3).
Minerva-Knight (3).
Graf and Stift (2).
Benz (1).
Rolls-Royce (1).
Protos (1).
Horch (1).
Raba (1).
Wanderer (1).
Praga (1).

The Irish Automobile Club had to cancel the intended hill-climb on Digoneil Hill, near Belfast, fixed for Saturday last, on account of the insufficiency of entries. It is proposed to hold a hill-climb on the 14th September on Ballinaslaughter Hill.

ROLLS-ROYCE IN THE ALPINE TOUR.

The highly successful Rolls-Royce in the speed trial. Mr James Radley who drove the Rolls-Royce throughout the Alpine Tour. The car on Surrach Pass.

JUNE MEETING AT BROOKLANDS.

The Handicappers Find Their Form Again—Some Excellent Finishes Witnessed in Glorious Weather.

ONE cannot commence the recital the doings at Brooklands on Saturday with pleasurable remarks anent the magnitude of the crowd of spectators, as compared with what one usually finds for a Bank Holiday meeting, the crowd was (naturally enough) not so very large. However, as the afternoon wore on, a goodly number of motorists were there to see the fare provided. Brooklands weather outshone itself, and all manner of rugs, wraps and coats were needed to protect paintwork and tyres. Briefly, it was very hot, and the shade of the hood was a most welcome attribute to a car's ordinary sphere of utility. If we make a happy exception of the first race, and one other event, nothing of more than usual note transpired. The finish of the first event was extraordinarily good. So let us to it.

A Very Close Finish.

As usual, the first item on the programme was for private competitors, the race in question being The June Private Competitors' Handicap, which, as its name implies, was a race for cars driven—and entered—by members of the Brooklands Automobile Racing Club. It attracted 11 entries, and Capt. Lindsay Stewart, on his four-cylinder 82.5 mm. by 140 mm. Schneider, had the satisfaction of fighting his way through, to obtain the judge's decision for first place. It was certainly a case for the judge, as there were about half-a-dozen cars all bunched together on the line so closely, that one could hardly tell who was the victor. His average speed was 70¼ m.p.h., which was not quite so fast as one would expect.

Mr. H. W. Cook, on his 130 mm. by 200 mm. Isotta-Fraschini was second, almost overhauling the whole field from scratch position. It was very hard luck for him not to obtain premier honours, as a few more yards to the starting line and he would have got her bonnet in front.

Mr. Arthur Williams was third on his 90 mm. by 120 mm. Straker-Squire, and he was very closely followed by two or three others. The finish to this race was one of the finest seen for many a long day

A Splendid Duel.

The second event was The Third Lightning Long Handicap, for which there were only four entrants, but it provided a very interesting spectacle. Mr. Holder's 98 mm. by 150 mm. Vauxhall was on scratch, but he did not manage to make up the start which he gave. We had, however, a splendid duel between Mr. Read's Vauxhall and Mr. Campbell's Sunbeam. The Vauxhall got away the better—once again proving that whatever the maximum speeds may be of two given cars, the larger engine will get away the better—but the Sunbeam gradually drew up, and finally just managed to get in front at the end of the railway straight on the second lap. It was then a neck-and-neck race between the two until the finish, the Vauxhall holding just behind, and even gaining a trifle coming up the straight. However, the Sunbeam just won by a few yards at an average speed of 86 m.p.h., Mr. Read, of course, being second, whilst Mr. Toop, on Mr. Gordon Watney's 78 mm. by 156 mm. Peugeot, was third. The fight between the first two was splendid.

A Comfortable Win.

The next item on the programme was The Sixth 75 m.p.h. Long Handicap (over the usual distance of about 8½ miles), and this proved a pretty comfortable win for Mr. R. C. Fish, on his 80 mm. by 160 mm. Gregoire, who was successful from scratch. Mr. J. Broadbent was second on Mr. W. Hillman's 60 mm. by 120 mm. Hillman, and the Hon. R. W. Beckett was a none-too-close third, on his 78 mm. by 156 mm. Lion-Peugeot. The winner's average speed was 75¾ m.p.h.

Won by a Few Yards.

The Sixteenth 100 m.p.h. Long Handicap came next, and this again provided a fairly good finish, Mr. A. G. Brown, on Mr. E. J. Rossiter's 85 mm. by 130 mm. Hispano-Suiza, only having a few yards to spare from Mr. G. Hornsted, on Mr. Bovier's 96 mm. by 190 mm. Schneider, who was second. The Hispano-Suiza averaged exactly 86 m.p.h. in winning—precisely the same speed as the Sunbeam won at in the second event. Mr. H. W. Cook, in spite of his new handicap on account of his previous win, managed to get amongst the honoured ones, being third home on his big Isotta-Fraschini.

There were 14 entries for The Sixth 75 m.p.h. Short Handicap, which was won by Capt. Lindsay Stewart on his Schneider at a speed of 71½ m.p.h. Mr. A. Layzell was second on Mr. G. W. Robinson's 79.5 mm. by 150 mm. Calthorpe, and Mr. Hillman's 60 mm. by 120 mm. Hillman was successfully steered through to the third post of honour by Mr. J. Broadbent.

Fastest Speed of the Day.

The sixth race on the card produced the fastest speed of the day so far as winner's returns were concerned, Mr. H. W. Cook pulling off the event on the Isotta-Fraschini at an average speed of 87¾ m.p.h. He drove a very fine race and won with a comfortable margin. This Isotta-Fraschini is a very fine machine, with an engine as spick and span as a well-kept touring car. Mr. Arthur Williams was second on his Straker-Squire, and Mr. Hornsted was third on Mr. Bovier's Schneider. After the fine records just set up by the Big Benz, we should have liked to have seen Mr. Hornsted piloting it round! En passant, it would also have been very nice if some of the T.T. cars could have put in an appearance. It would not be a bad idea at the meeting after a big road race if an event—preferably a handicap—were held for cars which had participated in the road race.

Read Turns the Tables.

We overheard an amusing "bookie" incident just prior to the next race, which was The Third Lightning Short Handicap. A certain lady was speaking to a friend.

"You see, dear," she said, "there are only four runners, so I could afford to back them all, and I *must* win." It sounds reasonable—as feminine logic goes. Mr. J. W. Read, on his 95 mm. by 140 mm. Vauxhall, proved to be the winner, at an average speed of 82½ m.p.h., turning the tables on Mr. Campbell, who was about 2 secs. behind, on his Sunbeam. The larger and scratch-mark Vauxhall driven by Mr. N. F. Holder was third.

Last Race Produces Close Finish.

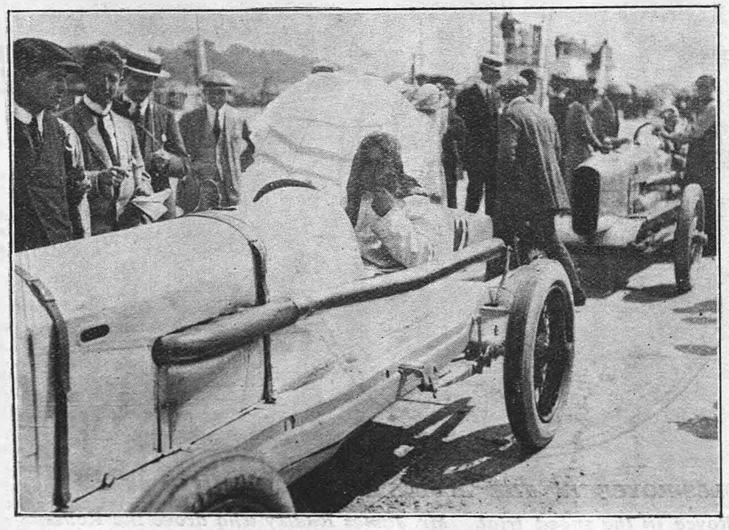
The last item on the programme was The June Sprint Race over the usual distance of about two miles. Good finishes are the usual order of things in these races, and the one under consideration was no exception to the rule. Mr. J. Broadbent, on Mr. Hillman's 60 mm. by 120 mm. Hillman, managed to make sufficiently good use of his start to obtain first place, at an average speed of 66¼ m.p.h. Mr. Arthur Williams's Straker-Squire—this time piloted by Mr. A. N. Appleford—was second, only a few yards behind, and Mr. C. L. E. Geach, on the Peugeot, pulled up from scratch position to the third place of honour.

The June Aeroplane Handicap was held afterwards, and earlier in the afternoon Mr. H. G. Hawker gave a pretty demonstration of looping on a 100 h.p. Sopwith Scout biplane.

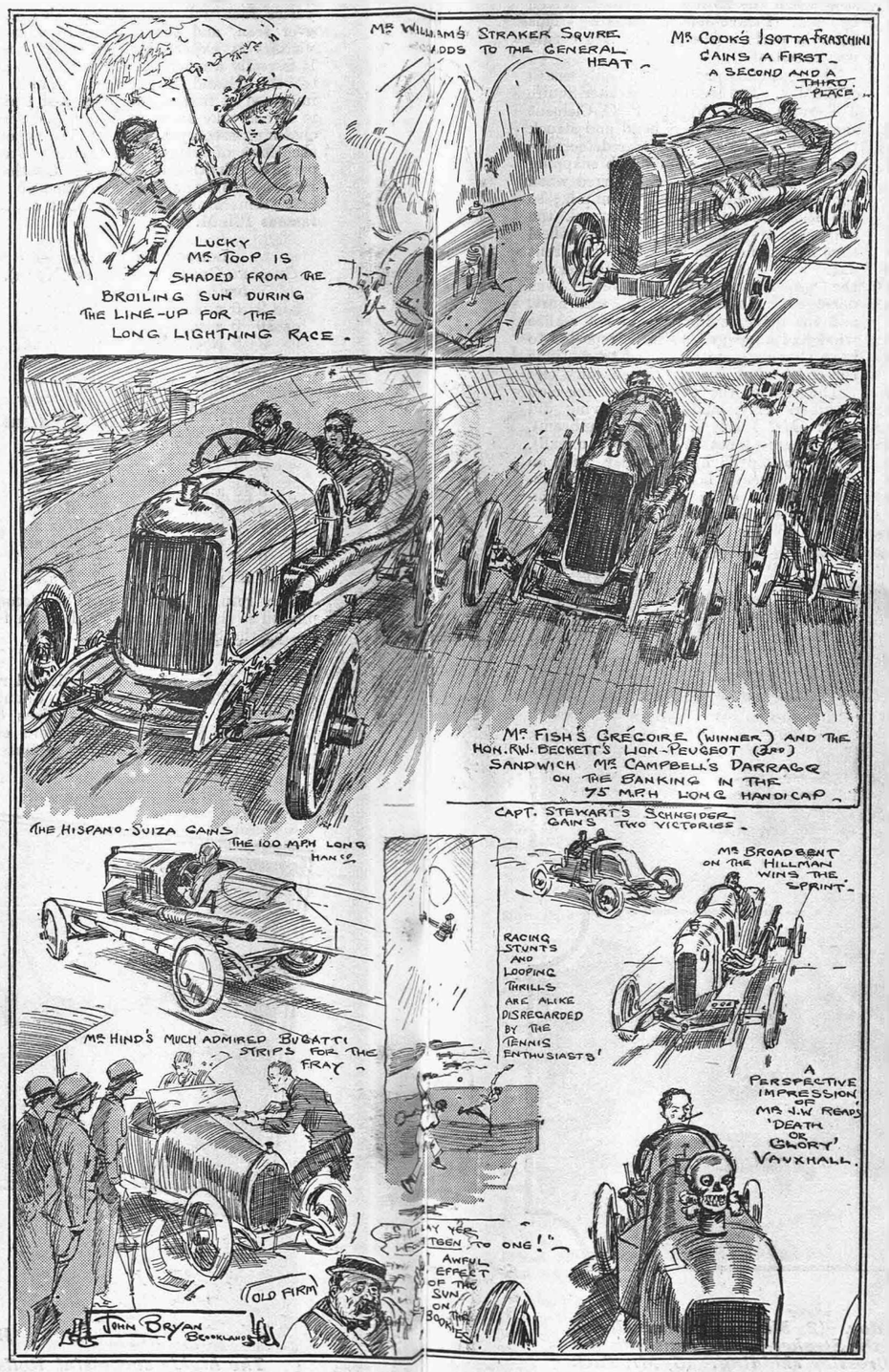
As stated before, the weather was glorious, and a welcome improvement in the skill of the handicappers added to the afternoon's amusement. As a whole the finishes were considerably better than they have been at the last few meetings. The next big meeting is to be held on August Bank Holiday.

Hawker's Smash at Brooklands.

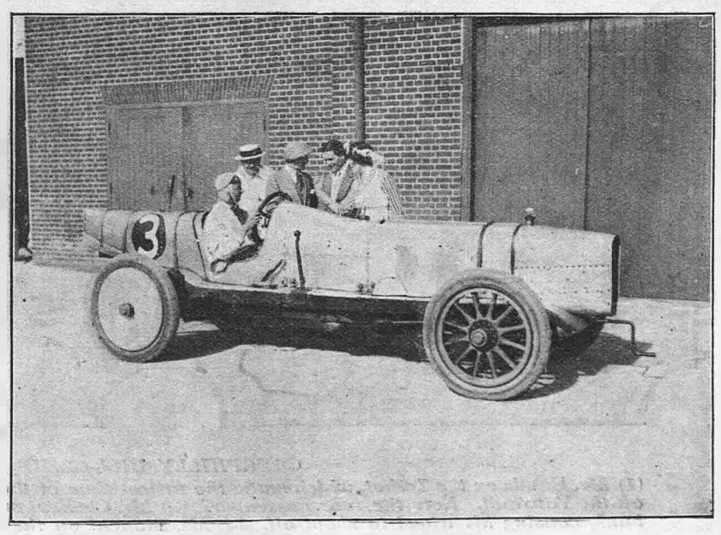
Last Saturday, after the B.A.R.C. meeting, Mr. Hawker was giving an exhibition of flying on his Sopwith biplane. About 7.15 p.m. he was bringing his flight to a close with a series of loops at a height of about 600 ft. On completing one loop his machine had not sufficient way, and slipped tail foremost to the ground, where it struck an oak tree in the enclosure. When the spectators approached the wreckage they found Hawker standing amid the wreckage, somewhat bewildered but otherwise unhurt. Hawker rarely seems to be injured in the accidents which smash up his machines.



A competitor finds the sun very trying.



Some incidents of the Brooklands Summer Meeting.



Congratulating Mr. J. W. Read (Vauxhall), winner of the Seventh Race.

THE CAERPHILLY HILL-CLIMB.

THE South Wales A.C., in conjunction with the Cardiff M.C., held their annual hill-climb at Caerphilly last Thursday. There was a big entry of cars and some good speeds were put up, though last year's figures were not beaten.

The hill was in good condition, but towards the end of the day it became rather cut up, especially at the top bend. Several exciting incidents occurred, but luckily no personal injury was sustained. All the arrangements had been excellently carried out by the officials of the club, and the results were got out with promptness. Timing was done by synchronized watches in the capable hands of Messrs. Ebblewhite and Bidlake, the official timekeepers.

The hill is some three-quarters of a mile long and of an average gradient of 1 in 10. There are about six bends, one of them S shaped.

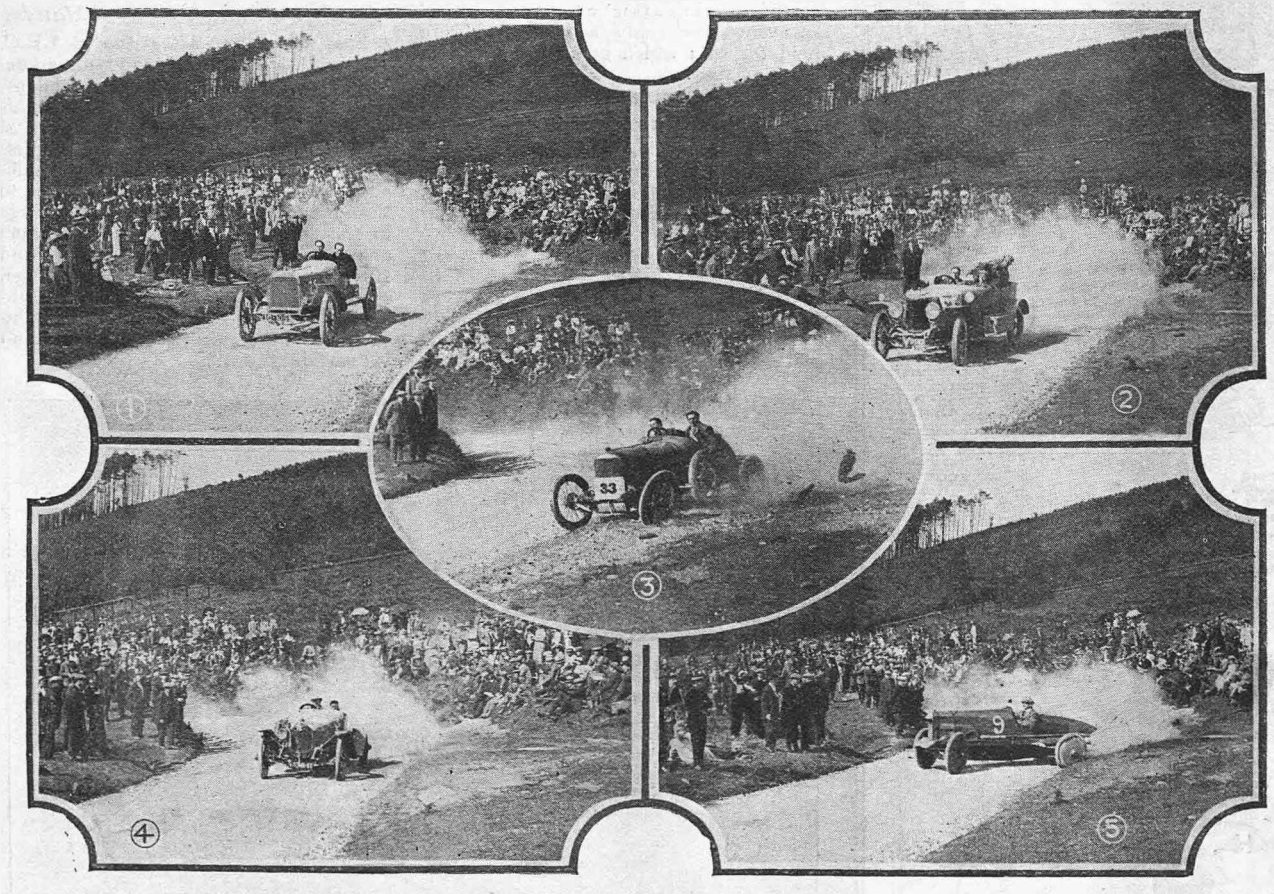
The first car event was for light cars, and in this Mr. Lionel Martin's Singer easily scored first place. The Morris-Oxford "Zelia" of Mr. Sully attracted much attention with its very narrow one-seated racing body. On the top corner it skidded badly and raised clouds of dust. In the next class, that for cars up to 70 mm. bore, the 11.9 h.p. Humber driven by Mr. W. G. Tuck was very fast. In spite of two tyres bursting on a corner he finished in 1 min. 27¼ secs. Being allowed a second attempt after changing his tyres, he put up the best speed in that class, i.e., 1 min. 18 secs. Mr. W. Bentley's D.F.P. was also very fast.

In Class 3, for cars up to 75 mm. bore, Mr. J. Walters, on a 12-16 h.p. Vermorel, was the fastest, the other cars being more or less standard touring machines. In the next division the famous Talbots put in an appearance, that driven by Mr. E. Stokes winning on formula. The 15.9 h.p. Sunbeam of Mr. Insole, however, was extremely fast, and put up the best time. Miss Starkey handled her 12-16 h.p. Sunbeam excellently.

Spectacular skidding was performed by Mr. H. Day, driving the 25-30 h.p. Talbot, in Class 5, his manner of taking the top bend being hair-raising. The Star handled by Mr. R. Lisle was the fastest in this class, despite a terrific skid on the S bend, when it appeared that the car would charge the crowd collected there. A big skid in the same place was seen when the 25 h.p. Vauxhall, driven by Mr. Pearce-Jones, passed. This driver's performance at the last corner was excellent.

The next class provided the only smash of the day. The 15-20 h.p. Straker-Squire T.T. racer driven by Mr. F. C. Clement skidded badly at the S bend and struck the bank at the side. A rear detachable wheel broke off, the inner hub snapping quite "short." The skid occurred when the car was doing about 40 m.p.h., so the shock when the wheel struck the bank was tremendous. The front wheel then also struck the bank, and the front axle was badly twisted. Neither of the wheels themselves, however, was damaged. No one, luckily, was hurt, and the driver evidently did not realize what had happened, as he is reported to have changed gear and tried to continue the climb after the wheel had come off!

The rest of the events were for club members only, and the following did well:—Mr. Insole (15.9 h.p. Sunbeam), Mr. Pearce-Jones (25 h.p. Vauxhall), while the old 28 h.p. Daimler, with an extremely heavy body, entered by Mrs. Bailey, was extraordinarily fast considering the circumstances.



CAERPHILLY HILL-CLIMB.

(1) Mr. Hands on the Talbot, which made the fastest time of the day. (2) Mr. G. D. Pearce-Jones on the Vauxhall. Note the rear passenger. (3) Mr. Clement on the Straker-Squire runs into the bank, causing his wheel to shoot off. (4) Mr. Bianchi on the Crossley skidding. (5) Mr. Tuck on the Humber has a broadside skid and bursts his tyre.

NEWS AND NOTES.—Contd.

The fastest time of the day for cars was put up by the 25-50 h.p. Talbot driven by Mr. L. Hands, the time being 1 min. 6⅘ secs.

The following are the results; those on formula are at present only provisional:—

Light cars up to 65 m.m. bore; open.—1, L. Martin (10 h.p. Singer), figure of merit 2.1990, time 1 min. 22¼ secs.; 2, R. Sully (10 h.p. Morris-Oxford), 1.7894, 1 min. 42⅘ secs.; 3, S. Powell (10 h.p. Humber), 1.5952, 1 min. 55 secs.

Cars up to 70 mm.; open.—1, W. O. Bentley (12-15 h.p. D.F.P.), 2.1533, 1 min. 25⅘ secs.; 2, J. Withers (12-15 h.p. D.F.P.), 2.0378, 1 min. 35⅘ secs.; 3, W. G. Tuck (11.9 h.p. Humber), 1.9097, 1 min. 27⅘ secs. Fastest time, W. O. Bentley (12-15 h.p. D.F.P.), 1 min. 25⅘ secs. In this class Mr. Tuck burst his tyres, and on a second attempt his results were: formula 2.1497, time 1 min. 18 secs.

Cars up to 75 mm. bore; open.—1, M. Neale (14 h.p. Humber), 1.9337, 1 min. 54⅘ secs.; 2, W. G. Tuck (14 h.p. Humber), 1.8141, 1 min. 33⅘ secs.; 3, H. J. Neale (14 h.p. Humber), 1.7867, 2 mins. 8⅘ secs. Fastest time, J. I. Walters (12-16 h.p. Vermorel), 1 min. 31⅘ secs.

Cars up to 80 mm. bore; open.—1, E. Stokes (15-20 h.p. Talbot), 2.7889, time 1 min. 19⅘ secs.; 2, E. R. Insole (15.9 h.p. Sunbeam), 2.3177, 1 min. 19 secs.; 3, B. Davies (12 h.p. Talbot), 2.0285, 1 min. 41⅘ secs. Fastest time, E. R. Insole (15.9 h.p. Sunbeam), 1 min. 19 secs.

Cars up to 91 mm. bore; open.—1, H. G. Day (20-30 h.p. Talbot), 3.1629, 1 min. 19⅘ secs.; 2, R. Lisle (20 h.p. Star), 1.7383, 1 min. 17 secs.; 3, J. H. Jones (18 h.p. Minerva), 1.7289, 1 min. 21⅘ secs. Fastest time, R. Lisle (20 h.p. Star), 1 min. 17 secs.

Cars up to 102 mm. bore; open.—1, R. S. Witchell (15-20 h.p. Straker-Squire), 2.3795, 1 min. 12 secs.; 2, G. D. Pearce Jones (25 h.p. Vauxhall), 1.9358, 1 min. 21⅘ secs.; 3, L. Hands (25-50 h.p. Talbot), 1.5099, 1 min. 6⅘ secs. Fastest time, L. Hands (25-50 h.p. Talbot), 1 min. 6⅘ secs.

Tourist Trophy cars; open.—1, R. S. Witchell (15-20 h.p. Straker-Squire), 2.0895, 1 min. 11⅘ secs.; 2, C. Bianchi (15-20 h.p. Crossley), 2.0178, 1 min. 22⅘ secs.; 3, R. Lisle (20 h.p. Star), 1.8022, 1 min. 14⅘ secs. Fastest time, R. S. Witchell (15-20 h.p. Straker-Squire), 1 min. 11⅘ secs.

Cars up to 65 mm. bore; closed.—1, H. K. Neale (10 h.p. Humber), 1.7828, 1 min. 55⅘ secs.

Cars up to 80 mm. bore; closed.—1, E. R. Insole (15.9 h.p. Sunbeam), 2.3060, 1 min. 19⅘ secs.; 2, G. Kenshole (12-16 h.p. Talbot), 2.2936, 1 min. 34⅘ secs.; 3, Dr. N. Davies (12-16 h.p. Sunbeam), 2.0057 1 min. 36⅘ secs. Fastest time, E. R. Insole (15.9 h.p. Sunbeam), 1 min. 19⅘ secs.

Cars above 80 mm.; closed.—1, G. D. Pearce Jones (25 h.p. Vauxhall), 2.0463, 1 min. 18⅘ secs.; 2, E. S. Pink (15 h.p. Talbot), 1.7575, 1 min. 42⅘ secs.; 3, H. West (25 h.p. Vauxhall), 1.7197, 1 min. 32⅘ secs. Fastest time, G. D. Pearce Jones (25 h.p. Vauxhall), 1 min. 18⅘ secs.

Cars driven by paid drivers of members.

	Formula.	M. S.
Dr. Davies (12-16 h.p. Sunbeam)	1.9851	1 37⅘
Wakley (25 h.p. Vauxhall)	1.6473	1 37
Pritchard (15.9 h.p. Hispano-Suiza)	1.2549	1 40⅘

Fastest time: Wakley (Vauxhall): 1 min. 37 secs.

South Wales A.C. and Cardiff M.C. Dinner.

On Friday last a dinner was given by the South Wales A.C. and Cardiff M.C. to the officials and competitors in the recent trials held by these clubs. About 80 persons were present at the Park Hotel, Cardiff.

After the loyal toasts, proposed by the chairman, Principal Griffiths, J.P., Mr. W. Graham, J.P. (in the absence of Sir John Courtis), proposed the "Officials of the Organizing Clubs." The speaker, in the course of his remarks, urged motorists to drive carefully on their way to Porthcawl next day, for the speed trials to be held there, finishing with the naïve statement that it was "chucking good money away," referring evidently to his position on the bench and fines for reckless driving.

Mr. T. G. Jones, chairman of the Porthcawl U.D.C., stated that he and his colleagues hoped, by attracting motorists to Porthcawl, to advertise the charms of that place. He also expressed the hope that a permanent track might replace the sand beach for motor races, and possibly the future might see an aerial station established there.

Letters of apology were then read from Messrs. Julian Orde, Stenson Cooke, Arthur Stanley and others.

The chairman, Principal Griffiths, in his speech, pointed out the increase of education brought about by motoring. Even hens had gained in knowledge, and a new species, which had sufficient sense to get out of the way of motors, had been evolved. Motoring, too, had led to the conquest not only of the earth but also of the air, and probably in the future, instead of hill-climbs on Caerphilly, aerial trials would be promoted

"The Press, the Visitors and the Joint Sports Committee" having been proposed and responded to, the cups won in the hill-climb were given away as follow:—

President's Challenge Cup for the best figure of merit for cars up to 70 mm. bore: W. O. Bentley (12-15 h.p. D.F.P.).

R. A. Wakley's Challenge Cup for best figure of merit for cars up to 75 mm.: J. Gwyn (14 h.p. Humber).

Park Hotel Challenge Cup for best figure of merit for cars up to 80 mm.: E. Stokes (15-20 h.p. Talbot).

R. F. Wakley's Challenge Cup for best figure of merit for cars up to 91 mm.: H. G. Day (20-30 h.p. Talbot).

Cardiff Exchange Challenge Cup for best figure of merit in the closed classes: E. R. Insole (15.9 h.p. Sunbeam).

Sunbeam Cup for car having best figure of merit in the closed classes: E. R. Insole (15.9 h.p. Sunbeam).

South Wales Motor Traders' Challenge Shield for cars driven by club members' paid drivers: H. Taylor (12-16 h.p. Sunbeam).

Special prize presented by Miss Starkey for best figure of merit in all open classes: H. G. Day (20-30 h.p. Talbot).

R.A.C. special medal for fastest time: L. Hands (25-50 h.p. Talbot).

A good musical programme interspersed the speeches and prize-givings.

The report of the Porthcawl speed trials appears on the next page.

Zenith Carburetters in the Grand Prix Race.

On page 1056 will be found a table setting forth the mechanical features of the Grand Prix cars. This has been prepared by our Paris correspondent from information obtained on the spot, but since it was completed and sent to press we have received a letter from the Zenith Carburetter Co., Ltd., in which they state that the Nagant and Opel cars are fitted with Zenith carburetters.

Competing cars among the rocks at Porthcawl waiting their turn to start in the speed races.

RACING ON PORTHCAWL SANDS.

Talbot does 71.43 m.p.h.—Start Delayed by Tide and Wind.

LOVELY weather and large crowds of spectators graced the speed trial at Porthcawl beach, held by the South Wales A.C. and Cardiff M.C. Owing to a spring tide and a sea breeze there was some delay before the first event. In consequence of this the surface of the sand was still in places under water and rather soft. Nevertheless high speeds were attained, and the record was beaten by L. Hands, driving a 25-50 h.p. Talbot.

The little 11.9 h.p. Humber driven by Mr. W. Tuck scored a good victory in the class for cars up to 70 mm. bore, defeating both the D.F.P. cars entered by Mr. W. O. Bentley.

The first really high speeds came in the open class for cars up to 80 mm. bore, when the 15-20 h.p. Talbot driven by Mr. E. Stokes completed the mile in under 1 min.

The 20-30 h.p. Talbot in the next event won easily, passing the finishing point about 12 secs. ahead of the next car. The 25-50 h.p. car of the same make, driven by Mr. L. Hands, did the mile in 52⅕ secs., and came in about 300 yds. ahead of the 30-98 h.p. Vauxhall. Unfortunately, a valve in the 25-50 h.p. car broke when returning from the last event, and the car was delayed while fitting a new one, an operation which, by the way, only took five minutes. In consequence of this it did not run in the unlimited capacity class, and the prize for this was won by Mr. A. Bertelli on the 30-98 h.p. Vauxhall. The T.T. class did not provide very high speeds, but the finish was very close, the first two cars passing the tape with only ⅕ sec. between them. After this Mr. L. Hands (25-50 h.p. Talbot) had a run by himself, and by doing the mile in 50⅖ secs. broke the previous record, his speed being 71.43 m.p.h.

The ladies' handicap came next, and, owing to a mistake, had to be run twice. Mrs. Neale (14 h.p. Humber) was the winner of this event.

The following are the times in the various classes :—

Class 1 (for cars up to 65 mm. bore), open.—First heat : 1, C. L. Scott (12 h.p. A.-C.), 1 min. 24⅘ secs. ; 2, L. Martin (10 h.p. Singer), 1 min. 30 secs. ; 3, S. Powell (10 h.p. Humber), 1 min. 30⅗ secs. Second heat : 1, R. J. Sully (10 h.p. Morris-Oxford), 1 min. 22⅕ secs. ; 2, B. Davies (10 h.p. Mathis), 1 min. 37⅘ secs. ; 3, F. Rowlands (10 h.p. Morris-Oxford), 1 min. 44 secs. Final heat : 1, C. L. Scott (12 h.p. A.-C.), 1 min. 25⅘ secs. : 2, L. Martin (10 h.p. Singer), 1 min. 27 secs. ; 3, R. J. Sully (10 h.p. Morris-Oxford), 1 min. 30 secs.

Class 2 (for cars up to 70 mm. bore), open.—1, W. G. Tuck (11.9 h.p. Humber), 1 min. 9⅘ secs. ; 2, W. O. Bentley (12-15 h.p. D.F.P.), 1 min. 17 secs. ; 3, J. Withers (12-15 h.p. D.F.P.), 1 min. 19 secs.

Class 3 (for cars up to 75 mm. bore), open.—Heat 1 : 1, E. I. Walters (12-16 h.p. Vermorel), 1 min. 17 secs. ; 2, A. Bray (14 h.p. Foy-Steele), 1 min. 19 secs. Heat 2 : 1, W. O. Bentley (12-15 h.p. D.F.P., 1 min. 14⅘ secs. ; 2, W. G. Tuck (14 h.p. Humber), 1 min. 16 secs. ; 3, J. Withers (12-15 h.p. D.F.P.), 1 min. 16⅕ secs. Final : 1, W. O. Bentley (12-15 h.p. D.F.P.), 1 min. 15 secs. ; 2, E. I. Walters (12-16 h.p. Vermorel), 1 min. 18 secs. ; 3, A. Bray (14 h.p. Foy-Steele), 1 min. 20⅕ secs.

Class 4 (for cars up to 80 mm.).—Heat 1 : 1, Miss Starkey (12-16 h.p. Sunbeam) ; 1 min. 12⅕ secs. 2, B. Davies (12 h.p. Talbot), 1 min. 14 secs. ; 3, E. I. Walters (12-16 h.p. Vermorel), 1 min. 17⅖ secs. Heat 2 : 1, E. Stokes (15-20 h.p. Talbot), 58⅕ secs. ; 2, C. Bianchi (15-20 h.p. Crossley), 1 min. 3 secs. ; 3, E. R. Insole (15.9 h.p. Sunbeam), 1 min. 12⅘ secs. Final : 1, E. Stokes (15-20 h.p. Talbot), 57⅘ secs. ; 2, C. Bianchi (15-20 h.p. Crossley), 1 min. 3 secs. ; 3, Miss Starkey (12-16 h.p. Sunbeam), 1 min. 9⅕ secs.

Class 5 (for cars up to 91 mm. bore), open.—1, H. G. Day (20-30 h.p. Talbot), 58 secs. ; 2, R. Lisle (20 h.p. Star), 1 min. 0⅕ sec. ; 3, C. Bianchi (15-20 h.p. Crossley), 1 min. 2 secs.

Class 6 (for cars up to 102 mm. bore), open.—1, L. Hands (25-50 h.p. Talbot), 52⅕ secs. ; 2, — Munro (30-98 h.p. Vauxhall), 1 min. 1⅛ sec. ; 3, J. Jones (18 h.p. Minerva), 1 min. 9⅘ secs.

Class 7 (unlimited capacity), open.—1, — Munro (30-98 h.p. Vauxhall), 1 min. 0⅕ sec. ; 2, J. Jones (18 h.p. Minerva), 1 min. 8⅘ secs. ; 3, R. F. Wakley (25 h.p. Vauxhall), 1 min. 20⅘ secs.

Class 8 (T.T. cars which ran in the race in 1914).—1, F. C. Clement (15-20 h.p. Straker-Squire), 1 min. 1⅘ secs. ; 2, C. Bianchi (15-20 h.p. Crossley), 1 min. 2 secs. ; 3, R. S. Witchell (15-20 h.p. Straker-Squire), 1 min. 4 secs.

Class 9 (cars driven by ladies), unlimited capacity, handicap on time basis.—1, Mrs. Neale (14 h.p. Humber), 1 min. 46⅘ secs. ; 2, Mrs. Jones (25 h.p. Vauxhall) ; 3, Mrs. Powell (10 h.p. Humber).

Closed Events.

Class 10 (for cars up to 65 mm. bore).—1, H. K. Neale (10 h.p. Humber), 1 min. 32⅘ secs.

Class 12 (for cars up to 80 mm. bore).—Heat 1 : F. D. Pritchard (15.9 h.p. Hispano-Suiza), 1 min. 19⅘ secs. ; 2, Miss Starkey (12-16 h.p. Sunbeam), 1 min. 21 secs. ; 3, G. Kenshole (12-16 h.p. Talbot), 1 min. 24 secs. Heat 2 : 1, E. R. Insole (15.9 h.p. Sunbeam), 1 min. 13 secs. ; 2, W. H. Lewis (15-20 h.p. Talbot), 1 min. 24⅕ secs. ; 3, J. Gwynne (14 h.p. Humber), 1 min. 38⅗ secs. Final : 1, Miss Starkey (12-16 h.p. Sunbeam), 1 min. 12⅘ secs. ; 2, E. R. Insole (15.9 h.p. Sunbeam), 1 min. 17 secs. ; 3, F. D. Pritchard (15.9 h.p. Hispano-Suiza), 1 min. 19⅘ secs.

Class 13 (for cars above 80 mm. bore).—1, Miss Lena Cooper (48.6 h.p. Rolls-Royce), 1 min. 17⅕ secs. ; 2, R. C. R. Pomeroy (20-30 h.p. Talbot), 1 min. 20 secs. ; 3, R. F. Wakley (25 h.p. Vauxhall), 1 min. 21 secs.

The following are to receive the special cups :—The R. E. Jones Challenge Cup (for cars up to 70 mm. bore), open.—W. G. Tuck (11.9 h.p. Humber).

Humber Vase (for cars up to 75 mm.), open.—W. O. Bentley (12-15 h.p. D.F.P.).

Mrs. C. H. Bailey's Cup (for cars up to 80 mm. bore).—E. Stokes (15-20 h.p. Talbot).

Mrs. C. H Bailey's Cup (for cars up to 91 mm.).—H. G. Day (20-30 h.p. Talbot).

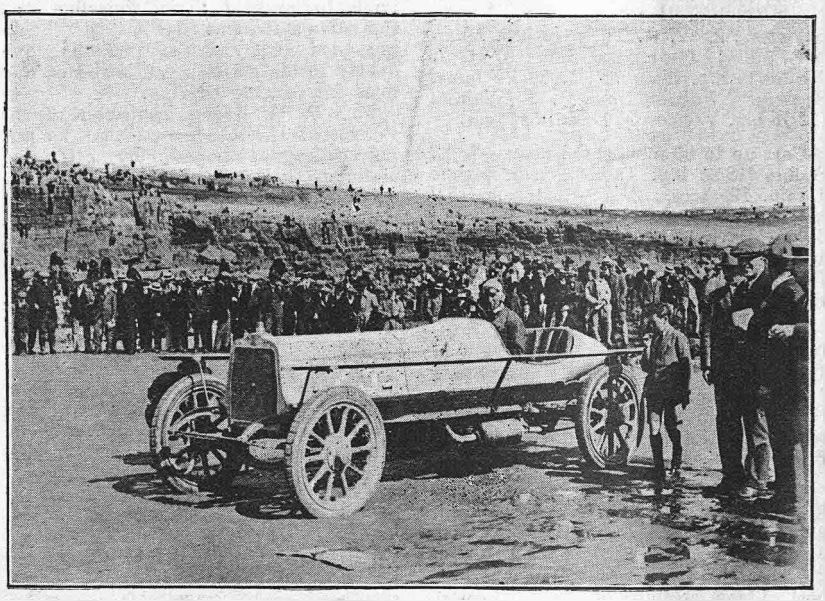
Challenge Cup, presented by Porthcawl Chamber of Commerce (for cars up to 102 mm. bore), open.—L. Hands (25-50 h.p. Talbot).

Wm. Graham Challenge Cup (for cars of unlimited capacity).— — Munro (30-98 h.p. Vauxhall).

R.A.C. Special Medal for the fastest time of the day.—L. Hands (25-50 h.p. Talbot).

The special cup, presented by Mrs. C. H. Bailey for the best average figure of merit in both the hill-climb and the speed trial, goes to Mr. G. Kenshole (12 h.p. Talbot).

The D. K. Roberts Cup, for the same average figures for genuine touring car, goes to Mr. J. Gwynne (14 h.p. Humber).



Mr. L. Hands's 25-50 h.p. Talbot, which made fastest time in the Porthcawl speed trials.

THE RUBBER EXHIBITION.

Motorists as a class are particularly interested in the rubber question, as this material is of vital necessity in connection with various parts of a car. The International Rubber Exhibition, which was opened at the Agricultural Hall on Wednesday last, and remains open till Thursday, 9th July, has, therefore, as first claim the fact that it is devoted to this very little-understood material. While the exhibition consists mainly of raw and partially-worked rubber, many of the finished products are of interest to the car owner, particularly tyres. Several concerns are exhibiting the finished products, and probably the most inclusive show of tyres is that on the Pirelli stand. On the Dunlop stand specimens of various tyres for every class of vehicle are shown, also on the stands of the North British Rubber Co., the Continental Tyre Co., Wood-Milne, Ltd., Moseley, and Palatine. It is interesting to note, in view of the discussion which has recently arisen, that the Palatine tyres are manufactured exclusively of plantation rubber.

While not directly affecting the running of a car, nevertheless there are several interesting features in this exhibition. Several of the large rubber concerns stage tyres, etc., which are made from the productions of their estates, and thus the motorist has an opportunity of seeing the rubber from which his tyres are made in its natural state.

The possibilities of rubber roads have been realized for some time. The unfortunate drawback to this method of construction is its initial expense, as the cost of laying a road with rubber is such that only a small area, such as the courtyards of hotels or stations, can be so treated. A particularly interesting form of road covering is exhibited by the Leyland and Birmingham Rubber Co., Ltd.; it consists of a number of interlocking strips. The idea of making a road covering in this manner, and not in one continuous piece, is that the dismemberment of the road for excavating purposes can be undertaken very easily. One strip of road can be removed without disturbing the surrounding strips, and the excavations can then be carried out with ease; when the excavations are finished, the replacement of the strips will restore the road to its originally smooth surface. This concern is also exhibiting a specimen of rubber-block paving, some of which has been laid in the Old Kent Road, London. These blocks are similar to the wooden blocks, only smaller, and it is found that they wear much better under heavy traffic.

A visit to this exhibition will result in wonder on the part of the visitor as to where the uses of rubber end. The North British Rubber Co., the manufacturers of the Clincher tyre, for instance, have one room on their stand which is called the rubber room, in which the chairs, etc., are upholstered in a sort of rubber sheeting, which, without touching, it is practically impossible to distinguish from soft leather, and the floor is covered with rubber which has the exact appearance of a carpet.

A particularly interesting machine is shown in the St. George's Hall, made by the Pierce Wrapping Machine Co., of Chicago, U.S.A. The purpose of this machine is to wrap tyre covers in the thin paper strip in which they are received by the purchaser. The strip is wrapped evenly around the tyre, and simultaneously a small gummed strip is wound round the centre of the tread, holding the wrapper firmly in position and preventing its displacement.

The specimens of rubber in its raw state which are exhibited give some idea to the motorist of the number of processes through which it has to go before he receives it in the finished state as a cover or an inner tube.

The Success of a Window-dressing Competition.

That a well-dressed window display is as indispensable to motoring concerns as to any other traders is testified by the results and sales returns achieved in the window-dressing competition organized by the Vacuum Oil Co., Ltd. In this competition nine districts of the Kingdom were portioned off, and three prizes were awarded to each district, the prizes totalling £270. The judges were motoring journalists from the technical Press, and they awarded the prizes according to what they thought was the most effective display of Gargoyle Mobiloils and greases from an advertising point of view. The awards were made regardless of the size of the windows or the number of cans displayed. Much ingenuity was exercised by the competitors in their display, and so gratifying was the result of the contest that the concern are considering the advisability of holding another competition. Although a number of the entrants were disqualified through not strictly adhering to the rules, all the awards were made. The display of the Dunlop Motor Co., Kilmarnock, was in the judges' opinion the most attractive in the whole of the Kingdom.

The Ford Inset.

In each copy of The Motor this week is a 12-page inset by the Ford Motor Co., Ltd. It deals mainly with the Ford Service system, a vast organization throughout the British Isles, and operating through the Ford agents. By reference to the maps provided and to the very complete directory given, every owner of a Ford can instantly find the name and address of the nearest Ford service man, for advice or assistance. At the service depots spares may be easily obtained and all fitting is done as cheaply as possible. As soon as a man becomes the owner of a Ford the Ford service is at once placed at his disposal.

The Saltburn Speed Trials.

The speed trials held by the Yorkshire Automobile Club on the sands between Saltburn and Marske is one of the big annual motoring events. This year the meeting will take place on Saturday, 11th July, the racing commencing at about 8.30 a.m., as the tide permits. Eight of the events are races which are open only to members of the Yorkshire Automobile Club and of recognized clubs in Yorkshire. The rating is according to capacity, the limits in the closed events being 1400 c.c., 1850 c.c., 2500 c.c., 3060 c.c., 3450 c.c., 4600 c.c., and unlimited. Event H is a handicap for lady drivers. The other 15 events are open. One class is for cyclecars with an engine capacity not exceeding 1100 c.c. Eight classes are for cars with a capacity not exceeding 1100 c.c., 1400 c.c., 1850 c.c., 2500 c.c., 3060 c.c., 3450 c.c., 4600 c.c., and unlimited. Three classes are on a price basis, the limits being £200, £350, and £450. One class is a handicap for Associates of the R.A.C., and there are two classes for racing cars. Full information may be obtained from Mr. R. Hilditch, Atlas Chambers, King Street, Leeds. Entries close on 6th July.

A ROSE DAY SNAP.
An enterprising lady captures a chauffeur in the park.

HENRY FORD.

Romantic Career of a Man who was Intended to be a Farmer, but who Determined to "Build a Car for the Multitude."

Much is known of the Ford car, the works in which it is produced, their enormous output and the unique business organization of the company, but of the man behind the motor how little is known, beyond his name. A brief outline of a career crammed with incident and crowned with commercial success may therefore be of interest to our readers, whether Ford owners or not.

Henry Ford was born on 30th July, 1863, at Greenfield, near Detroit, Michigan, where his father, an Irish emigrant, owned a large farm. He was the eldest of a family of six, three boys and three girls, and from the very first showed little interest in the farm. His passion was for things mechanical, and to the despair of his father he gathered a few tools together and established a workshop on the farm. After considerable practice in this tiny shop the youth of sixteen ran away from home and became apprenticed to Flower Bros., of Detroit, who employed some 40 men. After nine months with these general engineers, Henry Ford went to work with the Dry Dock Engine Co., making marine engines and employing 208 men.

At the age of nineteen, Henry Ford was employed by one John Cheeny, the agent for portable farm steam engines, working on these during the summers of two years, and spending the winters at his home at Greenfield. During these winters he built a small steam tractor and made numerous electrical experiments. On his twenty-first birthday his father presented him with a 40-acre plot of land, in the vain hope of weaning him from his mechanical pursuits.

At the age of 24, Henry Ford married, and took this opportunity of moving his workshop to his new home. Two years later he gave up any idea of becoming a farmer, and moved to Detroit, where he obtained a position with the Detroit Edison Illuminating Co. at a salary of £9 per month! Shortly afterwards he was made chief engineer of this company, at a salary of £25 per month. For seven years he stayed with this company, spending his leisure in his home workshop working on gas engines and electrical fittings, and finally on the construction of road vehicles driven by gas engines.

Henry Ford, the man who "built a car for the multitude."

In 1898 he placed his second self-propelled car on the road, and left the Edison Co. to join the Detroit Automobile Co., which was formed to exploit this second Ford car. Things did not go smoothly, so Ford left the Detroit Automobile Co., which was the forerunner of the Cadillac Co., and opened a workshop of his own, devoting his energies to the production of his third car.

On 16th June, 1903, the Ford Motor Co. was first organized with £100,000 capital, and the first Ford car was sold to a private purchaser in July of that year. Henry Ford held 26½ per cent. of the stock, but in 1905 he realized that he could not carry out his policy unless he had control, so he purchased sufficient stock to bring his holding up to 51½ per cent. At present his holding is 58½ per cent. of the 2,000,000 dollar capital. His personal income is between 5,000,000 and 10,000,000 dollars per annum, and it is mainly due to the fact that he was a worker himself at the beginning, that the recent profit-sharing scheme was introduced.

His great motto when he started business was "I will build a car for the multitude," and the ubiquity of the Ford is proof of his success.

Indianapolis Limit Reduced.

The engine capacity limit of the recent Indianapolis race was 450 cubic ins., and a Peugeot was second with an engine of 183 cubic ins. The Americans have therefore decided to encourage the small size, high-speed engine, and have set the capacity limit for next year at 300 cubic ins.

Colwyn Bay Speed Trials.

This meeting is organized by the Mersey Motor Club, and the trials will be held over the Promenade, Colwyn Bay, North Wales, on Saturday, 4th July. There are classes for cars with engines up to 1500 c.c., 2100 c.c., 3000 c.c., 4000 c.c., 5000 c.c., and unlimited in size. Full particulars may be obtained from Mr. S. W. Carty, 5, Redcross Street, Liverpool.

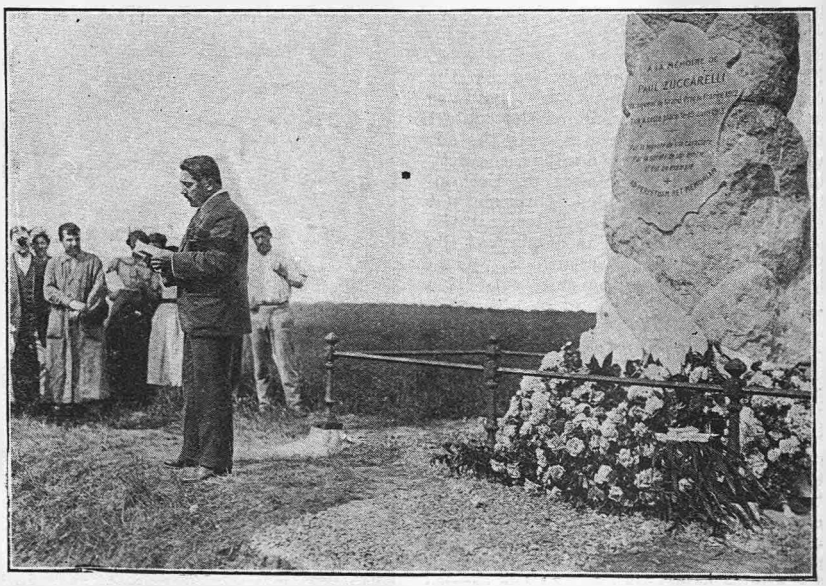
The Austin Service Scheme.

Reference has already been made in these pages to the Austin service scheme, and a booklet has now been issued giving full particulars of the scheme. One Austin owner, commenting on the Austin service scheme, remarks that if all Austin owners are as fortunate as he is, the Austin service men will not have very much to do.

Motor Traffic Report.

Mr. F. Hall asked the Prime Minister when the House would have an opportunity of discussing the report of the Select Committee on Motor Traffic which sat last year.

Mr. Asquith: I am afraid I am unable at the present time to give any definite promise in this matter.



MEMORIAL TO DEAD RACER.

Georges Boillot reading his speech at the inauguration of the monument in memory of Paul Zuccarelli, killed near Nonancourt while practising for last year's Grand Prix.

NEWS AND NOTES.—Contd.

Essex M.C. Speed Trials at Westcliff.

On Thursday, 25th June, the Essex Motor Club held their first speed trials on the Western Esplanade, Westcliff-on-Sea. A crowd which was estimated at 20,000 lined the mile-long course, which was well roped off. The performance of two light cars, Mr. Nelson Smith's 9 h.p. Hillman and Mr. Bramley Haywood's 10 h.p. Singer, were specially meritorious.

Car Results.

Maximum cylinder capacity 1100 c.c.—Half-mile flying start.—Mr. Bramley Haywood (10 h.p. Singer), 34⅘ secs.; Mr. John W. Leno (Baby Peugeot), 39 secs.

Maximum cylinder capacity 1500 c.c.—1 kilom. standing start, a handicap.—1st, F. Lewellen Scholte (8 h.p. Bugatti), received 9 secs. from 2nd, Mr. Bramley Haywood (10 h.p. Singer).

Maximum cylinder capacity 1100 c.c.—1 kilom. standing start, a handicap.—1st, Miss D. Addis-Price (10 h.p. Mathis), received 21 secs. from 2nd, Mr. Bramley Haywood.

Maximum cylinder capacity 1500 c.c.—Half-mile flying start.—1st, Mr. H. Nelson Smith (9 h.p. Hillman), 30⅘ secs.; 2nd, Mr. Bramley Haywood (10 h.p. Singer), 31⅘ secs.; 3, Mr. Noel A. Stevens (10 h.p. La Ponette), 36⅖ secs.

Maximum cylinder capacity 2100 c.c.—1 kilom. standard start, a handicap.—1st, Mr. H. Nelson Smith (9 h.p. Hillman), gave 5 secs. to 2nd, Mr. Arthur E. Wood (11.9 h.p. Humber).

Maximum cylinder capacity 3000 c.c.—1 kilom. standing start, a handicap.—1st, Mr. H. Nelson Smith (9 h.p. Hillman) gave 9 secs. to 2nd, Mr. Henry H. Burrows (13.9 h.p. Humber).

Maximum cylinder capacity 2100 c.c.—Half-mile flying start.—1st, Mr. H. Nelson Smith (9 h.p. Hillman), 28⅕ secs.; 2nd, Mr. Arthur E. Wood (11.9 h.p. Humber), 35⅕ secs.; 3rd, Mr. W. Turner Smith (13.9 h.p. Stoewer), 51 secs.

Maximum cylinder capacity 3000 c.c.—Half-mile flying start.—1st, Mr. E. Remington (22.4 h.p. Bedford-Buick), 29⅕ secs.*; 2nd, Mr. W. C. Sykes (20 h.p. Ford), 32⅘ secs.; 3rd, Mr. Arthur Bray (14 h.p. Foy-Steele), 34⅕ secs.

Maximum cylinder capacity 4000 c.c.—1 kilom. standing start, a handicap.—1st, Mr. W. C. Sykes (20 h.p. Ford), received 6 secs. from 2nd, Mr. S. H. Greenaway (25 h.p. P.H. Vauxhall).

Maximum cylinder capacity 4000 c.c.—Half-mile flying start.—1st Mr. Arthur Bray (14 h.p. Foy-Steele); 2nd, Miss Mary Ellis (20 h.p. Spyker).

Closed event for club members and for Southend and District A.C. members.—A handicap for cars in touring trim.†—1, N. A. Stevens, 10 h.p. La Ponette, gave 3 secs. to 2, Henry H. Burrows, 13.9 h.p. Humber.

Maximum cylinder capacity, 5000 c.c.—Half-mile flying start.—1, L. C. Rawlence (24.8 h.p. Berliet), 30.4 secs.

Unlimited capacity.—One kilom., standing start, a handicap.—1, Mr. P. H. Easton, Schneider (34⅖ secs.), received 5 secs. from 2, Mr. H. W. Cook, 120 h.p. Isotta-Fraschini (37⅘ secs.).

Maximum cylinder capacity 5000 c.c.—One kilom., standing start.—1, L. C. Rawlence (24.8 h.p. Berliet), 37⅕ secs.

Unlimited capacity.—Half-mile, flying start.—1, P. H. Easton (15 h.p. Schneider), 24⅖ secs.; 2, H. W. Cook, 120 h.p. Isotta-Fraschini.

A match between the fastest car, Mr. P. H. Easton's Schneider and the fastest motorcycle, Mr. Harry Reed's 7 h.p. Dot, resulted in an easy win for the motorcycle, which had been travelling at 90 m.p.h.

Special awards.—Event No. 2, Palmer Tyre, Ltd., one pair of 700 mm. by 80 mm. covers.* Event No. 8, the Southend Advertising Agency, special gold medal. †Event No. 11, the Southend and District Automobile Club, £5 5s. cup.

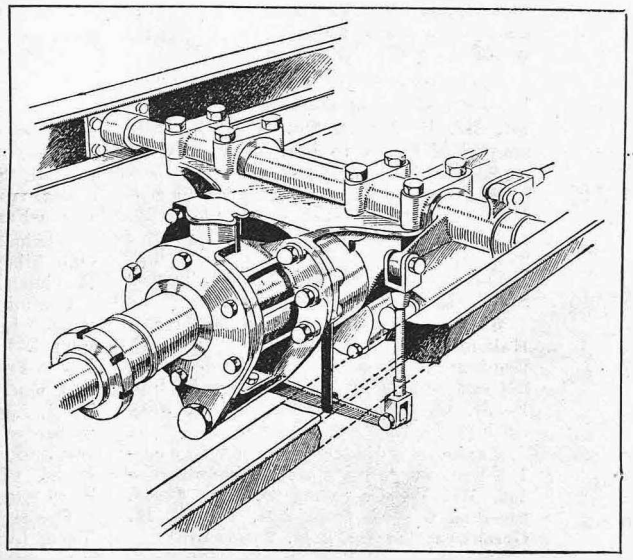
The Essex M.C. open speed trials at Westcliff-on-Sea. The top picture shows Mr. Nelson Smith on a Hillman car approaching finish

The lower picture shows a pleasant interlude, Mr. Sidney Henry Greenway taking a cup of tea.

A SMALL CAR WITH A BIG HEART.

A Description of the Phoenix Chassis.

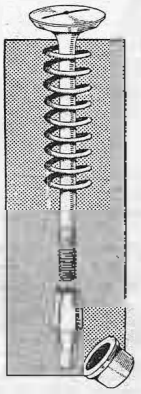
Interesting Notes Relative to its Road Capabilities.



The enclosed brake at the rear of the gearbox. Note the lubricating box on top for the universal joint.

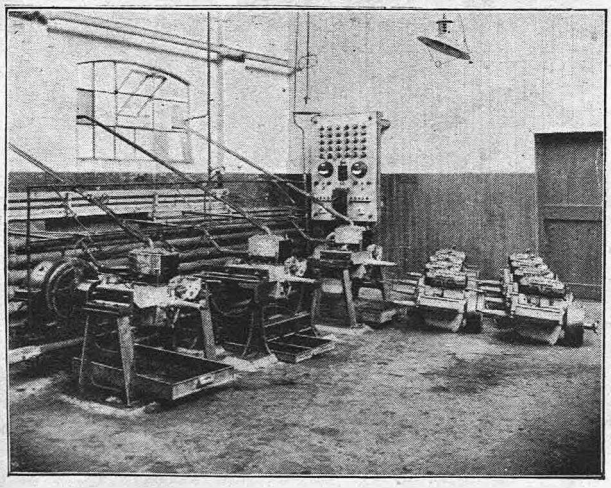
ONE of the many hobbies which exist, but which one does not frequently meet, is that of the study of allegory. Some folk take it so seriously that if one questions the origin or history of any allegorical allusion, or fable, the whole recital is at once propounded from memory. These folk perhaps take it rather too seriously for the average man, but in a more superficial manner there is a good deal of interest attaching to the subject. In the motor world we have several cars which take their name from legend, fable or allegorical allusion. It is not necessary to quote them as several will readily come to mind. In the case of the car under consideration, the Phœnix, we all know that this is a fabled bird of some type or another, but whether or no it has any specific relation to the long extinct and much-famed Dodo, the present writer for one would not be prepared to say.

The conversation turned to this topic whilst we were sampling the joys of one of the new model 11.9 h.p. Phœnix two (sufficiently wide for three) seater cars in the vicinity of Letchworth Garden City recently. "What precisely," we queried, "is, or was the Phœnix?" "It is a famed bird," quoth Mr. van Hooydonk, "said to have lived for 500 years, after which, in fair Arabia, it made itself a nest of spices, then cremated itself, and came forth again to renewed life and vigour for a further period of 500 years. On the other hand," he said, "certain authorities can be quoted who put the period of life at 1000 years, after which brief span on earth he built himself a funeral pile, sang a melodious air through his 50 organ pipes and then flapped his wings to such purpose and with such constant acceleration that the friction set up eventually set fire to the pile, and he was consumed to ashes." Consequently the word has come to carry the meaning of something unique, something in the nature of a paragon, as, there only being one Phœnix, it was obviously rather a wondrous bird. The 11.9 h.p. Phœnix cannot claim to so wonderful a distinction as this glorious isolation, but nevertheless it is one in a class which as a whole is a very good branch of the automobile tree, and in regard to the question of price, in conjunction with quality, workmanship and material, it comes very near to being a Phœnix in fact, as well as in name.



An exceptionally simple valve adjustment is employed on the Phoenix engine.

In the first place it is British-built throughout, and walking through the Letchworth factory it is readily seen by the keen observer that it is built under ideal conditions. The factory itself is well arranged and kept scrupulously clean, the work therefore being carried out under ideal conditions. We can confidently state that the mechanism of this car can successfully withstand the closest scrutiny. It is quite the reverse of being a cheaply-produced car; all the usual jigs used in the production of the most expensive machines are employed in just the same manner in the building of the Phœnix. In some few cases, however, we noticed an ingenious simplification of jig work and tool-room practice, all of which makes for lower cost and the production of a better-grade machine. The idea of making a two-seater car sufficiently wide comfortably to take three people of ordinary stature seems quite a sound scheme. Another neat point in connection with the car itself which rather took our fancy was the arrangement for carrying the spare wheel, which is neatly stowed away in a special compartment provided in the rear toolbox. It is certainly distinctly preferable to the ordinary method of carrying it at the side of the car, which is at the best of times unsightly, although we are gradually becoming so accustomed to it as hardly to notice it.



Where Phoenix motors are tested.

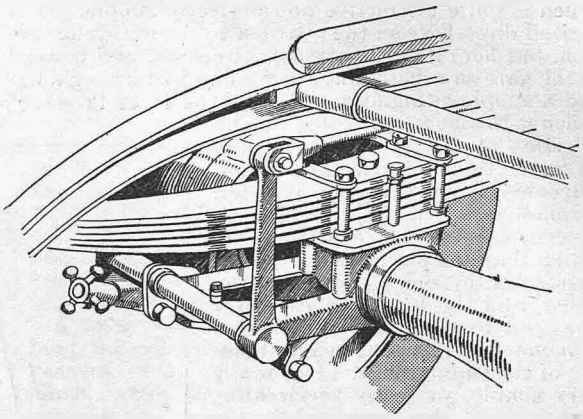
We may now deal with the construction of the chassis. Starting with the engine in the first place, partly on account of it being the most natural unit with which to commence one's description, and also because of its outstanding excellence, it is really a remarkably good little power unit. It seems to be a happy size, this 11.9 h.p., as there are several excellent little cars of English manufacture of that power, and this one is certainly to be numbered amongst the best.

PHŒNIX CHASSIS.—Contd.

With a bore and stroke of 69 mm. and 100 mm. and the four cylinders cast en bloc, the external size of the motor is certainly the reverse of excessive. In appearance it is also quite neat, and the two tray extensions from the upper portion of the crankcase which support the engine by the main frame are responsible for keeping it in a very clean condition. On the one side is the carburetter and in the other tray one finds the magneto, both units being neatly ensconced and working under ideal conditions as regards cleanliness. An interesting point in the design of the engine is relative to the method of casting the cylinders. Instead of the usual type of casting an open-sided one is employed which simplifies the casting, as a casting, and assures more reliability so far as the question of evenness of the metal is concerned, whilst in the third place the deposit which gradually settles on the cylinder walls can easily be cleaned.

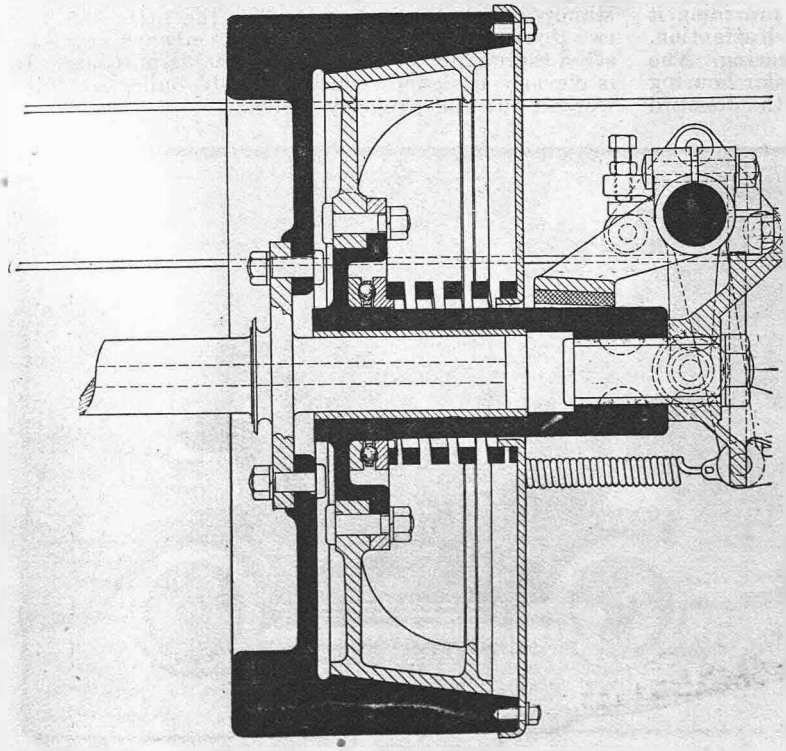
The valves are quite small, and are of the same size. The adjustment provided is really extremely neat and simple, quite one of the best things in tappet adjustment which we have come across. The tappet headpiece is threaded, and the threaded portion is slightly coned externally, whilst it is also tongued, so that when the collar, which is similarly coned, is forced down on to it by the valve spring, the thread is gripped tightly without fear of any movement. For adjustment purposes it is only requisite just to release the pressure of the spring and then the tappet head can be turned round as desired, by the fingers, and so soon as the spring pressure comes into play again it is automatically and instantly locked in position. The illustration which we give of this valve-adjusting scheme will probably render it quite easily understood, and it must be agreed that it is certainly the essence of simplicity in theory, whilst in practice it has proved itself thoroughly reliable.

The designer has not been afraid of weight so far as the crankshaft is concerned; for so small an engine it is of quite generous proportions, and being provided with a central bearing, long life and reliability should be assured. All the bearings are lined with white metal, and the condition of the crankshafts and connecting rods which we saw going through the shops on our visit to the works impressed us very favourably. A helical tooth is used for the timing gear so as to assure, so far as possible, quietude in the operation of this mechanism; suitable provision is made for the end thrust. The camshaft itself is cut from the solid, and is provided with a central bearing.



The simple means provided for adjusting the rear brake: note the little pipe with a lubricator on top for oiling the oscillating spring pad.

With regard to the question of lubrication, this is carried out in a very thorough manner, the big-ends being provided with dippers which scoop up the oil from troughs in which the supply of lubricant is kept at a constant level by a pump. This pump is fitted in the front of the engine and is in a readily accessible position. It is provided with a priming cock in case such a fitment should ever prove necessary. The surplus oil overflows into the sump, whence it passes through a detachable filter of generous dimensions. The main bearing at the flywheel end is lubricated by a special pipe led directly from the sump. An indicator mounted on the dashboard is useful for acquainting one as to the well-being of the lubrication system. The actual quantity of oil carried is about a gallon, which, under average conditions, is enough for about 1000 miles running, or even a little more. Altogether we think very highly of the design and arrangement of this little Phœnix engine, and in practice we certainly found that it lived up to preconceived ideas based on a study of the design. It is a thoroughly well-designed unit, is most conscientiously built and put together, and gives a fine account of itself when it gets to business.

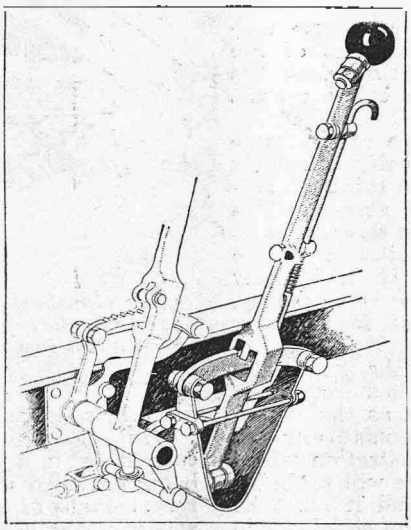


A notable feature of the Phœnix chassis is the special design of metal-to-metal clutch.

With regard to the question of the clutch, this is really a most interesting piece of work on the Phœnix chassis, as it is rather a bold conception. It is of the metal-to-metal cone type, running in oil. Any amount of surface is provided for the frictional contact, and it is of the practically unwearable type. Another good feature in connection with it is the fact that if it ever should be desirable to take it down for any reason it can be withdrawn without the necessity of disturbing either the engine or the gearbox. Between the clutch and the gearbox a universal

PHŒNIX CHASSIS.—Contd.

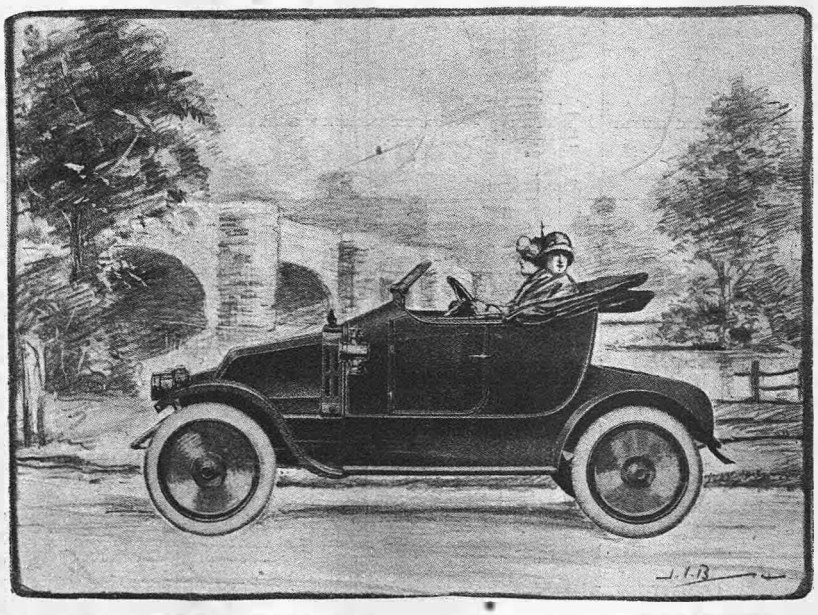
joint is incorporated—quite a simple type of withdrawal mechanism is employed. The actual number of speeds provided is three and a reverse, all the shafts being mounted on ball bearings and being kept as short as compatible with the necessary movement of the sleeves. It is also so arranged that the reverse shaft is idle when the forward gears are in engagement. We give an illustration showing the "gate," which is quite distinctive and perfectly simple. It is carried directly from the gearbox by a housing extension, but here its ordinary aspect ceases, and instead of the gate as usually known, we find just a single bar and a simple swinging motion for the lever laterally, which is the means provided for the selection of the shaft to be picked up inside the gearbox. The actual movement is just the same as in the ordinary type, though, of course, it is considerably more certain in action than the plain sliding type of gate, as in this one a fulcrum is provided, and the length of the lever does not tend in anything like so pronounced a manner to cause binding of the sliding shaft. It is really very simple, perfectly serviceable, and a small stop provided in the ordinary way to prevent the engagement of the reverse prevents the possibility of any mistake in this respect. The whole mechanism of this gearbox is totally enclosed, and the design, once again, is distinctive, not only because it is distinctive, but also on account of its general all-round excellence. One small point on this car which might be more in general evidence than it is, is the provision of a wick lubricator to the universal joint at the rear of the gearbox, as this joint is not usually cared for as well as it might be by the average user, so that the longer one can make it last without requiring lubrication the better; similarly the more simple one can make the work of providing it with lubricant the more likely is it to get such attention.



The rocking lever for gear changing on the Phoenix.

The final drive is by means of worm gearing. The tailshaft is carried in a heavy-gauge tubular housing which constitutes the torque stay. At the forward end of the said housing there is a large ball and socket joint with the universal joint arranged co-centrally therewith. The rear axle construction is of a most substantial nature, the centre-piece being of a very strong section and provided with a large cover to the front and rear. Detachable wheels are fitted, and the spring pads are arranged to be of the oscillating type. There are a good many arguments in favour of the oscillating spring pad, the general one against it being that it is not looked after from the lubrication point of view. One generally finds that it is necessary more or less to climb underneath the car in order to lubricate the oscillating spring pad, but in the case of the Phœnix a pipe is brought up into a convenient position with the lubricator attached to the top so that one has no excuse for not attending to it occasionally. The usual two sets of brakes are provided, one being at the rear of the gearbox operated by a pedal, whilst the side lever controls the enclosed brakes mounted in the drums of the rear wheels. The side brake lever is mounted quite independently of the gate change provided (it will be recalled that the gate is carried directly from the gearbox), so that there is no tendency to distort the original accurate movement in the gate, or to make the change-speed lever bind when the side brake is applied. The actual metal employed for the brakes is flexible steel, with a friction lining, and whilst the diameter is not very great, the braking power was ample and for wearing properties the width is such that long life and freedom from excess of adjustment troubles are assured. The brake pedal and also the clutch pedal are adjustable as to height to suit the individual requirements of the owner, whatever they may happen to be.

We have now fairly well covered the mechanical parts of the chassis, and may briefly recapitulate some general impressions from the road behaviour point of view. The most noticeable aspect of the car's work was the stout heart with which it tackled it. Nothing seemed to come amiss, and for so small an engine she was most courageous in her assault on the hills. She showed a wonderful freedom from knock and on one occasion Mr. van Hooydonk, just to show what was in point of actual fact possible, drove hard against a steep hill on top gear until the engine actually stopped dead. Instead of the violent knocking and signs of distress which one would anticipate, the engine gradually pottered out, going slowly and more slowly until finally it simply did not get round to the next firing position. There was no knock or violent jerk. The steering was light and easy, and about two or three operations with the change-speed lever were sufficient to accustom one to the slight variation from standard practice. Both brakes were thoroughly serviceable; the springing was quite up to the average. From an all-round standpoint we see no reason why the little 11.9 h.p. two-three-seater Phœnix should not always prove itself a thoroughly satisfying and reliable purchase. It is cleverly designed, conscientiously built, carefully worked out and properly tested.



The Phoenix car on the road.

THE ALPINE TOUR.

The Fearful Turracher Hohe, Climbed by Nearly all Competitors—British Cars Again Do Well—Seventh Day of Trial Concludes Amid Fierce Thunderstorm—Landslide Cuts Off Rear of Trial—Many Marks Lost—What the Day Meant to Motoring—Another Star Performance on Kelochberg.

BY OUR SPECIAL CORRESPONDENT IN THE TRIAL.

VILLACH, *22nd June.*

AFTER a rainy day and a stormy night, starting up from cold proved rather strenuous work. Most cars, however, started very well, though there was some misfiring and spitting among the more reluctant engines. As the roads were still in the Tyrol, the speed limit in this province had to be strictly observed, and so Prince Ely of Parma's car led the

How a car and its occupants look after five strenuous days.

van. On the top of Thurn Pass the Salzburg border was reached, and Mr. Radley took the lead with lightning rapidity on his aluminium Rolls-Royce.

The Tauern Pass, though one of the steepest of the Austrian passes, was conquered by all without a falter. Next came a long descent, a few miles of more or less level road, and then the Katschberg. This timed hill-climbing trial was more or less of a race, the competitors starting at intervals of from four to six minutes. A field telephone enabled messages to be sent from the start to the finishing point on the top of the mountain. Here hundreds of spectators from Vienna had assembled to watch the climb, including a group of British sportsmen and journalists, among them Mr. Chas. Jarrott, Mr. C. L. Freeston, F.R.G.S., Mr. Gibb, and Mr. Inglis-Ker.

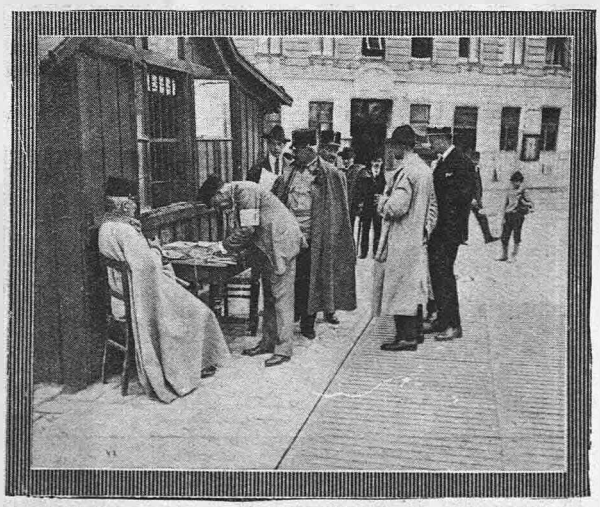
Mr. Radley's Rolls-Royce made fastest time, in spite of other more powerful cars. Mr. Tinsley Waterhouse's Vauxhall was second (according to my own information gathered on the spot and still to be confirmed by the official timing). The Armstrong-Whitworth and the Hotchkiss also did well, the Armstrong being one of the fastest cars. The Hotchkiss has only lost marks for trifling reasons, and has made a very fine show throughout. This performance is due to a great extent, to the able handling by an English driver, Mr. Ainslee.

The same may also be said of the performance of the Austin, which is one of the best behaved cars in the trial and has an absolutely clean record sheet as yet. Ably steered by Mr. Kendall, it simply roared up the dreaded Katschberg, playing with the gradient, and though by no means at full throttle, overhauling numerous competitors, and having still plenty of reserve power.

A small number of cars lost marks on the Katschberg, amongst them the Darracq, but only for trifling reasons. One of the Cadillacs made a very fast climb, while Mr. Roberts (Singer light car) had to stop on the worst part, showing us a sooted plug as we passed him. The Singer then supplied the joke of the day, for when the plug had been changed and a restart had successfully been effected, it romped up in true racing style, gamely overhauling a panting 100 h.p. car of countless cwts. amid roars of laughter from the amused spectators. The Wanderer light car also did very well.

Heavy rain, mountain mists, and snow again obscured the view and interfered with photographing. All cars arrived safely at Villach, where they were parked in a wet meadow for the night, while the Automobile Club of Carinthia had a buffet ready for the hungry and tired drivers.

The chief topic of conversation was the dreaded Turracher Höhe on the following day. Our grave anticipations may, however, have been too extreme, as very complete arrangements had been made to prevent the wrecking of the trial on this hill, which Mr. Radley, on a Rolls-Royce, had already climbed with success during our day of rest at Innsbruck. As I write these lines at the hotel at Villach, news comes that one of the powerful official cars just attempted the climb, but failed, and only with great pains and exertion was extricated from the mire.



Some members of the Austrian A.C. committee. Lieut.-Col. Wolf (seated), Capt. Reche, Capt. Von Drahtschmidt, and Mr. Spanner. Prof. J. E. Wolfbauer, our correspondent, is the figure on the right in black and wearing a straw hat.

THE ALPINE TOUR.—Contd.

Monday, 22nd June.

The sixth day of the Alpine Tour will long live in the annals of motoring as the day on which the cars on trial showed that nothing less than a mountain side is necessary to provide a trying test for the cars of 1914. Though the dread anticipations were scarcely realized, the climbing of the Turracher Höhe proved, nevertheless, particularly trying, inasmuch as it needed the utmost power from even the finest cars.

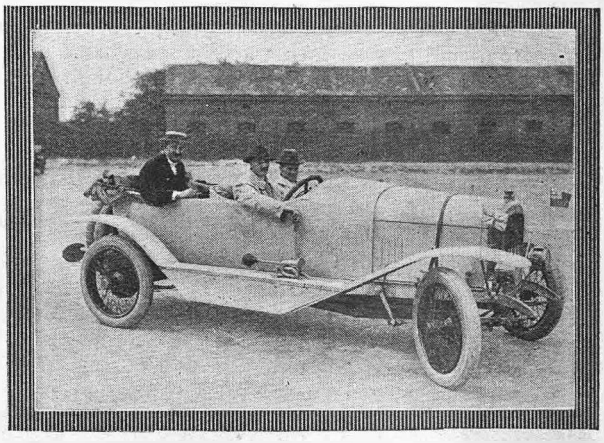
Though the dreaded Katschberg Sattel Pass is steeper, the Turracher Höhe, owing to its hundreds of donkey-back bridges, caniveaux, and three most difficult bends, may even prove fatal to a car which climbed the former mountain road successfully. There were two portions of the ascent—the Radentheiner Höhe and the Turracher Höhe proper. The first, though very steep, and in spite of several deep gullies, was taken with a rush by most competitors, though, for fear of blocking the road, these were started off at intervals of five minutes. The same took place on the Turracher Höhe proper, the sole difference being that here ten minutes were allowed as an interval between every start.

As some competitors had to resort to the aid of horses to propel cars the engines of which had struck work, an hour and more was lost. The British cars, in spite of some malicious reports spread by Continental competitors and gleefully printed in the local Press, did very well, though all except the Rolls-Royce were overgeared for this newly-found freak hill. The Austin roared up in fine style, but had to stop many times on the steepest parts of the gradient, owing to being baulked by the Darracq and Protos cars, the former with its small engine being evidently geared far too high. The Austin restarted every time quite well, but on the very steepest pitch the clutch had to be slipped, and the car lost some marks (only in the smallest category). That bottom gear, adjusted to a nicety to rush the Katschberg at record speed, was just a trifle too high for the Turracher Höhe. The Vauxhall also went up very well, while the Armstrong, too, got up unaided. The Singer sooted a plug once more, and then also got up, though it took, of course, all the skill of Mr. Roberts to get this pigmy up the almost perpendicular rock.

The Turracher Höhe was a Waterloo for many; the Austin here lost its first marks, as also for trifling stops the Hotchkiss and one more of the Cadillacs, though some foreign cars failed altogether, and even Austrian cars, specially prepared for this hill, had to resort to the teams of horses and oxen placed alongside the path.

The descent, though vile enough, was not so bad as expected. As much time had been lost on the Turracher Höhe, high speeds were indulged in to reach the yet distant Salzburg. The Rolls-Royce and the Austro-Daimlers vied with each other to reach Salzburg first.

Triumphal arches again bridged the roads in many places, as up hill and down hill and through undulating mountainous countrysides we sped to reach the Salzkammergut Lake District and Salzburg. A thunderstorm towards the evening cut off the rear of the trial by causing a landslide and completely destroying the road. The light car drivers and several others were cut off, and had to spend the night amid torrents of rain on the mountains in a hut, fresh milk and bread being their only fare. Wires were exchanged with the



Mr. Kendal (at the wheel) on the Austin car going to the scales. Note unusual steering lock and body.

trial marshals at Salzburg, when it was decided that the cut-off competitors were to lose no marks for this "force majeure," and they were permitted to rejoin the trial by a roundabout route next morning.

Near Ischl.

Baron Malberg lost marks for a broken oil pipe, thus putting the hitherto successful F.I.A.T. team out of the competition for the team prize, leaving only the Audi and Puch teams to fight for this coveted honour. Owing to the wretched condition in which many of the competitors arrived, some having been nearly drowned in their cars, the start was delayed for one hour on the next morning.

To-day it came to light that the star performance of Radley on the Katschberg on the previous day had

Stopped by the floods. Count Kotowrat leaves his car (Laurin and Klement).

Delayed at Bozen barrackyard by thunderstorms having destroyed the Jauffen Road.

THE ALPINE TOUR.—Contd.

been outdone by an even smaller four-seater, a five-litres Austro-Daimler, steered by Herr Direktor Porsche, of the Wiener Neustadt works, doing the ascent of this hill, about 6 kiloms., at the approximate speed of 40 m.p.h.

Performances on the Katschberg.

	Time Allowed. M. S.	Time Actually Tak n. M. S.	Improvement on Allowance. M. S.
Austin (Austin)...	24 30	11 58	12 32
Koehler (Hansa)	28 00	15 47⅗	12 12⅖
Koch (Opel)	26 00	15 26⅘	10 33⅕
Horch (Audi)	21 30	12 10⅗	9 19⅖
Delmar (Benz)	20 00	10 43	9 17
Schneeweiss (F.I.A.T.) ...	23 00	13 44⅘	9 15⅗
Slaney (Armstrong)	20 00	10 45⅕	9 14⅘
Lange (Audi)	21 30	12 41⅗	8 58⅘
Mercellino (F.I.A.T.)	23 00	14 07⅘	8 52⅗
de Jong (Minerva-Knight) ...	23 00	14 07⅘	8 52⅗
Obruba (Audi)	21 30	13 02⅕	8 27⅘
Klintosch (Minerva-Knight)	23 00	14 35⅘	8 24⅕
Barys (Hansa)	28 00	19 51⅗	8 08⅖
Skorpil (Puch)	21 30	13 29⅕	8 00⅘
Bettaque (F.I.A.T.)	23 00	15 18	7 42
Graumüller (Audi)	21 30	13 53	7 37
Czech (Austro-Daimler) ...	23 00	15 35⅘	7 24⅕
Hermann (Puch)	21 30	14 06	7 24
Count Lamberg (Puch)	21 30	14 25	7 05
Prince Parma (Austro-Daimler)	23 00	16 01⅗	6 58⅖
Direktor Stoll (Austro-Daimler)	23 00	16 24⅗	6 35⅕
Muhri (Audi)	21 30	15 00⅕	6 29⅗
Dr. Strauss (Puch)	21 30	15 06⅗	6 23⅕
Sak (Praga)	20 00	14 06⅕	5 53⅘
Baron Malberg (F.I.A.T.) ...	23 00	17 12	5 48
Henschel (Austro-Daimler) ...	23 00	17 26⅕	5 33⅘
Vorbach (Graf and Stift) ...	16 00	10 37⅗	5 22⅕
Mr. Radley (Rolls-Royce) ...	11 45	7 18	4 27
Count Kolowrat (Laurin-Klement)	17 00	13 40⅗	3 19⅖
Baron Steinheil (Graf and Stift)	16 30	16 25	0 05

As will be seen, a British car (the Austin) made an excellent performance in improving on its allotted maximum time (corresponding with its capacity) by more than half, which is truly marvellous and deserving of great praise, as the makers are far from the Alpine testing grounds, and had only built their first Alpine climber this year.

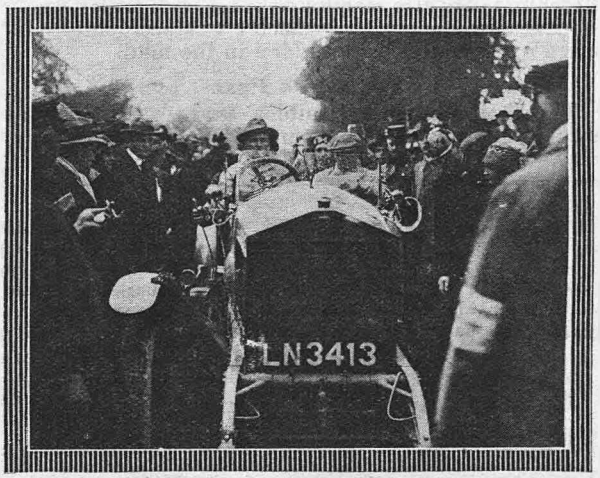
The Last Day.—Salzburg to Vienna, 223.4 miles. The Speed Trial.

Quite beyond our expectations, the 23rd June proved a fine, hot day. This was the day of speed, the fine roads of Upper Austria and the Solzkammergut allowing of an occasional burst of a decidedly Brooklands nature, many cars doing 70 miles for minutes, even on an occasional stretch of level road. At Ischl, amid cheering crowds and a bombardment of flowers, the tired and worn-out rearguard of the trial joined us, Mr. Roberts (Singer), before a closed railway gate, hurriedly telling us of his adventures of the previous night.

On and on we sped, till Wels, a town in Upper Austria, was reached, where a flying start for the speed trial was made, the arrangements keeping the arrivals more than half an hour before a start could be effected, as no competitor was allowed to start before the preceding one had finished the run, a mile long field telephone aiding greatly in this matter.

The arrangements, which were mainly in the hands of Messrs. Fassbender, Quidenus, Von Jaegermayer and Capt. von Drahtschmidt (starter), as is usual with the Austrian A.C., worked admirably. At the finish quite a number of British visitors watched the trial, among them Mr. Chas. Jarrott.

A wayside stop to change wheels at Meran (Tyrol). Note the strange headgear of observer.



Mr. James Radley (Rolls-Royce) starting. Note "The Motor" Union Jack on bonnet, and the crowds.

The speeds actually attained will not be published by the I.R.A.A.C., it seems; but, according to private timing, the Rolls-Royce of Mr. Radley did the 5 kiloms. at the rate of 130 kiloms. per hour, the little 3-litre Austin at the rate of 101 kiloms. per hour, while the Hotchkiss is also said to have done far over 100 kiloms. per hour. The only cars which lost marks for not attaining the speed minimum of their class seem to have been the two huge Graf and Stifts (Austrian make).

The Puch team was broken this day, as the engine of one car persistently refused to start up in the morning, which entailed the loss of many marks, though of a minor category. Thus only the Audi team was left unpenalized.

The rest of the drive to Vienna, over vile, dusty roads, proved rather "racy," and by 2.30 p.m. most competitors had arrived before the building of the I.R. Austrian Automobile Club on the Ring Avenue, where a crowd of distinguished members of this body, foremost among them being the Marquis Alexander de Pallavicini, awaited the arrival of the competing cars, those which had not lost marks previously being dispatched at once to be "parked" in the Artillery Arsenal, to be examined by a committee of experts the next day, in which body managing director de Jong (Minerva Motors, Ltd.) represented the foreign competitors.

At the time of writing the following cars appear to have lost no marks:—

All the Audis, Mr. Radley's Rolls-Royce, No. 31 Puch, No. 22 Benz, No. 32 Puch, Count Kolowrat's Laurin-Klement, No. 41 Austro-Daimler, Prince von Parma's Austro-Daimler, No. 45 Austro-Daimler, No. 52 Minerva-Knight No. 47 Protos, No. 32 Minerva-

THE ALPINE TOUR.—Contd.

Knight, No. 46 Austro-Daimler, No. 50 F.I.A.T., No. 58 Opel, No. 33 Puch, No. 49 F.I.A.T., No. 70 Hansa, and No. 71 Hansa.

As will be seen, there is only one British car among the unpenalized finishers, but this does not in any respect detract from the performances of British-built vehicles in the trial, which showed up in quite an excellent manner. Marks were only lost for trifling causes. For instance, the Austin on the last day suffered from a choked jet, owing to the vile grade of spirit supplied to the competitors. By using the injecting device on the dashboard the jet could be cleared by the suction of the engine without opening the bonnet even, within six minutes, but nevertheless marks of the first category were lost for this. The same was the case with the other British competitors: Mr. Waterhouse's Vauxhall losing valuable marks for a spoted plug, the Armstrong-Whitworth and the Hotchkiss cars also losing marks for such trifles, while Sir Evecard Dunmore's Wolseley was accidentally injured by a pointed rock hidden in the mud.

Pack Alpe Pass.

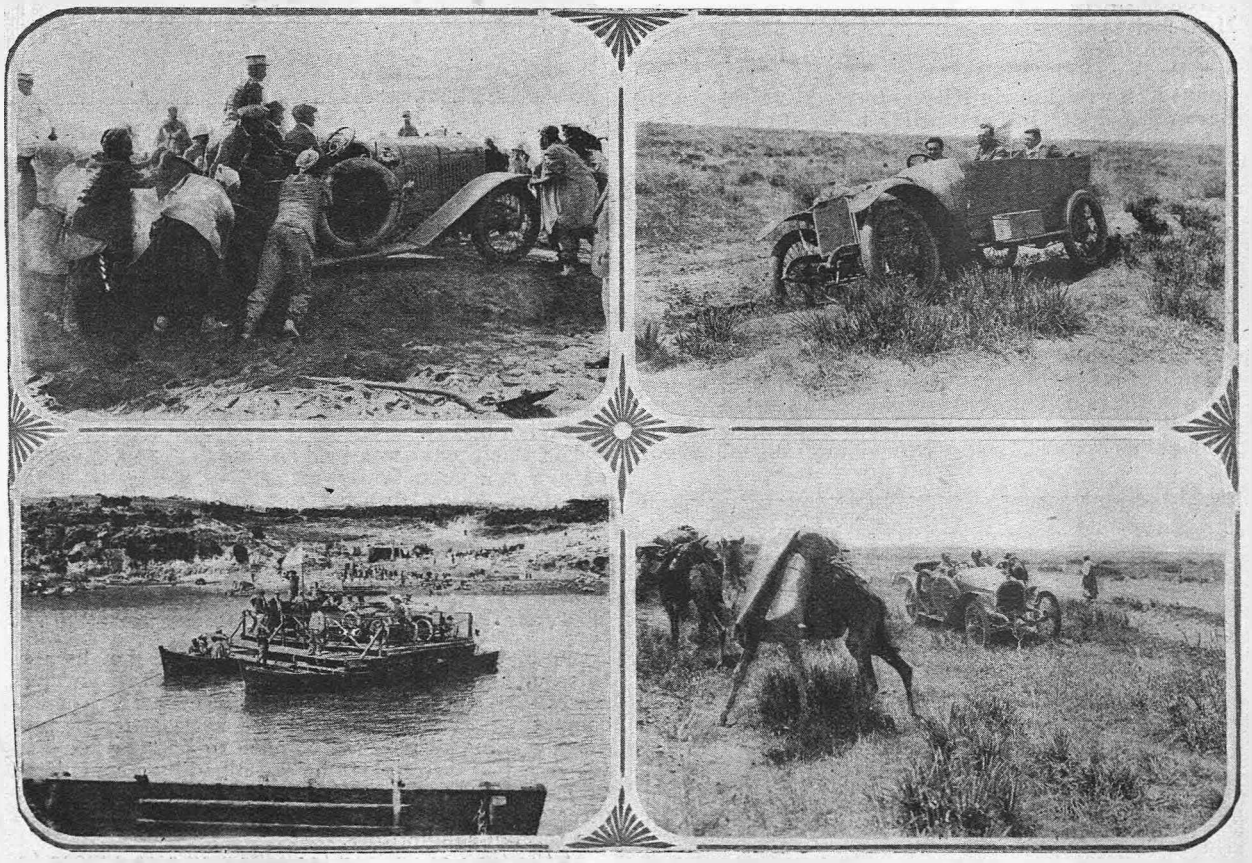
The little Singer's troubles again were such as would only tend to recommend it to the owner driver, for when a car in such a test to destruction only sustains sooted plugs or the like, it must be made of excellent material, which also may be said of the Wanderer light cars, though these cars had rather much tyre troubles, owing to their long-legged, tandem-seater model being rather unstable when cornering at high speeds, and thus putting the tyres to an undue amount of wear and tear, which trouble, however, in the case of their sociable model is conspicuous by its absence.

The Austro-Daimlers were unfortunate, two of their team competitors lost no marks, while the third, Director Edward Fischer, to avoid running over a child, injured his chassis and was thus put out of the competition; continuing the tour, however, hors-concours, after having effected a repair at Trieste.

At Innsbruck, rumours were current that the Alpenfahrt was to be dropped entirely by the I.R. Austrian Automobile Club, whereupon, on the initiative of our correspondent, a petition requesting the continuation of this splendid trial for at least another year was signed by all the British and most of the foreign competitors and Pressmen and presented to the Marquis Pallavicini, the president of the I.R. Austrian Automobile Club.

Parliament and Reckless Motorists.

In answer to a question by Mr. Chiozza Money, Mr. McKenna stated in the House that he had recently issued a circular calling the attention of magistrates to the importance of imposing adequate punishment where offences under the Motor Car Act were of a serious character. After referring to the recent running down cases, Mr. McKenna stated that when the offender could be traced he ought to be severely punished, and he had no doubt that when an opportunity for legislation occurred, the House would be disposed to increase the penalty under the Act.



REMARKABLE SCENES IN SECOND MOROCCAN CIRCUIT.

Left to right: (1) Arabs help the winner of the circuit to get out of a rut. (2) The N.S.U. car on the same track during the last stage. (3) Cars crossing the lake. (4) Bouverot on the Peugeot disturbs a camel caravan.

WHO WILL WIN THE GRAND PRIX RACE?

The Drivers in the Great Race and Their Records on the Road.

IT requires no prophetic vision to predict unusual success for the French Grand Prix race at Lyons on 4th July. But it does require a large degree of confidence to select the winner. Experts may have their preferences, but the most ardent partisan will hesitate to assure his friends that his favourite will win against such competition as will be met with in the race this year.

For the first time since the Grand Prix has been run, it is a truly international and not a French race. It is doubtful if this is what was aimed at when a start was made, for it will be remembered that the Gordon-Bennett series was abandoned in 1905 because it let in too many foreigners, and the first French Grand Prix, in 1906, was a French race in which outsiders were allowed to compete. This year there are 41 entries, and 39 cars will actually start. Although no official announcement has been made, it is certain that the two Cæsars will not respond to their call.

France has twelve cars entered by four firms; Italy has nine cars of three different makes; Germany has eight from two different factories; England has six supplied by two concerns; Switzerland and Belgium each have two cars. Thus, although France has a greater number of cars than any other nation, she is in a decided minority against the field.

There is not an inferior make of car in the race. Alda, Delage, Peugeot and Th. Schneider are worthy representatives of France. If selection had to be made in the open market, it is certain that England could not make a better choice than Sunbeam and Vauxhall as its speed champions. Mercedes and Opel are sufficient to uphold the dignity of the Fatherland. Piccard-Pictet and Nagant are worthy delegates of Switzerland and Belgium; and F.I.A.T., Nazzaro and Aquila-Italiana represent the aristocracy of the Italian motor industry.

Five Previous Winners in this Race.

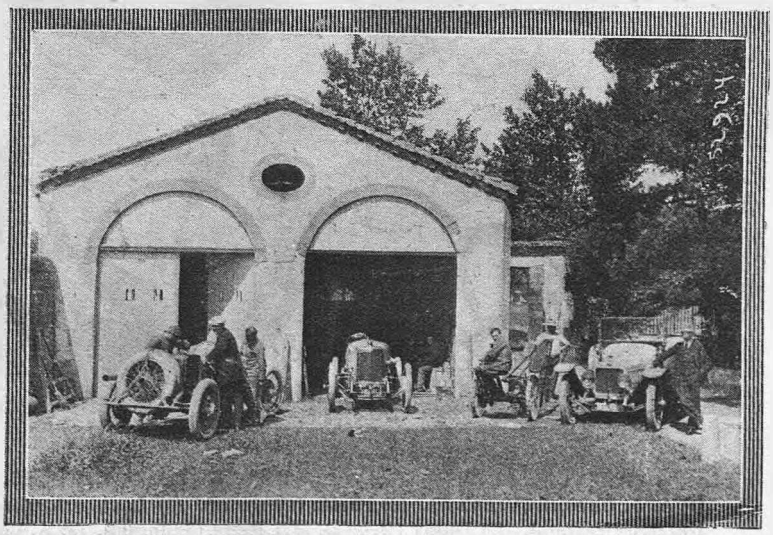
There have been five Grand Prix races, and the winner of each is to be found in this sixth contest. Szisz captured the first for Renault, running over the monotonously level course near Le Mans in the summer of 1906. This time Szisz is at the wheel of an Alda, this being his first appearance in a big race since his victory of eight years ago. Nazzaro captured the second for F.I.A.T., on the Dieppe course, in 1907. Now Nazzaro is driving one of his own cars, and making his first appearance in the Grand Prix as a manufacturer-driver. The third race, also at Dieppe, went to the burly, hardened Lautenschlager, driving a Mercedes. He has the same make of car, and he is just as confident of winning as he was on that July morning six years ago.

After that German victory, following on the heels of an Italian triumph, there was an interval of three years without an official French race. Then the contest was staged in 1912 with Dieppe in the background. A new man, belonging to a new school, trained under new conditions, came forward as the winner in Georges Boillot. In 1913 the scene changed to Amiens and Old Picardy, and again Boillot was hailed the victor. Again he is present with a Peugeot car, built by the same engineers prepared with the same care as its predecessors. Can he win the Grand Prix a third year in succession? The feat, while not impossible, is unprecedented. Competition has become keener. Boillot knows the risks of motor racing too well to be certain that fortune will smile on him a third time; but that does not prevent him starting with confidence in Saturday's race.

The British Team.

In the 1912 Grand Prix there was a second class, and a second winner, who ought to be bracketed with Boillot. It is Victor Rigal, who finished first for Sunbeam with one of the famous 3-litre cars. Since then Rigal has transferred his affections and his interests to Peugeot, completing the team of which Boillot and Goux have so long been members. The Grand Prix winners, however, do not monopolize the racing talent of Europe. Just take the English representatives. There are six of them: Jean Chassagne, K. Lee Guinness and D. Resta for Sunbeam; and A. J. Hancock, W. Watson and Ralph de Palma for Vauxhall. The Sunbeam men need no introduction. Though he modestly withdraws himself from public gaze as much as possible, Chassagne has too many victories to his name to be unknown or unappreciated; Mr. K. Lee Guinness is fresh from his triumph in the Isle of Man; and Mr. Resta is now a veteran of English motor racing. There is one new-comer on the Vauxhall team—at any rate, new to the English public, for Ralph de Palma is known to every really live person in the United States. De Palma does not come with any spread-eagleism. He is a true American, despite the fact that he spent the first six years of his life in Italy; but he is, above all, a true sportsman, and it is that which has endeared him to the hearts of all who take an interest in motor racing. When his car broke down in the 1912 Indianapolis race, with victory fully in view and only 15 miles to go, he did not curse his luck; when he found it was impossible to start with his car in this year's race on the Indianapolis track, he did not blame the maker. As a driver he has shown what he can do, both in America and France, and nobody will doubt his ability to get the very best out of his Vauxhall.

(Continued on page 1046.)



The Delage headquarters on the Lyons course.

GRAND PRIX DRIVERS.

(1) A. J. Hancock (Vauxhall). (2) Pilette (Mercedes). (3) Lautenschlager (Mercedes). (4) Porporato (Nazzaro). (5) Nazzaro (Nazzaro). (6) Duray (Delage). (7) Resta (Sunbeam). (8) K. Lee Guinness (Sunbeam). (9) Rigal (Peugeot). (10) Chassagne (Sunbeam). (11) Goux (Peugeot). (12) Champoiseau (Schneider). (13) Elskamp (Nagant). (14) R. de Palma (Vauxhall). (15) Guyot (Delage).

GRAND PRIX DRIVERS.

(1) Scales (F.I.A.T.). (2) Sailer (Mercedes). (3) Carl Joerns (Opel). (4) Esser (Nagant). (5) Bablot (Delage). (6) Erndtmann (Opel). (7) Cagno (F.I.A.T.). (8) Boillot (Peugeot). (9) Juvanon (Schneider). (10) Gabriel (Schneider). (11) Salzer (Mercedes). (12) Breckheimer (Opel). (13) Fagnano (F.I.A.T.). (14) Tabuteau (Alda). (15) Wagner (Mercedes).

WHO WILL WIN?—Contd.

The Delage Trio.

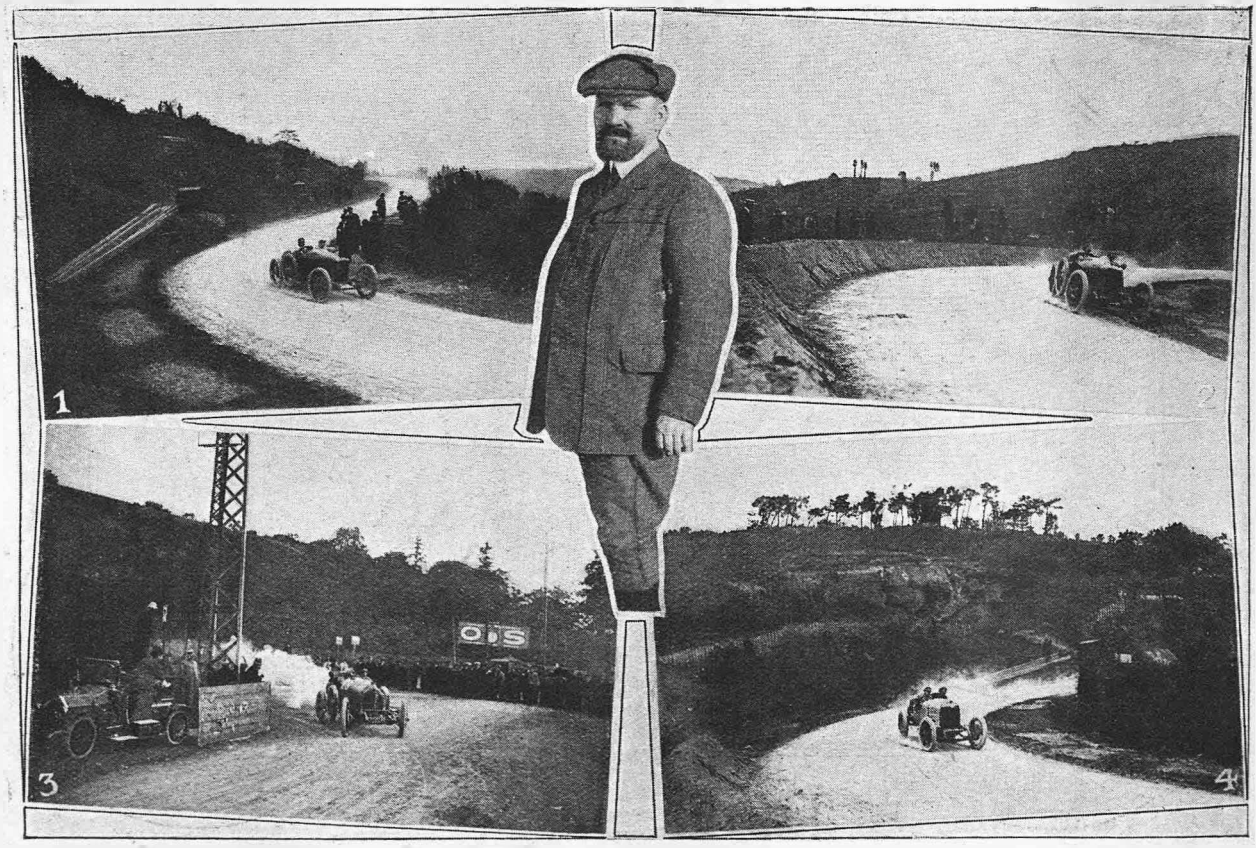
Delage has a strong team of drivers, comprising Bablot, Guyot and Arthur Duray. The two latter have begun the year well, for Duray finished second at Indianapolis with the little Peugeot, which he entered privately and prepared without any help whatever from the factory. During the practice work he wore an American flag as a neck band; perhaps it was in honour of his success, or it may have been to substantiate his claim to American citizenship, for Duray maintains that he was born in New York City. Guyot finished third at Indianapolis, losing a better place by one of those flukes for which no man, however careful, can be responsible.

Mercédes is another strong team. Lautenschlager, Salzer and Sailer are big, heavy men, with Deutschland written all over them. Lautenschlager and Salzer showed their endurance in the Le Mans race last year, when, owing to excessive vibration, their hands were skinned to the raw flesh, but they remained at the wheel, and drove at speeds of 90 miles an hour. Pilette differs in physique from his companions, being slender and delicate looking. He is the leading agent for Mercédes in Brussels. Louis Wagner is a Frenchman, despite his German-sounding name. Tall, thin and wiry, he has the agility of a cat and a strength which is hardly expected at first sight.

There are one Englishman and two Italians on the F.I.A.T. team. Mr. Scales represents the home country, while his team mates are Cagno, an old figure in Continental races, and Fagnano, a joyous son of Italy, who makes his first appearance in a Grand Prix. Aquila-Italiana, another Italian firm, it is hardly necessary to explain, has Beria d'Argentina, Marsaglia and Constantini as drivers. The first-named is the son of an Italian senator, and all three men have done much competition work throughout Europe. Nazzaro is driving his own car, having with him Porporato, of Tourist Trophy fame, and another who hides his identity under the title Cenisio.

An Expert Cornerist.

Gabriel, of the Th. Schneider team, is the veteran of the race. He won the tragic Paris-Madrid race for Mors 11 years ago. On the other hand, Juvanon, Lyons agent for this firm, is running his first big race. Champoiseau, the third man, earned for himself the title of "Roi des Virages" at Amiens last year. He really is a driver of more than ordinary merit. Only one of the Opel men is known to the general public. This is Carl Joerns, who comes into at least one French race every year and picks up half-a-dozen French words, and makes considerably more friends on each occasion. The two others, Franz Breckheimer and Emile Erndtmann, are strangers to French crowds. Sisz, who joined the Renault factory when the product was a car a month, and who won the 1906 Grand Prix for that firm, is now on the Alda team. Tabuteau, ex-aviator, is one of his companions, and the amateur Pietro the other. Of the Piccard-Pictet men, Tournier is of French nationality, and Th. Clarke is an amateur and an Englishman, who has spent the whole of his life in France. Elskamp and Esser, the Nagant drivers, are both Belgians. Elskamp has done a lot of work for Mercédes, and had one of those cars in the Grand Prix de France last autumn. Esser has been with various Belgian and German firms, and this year went through the Tour de France at the wheel of a German car.



SPEED TRIALS ON THE GRAND PRIX COURSE.

(1) Scales, the English driver of a F.I.A.T., on the winding descent before the grand-stands. (2) Cagno (F.I.A.T.) coming down the winding hill leading to the grand-stands. (3) Clarke's Piccard-Pictet on the Lyons hairpin during practice. (4) Bablot on the winding road before the grand-stands. Centre: M. Andre Sautin, general manager of the Grand Prix.

THE KEENEST RACE OF THE YEAR.

The Course of the Grand Prix and the Facilities for Really Seeing the Race.

AT 8 o'clock next Saturday morning will start the keenest and the most spectacular road race France has ever held. The keenness of the struggle is guaranteed by the quality of the cars and the skill of the drivers taking part in the Grand Prix. There are 14 firms entered for this race, but there is no one which can reasonably claim to have a marked advantage over the others. Competition is so keen that one may be prepared for a neck-and-neck finish.

The spectacular nature of the race is assured by the set of roads selected. In the past the Automobile Club of France has sought to withdraw itself from the crowd, and has held races at places easily reached by owners of cars, but inaccessible to the general public. This was not done in a spirit of exclusiveness, but was prompted by a nervous fear of accidents. With experience this fear has diminished, if not entirely departed, and when it was proposed to hold the race over a difficult course at the gates of Lyons, a city of more than 500,000 inhabitants, there was not much hesitation. There will be bigger crowds than ever seen at a previous Grand Prix, as is proved by the fact that 10 days before the race not a box seat could be had at any price, and reserved seats were being booked up with amazing rapidity. Not only can Lyons furnish thousands, but the whole surrounding country is well populated with that class of people most interested in motors and motor racing.

It is often hard to find a good spot for the erection of grand-stands, and when the best has been done somebody will always be ready to criticise. The Lyons position is really above criticism. The course is triangular, and 100 yds. to 150 yds. from the Lyons fork, on No. 1 leg, the stands have been erected, with the tyre pits opposite them, and a hill beyond down which the cars will travel at a fast pace, despite the several turns. With the naked eye it will always be possible to distinguish the make of the car as soon as it appears on the crown of the hill, and if the committee insists on a really big figure being painted on the bonnet, this could be read before the car is halfway down the hill. The cars are in view for three miles.

There is only one better spot from which to see the race, and that is from the top of the hill, where there is a magnificent bird's-eye view of the road and the grand-stands in the valley below. But it would have been impossible to build a really big stand at this point. Everything necessary has been done to prevent the grand-stand view being obstructed. All the land opposite the stands, both in the valley and on the hillside, has been rented by the Sporting Committee, in order to prevent advertising agencies from securing a place for hoardings. In addition to this, most of the land on the bends has been rented for the day of the race, thus making it impossible for people to congregate at these points to their own danger.

80 Turns in Eight Miles.

Much has been said about the dangers of the winding descent to the grand-stands. The title of "Death Corner" is exaggerated. Beyond a certain point a turn ceases to be dangerous, for its difficulties become so apparent that a driver refuses to take risks. When speed has to be reduced to 30 miles an hour in order to get round a turn there is no more danger, for, whatever happens, the men cannot be seriously injured. There will doubtless be more thrills on the second leg of the course, where there is a wall of granite on the right and a drop into vineyards and the river on the left. Somebody has counted 80 turns in eight miles, which means that the driver is hardly out of one bend before he is in another, and the least miscalculation of speed may cause an accident.

From the bluffs above this road, if it is possible to reach them, some thrilling sights ought to be witnessed. The third leg of the course opens with a hairpin turn, a long winding ascent, then one of those dead-straight, undulating roads found nowhere but in France. It is here that cars will travel like the wind. And it will not be easy driving either. Many of the competitors have stated that at the top of these short rises they have felt the whole car go into the air.

Preparation of the Course.

Preparations for the race have been made on an elaborate scale. The main stands are 560 ft. in length; they provide 4000 seats. There is a garage for 3000 cars, 2000 bicycles and 1000 motorcycles, with free insurance for every machine entering this enclosure. One-hundred-and fifty tons of wood have been used in erecting 18 miles of barricades round the course. Telephone or telegraph stations are placed every two kilometres, necessitating the use of 300 miles of wire, weighing about 20 tons. Eight telephone and telegraph lines have been erected for the use of the public. Calcium chloride will be made use of to lay the dust, the amount to be scattered on the 23-mile course being 80 tons. The town of Lyons has furnished a subsidy of £4000 towards the expense of organizing the race. In addition, the Government has spent over £6000 in remaking the roads, with the result that the surface is doubtless the best on which a road race was ever run. On two of the hairpin turns the road surface has been concreted, the experience at Amiens last year proving that this surface dressing wears remarkably well.

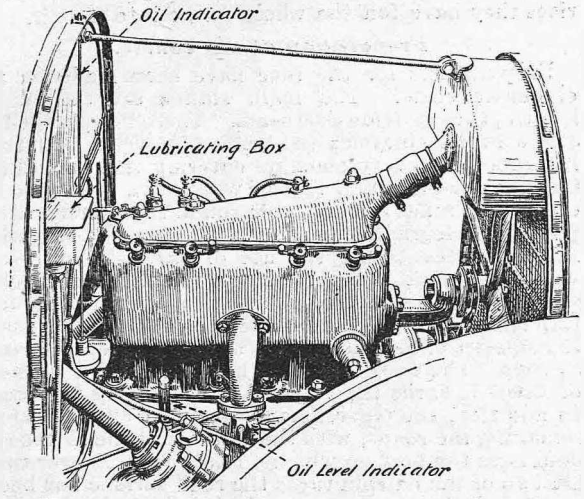
The following is the order in which the cars will be sent away in the race, the starts being given in pairs:

8.0	1.	Alda (Tabuteau).
	2.	Opel (Joerns).
8.0.30	3.	Nagant (Elskamp).
	4.	Vauxhall (Hancock).
8.1	5.	Peugeot (Boillot).
	6.	Schneider (Champoiseau).
8.1.30	7.	Caesar
	8.	Nazzaro (Felice Nazzaro).
8.2	9.	Delage (Bablot).
	10.	Sunbeam (Chassagne).
8.2.30	11.	Piccard-Pictet (Tournier).
	12.	Aquila-Italiana (Beria d'Argentina).
8.3	13.	F.I.A.T. (Cagno).
	14.	Mercedes (Lautenschlager).
8.3.30	15.	Alda (Pietro).
	16.	Opel (Emile Erndtmann).
8.4	17.	Nagant (Esser).
	18.	Vauxhall (W. Watson).
8.4.30	19.	Peugeot (Goux).
	20.	Schneider (Gabriel).
8.5	21.	Cæsar
	22.	Nazzaro (Porporato).
8.5.30	23.	Delage (Guyot).
	24.	Sunbeam (K. Lee Guinness).
8.6	25.	Piccard-Pictet (Th. Clarke).
	26.	Aquila-Italiana (Marsaglia).
8.6.30	27.	F.I.A.T. (Fagnano).
	28.	Mercedes (Pilette).
8.7	29.	Alda (Sisz).
	30.	Opel (Franz Breckheimer).
8.7.30	31.	Vauxhall (Ralph de Palma).
	32.	Peugeot (Rigal).
8.8	33.	Schneider (Juvanon).
	34.	Nazzaro (Cenisio).
8.8.30	35.	Delage (Duray).
	36.	Sunbeam (Resta).
8.9	37.	Aquila-Italiana (Constantini).
	38.	F.I.A.T. (Scales).
8.9.30	39.	Mercedes (Salzer).
	40.	Mercedes (Sailer).
8.10	41.	Mercedes (Wagner).

THE 13-20 h.p. FAFNIR.

Its Compact Design and Excellent Running Qualities.

IT is one of the most interesting features of motor-car design that the products of the different nations seem to incorporate the chief characteristics of their producers. Thus, the French car is light and graceful, the Britisher is beautifully made and delicately finished, the American is "hustled" on to



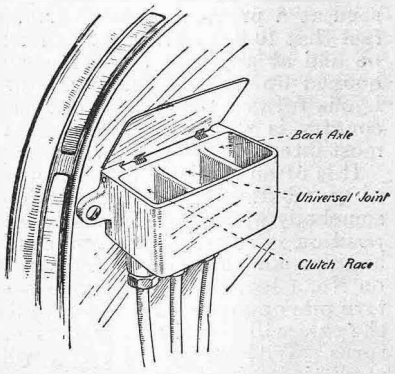
The power plant of the Fafnir, showing the refinements in the lubrication system.

the road and into the hands of the buying public, while the German is chiefly noticeable for the solidity of its construction and the degree of comfort provided.

The Teuton is painstaking to a degree, he refuses to be hurried, and prefers to take his own time and way of doing things. But why is it that German bridges, German machine tools, German ordnance, and German pianos have so high a reputation? Simply because the German has a first-rate knowledge of steel, an unparalleled regard for detail work, and has no fear of putting an ample supply of material into all his products.

These ruminations on the psychology of car construction have been prompted by an inspection and trial of the 13-20 h.p. Fafnir. This car embodies all the best features of German car construction. The design is sturdy, the material appears to be excellent, and the attention to detail which has been manifested is not the least of its features. On the road the car is comfortable and fast.

An example of detail work is the provision for lubrication of the clutch thrust ring, of the single universal joint, and of the back axle. On some cars one has to raise footboards or crawl under the car to attend to these components, but not so on the Fafnir. Mounted on the engine side of the dash-board, beneath the bonnet, is a rectangular aluminium box, with a spring lid. When the latter is raised it is seen that the box is divided into three separate compartments. An oil pipe leads from each compartment to each of the three friction points we have mentioned, so when lubrication is necessary the lid of the box is raised and each compartment is charged from an oil can. The oil then flows to the desired points. A cleanlier or more convenient method would be difficult to devise.

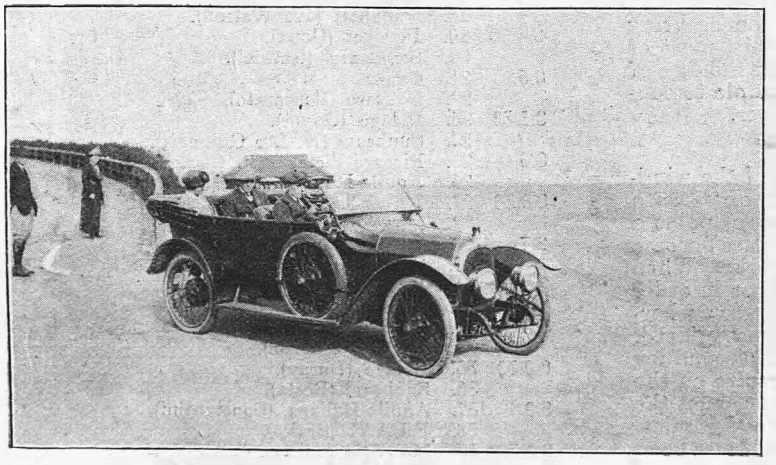


The lubricating box on the dash of the Fafnir by which oil can be quickly and conveniently fed to the points marked.

The engine is a neat four-cylinder, 72 mm. by 125 mm., the long stroke showing to advantage on hills. The crankshaft is supported on three bearings, and oil is led under pressure to all points, the crankcase being drilled for this purpose. The pressure of the oil is governed by an adjustable by-pass, and an indicator rod shows whether the oiling system is functioning properly.

Cooling is by thermo-syphon through a massive radiator of the raised centre type, and a belt-driven fan behind the radiator makes assurance doubly sure. The carburetter fitted is a Zenith, controlled both by foot and by hand, and the Bosch magneto can also be set from the steering wheel. For permanent setting of the magneto the base is rounded and rests in a semi-circular channel in the crank chamber. Thus to alter the timing of the magneto, apart from the setting of the contact breaker, the holding strap is loosened and the magneto rotated bodily about the armature. This is yet another example of attention to detail.

The clutch is a leather-to-metal cone and is connected with the gearbox by a flexible metal joint. The clutch-withdrawing gear is situated within the gearbox, and is thus protected from dirt and grit, and can also be more satisfactorily lubricated. The gearbox provides four speeds and a reverse, a most praiseworthy feature, as it is small cars of this type which require the maximum of assistance from the gearbox.

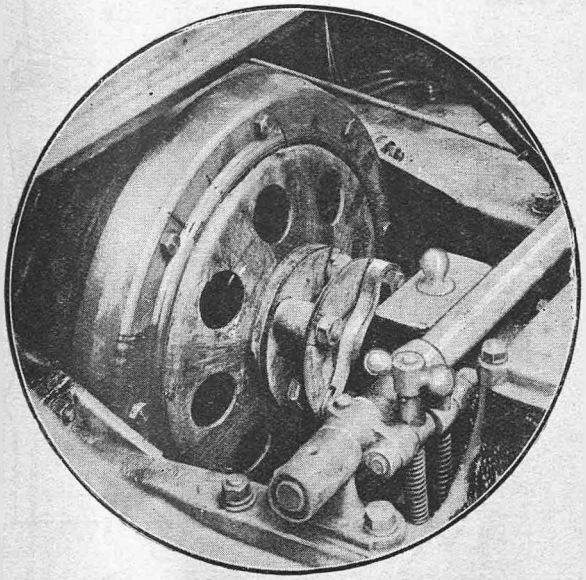


The 13-20 h.p. Fafnir on the road.

THE 13-20 h.p. FAFNIR.—Contd.

Situated to the rear of the gearbox is the internal-expanding brake. A ratchet sprag operates on the exterior of the drum and constitutes one of those mechanical features with advantages far outweighing their disadvantages, but which, nevertheless, are in a minority on modern cars.

At the rear of the brake drum is an enclosed



Clutch details of the Fafnir, showing the flexible joint and the brake adjustment.

universal joint which transmits the power to the bevel-driven live axle via an enclosed propeller shaft. The front end of the shaft casing is forked, and is hinged to a cross-member of the frame, the latter taking all torque stresses and the shaft casing acting as a radius rod.

Springing has received careful attention, the springs being of unusual length and flexibility, while those at the rear are hung below the axle. As a result the car rides extremely well, absorbing pot-holes and road inequalities in a most efficient way, especially as the tyres are somewhat on the small side. Side roll is practically non-existent, and the comfort and security felt by the occupants could scarcely be increased, whatever the speed.

With hood, screen, detachable wire wheels, and three lamps, the Fafnir sells for £350. It is handled by Messrs. G. Straus and Co., Ltd., 211, Upper Thames Street, London, E.C.

Dealing with its running on the road, the outstanding features are the comfort of the suspension, the magnificent brakes, and the speed, both on the level and uphill. Linked with the last-named characteristic is one which renders it an ideal traffic car, namely, slow running on top gear. The range of engine flexibility is exceptionally wide for so small an engine, and the powerful torque at low speeds in another attractive feature. As an example of the latter we may mention that Guildford High Street was climbed on third, at the legal 10 miles an hour limit, although we had started from rest on the hill itself. On the same gear over 30 m.p.h. could be obtained uphill, so the power of the engine to pull steadily on top speed need not be questioned.

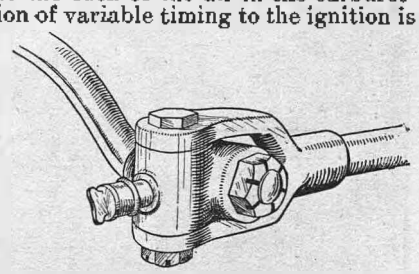
On an ordinary give-and-take road, such as that from Worthing to London, the engine pulled like a 30 h.p. instead of a 13-20 h.p., and but for our archaic speed laws it would have been an easy matter to average 30 m.p.h. for most of the distance, although four passengers were carried.

On really steep hills, such as Ranmore Common (1 in 6½) and Boar Hill (1 in 7) second gear was ample. In fact, on the first-named hill, the speed was so uncomfortably fast as the hairpin corner was approached that the writer changed to first, so that the acute bend could be taken in a safer manner. This was the only occasion when the 20 to 1 bottom gear was employed, and then it was not really necessary.

The gear ratios are well proportioned. Most hills are done on top and the rest on third, unless it is really steep, when second will suffice. The gears change easily, both up and down.

An exceptionally good steering lock is provided, making turning in narrow roads a comparatively easy matter. The steering itself is easy and light, and there is no lost motion between the steering wheel and the front wheel. The design of the various steering connections has obviously received very careful consideration, as all the joints are of generous size, and provision for their proper lubrication is made.

The engine is a consistently easy starter, even from cold, and the greatest noise proceeding from the bonnet is that due to the suck of the air in the carburetter. The provision of variable timing to the ignition is particularly useful for obtaining the maximum pull on a hill.

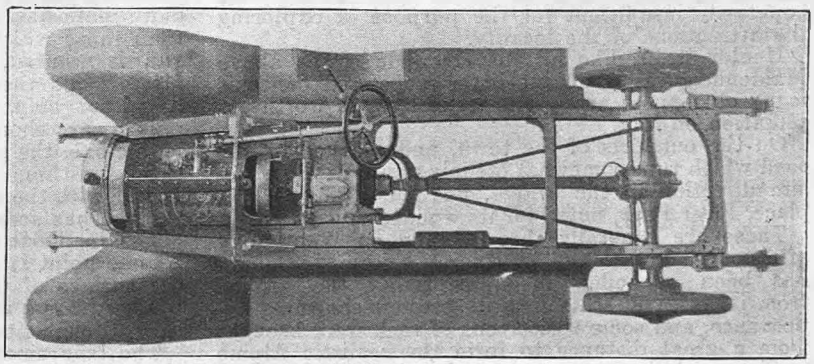


The massive steering joint on the Fafnir, which has a universal action.

Petrol consumption was about 29 m.p.g. and oil was consumed at the rate of one gallon per 600 miles. Little water was required in the radiator, and the temperature never approached boiling point, although the day was particularly hot.

With reference to reliability, one would not expect trouble on the comparatively short run of 300 miles which we made on the car. An inspection of the construction should be reassuring on this point, as every part is of ample size. All small moving parts, which are not included in the general scheme of lubrication, are provided with oil cups and screw-down greasers. The unit system of construction for the gearbox, clutch pit and engine is adopted, and as this safeguards the major part of the transmission from any damage due to frame flexure, the reliability of the drive is thereby enhanced.

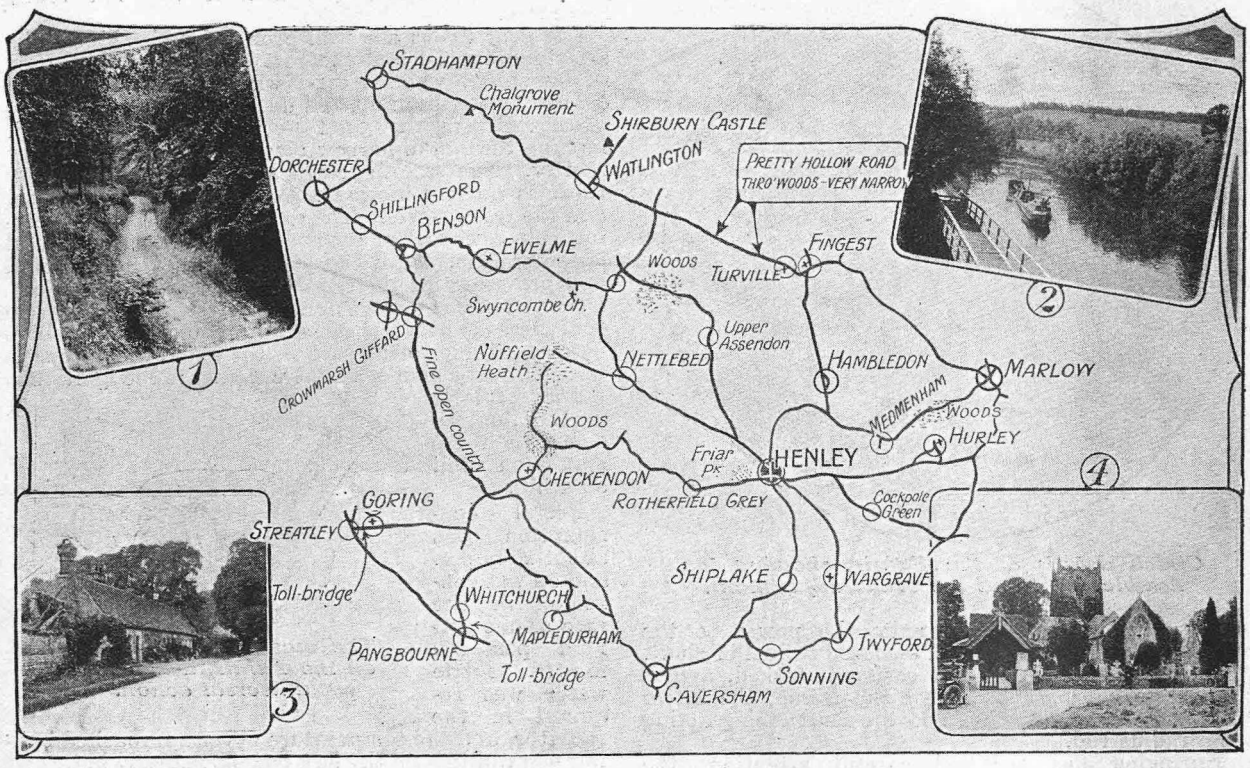
After an extensive trial of the Fafnir we have formed the opinion that this car is among the best of its class. It is a "go-anywhere" car, and it certainly does not stand upon the order of its going.



The Fafnir chassis, showing the enclosed propeller shaft and the rigid design of the rear axle.

WHERE TO MOTOR AND WHAT TO SEE.

Motoring Round Henley—Delightful Spots Within Reach of the Classic Course which will this Week be the Scene of the Annual Regatta.



Inset: (1) A hollow road near Turville. (2) The Thames at Goring. (3) Quaint almshouses, Mapledurham. (4) Wargrave Church, which was the scene of a recent fire.

IT almost savours of flippant disrespect for the honoured associations of the great aquatic carnival to talk of Henley as a motoring centre.

Yet, since the water mileage made at the famous regatta must nowadays pale into insignificance before the road mileage piled up in connection with getting to and from the riverside Mecca, the suggestion that Henley-on-Thames is also Henley in Oxfordshire: and consequently is within reach of fair scenes and historic spots, is not so inapposite as it might have been in the days when every visitor arrived by rail, and a couple of spare hours were hopelessly insufficient for the purpose of exploring the attractions of the locality.

Henley itself, like all the riverside towns above Maidenhead, is a quaint little place and contains many old houses and picturesque byways worth exploration on foot.

On the outskirts of the town, and reached by the road which runs somewhat steeply uphill in the opposite direction to the bridge, lies Sir Frank Crisp's place, Friar Park, noted for its wonderful gardens.

These are generally thrown open on Wednesday afternoons during the summer. Enormous labour has been expended in transforming the ground from its original state into its present charming appearance, and some 20,000 tons of rock were brought from a great distance to form the realistic Alpine garden with its mountain peaks, its dusky caves, its rushing torrents, and its much prized edelweiss. There are said to be as many as 24,000 different species of plants in the Friar Park gardens, and in the flower season the place is a beautiful sight.

There is no prettier drive from Henley than that in the direction of Fingest. Taking the Marlow road out of the town and swinging to the left in about a couple of miles, the picturesque, if a trifle over neat, village of Hambledon is reached, and then there is a run up a charming valley to Fingest. There is a fine Norman church tower here, with unusual twin roofs, and beautifully set. One is tempted to call this the most picturesque locality in the whole range of the Chilterns, and certainly no valleys are more imposing or are surrounded by loftier hills than those which meet at Fingest. If quite a short run is wanted, one could return to Henley via Marlow and the very pretty road through Medmenham, but before turning back Turville, scarcely a mile away, should be visited, for the village is an idyllic one, the grey old church and rose covered cottages nestling in the narrow valley leaving the visitor with the impression, for the time, at any rate, that he has seen the prettiest village in England.

The road out of Turville is particularly beautiful. At one point it runs through the woods, deep below the surface of the ground, worn hollow by ages of use, and being very narrow, should be driven up with care, though little other traffic is to be met.

The lane emerges eventually on the open ground along the edge of the hills, and wide views over the upper Thames valley and the Vale of Aylesbury are to be had by turning to the right. The best way

(1) Sonning Bridge. (2) Dorchester. (3) A corner of the churchyard, Turville. (4) Monastic dovecote at Hurley.

back to Henley, and a very pretty one, is through Nettlebed, but if the day is still young there are attractions to tempt one a little farther afield.

Near at hand is Shirburn Castle, romantic with moat and drawbridge. Four miles off is the monument marking the spot where John Hampden fell, mortally wounded, at the battle of Chalgrove. A little further away lies quaint old Dorchester, with its Roman earthworks and very long church (the famous Jesse window should be inspected), and also Shillingford and Stadhampton, both picturesque spots.

The country lying within the great bend made by the river between Henley and Wallingford contains a good deal worth seeing. The gem of these parts is, beyond all question, Ewelme. The direct way is through Nettlebed, but a prettier route is through Upper Assendon, Cookley Green, and Swyncombe, at which last-named place there is a small church of much interest.

Ewelme is the sweetest of villages imaginable, the houses being dotted about promiscuously on the hilly ground, while the fine Perpendicular church, the beautifully cloistered almhouses and the many centuries old red brick school-house form a trio of which any village might be proud.

A good way back from Ewelme would be by Benson and Crowmarsh Gifford, then along a very varied stretch of up and down road to Caversham, and on through Shiplake.

From a point a mile or so beyond Nettlebed there is a pretty road running first across Nuffield Heath and then through Woodland to Checkendon, where there is a very interesting Norman church to be seen.

If the trip is only a short one there is a convenient route back to Henley through Rotherfield, but with time it would be well to go on to Goring, the Thames there being exceedingly lovely, and work back by Pangbourne, Mapledurham, and Sonning.

Sonning, well known as one of the most picturesque of Thames-side villages, makes a nice little run by itself, the prettiest way being past Park Place and through Wargrave. At the present moment Wargrave is attracting visitors by the melancholy sight of its once charming old church, now completely gutted, a victim of suffragette outrage.

The corner of Berkshire which happens to lie across the river from Henley does not offer as many opportunities for exploration as are to be enjoyed on the Oxfordshire side. It is rather a pretty run into Marlow, either via Cockpole Green or direct, and on the latter route a pause should be made to visit Hurley, which, though not half a mile distant from the main road, is easily passed by unnoticed. It is a very sleepy and picturesque nook and, further, boasts of a monastic dovecote, an exceedingly old inn, and a fine Norman church.

THE GRAND PRIX RACE.

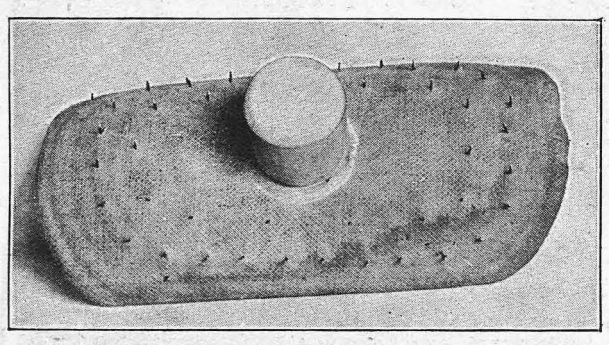
This important race takes place on the Lyons Circuit next Saturday. A FULL report, with illustrations, will appear in THE MOTOR next Tuesday.

THE DOUBLE PURPOSE REPAIR PLUG.

New Type of Internal Gaiter for Damaged Covers.

WE are enabled to give first particulars of a perfected and patented type of repair device for damaged covers, and one which appeals to us strongly by reason of its combined novelty, effectiveness and low cost. This new repairing plug has been christened the Double Purpose by its inventor, Capt. W. G. Windham, whose name will be well known to many of our readers. It should appeal directly to garage proprietors and motor agents, as well as to owner-drivers and chauffeurs.

The chief point about this repair plug for covers is that it fulfils a double purpose; it can be used to effect a temporary repair, in order to get the damaged tyre home, and it can be vulcanized into the cover to make a permanent repair. Either



Double Purpose Repair Plug.

method of use results in further mileage, which is all-important to the motorist from the point of view of economy.

The new "Double Purpose" plug embodies all the best features of alternative practices, and it combines the plug method of filling the hole in the cover with a strengthening base made integral with the portion that fills the hole.

The damaged canvas is cut out with a punch, and the plug inserted in its place, from the inside of the cover. The plug is located by pins, which are inserted by a special method into the extended base of canvas and rubber. The pins are constructed in sections of three under Marles patent, which method has been successfully applied in the U.S.A. for some time past, and the sole rights for which, for use with this patent plug, are held by Capt. Windham in the United Kingdom. The pins are annealed and cannot rust, and they are used in a special triangular form, with upturned points, which arrangement results in their being firmly held and effective in locating the plug according to intentions.

It will be clear that one important function of the plug is its assistance in locating the base; this compares very favourably with the older method of filling up the hole with rubber, and strengthening the weak part of the cover from below with independent layers of canvas. In the older method there is no positive connection between the vulcanized rubber and the canvas layers. The new method holds the plug both from the sides and the base, which is a distinct advantage. As we have already pointed out, once in place, by vulcanizing at a very low pressure, a complete and permanent job can be made of the repair, and this without any risk of damage to the cover, even in the hands of a careless or unskilled person.

These "Double Purpose" repair plugs are low in cost, the sale price being fixed at 3s. each for motor-car tyres, and 2s. each for motorcycle tyres. They are adaptable to any required thickness, as regards depth, simply by paring down the plug portion; the other dimensions are standardized by the cutting tools. The latter, for punching out the hole, are supplied in the cylindrical shape with diameters of ½ in., ¾ in., or 1 in., and in the oval shape with major axes of ½ in. and ¾ in. The price for these is approximately 2s. each. A plug, with its accompanying punch, can be carried in a compact space in a tool-bag, and used without delay when any emergency arises. It is not necessary to remove the wheel, cover or tube to effect a temporary repair.

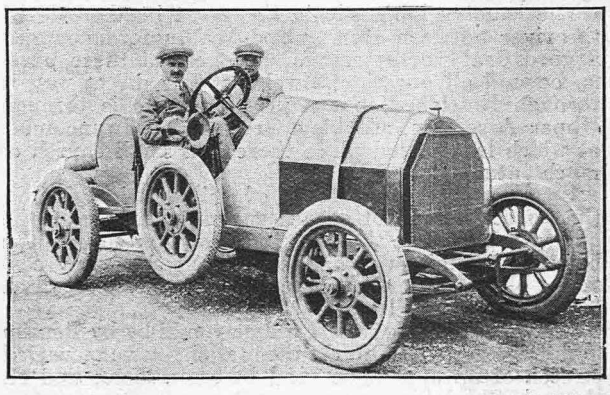
An alternative use of one of these plugs, for the purpose of strengthening any apparently-weak area in a cover, is rendered possible by cutting off the whole of the plug, and merely leaving the base portion. The locating pins retain it in any desired position, once the tube is inflated and pumped up.

Extended tests were made during the course of the trials which were carried out before this plug was perfected for the market. One of these was in respect of a hole of 1¼ in. diameter in the tread of a tyre on a 20 h.p. Vauxhall car. A well-known vulcanizing house declined to deal with the repair other than by the insertion of a new section at £2. The "Double Purpose" repair plug was then used, and the owner of the car, Mr. J. H. Maitland, chairman of Vauxhall Motors, Ltd., subsequently wrote concerning the test: "I used your patent tyre plug on my 20 h.p. Vauxhall car; the plug was 1¼ in. diameter, and was vulcanized by Harvey Frost and Co. It ran between 1400 and 1500 miles on the car, which weighed about two tons when loaded. This was a very satisfactory test, especially as it was the first plug ever fitted on a car."

Fuller particulars may be obtained on application to the Double Purpose Plug Syndicate, 12, Piccadilly Arcade, London, W.

TO OUR READERS GENERALLY.

Although considerable space in this issue is devoted to matter of special interest to lady drivers of cars, we would particularly emphasize the fact that no encroachment is made upon the ordinary part of the paper. A normal issue of THE MOTOR consists of 44 pages of reading matter. This number contains 66 pages in all, and nothing of interest to the ordinary motorist has been sacrificed to make room for the special section set apart for the lady motorist.



Felice Nazzaro on the Nazzaro car on which he won the Coppa Florio.

PUSHING THE POWER TO THE LIMIT.

The Design of the Grand Prix Racers, with Their Unique Features for the Course.

NEARLY every year the Sporting Commission of the Automobile Club of France fixes new rules for its Grand Prix race. In 1906 the race was open to all; in 1907 the fuel consumption was limited to 30 litres per 100 kiloms.; the following year no engine could exceed 155 mm. bore; in 1912 manufacturers were again given a free hand; last year the fuel was limited to 20 litres per 100 kiloms. (practically 14 miles to the gallon). This year's regulations call for a motor of not more than 4½ litres piston displacement, or, in other words, 274.6 cubic ins., with a maximum weight of just over 21 cwt.

The Progress of Engine Design.

It is interesting to note the progress made. In 1906, with no limitation whatever, the winning Renault had a bore of 165 mm. and a stroke of 150 mm. Its piston displacement was thus 12,850 c.c. The motor developed 105 h.p. maximum, and its speed, as officially determined over the measured kilometre, was 90 miles an hour. This year no motor exceeds 4500 c.c. piston displacement. The power obtained is not less than 130 h.p., and the speed on the level can very conservatively be fixed at 108 miles an hour. The probabilities are that it will be higher, given favourable road conditions. Thus, with a reduction in piston displacement of more than 8000 c.c., the 1914 cars are more powerful and faster than those of 1906.

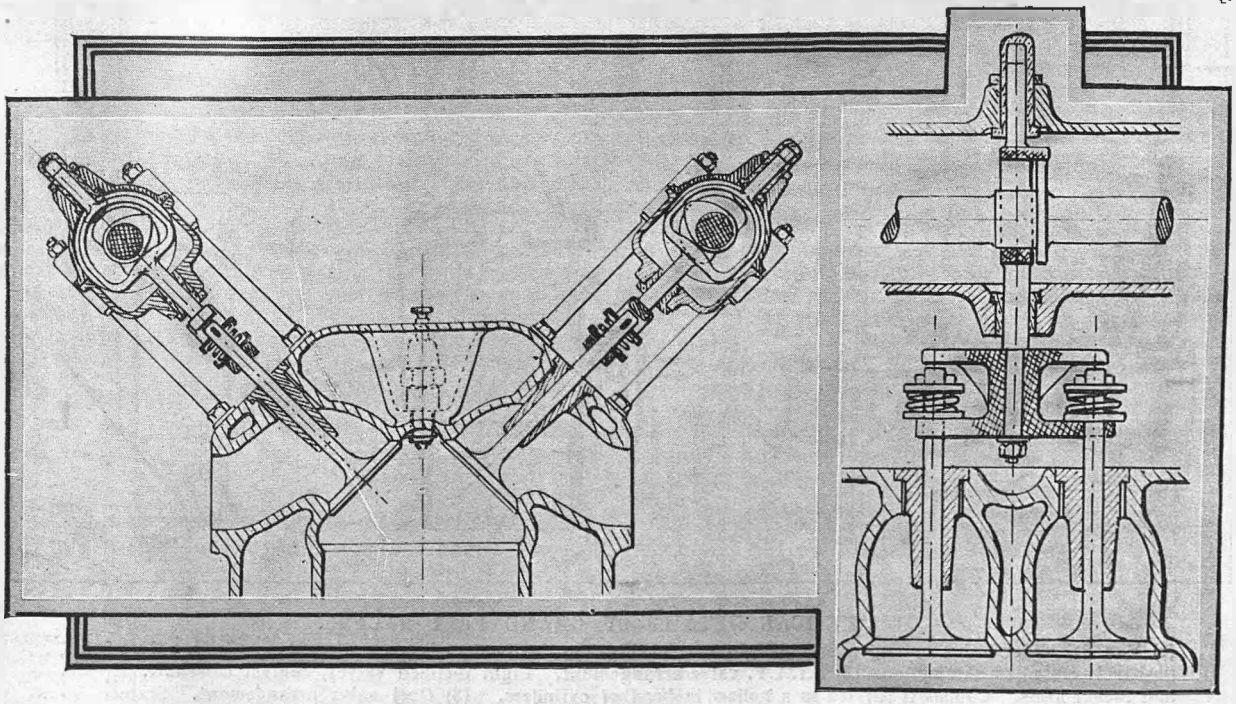
It is not merely a question of power. The modern cars are lighter, they use up fewer tyres, they consume considerably less petrol, and their thirst for lubricating oil has been reduced to a minimum.

The similarity of design, so far as main features are concerned, is really striking. All the firms but one have built four-cylinder engines; also all but one have the cylinders in a bloc casting. Aquila-Italiana stands out as an exception by reason of its six-cylinder engine, and Mercedes differs from the others in having separate steel cylinders. A bore and stroke of 94 mm. by 160 mm. is most generally adopted. Peugeot has a rather longer stroke—92 mm. by 169.5 mm. F.I.A.T. has 100 mm. by 143 mm., and Vauxhall has the shortest-stroke motor with dimensions 101 mm. by 140 mm.

Piccard-Pictet is making use of the single-sleeve motor built under the joint Piccard-Pictet and Argyll licence. With this exception all the cars have overhead valves, many of them with four valves per cylinder, operated by either one or two camshafts. The racing motor with valves on either one or opposite sides, or even with superimposed valves, has entirely disappeared. A hemispherical combustion chamber, without valve pockets, has been adopted by all makers.

Valve Springs Abolished.

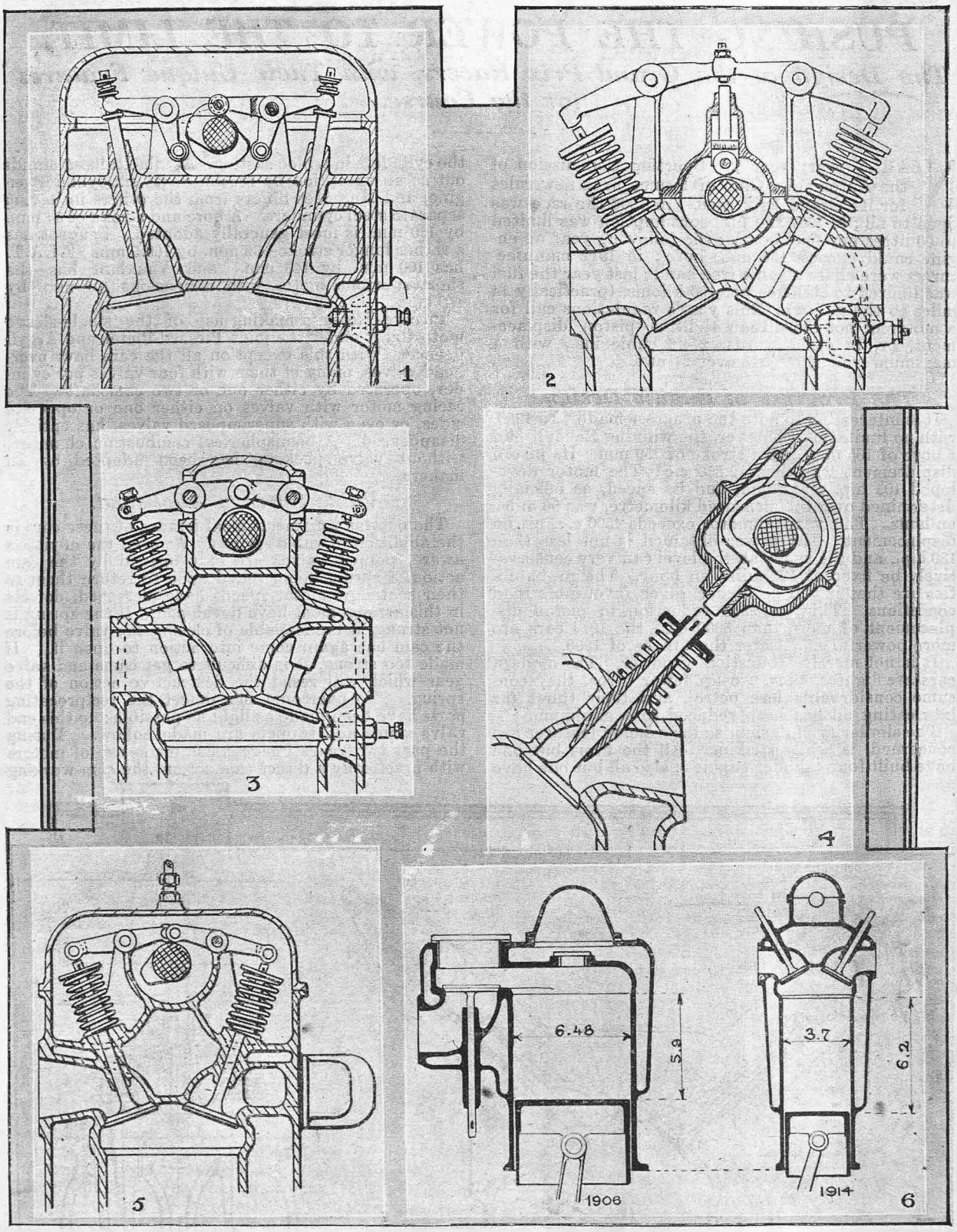
The outstanding mechanical feature of these cars is the abolition of valve springs. As even the novice is aware, poppet valves are only opened by the cam action, a spring being relied upon to return them to their seat. As motor speeds have increased, defects in this arrangement have developed. If the spring is not strong, it is incapable of closing the valve before the cam has again come into action to open it. If made too strong, it is difficult to get cams and valve gear which will resist the destructive action of the spring. To overcome this defect the reciprocating parts have been made as light as possible: to this end valve stems and tappets are made hollow. During the past two years Peugeot has made use of motors with practically a direct cam action, the cam working



MECHANICAL DETAILS OF DELAGE GRAND PRIX RACERS.

Delage valve arrangement. 16 inclined overhead valves, positively opened and closed by cam action. This system avoids the use of valve springs.

Delage valve arrangement. Pair of valves (inlet) positively closed by cam action. Valve springs are dispensed with.



MECHANICAL DETAILS OF GRAND PRIX RACERS.

(1) The Schneider valve arrangement. Eight overhead valves, inclined 10 degrees. No valve springs, valves being positively closed by cam action. (2) F.I.A.T. valve arrangement. Eight inclined valves, central camshaft, tappets and rocker arms. Camshaft carried in a hollow in head of cylinders. (3) Opel valve arrangement. Sixteen inclined overhead valves, single camshaft rocker arm, external valve springs. (4) Peugeot valve arrangement. Direct operation from overhead camshaft, without use of rocker arms. Sixteen valves. A similar design is employed by Sunbeam, Vauxhall and Nagant. (5) Alda valve arrangement. Sixteen overhead valves, single camshaft, 16 rocker arms, all mechanism enclosed. (6) A contrast of the winning Grand Prix cars of 1906 and 1914. Diagrams show dimensions of the winning motors.

PUSHING THE POWER.—Contd.

within what may be termed a stirrup, having a couple of projections, both of which serve to guide it, and one of which comes in contact with the end of the valve stem. This arrangement, which is shown in one of the illustrations, is the nearest possible approach to the cam acting directly on the valve. It has proved so successful that it has been adopted—in principle, at any rate—on quite a number of racing cars this year.

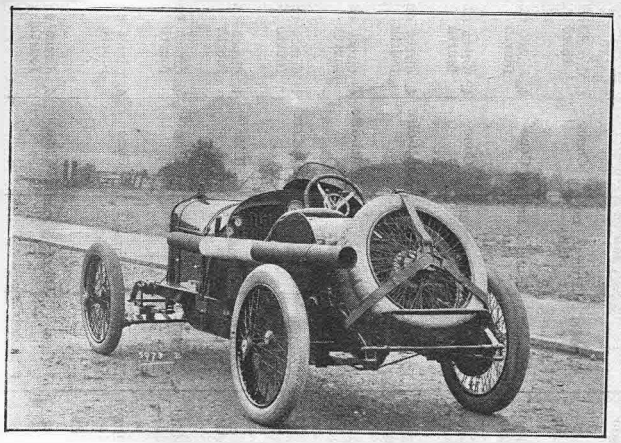
The later development, the springless valve, has been introduced by Delage, and also by Th. Schneider. In these two cases there are no valve springs, the cam being relied on to both open and close the valve. Examining the Delage first, it will be seen that there are 16 inclined valves, 4 in each head, and operated by a couple of overhead camshafts driven by a vertical shaft and enclosed bevel gearing. Each cam operates in a light steel stirrup-shaped guide, from the top and bottom of which project two circular section stems. These serve to guide the piece. In addition, the lower one projects through the camshaft housing and receives a light steel piece, forming a double yoke. Two valves are attached to this member. As the "stirrup" has a positive up-and-down motion under the action of the cam, it is obvious that the valves are positively opened and closed.

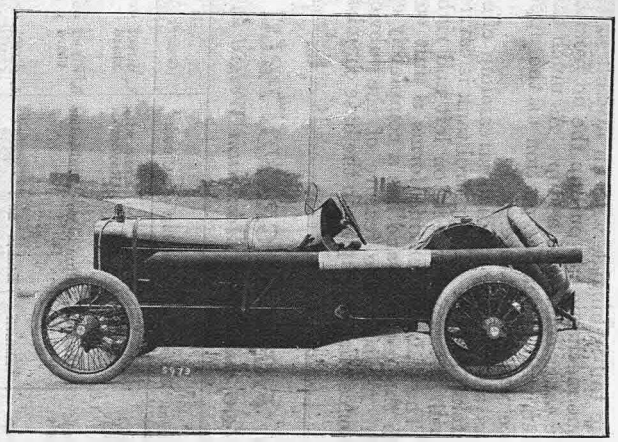
Alda has 16 inclined valves, and uses a single hollow camshaft to operate 16 very light rocker arms with a roller let in each end. A train of spur pinions drives the shaft, and an overhead cover protects the entire mechanism. The F.I.A.T. arrangement makes use of a single overhead camshaft carried in a recess on the head of the cylinder, the upper portion of the camshaft housing being a bolted-down steel cover. Valve tappets are carried in this cover, and it is through these that the overhead rocker arms are operated. Valve springs and rocker arms are, of course, external. Opel has the same centrally-located camshaft, with rocker arms carried in the cover and directly operated by the cam. Thus one half the rocker arm is within the housing and the other half outside, the valve springs being external. There are 16 valves for this engine. Mercedes has also a 16-valve engine with an overhead camshaft and rocker arms.

Five Speeds on Delage—Direct on Third.

Quite apart from the valve gear, there are interesting features about the Delages. The engine forms a remarkably compact bloc casting, carried directly on the main frame members. There are five ball bearings for the crankshaft, this necessitating a built-up shaft in four parts and entailing wonderfully accurate work in order to get perfect balance. Few firms have been able to get the correct degree of balance for a structure of this nature, but Delage has succeeded in such a measure that with the motor running at 3000 revolutions on the bench, and the exhaust carried outside, an observer a yard away could hardly tell whether it was in motion or not. Ball bearings are used not only for the crankshaft but for every other part of the motor with the exception of the connecting rods. The crank and camshafts are hollow, and, like the connecting rods, are of B.N.D. steel. The pistons are also machined out of the solid bar of steel. Because of the varied and winding nature of the course, five speeds are employed, with two of them geared up. The fourth indirect is employed on the straight stretches and the fifth on the down grades. B.N.D steel is again found in the gearbox, the shafts being hollow.

The rear axle is a fine piece of work with the tubes machined out of the solid, hollow drive shafts, and the differential housing of heavily ribbed aluminium. There are ball bearings both to the front and the rear of the driving pinion. Brakes are fitted on both front and rear wheels and also on the differential. It is really amazing to note how quickly the cars can be pulled up with the use of these brakes, and to observe the excellent manner in which they hold to the road while being braked hard. Provision is made for the mechanic to adjust all the brakes while the car is running at speed.





Rear and side views of the Sunbeam racers for the Grand Prix.

In the diagram of this interesting mechanism, which, parenthetically, does not claim to be accurate in every detail, it will be seen that there is a very light coil spring within the yoke, and at the end of each valve. This, however, does not serve to return the valve to its seat. A certain amount of clearance must be left between the end of the valve stem and the yoke, in just the same way as play must be left between tappet and valve. The springs make allowance for this, and serve to give the final seating of the valve—if we may be permitted the expression. The design is not only ingenious, but is remarkably well worked out, and is one on which the Delage engineers are to be congratulated. Wonderful results have been attained in the tests, but of this more can be said after the race.

Separate Cams to Close the Valves.

The Schneider arrangement is similar so far as general principles are concerned, but is worked out in a rather different manner. There are two valves per cylinder, inclined 10 degrees, and operated by a single camshaft. Each valve has two cams, one securing the opening and the other closing the valve. A very light coil spring is made use of to provide for the slight amount of play which must be left for expansion and contraction of the stem. Spur pinions are employed to drive the camshaft, and the whole of the valve mechanism is hidden by an aluminium cover down the full length of the engine.

PUSHING THE POWER.—Contd.

Reducing Wind Resistance on the Peugeot.

So far as the engine is concerned, Peugeot is running with last year's type. The external appearance of the car, however, is entirely different. With its graceful streamline form it is really the most pleasing production on the course. The entire machine is set very much lower than formerly, the front axle being mounted above instead of under the springs. Front-wheel brakes are used. The elongated tail carries the petrol tank and a locker for a couple of spare wheels. The top of the tail is hinged, with an eyebolt in the end, so that the mechanic can pull up the lid from his seat while the car is coming to a stop. As much care has been taken with the under portion as the upper part to reduce wind resistance.

F.I.A.T. has also closely studied streamline effect with very pleasing results. The petrol tank is carried in the tail, with the spare wheels on left and right-hand sides. The F.I.A.T. engine forms a unit construction with the gearbox, and has a completely enclosed clutch. A distinctive feature of the lubrication is the absence of an oil supply in the base chamber.

Radiator Guards Part of the Design.

It is interesting to note the way in which both Th. Schneider and Alda have retained their usual type of bonnet while removing the radiator to the front. While the dashboard radiator has decided advantages for touring and general work, it is a handicap under the severe strain of racing. Schneider and Alda have therefore put the radiator in front under the bonnet, and cut a panel in this latter for the passage of the air. As the panel is covered with a wire gauze screen, it protects the radiator against flying stones.

CHARACTERISTICS OF CARS IN FRENCH GRAND PRIX, LYONS, 4th JULY, 1914.

Cylinder Capacity 274.6 cubic ins. Maximum Weight 2,425 pounds.

Make.	Drivers.	Motor.	Valves.	Main bearings	Oiling.	Ignition.	Carburetter.	Cooling.	Clutch.	Gears.	Drive.	Drive taken through	Brakes.	Wheelbase & track.	Wheels.	Tyres.
ALDA (France)	1 Tabuteau 15 Pietro 29 Szisz	4 monobloc (94 by 160 mm. bore & stroke)	16 overhead, 1 camshaft	5 plain	Variable splash	Bosch double	Claudel	Pump, no fan	Cone with Raybestos	4, direct on third	Shaft	Central tube	Differential rear wheels	106 ins. 53 ins.	Dunlop	Pirelli 875 by 105 880 by 120
DELAGE (France)	23 Bablot 9 Guyot 35 Duray	4 monobloc (94 by 160 mm. bore & stroke)	16 overhead, 2 camshafts	5 ball	Centrifugal circulation	Bosch single	Claudel	Pump, no fan	Multi-disc	5, direct on third	Shaft	Springs	Front wheels, differential rear wheels	106 ins. 53 ins.	Rudge-Whitwth.	Pirelli 880 by 120 895 by 135
PEUGEOT (France)	5 Boillot 19 Goux 32 Rigal	4 monobloc 92 by 169 mm. bore & stroke)	16 overhead, 2 camshafts	3 ball	Pump circulation	Bosch single	Zenith	Pump, no fan	Leather cone	4, direct on fourth	Shaft	Springs	Front wheels, differential rear wheels	106 ins. 53 in s.	Rudge-Whitwth.	Dunlop 875 by 105 880 by 120
TH. SCHNEIDER (France)	6 Champoiseau 20 Gabriel 33 Juvanon	4 monobloc (94 by 160 mm. bore & stroke)	16 overhead, 1 camshaft	3 roller	Centrifugal circulation	Bosch single	Claudel	Pump, no fan	Cone	4, direct on third	Shaft	Torque member	Differential rear wheels	110 ins. 54 ins.	Rudge-Whitwth.	Dunlop 870 by 90 880 by 120
SUNBEAM (England)	10 Chassagne 24 Lee-Guinness 36 Resta	4 monobloc (94 by 160 mm. bore & stroke)	16 overhead, 2 camshafts	3 ball	Pump circulation	Bosch single	Claudel	Pump, no fan	Cone	4, direct on fourth	Shaft	Springs	Differential rear wheels	106 ins. 53 ins.	Rudge-Whitwth.	Dunlop 880 by 120 880 by 120
VAUXHALL (England)	4 Hancock 18 W. Watson 31 De Palma	4 monobloc (101 by 140 mm. bore & stroke)	16 overhead, 2 camshafts	5 plain	Pressure	Bosch double	Zenith	Pump, no fan	Cone	4, direct on fourth	Shaft	Tube and spherical joint	Differential rear wheels	111 ins. 54 ins.	Rudge-Whitwth.	880 by 120
AQUILA-ITALIANA (Italy)	12 Beria d'Argent 26 Marsaglia 37 Constantini	6 monobloc (85 by 130 mm. bore & stroke)	12 incl. overhead	3 ball	Pressure	Bosch single	Zenith	Pump	Multi-disc	4, direct on fourth	Shaft	Central tube	Differential rear wheels	106 ins 56 ins.	Rudge-Whitwth.	Pirelli 875 by 105 880 by 120
F.I.A.T. (Italy)	13 Cagno 27 Fagnano 38 Scales	4 monobloc (100 by 143 mm. bore & stroke)	8 overhead, 1 camshaft	5 plain	Pressure	Bosch double	F.I.A.T.	Pump, no fan	Multi-disc	4, direct on fourth	Shaft	Springs	Front wheels, differential rear wheels	110 ins. 52 ins.	Rudge-Whitwth.	Pirelli 875 by 105 880 by 120
NAZZARO (Italy)	8 Nazzaro 22 Porporato 34 Cenisio	4 monobloc (94 by 160 mm. bore & stroke)	16 overhead, 1 camshaft	3 ball	Pressure	Bosch double	Zenith	Pump	Dry discs	4, direct on fourth	Shaft	Central tube	Differential double on rear wheels	107 ins. 54 ins.	Rudge-Whitwth.	Pirelli 875 by 105 880 by 120
PICCARD-PICTET (Switzerland)	11 Tournier 25 T. Clarke	4 monobloc (97 by 150 mm. bore & stroke)	single sleeve	5 plain	Pressure	Bosch single	Zenith	Pump	Disc	4, direct on fourth	Shaft	Springs	Front wheels, differential rear wheels	104 ins. 52 ins.	Rudge-Whitwth.	Continental 875 by 105 880 by 120
NAGANT (Belgium)	3 Elskamp 17 Esser	4 monobloc (94.8 by 158 mm. bore & stroke)	16 overhead, 2 camshafts	3 ball	Centrifugal circulation	Bosch single	Nagant	Pump	Disc	5, direct on fourth	Shaft	Springs	Differential rear wheels	110 ins. 53 ins.	Rudge-Whitwth.	Dunlop 880 by 120
MERCEDES (Germany)	14 Lautenschlager 28 Pilette 39 Salzer 40 Sailer 41 Wagner	4 steel separate (93 by 156 mm. bore & stroke)	16 overhead, 1 camshaft	5 plain	Circulating	Two Bosch doubles, 4 plugs per cylinder	Mercedes	Pump	Cone	4, direct on fourth	Shaft	Tube and torque member	Differential rear wheels	111 ins. 53 ins.	Rudge-Whitwth.	Continental 880 by 120 895 by 135
OPEL (Germany)	2 Carl Joerns 16 Erndtmann 30 Breckheimer	4 monobloc (94 by 160 mm. bore & stroke)	16 overhead, 1 camshaft	5 plain	Pressure	Bosch single	Opel	Pump & fan	Cone	4, direct on fourth	Shaft	Springs	Differential rear wheels	118 ins. 53 ins.	Rudge-Whitwth.	Continental 810 by 105 880 by 120

Caesar entered in [illegible], but will not start.

A COMPETITION FOR TWO-STROKE ENGINES.

Encouragement Offered to the Simpler Form of Engine by the Governing Body.

By HENRY STURMEY.

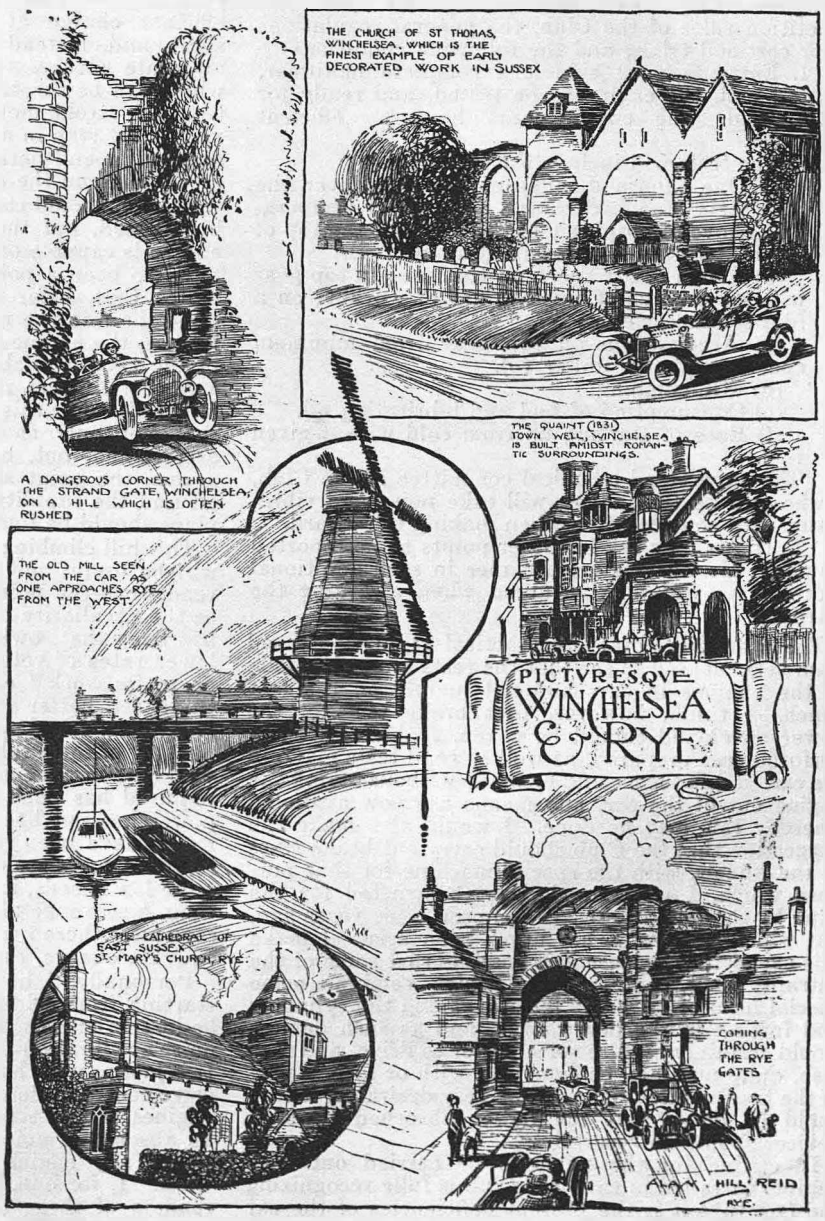
I AM very glad to see the Royal Automobile Club once more taking up its work as a "society of encouragement," for, perfect as our cars are to-day by comparison with what they were even 10 years ago, we have far from reached finality yet. If I am not mistaken, constructional details will receive considerable modification by the time the next 10 years have gone by.

The man who has a good car now may well ask what more he wants than a vehicle which runs smoothly and silently and obeys his every direction, which takes him out and brings him home again, be the distance but 10 or 1000 miles. But I was looking through an early number of a motor paper, published in 1897, the other day, and I saw a paragraph there of my own writing in which I said: "If a car can keep up an average pace over an ordinary road of 12 to 14 miles per hour, thus keeping within the provisions of the Act, it is quite fast enough for all practical purposes." Which only shows how one's views alter with the progress which is being made.

I was perfectly sincere when I wrote that. Even at that early date we had cars which would do all we then wanted of them, and travel farther and faster than any horse, so what more could the average man want? We see in our motorcars to-day what the enthusiasts have brought them to by following up one line of investigation after another, and striving along each to reach an ideal which, at the time, may have seemed unattainable, and so the game goes on. Enthusiasts are never satisfied, and ever, having surmounted one eminence, they see another of still greater height in front of them, and so it is that we do well to seek improvement in directions where such seems possible.

In the early days of motoring, the Club was constantly carrying out trials and demonstrations of all kinds; but, so high a state of development having been reached, it has relaxed its efforts somewhat in recent years. But last year it was announced that, upon the initiative of Mr. Worby Beaumont, the Club was prepared to offer prizes for a competition having the object of developing a practical internal-combustion turbine. I was glad to see the Club once more stepping into the arena in this way; but it did not appear to me that a turbine system engine would be of much real advantage in motorcar construction if it could be produced. It must be remembered that no such engine has been produced which will work at all as yet, although many patents have been taken out. I thought that there were several other lines of investigation which the Club might set to work to encourage, with a better chance of early and successful results, and with better advantage to the automobile, when success had been achieved.

An example would be the abolition of stepped gearing and the attainment of the ideal of infinitely-variable transmission, as also the perfection of the two-stroke engine, towards both of which ideals some progress had been made by independent investigators, and I suggested to the Club that it should take up the investigation of either or both of these lines



By reason of their picturesque qualities, Rye and Winchelsea stand out before all the little towns and villages in the South. Any motorist who may be in the vicinity will find himself amply justified in diverting his course thither.

TWO-STROKE ENGINES.—Contd.

of research. I was pleased to learn from Mr. Orde, a few months since, that the development of the two-stroke motor was being seriously considered. On the face of it, the two-stroke proposition is an attractive one, for, could equal efficiency per impulse be obtained, we should be able to do several very important things. We could have the number of revolutions to get the same power, and, consequently, get a smoother running engine at equal car speeds, and we could get the same torque effect with half the number of cylinders, which, all other things being equal, would give us half the number of engine parts and something like half the manufacturing expense—all highly desirable points.

I am pleased to say that the matter has so far progressed that the Club has now issued the regulations for the new contest, which, I understand, will take place some time during 1915. These regulations are as follow:—

The competition, which is restricted to two-stroke engines fitted to cars, is held under the open competition rules of the Club, the general regulations for certified trials, and the following conditions:—

1. Entrants must submit a complete motorcar, fitted with the engine to be tested, and ready for the road. The engine must have an efficient silencer.

2. The tests will include the following:—

(a) One thousand miles on the road over the Club's six standard routes. Excess of temperature above atmospheric of the water at the top of the radiator will be recorded at intervals.

(b) Range of car speed on the level on top gear without the engine missing fire or working on a four-stroke cycle.

(3) Acceleration on top gear from minimum speed as shown under (b).

(d) Hill-climbing.

(e) Consumption of fuel and lubricating oil.

(f) Ease of starting up from cold with a given fuel.

The expert and technical committee of the Club, who will be the judges, will take noise and vibration into consideration when making the award.

Entrants may ask for other points to be reported upon. Meritorious performance in such additional directions will be considered when awarding the trophy.

These are all eminently practical regulations, and I am very pleased to see that the tests are to be made of the engines in cars and not merely on the test bench. I think, however, that brake tests of the power developed should be taken, and diagrams of performances prepared, as well as road tests made in the car. Such tests could be made without taking the engine out of the car, and means are now available whereby this may be done. I would also make the suggestion that the Club should carry out brake tests at the wheels, with the special machine for that purpose which, I understand, was constructed for the Club by the late Mr. Lyons Sampson some years ago, but which, I believe, has never been used. I make this suggestion because it is possible that some of the entrants may bring engines which combine some special form of air pump for scavenging the cylinders and forcing in the new charge, and as such devices would certainly require some power to drive, and may also, quite possibly, be combined with or form a part of the transmission, it would be very desirable, if such could be done, that the power absorbed by such devices should be ascertained.

In calling for the trials to be carried out with engines installed in cars, the Club is fully recognizing the fact that it is the present deficiencies of the car type of engine which it is the object of the competition to surmount. There are already many highly-successful two-stroke engines on the market for motor boat and stationary work; but it is the very exacting nature of motorcar work, the requirements of which this type of engine has hitherto been unable to fulfil. It is a satisfactory two-stroke motor for motorcar work which it is the object of the competition to produce, and not merely a two-stroke motor, for that, as just said, has already been done.

In regard to test (a), it is possible some modification may be found necessary. I refer particularly to the taking of the temperature of the water at stated intervals, because it must not be overlooked that the most successful two-stroke work which has yet been done has been done with motorcycles and with air-cooled engines, so that steps should be taken in framing the regulations to deal with air-cooled engines, should they be entered.

Test (b) I look upon as one of the—if not the—most important of the series, for it gets right at the weak spot of the two-stroke motor in car work. It is well known by all who have had any practical experience with two-stroke engines in cars, that they cannot be throttled down, as four-stroke motors can be, to low limits, because there appears to come a time with all such engines when the cylinder fails to take in an efficient charge at each revolution of the crank-shaft, and, instead of firing regularly, misses every alternate stroke. If an engine can be produced which can be throttled down to the same low speeds as a four-stroke motor without doing this, it will be a very great step in advance, and an engine which will attain this end perfectly will almost certainly distinguish itself on the other tests.

Test (c) should cover not only rapid acceleration to high speed, but the actual speed rate to which the engine is capable of being accelerated, because it has hitherto been a point of weakness of the two-stroke motor that, after passing a certain critical speed, somewhere in the neighbourhood of 900 or 1000 revolutions, the engine has failed to take in a full charge in the time available, and, whilst capable of higher acceleration, the power per revolution has rapidly fallen off. For this reason, I think it most important that not only should the possible speed rate be ascertained, but, by means of brake tests and diagrams, the point at which the power begins to fall off and the rapidity with which the falling off takes place should be found out as well.

The hill-climbing test—on top gear particularly—will be useful and interesting, and will bring out in road work the points aimed at by the previous test, as the peculiarity of the two-stroke motor of the past has been that, owing to its giving full power at the lower rates of rotation only, the engine will "hang on to its work" on a long grade which pulls down the speed better than a four-stroke will, but it will fall off in speed quicker. Test (c) will also get at another of the weak spots of the two-stroke motor, as we know it now, as in some of them the lubrication required has been excessive, whilst in all the same power has not been developed per gallon of fuel as would have been the case with a four-stroke engine of the same size, owing to the fact that, except at quite low speeds, it has not been possible to obtain so clean a scavenge of the exhaust gases, and, as a consequence, there has been a larger admixture of these with the charge, the power of which has suffered.

Personally, I have never noticed any difficulty in starting from cold in any engines of this type I have had experience with, nor have I noticed any greater noise or vibration than with four-stroke constructions. It is just as well, however, that these points should receive consideration in the tests, as I believe that some engines of this type have been difficult to start, and an absence of noise and vibration is a desirable feature in any engine, if it is to be a success in motorcar work. I, for one, and, I am sure, very many of the readers of these notes also will look forward with much interest to the results of these trials, as the two-stroke motor of to-day only just falls short of the ideals, the accomplishment of which would make it a successful competitor with the four-stroke type.

OTHER PEOPLE'S VIEWS.

Readers' Opinions on Current Motor Topics—Difficulties and Solutions.

Royal Automobile Club Trials: A Suggestion.

There has been considerable discussion in the Press, and out of it, on the value of the R.A.C. trials, but most of the disputants seem to have missed the crucial point. Nobody, I imagine, is prepared to maintain that the findings of the R.A.C. are not absolutely reliable and valuable so far as they go. The real issue, however, is that, through no fault of the R.A.C., they do not go far enough.

It is very truly pointed out that in an R.A.C. trial the firms entering, to a great extent, impose their own conditions—that is, they ask for certain features to be tested, or for the trial to be conducted in a certain way, and therein is the whole weakness of the system, because no entrant is going to ask the R.A.C. to test a quality in the goods under trial that is felt to be weak.

How is the public to know what material issue has been burked or obscured under a report upon the strong points of a particular article? The public is not so technical that it can see from a study of a certificate the precise nature of a test, even if the public is sufficiently interested to study the certificate at all.

It seems to me that what is wanted is for the R.A.C. itself to decide upon the material points of any commodity which any manufacturer is desirous of having tested, and to make the decision solely from the point of view of the private motorist. Let the R.A.C. have its private members' committee appointed for the purpose of collaborating with the technical committee in defining the terms of reference for the purposes of the trial. That is probably a novel idea against which some objections can be levelled, but I submit the objections cannot outweigh the obvious advantages, from the public point of view.

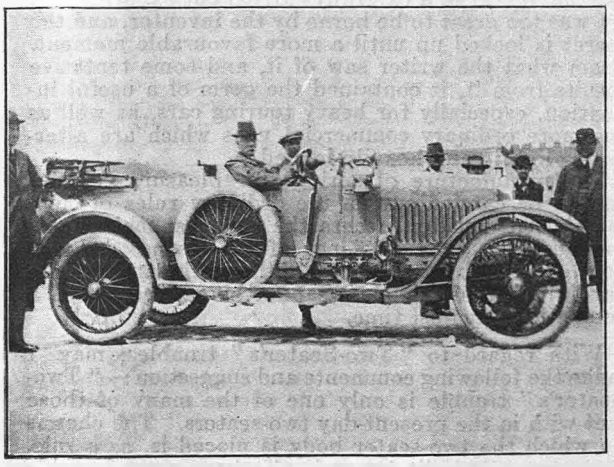
So long as manufacturers submitting goods for trial tie the hands of the R.A.C. as to the conditions of trial, so long will an R.A.C. certificate possess less value than so important a document should do. Give the R.A.C. a free hand to decide for itself what the essential features of any car accessory are; give it entire liberty to make the test under its own conditions, by comparison with any other commodity of the same kind if it thinks fit (although, without the consent of the manufacturers or concessionnaires of those other commodities they cannot perhaps be mentioned specifically); restrict the R.A.C. in no way whatever, and the result of any trial will be of far greater value than now.

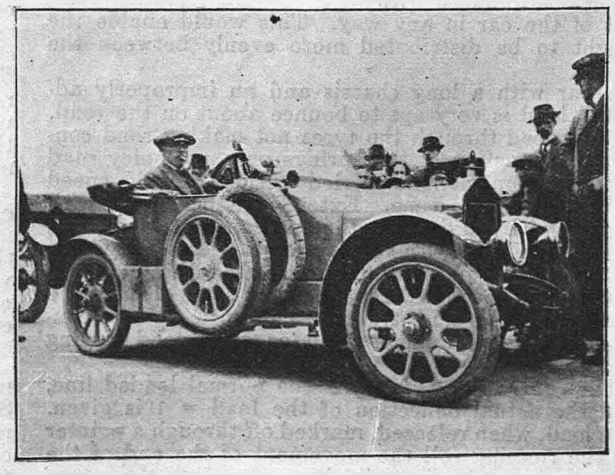
This, I believe, has never yet been done in the history of the R.A.C. trials; and, if done, will, I am confident, add enormously to the Club's prestige and to the weight of its certificate. What difficulties may be in the way are, I am sure, of small moment. As earnest of my belief, and to show that I am as keen with example as precept, I propose to ask the R.A.C. to undertake the test of the Rushmore engine starter and lighting installation precisely on these terms.

S. F. Tyler.

Two-seaters and Pot-holed Roads.

The inquiry made by a reader in the issue of 16th June regarding the discomfort of a two-seater and its bumpiness on a pot-holey road, suggests that the remedy may be met in many ways. It is not possible to give an opinion or direction which will be of universal application and of equal efficiency, and no useful information regarding a possible remedy could be given without an inspection of the particular car in question. The distribution of the load on the chassis, and the additional load of the passengers, materially affect the load on the springs and alter their working. There would have to be a carefully-corrected list made of the unsprung weights on each axle of a series of cars to obtain an average of the loads; but this is hardly possible, and the load on each axle of the car "ready for the road" can be easily ascertained. The proportions of the load on the axles would be about 13 to 12 front and rear respectively on the two-seater, and about 13 to 20 on the four-seater car. These figures include an average weight of the passengers. The arrow heads in the illustrations (Fig. 1 and Fig. 1a) indicate where the load of the passengers is placed on the wheelbase. In considering the action of the springs, the enlarged view of a rear spring is given, with the main plate in the normal unloaded position the first deflection



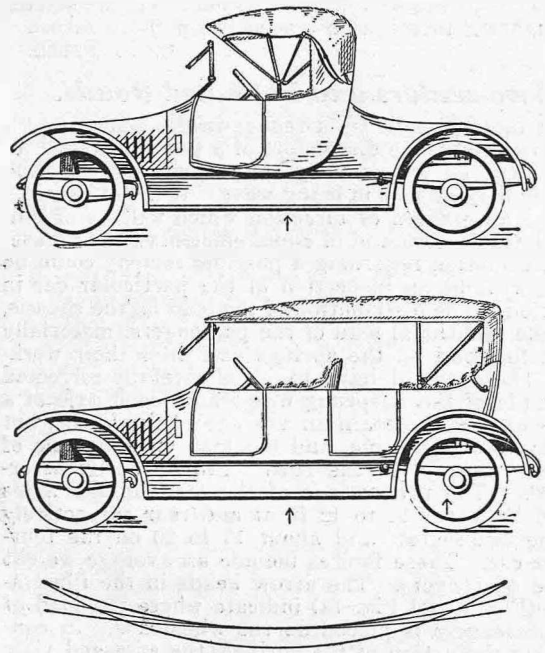


Two British cars that competed in the Alpine Tour. On left, Mr. Tinsley Waterhouse's Vauxhall. On right, the Singer light car, the smallest vehicle in the tour.

O.P.V.—Contd.

representing the light load and the second the heavy load. The distances between the different cambers are proportioned to the roads. The manner in which the spring is made up, as well as the quality of the steel and the character of the workmanship, are collectively responsible for the efficiency of the springs, and the quality of the material and the character of the workmanship may be regarded as constants, while the manner of construction is variable for the particular work which the spring has to perform. It is not fair, in dealing with the suspension, to put springs suitable for a four-seater body into a chassis on which a two-seater is to be fitted. The one spring is too hard or the other is too soft to ride upon. The manner in which the spring is built up can be modified so that it reaches the desirable middle course. This is, however, more a matter for the expert with all the facts of the case before him.

It might be suggested that when a chassis is standard for two and four-seater bodies, the angle of the steering column should be varied, that for the four-seated car being such that the space occupied by



Figs. 1 and 1a.

the seat is reduced without detracting from the comfort of the car in any way. This would enable the weight to be distributed more evenly between the axles.

A car with a long chassis and an improperly adjusted load is very apt to bounce about on the road, losing speed through the tyres not making road contact. The action of the springs on a pot-holey road depends upon the load carried by them and the speed of the car at the time. Extended experiments with springs with varying lengths and constant loads, and constant lengths with varying loads, were carried out by the writer, and automatic records with a clock recording half-seconds taken, and from some of these the additional diagram is traced. This spring was of constant length and number of plates, and a load varying as 1 to 2.7.

The centre line (Fig. 2) is the normal loaded line, and the actual deflection of the load = 1 is given. The load, when released, marked off through a pointer on the running roll the movement of the end of the spring, shown in the solid line, recording the movement during the first second (the number of movements down and up in the time, 1 sec., is shown). The dotted line is taken from part of the record of the load = 2.7, and is from that part of the record, the third second, in which the top of a rebound of the spring was, at a distance from the normal line, equal to the starting point of the record shown in solid line. The number of the down and up motions varies in each case, and is determined by the load on the spring at the time of running.

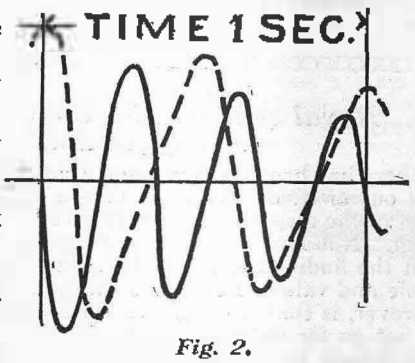


Fig. 2.

When there is a light load on the springs, an impulse, as from a pot-hole, will cause a further deflection equal to the full deflection, and the movements of the spring are short and rapid. When the spring is loaded, as in a four-seated car, the initial deflection is greater, and when an impulse due to pot-holes further deflects the spring to the same distance as in the first instance, the movement of the spring is slower, and instead of six and a half movements up and down, there are only four in each second of time during which the movement lasts uninfluenced by any other movement.

With a lightly-loaded car, the spring has a short, jerky motion, very frequently repeated, which is exceedingly disagreeable. With a heavy load, the motion is less rapid and jerky, and the spring does not always get "extended," as when there is only a light load upon it. That is one of the reasons explaining the comfort of a well-loaded spring. Of course, when the "engine" is extended at speed then the spring has to follow suit, due to the speed and momentum and in part to repeated blows from the pot-holes.

The experience of "Two-Seater" with shock absorbers does not appear to have been a very happy one. The merit of the elastic shackle form of shock absorber is its great sensitiveness to road inequalities; when there is a great bump it closes up "dead," leaves the main spring to do the work, and afterwards gives an added jerk to the rebound. This is not the case with the hydraulic shock absorbers fixed between the axle and the chassis; they react against the spring and neutralize its action.

A very easily adjustable shock absorber, which can be set conveniently on any journey, would be of great advantage, provided the main springs could be so made that light and heavy loads could be carried with equal security and ease. Some initial experiments were entered upon with such a shock absorber, but the estimated cost of a carefully carried out experimental set was too great to be borne by the inventor, and the secret is locked up until a more favourable moment. From what the writer saw of it, and some tentative results from it, it contained the germ of a useful invention, especially for heavy touring cars, as well as the more ordinary commercial vans which are alternately lightly and heavily loaded.

The manufacture of springs for pleasure vehicles cannot be carried out on the ordinary rules of commercial competition, where the cheapest maker gets the business. The efficiency of the spring depends very greatly on the character of the workmanship, and careful work of this class cannot be carried out in a competition against time. G.W.

With regard to "Two-Seater's" troubles, may I make the following comments and suggestion:—"Two-Seater's" trouble is only one of the many of those met with in the present-day two-seaters. The chassis on which the two-seater body is placed is, as a rule, never actually built for such. To have a comfortable two-seater which will ride the roads with considerably less vibration and bumps, one must use a much shorter

O.P.V.—Contd.

wheelbase than 10 ft. 2 ins., and the passenger should be actually placed over the "back axle" to be correct, just as the racing cars are made, so as to distribute the weight of engine and passengers on the front and back axle as much as possible. I have noticed very often the discomfort there is in driving these long-wheelbased chassis with two or three-seater bodies, especially on greasy roads. I have often wondered why the builders of cars do not build a special chassis for two-seater bodies; surely there would be a good sale for such!

May I suggest to "Two-Seater," if he has not already used Houdaille hydraulic suspension that he should give it a trial, as I have found it very satisfactory. Usual disclaimer.

NORMAN W. TAYLOR.

Rule of the Road on Hills.

There can be no question whatever that one car has no right to overtake another if, by so doing, it impedes the passage of a third car coming in the opposite direction. This applies to other vehicles also.

The reason is simple. It is merely a matter of giving preference to the method which frees the road in the least time, and this is in the best interests of the community at large.

Two vehicles meeting each other will pass clear at the rate of the combined speeds of the two, whilst one vehicle overtakes another only at the rate of the difference in speed between them. If B, ascending a hill, wishes to overtake A, and Z is coming down the hill towards them, B will be delayed less time in waiting for Z to pass than Z would be delayed if he were to wait for B to overtake A. This holds good under all ordinary conditions. Let your correspondent "A.W." work out examples for himself.

If Z sees B struggling up the hill under difficulties, he might give way as a matter of courtesy, but not of right, and certainly not to save B from changing down to first speed.

"X."

The Aston Hill-climb.

We notice in your issue of the 16th inst. a letter on the subject of the Aston hill-climb signed "Another Amateur," in which he criticises the club for allowing trade cars to enter.

We should like to emphasize the fact that the car with which we won the hill-climb was entirely a standard 12-15 h.p. speed model D.F.P.

BENTLEY AND BENTLEY, LTD.

The Severn Tunnel Route.

In a recent issue I notice a paragraph (on page 950) about petrol and cars passing through the Severn Tunnel from Bristol to Newport, or vice versa. The paragraph alludes to a saving of 12 hrs. by using this route in preference to traversing the whole journey by road. From Bristol to Newport by road (via Gloucester) is 85 miles; via the Severn Tunnel 29 miles; difference 56 miles; at the outside 3 hrs. would be a liberal allowance for this distance and not 12 hrs. The petrol exchange system has been in force five years to my knowledge, and was, I believe, originated at Paddington.

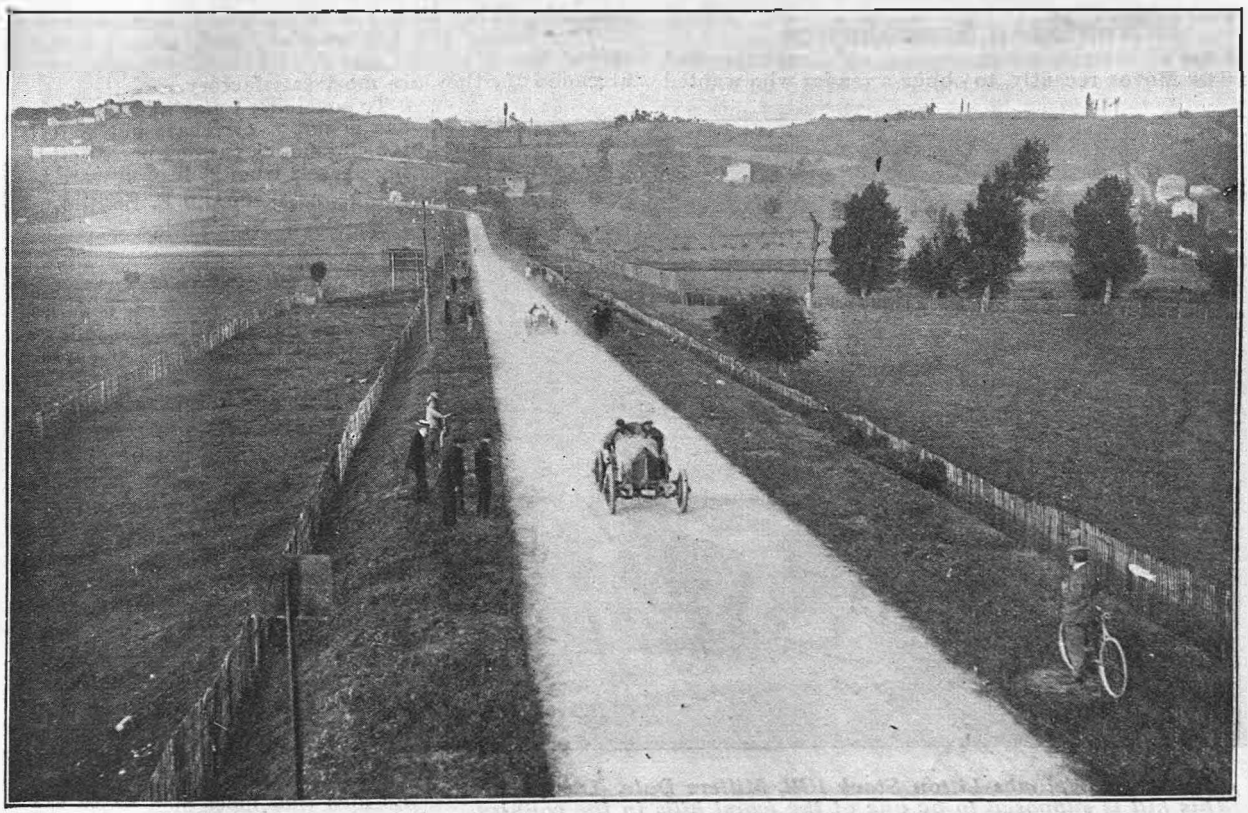
W. B. HALLOWES.

Reliability of the Sparking Plug.

In the second column, page 996, of THE MOTOR, 23rd June, at the beginning of the second paragraph the following sentence appears:—"Another and better way is to provide a taper joint between the insulator and metal parts."

The actual sentence in our letter, however, was as follows:—"There are three principal ways of making the joint between the insulator and the metal parts."

THE LODGE SPARKING PLUG CO., LTD.



AN OPEL AND A PICCARD-PICTET AT FULL SPEED DURING GRAND PRIX TRAINING.

B35

O.P.V.—Contd.

Harrogate Again.

Quite recently I made an appeal for motorists to be more cautious and discreet in travelling both up and down Humphrey Bank, on the great southern portal of Harrogate. Now, owing to the alleged recklessness of so many drivers, there is a strong agitation afoot for a stern restriction on speed. A 10-mile limit is once again being freely talked of. There is an easy cure for the clamourers: Let every motorist restrain his speed. Nobody, either afoot or in another car, cares a brass button about the potentialities of Mr. Average Fool's car; he does not need to "show off" on the Stray. There are lots of good cars besides his, and perhaps many better ones—also handled by better drivers. There is talk of the R.A.C. being asked to take action. To me that is as funny as asking Harrogate Corporation to check it.

HUMPHREY BANK.

Rough Usage of Cars in Garages: Tourist's Garage Plaint.

Your correspondent "Tourist" (page 754) is thoroughly justified in all he says by way of criticizing the habits and practices of employees at some depots. But he may be glad to have his interest pointed in the direction of a notice in the garage of a Southport concern:—

"Cars must not be pushed by the radiators, headlamps, or fitments of any kind. Lamps or other accessories, of the company's stock cars or others, must not be removed under any circumstances whatever without permission from the office.

"Any complaints or breakages must be reported at the office at once.

"Any infringement of these rules will render the person responsible liable to instant dismissal."

The first and last clauses, of course, are chiefly to the point in re "Tourist's" right and proper "growl."

R.

Wanted—a Speedometer.

After all the nice complimentary opinions expressed in THE MOTOR recently, to oblige a reader who wanted to know of a good speedometer, I think it is worth quoting the following, which appears in the June "Ford Times":—

"Owing to our inability to secure a satisfactory speedometer, our cars will not be equipped with them for the present. An allowance of 25s. will be made purchasers on Ford cars not equipped with speedometers."

Does it mean that the Ford folk value a good instrument at 25s., or that they appraise present speedometers at that sum?

INDICATOR.

Piece of a tramline which pierced one of the tyres of a reader's car. The illustration is actual size.

Tramline Danger.

I enclose what appears to be a shaving off the edge of a tramline which pierced the tyre of my car in West Bromwich the other evening. If my diagnosis is right the condition of the tramlines constitutes a considerable danger to road users.

DU5130.

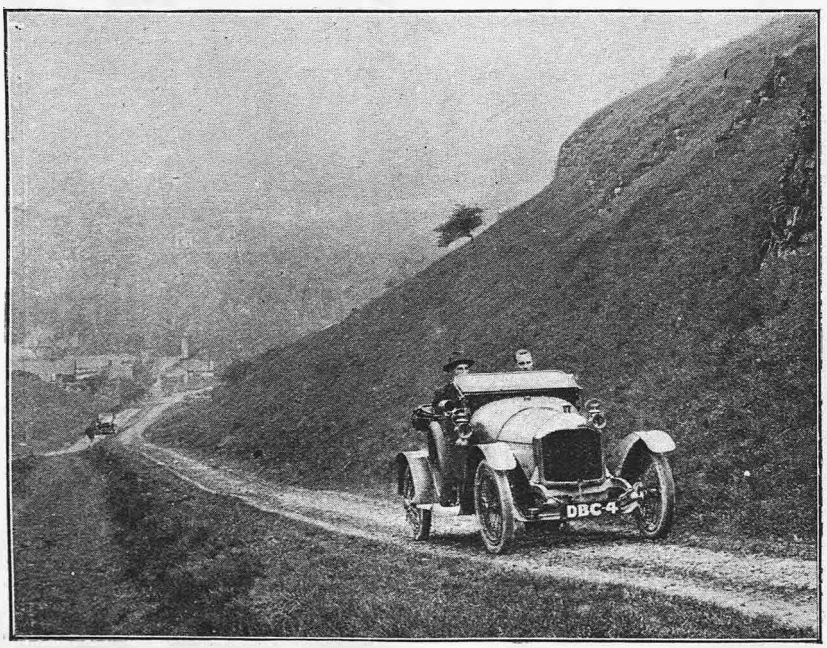
Air-cooled Cars.

In reply to "A Country Doctor's" letter in THE MOTOR on 12th May re air-cooled cars, I should like to point out that air-cooled engines have become very popular in this country, and they are quite efficient and stand up well here under both traffic and touring conditions. The Cameron, especially, has been brought as near perfection as possible, and the number of these cars (both low and also high-powered) which are in daily use in this city is very large. This car is very well finished, and has quite a simple four-cylinder engine, which is fitted under an ordinary bonnet of the Renault pattern, and the advantages gained with this engine, especially during the excessively cold winters experienced over here, are considerable. They do not show signs of excessive overheating during the hot weather, and, provided the carburation is correct and the lubrication is carefully attended to, they are most satisfactory.

To conclude, I may add that this car is not a cyclecar, but a full touring model, the company building chassis from 25 h.p. upwards.

RICHARD F. SPRING.

Brooklyn, New York.



An Ascot car climbs Litton Stack Hill, Millers Dale, Derbyshire. This hill is supposed to be one of the worst hills in the country. The portion of the hill upon which the car is standing has been carefully measured to be 1 in 3.9. The surface is also very bad.

B36

Pickwickian!

Some of your readers will no doubt be interested in the following notice, which I came across recently:—

"Notice is hereby given that the Lancashire and Yorkshire Railway Co. will not be able to accept general horse, carriage, or motorcar traffic for conveyance by passenger trains on Saturdays during July and August, also on Monday, 3rd August."

It seems Pickwickian, Gilbertian, etc., all rolled into one. Is it a joke at the expense of motorists? One would think that a railway company would be glad of motor traffic, for at the prices charged, it must be exceedingly lucrative. And, again, one had an idea that most men drove the cars on the high road and did not send them by railroad.

O.B.S.

INFORMATION BUREAU.

Questions Embodying Points of General Interest with Instructive and Helpful Replies.

RULES.

We are at all times pleased to answer queries on technical and general motor subjects, or to receive correspondence upon any motor topic. In consequence of the large number of letters received, however, we must insist upon the following simple rules being adhered to:—

1. Clear writing. Type-writing for preference.

2. All letters to be written on one side of the paper only.

3. Questions to be clearly expressed, concise and without tedious preamble.

4. An envelope must be enclosed bearing a penny stamp, and the name and full address of the sender. NOT a stamped undirected envelope.

5. Questions cannot be answered on the telephone.

6. Inquiries for routes are dealt with separately. Rules stated at end of this section.

Drilling a Piston to Remedy Over-Lubrication.

R.O. writes:—I have a car which is very prone to trouble from over-oiled cylinders, despite the fact that the piston rings have been examined and found to be a good fit and the lubrication system tested and proved to be in good order. It has now been suggested to me that, by having a ring of small holes drilled around the base of the piston, with a shallow groove cut on the surface, passing through the holes, a lot of, if not all, the over-lubrication could be prevented. I am inclined to have this done, but would first of all like to know if this treatment would in any way weaken the piston, also if you think that there is a chance of the plan proving effective.

There is no risk in the plan. The holes should be small, say, not larger than ⅛ in. diameter, and six or eight of them would be ample. It is a plan that is sometimes adopted with fair success; the idea being that the excess oil drains through the holes instead of being forced up to the top of the cylinder. Its success, however, in any given case is entirely a matter for trial.

Relative Power with Air and Water Cooling.

T.B. writes:—I would be obliged if you could give me any information as to the power obtainable from engines of equal size, but respectively air and water cooled. I am aware that water cooling is universally employed on cars, but is it an actual necessity in view of the fact that air cooling answers well for motor-cycle engines? I am referring to engines used on fair-sized cars, say, from 15 h.p.

A water-cooled engine gives more power than an air-cooled one of equal cylinder dimensions, other factors being equal. There are various reasons for this. A greater weight of charge can be induced in a water-cooled cylinder. A charge entering a very hot cylinder expands, and its density is proportionately reduced. Water-cooling enables higher revolution speed to be obtained without risk of pre-ignition. Lubrication of the cylinder can be more effectively maintained with water-cooling. It is, taken all round, the more reliable system, and avoids many difficulties that might arise with air-cooling in the hands of the average user. Air cooling, however, is quite feasible, even for fairly high-powered engines, but it demands more attention and knowledge to get the best results from it than water-cooling. A number of small light cars, of course, have air-cooled engines, but these are in a class by themselves.

A Worn Valve-Guide Difficulty.

H.R.C. writes:—I should be obliged if you could give me any hints which would effect a remedy in a bad case of misfiring due to air leakage up the valve guides. This weakens the mixture, and I usually have considerable difficulty in starting unless I inject petrol into all the cylinders. The valve guides are much worn, and there is a further difficulty insomuch that the guides are in one piece with the cylinder casting and are not the usual separate guide of phosphor-bronze, which can be renewed.

The simplest way out of the difficulty would be to have ordinary guides fitted. In all probability the cylinder casting would have sufficient metal at this part to enable it to be done. It would mean drilling and reamering out the present guides to about ⅝ in. to take an ordinary bushing. If the casting does not permit of this being done, there is no alternative to having the untrue guides reamered out and a new set of valves made to fit.

Magnetic Brakes.

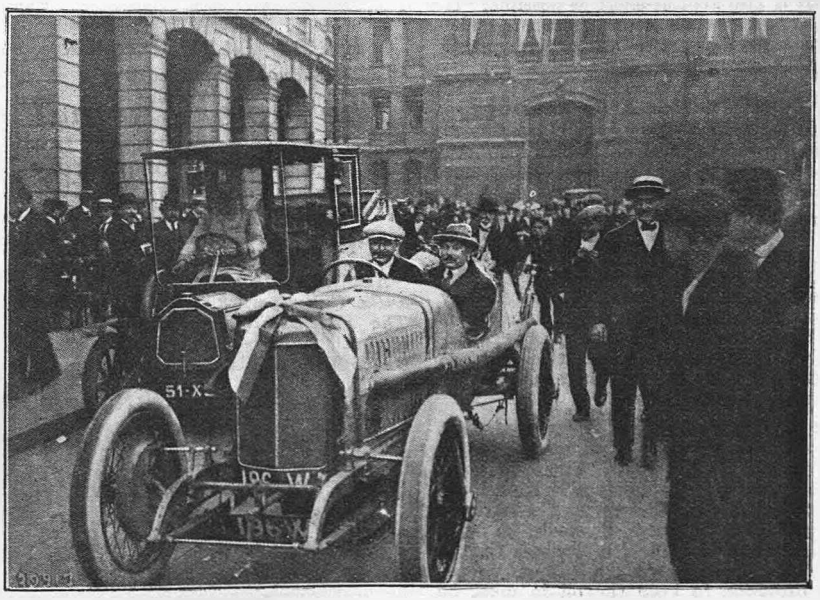
C.C. writes:—Could not the brakes be operated by the current from a lighting set by pressure on a button? Why has this plan not been tried, as it seems to me that it would considerably simplify the mechanism?

Braking by electro-magnets is an old idea. It does not offer any advantages over manual operation, and would introduce a series of new problems and complications. The method has possibilities, however.

Gumming-up of Valves.

C.N.P. writes:—When removing the valves of my car I found the exhaust valves badly stuck in the guides, gummed and sticky and difficult to withdraw; the inlet valves were not thus affected. The stems were all treated with graphite last summer. Can I do anything to prevent this defect? It must make for loss of power. If I turn the engine over until one of the exhaust valves is open and then put oil in compression tap, will it find its way over valve head and down valve stem?

The gumming-up complained of is due to



Thomas, the victor in the Indianapolis race, entering Paris on his return from America.

BUREAU.—Contd.

oil and exhaust products leaking down the valve guide. Running on inferior quality fuel will also cause it. The proper course to adopt will be in the first instance to see that the valve stems fit properly, i.e., a free fit without any actual play in the guide. It may be necessary to renew the valve guides if they are worn. Steps must also be taken to prevent over-lubrication of the cylinders, a defect which may arise from loose piston rings. If there is evidence that some of the deposit on the valve stems is due to the mixture, i.e., carbon and tarry matter, the remedy is obvious. As a rule, exhaust valves get ample lubrication without injecting any oil in them, although any valves prone to sticking may with advantage have some paraffin injected down the guides occasionally, but, of course, this does not remove the prime cause of the trouble.

Two-bearing Crankshaft.

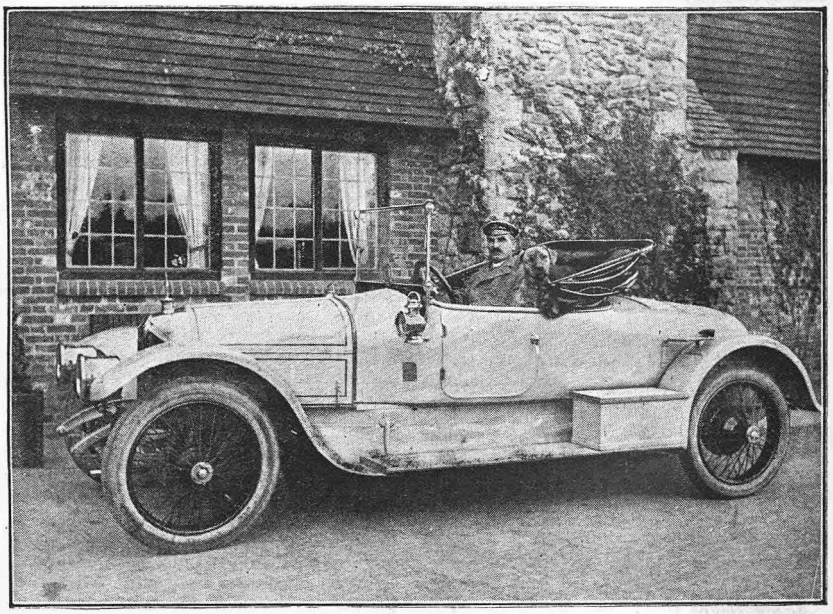
G.E. writes:—I have under consideration the purchase of a car, second-hand the only point on which I am in doubt being the arrangement of the engine bearings. It is a four-cylinder engine of the monobloc type, and runs very well and without vibration. The transmission is in good order. As I understand that engines are not now made with fewer than three crankshaft bearings, and some have five, I should be glad to have your views as to whether a two-bearing crankshaft is likely to prove satisfactory.

If the car is of a reputed, well-known make it is not probable that any trouble will result from there being only two bearings. Whilst it is correct to say that nowadays this system is not generally favoured, the majority of engines now have a centre bearing; there are a few makers who have specialized in a two-bearing crankshaft and have got very good results from it. It means, of course, that, to avoid "whip" and vibration, special care has to be paid to the design of the crankshaft as regards it being of ample diameter and thickness of the webs. It is also kept as short as possible. It is, on the whole, more difficult to make a satisfactory two-bearing crankshaft than one with three bearings.

Oil-tight Glands for Gearbox.

H.D. writes:—I have a four-cylinder car, about five years old, which has been modernized in some respects. It has one rather serious drawback, inasmuch as oil leaks from the gearbox very badly. This oil gets on the countershaft brake and adversely affects its working. I am not clear as to the construction of the bearings, but, so far as I can judge, they are ball bearings. The point, however, is whether the bearings have oil-tight packing or felt washers, and if this could be renewed. If not, is there any other remedy for the leakage?

It is improbable that the car of that date would have any special device to keep the oil in; the shaft ends would come through the bearing housing with a small clearance. Glands on the shaft ends can, however, be fitted in many cases or felt washers can be fixed inside. Any box without proper provision to keep the oil in must be run with a fairly stiff lubricant, and only just enough of it to touch the lower part of the teeth. As such a gearbox will run rather hot, an air vent must be provided in the cover to release expanded air.



Mr. S. F. Edge on his 15 h.p. Shelsley-Crossley car with his bull mastiff puppy "Tango." The car is fitted with a very special design of two-seated body, the details of which Mr. Edge went to a great deal of trouble in arranging.

The Three-cylinder Engine.

H.E.L. writes:—Can you give me any information as to the reasons why the three-cylinder engine is not used nowadays? I recently came across a car of this type in excellent condition, and not of out-of-date appearance, which I might have bought but for the fact that I was informed that such engines have not been used for years. I know that the car runs well and has high-tension magneto ignition.

The disappearance of the three-cylinder engine was, to some extent, a matter of fashion. In engine design the principle of the survival of the fittest has been adopted, hence the universal use of the four-cylinder. It is a type that offers the most all-round advantages. It is certain that in the matter of evenness of torque the three-cylinder is not so good as the four-cylinder, and as the strokes of the three-cylinder engine overlap to an appreciable extent, the efficiency cannot be so high. The saving in space and weight as compared with a four-cylinder is not appreciable, and it is certainly a more expensive engine to make by reason of the complex design of crankshaft, whereas the four-cylinder crankshaft is an ideally simple piece of machining work. There are several other more technical objections that might be advanced against the three-cylinder engine.

ROUTES.

All inquiries concerning routes and details of tours must be accompanied by a remittance of 6d. and a stamped and addressed envelope. Owing to the very large number of such inquiries received it has become necessary to form a special department to deal with them. Letters should be marked "Motor Routes." We would, however, call our readers' attention to the fact that an excellent series of Motor Road Maps and Books can be had from our Publishing Department. Particulars of these Maps and Books are given from time to time in our advertisement pages, or a list can be had from our Publishing Department.

Routes cannot be sent by return. *All applications are replied to in strict rotation in the course of 21 days. We do not give recommendations to Hotels or Boarding Houses.*

Owing to pressure on our space a large number of replies are unavoidably crowded out. We are always pleased to reply, almost by return of post, to inquiries, when a stamped addressed envelope is enclosed. Postal replies to readers' queries average 200 weekly.

Miscellanea

Motor Benzole.

The use of benzole has now become quite a settled part of the industry and a number of motorists using it regularly are finding it gives them better results than petrol used to. In the Manchester district a considerable quantity is being used, and, so long as one has good quality benzole, there is no doubt that excellent results are obtainable. The Motor Benzole Co., Ltd., of Royal London Buildings, 196, Deansgate, Manchester, deal largely in the Clayton benzole, and special care is taken that only the best quality is purchased. Any readers who have not yet experimented with benzole would be well advised to get into touch with them and obtain their booklet of prices, etc. They supply it in 50-gallon drums, with or without taps, and in both ten and two-gallon tins.

Ideas of Coachwork.

The 14 h.p. De Dion Bouton which is used by Munn and Underwood, Junction Garage, Southampton, for demonstration purposes has a number of interesting ideas incorporated in the bodywork. There are no screws on the faces of the panels, the latter being turned over the framing to prevent the common fault of screw holes showing. Four doors are fitted, access to the driver's seat being possible from either side. Shoulder rests are provided on the backs of the seats to give the passengers greater comfort, and a "one-man" hood is fitted, the front fixing on to the top of the windscreen, and thus avoiding draughts. The screen itself may be arranged visor fashion in wet weather. The car is painted purple lake, with black frame and wings, and a dynamo lighting set is fitted. This car is used for giving trials in any part of Hampshire, Wiltshire, and Dorset, within 28 miles of Southampton.

The Care of the Arrol-Johnston.

Manufacturers are beginning to realize that their reputation lies in the hands of their customers, and that for their cars to run well their owners must look after them properly. The wise makers will therefore issue books of instructions on the care and management of their products. Among this number are Arrol-Johnston, Ltd., who have recently issued a concise and instructive booklet telling the owner-driver exactly how his Arrol-Johnston car should be cared for. Large illustrations are given, and at the end of the booklet is a folded plan of the whole chassis, on which are marked the different parts requiring lubrication, and the sort of lubricant which should be used. A useful feature is the inclusion of a list of agents for these Scotch-built cars, so that each owner may know where is the nearest source of information and advice.

The Dunlop Rubber Co. announce that they have taken larger and more commodious premises in Brussels at 14, Rue de France.

F.I.A.T.s in Bristol.

F.I.A.T. Motors, Ltd., are about to give special attention to the convenience of their clients in the West of England, and to afford assistance to the local agents to extend their sales of F.I.A.T. cars. With this object commodious premises have been secured at Bristol, namely, the famous Hannah More Hall, in Park Street, which is one of the landmarks of the city. The showrooms on the ground floor have a floor space of about 3000 ft., and a frontage of 40 ft. A large stock of cars and parts will be kept on hand, so that prompt deliveries can be given, and further there will always be available for immediate service a full range of demonstration cars.

The running of the business will be in the hands of Mr. Ernest Arnott, who, after having been for several years out of the business is now returning to the motor trade, in which he was so well-known during the earlier days of the motor movement.

Mr. Arnott first took up motoring in 1899, and about two years later entered the motor trade in association with Mr. S. F. Edge's interests, becoming prominently identified in turn with De Dion cars, Werner motorcycles, and Gladiator and Napier cars, and later joined C. S. Rolls and Co. as manager, both of the Minerva business and of the Rolls-Royce agency department.

Mr. Arnott has always been keenly interested in all forms of competitions, and has taken part in many big events, in addition to numerous local hill-climbs and speed contests. Amongst the events in which he competed, special mention might be made of the following:—

In 1901, the Scottish Reliability Trials, in which he secured a silver medal, driving a De Dion car. In 1902, and the early part of 1903, he confined his attention to motorcycle racing, during which time he secured the Land's End to John o'Groats record; finished third in the Circuit des Ardennes race in Belgium, and secured a number of track records. He also competed in the ill-fated Paris-Madrid race.

Later in 1903 Mr. Arnott won a gold medal in the R.A.C. Reliability Trials, driving a Gladiator car. In 1905 he drove the Minerva car in the first Tourist Trophy race, and in 1907 the Arrol-Johnston car in the Heavy Touring Car Race in the Isle of Man.

In addition to handling the F.I.A.T. business, Mr. Arnott will probably interest himself in the sale of popular-priced American cars, light cars, cyclecars, motorcycles, accessories, etc., and has made arrangements with the F.I.A.T. Co., whereby he will have part use of their handsome showrooms for the purpose.

Manufacturers of, and concessionnaires for, these lines, who are not already satisfactorily represented in Somerset, Gloucester, Wiltshire, and Monmouthshire, should communicate with Mr. Arnott, whose address up to 14th July is care of F.I.A.T. Motors, Ltd., 69, Piccadilly, London, W. After that date he anticipates that he will be in occupation at the new Bristol premises.

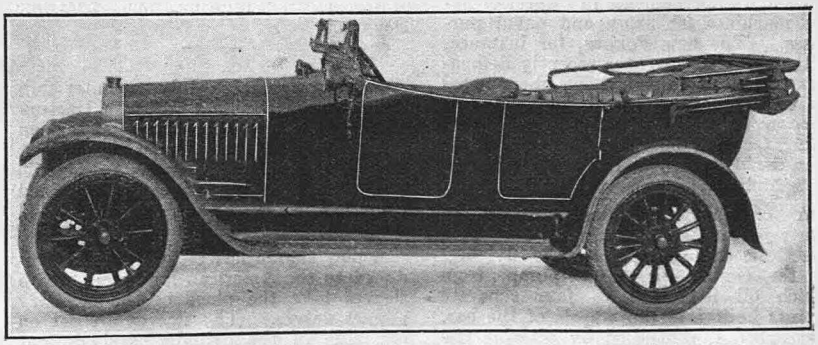
The writer of the personal paragraph relating to Mr. Bianchi, which appeared in a recent issue, was responsible for a remarkable slip when he wrote that Mr. C. Jarrott acted as mechanic to Mr. Bianchi in the race from Paris to Madrid. It should have been the other way round, Mr. Bianchi acting as mechanic to Mr. Jarrott, who drove the De Dietrich on that occasion. We regret the slip and hasten to correct it.

The title of the Vinet Rim Syndicate has been changed to the Kap Manufacturing Co., Ltd., with registered offices at 44, St. Paul's Crescent, Camden Town, London, N.W., where all communications relating to the concern should now be addressed. The telephone number is North 1355. Vinet rims are still on view at 171, Great Portland Street, where a practical demonstration can be had at any time.

We are informed that the motor luggage truck illustrated on page 862 of the 9th June issue is an Edison-Buckwalter truck fitted with Edison batteries. The sole sale agents in England for these trucks are the Railway Track Supply Co., Gracechurch Buildings, 79½, Gracechurch Street, London, E.C.

The Adler Motorengesellschaft reports business, with satisfactory profits, in the same volume as last year. Reserve funds completely cover the Gesellschaft's losses through the failure of the Dresden Motorwagengesellschaft.

The humorous book entitled "A Tour on Tyres with a Tyro," by Ashley Sterne, is obtainable post free from the Palmer Tyre Co., Ltd., 119, Shaftesbury Avenue, London, W.C.



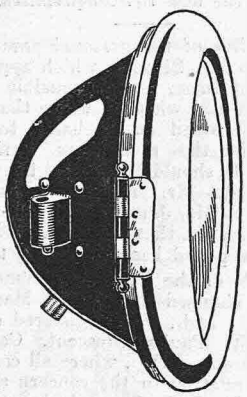
14 h.p. De Dion Bouton which is used by Munn and Underwood, of Southampton, for demonstration purposes.

MISCELLANEA.—Contd.

Pressed Steel Lamps.

As pressed steel is entering so largely into the construction of the modern automobile, it is but a natural sequence that the lamps should be formed of it. An excellent example is the Abantolite, the body of which is formed with one pressing. The reflectors are of spun brass, electro-plated with silver, and the external finish may be either black, black and brass, or black and nickel. These lamps are electric and are moderate in price. A pair of 12 in. headlights sell for £4 10s. without bulbs, and sidelights sell for £1 15s. 6d. per pair. Headlamps are also sold in 11 in. and 9 in. sizes.

Another speciality of Robert W. Blackwell and Co. Ltd., who deal in these lamps, is the A-B dimming switch, by means of which the power of the headlights can be reduced in towns, etc.,



A pressed steel lamp.

without wasting current. This is very simply effected, as the switch merely puts the headlights in series instead of in parallel, when a dim light is required. In this way the voltage is halved and current is saved.

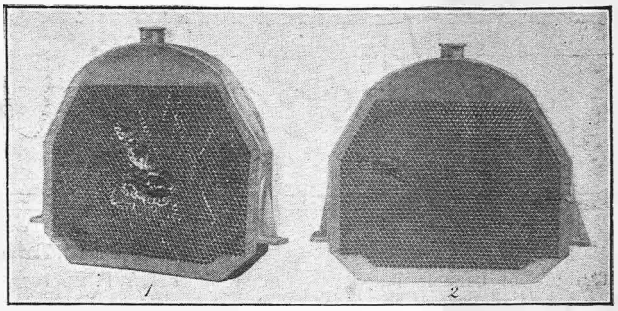
Electric horns, gongs, and a neat form of inspection lamp, which can be stuck on any metal portion of the car, are also sold by Blackwell and Co., whose address is 14, Great Smith Street, London, S.W.

Germany is to have, at Berlin, an international aeroplane exhibition next autumn, the new hall intended for the International Motor Show being used for the purpose. The Imperial Motor Club and the German Automobile Makers Association will organize it. Experts in England might do worse than travel over and inspect what Germany's aero designers have to show in the way of new types and improvements in respect of flying machines for army and naval purposes. The new Fokker, for instance, with which its inventor recently demonstrated at Johannistal, shows phenomenal stability in all angles of flight, and is very solidly constructed into the bargain. German officers regard the Fokker as a decided advance in the stabilization of aeroplanes.

A company has been formed in America to manufacture a car with hydraulic transmission. The flywheel of the engine operates a pump, from which oil is forced to four separate motors built into the wheels of the car. The speed is controlled by altering the stroke of the pump, and to obtain a reverse the oil is pumped through the pipes in the reverse direction.

Restoring Battered Accessories.

When cars are involved in collisions, it is usually the wings, the radiators and the lamps that are damaged. The wings one sends to the coachbuilder to be straightened, but in most cases the owner decides that it is necessary to have the radiator and lamps replaced. Yet this is rarely necessary, as there are several concerns which make a speciality of restoring battered radiators and lamps.



(1) A radiator damaged by a collision as it arrived at the Barimar works; (2) the same radiator repaired.

Amongst this number are Barimar, Ltd., 10, Poland Street, Oxford Street, London, W. Every repair is accepted on the condition that a sound repair will be made; otherwise the money is refunded. As Barimar, Ltd., carry a large stock of all fittings, most repairs may be undertaken at once. Where a repair will take some time, they are frequently able to loan a radiator or lamp until the repaired one is ready.

Business and Pleasure on the same Car.

A new model of the 10 h.p. Briton has recently been introduced, which should make a special appeal to those who desire a car which shall be useful for carrying light goods and which can also be used for pleasure. The body is of the two-seater type, and at the rear is fitted a large box, which can be used for carrying light goods of a bulky character. If it is desired to use this car for pleasure, the box can be quickly detached, when the car will be indistinguishable from a private motor. This car should be particularly useful to commercial travellers. Its price is 180 guineas.

The S.A.E. of America.

The members of the Society of Automobile Engineers of America are holding their summer meeting at Cape May, N.J. Amongst the many papers that will be read are some by English authors on "Suggested specification for a highest quality six-cylinder chassis for America" and "Modern European Tendencies." There will be papers read entitled "The Ideal Car," "Possible Weight Reduction of Cars," "Elements of Design for a Successful High-speed Motor," "Electric Transmission for Motorcars," "Ignition and Starting Devices."

On Saturday, 11th July, an inter-club hill-climb will be held at South Harting Hill, near Petersfield, Hants. It is open to members of the Hampshire, West Surrey, Kent, and Dorset Automobile Clubs. Full particulars can be obtained from Mr. J. H. Franckeiss, Prudential Buildings, Portsmouth.

A new engine has recently been introduced to the American market in which sleeves take the place of the ordinary poppet valves. The sleeves are set on one side of the cylinder, and do not encircle the piston. An unusual feature of this engine is that oil instead of water is used in the cooling system.

Saltburn Speed Trials. The Events to be held.

The events arranged for the Saltburn Speed Trials, held under the auspices of the Yorkshire Automobile Club on 11th July, include closed events for touring cars with fully equipped touring bodies, properly finished, upholstered, painted, and fitted with mudguards. Lamps will not be carried, and an exhaust cut-out rear of the dash will be allowed. The classes are arranged for cars whose cubic capacities are 1400 c.c., 1850 c.c., 2500 c.c., 3016 c.c., 3450 c.c., 4600 c.c., and unlimited capacity. There will also be open events for cars (fitted with any type of body or in the chassis state) with the same cubic capacities as for the closed events. The events for the chassis price race have been altered, and the cars in these races must now be fitted with properly-finished touring bodies, upholstered, painted, and fitted with mudguards. The usual Associates' 5 per cent. race will be held, and arrangements will be made to avoid the long wait in the middle of the races. There will also be two events, one for racing cars up to 3450 c.c. and one with unlimited cubic capacity (to be run from a flying start), an open event for cyclecars with three or four wheels not exceeding 1100 c.c., weight unlimited. A special event on handicap will be confined to lady drivers, who may be nominated by members of the club. Silver and bronze medallions will be given for first and second prizes, and in addition there are valuable silver trophies to be awarded. The secretary of the club is Mr. Robert Hilditch, Atlas Chambers, King Street, Leeds.

J. Lacoste and Co., 184, Shaftesbury Avenue, London, W.C., have issued a neatly-produced booklet on automatic vulcanizing of covers and tubes, which is obtainable gratis. This booklet deals in detail with the Vulcan vulcanizer, which is claimed to be the only automatic vulcanizer on the market, and in a practical, and concise manner shows how enormously vulcanizing reduces tyre costs.

The General Electric Co. have just placed on the market a spare electric lamp box to carry Osram lamps. This is designed for car use and ensures that the bulbs are not broken, as so frequently occurs when the bulbs are not properly packed. The box holds an assortment of six lamps. Sets are kept in stock to suit various voltages and candle-powers as required.

"The Motor Manual" new edition. This useful practical handbook on motoring is now on sale. Obtainable through all booksellers.