

The

AUTO MOTOR

JOURNAL

A Record and Review of Applied Automatic Locomotion.

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ROYAL AUTOMOBILE CLUB FOUNDERS' DINNER.—Annually we have made it a practice to record the signatures of the members present at the commemorative banquet of the founders of the Club. The above is the "roll" for 1909, upon the occasion of the event on November 24th at the Hotel Great Central, when about 70 of the 160 surviving founders foregathered under the Chairmanship of Mr. Roger W. Wallace, the first Chairman of the Club. Upon this occasion Prince Francis of Teck, the Hon. Arthur Stanley, M.P., and Colonel Holden, as past Chairmen of the Club, and Mr. E. Manville, as President of the S.M.M.T., joined in the celebration as guests.

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CONTENTS.

	PAGE
Royal Automobile Club Founders' Dinner	1453
An Illustration of the Cross-Road Danger	1454
The Patrol Question Again	1455
Taximeter Law	1455
Motor Cabs and Speed Alarms	1455
Police Tactics and a Point of Law	1456
Unconventional Portraits of Leaders in Motorism. No XLIX	1457
This Week's Portrait—Admiral Sir Wm. Kennedy, K.C.B.	1459
The Dash Radiator. (Illustrated)	1460
Splayed Steering-Heads. (Illustrated)	1463
An Original Arrol-Johnston Design. (Illustrated)	1464
A Successful Twin-Cylinder Unit. (Illustrated)	1466
A Record of Motor Racing	1467
Tuning Up the Magneto. (Illustrated)	1471
French Heavy Vehicle Trials	1472
Races, Records, and Trials. (Illustrated)	1473
Clubs and Associations	1474
A First-Class British Micrometer. (Illustrated)	1475
Reinforced Inner Tube Experiences. (Illustrated)	1475
Census of Motors in Great Britain	1476
A "Little Guide" to Essex	1476
Company Doings	1478
New Companies Registered	1478
Legal Intelligence	1479
Commercial Points	1479
Publications Received	1479
British Patent Specifications. (Illustrated)	1480

PASSING EVENTS.

The unfortunate accident in which the Hon. Archibald Gordon met with serious injuries on Sunday last, draws renewed attention to a matter which has often been mentioned in these columns, and which was referred to by us as recently as a fortnight ago. For the sake of brevity we may call this the cross-road danger. We pointed out that there are many occasions when a motorist travelling along one road may suddenly, and entirely without warning, encounter another road crossing his own thoroughfare at right angles. Another car may or may not be travelling on this cross-road and approaching the junction at the same moment; but, in any case, it may be urged with complete justice that this is an eventuality for which every motorist should be always prepared. The central feature of the cross-road danger, however, is not this mere obvious risk of collision where an accident may be ascribed to careless driving on the part of either or both motorists concerned. Rather, it is the risk of collision through a lack of knowledge on the part of one or other as to which road is the more important thoroughfare. As we remarked the week before last, it is, or should be, common knowledge that traffic on a main road takes precedence of traffic on a road of less consequence. This is all very well when it is obvious which is the main and which is the by-road, but in many cases—one might almost say in the majority of cases—it is almost impossible to tell which is the more important road until the car is actually at the junction. In ninety-nine cases out of a hundred the car arrives at the crossing and the position becomes clear to the driver without accident, if not without risk; but unfortunately last Sunday's accident was the exceptional instance in which a calamity resulted from the lack of indication as to the relative importance of the two thoroughfares.

From the Press reports one gathers that both the cars concerned in the collision gave warning of their approach, but whether the respective drivers heard the horn of the other car or not, which is extremely doubtful, each held on his course under the apparent impression that he had the right of way by virtue of the supposed relative unimportance of the road upon which he was about to encroach. The result was practically inevitable. The road upon which Mr. Gordon was driving—about two miles out of Winchester, on the way to Andover—crosses a

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DIARY OF FORTHCOMING EVENTS.

1909. Foreign Events (Trials, Races, &c.).
Dec. 5-19 ... Voiturette Trials (French).

main road at right angles, and the view is obscured by a high hedge and thick fir trees. But, dangerous as are these combined conditions from the point of view of the motorist, there was the additional danger in this, as in every similar case, that the traveller on the by-road was not warned of the proximity of a main road. It might be suggested that the common danger triangle would serve the purpose at such a place as this, but we consider that apart from the fact that familiarity has bred contempt of these signs in the minds of many motorists who have been falsely warned by them of a danger which did not exist or which was grossly exaggerated by their appearance, they have in our minds the additional failing that they give no indication of the particular variety of danger to be apprehended.

We do not propose again to go into the whole question of distinctive danger signs at the moment, although it is a sufficiently urgent one to merit serious attention at any time; but the recent accident shows very good cause why our suggestion for the erection of special warnings, to be used solely on by-roads or roads of comparative unimportance, to indicate the nearness of a main road or a road of greater importance than that in which the sign is placed, should be considered and adopted. It must be perfectly obvious that this course would solve the whole difficulty; it would in all probability have prevented the accident to the cars of Mr. Gordon and Mr. Clarke on Sunday, and at the very least if an accident did take place in spite of such precautions, it would be possible immediately to apportion the blame to the driver of the car on the by-road, who, by colliding with another vehicle on a main road after such warning as we suggest, would thereby prove that he was not using due care in the control of his car. This in itself is a result worth gaining; but of far more importance is the prevention of accidents from this cause, and we feel sure that this would have been effected in the case under notice had there been a proper and distinctive cross-road sign on *either one road or the other.*

The Patrol Question Again.

The effect of the recent Divisional Court ruling in regard to the legal situation of the Automobile Association scouts was soon felt, for only a week ago a charge was heard against a patrol for "obstructing the police in the execution of their duty" by warning motorists of the existence of a trap on the Maidstone road. Significantly enough, it was dismissed, on the score that there was not sufficient evidence as to the speed of the cars at the time; and for this result the whole motoring community as well as the Automobile Association itself may be truly thankful. As we pointed out at the time of the famous decision in the Appeal Court, it is important that the limited extent to which A.A. scouting has been condemned as being illegal should be comprehended by motorists and by their persecutors equally. For our own part we welcomed the decision as being to the ultimate good rather than to the undoing of the A.A., inasmuch as they were but being specifically debarred from that particular phase of police-trap breaking which could not honestly be sanctioned on strictly moral principles. The risk that was run in consequence of any misapprehension as to the exact ruling of the Appeal Court was that the anti-motoring section of the police force throughout the country might endeavour on the strength of it to drive the A.A. scouts off the road entirely, in the vain belief that any warnings issued by the scouts under any circumstances concerning any police-trap tactics might be

construed as "obstruction." And hence our pleasure at the police defeat over this early Maidstone road prosecution. It will, we trust, serve to emphasise the fact that "obstruction to the police in the execution of their duty" was held to be constituted by the act of warning the driver of a car who was at the time exceeding the legal limit and who happened at the moment to be under the observation of the police to the extent that they were even then obtaining evidence to prove the breach of the law on his part. In this case in Kent there were apparently many respects in which the police utterly failed to establish any such combination of conditions. Hence the proceedings will inevitably strengthen the hands of the Automobile Association abundantly.

Taximeter Law.

A case of some importance to the motor cab industry was decided at the City of London Court recently. Briefly, the taximeter on a motor cab became defective, and registered over 5s. for what should have been a 1s. ride. Naturally enough, the fare stopped the cab, refused to pay, and completed his journey in another vehicle, while the driver took the instrument to be put in order. He was subsequently called upon by his company to pay 2s. 10d. which he had not received, and by waiting to have the taximeter attended to he lost a whole day's work, for which he also successfully claimed compensation from the Court. The Judge held that he was entitled to 5s. for wages, since he had been guilty of no misconduct, and gave him a verdict in favour of the return of the disputed fare. Not only so, but the driver was given costs on the higher scale "because of the considerable importance of the case to motor cab companies and drivers alike." It seems to us that this was the only possible decision that could have been arrived at in justice, for the driver should be in no way responsible for the reliable working of a machine which presumably he is forbidden to meddle with in any way. In such a case as that which we have mentioned, he might or might not have been able to correct the derangement of the instrument himself—the flexible cable had apparently been caught up—but he was perfectly right in taking it instead to responsible people to be seen to. Anyway, the cab companies, and not the drivers, are now to be held responsible for the upkeep of the taximeters and for any loss entailed by breakdown.

Motor Cabs and Speed-Alarms.

The idea that excess of the speed-limit might be prevented by the compulsory adoption of a speed-alarm which would automatically give warning as soon as the pace of the vehicle to which it was fitted rose above 20 miles an hour, is one of those simple but entirely impractical notions that have so great an attraction for some people. This particular suggestion is by no means new, but it has been brought up-to-date, in connection with motor cabs, by the Metropolitan Police authorities. The London motor cab drivers, however, have met in solemn conclave, and have recorded their conviction that this would be "no infallible index to the speed attained." They protested most emphatically against such a system being adopted, and "respectfully submitted to the Commissioner of Police and the Home Secretary that a reliable speedometer, if affixed to every cab, would not only act as arbiter in cases of dispute between the police and drivers, but would warn those who unintentionally committed a breach of the law." Every motorist will agree with this decision on the part of the cab drivers,

particularly as it must be obvious that following upon the compulsory adoption of such a device there would be a very serious risk of attempts being made, sooner or later, to prescribe much the same system for private motor cars also. In the resolution from which extracts are quoted above, reference is rightly made to the fallibility of a speed-alarm mechanism, for, like every other item in a car's construction, it would require some amount of attention to keep it in order. But, unlike the magneto, or carburettor, or any other detail that one might name, there would be no inducement—rather the reverse—for the driver to give the speed-alarm the requisite attention, and with the conditions of neglect under which it would have to work in the majority of instances the device would most certainly quickly get into an inefficient and unreliable condition. There are many arguments in all against such an innovation, but the most important of all is really formed by that well-known and unshakable objection that there is to the speed-limit itself. There is not a motorist, at any rate in London, who has not found that safety may actually at times lie in speed capabilities, and it is quite conceivable that this "safe" speed, although temporary, may exceed the limit. The speed-alarm may not be quite so objectionable in this respect as the frequently-suggested governor which is to shut the throttle and apply the brakes automatically at a certain given speed, because in the case of the latter there would be many occasions when the sudden cutting out of the engine would literally spell instant disaster. Especially would this be the case with the motor cab, which practically depends for its existence upon its facility for "nipping" through the London traffic. Then, too, the speed-alarm would be confusing and altogether most objectionable to everyone and not least to the "fare." In this way we consider that its adoption would tend to make the motor cab unpopular, and we are inclined to think that the suggestion of the cabdrivers' meeting that every cab might be fitted with a speed-indicator is the best that can be made. Such an instrument possesses all the advantages and none of the disadvantages of the audible speed-alarm.

**Police Tactics
and a
Point of Law.**

Several points of interest, and points open to adverse comment, were raised afresh in a recent case in which the owner of a car was summoned and fined for failing to give the name and address of the driver of his car on a certain date when it was alleged—on the grounds that a speed above the legal limit had been maintained over a measured furlong—that the vehicle had been recklessly driven. The defendant was represented by the solicitor to the Royal Automobile Club, who said that the case would be made a test case. A fine of £16 7s. was inflicted, and notice of appeal was given. These are all the main facts that need be detailed here, but the pivot upon which the whole action turned was that, in demanding the driver's address, no mention was made of reckless driving, but it was simply stated that a car of which the defendant was the registered owner had been timed while travelling at a speed of 28 miles an hour. The trap, apparently, was one of one furlong, in which electrical timing apparatus was in use, and all cars passing through it were timed and their numbers taken, but no vehicle was stopped. The R.A.C. solicitor pointed out the unfairness of such a method of timing, and stated the fact that there was no obligation to furnish the name and address of the driver when the offence alleged was only one of exceeding the speed limit. The

Bench took a different view on this point of law, and, as we have said, their decision will be appealed against. We are very glad indeed to see that the Royal Automobile Club has taken the case in hand, for it is essentially one for the attention of the representative and ruling organisation of automobilism.

The elements of injustice are not so much in the case itself, which really resolves itself into a question of opinion upon a definite point of law, but in the conditions of police activity that are disclosed. In the first place, it has been pointed out over and over again, that with the inherent human liability to error—which is not greatly minimised by inexperienced use of electrical apparatus—so short a distance as one-eighth of a mile magnifies any mistake in timing, so that a car travelling at a pace in the neighbourhood, but on the leeward side, of the speed limit is invariably found by the police to have exceeded it. This is quite bad enough, but the motorist who has that absolutely necessary accessory, a speedometer, on his car, has some slight chance of successful defence if he is taxed with the awful crime of driving at 20.5, or even 25 miles an hour at the time of the alleged offence. But in the case in question it is expressly stated that all cars passing through the "measured distance" were timed but were not stopped. To illustrate the extreme injustice of these particular tactics on the part of the police, one need only imagine the ordinary week-end run of the average motorist. He drives down to Margate and along the coast to Brighton one day, and on the next returns by an equally circuitous route to the westward. Supposing that a few days later he receives a summons for exceeding the limit at some out-of-the-way place in any one of the five or six counties through which he has passed, it is obviously impossible for him to remember the reading of his speed-indicator over that particular one-eighth of a mile out of the 350 miles or so of his week-end run. Even if he can, by some miraculous feat of memory, recall the precise moment, it is even more obviously impossible for him to secure evidence for his defence.

This does not seem to coincide with the accepted standpoint of British justice, under which persons charged with offences against the law are regarded as innocent until they are proved guilty, and under which the alleged offender is afforded every possible opportunity of defending himself properly and of making good his defence. In the case of the motorist, under most circumstances, he is regarded as guilty from the commencement. There is a further point in connection with the failure of the police to stop a car which they allege to have travelled at excessive speed, and that is that if a car is moving at the terrible pace shown by their calculations the poor fellows must have great difficulty in reading correctly the number as the vehicle flashes past.

OLYMPIA PRIZE ESSAY.

ALL those taking part in this competition are reminded that Wednesday next, December 8th, is the last day on which their treatise, entitled "The Ten Best Novelties in the Design and Construction of Motor Chassis, as Exhibited at Olympia, November 12th to 20th, 1909," can be received by us. Every treatise, accompanied by a duly filled-in application form, must reach this office at or before 12 o'clock noon on that day.

**UNCONVENTIONAL PORTRAITS
OF LEADERS IN MOTORISM.**



**XLIX.—ADMIRAL SIR WILLIAM KENNEDY, K.C.B.
“Motor Boating.”**

THIS WEEK'S PORTRAIT—No. XLIX.

ADMIRAL SIR WILLIAM KENNEDY, K.C.B.

THE British Motor Boat Club owes much of its present success to its Admiral, Sir William Robert Kennedy, K.C.B., who has always taken a very keen interest in its development and progress since he joined the Club, very shortly after its inception. He became Commodore of the Club in 1905, and two years later took supreme command as Admiral. Sir William has filled his position to perfection; no trouble has been too much for him, and his record of attendances at committee meetings and on other occasions when his presence was necessary or desirable is one upon which the B.M.B.C. may well congratulate itself. His interest in the Club has also taken the further practical form of a presentation to the members of a series of twenty water-colour paintings of subjects that appeal to all devotees of motor boating.

But although Sir William has done so much to encourage the use of power-driven craft by furthering the interests of the Motor Boat Club and of motor boating generally, his present activities form but the sequel to a lifetime spent in the service of the sea. Born in 1838, the son of Mr. John Kennedy, Chargé d'Affaires at Naples, Sir William early gave evidence of a love for salt water that has lasted through all his seventy-two years; and the commencement of his connection with the British Navy as a cadet at the age of thirteen was the prelude to a long and brilliant career in which he has had a record of successes that it is given to few to achieve. Only three years after his life's work was entered upon, the lad saw his first engagement in the Crimean War, and he applied the teaching that he had received during the few years of his cadetship to such good effect that his services to his country were rewarded by two medals.

Scarcely was this war finished when young Kennedy was ordered off to China, and there, during his three years' stay, he earned further honours in the form of a medal and a clasp in addition to promotion to the rank of sub-lieutenant. Ten years after he had thus climbed the initial rungs of the ladder of success, he became Commander Kennedy, a captaincy following in another seven years. Progress, when viewed at this distance of time, may seem to have been slow, but its very steadiness is illuminative of the singleness of purpose and conscientiousness of endeavour which is still Sir William's great characteristic, and which has no doubt been of service in his direction of the Motor Boat Club—a direction which, unable to close his connection with the sea upon which the major portion of his career has been spent, he has made the hobby of his later years.

Fifteen years passed before his promotion from the rank of Captain to that of Rear-Admiral was received, but shortly afterwards he became Commander-in-Chief in the East Indies—at the age of 44—where he remained until 1895. Immediately upon his return the penultimate step to the rank of Vice-Admiral was made, and in the following year he was made a K.C.B.

Never was the reward of a title more surely or more thoroughly earned. The final promotion to the rank of full Admiral followed as a matter of course a few years later, in 1901 to be precise, and his active

service in the interests of his country concluded with a short period at the Nore.

Admiral Sir William Kennedy is a typical naval officer of the old school; direct and straightforward to a degree, he and his contemporaries have done for England more than the mere show of armour-plating and weight of artillery can ever effect, and the example of his unity of purpose and determination could not fail to affect those under him for their own good, and for that of the nation.

A love of sport has always been, and must always be, a part of the nature of Britain's "sea dogs," and as far back as the time of Francis Drake we find that that great leader made a hobby of the game of bowls—or so tradition asserts. Admiral Kennedy is in no way behind his great predecessor; but what is perhaps more unusual, Sir William is also an author of no mean ability. His four publications naturally deal with the subjects of his life's work and play, but their titles and contents show that his love of adventure and travel was by no means satiated by his experiences of fifty years in the navy. "Sporting Adventures in the Pacific," "Sport Travel in Newfoundland," "Sporting in South America" are his three principal works, while the tale is completed by "Hurrah for the Life of a Sailor!" a title which is typical of the pleasure and interest which has so considerably helped the author in the more serious part of his career.

With such an Admiral at the helm it is scarcely to be wondered at that the British Motor Boat Club should have prospered. To-day it is in an exceptionally healthy position, especially since it has thrown in its lot with the Motor Club; and at the present time it can number among its members well over 300 boats.

E. K. S. RAE.

UNCONVENTIONAL PORTRAITS
ALREADY PUBLISHED.

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THE DASHBOARD RADIATOR.

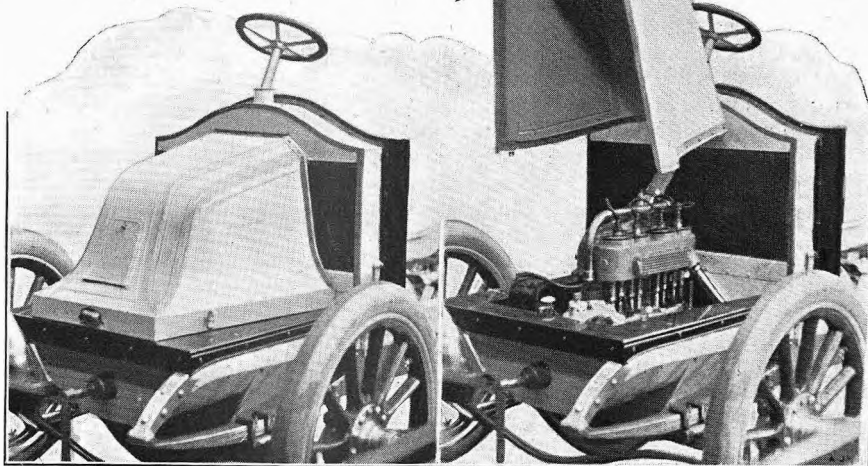
HAS IT COME TO STAY?

A TREND of modern automobile design which must have struck even the most casual visitor to the Olympia Show is the increasing prevalence of the dashboard radiator, which has for the past year or so been a characteristic of the famous Renault cars. A question as to whether this new type is going to stay is one which can hardly fail to interest anyone who looks twice at a car, because, supposing that it does wage a successful competition against the radiator in front of the bonnet, it is going to make a very radical change in the appearance of cars as a whole, and would essentially tend to modify the popular conception of a typical motor car silhouette.

While a number of people may doubtless have at first supposed that the dashboard radiator was introduced almost solely with a view to gain a distinctive appearance, those who knew the methods of M. Renault wisely judged that there would be something more that this which decided his choice; that his views on the subject have also appealed to others may be judged from the fact that quite a fair sprinkling of the new models which have been introduced this year have their radiators in the Renault position.

What are the pros and cons of the dashboard radiator is a question which those who take an interest in the practical side of things are asking, and in what follows we wish to endeavour to point out a few of the more salient considerations on the subject. Any radiator has necessarily to be judged primarily under the heading of its efficiency as an instrument for performing its appointed purpose, but a second consideration of considerable importance which may be taken into account is its

dashboard radiator was used on Renault cars. At first sight, a radiator placed up against a solid dashboard in a position which seems, superficially, to be impervious to the passage of air, certainly suggests a way of efficient cooling. But, as the old adage has it, "the proof of the pud-



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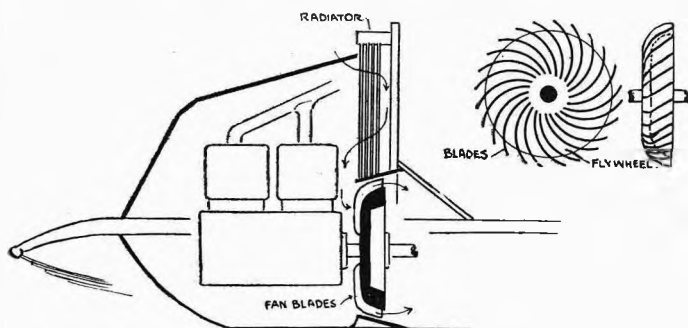
The Pioneer of Dashboard Radiators.—Two views of the Renault car with the bonnet raised and down. The radiator is made of small bore tubes, and the air is drawn through by a special form of fan on the fly-wheel.

ding is in the eating," and those who have tried the system have, as far as we are aware, all given it their approval. It is possible, and seems indeed to be quite easy, to provide for the passage of all the air that is necessary, and although the radiator is commonly larger than it would be in front of the bonnet, we have failed to see any suggestion of ungainliness in the size of those which are now being produced.

The art of radiator construction is one which is thoroughly well understood in this country, and inasmuch as, with the dashboard radiator, designers can break away, if they desire, from the fetters of popular prejudice associated with the familiar honeycomb, there is latitude enough for the unrestricted application of skill in producing designs which shall embody all the features which past experience has shown to be desirable. There is no reason that we can see, and we have inquired diligently among radiator constructors on this point, why a dashboard radiator should not be at once efficient in its cooling, strong mechanically, and of good appearance.

Thermo-syphon cooling, which has come to the fore so much of late, seems to be quite applicable to the dashboard radiator; indeed there are not, as far as we can see, any very special difficulties associated with the proper and efficient arrangement of a dashboard radiator on a car.

With one exception, the Charron, every maker provides some form of induced draught, that adopted on the Renault cars being perhaps the most interesting. In these machines, fan-blades are fitted to the periphery of the fly-wheel and also extend some little way down the fly-wheel face. They thus combine in a single unit two fans of different types; that part of the blade mounted on the face of the fly-wheel forms a centrifugal fan, while



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Sketch showing the arrangement of the fan used with the Renault dashboard radiator.

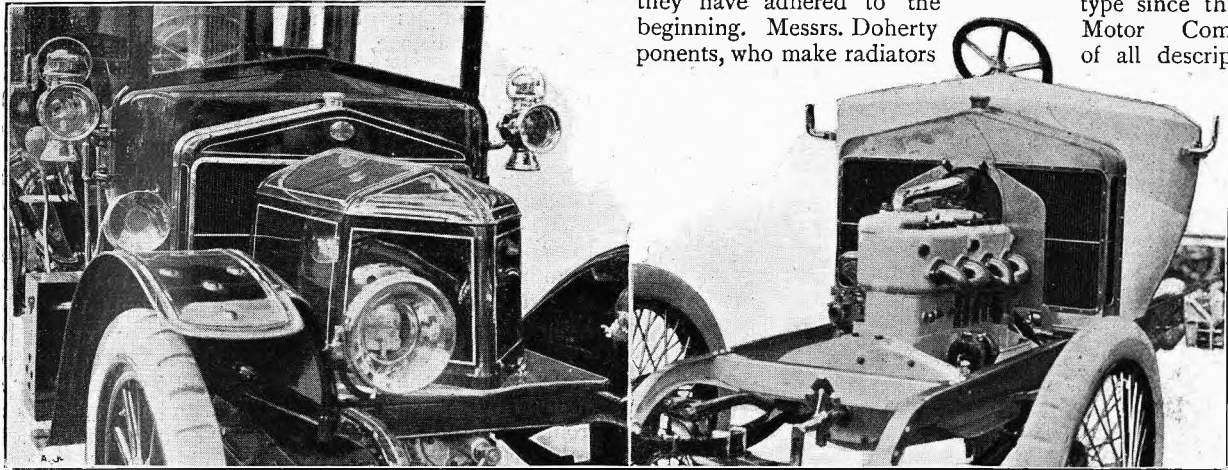
appearance, and a third point not to be overlooked is the effect which its position may have on other parts of the car in respect to accessibility and cleanliness.

Taking the question of efficiency; that is a subject which might possibly have had to be left in abeyance had there been lacking that evidence of practical experience which has been before the motoring world since the first

the other portion lying along the periphery acts as a propeller-fan. The fan is surrounded by a close-fitting casing, and the object of the centrifugal portion of the fan is to make the propeller portion more efficient by feeding it with air which has been centrifugally compressed to a higher density in the zone immediately

arrangement of vertical tubes. The main point at the moment is whether those tubes should or should not be fitted with gills.

Messrs. Renault, as will be noticed from our accompanying photographs, use small-bore tubes without gills, and the result is a neat radiator which can easily be kept clean and seems to be thoroughly efficient, inasmuch as they have adhered to the type since the beginning. Messrs. Doherty Motor Components, who make radiators of all descrip-

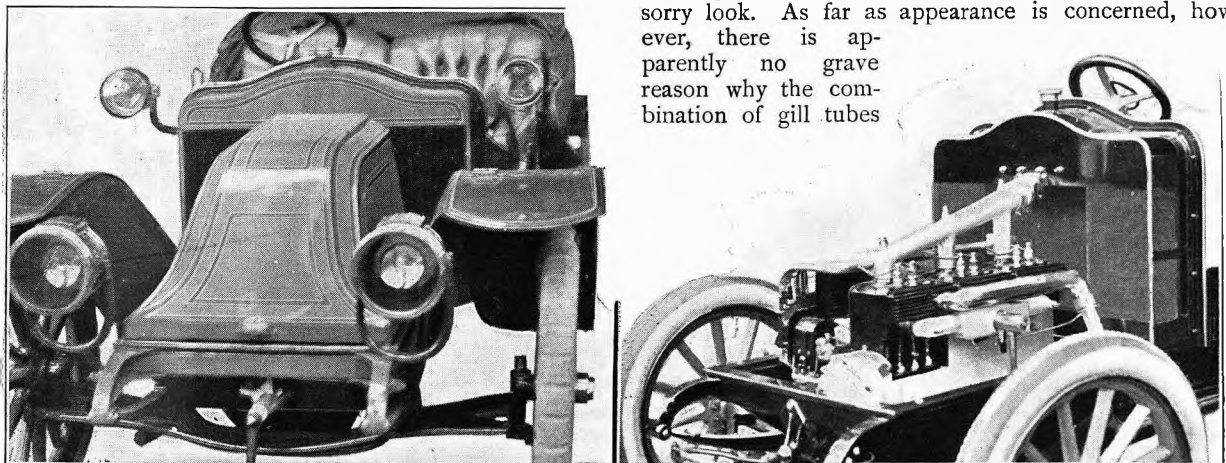


Automotor Journal" (Yellow Cover) Copyright Photo.

The Deasy dashboard radiator is built up of vertical flat tubes set at an angle so that the air is guided inwards as it passes between them.

adjacent to the fan casing. The action of the fan as a whole is to exhaust the chamber formed by the bonnet and the undercasing. Air rushes in through the sides and through a portion of the face of the radiator, and there is thus a continual renewal of the air inside the bonnet, although the main stream does not pass across the engine. The air leaving the fan is delivered freely into the atmosphere after passing beyond the end of the undercasing, which extends back to the gear-box. Much of the

tions, would themselves be inclined to favour a somewhat similar tube of small bore made of copper but fitted with a rather large gill, their experience leading them to strongly believe in the merits of the increased surface which gills provide. According to the Coventry Motor Fittings, who are also engaged in this work, gills should preferably be multi-pointed for high efficiency, but on the other hand such gills are not very neat in appearance, and they are rather apt to get their corners bent up, which very soon gives a radiator a somewhat sorry look. As far as appearance is concerned, however, there is apparently no grave reason why the combination of gill tubes



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The Charron dashboard radiator is unique in that it works on the thermo-syphon cooling principle without a fan. Air enters at the sides, and passes away under a sloping floor-board on the driver's side of the dash.

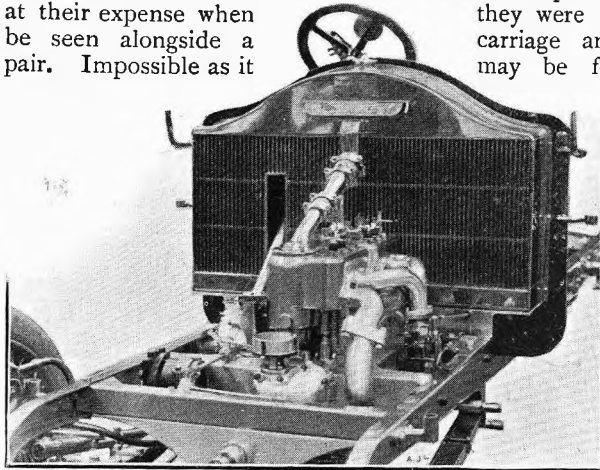
efficiency of the fan obviously depends on a properly arranged discharge, as free as possible from obstruction.

As to what actual form of construction of dashboard radiator will eventually prove most popular, it is well-nigh impossible to say, but it is likely, at any rate, that designers will in the main adhere for the time being to some

and plain tubes should not be used, if desired; the gill tubes being behind could then have star-shaped gills, and the plain tubes being in front would perhaps more readily lend themselves to arrangement with a view to attractive effect. Mere appearance may seem to be rather a second-rate sort of object in design to those who

are purely engineering enthusiasts, but really it is of great importance, and that not only because of the commercial possibilities existing in a car which looks nice.

To an extent it may be said that the automobile has been evolved to its present state of excellence by constantly striving to produce a vehicle of good appearance. Early cars were very clumsy, and many very cutting remarks used at their expense when they were to be passed to be seen alongside a carriage and may be for impossible as it



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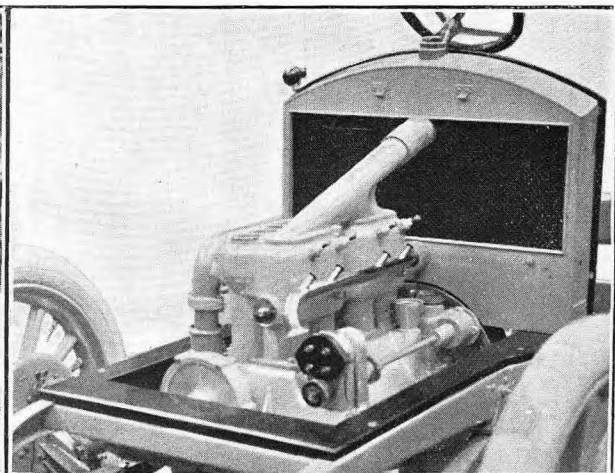
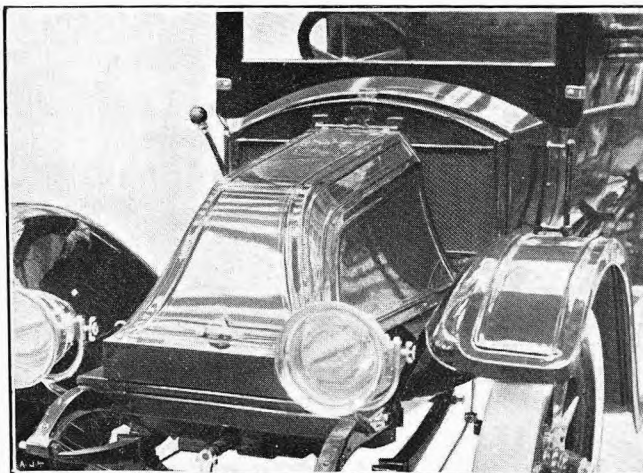
The Sheffield-Simplex dashboard radiator is built up of vertical tubes, and extends the full width of the dashboard. Air is drawn through by a fan on the periphery of the fly-wheel.

man to reproduce an inanimate object having the noble grace of the horse, it is, nevertheless, absurd to deny that a thoroughly well-appointed up-to-date car has a refinement and dignity which is well worthy of its purpose. And the modern car, taken as a type, is essentially a machine in which the radiator figures in

fitted in front. At the moment, most manufacturers of dash radiators have simply copied the Renault type of sloping bonnet, but that there are alternatives is shown by the bold departure made by Mr. J. D. Siddeley in the case of the new Deasy cars, where a dashboard radiator is combined with a type of bonnet which for the sake of distinction may perhaps be briefly described as pointed.

In the design of these new bonnets, everything depends, of course, on the selection of an attractive curve, and new difficulties in this respect are necessarily involved by any change in the space occupied by the engine. This very fact forms the chief and possibly sole objection to the use of a sloping bonnet over a large 6-cyl. motor. There is a model of this type in the range of Renault cars, and it is the only one of the series which has a disappointing appearance. Hinged as it is to the dashboard, the bonnet on this model seems to rise to an inordinate height when lifted for access to the engine. Such details as these it is, of course, well within the scope of combined artistic and mechanical ability to solve, so that while for the moment we would unhesitatingly admit our preference for the lines of a powerful 6-cylinder car as defined by the straight cut bonnet and the radiator in front, we by no means think it impossible for an equally attractive design to be evolved of another type.

Of the three headings under which we set out to consider the merits and demerits of the dashboard radiator, the next is the question of their effect on the accessibility and cleanliness of other parts of the car. To say that the dashboard radiator tends towards greater accessibility of the engine is not to imply the contrary with radiators of the ordinary type any more than it implies facility for getting at parts of a motor which has been indifferently designed. Other things being equal, however, there is a certain advantage in being able to get three parts round an engine in the way which the dashboard radiator alone renders possible.



"Automotor Journal" (Yellow Cover) Copyright Photo.

The New Arrol-Johnston cars have an imitation honeycomb radiator on the dashboard through which the air is drawn by the fan-shaped blades constituting the arms of the engine fly-wheel.

front of the bonnet; the introduction of the dashboard radiator to any extent must, therefore, at the very least, give one additional standard of car "beauty."

Unquestionably the dashboard radiator completely alters the type of car, as it does not lend itself to the level bonnet which is so universal when the radiator is

On the score of cleanliness, the advantage of the dashboard radiator is somewhat more definite. Its satisfactory operation under practical running conditions depends very largely on a well-fitting bonnet and undercasing. No air flows through the bonnet space in quite the same way as it does when the radiator is in front, although there

is, of course, a perpetual exhausting and renewal of the internal "atmosphere." This latter takes place in such a manner, however, that dust, flies, with other solid particles which invariably pass through the radiator with the draught, are no longer deposited on the engine to form, as so often happens, that objectionable oily paste. In the Renault experience it is found that these objects mostly fall on to the undercasing immediately in front of the fly-wheel.

So far as the comparative cleanliness may affect the life and working of the engine, it may possibly be a moot point as to whether it is proper to rely on the bonnet for this purpose, some manufacturers adhering to the principle that an engine should be a thoroughly self-protected unit capable of being placed in any exposed position. It is not our purpose to discuss this detail in engine design, as it has no special relationship to the subject, but there is one matter rather closely allied to the point at issue which may be mentioned, and that is the advantage of fitting engines with a tray extending all round the crank-chamber and as far outwards as the frame. This tray can quite well be made to serve the purpose of an undercasing so far as is necessary to provide an air-tight bonnet space, and it has the additional advantage of preventing tools and other small objects dropping down into inaccessible positions beneath the engine. There is nothing which is quite so annoying on the road as having a screwdriver or some small nut dropped down into the

undercasing while an adjustment is being effected to some fitting on the engine. Considerable delay is always involved in its recovery, and the process is about as dirty and altogether unpleasant as any which the motorist is ever called upon to perform. Whether dashboard radiators or otherwise are the fashion, therefore, we would strongly advocate the use of the tray, and if dashboard radiators do anything to encourage the fitting of this detail they will at least have done something definite to the advantage of users of cars.

Summing up from the foregoing remarks it will be evident that the balance of argument is in favour of the dashboard radiator for cars of comparatively low power, and, on the whole, we should feel inclined to prognosticate an increase in its popularity. Very possibly there are objections to its use which we have overlooked, and if any such are known to our readers we hope that they will not hesitate to throw the weight of their opinion on to that side of the scale for the benefit of those who may be trying to weigh these pros and cons fairly. For our own part, we appreciate as fully as anyone can that very much indeed depends upon questions which may now seem to be of minor importance, but which can only be settled one way or the other by somewhat prolonged practical trial. Hence, time alone can really provide the final answer which is being sought in this matter.

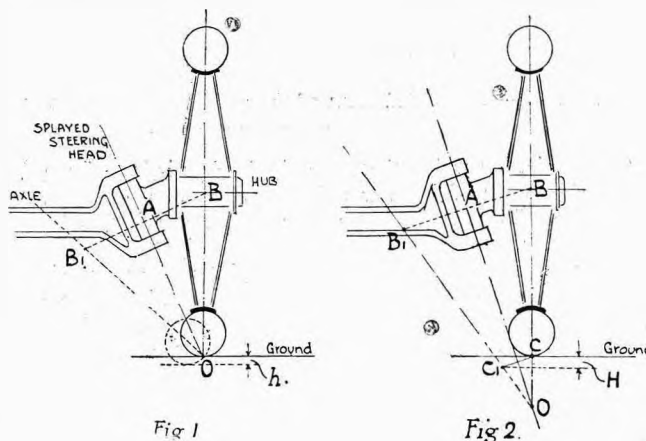


SPLAYED STEERING-HEADS.

THE article which we wrote in connection with the Olympia Show dealing with the subject of front-wheel brakes has elicited from a correspondent, Mr. Stanley Wells, some discussion on the subject as to whether splaying the steering-heads can possibly have any canting effect on the car when turning a corner. The point at issue relates, as our readers will remember, to the desirability of having centre-point steering on any cars that may be fitted with front-wheel brakes, and the necessity of either splaying the wheels, splaying the hubs, or doing both to obtain this arrangement with a wheel which has not been specially designed to give an internal steering pivot.

Splaying the wheels is limited by the amount of lateral stress which it is permissible to put upon the spokes; splaying the steering-heads necessitates the use of ball-socket connections in the steering tie-bar, but Mr. Wells has shown by the aid of diagrams that a real centre-point steering cannot have any canting effect whatever on the axle. As he points out, in a true centre-point steering—such as that shown on an exaggerated scale in Fig. 1—the plane of the wheel, B O, is tangential to the side of an imaginary cone, of which A, O, is the axis and B, B', the base. The point, O, is the apex of the cone, and occurs on the ground-line where the axis of the splayed steering-head intersects the tread of the tyre. As the steering-head is swivelled about its centre, so does the wheel roll round the side of the cone until in the limit it would move from the vertical position, B, O, to the much-inclined position, B', O, where it would be lying right under the axle. In this manoeuvre there would be no actual movement of the point, O, but in practice the size of the tyre would cause a slight displacement of the contact-point, and, assuming the tyre to be dead hard, would give rise to a slight difference in level of the axle as represented by the amount, *h*, on the diagram. This change of level, however, represents an increase in altitude whether the car is turning to right or to left and is equal for both wheels.

When centre-point steering has not been fully attained (and this seems to be the case more often than not) there may be a material difference in level in the mere point, O, alone. This condition is shown in Fig. 2, where the axis of the steering-pivot and the plane of the wheel intersect one another some way below the ground level. When steering, the wheel still rolls round the side of the imaginary cone, but in this case the cone is



truncated so that by the time that the centre of the hub, B, has travelled through 180° into the opposite position, B', the point of contact, C, has travelled into the position, C', which in itself represents an increase in the altitude of the axle above the ground by an amount, H, as shown in the diagram. Here the size of the tyre has been neglected, so that the full increment of height would really be $H + h$ for the arrangement shown. In this case, as in the other, however, the lift is the same at both ends of the axle and is independent of the direction of steering.

AN ORIGINAL ARROL-JOHNSTON DESIGN.

In the design of few cars has more boldness been displayed amongst the 1910 models than in the 15.9-h.p. Arrol-Johnston, for which Mr. T. C. Pullinger is very largely responsible. It is not, moreover, that any of

which it rests upon the inswept lower flange of the main frame members obviates any need for a separate under-sheathing; the radiator is embodied in the dashboard where it lies behind the engine, instead of in front of it; brakes are fitted to all four wheels instead of acting upon

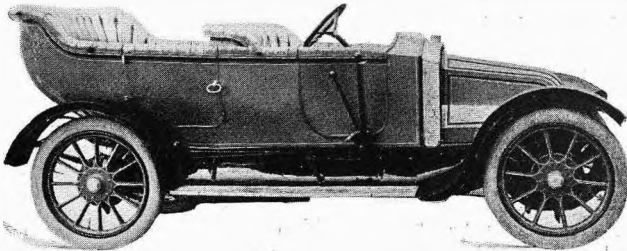


Fig. 1.—The 15.9-h.p. Arrol-Johnston car, with its distinctive standard body.

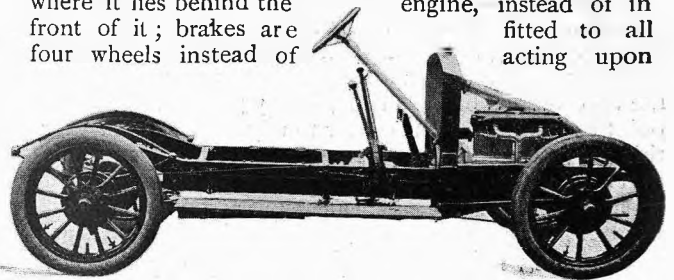


Fig. 2.—View of the Arrol-Johnston chassis from the off side, showing the full elliptic springs and the dash-radiator.

the features taken separately are inherently novel, or are totally dissimilar from other models which were also

the rear wheels only; and a very striking type of "torpedo" body has been adopted as next year's

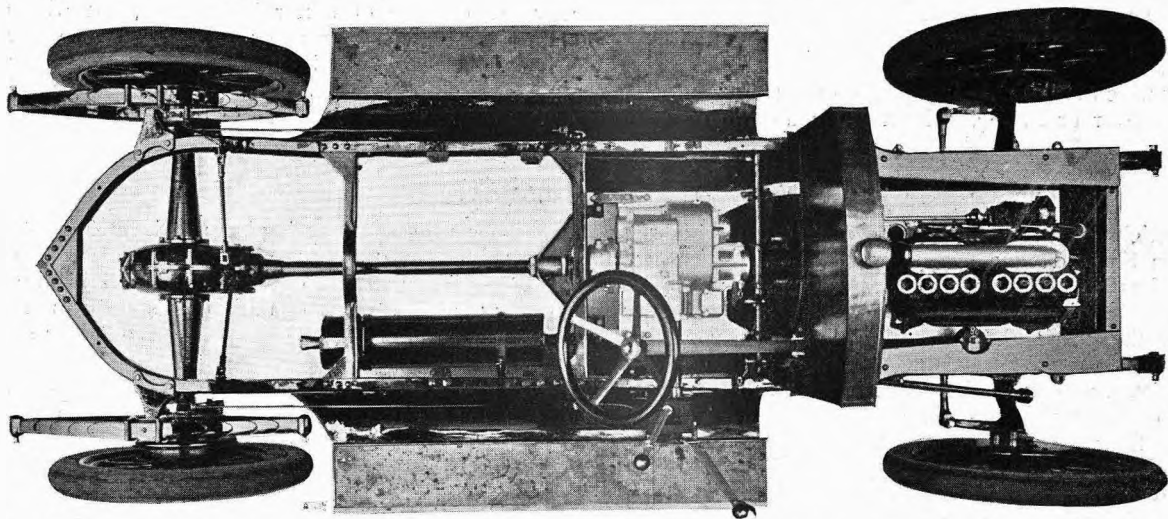


Fig. 3.—The pointed stern of the main frame, and the general arrangement of the transmission mechanism as well as of the radiator, are well illustrated in the above plan view.

at Olympia, but rather that on a single chassis have been embodied most of the new points that are, so to speak, "in the air" just now, and that are felt to be steps in the right direction. Briefly reiterated, this interesting chassis has a single aluminium casting to form the base of the crank-chamber, of the clutch-chamber, while at the same time the manner in

standard. When, added to these novel features, it is mentioned that full-elliptic rear springs are retained in conjunction with parallel motion transverse guide-rods on the Arrol-Johnston principle, it will readily be understood why a very considerable amount of attention was devoted to this chassis in the great motor show at Olympia.

The numerous illustrations which we reproduce here-

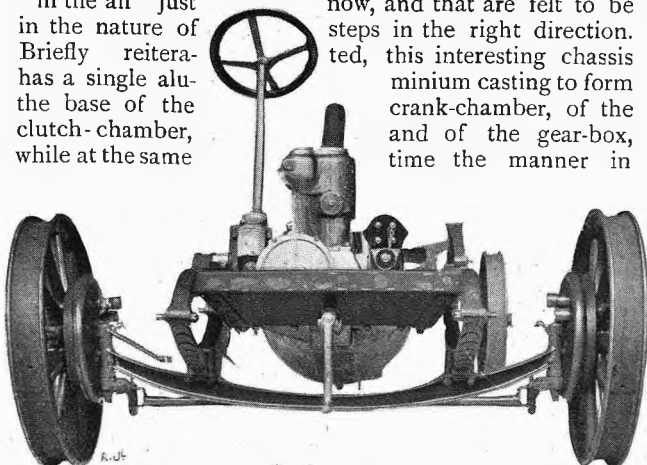


Fig. 4.—Front-wheel brakes, and the arrangement of the propelling mechanism to dispense with any under-casing, are outstanding features of the Arrol-Johnston chassis.

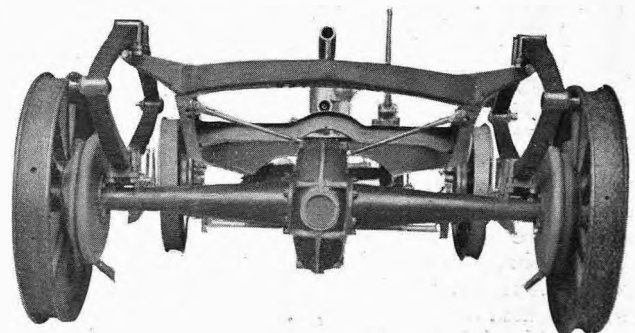


Fig. 6.—The above rear view of the Arrol-Johnston chassis shows the parallel-motion stay-rods that enable full elliptic rear springs to be employed.

with amply serve to bring forward the various details that are of importance. Our first view shows at a glance the

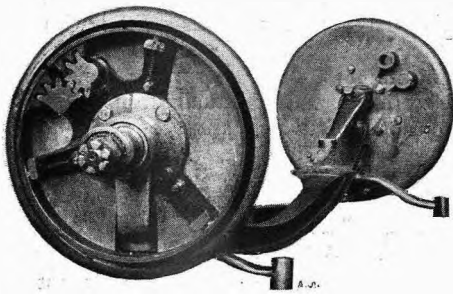


Fig. 5.—View of the Arrol-Johnston front axle, with its internal-expanding brake-rings.

engine, owing to the fact that dust and flies are not drawn in and deposited upon it. This second view, moreover, shows the full-elliptic rear springs, and enables the front-wheel brakes to be recognised.

Another complete view of the chassis will be found in Fig. 3, this being reproduced from a photograph taken looking down upon it from above. Therein the curious shape of the main-frame at the rear stands out prominently, and similarly will be noticed the enclosed propeller-shaft with the substantial bracket which anchors its enclosing tube to the main-frame. The front-wheel brakes are once more in evidence in this illustration, though the next two photographs are even better calculated still to bring out their actual construction. The first of these views (Fig. 4) is a front view of the chassis, and incidentally of the front axle, while Fig. 5 is of the brakes alone, inasmuch as the road-wheels have been taken off the stub-axes. The internal expanding brake-rings are merely split at one place to render them flexible, and are then forced apart by means of the toothed segments that engage with one another, and also with corresponding teeth on the ends of the split ring. For operating the brakes there are vertical rods carried up centrally inside the steering pivots, and these are acted upon by means of cams that press the rod upwards when the brake-pedal is depressed. The ordinary type of compensating mechanism and of connecting-rod passes forward to lever-arms carried by the disc-cams already referred to, and consequently these brakes, which are interchangeable with the rear-wheel brakes, are equally under control and are similarly unaffected by the movement of the steering-wheels when deflected for altering the course of the vehicle. Not the least ingenious part of the way in which these brakes are arranged under the Allen-Liversidge patent, is the simple manner in which compensation is made for wear of the brake-rings, this being effected merely by an adjustment-nipple which lengthens

or shortens the virtual length of the rods passing up through the steering-heads.

Fig. 6 is a rear view of the chassis, and in this may be noticed the transverse tie-rods which permit full-elliptic springs to be used and prevent undue side swing of the frame above the axle when turning a corner. As regards the engine, the bore and stroke of which are 80 mm. by 120 mm. respectively, reference should be made to Fig. 7, for therein it is seen complete with its plate-clutch fly-wheel and its four-speed gear-box all fitted to the aluminium base-plate, which is common to those parts. A good idea may be obtained of the method of

construction, inasmuch as another view of the upper portion of the crank-chamber is included in the group of photographs, and other views of the two cylinder-castings are given separately above. The first of these makes it clear how the common base-

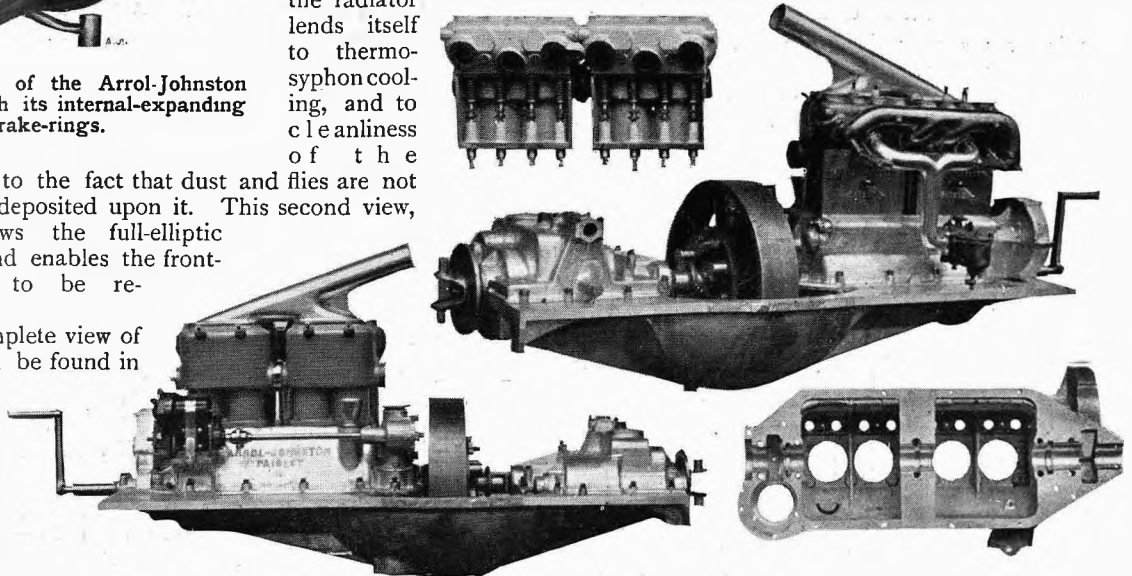


Fig. 7.—Two views of the complete engine, clutch and gear-box unit, together with separate views of the two cylinder-castings and of the upper crank-chamber casting.

construction, inasmuch as another view of the upper portion of the crank-chamber is included in the group of photographs, and other views of the two cylinder-castings are given separately above. The first of these makes it clear how the common base-

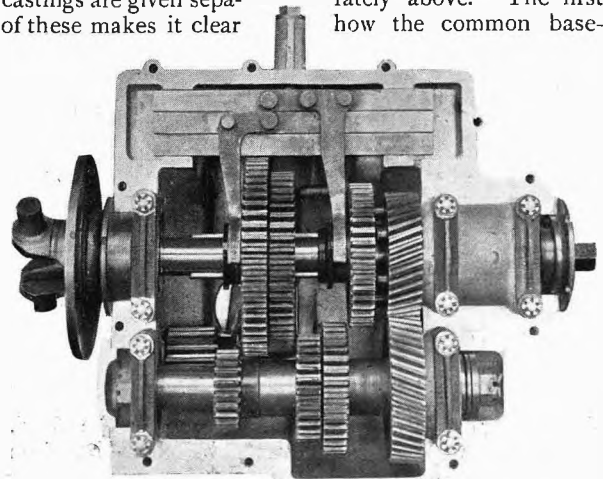


Fig. 8.—Helical gear-wheels for the lay-shaft, and disconnected idle pinions for the reversing gear, are features of the four-speed Arrol-Johnston gear-box.

plate serves for the gear-box as well as for the engine, and the latter subsidiary views demonstrate the simple means

adopted on the complete engine for covering in all the eight valve-stems.

As regards the engine itself, the only special points that need be mentioned are that helical gear-wheels are used for the cam-shaft, the untimed magneto, and the oil-pump; while lubrication is effected through passages drilled in the crank-shaft, and provision is made in the cylinder castings for fitting a second set of ignition-plugs if desired.

In Fig. 8 is a view of the gear-box looking up from beneath, it having been lifted clear from the large alumi-

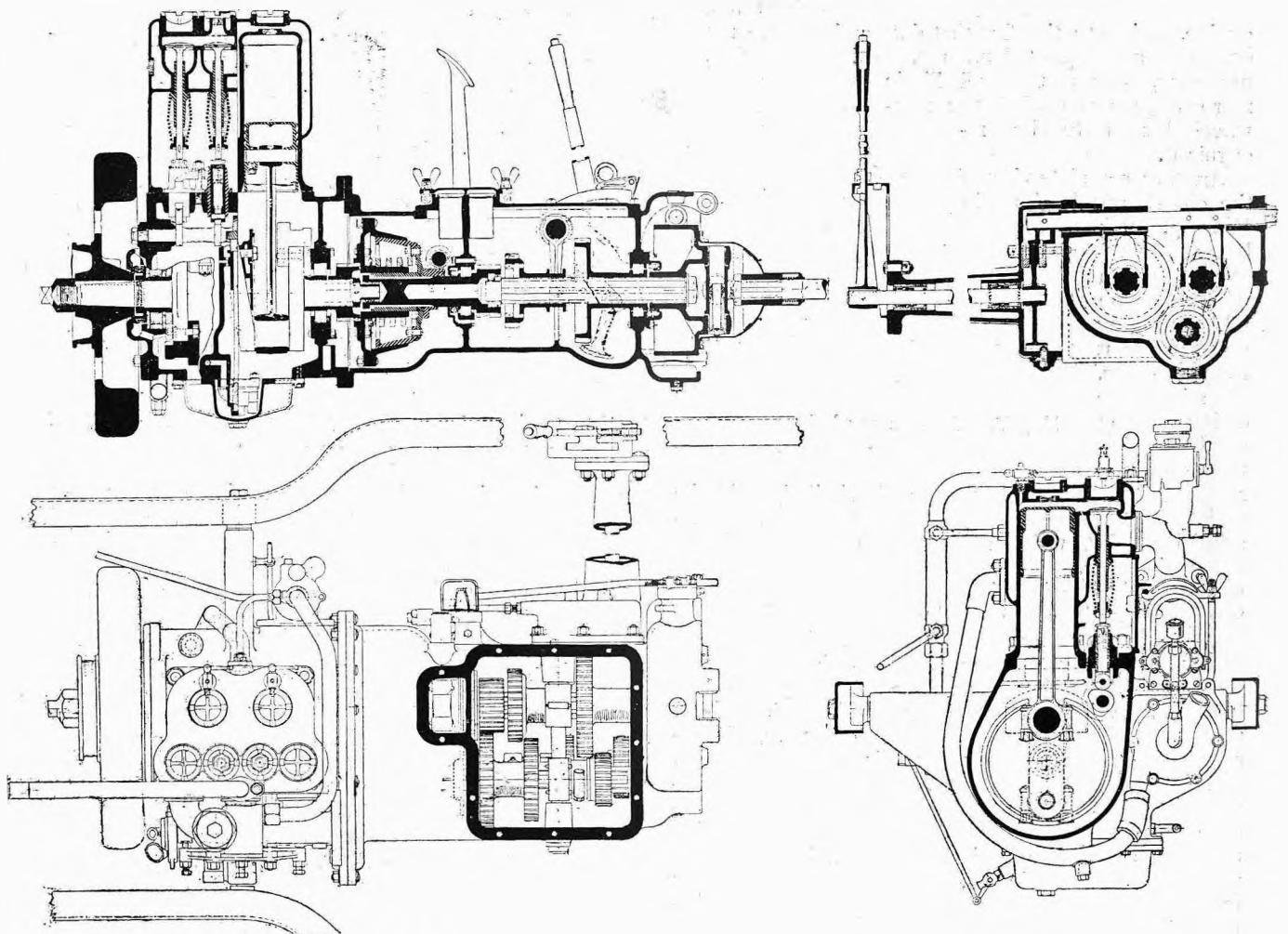
nium casting which forms its base. Therein will be observed the helical gear-wheels which drive the lay-shaft as well as the portion of the universal-joint on the direct through-shaft which serves to couple it up with the propeller-shaft. This gear-box affords four speeds, with a direct drive on the top speed, while to still further reduce any noise to a minimum the idle reverse pinions are allowed to come to rest when not actually in use.

The overall dimensions of the chassis are 12 ft. by 5 ft. 2 ins., and the wheel-base is 9 ft., with a track of 4 ft. 5 ins.

A SUCCESSFUL TWIN-CYLINDER UNIT.

It is over a year since the new unit-system Napier models were first brought out, and at that time illustrated descriptions appeared in these columns. Since then no very marked changes have been made either in the little

it is remembered that on the score of economy it is not easily surpassed by its 4-cyl. rivals, and that the Napier twin-cylinder chassis lends itself so exceptionally well for small landaulettes and similar town vehicles, apart from



twin-cylinder 10-h.p., the 4-cyl. 15-h.p., or the 6-cyl. 30-h.p., all of which, it will be remembered, are based on much the same design. But nevertheless, a few minor details have been improved here and there successively at intervals, all tending towards simplification from the point of view of the owner and those responsible for the continued upkeep of these cars.

There are, comparatively speaking, so few high-class twin-cylinder models still on the market that a considerable amount of interest must necessarily still centre around the Napier model of this type, especially when

the demand that there must always be for such a machine for Colonial use.

In view of this, not a few readers of THE AUTOMOTOR JOURNAL will welcome the accompanying line drawings that illustrate in full detail the whole construction of the 10-h.p. Napier engine, clutch and gear-box combination, particularly as those drawings indicate the simplicity of the arrangement that has been brought about by the full adoption of the unit system and show at a glance the precise manner in which this system has been carried out. These drawings include a longitudinal section

through the engine, metal-cone clutch, and three-speed gear-box; while beneath is a plan view of these same parts indicating the grouping of the spur-wheels in the gear-box, and on the right are two transverse sections, one of which is through the gear-box, while the other is through the engine.

So clear are these drawings that very few words are required to remind the reader of the leading characteristics of this compact mechanism. Principally, it is notable in that the fly-wheel is arranged in front, thereby serving the two-fold purpose of increasing the virtual clearance of the finished car above the road, because the fly-wheel is situated over the front axle instead of between the axles, and of enabling a comparatively small diameter casing to be used about the clutch instead of having to make it large enough to accommodate the fly-wheel.

Also it should be remembered that the valves, which all lie on the same side, are so disposed that they can be completely enclosed by a detachable plate; and that similarly thorough lubrication, combined with ample protection from dust and from other external uncleanness, is afforded by forced lubrication operated by a gear-driven pump in the base-chamber.



"A RECORD OF MOTOR RACING."*

MR. GERALD ROSE, in the record of the great motor races of the past which he has compiled for the Royal Automobile Club, has combined instruction with interest in a singularly happy fashion, and the volume just to hand is, as it should be, the best concise historical work concerning motor racing that has been published. Every event of International importance during the past sixteen years is dealt with in a surprisingly detailed manner, while many of the early races are not only described, and their principal incidents narrated, but a brief description of the quaint old cars that were then considered the "last word" in mechanical locomotion is included.

It is a fascinating, if oft told story that Mr. Rose has to tell, and although he has been under the necessity of writing up to his title—that is to say of keeping in view the fact that he was writing a more or less official record of motor racing—the book is thoroughly readable from beginning to end. In regarding the work critically, it is, of course, impossible for the reader to overlook the fact that Mr. Rose personally probably attended few, if any, of the races of which he writes. It is indeed clear that he must have gone to a huge amount of trouble to collect the necessary data with which to reconstruct the past in the illuminative style which is the main characteristic of his work. From the point of view of the sensational journalist, it is a matter of no great difficulty to "write up" an incident that he has not seen in such a way that readers will believe his "story" to be the account of an eye-witness; but it must be remembered that Mr. Rose, supposing that he possessed the faculty of adopting that style, was debarred from making use of it, since his book was destined to be published as an official record, and with the authority of the R.A.C. Consequently, we must congratulate the author upon the pains he has taken to supply "local colour" and accurate detail, and upon the successful outcome of his labours.

Having said so much, perhaps we may be permitted to express our opinion that it might have been wiser if the R.A.C. had decided to present Mr. Rose's record in a

* "A Record of Motor Racing," by Gerald Rose. Published with the authority of the Royal Automobile Club, by Revere Bros. 10s. 6d.

Effective cooling is ensured by means of a pump, the position of which will readily be detected, and above this is situated the untimed high-tension magneto which alone answers all ignition requirements. As regards the engine control, there is only the accelerator-pedal if one omits to mention the small "minimum speed" auxiliary lever which is situated upon the dash; while similarly as regards the control of the car itself, there is but one pedal for disengaging the clutch and for actuating the powerful brake that is situated close up behind the gear-box and is adjacent to the universal-joint. Thus it will be observed that the driver has but two pedals in all whereby he regulates the speed of the car under ordinary conditions of running, while apart from these there are but the two customary side-levers, one for the change-speed-gear, and the other for the hub-brakes.

Ample power for ordinary work is available, inasmuch as the cylinders have a bore of 3½ in. (82.5 mm.) by a stroke of 5 in. (127 mm.), while the handiness of the vehicle for use in congested districts and in narrow streets may be realised from the fact that a turning circle of 25 ft. is available with the 8 ft. wheel-base, the 4 ft. 6 in. track, and the 8 10 by 90 mm. tyres. A platform area of 7 ft. 5 in. is moreover available behind the dashboard.



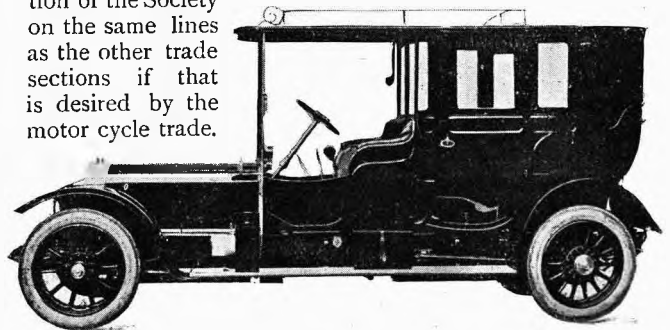
rather less elaborate fashion. At half-a-guinea, the book may not command the ready sale that is always desirable, whereas a shilling edition might have reckoned almost every motorist in the country as a purchaser. Except in so far as the present price may debar many people from the possession of a really useful and interesting work of reference, the question of cost is none of our business, and we merely offer an opinion on the point for what it is worth. More to mark, perhaps, by way of comment, is it to point out a very real fault in the book itself, which must necessarily very largely limit its practical value. A work of reference it professes to be, and a work of reference it is in all but one respect; but, extraordinary to relate, it possesses no index.

In conclusion, we may say that the contents of the book include a hundred and forty-four illustrations, a coloured frontispiece, and seven maps, together with a preface by H.S.H. Prince Francis of Teck.



A Motor Cycle Section of the S.M.M.T.

In view of the movement amongst motor cycle manufacturers to found an organisation for the protection of their interests, the Council of the Society of Motor Manufacturers and Traders have resolved to offer to form a motor cycle section of the Society on the same lines as the other trade sections if that is desired by the motor cycle trade.



His Excellency the Viceroy of India's Splendid 40-50-h.p. Rolls-Royce Limousine Landaulette, 1910 Type.—The carriage portion is by Barker and Co.

THE MULTIPLE-JET "SCOT" CARBURETTOR.

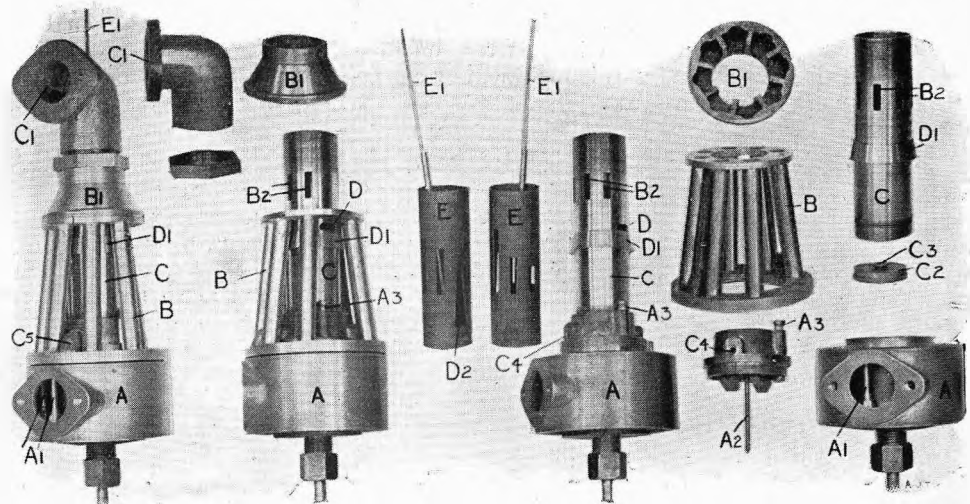
THERE is some similarity between the carburettor with which we are about to deal, and one that was described at considerable length in these columns a few weeks ago—the "Polyrhoë"—but the resemblance is only as far as the principle is concerned, and the mechanical construction and design is far from being the same. In both cases a sliding-member is provided which is acted upon by the suction in the mixing-chamber, and which automatically brings into operation a greater or a less number of jets, according to the distance that it has been forced to travel by the rate at which the explosive mixture is being drawn into the engine, *i.e.*, by the suction acting upon it.

Full particulars of the construction can be gathered from the composite illustration that we give herewith, wherein the complete carburettor is shown on the extreme left, and its various parts

in successive stages of dismantlement are arranged across the illustration from left to right. Briefly described, the lowest casting, A, is a combined float-feed-chamber and jet-chamber. The central portion contains a float-feed device of much the usual form, and around this is an annular space that contains seven jets, A¹, each of which projects upwards into a separate hole in the roof of this annular chamber. Fixed centrally above the float-feed-chamber is a comparatively large tube, C, that has ports, B² and D, cut through its walls, and a small non-return valve, C³, in the plug, C², that closes its lower end. It is this tube, C, that forms a cylinder for the sliding piston-valve, E, which has ports corresponding with those in the cylinder itself, and which occupies various positions according to the suction exerted upon it from above. It should be explained that the piston-valve, E, is completely closed in at its lower end, and it should also be made clear that the space immediately beneath it would be in open communication with the jet-chamber but for the upwardly lifting non-return valve, C³. The communication is made by means of a hole, C⁴, and the small connecting-pipe, C⁵, while the function of the non-return valve, C³, is to permit the piston-valve to rise rapidly if the throttle-valve is suddenly opened up or if the speed of the engine suddenly increases, but to compel it to come down slowly when either converse action is occurring.

Immediately above each of the seven spray-jets, A¹, is a tube, B, for leading explosive mixture up from that particular jet into a sort of valve-box, B¹, which serves to establish communication between all the seven tubes, B, and the seven windows, B², in the central tube, C. It will thus be observed that everything depends upon the position of the piston-valve, E, inside the windows, B², as

to whether or not the engine is able to draw an explosive mixture up into the induction-pipe, C¹, from any one of the individual tubes, B. Such is the shape of the corresponding windows in the piston-valve, E (two views of which are given in our illustration side by side), that when the engine is almost at rest only one of the tubes, B, and therefore only one one of the jets, A¹, is supplying mixture to the induction-pipe, C¹. As the piston-valve, E, rises, however, one after the other of the windows, B², are additionally exposed, with the result that an approximately constant degree of suction is maintained in the induction-pipe, but the number of jets that is in use at any particular time depends strictly upon the rate at which the engine is demanding its supply of mixture. Hence, it will be observed that the tendency is for the richness to remain constant in spite of any



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Seven feed-pipes, B, serve to communicate between the seven jets, A¹, in the jet-chamber and the seven windows in the automatic piston-valve, E, thus enabling a constant richness of mixture to be obtained from the "Scot" carburettor at all loads and all speeds. The above group shows this carburettor complete and in various stages of dismemberment.

variations of load or of speed, and however rapid those variations may be.

It only remains to add in connection with the action of this carburettor that the port, D, in the tube, C, is provided in order to admit auxiliary air direct from atmosphere, and that an adjustment is rendered available by the ring, D¹, that can be made to vary the effective area of this port. A corresponding tapering window, D², is cut in the piston-valve, E, whereby the actual area of the auxiliary-air orifice is automatically increased in accordance with the number of jets that are in operation.

One of our views shows how the agitator, A³, is arranged above the float-feed-chamber, this serving as usual for flooding the carburettor by lifting the needle-valve, A², when starting the engine. Also it will be observed that a guide wire, E¹, is brought up from the piston-valve, E, so that the action of this automatic member can be watched if desired. The carburettor is the invention of Mr. William Scott, of Glasgow, who has been at work upon its development for a very considerable time. In sending us particulars concerning it, he says "It's ca'd the Scot, because it's sae thrifty—and sae strong."

A SIX-CYLINDER PANHARD OF 30-H.P.

Leading Features.

Engine.—Bore, 90 mm. ; stroke, 130 mm. ; R.A.C. rating, 30.4-h.p. ; six cylinders cast separately ; seven bearings for crank-shaft ; valves opposite ; high-tension magneto (rocked bodily for timing).

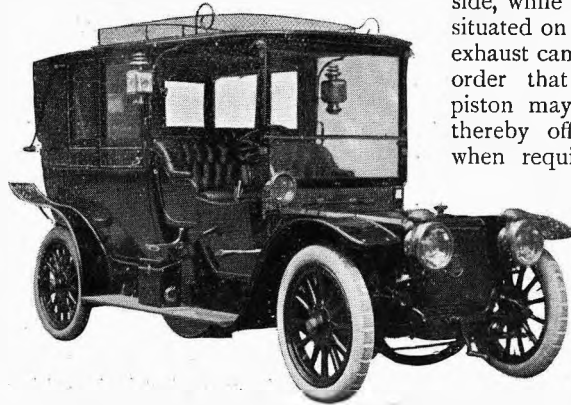
Transmission.—Side-chains or propeller-shaft optional ; multiple-disc clutch enclosed in gear-box ; four speeds (direct fourth), operated by cam-disc.

Dimensions.—Wheel-base, 10 ft. 6 ins. ; track, 4 ft. 9 ins. ; platform area, 8 ft. 6 ins. (live-axle model) or 8 ft. 10 ins. (chain model) by 2 ft. 9½ ins. ; chassis weight, about 19½ cwt. ; tyres, 880 × 120 mm.

Unusual Details.—Engine brake ; rocking magneto ; separate cylinder construction, combined clutch and gear-box ; metal strips for operating side-brakes.

PROMINENT amongst the new models for next year which go to show the determination of the Panhard Company to keep their productions up in the front rank with motorists, is the new 6-cyl. model, of which some idea is conveyed by the accompanying illustrations. Not only does it merit special notice, by virtue of the neat arrangement of the six independent cylinders so close together that they take but little more room than if cast in one solid piece, but this engine is so designed with additional exhaust-cams on a sliding cam-shaft that it can be used as a very effective brake in addition to the ordinary brakes on the car. The chassis, too, is interesting in that it can either be obtained with a live-axle form of drive or with side chains.

As a complete car, one form of which is seen in Fig. 1, the essence of refinement has been aimed at by the

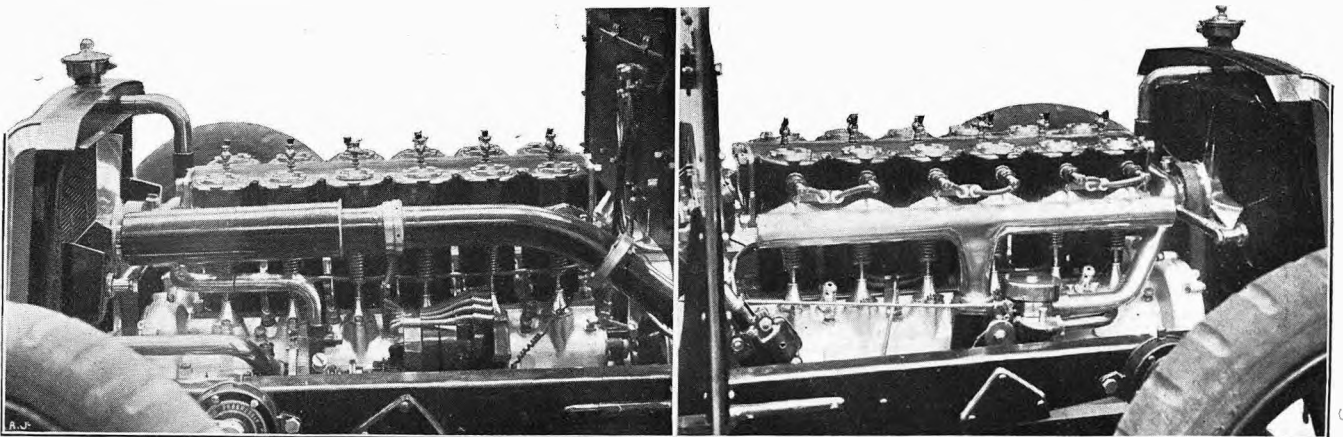


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Fig. 1.—One of the new 6-cyl. Panhard cars.

19½ cwt. From the two views that we give of the engine, it will be observed that the inlet-valves and the ignition-plugs, together with the carburettor, lie on the right-hand side, while the magneto and the pump are situated on the exhaust-valve side. It is the exhaust cam-shaft that is caused to slide in order that both upward strokes of each piston may be used for compressing air, thereby offering a powerful brake action when required ; the cam-shaft is for this

purpose coupled up to an additional pedal. Another unusual characteristic of the engine is that the whole magneto can be rocked bodily about its spindle, a full range of timing being thus provided which at the same time enables the "maximum" spark to be obtained whether the ignition is advanced or retarded.

Whether side chains or a propeller-shaft are used for transmitting the power to the rear wheels, a main clutch of the multiple-disc pattern is fitted, and this is situated in the forward end of the gear-box ; while the change-



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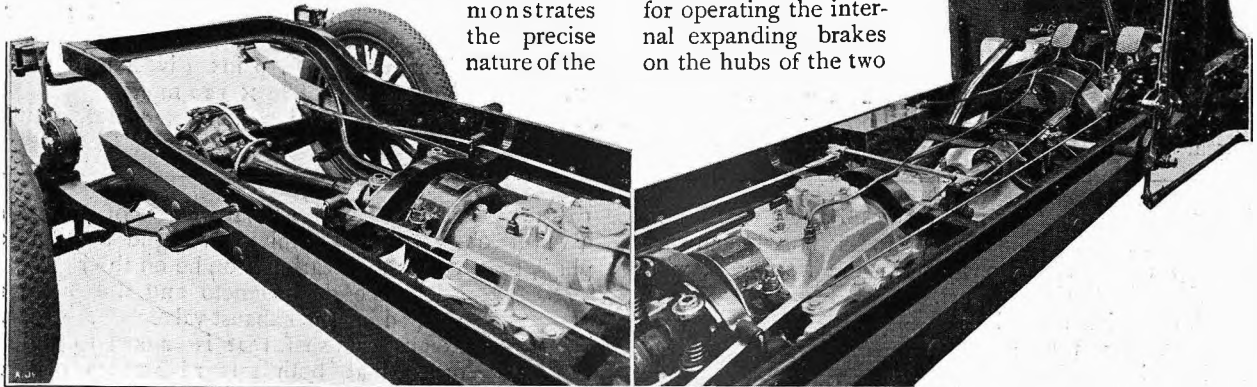
Fig. 2.—Views from the near and off sides of the 30-h.p. Panhard engine, which is specially constructed to be used as an auxiliary brake.

adoption of the 6-cyl. principle, while ample power is available for open country work of all descriptions, inasmuch as the cylinders have a bore and stroke of 90 mm. by 130 mm., while the chassis weight is but about

speed mechanism affords four forward speeds with a direct top gear, brought into operation by two sliding-sleeves which are controlled by a cam-plate action from the side-lever.

Our third figure includes a couple of views of the chassis rearward of the dashboard, and these, therefore, virtually embrace the whole of the transmission mechanism on the live-axle model. Prominent in both is the unusual construction of the main-frame, with its combined wood and pressed-steel side-members, while

whereas one of them demonstrates the precise nature of the gear-box, placed somewhat further back than is altogether usual, and accommodating the main-clutch inside its front end; while yet another outstanding feature is the special use of metal strips, instead of rods, for operating the internal expanding brakes on the hubs of the two



The 30-h.p. 6-cyl. Panhard-Levassor Chassis.—Views of the transmission mechanism, of the dashboard, and of the brake-operating gear.

three-quarter elliptic rear suspension, the other indicates the simple nature of the dashboard fittings. These views, moreover, clearly bring to light the general character of

driving-wheels. It will be observed also that the fly-wheel constitutes a powerful fan acting in concert with the belt-driven fan, which is situated close up behind the radiator.



Motors 'Buses in the City.

THE COURT of Aldermen of the City of London are now arranging to draw up a set of regulations for the control of the heavy omnibus traffic through the City. These, it is intended, should come into force early in

January, but before this can be done it will be necessary to hold a public inquiry at the Guildhall, so that objections to them may be heard. Then, if necessary, they will undergo revision and be submitted to the Home Secretary for confirmation.



New public service motor "hansoms" just placed on the Paris streets by the Reval Company.

TUNING UP THE MAGNETO.

THE majority of manufacturers are, of course, only too well aware of the fact, but it is by no means every user, even though he may have driven a car for many years, who has realised how entirely the capabilities and the general "feel" of a modern car depend upon the correct setting of the magneto when that form of ignition is made use of. The majority of experienced motorists realise the enormous influence which carburettor adjustment may have in the direction indicated, but it is almost safe to say that the correct timing of the magneto in relationship to the crank-shaft and cam-shaft is every bit as important to those who seek for the essence of refinement in the working of their vehicles.

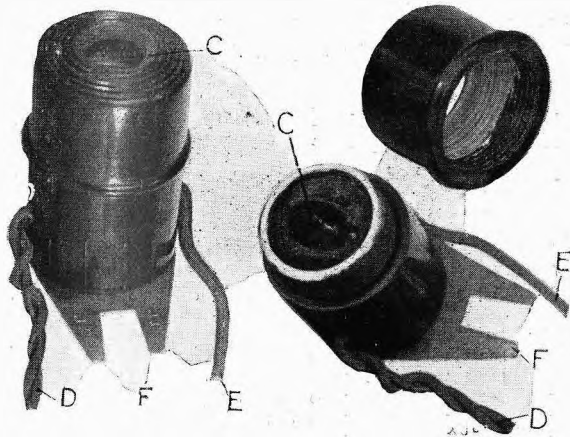


Fig. 1.—A neat little test-lamp for indicating the exact setting of a magneto on a petrol engine. The complete lamp is shown on the left, and the same fitting, with the cover taken off, on the right.

The worst of it is, of course, that no two engines, certainly no two types of engine, necessarily call for the same setting of the magneto armature relatively to the crank-shaft. Hence it follows that the mere fact that the moment at which the spark occurs can be varied by moving the timing-lever, does not provide the full compensation for incorrect setting for the majority of present day magnetos. For one thing the entire range of timing is none too great for some types of engine, and for another thing it is necessary for the engine to be able to run at a very low speed on the magneto. Hence there is nothing for it, if the best working is to be ensured, than to devote a certain amount of time in tuning up the magneto when it is first fitted to an engine.

Tuning up the magneto is in any case apt to be a somewhat trying job, though, of course, in the factory, where a large number of identical engines are turned out regularly, the task is for the most part overcome for good and all in the initial stages on the first two or three engines. Even for the manufacturer, however, the devices which we are about to describe are likely to prove of very great benefit, while for those owners and users who have magnetos fitted to their cars after having originally bought the car with another type of ignition upon it, the devices in question are of inestimable value.

One of the devices to which we refer is a simple form of coupling that has been specially devised by the Electric Ignition Company in connection with a new high-tension magneto that they are, as already announced in these columns, placing upon the market. As will be observed in

Fig. 2, it consists of a steel driving block drilled out to fit over the magneto-shaft, and not only split so as to render it springy, but provided with a taper screw, A, that enables it to be tightened up firmly about the shaft when in place. The driving-block, which is formed solid with it on the front face, engages in the usual way with a corresponding grooved block on the end of the driving-shaft, but it will be observed that the taper-screw, A, enables the coupling to be fixed quite sufficiently firmly to the magneto-shaft to prevent any chance of it slipping, so that even were there no further need of holding it, it would probably work indefinitely without giving trouble. It is intended to be used in this way until it is definitely known, following upon trial-and-error experiments, that the magneto is correctly set to suit the engine, and it is only subsequently to that that the further permanent fixing is resorted to which enables the coupling to be taken off at any time (if necessary) without involving risk of replacing it wrongly. In order to provide this additional fixing, a small ball-pointed grub-screw, B, is fitted through the coupling-piece as seen in our illustration, but this grub-screw is removed during the initial stages of adjustment. It is only subsequently that a small drill is inserted through the hole in the coupling, making the hole act as a jig, whereby the magneto-shaft is drilled into to receive the grub-screw.

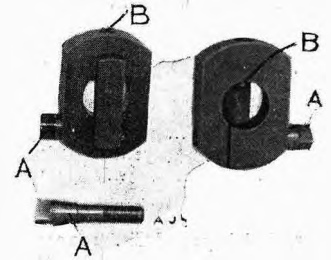


Fig. 2.—Front and back views of the Electric Ignition Co.'s special adjustable magneto coupling.

The other device referred to above is shown in our first illustration. It is in the nature of a testing instrument, and its purpose is to facilitate the setting of a magneto when it is first being installed. As will be observed, it consists primarily of a small four-volt lamp, C, embedded inside a small polished wood case that is open at the top, and is fitted up with a flexible cord, D, that enables it to be coupled up to the two poles of a two-cell accumulator as well as with another insulated wire, E, which is destined to be connected to the platinum-point terminal of the magneto. In addition to this, it has a metal plate, F, fixed to its under side, which serves to make an "earth" contact with the framework of the engine if this small test-lamp is stood up on any part of the metal work or is clamped under any nut upon it.

Having made the electrical connections which we have just indicated, and having previously inserted a piece of paper beneath the carbon-contact of the contact-breaker so as to prevent the current from the battery passing to "earth" through the armature, the following is the method to be pursued for utilising this test-lamp:—Pulling the fly-wheel slowly round, it will be found that whenever the platinum points of a magneto are separated, the test-lamp will be "out," but that immediately these contact points come together, the little lamp will light up and thereby indicate, with far greater accuracy than is possible from a direct observation of the contact-breaker itself, the instants at which the low-tension circuit of the magneto is made and broken.

FRENCH HEAVY VEHICLE TRIALS.

THE full tables of results obtained in the trials of industrial vehicles held by the A.C. de France from October 15th to November 15th has now been issued, and from it we have extracted the figures in the accompanying table regarding fuel consumption. Altogether seven fuel tests were made during the month, three with petrol, two with carburetted alcohol, and two with benzol.

The cost of these fuels for the purpose of calculating the marks was taken at 37.16 francs per 100 litres for petrol, 36.25 francs per 100 litres for alcohol, and 24.21 francs per 100 litres for benzol. In our table will be found details of the amount of fuels used on these seven special days, and the total cost of the three fuels and cumulative distance run with them is also given, together with weight of the vehicle and the useful load carried.

Entrant and Official No.	Petrol.						Alcohol.				Benzol.				Total Distance.	Total Cost of Fuel.	Useful Load.	Total Weight of Vehicle.	Tyres.		Official Placing.
	Distance.		Consump- tion.		Distance.		Consump- tion.		Distance.		Consump- tion.		Front.	Back.							
	kms.	litres	kms.	litres	kms.	litres	kms.	litres	kms.	litres	kms.	litres									
CLASS I (loads between 400 and 600 kilogs.).																					
44. A. Clement	134	15.350	155	16.300	155	18.260	155	15.820	155	15.200	155	13.235	155	13.210	1064	36.19	530	1.426	P	P	1
CLASS II (loads between 600 and 1,200 kilogs.).																					
58. Vinot and Deguin.	134	22.100	155	26.000	155	25.700	155	28.600	155	27.090	155	26.190	155	25.170	1064	60.04	958	2.470	R	R	1
CLASS III (loads between 1,200 and 2,000 kilogs.).																					
23. Saurer	134	35.910	155	36.550	155	34.650	155	39.270	155	36.550	155	50.680	155	37.780	1064	88.74	2027	4.263	R	R	1
28. Delangere-Clayette	134	56.710	155	74.140	155	55.280	155	50.470	155	52.360	155	55.660	155	55.380	1064	133.33	1200	2.904	P	P	3
45. A. Clement	134	31.000	155	32.500	155	31.980	155	32.650	155	31.690	155	29.220	155	28.800	1064	72.85	1419	3.239	R	R	2
CLASS IV (loads from 2,000 to 3,000 kilogs.).																					
5. Delahaye and Cie.	100	24.500	122	25.820	115	29.900	122	28.330	115	27.220	122	22.875	115	19.000	811	60.09	2245	4.089	R	R	5
6. " "	100	24.810	122	24.860	115	21.440	122	26.550	115	25.000	122	22.625	115	19.155	811	55.22	2247	4.100	R	R	2
9. Aries	100	30.510	122	33.730	115	33.350	122	36.800	115	31.440	122	28.910	115	27.950	811	74.77	2206	4.382	R	R	8
10. " "	100	29.980	122	32.870	115	29.600	122	32.875	115	29.265	122	28.640	115	24.440	811	69.73	2191	4.348	R	R	—
19. De Dion Bouton	100	41.000	122	44.450	115	38.000	122	45.000	115	36.120	122	34.050	115	31.180	811	91.07	2515	5.310	R	R	7
24. Saurer	100	31.600	122	39.000	115	35.640	122	41.701	115	37.740	122	36.050	115	32.120	811	84.78	2717	5.531	R	R	3
25. " "	100	33.650	122	35.565	115	31.160	122	42.760	115	39.650	122	34.330	115	27.810	811	82.21	2742	5.528	R	R	1
31. Vinot and Deguin.	100	31.220	122	36.650	115	36.690	122	42.920	115	44.600	122	35.450	115	32.985	811	87.15	2995	5.662	R	R	4
32. " "	100	31.300	122	40.465	115	37.580	122	45.220	115	39.920	122	35.780	115	30.720	811	87.59	3000	5.627	R	R	6
35. Peugeot	100	37.000	122	46.140	115	42.560	122	50.740	115	43.000	122	41.760	115	38.520	811	100.13	2899	5.713	R	R	10
38. Panhard and Levas.	100	29.500	122	43.590	115	42.800	122	45.485	115	39.820	122	38.170	115	33.330	811	91.29	2592	5.191	R	R	9
48. Berliet*	100	—	122	—	115	—	122	—	115	—	122	—	115	—	811	—	2263	—	R	S	—
49. " "	100	—	122	—	115	—	122	—	115	—	122	—	115	—	811	—	2255	—	R	S	—
52. Cohendet and Cie.	100	51.970	122	62.800	115	60.430	122	67.230	115	73.870	122	57.230	115	52.500	811	142.21	2843	5.493	S	S	12
53. " "	100	69.190	122	70.845	115	55.460	122	—	115	—	122	—	115	—	811	—	2768	5.442	S	S	—
56. Malicet and Blin	100	43.470	122	47.100	115	39.820	122	58.460	115	51.730	122	40.720	115	33.100	811	106.26	2926	5.732	R	R	11
CLASS V (loads exceeding 3,000 kilogs.).																					
7. Delahaye and Cie.	89	31.390	96	28.850	90	23.695	96	26.490	90	26.750	96	25.160	90	24.890	647	62.61	3591	6.371	R	R	2
8. " "	89	28.830	96	27.970	90	24.680	96	24.350	90	25.690	96	24.040	90	22.600	647	59.71	3591	6.383	R	R	1
11. Aries	89	41.000	96	34.830	90	32.260	96	30.115	90	31.110	96	27.715	90	24.880	647	75.09	3145	5.800	R	R	5
12. " "	89	39.720	96	39.190	90	34.360	96	35.440	90	32.620	96	29.590	90	29.000	647	80.94	3104	5.777	R	R	6
21. De Dion Bouton	89	32.300	96	33.100	90	35.840	96	42.690	90	37.930	96	32.210	90	34.140	647	82.90	2947	5.738	R	R	4
22. " "	89	31.260	96	33.285	90	33.410	96	36.220	90	36.360	96	33.200	90	36.415	647	79.56	2948	5.774	R	R	3
57. Malicet and Blin	89	53.200	96	60.760	90	53.430	96	61.625	90	55.460	96	48.515	90	44.000	647	127.04	3547	8.087	S	S	7
CLASS VI (tractor luries).																					
26. Saurer	89	58.570	96	59.000	90	52.780	96	57.370	90	53.120	96	53.120	90	50.000	674	128.32	6086	10.943	R	R	1
CLASS IX (*buses for 6-10 passengers).																					
36. Peugeot	134	24.260	155	27.980	155	26.000	155	28.310	155	27.720	155	24.390	155	23.380	1064	60.95	802	2.533	P	R	3
46. A. Clement	134	14.880	155	17.925	155	17.420	155	19.880	155	18.160	155	16.940	155	16.110	1064	40.45	351	1.474	P	P	2
47. " "	134	18.830	155	21.985	155	22.190	155	23.160	155	22.680	155	19.125	155	18.505	1064	49.14	560	2.012	P	P	1
CLASS X (*buses for 20 passengers).																					
27. Saurer	134	37.270	155	46.400	155	44.990	155	50.620	155	47.000	155	49.640	155	44.335	1064	105.95	2066	5.443	R	R	1

* Taking part in the Competition of Minister of War.

Tyres.—P = Pneumatic ; R = Solid rubber ; S = Steel.

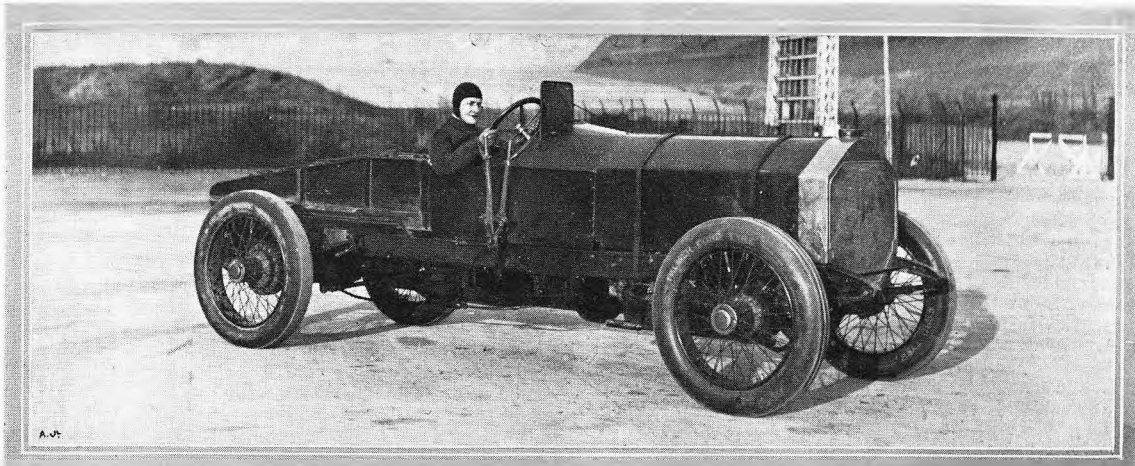


R.A.C. Special Danger Signs.

AN instance of the sort of place at which it is intended that the R.A.C. special danger sign should be erected is the top of a particularly dangerous hill near Oakamoor village, Staffordshire. The hill is on the main road from Cheadle, and from the top it winds down

among trees, the gradient increasing from about 1 in 10 to 1 in 6. The surface is bad, and there is a bad corner on the descent and right-angled turns at the bottom to the left and right. An R.A.C. danger sign will shortly be placed there to warn motorists of the caution necessary when negotiating this little piece of road.

RACES, RECORDS, AND TRIALS.



The Thames car, driven by Mr. Smith, and fitted with Palmer cord tyres, which recently put up such splendid new World's records from the half mile up to 300 miles for distance, and the 1, 2 and 3 hours' records.

Grand Prix Race Abandoned.

As was anticipated, the 45 entries necessary to ensure the Grand Prix Race being run were not forthcoming at the time the list closed on Tuesday last. As a matter of fact the actual entries numbered one dozen, made up of four teams of three cars each from Rolland and Pilain, Benz, De Dion-Bouton, Hispano-Suiza.

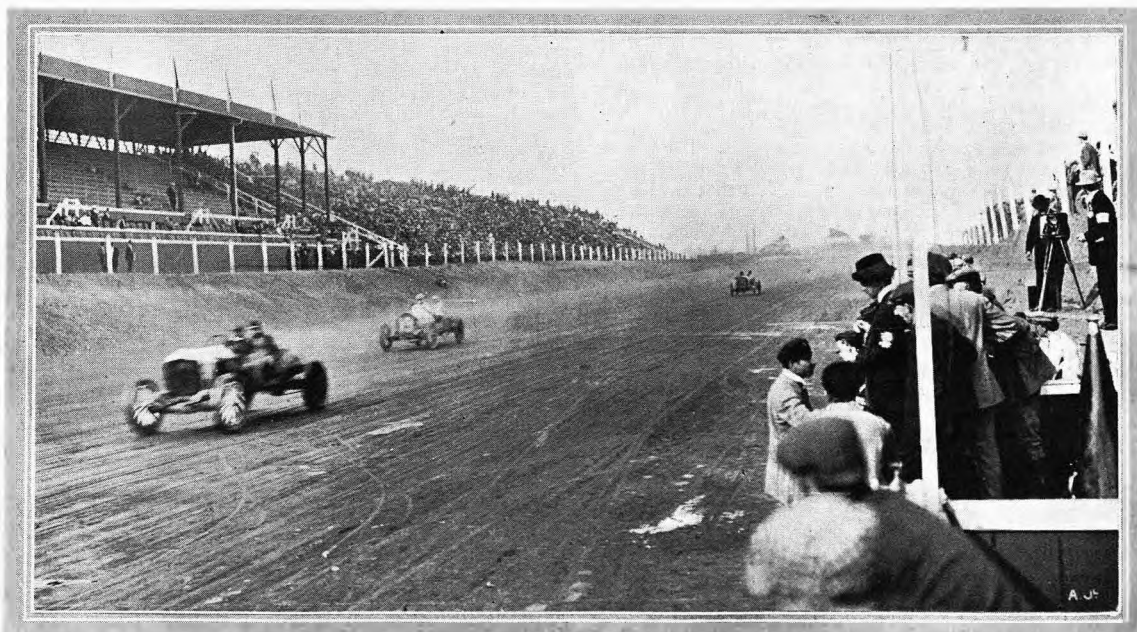
A New Brooklands Standard Class.

IN view of the large number of cars of about 20-h.p. R.A.C. rating which took part in the racing at Brooklands during the past season, it has been decided to establish a new standard class to be known as the "21-h.p. R.A.C. Rating Class." There will be long and short records for this as in the four other classes, the "short" record being over a flying half mile and the "long" record over ten laps

from standing start. The maximum bore for 4-cyl. engines is $3\frac{1}{8}$ ins. or 92.075 mm., while for 6-cyl. motors the limit is $2\frac{3}{32}$ ins. or 75 mm. The minimum rating allowed in the class is 18, while the weight has been fixed at 1,800 lbs.

French Voiturette Trials.

TO-MORROW, Sunday, the reliability trial for voiturettes and small cars, organised by our French contemporary, *L'Auto*, will start from Suresnes and continue for a fortnight. Suresnes will be the headquarters during that time, but four routes among the environs of Paris will be used. The first will be through Chatou, St. Germain, Ecquevilly, Mantes, Bonnières, Chaffour, and Evereux; the second, after crossing the bridges of Puteaux, Courbevoie, Jatty, Asnières, Clichy, St. Ouen, and Ile St. Denis, will continue *via* Pierrefitte, Ecouen,



Racing on the Atalanta Track (U.S.A.).—Finish of a 10-mile sprint for stock chassis.

Chaumontel, Chantilly, Verneuil, and Méru; the third will cross Puteaux and Courbevoie bridges and then on through Houilles, Maisons-Laffitte, Pontoise, Méru and

Allonne; and the fourth will be past Versailles, Port Royal, Rambouillet, Epernon, and Lères. The first two are each 87 kiloms. round, while the other two are 84 kiloms. each.



CLUBS AND ASSOCIATIONS.

R.A.C. Founder Members at Dinner.

THE twelfth annual dinner of the Founder Members of the R.A.C. was held on Wednesday, November 24th, and this year, in view of the increased number of members attending the function, it was held in the Grand Oak Room of the Hotel Great Central. As will be seen from the list of signatures of those present, which forms our frontispiece this week, the company numbered seventy, including three guests, H.S.H. Prince Francis of Teck, Chairman of the Club, the Hon. A. Stanley, and Mr. E. Manville. The chair was taken by Mr. Roger W. Wallace, K.C., the original chairman of the A.C.G.B.I., and during the evening he read a Marconigram from Mr. F. R. Simms, who was in mid-Atlantic on the "Mauretania," conveying his good wishes.

After the loyal toasts had been duly honoured, Prince Francis proposed the health of the Founder Members, although he did so with some diffidence, he said, because, at the particular period they were commemorating, he had been far away travelling on the screaming camel, or enjoying the stately walk of the elephant. He then briefly referred to the history of the Club, pointing out how much was due to the work of Mr. F. R. Simms as founder, Mr. Wallace as the first chairman, and Mr. Claude Johnson as the first secretary. In 1898 the Club membership was 380, and now it was 5,000. They looked forward to their future palace as putting the seal of success on the enterprise of their Founder Members.

Sir William Goff, Bart., was the first to reply, and said he was glad to see that the Founder Members were relaxing their rule with regard to the admission of guests. He ventured to suggest that they might extend that and draw up a scheme whereby the eldest sons of Founder Members might occupy the chairs of their fathers when their fathers were no longer able to join them.

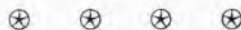
Mr. T. W. Staplee Firth told the company several of his experiences in connection with the Gordon-Bennett Race in Ireland, of which he had been reminded by the presence of Sir Wm. Goff. He also spoke of the improved relations between motorists and the police authorities. Sir John Thornycroft, F.R.S., referred to the new premises of the Club, and ventured an opinion that if they outgrew their new premises it would be a serious operation. Mr. A. J. Walter, K.C., also spoke, and drew attention to the way in which the number of motor cars in use had grown during the past few years.

The Hon. A. Stanley, in a humorous speech, proposed the health of the chairman. Without wishing to enter upon any contentious matter, he felt obliged to say that he admired the way in which Mr. Wallace had steered the fortunes of the Aero Club. It was necessary that there should be a central authority in this country for automobilism, and also one for aeration—or whatever they called it—above the country. The latter paramount authority was the Aero Club, and Mr. Wallace was its chairman. The Royal Automobile Club was going to do all in its power to uphold him. Mr. Wallace, in replying, drew attention to the fact that the list of founder members of the Aero Club was rapidly nearing its maximum, and several of those present have since joined the Aero Club.

After the dinner followed an entertainment, in which Messrs. Geo. Adams, John Bromley, J. Bull, Tom Clare, Sidney Gandy, Leslie Lambert, Chas. Pond, George Snazelle, Louis D'Egville, and Montague Grahame White, the latter two being founder members, took part.

Hertfordshire County A.C. Annual Dinner.

THAT a most successful season had been concluded by a very enjoyable function was the unanimous verdict of everyone present at the Trocadero Restaurant, Piccadilly Circus, on Saturday, when



Are You Interested in Flying?

IF so, you will find in the current issue of *Flight* many things of interest to you. Apart from the news of the week, both from at home and abroad, there is an instructive article giving the results of some experiments

sixty-six members and friends sat down to an excellent dinner, followed by an exceptionally good musical programme.

Mr. Sydney J. Ellis presided, and in proposing the toast of "The Hertfordshire County A.C." said the club had had an extremely successful year. They had started under a disadvantage, having to settle the affiliation question, and after deciding to become associated with the R.A.C., they had sustained a slight loss or members, which, however, had been made up since. They had now grown from 119 to 160 members. Although handicapped by bad weather, they could claim the most successful list of functions the club had ever had. They had carried out a fuel consumption trial, a speed-judging competition, and three hill-climbs—one open, one for members, and one for motor cyclists—as well as a gymkhana in the park of Lord Clarendon, a visit to Earl Brownlow's, and a picnic on Ivanhoe Beacon.

Capt. Hume, in replying to the toast, regretted the absence of Mr. Orde, which was due to severe illness in his family.

The chairman pointed out that they had been faced with a difficulty regarding the secretary. Mr. Salmon had stepped in; no man could possibly have worked harder. During the busiest time of the club's season, one could see Mr. Salmon's light burning when all respectable people were in bed. The prosperity of the club, the increase in membership, the success of the events, were in the main due to Mr. Salmon's work, and the committee had felt that they could not let the occasion pass without showing a slight mark of appreciation. They had, therefore, decided to present him, on behalf of the club, with a small souvenir in the form of a massive silver cigar and cigarette casket.

In reply, Mr. Salmon said he thanked them all for the hearty way in which they had drunk the toast, and he thanked them most sincerely for that most magnificent present. They had had a successful year, but a great deal of the success was due more to the members than to the secretary. They had had a very big attendance at all the meetings of the club; the members seemed somehow or other to have been aroused to enthusiasm this year, and that had helped him a good deal. In the last few weeks negotiations had been going on, and were now practically completed, with the St. Albans and District Motor Cycling Club in regard to an amalgamation of the two clubs. That club had a membership of between 30 and 40, and the amalgamation would give them one of the strongest motor cycling sections of any county club. There were in addition to those 30 or 40 members some 15 or 20 individuals who had expressed an intention of joining the club when the amalgamation was complete. He was sorry to have to resign the secretaryship, but the work was very great, and the worry even greater. The idea was to split up the events next year so that each event would be dealt with by a different member of the committee.

Lord Herbert Scott, D.S.O., proposed the toast of "The Visitors."

Mr. Claude Johnson, responding, congratulated the club on the admirable evening they had given their members. He knew of no automobile entertainment that had been so admirably conducted. He remembered on one occasion at the end of one of the big races there was a large banquet, which, apparently, the secretary had forgotten to attend, and there was no toastmaster. There was an enormous concourse. The dinner was supposed to begin at half-past six, and actually began at half-past eight. Also a little difficulty arose as to when the band should play and when it should not play. It was up in a gallery. The conductor every now and then looked through the verandah, and generally played when some speaker was in the midst of the best part of his speech. They had 27 speeches that evening, and the band played on and off during all the speeches.

with a glider on the Surrey Hills, which contains many valuable hints to those who contemplate working in that direction. Another interesting feature is a short summary of some recent patents. *Flight* is on sale to-day, Saturday, at all newsagents and bookstalls, price one penny.

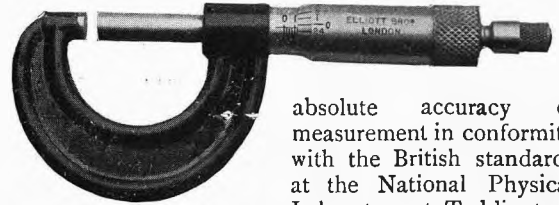
A FIRST-CLASS BRITISH MICROMETER.

THERE is perhaps no class of machinery in which more accurate work is required, and is to be found nowadays, than that connected with motor car construction. Hence, there is naturally a considerable demand for instruments of the utmost precision, whereby the measurement of any parts may be ascertained into at least the $\frac{1}{10000}$ th of an inch. Micrometers designed and made specially for this purpose have lately been brought out by the well-known firm of instrument makers, Messrs. Elliott Brothers, whose excellent speedometers are familiar to the great majority of motorists throughout the British Isles.

The photograph that we reproduce herewith shows one of these little instruments, which weighs only 2 or 3 ozs., and can be carried quite easily in the waistcoat pocket. In this particular form, it has a ratchet head, that ensures the same results being obtained by different users, inasmuch as the sense of touch with the ordinary instruments is eliminated by the ratchet action which comes into play when a certain definite pressure upon the object that is being measured has been attained. Either with

this ratchet head or without it, the Elliott micrometer is constructed in the 1 in. or in the 2 in. size, and in all cases is specially easy reading is ensured by the very thorough manner in which all the divisions are numbered around the head.

Particular care has been taken, moreover, to ensure



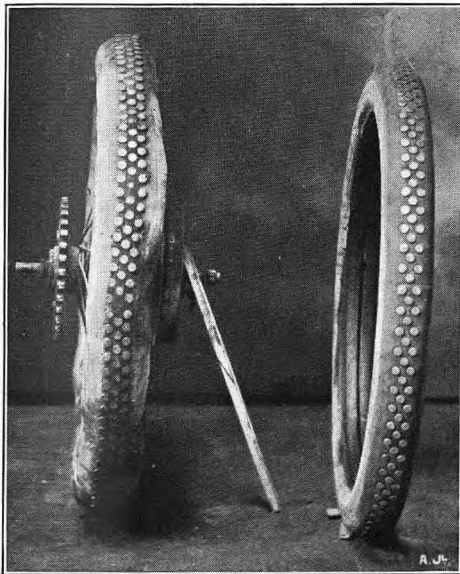
absolute accuracy of measurement in conformity with the British standards at the National Physical Laboratory at Teddington,

while further points which ought to be borne in mind by those requiring an instrument of this character are that provision is made for taking up wear in the thread, and that a very moderate price is being charged for this all-British production.



REINFORCED INNER TUBE EXPERIENCES.

ALREADY our readers will have remarked upon the successes achieved by "Challenge" reinforced inner tubes in the various official trials for which they have been entered with the Royal A.C. And now, coming very appropriately as an echo, we are hearing on



all sides expressions of satisfaction from practical—even if unofficial—users. Some of these experiences are well worthy of mention owing to the unmistakable story of success which they tell, and certainly it is seldom that any fresh device introduced nowadays in

connection with motoring has elicited more general approval from owners and users of cars than has the Reinforced inner tube.

A particularly notable case is that of Messrs. Swan and Edgar, who have been using one of the old scrapped covers that were bought by the Royal A.C. for the Brighton run on September 28th, and had up to the time of writing (October 21st) been in regular use with its Reinforced tube on their delivery van even since then. It will be remembered that originally the covers in question were bought from the scrap-heap at a cost of under 10s. each, and it will also be observed that delivery vans running 70 miles per day in the usual course of their work are not the easiest kind of vehicle as regards the life of tyres. Messrs. Swan and Edgar nevertheless bear witness to the fact that the Reinforced tube was still in use after having completed over 1,400 miles on the van without giving any trouble whatever.

Also we hear from Mr. J. Fisher, coachbuilder, of Hanley, a strong confirmation of what has been said in the Press concerning the merits of this inner tube. He encloses us the photograph that is reproduced herewith, and referring to it as "a perfect rag of a cover, which was used on the back wheel of a heavy and powerful tricar," he adds, "This cover was simply held together by the non-skid band and an ordinary tube had blown out immediately, but we put in a 'Challenge' tube, and as you will see by the distorted shape of the cover, a great air pressure was used. And we have run long distances on this tube which, without any doubt at all, supports the cover to a remarkable degree." Then, too, the manager of the George Motor Garage at Winchester, asks us to mention a very similar case. He says:—

"On October 6th I put on the back wheel of one of our cars, viz., a 14-20-h.p. Renault, with side-entrance body, an 880 x 120 non-skid Michelin cover, which had burst in the wall, and blown a piece out about 1½ ins. in diameter, the cover being declared useless. We placed in it, however, a 'Challenge' reinforced tube, and to our intense satisfaction it covered a distance of 892 miles without receiving any attention whatever. The cover has now been taken off to be canvassed over the burst, and seems capable of running at least another 1,000 miles. Beyond purchasing from the Reinforced Inner Tube Co., Ltd., one inner tube for each of our hire cars I have no connection with them."



Wrong Side of Refuges.

NOT a whit too severe was Mr. Curtis Bennett on Saturday when, at Bow Street, he fined a motor cab driver £3 and 2s. costs, with the option of a month's imprisonment, for driving on the wrong side of a refuge. The sentence erred on the side of leniency, for in the case in question two men who were sweeping the road were knocked down; and Mr. Curtis Bennett

intimated that the fact that the prisoner had held a licence for thirteen years without a complaint weighed with him in giving his decision, but if the dangerous practice of cutting round refuges on the wrong side was continued, he would deal severely with the offenders. The defendant pleaded that his cab skidded, but a police inspector gave evidence that the road showed no sign of a skid having taken place.

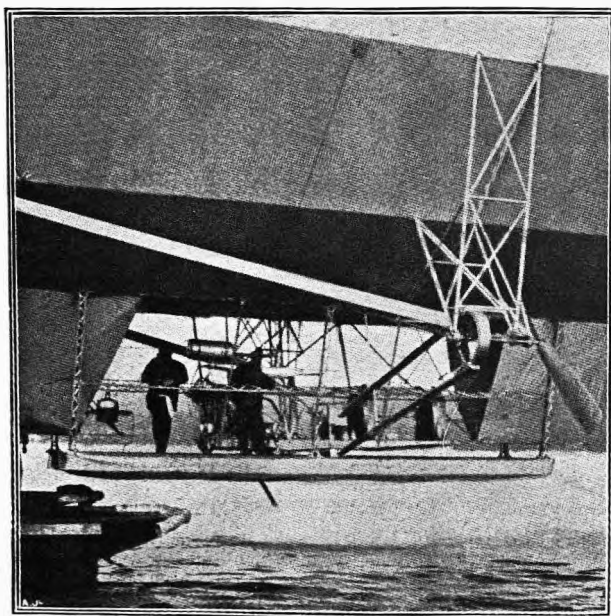
CENSUS OF MOTOR VEHICLES IN G.B.

ONCE again the R.A.C. have compiled a series of tables showing the total number of motor vehicles registered in Great Britain and Ireland, and they are summarised in the accompanying table. These figures refer to the vehicles registered at September 30th last, and it will be seen that during the year the total increase had been 29,358. In England and Wales the increase has been 18·8 per cent., while in Scotland and Ireland the increases are a little larger, *i.e.*, 20·1 and 21·2 per cent. :—

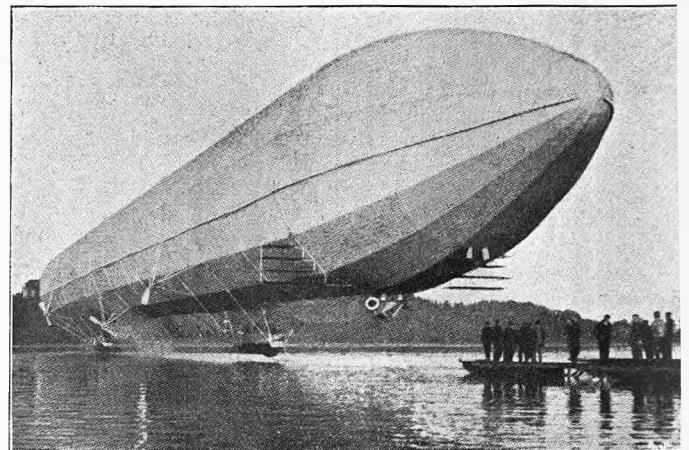
	Motor vehicles registered.				Licences issued.	
	Motor cars.		Total with public cars and motor cycles.	1909.	1908.	
	Private.	Trade.				
England and Wales	74,748	13,961	163,181	137,323	153,437	131,087
Scotland	6,157	1,056	13,093	10,907	15,146	12,654
Ireland	3,935	164	7,499	6,185	6,403	5,233
Total 1909	84,840	15,181	183,773	—	174,986	—
Total 1908	71,405	12,101	—	154,415	—	148,974

DAIMLER SCHOLARSHIPS CONTINUE.

ARRANGEMENTS have been made by the Daimler Motor Co. (1904), Ltd., to continue their offer of Works Scholarships for 1910, and full particulars of the conditions can be obtained from Prof. W. Morgan, B.Sc., Daimler Works, Coventry. They consist of one major and four minor scholarships, the former carrying the following advantages: Instruction in the (a) theory and (b) practice of motor engineering for two years; (c) a salary of £50 per annum for two years provided the holder of the scholarship agrees to serve the Daimler Co. for two years at a salary of not less than £150 per annum for two years after the expiration of the scholarship; (d) payment of the usual pupil's premium of £100. The minor scholarships carry the same advantages except that the payment during the holding of the scholarship will be at the rate of £20 per annum.



THE IMPROVED ZEPPELIN.—A nearer view of the supplemental "boat" which has been added to "Zeppelin III."



THE IMPROVED ZEPPELIN.—This view clearly shows the position of the third pair of propellers which have now been fitted to "Zeppelin III." It will be noticed that they are placed midway between the original sets and at a slightly lower level.

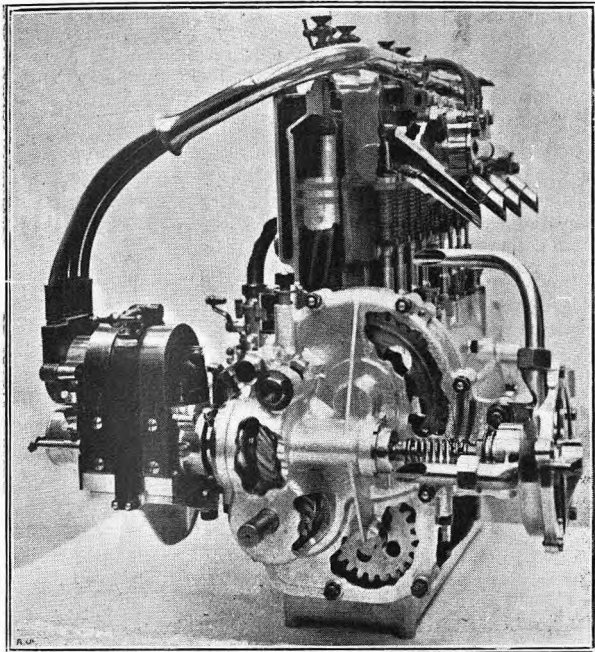
A "LITTLE GUIDE" TO ESSEX.

FOR the excellent quality of its main roads, Essex has cause to be thankful to the accession of the Prince of Orange to the British throne, for thereafter Harwich was much used as a port of departure for the Continent, and both during the reign of William III and that of Queen Anne special Acts were passed for the repairing of the main roads of Essex. During the 18th century more capital and trouble were expended upon many of the Essex roads than anywhere else in the United Kingdom. In addition to having good roads, Essex is a county brimful of attractions, both natural and artificial, but it has been sadly handicapped by a heresy to the effect that it is a flat and uninteresting county. It is to be hoped that the advent of a volume devoted to it in that excellent series of "Little Guides" published by Messrs. Methuen will do something towards freeing Essex from the aspersions of such a libel. It is perhaps unnecessary to say that the author, Mr. J. Charles Cox, LL.D., F.S.A., has done his work well, for those who are acquainted with this series of guides know that Messrs. Methuen see to it that the work of dealing with each district is only entrusted to one who is thoroughly familiar with and has a tender regard for the countryside and its associations. Motorists who do any amount of touring in the old kingdom of the East Saxons and wish to take an intelligent interest in the many things they will come across, will find the "Little Guide" to Essex an invaluable companion. It is illustrated by two maps and a large number of photographs, and is published at 2s. 6d. net.



The Nixon Memorial.

SOME time ago Mr. Charles Jarrott appealed for subscriptions towards the cost of erecting a memorial over the grave of W. Nixon, who was killed at Bonnevae in the Paris-Madrid race of 1903. A satisfactory response was received, and the work has now been carried out, Mr. Frank Fenton, of Paris, having supervised the erection of the memorial, which takes the form of a marble cross, and a marble border round the grave. In addition, Mr. Jarrott is arranging to have a small iron cross erected at the actual spot on the road where Nixon met his death. Mr. Jarrott once more wishes to thank all those who subscribed and thus helped to keep green the memory of one of the early martyrs to the cause.



DE DION ENGINE DESIGN.—A very attractive feature at the recent Olympia Show was the sectioned chassis exhibited by Messrs. De Dion Bouton. Above is seen the 14-h.p. engine of this 1910 model chassis which has a bore of 75 mm. by a stroke of 120 mm. (not 100 mm. as was the case with the 12-14-h.p. motor of the two past years).

Fire at the Motor Club.

ON Saturday evening an outbreak of fire occurred at the Motor Club, but fortunately it was practically confined to the premises recently vacated by the A.A. Members will therefore not be inconvenienced by the mishap, and efforts will be made to get the alterations to these additional rooms carried out as quickly as possible.

Buenos Aires Exhibition, 1910.

THE question of having a collective exhibit of British motor cars at the Buenos Aires Exhibition, on similar lines to that which is to be at Brussels, has been considered by the S.M.M.T. As most of those firms which are interested in the South American motor trade are arranging to exhibit through agents, it was decided not to move further in the matter.

Speed Limits in Middlesex.

At their last meeting the Middlesex County Council agreed to a recommendation of their Highways Committee to apply for 10 mile speed limits through High Street, Acton, the Uxbridge, Crawley, and Windsor Roads in Uxbridge and certain streets in Staines. It was resolved not to renew the application for a speed limit at Hampton Wick, while, on the ground that warning notices at certain spots would meet the case, it was decided not to proceed with the application of the Greenford District Council for a 10 mile limit.

Motoring in Malta.

QUITE a fillip has been given to motoring in Malta by the formation of the Malta A.C., which held its first meet on the 11th ult., when the members conveyed a large party of boy scouts round the island. Although many of the less important by-roads and lanes are very rough and trying to motor cars, the main roads, especially those in the northern part of the island, are, on the whole, good, and being metalled with the local soft stone are not trying to tyres. The number of motor cars in use on the island is gradually increasing.

Motor Union and Legal Defence.

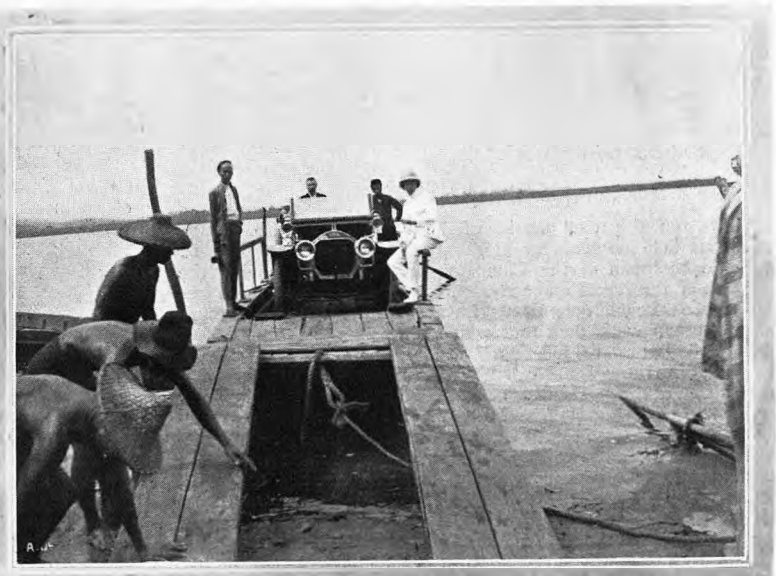
ON January 1st next what is announced as a free legal defence scheme will be instituted by the Motor Union. After that date every individual member of the Union will be entitled to the professional services of one of the appointed solicitors free, once every twelve months, for the purpose of defending him against a charge under Sec. 1 (Common Danger) or Sec. 9 (Speed Limit) of the Motor Car Act. Should the member wish to obtain these benefits also for his paid driver it will be requisite for him to pay an additional 10s. 6d. The privileges conferred by the badge scheme will be continued.

Miss Sheila O'Neill Enters the Business Arena.

UNDER the title of Sheila O'Neill and Co., Miss O'Neill informs us she has established herself at 207, Westminster Bridge Road, S.E., where she is interesting herself in motor cars, motor cycles, aeroplanes, and accessories. She is also opening up in Duke Street with an agency for Bentall cars.

Motor Cars in Newfoundland.

ACCORDING to the *Board of Trade Journal*, Mr. R. Grigg, H.M. Trade Commissioner in Canada, reports that eight 20-h.p. motor cars have recently been purchased by business men in St. John's; he is of opinion that many more will be purchased in the near future.



THE AUTOMOBILE IN MALACCA.—Shipping a 15-h.p. Napier from Singapore for Malacca, across the Straits of Johore, via Johore Bahru, the scene of our photograph. Thence the car was transported to Malacca, its destination, by rail.

COMPANY DOINGS.

Argylls, Ltd.

AT the annual meeting of Argylls, Ltd., held at the works on Monday last, Mr. Thomas Dence, who presided, stated that the Company was developing slowly and steadily towards better things for its shareholders. Their difficulties, however, were by no means over, but they were meeting them with stout hearts. They had performed good work at the Olympia Show, but the shareholders must not be too sanguine in their anticipation of immediate dividends, as the available funds for some time to come would be devoted to laying a solid foundation whereon to build a future and lasting prosperity. The accounts showed a balance of £1,630, while the stock of cars, stores, sundry debtors, and cash in bank amounted to £143,612. Outstanding accounts due by the Company amounted to £3,012, leaving, apart from calls in arrear (£1,126), a working capital balance of £140,600. The report was adopted unanimously.

Belsize Motors, Ltd.

THE third annual general meeting of Belsize Motors, Ltd., was held at Manchester on Thursday of last week. Mr. G. P. Dawson, chairman, in presenting the directors' report, said that the net profit available was £13,288, which was highly satisfactory in view of the state of trade. The total turnover in the year under review was double the turnover for the previous twelve months, and 50 per cent. more than the total for the preceding eighteen months, which represented the first financial year of the present Company. The orders on the books are considerably in advance of previous years, and the prospects to-day are such that the directors feel sure they will be able to present to the shareholders, at their next annual meeting, a much better balance-sheet, and at the same time be able to recommend the payment of an increased dividend.

During the year new markets had been opened up and cars were being supplied all over the world, from Norway to South Australia.

Contrary to expectation, it had been found necessary to increase the plant in order to cope with the increased demand and also to start a night shift. Mr. Dawson moved:—

"That the report and accounts, as circulated to the shareholders, in respect of the year ended September 30th, 1909, be adopted."

The motion was seconded by Mr. J. Whitehead and carried unanimously.

The chairman then moved: "That a dividend of 6 per cent. per annum, less income-tax, be paid on the shares for the past year."

The retiring director, Mr. J. Barber, was re-elected, and the auditors were also re-elected.

Mr. J. A. Morris then said that before the meeting broke up he would like to draw the attention of the shareholders present to the different tone of the meeting as compared with that of a year ago. He thought the shareholders would be a little bit ungrateful if they allowed the meeting to close without expressing, as proprietors, their feeling that they owed a great deal to the energy, assiduity, perseverance, and determination with which the directors had taken hold of the concern, and pulled it through very deep water. He begged to propose that their best thanks be extended to the board for their conduct in the past, coupled with an expression of gratitude with the present results, and a desire to assist the board in every way in the future. This resolution was carried with enthusiasm, and the chairman briefly returned thanks.

Daimler Motor Co. (1904), Ltd.

THE annual general meeting of the Daimler Motor Co. (1904), Ltd., was held on Tuesday at the works at Coventry, Mr. E. Manville, chairman of the Company, presiding. In moving the adoption of the report and accounts, the chairman said that he was glad the board could meet them with a very much better account of the past year's work than that which it was possible to put before them at the last annual meeting.

After going through the various items in the accounts, he went on to speak of the good effects of the R.A.C. trial to which their new engine had been subjected, and which it had come through so successfully. This test in itself served to counteract the adverse statements made by adversaries in the minds of the public, and the demand for new cars continually increased during the year, and, as they hoped might be the case, the result of the use of large numbers of these cars by the public had induced the possessors of them to speak in such high terms to their friends that the Company is now feeling the result in the most satisfactory manner possible. He had no idea as to the extent to which the demand may develop during the forthcoming season; but, as an indication of what is likely in this respect, definite and individually specified orders in hand to the end of this month already exceeded the total sales of the new type cars

last year. He should like to interpose a note of warning, and ask them not to estimate from this statement that profits during the year were going to be larger than in any previous year; for it must be recollected that during the past two or three years the prices of motor cars had descended considerably, so that the profit to be made out of each sale was much smaller than it used to be.

Perhaps one of the most satisfactory features of the year's work was the remarkable increase in their foreign trade, especially with the Continent of Europe. It had been found expedient to form a separate French Company to deal with the business in Paris, where the new cars had proved so attractive. Although handicapped by heavy duties and freight charges, the French Company had already turned out a profitable undertaking.

Last year attention had been drawn to the development they were making with omnibuses, Renard trains, and agricultural tractors. Progress had been made in all these directions during the last year, and they expected them to very soon produce profits. A further direction in which they had for a long time past been spending money in development was the production of self-propelled railway coaches. The last examples of these had proved eminently satisfactory, so that they were now in a position to deal with the demand which it is believed will exist for them.

Mr. Manville said that his colleagues and himself were sorry that they could not see their way to recommend a dividend being paid on the ordinary shares out of the profit made during the year, but they thought all the shareholders who had the interests of the business at heart would agree that, having regard to the large amount of work on hand, it was the soundest policy that they should conserve their resources for another year, after which they hoped and believed they would be in a position to declare a dividend on the ordinary shares. He begged to propose: "That the report and accounts for the year ended September 30th, 1909, be received, approved, and adopted."

This motion was seconded by Mr. A. H. E. Wood, and after some criticisms by Mr. W. Morgan had been answered by the chairman, was passed unanimously, as also was the motion for the payment of the final dividend on the preference shares. Mr. E. Manville and Capt. Longridge, the retiring directors, were re-elected unanimously.

NEW COMPANIES REGISTERED.

Aerial Flying Exhibition, Ltd., 4, London Wall Buildings, E.C.—Capital £32,000, in 30,000 preferential ordinary shares of £1 each and 40,000 deferred shares of 1s. each.

Game Motor Cab Co., Ltd., Gamage Building, Holborn, E.C.—Capital £175,000, in 173,000 preferred ordinary shares of £1 each and 2,000 deferred shares of 1s. each. First directors, A. W. Gamage, G. Murdoch, E. M. Gamage, and W. A. Vincent.

Helicopter Flying Machine, Ltd., 26, Shaftesbury Avenue, W.C.—Capital £5,250, in 5,000 ordinary shares of £1 each and 5,000 deferred shares of 1s. each.

Rom Tyre and Rubber Co. (1909), Ltd., 31, Brooke Street, Holborn, E.C.—Capital £30,000, in £1 shares. Formed to acquire the business of the Rom Tyre and Rubber Co., Ltd.

Vienna Motor Cab Co., Ltd., 62, New Broad Street, E.C.—Capital £200,000, in 197,000 participating preferred shares of £1 each and 60,000 deferred shares of 1s. each. First directors, Baron Leon de Steenhault de Waerbeck, Paul Nagelmackers, Jules de Borchgrave, and Hofrath A. von Glaser.

West Wales Motor Car and Engineering Co., Ltd. Capital £5,000, in £1 shares. Formed to acquire the business of engineers, motor car designers, builders, &c., carried on by W. D. Davies, T. H. Hutchins, and F. J. Morgan at Melbourne Place, St. Helen's Road, Swansea, as the West Wales Motor Car and Engineering Co.

Private Companies.

Car Sports, Ltd.—Capital £8,000, in £1 shares. Formed to acquire the business of motoring tailors and dealers in motoring accessories carried on by J. Wayman and T. C. Matthews as Wayman and Matthews at 1, Albemarle Street, W.

East Lancashire Motor Carrying Co., Ltd.—Capital £5,000, in £1 shares.

Edward Hammond Bentall and Co., Ltd., Heybridge Works, Heybridge, Essex.—Re-registered pursuant to the Companies (Consolidation) Act, 1908. Originally registered as an unlimited company under the name of Edward Hammond Bentall and Co. on January 5th, 1875, with a capital of £120,000 in £10 shares to acquire the business of an engineer and manufacturer of agricultural and other implements, formerly carried on by E. H. Bentall. The capital has since been increased to £130,000, in £10 shares, and 12,123 shares had been issued and paid for in full up to the date of the re-registration. Directors, E. E. Bentall, T. Lott, and Mrs. M. A. Bentall.

LEGAL INTELLIGENCE.**Warning of Police Traps.**

ALBERT JOY, a patrol in the employ of the Automobile Association, was summoned on the 26th ult. at Dartford for obstructing the police in the execution of their duty by warning motorists of the existence of a police trap on the Maidstone road. The police allege that while they were timing motor cars over a distance of two miles, the defendant stationed himself inside the control, and in consequence of his warning, certain cars (which would have been found to have exceeded the speed limit) passed at a decreased speed.

Mr. Harker (instructed by Messrs. Amery Parkes and Co., solicitors to the Automobile Association) submitted that the evidence as to the speed of the car at the time of the warning was not of such a character as would have justified the Bench in convicting the drivers of the cars under the speed-limit section, and that, therefore, there was no offence according to the recent ruling of the Divisional Court.

The Bench upheld this contention, and dismissed the summons.

**COMMERCIAL POINTS.**

Unanimous Opinion.—That the value of the Bowden wire mechanism for motor cycle controls is fully appreciated by the wideawake members of the trade and the amateur motor cycle fraternity, is evident from the fact that every machine competing in the Tourist Trophy contest in the Isle of Man was partly or wholly equipped with this useful device.

White Petrol Cars.—From the White Co. we have received a little brochure dealing with their petrol cars. It is got up in the same tasteful manner which has hitherto distinguished the literature published in the interests of the "Incomparable White Steam Car," and those who are thinking of investing in one of the new cars will find all the needful information regarding them set forth in a most succinct and concise manner. The booklet is illustrated by a large number of photographs from this journal, and a valuable feature is the very complete details given regarding the body-work which can be supplied. Any of our readers can obtain a copy by applying to the offices at Carlow Street, Camden Town, N.W.

Wolsley-Siddeley Cars.—For the new edition of the catalogue dealing with Wolsley-Siddeley cars, an introduction has been written by Mr. H. Massac Buist, in which he sets clearly forth some arguments as to why it is well that the purchaser of a car should see that he is getting a good car, and not merely a cheap one. Apart from this, the catalogue is a most artistic production, and its arrangement reflects great credit upon the compilers. Full specifications, accompanied by photographs and line drawings, are given of each model, as well as a list of the accessories supplied, and the cost of various extra fittings such as hoods, screens, &c.

Vauxhall Cars.—The new catalogue relating to Vauxhall cars is prefaced by an essay on the choice of a car, which will be found of interest and really helpful to those who are considering the purchase of a motor car. Following this, full descriptions are given of the three models for next year, the 16 and 20-h.p. four-cylinder cars, and the 27-h.p. six-cylinder model, while a number of photographs are included, from which can be obtained an idea of the various types of coach-work usually fitted to these chassis.

Talbot Testimony.—From Messrs. Clement-Talbot we have received a little brochure which has been compiled by them on a novel plan by Messrs. R. T. Lang. When considering the purchase of a car, a number of questions arise, and it is interesting to have the opinions of other users on these points. This little book then consists of a series of testimonials, but they are so arranged and indexed that it is quite easy to turn up and see what other Talbot owners say with regard to speed, fuel consumption, long service, and other points. The book is copiously illustrated by photographs, and copies can be obtained from the head offices at Barby Road, North Kensington, W.

On the Question of Lamps.—A most interesting and artistic little booklet has recently been issued by Messrs. Rushmore Lamps, Ltd., in which the various products of that firm are most lucidly dealt with. In it is explained the principle of the Rushmore mirror, the Rushmore multiplex lens, and the Rushmore shaking-grate generator, together with a wealth about the various types of lamps and hints regarding their proper working, which should prove invaluable to the car owner. A copy will be sent post free on application to 49, Rupert Street, W.

Changes on the S.M.M.T. Council.—At the last meeting of the Council of the Society of Motor Manufacturers and Traders, the resignation of Mr. A. E. Bennett, representing the Bosch Co., was

received and accepted with regret. Resignations were also received from Earl Russell, as representing the Humber Co., and Mr. H. G. Burford, as representing the Milnes-Daimler Co. Mr. Burford was unanimously re-elected, as representing Humber, Ltd., and re-appointed on the management committee. The other two vacancies were filled by the election of Mr. Mayes-Smith and Mr. Newey, the latter as an associate member.

Wolsley Marine Motors.—The Wolsley Tool and Motor Car Co., Ltd., have recently heard from Mr. George W. McClure, motorman of the Duke of Westminster's motor yacht "Laxford," that since the installation of the new machinery the "Laxford" has logged more than 2,000 miles, and has proved most reliable and satisfactory. The passage back to Greenock included a non-stop run of 15 hours, during which the boat averaged 10 knots towing a dinghy. On dismantling the engine for inspection the condition of bearings and working parts was found to be perfect.

Bowdens at the Stanley Show.—We learn that of the 258 motor cycles and auxiliary motors exhibited at the recent Stanley Show all but one were fitted with Bowden wire controls. There were but few with a single control, the majority having anything from three to five fittings each. A fact like this is ample testimony to the esteem in which the virtues of Bowden wire mechanism are held.

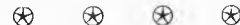
The Lion-Peugeot voiturette on which Boillot was successful a few days ago in breaking the voiturette records at Brooklands was fitted with a "U. H." magneto.

A **SELF-CLEANING** plug, possessing the perfect electric properties of insulation under all conditions of varying temperature and compression, gives advantages which motorists are not slow to appreciate. M. Pognon has provided a plug which will last for years, and it has been found still usable after three years' service in a car which has run 35,000 miles. In this country it is known as the Hobson-Pognon plug, the sole concessionaires for the United Kingdom and the Colonies being H. M. Hobson, Ltd., 29, Vauxhall Bridge Road, London, S.W.

INCONTROVERTIBLE evidence of increased demand is shown by the need for larger premises. Motorists have discovered the Avon tyres, they want them, and bigger factories must be built to cope with the increasing demand. With a continuation of the same high standard of quality and material, and methods of manufacture, the Avon manufacturers will doubtless find even these greatly increased facilities taxed to their utmost in the not too distant future.

As an indication of the rising popularity of the Opel cars, it is interesting to note that H.S.H. Prince Louis of Battenberg honoured the British Electromobile Co. Ltd. (who are the sole agents for the well-known Opel cars here in England) with an order for a 50-h.p. Opel landaulette at the Olympia Show. The body is of very special design, and identical with those already supplied to H.I.M. the German Emperor, H.R.H. the Grand Duke of Hesse, and Prince Alexandrovitch.

SOME of the most excellent examples of the coachbuilder's art exhibited at the recent Olympia Show were the creation of Vanden Plas, whose work surprised everyone who saw it. Messrs. Warwick Wright, Ltd., who showed some specimens of this fine body-work on Metallurgique chassis, are to be congratulated on their appointment as sole concessionaires in Great Britain for this well-known Brussels house. Messrs. Warwick Wright, Ltd., will be able to accept orders for any make of chassis.

**PUBLICATIONS RECEIVED.****Catalogues.**

Vauxhall Motor Carriages, 1910. Vauxhall Motors, Ltd., 180, Great Portland Street, W.

Rolls-Royce Motor Cars. Rolls-Royce, Ltd., 14-15, Conduit Street, London, W.

Motor Accessories and Spare Parts. G. T. Riches and Co., 19, Store Street, W.C.

Aerial Motors. Preliminary Catalogue, 1910. Aerial Motors, Selly Oak, Birmingham.

Motor Car Accessories and Specialities. George Robertson and Sons, 55, Back Sneddon Street, Paisley.

Dunhill's Motorities. Alfred Dunhill, Ltd., 259-261, Euston Road, N.W.

The Beatonson Wind-Shields. Carpenter and Warren, Ltd., Bank Buildings, Kingsway.

Wolsley-Siddeley Autocars, 1910. The Wolsley Tool and Motor Car Co., Ltd., Adderley Park, Birmingham.

Spare Parts for 18 and 20-h.p. Wolsley Live-Axle Cars. The Wolsley Tool and Motor Car Co., Ltd., Birmingham.

AN "Appeal to Reason" is the title of a little pamphlet recently issued by Messrs. C. C. Wakefield and Co., dealing with their lubricating oils, and giving a few reasons for their adoption. This firm have also recently published a little illustrated souvenir of the Doncaster meeting, and either of these publications will be sent to any of our readers who are interested, and care to apply for them.

As showing that the popularity of front-wheel brakes is on the increase, it is interesting to note that many manufacturers willingly undertake to manufacture and fit Allen-Liversedge front-wheel brakes to their cars at the request of purchasers. This goes to show that their many advantages are being widely recognised.

MESSRS. STEEL AND MARTIN, 6, West Street, Horsham, who are the sole agents for De Dion Bouton and Napier cars for the county of Sussex, have just been appointed sole agents for Metallurgique cars for the same county.

WE hear from India that Mr. James T. Vernon (late secretary and general manager to the Western India Motor Co., Ltd., Bombay) has recently been appointed general manager to the Bombay Motor Car Co., Ltd.

MESSRS. L. C. SELIGMANN AND Co., Ltd., of 96, Renfrew Street, Glasgow, have been appointed agents in Glasgow for Sizaire-Naudin cars.

MESSRS. SMALL AND PHILLIPS have now joined forces in acquiring a well-equipped repair shop at 6, Marlborough Mews, Great Marlborough Street, W., and have also acquired the services of the late foreman (Mr. Cook) of the recently-closed motor works a few doors away. Both partners have for some years been in the employ of Messrs. Jarrott and Letts, with whom, as well as previously, they have had an extensive experience with a variety of different types of vehicle. They are now prepared to undertake any work that may be entrusted to them.

BRITISH PATENT SPECIFICATIONS. Selected and Abridged by James D. Roots, M.I.Mech.E.,
Thanet House, Temple Bar, London.

The first date given is the date of application; the second at the end, the date of the advertisement of the acceptance of the complete specification.

15,166. 16th January, 1909. Improvements in and relating to Internal-Combustion Engines. Messrs. John Badger, A.M.I.M.E., of "Langdale," Kimberworth Road, Rotherham, and J. W. Whitaker, A.M.I.M.E., of 27, Abinger Road, Chiswick.—This invention relates to internal-combustion engines of the two-cycle type, in which the object is to provide an efficient engine in which advantage is taken of a long range of expansion due to the combustion of an explosive mixture in two adjacent and connected chambers, and thereby to ensure a perfect scavenging action, and consist in arranging two cylinders with a common combustion-chamber mounted on an enclosed crank-case. Fig. 1 is an elevation in section through both. Fig. 2 is a section at right angles to Fig. 1. Two vertical cylinders, A¹, A², are employed in a plane at right angles to the axis of the crank-shaft, B, and having their axes parallel and arranged on either side of the crank-shaft, B. The cylinders, A¹, A², are fitted with pistons, C¹, C², which perform the combined function of transmitting power to the crank-shaft, B, due to the explosion of the combustible gases, and also act as valves for the inlet and exhaust of the

the exhaust-chamber, K, through the ports, H⁵. The explosive mixture is now compressed during the return stroke of the pistons, C¹, C², and is then ignited. During the ensuing down-stroke of the pistons, C¹, C², the piston, C³, uncovers the ports, H³, and the products of combustion under pressure are discharged into the exhaust-chamber, K, prior to the opening of the ports, H⁴, and the cycle of operations is continued. N is the water-jacket.—November 10th, 1909.

814. January 13th, 1909. Improvements in and relating to Gas and other Internal-Combustion Engines. Mr. B. Rathmell, 15, Brunswick Street, Liverpool.—This invention relates to gas and explosive engines which work on a two-stroke cycle, and is of the type which have pistons of different diameters in line with one another, and attached to one connecting-rod and crank-pin, comprising a motor piston and compressor pistons for air and for gas or gaseous vapour fuel. Fig. 1 is a vertical section through an engine, having inlet-valves for the admissions to both the air-compressor (crank-chamber) and the fuel-compressor (top cylinder). Fig. 2 is a vertical section through the cylinders, with the pistons shown in

the smaller piston, 4, also being closed, and then compresses the air left within the annular combustion space, 3. At the same time the piston, 4, compresses the gas in the cylinder, 5, and as this compressor is constructed as nearly as practicable without clearance, whilst the motor cylinder has the clearance necessary for the volume of the compressed charge, the pressure in the upper cylinder increases more quickly and forces open the gas-discharge valve, 12, and the gas passes through the passage, 13, and the ports, 14 (of which only one is shown), into the motor cylinder; the ports, 14, are so placed that they diffuse the incoming gas throughout the motor cylinder, thus mixing it thoroughly with the air already contained therein. The gas-discharge valve, 12, is held to its seat by a spring, 15, and the whole is kept in place by a screwed cap, 16, so formed that if the valve-spindle breaks off it cannot enter the cylinder, 5. In large cylinders a plurality of valves may be used. The gas-inlet valve, 11, is placed in a seat, 17, which fits into the cylinder top, and the piston clearance may be adjusted by varying the thickness of the packing placed under the shoulder, 18. A shoulder or collar, 19, is attached to the valve-spindle at its greatest diameter, and the dished collar, 20, against which the spring, 21, bears, is attached to the weakest part; the collar, 19, will prevent the valve entering the cylinder. A lantern piece, 22, and a screw cap hold the valve-seat, 17, in position. 23 is a gas-induction port. The exhaust-ports, 8, communicate with an exhaust-passage, 24, formed around, or partially around, the cylinder, with an outlet-port, 25, to the atmosphere. The motor cylinder is provided with a water-jacket space, 26, and the gas-compressor cylinder has a jacket-space, 27. Referring to Fig. 2: In the gas-compressor cylinder, the ports, 28, which are uncovered at the bottom of the piston-stroke, replace the gas-inlet valve shown in Fig. 1, and the ports, 29, in the air-compressor, which are uncovered at the top of the piston-stroke, replace the air valves described for Fig. 1. The construction of the piston is the same as in Fig. 1. The water-jacket space, 27, is here preferably only long enough to cool the motor cylinder-head.—November 10th, 1909.

Patent Specifications Published.

Abbreviations:—I.C. = Internal combustion. m. = motors.

Applied for in 1908.

Published December 2nd, 1909.

- 22,643. H. C. CLEAVER. I.C. engines.
- 24,300. S. A. HERSTMANN. Speed indicators.
- 26,039. BRISTOL WAGON AND CARRIAGE WORKS. Valve mechanism.
- 27,200. H. M. BIGWOOD AND EYTON. Spring wheels.

Applied for in 1909.

Published December 2nd, 1909.

- 2,743. A. CHAUMONT. Brakes.
- 4,237. E. SCHNEIDER. Change-speed transmission.
- 11,363. J. L. V. DA CRUZ. Two-stroke explosion motor.
- 11,548. J. HODGSON. Valves.
- 11,957. W. E. PARFITT. Resilient tyres.
- 12,301. FORGROVE MACHINERY CO. AND F. GROVER. Float-feed carburettors.
- 12,971. T. J. KOVEN. Exhaust-valves.
- 14,234. M. H. PRESTON. Liquid level indicators for oil tanks.
- 14,429. LENTZ-GETRIEBE GES. AND H. LENTZ. Controlling fluid-transmission gear.
- 15,113. H. C. TURNER. Shock absorbers.
- 15,430. J. MURREY. Resilient wheels.
- 23,731. C. F. RENARD. Elastic wheels.

gases. The pistons, C¹, C², are connected to the crank-shaft, B, by a forked connecting-rod, D, working on the crank-pin, E. The crank-shaft, B, is contained in an enclosed chamber, F, upon which are mounted the aforesaid cylinders, A¹, A². An annular collecting-chamber, G, for the explosive mixture is provided, from which leads a passage or port, H¹, to the suction and compression-chamber, I. From the suction and compression-chamber, I, two passages or ports, H², H³, lead into a distributing chamber, J, from which a series of ports, H⁴, lead into the cylinder, A¹. From cylinder, A², a passage or port, H⁵, leads into the exhaust-chamber, K. To ensure a gastight crank-chamber, F, the crank-shaft, B, has provided a series of collars, M¹, M², M³, M⁴, M⁵, M⁶. On the up-stroke of the pistons, C¹, C², they open the ports, H¹, and admit the explosive mixture from the collecting-chamber, G, to the suction and compression-chamber, I; on the down-stroke of the pistons, C¹, C², they close the ports, H¹, and compress the explosive mixture in the suction and compression-chamber, I, in the passages or ports, H², and in the distributing-chamber, J; later, in the down-stroke of the pistons, C¹, C², the piston, C¹, uncovers the passage or port, H³, and the explosive mixture enters the cylinder, A¹, sweeping the existing contents of the cylinders, A¹, A², into

elevation, of an engine which dispenses with inlet-valves, utilising in place of such valves a set of ports for each compressor piston, the crank-casing forming the air-compressor. Referring now to Fig. 1: 1 is the motor piston working within the motor cylinder, 2, of which the effective area is the annular space, 3, formed between the cylinder, 2, and the gas-compressor piston, 4, which works within the cylinder, 5; the under side of the piston, 1, acts as an air-compressor, drawing air into the crank-casing, 6, through an inlet-valve or valves, 7 (one shown dotted), on its upward stroke, and compressing said air on the downward stroke. Near the end of the downward stroke the top edge of the piston, 1, uncovers the exhaust-ports, 8, in the motor cylinder, and at the time, or just afterwards the air-discharge ports (one shown) 9, in the hollow piston extension, 4, pass the edge of the motor-cylinder cover, 10, the compressed air within the crank-casing and hollow piston flows through the ports, 9, and sweeps the motor cylinder contents out at the exhaust-ports, 8. During the same downward stroke the fuel-compressor piston, 4, draws in gas (with or without air) through the gas-inlet valve, 11, placed in the top of the gas-compressor cylinder, 5. On the upward stroke the top edge of the motor piston, 1, first closes the exhaust-ports, 8, the air-discharge ports, 9, in