The AUTO -MOTOR JOURNAL.

The Motorist's Journal and Directory.

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The long gallery (ball room) and moat of Little Moreton Hall, the doyen of Cheshire Magpies.

The AUTO MOTOR JOURNAL (YELLOW COVER)

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DIARY OF FORTHCOMING EVENTS.

British Events.

1911.
Nov. 3-11 .. Olympia Motor Car Show.
Nov. 20-25 Olympia Motor Bicycle and Cycle Show.

Foreign Events (Trials, Races, &c.).

Nov. 29 .. Vanderbilt Cup Race.
Nov. 30 .. A.C.A. Grand Prix Race.

Passing Events

Olympia.

The years pass quickly—so quickly indeed that they end almost before we are conscious that they have begun. Yet another has passed, and we have with us once again the event of the automobile year in the shape of the Olympia Show. It seems but a matter of weeks since that of 1910 closed its doors, but nevertheless it is a full twelve months since we were last in the hurly-burly of the great Show, and during that time much water has run beneath the bridges, both literally and figuratively. Year by year we hear much of that finality which is never reached, and as each November comes round we find the critics averring that progress can surely go no farther, to find a year hence that it is ill work prophesying without that exact knowledge which makes prophesy worth while. Twelve months ago many people told us that we had entered upon a period of stagnation—or virtual stagnation—in design. Human skill could take us no farther in the essentials, and we had been driven to the elaboration of details in order to furnish us with new talking points for the sale of our cars. Well, we are not concerned to dispute the point with those who hold thus, for if they adhere to their opinions after studying all that is new to be seen beneath the glass roof of Olympia, they can only be written down as singularly unobservant, or else as wilfully blind to the trend of progress. Exactly in what direction progress has been made during the year it is not our purpose to set forth here and now. The reader can gather that for himself by perusing the descriptive reports of the more interesting things to be seen at the Show and which appear on other pages of AUTO. It is quite enough for us to say that the year has been one of very material advance in many directions, and, we may say further, that the end is not yet. The inventive faculty in man never dies. It may lie dormant for a time, and then ensues a period of relative stagnation of evolution, but sooner or later it re-awakens, and once more we begin to move forward. Without precisely committing ourselves to the opinion that the lean years which ended the first decade of the century produced such a period, we may at least say that, compared with the years that immediately preceded them, they produced but little that added to the sum total of our knowledge of motor-car construction. True, there was progressive improvement all round, but it was of that insensible kind which leaves little impression on the observer. It would be futile to argue that the car of, say, 1908 was not a better vehicle than its predecessor of 1905, but in all seriousness we opine that there was nothing like the general improvement during those three years which the past two have given us. Here again improvements have been insensible in detail to the casual observer, but in their turn they have given us an advance which is little short of marvellous,

as everyone who has followed the process of development at all carefully must recognise. For that reason, if for no other, the current Show is really the most interesting of the series.

Of the concrete lessons of the Show it is full early to speak. It has scarcely opened its doors yet, and a function of such imposing importance to the industry and the movement at large is not a thing upon which to base definite conclusions without careful examination. Will it prove as attractive to the public as in preceding years? Will its effect on business be as great as heretofore? Will the motorist take as kindly to innovations as their sponsors hope and believe? These and many more questions will have resolved themselves a week hence, but at the moment their fate is on the knees of the gods. Therefore, the most we can do now is to wish the Show and all concerned the measure of success they desire for themselves.

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Political J.P.'s

The resumption of Parliamentary sittings has been heralded by the wholesale appointment of Justices of the Peace, most of whom belong to the political party which now holds the reins of power, the underlying reason, no doubt, being the promise extracted from the Prime Minister that a day should be set apart for the discussion of why and wherefore a number of estimable gentlemen in all parts of the country are debarred from receiving the due reward of their services simply because a stiff-necked Lord Chancellor happens to consider them inept and incompetent for the administration of justice! The Ministry is unwishful of incurring the censure of its adherents, and appears to have taken a short way out of the difficulty in which some of the more zealous of the party partisans have landed it. Therefore the local butcher and baker and candlestick-maker have found their names figuring on His Majesty's Commission of the Peace in wild profusion.

We of the AUTO. have no politics so far as this journal is concerned, and it is on general principles that our criticism is levelled against these appointments of what we have advisedly called the inept and the incompetent to hand out the particular brand of "justice" affected by the Great Unpaid. We would hasten to say that we do not know a single one of the gentlemen who have doubtless been made happier by the permission to add the magic "J.P." to their names, and for all we know many of them are men of sound and mature judgment, and even possibly there may be some among them who are qualified for magisterial duty by legal training. But even if they were all lawyers—even if each one of the hundred or so whose appointments have been gazetted during the past couple of weeks possessed all the qualifications of the High Court Judge, we should still say that they were appointed under an entirely wrong principle and against the best interests of even-handed justice. For if these appointments mean anything at all, they mean that the right to dispense justice is not one that is conferred on the individual because of his eminent suitability to discharge the functions of a magistrate, but that he has done such service to a political party that he must be rewarded in some way, and that the best reward he can be given is that of the right to juggle with the liberty and property of the lieges! If this is not damnable doctrine then we give up the attempt to figure out what is. A man who has fought an unsuccessful election and spent money in doing it; one who has created a record by taking the chair at an unheard-of number of political meetings; the one who struck the brilliant idea of sending out bill-posters by night to cover up the election addresses of the enemy—these are the kind of people to whom a grateful party gives the right to sit in the seat of judgment. That the stream of justice should be thus polluted is—well, there is no word fit for polite ears that will describe what every level-headed citizen must think of it all.

If the justice of the Peace is to be appointed solely as a recognition of work done for whichever political party may happen to be in power, why not extend the principle to our High Courts and the County Courts? If the fountain of justice is to discharge a muddy stream, we might just as well do the thing properly and put all the judicial appointments up to auction. We are getting well on the road to this, for once the principle is publicly and solidly established that political service is to be rewarded by judicial office, there is no saying where it is likely to stop. Doubtless, it has long been covertly recognised that these appointments were made more or less by political merit, but never has it been so publicly held up as a laudable principle as it is at present, when in response to party pressure even so strong a man and so sound a lawyer as Lord Loreburn should have had to come obediently to heel. As motorists, apart from any feelings we may have as ordinary citizens, we cannot help viewing these political appointments with grave misgiving. We are so accustomed to "Justice's justice" that we had begun to imagine that nothing could well be worse than the ignorant and intolerant vagaries of the average magisterial bench when dealing with motoring cases. But so long as the Lord Chancellor of the day was allowed some discretion in making his appointments, the question often resolved itself into making choice of the lesser evil of a number, and this discretion often resulted in our benches being manned by the most suitable of an unsuitable lot. With that discretion removed, the manning of our benches is bound to become worse and worse, and we shall get on them men of the "'Ere's a stranger! Let's 'eave a brick at 'im" type. If we substitute the word "motorist" for "stranger," the analogy can be all too easily seen. But the whole nauseating job, bringing the administration of "justice" into the political arena, disgusts us!

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Taxicab "Extras."

On another page of this issue of AUTO. will be found an official communication from the various London cab companies, representing between them nearly seven thousand vehicles, which sufficiently indicates their attitude on the vexed question of "extras." Further than to say that until proper legislation has taken place to remedy the present impossible position we entirely agree with the points of view set out in this letter, we need make no comment upon it—we have already sufficiently expressed our opinions upon the dispute.

We should like to think that the appointment of the travelling inspectors to which the letter refers will work the desired reformation of the men, but we frankly have our doubts. It is manifestly impossible for these inspectors to detect more than an infinitesimal number of attempts to withhold monies from the companies, though their very presence in the streets—or the knowledge of the men that the inspectors may be about—may have a wholesome moral effect, and account for a good many of the "extras" reaching their proper destination. Whatever the outcome of it may be, we applaud the action of the companies and wish the scheme success, not only on their own account, but on that of the cab-using public.

The Road Board and its Work.

Last week the first report of the Road Board was issued as a White Paper, covering the period from May 10th of last year to June 30th of this, and records simply preliminary steps and provisional conclusions, the report stating that nothing like complete data regarding the condition and requirements of the national highways is at the Board's disposal to enable final conclusions to be reached.

Although the Treasury estimates of the amount of money likely to be available for allocation by the Board during the current year foreshadowed nearly a million and a quarter sterling, the Board decided to work upon the basis that the sum at its disposal would not exceed the round million, and the advances made or indicated to local authorities up to the 30th June last have been fixed on the assumption that this amount would be available. That the Board's estimate was a conservative one is indicated by the fact that up to July 8th the amount actually credited to the Road Improvement Fund was £1,161,345, the whole being derived from the petrol tax and motor car duties. After traversing the policy of the Board with regard to the question of the proportionate amounts to be spent in England, Scotland, and Ireland, the report goes on to deal with matters of general policy. The Board early determined that it would not at present embark on the direct construction of new roads, or appoint any staff for the purpose of such work of construction. It appeared to the Board to be sound policy to endeavour, in the first instance, to make the most of existing roads, and to improve and utilise these to the best advantage. Moreover, it was decided as a matter of general principle that it would not be advisable to begin by selecting for assistance a few large works in a limited number of places, but that the immediate and ultimate benefit of the Road Improvement Fund would be enhanced if in the first instance grants were widely distributed. This would be to ensure the initiation of improvements in a large number of counties, and the grants would not only provide financial assistance to useful works, but might also act as a stimulus to improvements by all local authorities. There is only one danger in such a policy as that of the Road Board, and that is that by following it out to its logical conclusion it might easily mean that a great deal of money would be wasted in patching to the benefit of nobody but road contractors. In this case, however, the allocations of the Board have been so wisely handled that this danger does not, so far, seem to have materialised.

* * *

The Road Surface Question.

In the matter of road surfaces, the report has this to say: "The condition of road crusts is a most urgent problem. Upon that depends both the alleviation of the intolerable and injurious nuisance arising from mud and dust, and also the mitigation of the burden of increasing cost of maintenance which is creating such widespread apprehension. Many miles of important roads in nearly every county are not constructed or surfaced so as to be suitable for motor traffic; and, on the other hand, the motor traffic, which on surfaces properly constructed and bound with waterproof bituminous binding material, probably causes less damage and wear than is caused by horse-drawn traffic, is destroying and wearing existing water-bound road surfaces in many districts to such an extent that the cost of the frequent renewal which they require to keep them in a fair condition imposes on the ratepayers a considerable burden."

This is all very interesting, but what we should like to know is why these local authorities keep on renewing the surfaces of their water-bound roads with the old and admittedly inadequate material. If, as the report states, these surfaces are renewed "frequently," then it seems to us that either the local council, which is not expert, or its road surveyor, who is supposed to be, is guilty of misfeasance.

But to return to the report itself, which goes on to say that, in the light of what we have quoted above, the most pressing and immediate need at the present day is to encourage and assist highway authorities to strengthen and improve the crusts of rural and suburban roads without delay, so as to secure satisfactory surfaces for the requirements of modern traffic, to alleviate the dust nuisance and to check the waste that is being incurred. Therefore, the Board have endeavoured to secure by their first distribution of grants the provision of crusts strong enough to carry the traffic, and smooth, dustless and mudless surfaces, constructed so as to last the longest possible time without renewal. In this connection they have been advised by their Advisory Engineering Committee that in order to obtain strong and durable surfaces it is essential to use some bituminous binding material on all important roads which have to carry heavy and fast traffic. Progress in this direction must, says the White Paper, be cautious and tentative, but there is a strong and general consensus of opinion among road engineers that the adoption of bituminous treatment is advisable.

* * *

Applications and Grants.

Up to June 30th last applications for advances were received amounting to £7,870,459, of which £3,515,034 is for improvement of road crusts; £2,698,629 for road widenings and improvement of curves and corners; and the balance for such purposes as road diversions, reconstruction and improvement of bridges and new construction. Of these aggregate sums England and Wales account for £5,650,020; Scotland, £929,336; and Ireland, £1,291,103. Relatively to its population and the amount contributed by way of petrol and motor taxes, it will be noticed that Ireland has been by no means backward in asking for a full share of the Road Board's money. Up to the date in question—June 30th—the Board had made grants aggregating £263,324 and loans to the amount of £7,500, while in addition grants totalling £408,000 have been indicated to various local authorities, and the details of the works towards which the grants are to be made are under discussion with the authorities concerned. The figures quoted are of the utmost interest because of the light they shed upon the great problem of our roads. Taking the amount realised from the taxes apportioned to highway purposes—which incidentally come out of the pockets of a single class of road user, the motorist—we shall see that to carry out works of pressing urgency alone some five years must elapse before sufficient money will have passed through the hands of the Road Board to enable it to make grants in aid of these necessary works. That is, assuming that all grants will be made out of revenue. Another policy is possible—that of raising the money wanted for these urgent works by means of a loan, but whether the Board will do it in this way remains to be seen. Another reflection that will strike most people is that if it is going to cost a round eight millions to put our main roads into a state of passably good repair, the highway authorities must have neglected their obligations in a most shameful manner in the past.

INCIDENTALS.

WHATEVER important events may happen at any time, such as the manufacture, by a well-known British motor firm, of a road-louse, to compete with America in our own home, or a sudden and general return to poppet-valves or crinolines, it is most important for a leading journal, such as the one you are reading, to be able to point to a previous number, in which the said happening was foreshadowed. Please carefully note, therefore, that in the last number of the AUTO. it was stated that in "a few years we may see our own roads left derelict, and all our former street traffic literally in the air." I wish it to be clearly understood that I am rubbing this in entirely on my own, and in no way because I have been prompted to do so by the Editor. My initiative, in fact, is due to an invention, recently brought to my notice, which the inventor has every reason to believe will not only effectively deal with the dust problem once and for all, but incidentally render the existence of the Road Board as unnecessary as the two buttons at the back of a tail coat; not that I think that Rees Jeffreys need look out for another job yet awhile.

I HAVE the drawings of the misguided designer in front of me, and although I am not at liberty to give away the details until a great Coventry firm has decided whether it will give up manufacturing road trains in its favour, or not, I may just mention that the basis of the machine will consist of,——no, I really ought not to tell you; I will only say that a new material has been discovered, capable of storing up energy derived from the varying densities of the atmosphere in conjunction with their electrostatic charges. The machine will be noiseless and smell-less, merely giving off ozone; there will be no complicated engine, with its noisy poppet-valves sounding like hammers struck on an anvil (I know they sound like this, because Mr. C. Y. Knight said so), or even slide-valves to shake your teeth out (different authority this time). However, time will show, as the housemaid said; meanwhile, you will be surprised to hear that a little money is, at this juncture, required to complete the experiments, and I consider that the B.P. should rush in like one man and prevent any foreign nation taking an interest. It is, I understand, guaranteed that there are no helicopters' or founders' shares in this connection.

TO-DAY, the great Motor Exhibition of 1911 will once again open its doors at Olympia to educate the motor-interested public in what is proving itself to be the greatest and most revolutionising industry the world has ever known. There are, of course, various specially attractive features which you must be sure not to miss, and after the Exhibition I shall be in a better position to tell you what they are when I have seen the show myself. As may be gathered from the very able accounts we have given of the various firms' novelties, I have had no difficulty in obtaining information in every case except one. There is, however, one firm that has surrounded its stand with a sort of "Hansom Cab Mystery," absolutely refusing to state what the improvements in its chassis will consist of, in fear, forsooth, that some one will be enabled to rush off and break their recent startling record. This firm, I may add, had the nerve to show a polished chassis *only* at the last motor show; I shouldn't be surprised if it is found that their stand this time will consist of nothing but a gold casket containing a copy of their order-form and three years' guarantee. A bit thick, don't you think?

I CANNOT imagine why it is that some people are so keen on having it thought that they were responsible for making the first six-cylinder car. I should say the chances are that so early a "six" was as full of defects as a second-hand steam car and hardly a matter to be proud of. It is only during quite recent years that the peculiar and inherent difficulties attending the successful manufacture of six-cylinder engines have been overcome even by the best makers, whilst the first few examples of this type, though encouraging, could hardly be called satisfactory.

AS times goes on I get to hate more and more the unnecessary hooting of hooters in London. It is seldom realised how little of this noise is actually required if only the rule of the road and other users' convenience are decently considered, At least 75 per cent. of such signals could be avoided if, as we constantly suggest in these pages, drivers were informed by street signals that they must, on approaching side streets, &c., either give way or expect others to give way, as the case may be. Then again a large proportion of this noise is due to more or less fruitless attempts to shift the slow traffic from the crown of the road in order to let faster traffic pass. A certain amount of interest is being taken by the police in this last point now, but so far it is not possible to notice any improvement. The law which requires a motor driver to sound his hooter on overtaking another vehicle is, in London, absurd, for, when driving along Piccadilly or Victoria Street, one would never cease from making such signals. Why should the man in front want to hear you are approaching behind? Provided he kept close in to his near side, and, in the event of wishing to turn across the road, *looked* to see whether all was clear before turning, the occasion for the motorist behind to indicate his presence would very seldom exist. Obviously, special conditions will arise from time to time, requiring special treatment, but the principle ought to be accepted that a driver should refrain from changing either his direction or velocity, or, in fact, from doing anything to interfere with the existing conditions of traffic around him, without first giving sufficient indication of his intention to do so, and also waiting reasonable time.

THERE were no signs of a spirit famine at the Motor-Aviation dinner on Monday last, at which Sir Marcus Samuel, one of the hosts, uttered a warning regarding the grave danger to our supply of petrol owing to the lack of storage facilities and sensible regulations of the Port of London; it appears that three days fog would be sufficient to scotch the entire supply of spirit for London. Speaking of Scotch reminds me that the occupants of L table were almost indecently cheerful, in spite of the talk of spirit famine which they were rather precipitating than otherwise. Mr. Armitage, in a very witty speech, in proposing the toast of the Houses of Lords and Commons, as usual, ineffectively attempted to hide his own politcs. Mr. Roger Wallace must have raised the host of the evening to the seventh heaven of delight by saying that so long as he gave money to further the ends of the Aero Club his health would continue to be drunk. Wigs by Clarkson. Dresses by Lucile. Spoons by Ernest Hutton. Ramblings by Harold.

"SEARCHLIGHT."

UNCONVENTIONAL PORTRAIT OF THE WEEK.

MR. E. DE RODAKOWSKI.

"RODA," as he is familiarly known by his intimates, is an essentially modest man, though in the days when he officiated as Clerk of the Course at Brooklands, even those who knew him best would hardly have imagined this to be the case. But in very many cases the necessity of living in the limelight which falls upon the public man is apt to result in the gathering of an entirely erroneous impression of the personality of the man concerned. So it is with Mr. de Rodakowski. Unquestionably a "Man of Moment," not only by reason of his long association with Brooklands, but by that of his present headship of one of the longest established and largest of the firms which cater for what we may call the incidental wants of the motorist. He himself is one of the last to recognise this, and declines to know himself as of the slightest importance in the world of automobilism. That being so, the task of writing anything like an adequate biographical sketch of "Roda" becomes very much akin to that of the Israelites of old, who were set to make bricks without straw.

After all, it is not so much what any given personality may have done in his early youth or before he became associated with the movement to whose concerns AUTO. is dedicated that matters so much, as what he has done since automobilism claimed him as its own. Mr. de Rodakowski's association with motoring may be said to date from the time when he was concerned with Mr. Locke-King, the maker of the Brooklands track, in business in Egypt. Exactly when the idea of the track began to take shape history does not record, but it was in the middle of the last decade that actual work was begun on the great autodrome at Weybridge, and during the years that it slowly progressed towards the goal of completion Mr. de Rodakowski was actively engaged in superintending its construction, maintaining that thorough-going, enthusiasm which always marked his conduct of the affairs of the track in later days in face of every difficulty and disappointment. He had from the very first an unbounded confidence in the future of Brooklands, and if the track failed to realise all his expectations it most certainly cannot be laid to any fault of his own.

It is a matter of history now that he acted as Clerk of the Course and manager of the new track from the time of its opening in 1907 until he relinquished his post in 1909, later, in 1911, to return once more to automobilism as managing director of United Motor Industries. During the time he managed the affairs of the track, he made himself exceedingly popular with competitors and public alike. Indefatigable in the carrying out of his duties, and anxious above all things that the meetings should run like clockwork, he was perhaps at times inclined to rub competitors the wrong way, but no one minded it because all who came in contact with him knew that underneath the zealous official was concealed the personality of the very best of good fellows.

Although he has relinquished the actual management of the track, he has by no means lost interest in its affairs and still retains his membership of all the Brooklands committees, and even if he cannot devote himself as fully to its affairs as in days gone by, his heart is still with the enterprise he did so much to create and foster.

Before he made England his home and honoured the country by becoming a naturalised British subject, he made a name for himself as one of the most dashing cavalry officers in the Austrian Army. He is a thorough all-round sportsman, a straight rider to hounds, and is a formidable man to face on the polo ground.

E. K. S. RAE.

CAN TAXICABS PAY?

THE following is the full text of the circular issued by the London Motor Cab Proprietors' Association (Limited), and subscribed to by proprietors owning 6,899 cabs, as follows :—

"The F.I.A.T. Motor Cab Co., Ltd., 495 cabs; the National Motor Cab Co., Ltd., 500; the St. Pancras Garage Co., Ltd., 50; the Sharp Motor Cab Co., Ltd., 100; the Quick Cab Co., Ltd., 61; the West London Taxicab Co., Ltd., 75; W. and G. du Cros, Ltd., 1,150; the Coupé Cab Co., Ltd., 100; the General Motor Cab Co., Ltd., 3,100; the British Motor Cab Co., Ltd., 1,000; the Waterloo Taxicab Co., Ltd., 102; the London Improved Cab Co., Ltd., 50; the Gamage-Bell Motor Cab Co., Ltd., 116.

"Taxicab Extras.

"It is common knowledge that friction arises between motor cab owners and their drivers upon the question of extras collected from the public, 75 per cent. of which is payable to the cab owners under official regulations. These extras are collected by the drivers, and the effect of the arrangement is thus described by the recently-appointed Departmental Committee, appointed by the Home Office, on taxicab fares :—

"'*Extract from Report of Departmental Committee.*

"'The whole system is unfortunate, as it leads an otherwise honourable class of men to appropriate, under a claim of perquisites, that to which they know they are not entitled, and which they pay over only when detected.'

"The Cab Proprietors' Association are no longer in a position to permit this state of things to continue, and they have decided upon the following method in view of the fact that within their knowledge a very large number of conscientious drivers are ready and willing to mark up the extras, and who express indignation at being classed with those men who only return their extras when their retention is detected.

"In future, therefore, a number of observers will be appointed by the Association itself, and not by individual owners as heretofore. The duty of these men will be to note and report all cases where extras are carried, as well as the nature of the extras.

"Details for checking purposes will then be furnished to each cab proprietor affected.

"1. In the event of the failure of a driver to report extras, the amount of the extras which he should have returned will be demanded from him and a warning will be administered to him.

"2. In the event of failure on the part of the same driver to return his extras on the second occasion, the employment of that driver will be suspended for *one day* and the payment of the extras demanded.

"3. In the event of a third offence on the part of the same driver, his employment will be suspended for *seven days*, and the payment of the extras demanded.

"4. If after these warnings the same driver offends on a fourth occasion, he will be dismissed from the service of his employer.

"By this course the Association hopes that the conscientious drivers will feel that they are no longer being confounded or implicated with those who only play on detection, and that the employers will receive the extras payable by the public under the official regulations for the payable maintenance of an industry which cannot itself continue to be a source of employment unless it can be worked on a remunerative basis."

MEN OF MOMENT TO THE PRIVATE OWNER.



LXXVIII.—MR. E. DE RODAKOWSKI.

The AUTO MOTOR JOURNAL

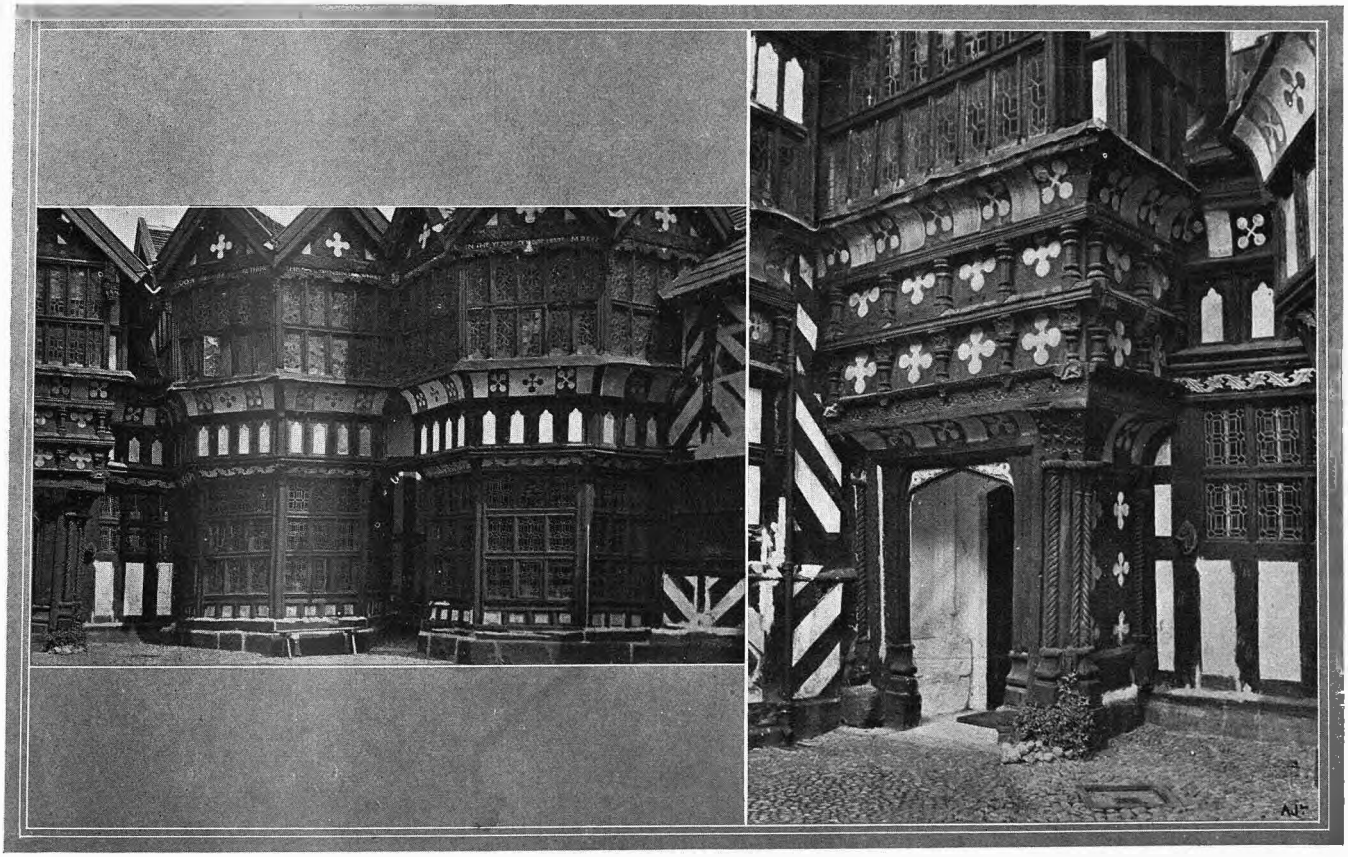
MOTORING AMONG THE MAGPIES.

By J. H. CRABTREE, F.R.P.S.

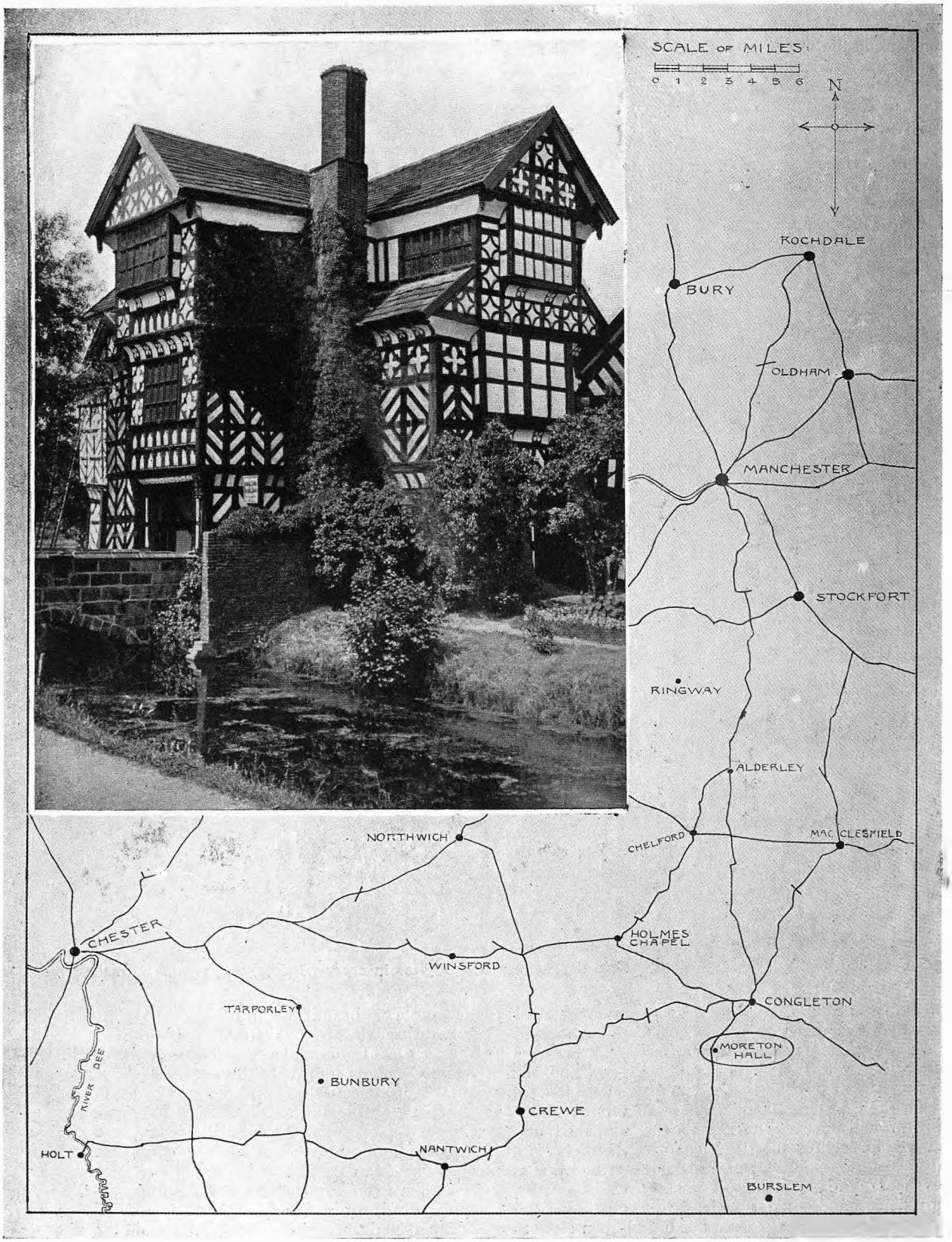
THE Cheshire magpies are not birds, but they are almost as pretty, and the motorist, I doubt not, will find them far more interesting. Few places in the world possess such a wealth of characteristic architecture as that small section of England included in the accompanying map. The picturesque black and white houses, which are the magpies of Cheshire, are worth coming far to see, and you will never regret your sojourn in these parts, for as a motorist you will find the roads and all else that you require in tip-top condition.

I have motored hundreds of miles in the county on roads that, even in winter, would put to blush many of the best known London streets as I last saw them, and, moreover, you will find that your Surrey traps and similar police attentions that you receive in some counties up North conspicuous by their absence here. "Prevention is better than cure" they say in these parts, and the authorities do their best to assist motorists; no wonder then that the Cheshire Plain has become a much prized rallying ground for car owners in the Midlands and North yearly, giving pleasure, charming scenery and fresh air to thousands. But its unique attractiveness comes from the black-and-white magpie mansions, country houses and cottages which stud the landscape in every direction. They are always beautiful, seen close to and from afar alike.

Little Moreton Hall is the doyen of the group and lies on the right, through a huge avenue of beech trees, as you drive up from the south along the Newcastle-Congleton road. All are welcome who care to inspect this romantic old home and if a boy be not there to oblige do not hesitate to open the road gate yourself and run under the beeches right up to the Hall. There is ample room for a dozen cars. The interior itself which for a mere trifle may be viewed is brimful of interest, with its nooks and corners which contain paintings, styles of decoration and gems of carving that are unique of their kind. The courtyard is commanded by bay windows containing 900 panes of glass in each; they were put up before the days of the window-tax and form a curio such as you will seldom see. A cobbled pavement leads to the portico, beautified with black-and-white trefoils and quatrefoils, by which the spacious dining-hall is entered. Lords and ladies have sat here with the Virgin Queen as guest. In the self-same room you may partake of coffee or tea, with rich Cheshire cream prepared on the premises. There is a ball-room, too, upstairs and a long wainscoted gallery whose high windows give a magnificent view across the cornfields. Queen Bess, they say, danced here in days of yore and you may well believe you hear the rustle of the frills and crinoline to the music of a simple country dance. Yet secret chambers and tortuous passages still remain to show the intricacy of life in those days. One at least delved under the deep moat, which belts the island on which the Hall stands. It comes to daylight about fifty yards away.



The famous bays of Little Moreton Hall. Note the many panes of glass in every window, and on the right the famous portico.



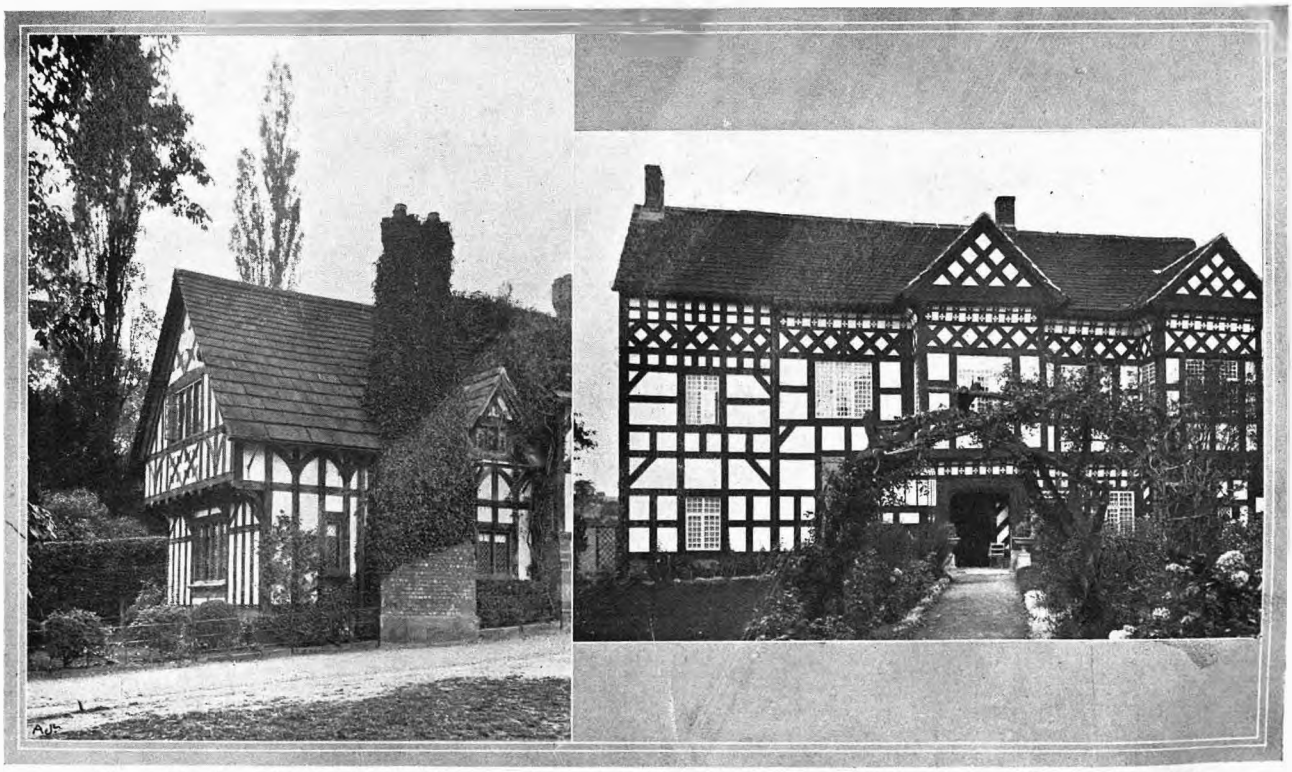
The gate house of Little Moreton Hall in Magpie Land.



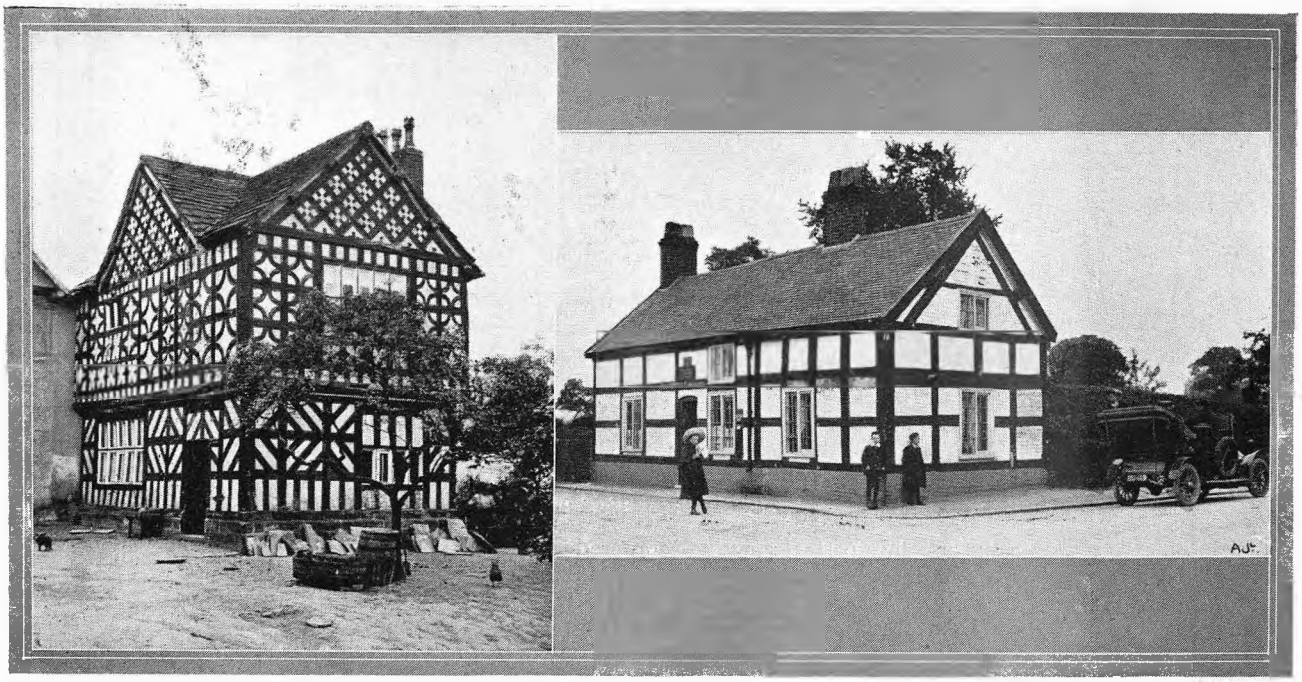
In a Knutsford Steeet (left), and on the right little Magpies of both kinds in the village of Over.

A delightful run awaits you on the road through Congleton to Northwich, and the tall spire of Astbury Church will show the way. It leads through Somerford Park and Davenport and on to Holmes Chapel, which is a piece of road worth travelling on at any season of the year. From Holmes Chapel the way is straight as the crow flies and, for the greater part, level as a "table-top." Many more magpies can be seen within a few miles of Northwich, for the country by the banks of the Weaver revels in its post and plaster ornaments. Arley Green, for example, easily reached through Marston and Great Budworth, is a veritable beauty spot on the Warburton estate, and all may go there—but on foot. This, however, is no encumbrance, for the car may be "rested" a short distance away. The Mere, decked with lilies and bordered with chestnuts; the Green with its magpies; the Hall in the Park, compose a sublimity of scenery found only at Arley.

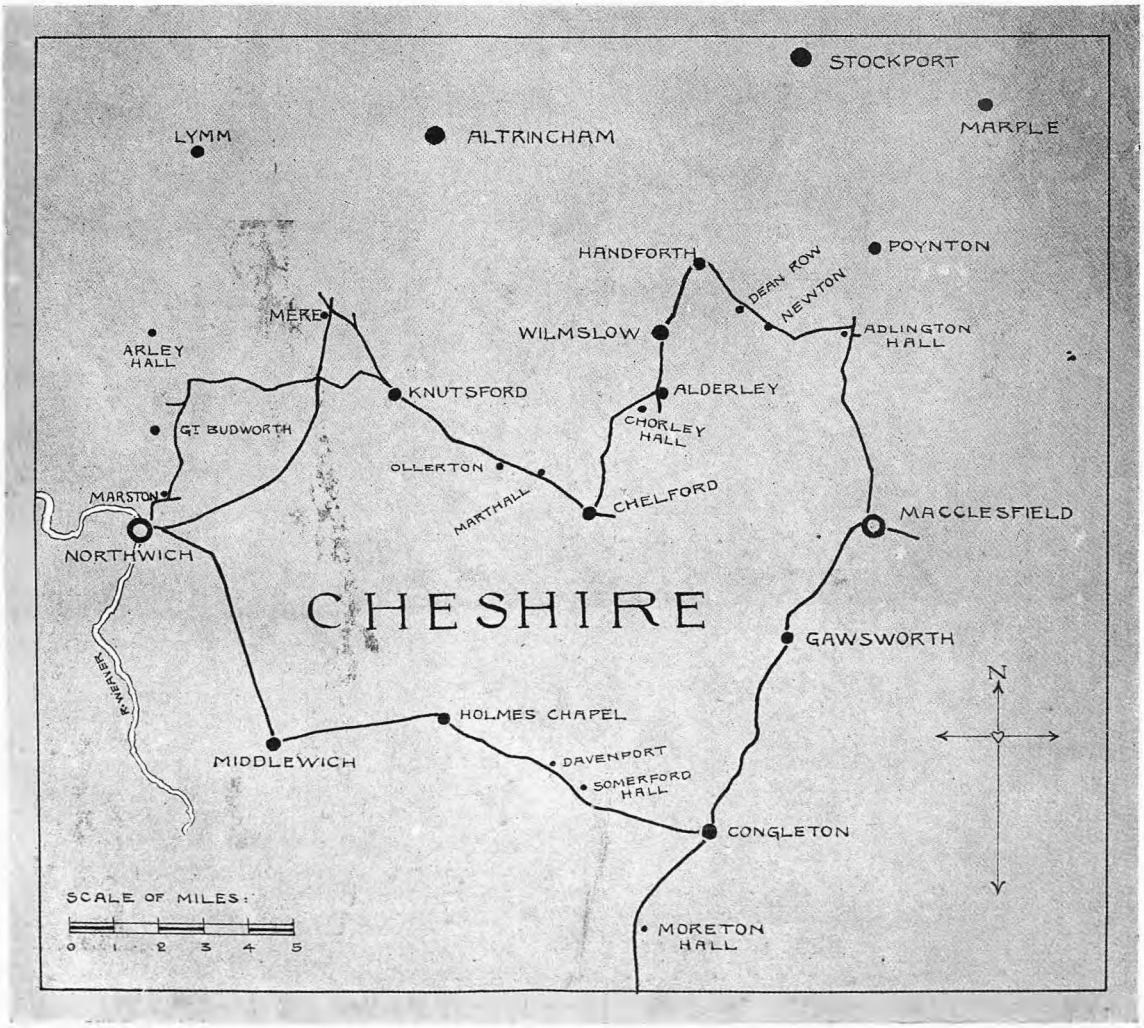
Then there is Knutsford, where you must take extra precaution in driving, for the number of children who flock promiscuously all over the road. They live in the magpies over the way, and you will have no wish to go fast whether they interfere with your progress or not. Knutsford lies in the heart of the county, and is the "Cranford" of Mrs. Gaskell's inimitable fiction. The novelist's home stands by the heath, and Higgin's house is there too, a beautiful ivy-covered cottage, whence the hero of "The Squire's Tale" passed to and fro with his horse's hoofs clad in woollen socks. Only a few magpies now remain in the streets of Knutsford; unfortunately



The gable of a Magpie at Arley Green (left), and on the right Handforth Hall, a famous Cheshire Magpie.



Chorley Hall, Alderley, a Magpie that is black and white all over. On the right Gawsworth Post Office.



MAGPIE LAND.—AUTO. "Key Map" as a guide to the Magpie country.

the growing commercial activity of this centre, indicated as it is by the presence of good garages, and other modern conveniences for travellers, has improved these relics of olden times quite out of existence. But although in the process many of its ancient crannies and corners have gone by the board, some of its "bottle-neck" stretches, where there is barely room for two vehicles to pass, remain, subjects for the attention of the Road Board.

Your way out of Knutsford lies up the Station Road, and your destination is Chelford, through Ollerton and Marthall. At Chelford Post Office you must turn to the left, along the wide but winding road through Chelford Wood, and very soon you will see Chorley Hall, another famous magpie, in the distance. Once the magnificent mansion of a celebrated Cheshire family, the Honfords, it is now adapted to the useful arts of husbandry.

Then come Alderley, Wilmslow. and Handforth village, in the centre of which you will turn down the Station Road to the right, and, passing over the railway bridge, pull up by the first group of cottages. A walk of fifty yards takes you to Handforth Hall, and its condition is so well maintained that you should on no account miss this typical specimen of the county's relics.

Adlington Hall is another delightful spot, which is reached after passing through Dean Row and Newton. And it has, besides, quite an historic interest of its own, for it figured prominently in the Civil War. Also, Handel, the musician, used to make the courtyard echo with the strains of the fine organ that this old-world mansion owns.

By the village post office at the cross roads, turn to the right and you will find yourself on the broad Macclesfield highway, but before entering that town turn aside again down a by-way to the right, which passes an old mill and leads into the Gawsworth Road. Thus you will avoid the crowded town and see one of the prettiest and most peaceful spots in all this delightful place. The old church, mirrored in a silent fish pond, the ancient magpie hall of the Fittons, a black and white rectory, and "Lord Flame's" resting place in the wood, await you along this last stretch of the road that leads once more to Congleton—a run of twenty minutes—and the finish of your little tour of "magpie-land."

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NOTES FROM NEW YORK.

The Society of Automobile Engineers is making good progress in its work in the cause of standardization and manufacturers of commercial vehicle wheels. Those who have adopted the Society standards are now being requested to permanently stamp the wheels with the Society's mark. Apart from the question of drawing up standard dimensions for wheels, the Society is giving its attention to the problem of grading material for wheels, with a view to drawing up standard recommendations.

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The New York Courts have been having quite a time lately with cases regarding alleged infringements of Patents covering motor car accessories. One of the latest is that brought by the Republic Rubber Co. against Morgan and Wright, who are charged with infringing patent No. 898,907, granted September 15th, 1908. This refers to what are known as "nobby" tyre treads. The plaintiffs, however, claim that the patent is not a valid one, having been antedated by bicycle treads illustrated and described in British Publications in 1896 and 1898, and also by the Duryea tread of 1901 and 1903. It will be interesting to see the decision of the judge in this matter.

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An unusual type of infringement case was heard in the New York Courts a day or two ago, when the Auto Spring Repairer Co. charged the Manhattan Storage Co. with infringing a patent for an automobile spring repairer. The defence was that the offending repairers were made up out of a job lot of parts for 1,500 repairers bought from the plaintiffs. The latter, however, maintained that the job lot of parts purchased were scarcely sufficient to make up 100 repairers, so there would appear to be a miraculous hand working somwhere.

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One of the latest announcements regarding self-starters is that the Prest-O-Lite Co. is putting such an appliance on the market very shortly. It will be sold at a popular price, and easily adaptable to any standard make of car. It will be operated by acetylene gas.

Nazzaro is not coming to America for the Grand Prize at Savannah after all, as he is too busy looking after the Nazzaro car which should soon be on the market. His place in the F.I.A.T. team is to be taken by Louis Wagner.

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It is becoming the custom in a good many States to change the colour of the motor car number plates each year. Hitherto Maine has had red number plates, but for 1912 the letters and figures will be blue on a yellow background. On the other hand, Wisconsin, which has been using green and white, will next year have red and white, the letters and figures being in white on a red background.

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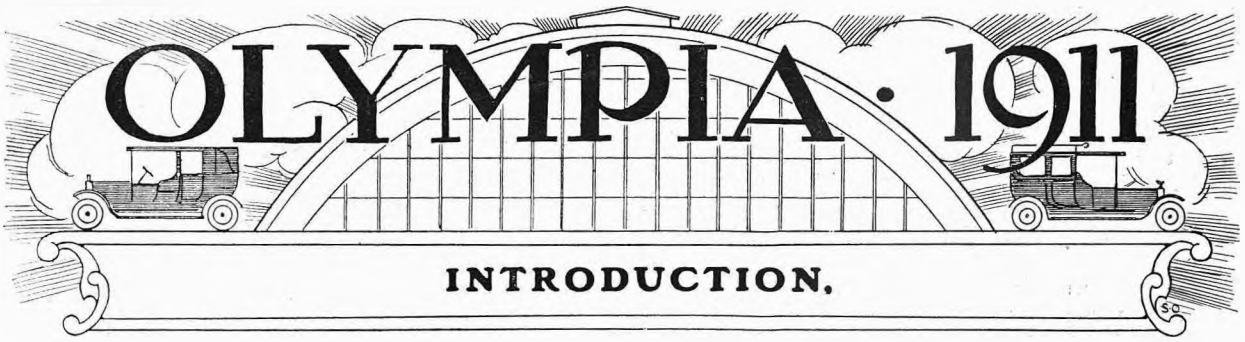
The arrangement of the brake and change-speed levers on cars fitted with high front doors has given much food for thought to designers. In two of the new Buick models the levers are arranged inside the door and enclosed in a sheath, the quadrants being shifted from the bottom of the levers to just below the handles, which makes a very compact and convenient arrangement.

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A good deal of credit for the increasing popularity of the electrical vehicle both for carriage and delivery van work in town may be safely ascribed to the useful propaganda of the Electric Vehicle Association of America. At the second Annual Convention in New York, on October 10th, there were about 300 men engaged in the industry present, and, after the election of officers, the rest of the day was spent in the hearing of papers on the various problems connected with the electrical vehicle. The next day a visit was paid to the Electrical Exhibition at the Grand Central Palace.

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At the recent Electrical Exhibition in the New Grand Central Palace, New York, there were nine exhibits of electrical vehicles. Visitors to the Exhibition were able to test the running qualities of the machines, as a portion of the second balcony was roped off and made into a miniature testing track, round which prospective purchasers were able to indulge in a trial spin.



INTRODUCTION.

OLYMPIA with its Motor Show is again with us. For the tenth successive year motoring records its history by an international exhibition of cars and accessories collected together under one roof, which for the nonce becomes the showroom and the central motor market of the world.

It is a great event, this annual display, and although it has many drawbacks, it does untold good without a doubt. For one thing, it is a sign of sustained enthusiasm beyond the ordinary enterprise of business, and motoring grows apace under such radiant interest.

You go to Olympia, and you are impressed from the moment you have parted with your shilling at the door. The first thing you see is a smart car, the next thing you see is another smart car, if anything a shade more to your liking than the first, and as you continue your journeyings along the crowded aisles, you see on every side still more smart cars, until you begin to realise that the whole place is full of machines that would just serve your purpose down to the ground.

Perhaps you do not intend to buy, perhaps you may even succeed in passing out through the non-return swing doors, watched over by the ever-vigilant Olympia policemen, without buying, but you will at least have been interested and enthused over the prospect of owning a car.

And indeed the cars of to-day are well worth owning. Automobile engineering may have sprung out of little, but it has at least grown into very much; it is a tree with many branches, and if the circumference of its trunk implies still youthful years, nevertheless does the extent of its shadow belie the fact. Few industries spread their ramifications so diversely as does this, and few industries can show such phenomenal achievements.

How little, unfortunately, the average owner knows of a car and the struggles that have led it to its present perfection. Why, in the very early days, not only had the manufacturer to contend with the difficulty of making a machine that would run at all, but the very user was as likely as not to be made acquainted with the fact that there were people in the world to whom it would give the greatest pleasure to shoot a motorist at sight. But enthusiasm and determination conquered, all the same, and to such purpose, withal, that the manufacturer found himself being pushed out of the frying pan into the fire. He had persuaded—with powers of persuasion above the ordinary—people to buy his cars, but he now found them coming back again with insistent demands that their new machines must be more powerful and less heavy.

Then began the war with the producers of material. Steel makers had never heard of such absurd requirements in their lives. They had not got the steel, and they had no intention of trying to make it; that is to say, most of them had no such intention, for it was only a few who foresaw the invincibility of the automobile movement and the enormous future of the car.

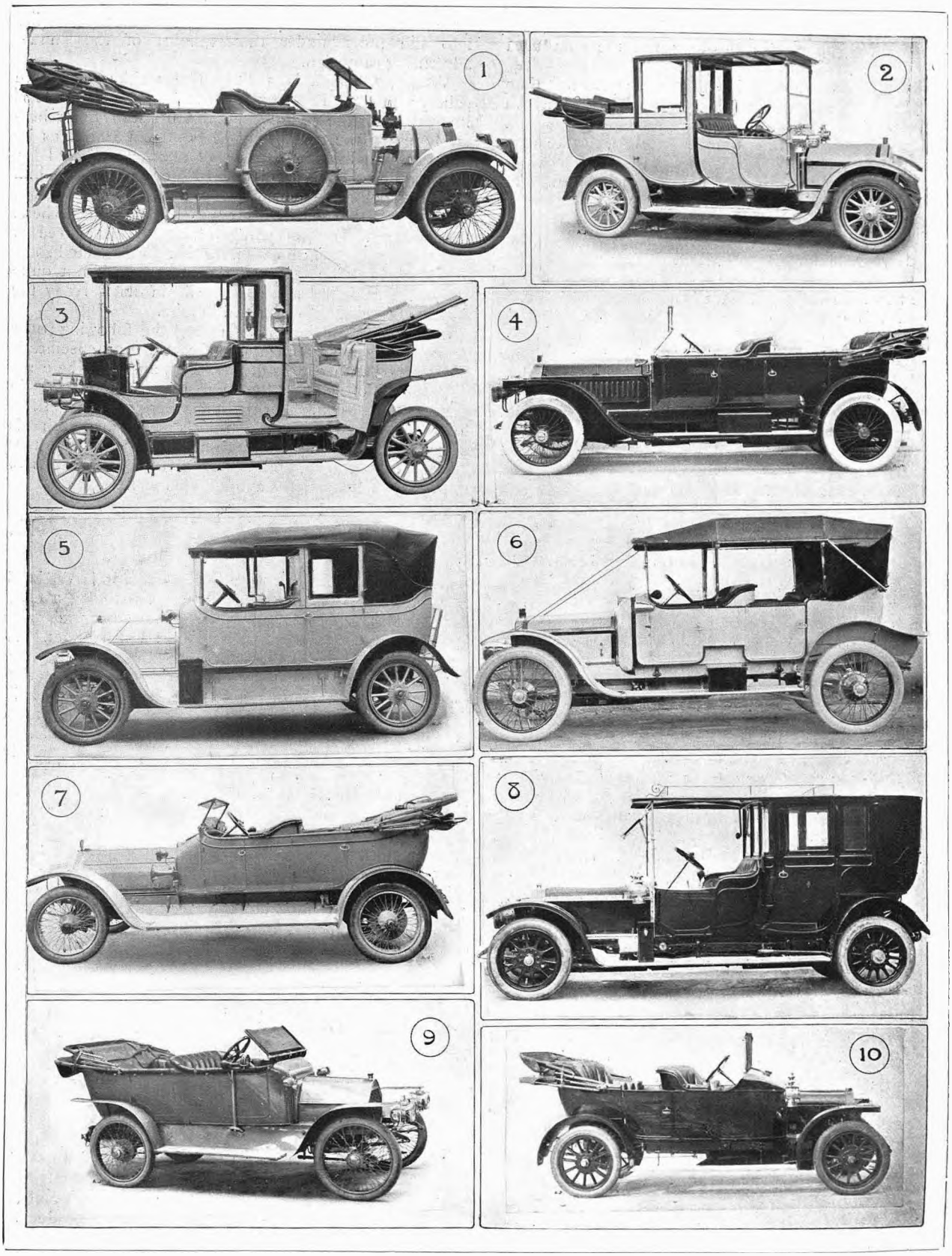
Gradually, materials improved and machines could be made more lasting, more efficient and more commodious without being much heavier. From vehicles having engines of six horse-power, a wheel-base in the neighbourhood of 7 ft. 6 ins., and a tub-like body that the French could not possibly have called anything else than *tonneau*, the motor car grew in length, power, and comfort. In the course of time, by dint mostly of hard-run races and trying trials, the majority of its weak spots were eradicated from its construction and design.

The completeness of the result is often shown in the indifference of an owner of a car towards its detail. At the present day the reliability of the modern car is not only taken for granted, but is actually so far removed from the scope of any reasonable competitive event as to make it most difficult to devise any sort of test for its endurance. Each year, manufacturers manage to make some further improvement, but now it is nearly always in the direction of satisfying some popular fancy—as the present cult of noiselessness. In an era when increasing refinement is perhaps the only compensation that the rush of civilisation has to offer its wearied humanity, there is small cause to wonder why the public demand silence, smooth running, and absence of vibration from their machines.

These things the manufacturer has always in mind; he thinks over them, and he does his best to find some way in which next year he can add yet one other good feature to his chassis without increasing its cost to the purchaser or detracting from its commercial possibilities to his firm. Thus is brought about a trend in current design, such as, for example, was first made manifest in the universal success of the four-cylinder engine, the subsequent introduction of six-cylinder engines on the more powerful luxury cars, the spread of the worm-driven live rear-axle among the chassis of 1911, and the present vogue of the chain-driven cam-shaft on the cars of 1912.

Add to this, the under-current of progress that has taken place in the perfection of less-apparent details, such as the synchronisation of the ignition, the improvement of magneto design, the extended application of pressure lubrication, and the fitting of adequate greasers to external joints, and you may appreciate that the life of a designer is just one more detail after another.

Moreover, once in a while the sword of Damocles falls, and the happening of the unexpected stirs the waters of experience to their depths. Such was the advent of the sleeve-valve engine in 1908. To-day, the motor industry is beginning to reap the first fruits of that shock, in the introduction of another sleeve-valve engine, and two



BRITISH-BUILT TOURING CARS FOR 1912.—Reading from left to right the names are: 1. Armstrong-Whitworth. 2. Wolseley. 3. N.E.C. 4. Napier. 5. Maudslay. 6. Austin. 7. Sheffield-Simplex. 8. Rolls-Royce. 9. Humber. 10. Argyll.

engines of the rotary-valve type. Well, it is all a sign of progress, and it is progress that is going to make history, for whatever happens in the long run the sum total knowledge is always increased by trying.

Some of these ideas, which are now for the first time receiving material expression in a thoroughly commercial way, were deemed impracticable in principle years ago. And perhaps they were impracticable then, for the only reason that we can see why the variety of obvious difficulties should apparently not be so great now as they were in the first instance, is because the increased experience of the designer of the orthodox type of poppet-valve engine, coupled with improved manufacturing facilities, enables him to foresee and prevent those minute hindrances that would be quite sufficient to put any of these new schemes out of court if they were neglected.

Yes, this question of trend in automobile design is fascinating always, and it is a pity, perhaps, that more users of cars do not make a hobby of its study. Those that do, at any rate, certainly increase the joy that they find in motoring, and, as a return for their greater understanding, are apt to obtain a higher level of performance from the car.

This year we have again endeavoured to make our Show issue interesting, helpful, and instructive to the majority, and have tried as far as possible to deal adequately and fairly with the exhibitors, without too much of the superabundant verbosity that is apt to flow so readily into the press under the stimulus of the annual advertising campaign.

Visiting Olympia is a little like visiting a picture gallery; rather a head-aching ordeal at the best. It is impossible for the well-meaning enthusiast to comprehensively regard the contents of the different stands as he wanders casually before them. The coachwork and the pleasing lines of a car will catch his eye and make him stop and look more closely, but it may be that an even more serviceable machine escapes his notice elsewhere. In writing a series of paragraphs on what to see at Olympia among the cars, we have therefore selected some new model or some particularly interesting, if not quite unique, technical feature that will in itself repay the interest of those who stop and inquire.

Also there will be found among the following pages some articles mentioning types of cars that are specifically built for certain classes of motorists, and elsewhere are illustrations of some of the more interesting features in modern car design. For example, there is a little article on the springs of a car, which deals with a subject that is perhaps of more importance to motorists than any other at the present time, and is one of the chief objects of study on the part of the automobile engineer.

THE AUTOMOBILE INDUSTRY AND THE BRITISH CAR.

SOME DISCURSIVE REFLECTIONS INSPIRED BY THE OLYMPIA SHOW.

JUST glance for a moment at this map of "Where British cars are made," and then reflect awhile on what motoring has done for British industry, and what the motorist thereby owes to the maker of the British car. In this map the names of cars only are given, but no chassis, however small or cheap, can be made without metals and the use of tools, nor is it ready for the road without some specimens of the coachbuilder's art. Add to these allied industries the enormous business of tyre making, the infinite variety of accessories that are designed exclusively for motorists, and the vast net of commerce that has grown out of the distribution of the essential *essence* alone, and you may guess how much of the white space that the map now displays would remain if the full catalogue of names, justly to be included in the British motor industry, were inscribed thereon.

How many cars are produced, and how much money is turned over in a year, it is impossible to say with any degree of accuracy, but the figure is certainly enormous, judged by whatever standard you please.

Output and Turnover.

One or two firms have an output of as many as two thousand cars a year, a few exceed half this number, and the rest take their places on a graduated scale that diminishes to a mere car a week. But quantity is not everything, nor is it necessarily an index to the financial magnitude of the undertaking. A couple of hundred cars is a business of very fair magnitude, when the price per chassis is in the vicinity of a thousand pounds, and it is purely a matter of preference whether this or the occupation of turning out a thousand cars at £200 a piece is the nicer sort of work.

Both serve a useful purpose, the one in upholding the prestige of the automobile as the vehicle *par excellence*, while the other breaks the ice with the man of moderate means, and is equally the best car that *he* could buy.

The Best Car.

There is, after all, nothing so good as the thoroughly suitable, and outside of an advertisement it is doubtful if *the* really "best" car actually exists. Among a class of vehicles ostensibly appealing to the same class of public there are, of course, differences that make one car better than another irrespective of the difference in price, but it can hardly be expected that the would-be motorist, whose requirements are not satisfied by that class at all, should feel as much concerned in these distinctions as in the relative merits of machines in an altogether different category. The manufacture of cars is, after all, hardly an academic pursuit, and when you bear in mind that a concern like the Ford Co. of America is planning an output of 70,000 cars for this coming year, you may readily believe that motoring makes its appeal to a great many people, not all of whom think alike when choosing a best car for their purpose. "It is not a bad car when you drive it with an open exhaust," said a racing enthusiast of the latest thing in multi-cylindered-silence—"and motoring in England is not much better than driving round a park, anyway," he added, as the memory of his last trans-continental run passed fleeting through his brain.

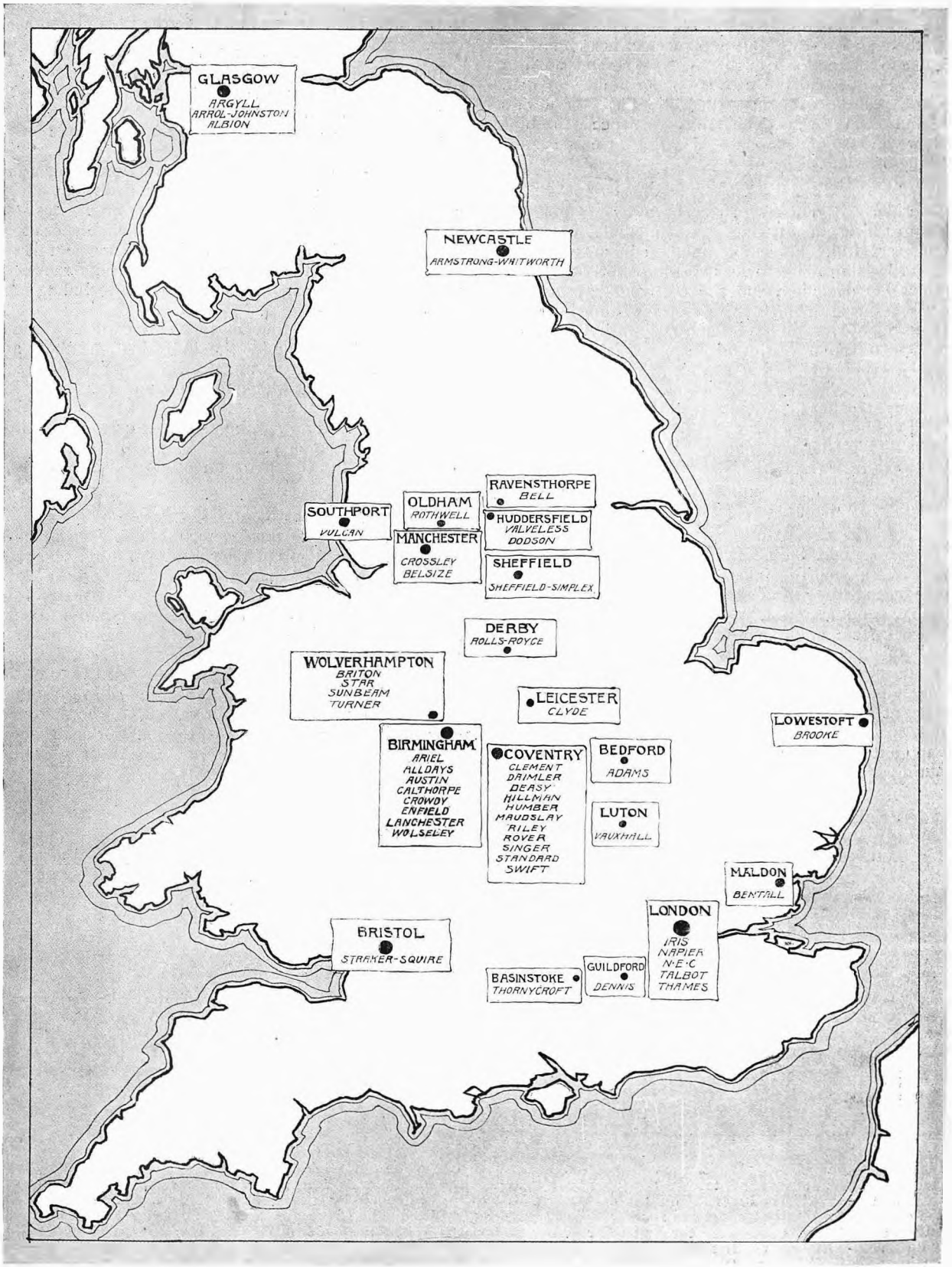
Yes, it is very much a matter of opinion, and what appeals to one man as most desirable is a drawback in the eyes of another. Never will individual opinion be unanimous, although the balance of public favour necessarily swings one way, as it has done lately, for example, towards the so-called small car.

It is a stroke of luck, or something more than superhuman judgment, to forecast this pendulum swing of popularity, and the maker of cars in great numbers has an anxious time of it; watching if his perfectly-good machine has hit the mark. Oh, happy the American, with our duty-free land to take up his surplus product!

A Free Market.

The British car must be good to hold the place it does in unrestricted competition, for with the best of men

WHERE BRITISH CARS ARE MADE.



Map showing some of the principal centres of the motor industry in Britain.

what touches the pocket goes perilously near to the heart and a long way beyond the mind.

Other things being equal, price is inversely as output, and it stands to reason that the big factory should produce the cheapest car. But a big factory is an immense expense in interest on capital outlay alone, and no firm here dare go beyond the capacity of its limited market. Abroad, and in America especially, there is always England over the water to help those very special machine tools we hear so much about to justify their existence by working overtime.

Special Machine Tools.

Consider the difference; you have twenty holes to make in a flange, and it takes you a minute a hole with an ordinary drill. For a few hundred pounds you can have a special machine built that will perform the entire work at one operation, and the cost of the process is thereby reduced to one-twentieth of the former charge. In a fortnight you will have done the work that would have taken you a year, and your special machine is idle unless you can find a surplus market for its over capacity.

There are better illustrations than this, but it will serve as well as another to show where the *big* savings are made in quantity production, and why an elastic market is essential to their realisation. It is open to any firm with average capital to install special machines by the dozen, but the day those machines stand idle the price of the car goes up.

Dead-Level Accuracy.

But, mark you, the difference is only a question of cost. The battery drill, to stand by the same poor example, is not a more accurate machine, for under the modern system of drilling holes through a pattern or "jig," this act has been raised to a dead level of excellence to which even the smallest maker must attain, or surely go out of business.

The fit of one moving part with another nowadays can be made as nice as you please, and the closer it is the more it costs, of course, but the great bulk of manufacturing processes for a car have a degree of accuracy that is common throughout the trade, and reaches a wonderfully high degree to boot. In these, at any rate, it is only by quantity production that the operations can be performed at less cost in one factory than in another.

Frames at 15s. Each.

Just imagine, for example, the number of chassis frames that must be made to bring their cost down to 15*s.* a piece; not much of a frame, of course, but it does duty in its own sphere well enough, and the public never grumble—at the price.

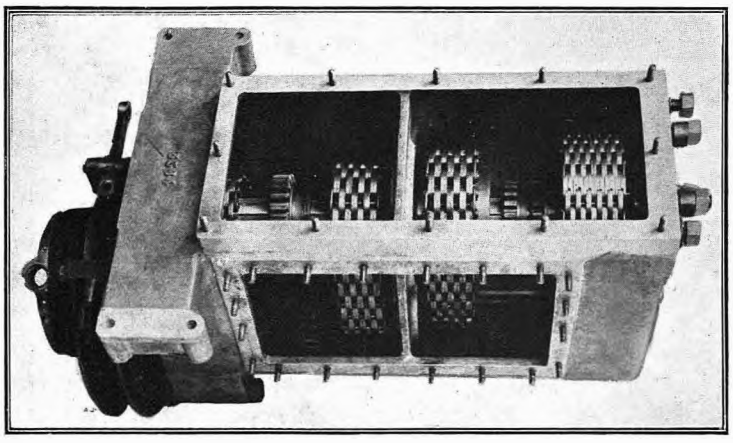
So much you can get out of quantity production and no more—a dead level, good, bad or indifferent as the case may be, but always cheap of its kind. Between one make of car and another there exist differences that only refinements can bring, and as refinement is an expensive luxury there is necessarily a difference in price between apparently similar cars, including the American.

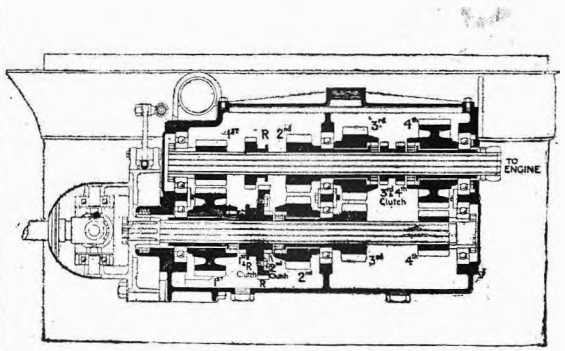
Each firm tries to draw unto itself a particular following, of which community the individual members are willing to spend just so much on the purchase of a car. This is the price at which the manufacturer builds his car to sell, and year by year, as he gets the proposition gradually "boiled down," he gives his customers a little more for their money. That is the outcome of experience and the benefit of an old-established business to the purchaser.

Refinement and the "B.W."

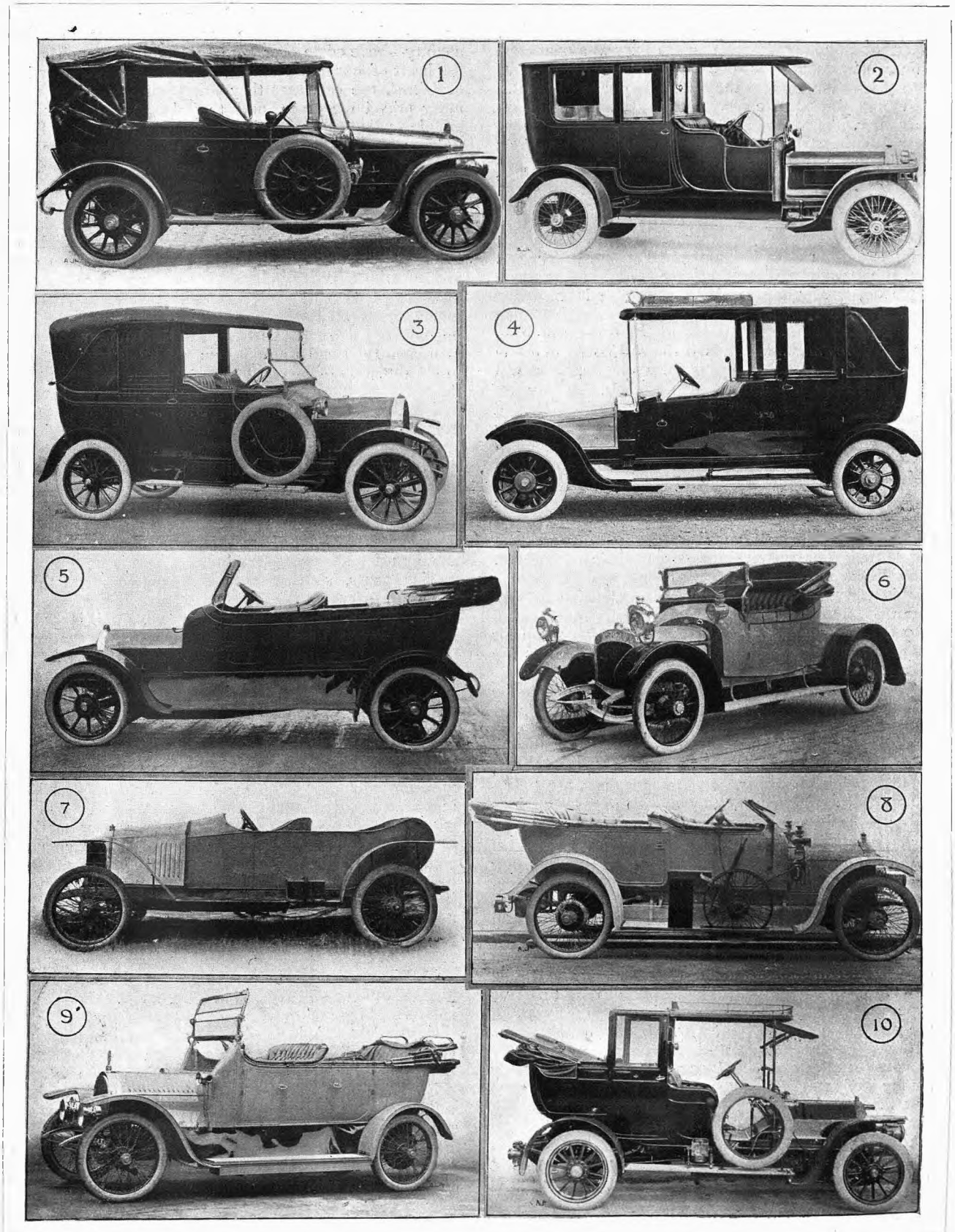
Those who sell to the very rich naturally spend more on making a good job of their cars than those who cater for the "moderate" masses. They can afford to take a week if they please on bedding a crank-shaft in its bearings or fitting a piston in its cylinder, and who shall say where those little attentions cease to return value in silence and life.

Of one thing, at any rate, you may rest assured. So far as they are of any purpose at all, you will realise their virtues to perfection in the British car, for nowhere else in the world are there so many good workmen whose labours can be engaged for the benefit of individual customers at a commercial price.





In the operation of the Maudslay chain gear-box, which is one of the novelties of the Olympia Show, two sliding clutches, consisting of small-toothed discs, serve to introduce the four forward speeds and the reverse. The position of these clutches is clearly indicated on the drawing, and they are controlled by a lever mounted on a gate-quadrant. In the operation of the first speed the reverse pinion moves together with the first-speed clutch and in the same direction. In the operation of the reverse these members move in opposite directions, which brings the reverse pinion into mesh with a spur-wheel on the first-speed clutch. There are four chains in the gear-box, but only two different lengths of chain and two different pitches are necessary, owing to the fact that the first-speed ratio is the inverse of the fourth and the second the inverse of the third. Each chain is carried by a fixed wheel and a floating wheel; the floating wheel is bronze bushed, so as to provide a suitable bearing surface when it is running free on the shaft. Both shafts in the gear-box are supported in the middle by an additional ball-bearing. The drive on every speed is indirect.



BRITISH-BUILT TOURING CARS OF 1912.—Reading from left to right the names are: 1. Vulcan. 2. Daimler. 3. Dennis. 4. Arrol-Johnston. 5. Star. 6. Thornycroft. 7. Vauxhall. 8. Straker-Squire. 9. Bentall. 10. Brooke.

THE AMERICAN CARS IN ENGLAND.

THERE has been much talk of the American invasion, and if for no other reason than to express a courteous "come in" to the visitor knocking at the door, it behoves us to at least inquire into the American car in England.

Ideas in some quarters seem to be a little vague on the matter. There is the impression, for example, that every American car is cheaper than any other machine; but the Americans, it should be unnecessary to remark, are under no such misapprehension. Over there, the Buyers' Guide of the year presents the prospective purchaser with a list of prices that ranges over very nearly as wide a scale as it does in this country, the only difference being that it is extended somewhat at the lower end. And the American regards price differences very much as we do, having, if anything, more faith in receiving value for extra money spent than the average British purchaser. To hear the maker of an American cheap car talk of his machine that is perhaps £50 more costly than another of apparently similar quality, you will begin to believe, if you listen long enough, that you are getting £500 worth of extra value.

The recognition of these distinctions *on the part of the American himself*, seems to us to be the vital point in the whole business, and the one to which the British purchaser would do well to pay most heed in his own interests. The Americans are thoroughly clever engineers; they know what they are about, as well as most people—rather better in some instances—and when they produce cars in their own country for the use of their own people, and sell them at prices ranging over a scale of figures that is very nearly, if not quite, as extensive as that covering the British and Continental cars in England, they do so well knowing that they can give value for money in each grade, and that it is not possible for the cheapest car to be also the best.

The most expensive American cars are not to be bought in this country, nor have they ever been placed on the English market; they cost, approximately, as much as the highest priced British machine, while the workmanship and the materials, from what we have heard, are also much on a par. In America, it must be remembered, a workman draws very high wages, and it is not possible for a firm to engage his individual attention on each individual car without charging for it; for which reason it would doubtless prove a very expensive proposition to manufacture there a machine with all the detail refinement of a Rolls-Royce.

As an outcome of this all-important fact, American engineers have evolved a genius for working with machinery, and the result of this is that their salesmen have all the time to cast about for a market sufficiently elastic in its boundaries to enable them to use that very expensive machinery economically by making it work all the year round on one particular job, of which it turns out, necessarily, vast quantities. Some years, when the crops are good, the demand for cars at home, especially among the farmers, is enormous, but the farmer is the first man to drop anything he can do without when times are bad. Then it is that manufacturing by machinery, to the extent necessarily practiced in America in the production of the cheap car, is apt to prove a most extravagant process unless some convenient extension of the market boundary can be made at the opportune moment.

England, being a free trade country, affords the most obvious solution to the American manufacturer's difficulty in this matter, which is why a few of the American firms—and at present there are only a few in this country—have come over here to establish branches in the heart of our home market. For the reasons already explained, the cars that they bring with them are the lower priced machines, and to judge American automobile engineering solely by that standard is a little like judging the American nation by the tourists that so conspicuously people the Charing Cross district of London during our summer time.

But, while it is important, and, to our mind, essential to appreciate the circumstances surrounding the American car in England, it is equally important and essential to realise the difference between the typical American car and our own. The American puts a large bore engine on to a light chassis, while the British and Continental manufacturers put a very diminutive motor into an uncommonly substantial frame. In England and on the Continent the trend of automobile design has been mainly in the direction of increasing engine efficiency, owing to the arbitrary, and, perhaps, artificial, standard imposed by latter-day competition rules. Be that as it may, however, the fact remains that the one idea of the British and Continental engineer has been, and is at the present time, to get the most power he can out of a given small bore.

As a result, the small cars of British and Continental origin have four-cylinder engines with bores down to anything as low as 60 mm., and make up for the deficit of area by using a long stroke or high compression and light moving parts, so that they may obtain extra high revolutions.

In America, this is not the idea at all, and it is for the reason that the American engineer has so little tendency to move of his own accord in the same direction as the British designer, that we suggested above that the trend engendered by our own competitions might perhaps be a little artificial in its character. The American engine more often than not exceeds 100 mm. in its bore, and just as often it has what we should call a short stroke.

In this country we regard the four-inch class, to which the 100 mm. motor belongs as practically the upper limit in dimensions for a really popular four-cylinder car. It is essential, however, to differentiate in a very marked way between the four-inch American engine, such as is employed on the American cars in England, and the better known British and Continental motors having a similar bore. The American manufacturer does not desire to obtain anything like the maximum horse-power from his motor that has been the one salient point in the success of the British and Continental cars to which we refer. The object of the American manufacturer in using a large-bore engine is to obtain a big turning effort at low speeds and by not overgearing or overloading his cars this translates itself into good acceleration and hill-climbing abilities. Particularly are these qualities noticeable when the car is in the hands of the average driver and touring on the normal English road, which seldom gives opportunity for the full display of those qualities that the highly developed British and Continental engines are best fitted to demonstrate. In a word, the American car is an uncommonly convenient machine to handle in traffic and on the English byways; out in the open it is less at home, but then America knows even less of Napolean roads than we do.

Also, American engines are for the most part quiet and smooth running and, again, this is presumably due to the fact that they are under- rather than over-loaded.

Not only does the American engineer build a light chassis, but the wheel-base seldom exceeds 10 ft., and the American coachwork is not ordinarily characterised by unduly massive construction. Besides being light, the American car is seldom high-geared, so that these factors both contribute to giving the average driver an impression that he has an exceptional mastery over the ordinary exigencies of the English road.

Technically, there is a feature of some interest in American car design in the presence of the gear-box just in front of the back axle. Although this practice is adopted in England on the Sheffield-Simplex chassis, it is quite common in America, and for some reason that is not altogether clear it seems to have endowed the average American machine with an extremely quiet second speed.

There is only one car on our American list, by the way, that has more than three speeds, and that particular machine, the White, is in many ways far closer allied to Continental practice than to the American type. At one time, the typical American car was associated with the epicyclic two speed gear and a system of control quite peculiar to itself, but this is now only the case with one or two cars like the Ford. Indeed, a characteristic feature of the later American cars on the English market is that they have the European system of control, with independent clutch and brake pedals, accelerator pedal, and sliding spur-wheel gears operated by a lever mounted in a gate quadrant.

What is perhaps the best known feature of American cars, from the purchaser's point of view, is the fact that they are sold complete with coachwork, hood, windscreen, and lamps, all of which accessories form part and parcel of the manufacturing scheme, and are as unalterable as the laws of the Medes and Persians. With the typical American cheap car, the purchaser is distinctly in the position of a man being told that he can "take it or leave it," but it is an unsuspected trait in many natures that, when thus presented with a cipher instead of an alternative, they suddenly discover that they are not so very keen on having yellow wheels and a striped body after all.

Of course, American cars are not always sold with American bodies, but for the most part the purchaser appears to get so much more for his money when he takes the whole thing complete that it is not usual to buy an American chassis by itself. And, speaking of completeness, this is, undoubtedly, the keynote of American design among the slightly more expensive cars this year. The Cadillac, for example, now provides its owners with an electric light installation, including a dynamo, thereby still further justifying the contention that it gives unrivalled value for money. This Cadillac car, too, it is only fair to remark, was the first American car to hold its own in the British market, and to establish a reputation for itself out of sheer merit. In the early days, the Cadillac "one lunger" was one of the best runabouts in existence, and although not particularly elegant in appearance it did truly wonderful service. Also, there was performed with this car a feat that has, as far as we know, never been duplicated, which was when Mr. F. S. Bennett had three of these machines dismantled into their component parts, out of which three other machines were erected at random. Every one of these "assembled cars" was started up without trouble, and was thereupon driven round Brooklands track.

The Anglo-American Motor Co., who formerly represented the Cadillac cars in England, now control the interests of the Overland machines, which have thus become very popular and are now thoroughly well-established. Incidentally, too, they have the largest range of models produced by any one American firm on the English market, the only other company having four different types being the Mitchell, who are also unique in representing the only 6-cylinder American car on the English market.

The Mitchell, the E.M.F., Flanders, Hudson, K.R.I.T. and R.M.C. are among the cars whose introduction into England recently has mainly been the cause of the war-cry of American invasion.

AMERICAN CARS IN ENGLAND, ARRANGED ACCORDING TO LENGTH OF WHEEL BASE.

Name.	H.P.	Bore and stroke.	Speed.	Wheel base.	Price (* car complete.)
				ft. ins.	£
Overland	15–20	94 × 114	2	8 0	215*
Hupmobile	12–14	83 × 88	2	8 2	180*
Ford	20	95 × 102	2	8 4	190*
Mitchell	15–20	92 × 133	3	8 4	225*
Mitchell	24	108 × 127	3	8 4	255*
R.M.C.	18–20	95 × 114	3	8 4	225*
Bedford	15–18	95 × 95	3	8 6	278*
Flanders	15–20	92 × 96	3	8 6	195*
Maxwell	22–26	102 × 102	3	8 8	25[illegible]*
Bedford	18–22	102 × 102	3	8 10	335*
Overland	20–25	102 × 114	3	8 10	250*
K.R.I.T.	15–20	94 × 102	3	9 0	210*
E.M.F.	25–30	102 × 114	3	9 0	260*
White (petrol)	20	95 × 130	4	9 2	385*
Stoddard	25	102 × 114	3	9 4	360*
Overland	25–30	104 × 114	3	9 6	325*
Hudson	25	102 × 114	3	9 7	375*
Hupmobile	15–18	83 × 140	3	9 8	225*
Cadillac	30	114 × 114	3	9 8	441*
Bedford	28–32	115 × 127	3	9 8	428*
R.M.C.	25–30	108 × 104	3	9 10	351 5s*
Overland	30–35	111 × 114	3	9 10	395*
Mitchell	20–25	94 × 127 (6-cyl.)	3	10 5	375*
Mitchell	35–50	108 × 127 (6.cyl.)	3	10 10	450*

A Tyre Section of the S.M.M.T.

THE first meeting of the new section of the Society of Motor Manufacturers and Traders, consisting of tyre dealers, met on the 16th ult., when all the important firms were represented. A Committee of the Section was appointed, and among the matters which they have to consider are the exhibition question with regard to the tyre section, the carriage of tyres by rail, the number of different sizes of tyres, and the standardization of rims.

The Open Door in Cyprus.

AN Order in Council has just been published in the *Cyprus Gazette*, notifying that for a period of two years from the 1st inst., motor cars, parts, and accessories, may be admitted free of duty into the Island.

Ladies' Day at Olympia.

TUESDAY next week will be Ladies' Day at Olympia, when, at the invitation of the Society of Motor Manufacturers and Traders, the Ladies' Automobile Club will pay a visit to the Exhibition. The restaurant grill-room to the right of the main entrance will be reserved for members of the club for tea on the afternoon of that day, from 3.45 to 5.30.

The A.C.F. and the Paris Salon.

UPON the invitation of the *Chambre Syndicale des Constructeurs d'Automobile* the Automobile Club of France has decided to extend its patronage to the International Exhibition of Automobiles, Cycles and Sports to be held in the Grand Palais next year.

AMONG THE CARS AT OLYMPIA, AND WHAT TO SEE THERE.

BRITISH SECTION.

Adams.—Compressed-air starter, which enables the engine to be started from the driver's seat by merely pressing a lever on the dashboard.

The new 6-cylinder car.

For further particulars see the AUTO. of August 26th, p. 914, and September 2nd, p. 940.

Albion.—The new 4-cylinder "fifteen."

Alldays.—The 6-cylinder 30–35 h.p. model.

Argyll.—The new single-sleeve valve engine on the 25-h.p. model.

In each cylinder a thin cast-iron sleeve, between the pistion and the cylinder wall, controls by a corkscrew-like movement the inlet and exhaust of the gases. Each sleeve is operated by a small half-time crank, and its motion is such that any point on its surface describes an ellipse during two revolutions of the engine.

The interconnected front and rear-wheel brakes on the 25-h.p. chassis.

For further particulars see the AUTO. of last week.

Ariel.—The new 25-h.p. model.

Armstrong-Whitworth.—The spiral-toothed bevel wheels on the new 6-cylinder. Wheels of this type were used long ago on the Wilson-Pilcher cars, which were among the earliest machines to have a reputation for silence.

The two new 4-cylinder models.

Arrol-Johnston.—The full elliptic springs with their transverse parallel-motion rods, which are standard on all models.

The new 11·9-h.p., which is to be sold at £285 complete.

Austin.—The full elliptic springs with hinged attachment of the lower half of the frame in order to give lateral security without auxiliary-rods.

Austin design and models remain unchanged.

Bell.—The 16-h.p. model, which sells at £395 complete.

The adjustable trough lubrication system.

Belsize.—The new light 4-cylinder model, which is to sell at £200. It has a monobloc 4-cylinder engine with detachable cylinder-heads. The sliding spur-wheel gear-box is erected with the engine on the unit system in a very interesting way.

Briton.—The new 11·3-h.p. selling at £252 complete.

B.S.A.—The B.S.A. car, which sells as a chassis at £250 and has a 4-cylinder new Daimler engine, three-speed gear-box and worm-driven back axle.

The arrangement of the transmission and back springs is very interesting.

For further particulars see the AUTO. of October 21st, p. 1146.

Calthorpe.—The new 12–15-h.p. selling at 255 guineas.

Clement.—The 14–18-h.p. model.

Crossley.—The changed design of the 20-h.p. model, which is now much stronger and has a separately mounted engine and gear-box. Formerly these were erected on the unit principle, as in the "fifteen."

Crowdy.—The Hewitt piston-valve engine, in which sliding pistons control the inlet and exhaust of the gases. These pistons are operated by a half-time crank-shaft and the setting is such that the force of the explosion, acting on the heads of the valves, becomes an increment to the turning effort on the main crank-shaft.

For further particulars see the AUTO. of April 29th, p. 450.

Daimler.—The vibration damper on the front end of the crank-shaft.

The interest in this lies in the fact that so much is accomplished by an object in which there is so little to see. The casing of the damper is the lower-belt pulley in the fan-drive, and inside the box is a set of steel plates arranged as in a multiple-disc clutch.

Periodic torsional strains in the crank-shaft, which manifest themselves as vibration at critical engine speeds, are damped by the revolving mass of the outer casing, through its frictional contact with the shaft through the clutch plates.

The new 20-h.p. 4-cylinder car and the new 30-h.p. 6-cylinder car, both with engines of 90 mm. bore.

For further particulars see the AUTO. of October 21st, p. 1143.

Deasy.—The new 4-cylinder car with the 90 mm. Daimler sleeve-valve engine and the new 6-cylinder model of the same type.

The inverted Lanchester type rear springs in combination with the ordinary semi-elliptic front springs, which gives very easy suspension for the passengers and the requisite steadiness for steering.

Dennis.—The new 20-h.p. model, with the 90 by 130 mm. engine.

Dodson.—The two-cycle valveless engine.

Enfield.—The new runabout model.

Humber.—The new 11-h.p. car that is to sell at £285 complete.

The new 14 and 20-h.p. models, with their worm-driven axles.

For further particulars see the AUTO. of October 21st, p. 1145.

Iris.—The back axle of the 15-h.p. model.

Lanchester.—The new 25-h.p. car, with the 4 by 4 in. engine.

The epicyclic gear, with gate control.

The Lanchester springs.

Maudslay.—The new chain-drive gear-box, in which silent chains transmit the power on all speeds.

Each pair of wheels is clutched to their shafts, as required, by sliding jaws controlled by a change-speed lever operating on the gate principle. The gate itself is an interesting detail.

The worm-driven axle and the axle-casing that is machined from the solid.

Napier.—Improved springing on the 15-h.p. chassis, and general refinement in design of this moderate-powered car *de luxe*, which sells at under £500 complete.

The 15-h.p. Colonial model.

The 6-cylinder 30-h.p. model, which sells as a chassis at £595; and the 45-h.p. and other high-powered 6-cylinder cars.

For further particulars see the AUTO. of September 16th, p. 993; October 21st, p. 1141.

N.E.C.—The tilting steering-wheel, by means of which the driver gains access to his seat from the off-side.

The starting handle on the dashboard.

The quarter-elliptic springs, by means of which the entire body is brought within the wheel-base.

Phœnix.—Central chain-drive on a car that sells at £175.

Pilot.—The friction drive variable speed-gear.

Riley.—The V-type twin-cylinder engine, with a bore and stroke of 4 by 5 ins.

Rolls-Royce.—The remarkable refinement of small detail that characterises the design and splendid workmanship of these cars.

The spherically-headed tubular torque stay enclosing the propeller shaft.

Rothwell.—The 15-h.p. model which sells at £350 complete.

Rover.—The new 4-cylinder "twelve," which sells as a complete car with a five-seated body at 300 guineas.

The new 4-cylinder "eighteen," with the 90 by 130 mm. engine.

Sheffield-Simplex.—The new 6-cylinder 25-h.p. model with the 89 by 127 mm. engine.

The sliding pedal accelerator, multi-core cable for the ignition circuit. Tilted magneto to facilitate inspection and adjustment. Combined clutch and brake-pedal. Spherically-headed torque-tube surrounding propeller-shaft, which also pushes the car. Gear-box in front of back axle.

The 45-h.p. gear-boxless model.

Further particulars in the AUTO. of May 13th, p. 494.

Singer.—The new 20-h.p. model, with a 10 ft. 9 in. wheel base.

Standard.—The method of water-jacketing the mixing-chamber.

Star.—The Star "six."

Straker-Squire.—The worm-driven axle for closed carriages.

The "fifteen," which is the only model made, now has a wider track, Eisemann self-timing magneto, and improvements in various other small details of design.

Sunbeam.—The new long stroke engines with dimensions of 80 × 150 and 90 × 160 mm. The cylinders are desaxe to the crank-shaft.

Swift.—The new 10–12-h.p. 4-cylinder car, which sells at £315 complete.

Talbot.—Improved sprags on all models, which automatically lift out of engagement if the reverse gear is engaged. This is a very important detail in the design of ratchet sprags, which if neglected in this respect are liable to cause damage in the event of the car being driven on the reverse after the sprag has been in use.

Thornycroft.—The new "eighteen," with a 4 by 4½ in. engine and worm-driven back-axle.

Turner.—The new 10-h.p. 4-cylinder petrol car, selling complete at £200.

The gear-box gives two speeds and reverse, and has the gears always in mesh.

Vauxhall.—The smaller and smarter radiator in front of the car, which has been rendered possible by introducing pump circulation for the cooling water. The multiple disc clutch using dry graphite lubricant.

The Prince Henry type 20.—A light design of the standard "twenty," but with special cam-shaft and valves designed to give maximum power.

Vulcan.—The 29·4-h.p. 6-cylinder car, which sells for £635 as a finished landaulette.

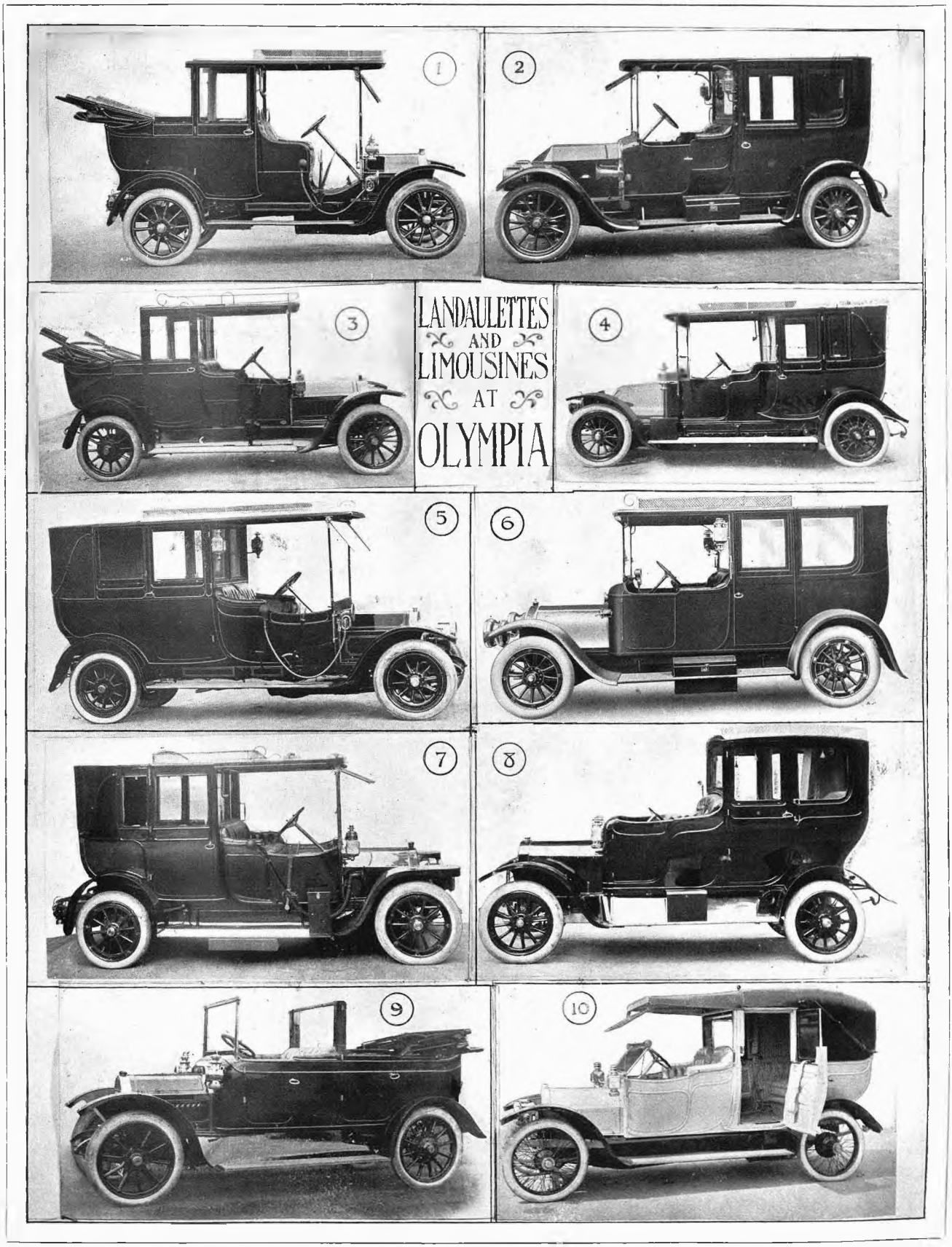
The new 10-h.p. car with the 4-cylinder Aster engine.

Waverley.—The 10-h.p. model which sells at £225 complete.

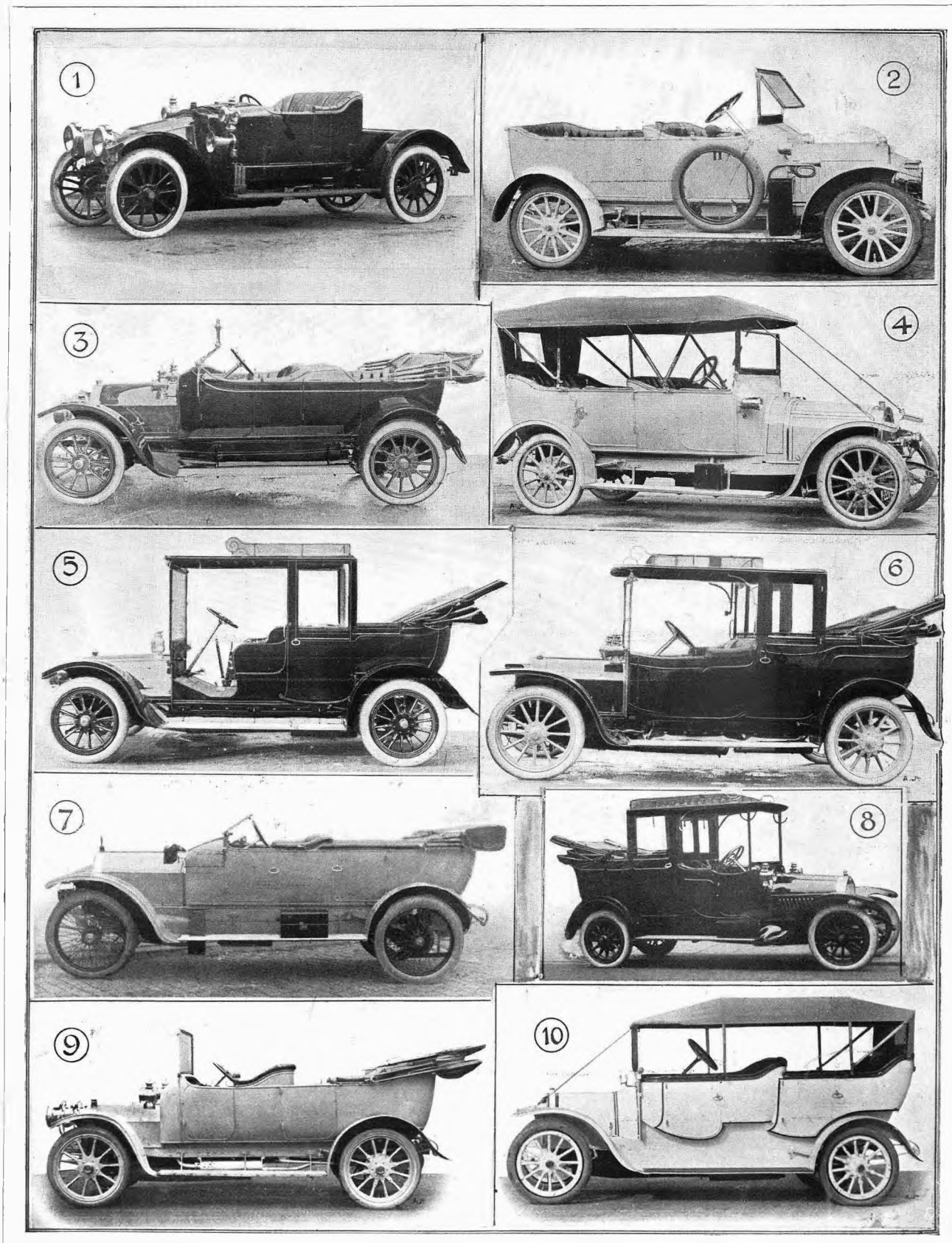
Withers.—The 20-h.p. car at £475 complete.

Wolseley.—The new rear springs, which are slung under the axle, and have their forward hinges on a level with the hubs of the wheel. This is in order to give a vertical rise to the axle, and to avoid checking the momentum of the wheel mass by the backward throw of the springs caused by their radius-rod action.

For further particulars see the AUTO. of October 14th, p. 1118.



The landaulette and limousine are becoming an ever-increasingly popular type of car, and the above photographs show some typical examples. Reading from left to right the names of the cars are: 1. Fiat. 2. Metallurgique. 3. Peugeot. 4. Renault. 5. Lancia. 6. Delaunay-Belleville. 7. Mercedes. 8. Sirron. 9. F. L. 10. Gobron.



SOME CONTINENTAL TOURING CARS FOR 1912.—Reading from left to right the names are: 1. S.C.A.R. 2. M.S.L. 3. La Buire. 4. Chenard. 5. Panhard. 6. Lorraine-Dietrich. 7. S.C.A.T. 8. Opel. 9. Martini. 10. Le Gui.

CONTINENTAL SECTION.

Adler (MORGAN & CO.).—The method of mounting the engine and gear-box on a tray-like under frame.

Albruna (BROWN BROS.)—The new 12–14-h.p. 4-cylinder.

Austro-Daimler.—The flanged back axle-casing and method of hinging the springs thereto.

Benz (BROMPTON MOTOR CO.).—The new 12–20-h.p. 4-cylinder model, 72 × 120 mm. with self-timing magneto, chain-driven cam-shaft, 4-speed gear-box and 9 ft. 6 in. wheel base, which sells as a complete car for £365.

The detachable stub axles supporting the front wheels on all Benz chassis.

The Benz sliding-clutch coupling.

Berliet (BERLIET MOTORS).—The method of mounting the accelerator on the dashboard.

Bollee (CONNAUGHT MOTOR CARRIAGE CO., Ltd.).—The 35–45 h.p. 6-cylinder model.

Brasier (A. TURNER).—The diagonal gate to facilitate changing from second to third.

Brenna (SEALE AND DE BECKER).—The combined water and induction pipe casting.

Charron (LONDON MOTOR GARAGE).—The new 10-h.p. "small car." Four cylinders.

Chenard-Walcker.—Two new models: 10–12-h.p. and 16–20-h.p. The gear drive in the road wheel hubs and the double back axle.

The rubber buffer supporting the upper end of the propeller-shaft casing.

Cottin Desgouttes (A. TURNER).—The 20-h.p. 6-cylinder car.

Darracq.—The new rotary-valve engine. This is operated on the Henriod principle with a D-section rotary valve turning on a horizontal axis alongside the cylinder. Alternatively the valve opens and closes a port in the side of the cylinder wall.

The important feature of the system is the fact that this port lies below the combustion chamber, and is, consequently, covered by the piston at the time of explosion. In this way the rotary valve is protected from the greater pressure and heat to which it would otherwise be subjected. There is only one port in each cylinder, and the same valve, rotating at a half the engine speed, serves the inlet and exhaust.

De Dion.—The V-type 8-cylinder engines on the 26 and 50-h.p. models.

Delage (LONDON AND PARISIAN MOTOR CAR CO.).—The 6-cylinder 15·9-h.p.

Delahaye. (H. M. HOBSON).—The 6-cylinder monobloc V-type engine.

The combined radius and torque rod with the ball joint.

Delaunay-Belleville.—The combined jet and surface carburettor, in which two pipes lead from the throttle-chamber to the float-chamber. One of these pipes draws petrol in a spray from the ordinary type of jet, while the other draws vapour only from the space above the petrol level in the main float-chamber. Air is, of course, admitted to the top of the float-chamber to supply the requirements of this latter pipe.

The supplementary shaft brakes on the larger models in order to give greater facilities for touring in mountainous districts.

The inclined valves on the 6-cylinder engines.

The new 24·8-h.p. model.

D.F.P. (G. A. LECOQ).—The new 12·15-h.p. 4-cylinder, 70 × 120 mm.

Fafnir (G. STRAUS).—The new 12–16-h.p. model.

F.I.A.T.—The combined back axle casing and torqure tube. Worm-driven cam-shaft on all models of the "fifteen."

Germain (THEO. MASUI).—The overhead cam-shaft on the 15-h.p. model. The steel cylinders and brass jackets on the larger models.

Gladiator (VINOT CARS, LTD.).—The new 10–12-h.p. 4-cylinder model.

Gobron (A. TURNER).—The double piston engine that is standard on all Gobron cars.

Gregoire (OSBORN & CO.).—The 16–24-h.p. engine, 80 mm. bore, which has a long stroke of 160 mm.

Hotchkiss (LONDON AND PARISIAN).—The new 12–16-h.p. 4-cylinder model, 80 × 120 mm.

Hurtu (ARIEL AND GENERAL REPAIRS).—The gate operated change-speed gear-box on the new 10-h.p. chassis, which replaces the straight-through quadrant type.

Imperia (MANSION MOTOR GARAGE).—The "15·9" which is sold at £390 complete.

Itala.—The new rotary-valve engine, in which eight poppet-valves are replaced by two rotary-valves. See the illustrated description in the AUTO. of October 28th.

Jackson.—The light chassis with the 10 ft. wheel base.

The absence of external pipe-work on the engine.

La Buire (HOLLINGDRAKE AUTOMOBILE CO.—The long stroke "fifteen" with the 160 mm. stroke.

Lancia (W. L. STEWART).—The double direct drive on third and fourth speeds on the new 4-cylinder "fifteen."

Lorraine-Dietrich (DE DIETRICH ET CIE.).—The gate change gear box on the 12·14-h.p. model.

Marlborough (T. B. ANDRE).—The 15–9-h.p. model still sells at £300 complete.

Martini.—The three-way oil-cock on the engine base-chamber.

Mass.—The popular 10–12-h.p. 4-cylinder model.

Mercedes (MILNES-DAIMLER).—The new 15-h.p.

The 40-h.p. chassis with the Knight sleeve-valve engine.

Metallurgique (METALLURGIQUE, LTD.).—The expanding metal clutch and spring drive, which are common to all models.

Minerva.—The Knight sleeve-valve engine on all models.

M.S.L. (MOTOR SHOW ROOM).—The 10–14-h.p. model at £325 complete.

Opel (BRITISH ELECTROMOBILE CO.).—The new 12·1-h.p. in which the bore has been increased from 65 to 70 mm., and the stroke shortened from 120 to 100 mm.

Oryx (F. B. GOODCHILD).—The 18–24-h.p. model at £410 complete.

Panhard (W. AND G. DU CROS).—The new 4-cylinder "fifteen" with the Knight sleeve-valve engine.

The unit system of power plant construction on this model and the new fibre and steel disc clutch.

The straight-through quadrant change-speed lever, which operates two sliding sleeves in the gear-box as if arranged on the gate principle.

All brakes operate on the rear wheels in the 25-h.p. Knight-Panhard.

Peugeot.—The 12–15-h.p. sold at £360 complete.

Phanomobile.—The air-cooled engine and front-wheel drive.

Piccard-Pictet (DONNE AND WILLANS):—The new sleeve-valve engine with a single sliding sleeve built under license from Messrs. Argyll. Messrs. Piccard-Pictet were independently experimenting along similar lines, but were anticipated by three months in the patent. The stroke of the Piccard engine is longer than the Argyll, being 150 mm.

The mechanical tyre pump on the top of the gear-box of the 22–30-h.p. chassis.

The method of mounting the change-speed lever so as to avoid binding strains on the sliding tube.

Pilain (PELLANT).—Two new models—10–12-h.p. 4-cylinder, 65 × 120 mm., and the 15–18-h.p. 6-cylinder, 65 × 120 mm.

Renault.—The 18-h.p. 6-cylinder model, its extreme cleanliness of design.

Scat (NEWTON AND BENNETT).—The self-starter, by means of which the engine can be set in motion from the driver's seat. Being pneumatic, it will also pump up tyres. Chain drive for the cam-shaft on both models.

Sizaire (JARROTT AND LETTS).—The new 4-cylinder "fifteen." Chain-drive for the cam-shaft on both 4-cylinder models.

S.P.A. (THOS. GREEN).—The 16–20-h.p. model.

Spyker (INDUSTRIELLE MAATSCHAPPIJ TROMPENBURG).

The transverse cam shafts.

The new 6-cylinder.

The original Spyker 6-cylinder, 4-wheel drive, chains.

Unic (UNIC AUTOMOBILE AND MARINE MOTORS, LTD.).—The 16–24-h.p. 4-cylinder model.

Vinot (VINOT CARS, LTD.).—The vertical gate change speed system.

The new 4-cylinder 10–12-h.p.

Zedel (C. BERTRAND).—The balanced air-valve on the carburettor.

AMERICAN SECTION.

Cadillac (F. S. BENNETT, LTD.).—The dynamo lighting set, which also starts the engine and supplies the current for the ignition, and is included on the "thirty" without extra cost to the purchaser; nor has the price of the car been increased from last year.

Ford.—The magneto, which is mounted on the fly-wheel, and can also be connected up to serve electric light.

Hupmobile (WHITING, LTD.).—The 12–14-h.p. model with 2-speed gear, which sells at £180 complete.

Overland (ANGLO-AMERICAN MOTOR CAR CO.).—The 20·25-h.p. model with three speed sliding spur-wheel gear-box, which sells at £250 complete, and the larger 25·30-h.p. car with a 9 ft. 6 in. wheel base, which can be bought for £325 complete.

R.M.C. (SEABROOK BROS.)—The underhung frame, which, being below the axles, gives the car a particularly low-built appearance.

Stanley.—One of the few steam cars at the Show.

White.—The White petrol car, which is more typical of European practice in design than American in some respects.

The White steam car.

AMONG THE ACCESSORIES AT OLYMPIA, AND WHAT TO BUY THERE.

Acetylene Illuminating Co., Ltd. STAND 232.

The new "Popular" illumination set, which sells at £6 18*s.* 6*d.* complete. This includes gas cylinder, reducing valve and gauge.

This firm has recently increased the number of its agents about the country to over seven hundred, so that the exchange of empty cylinders is now much facilitated.

Adams (H.) and Co. STAND 205.

The Adams Quicklift and short-locking motor jacks, on which the car may be moved after it is jacked up.

These are specially useful in cramped quarters, as they enable the car easily to be pulled into any position.

Andre and Co. STAND 271.

The M.A.B. component parts for a four-cylinder car—8-9-h.p. engine, three speed and reverse gear-box, and bevel drive back axle—which, when complete, will sell at £145.

Auster, Ltd. STAND 201.

The Auster one-man hood, which can easily be erected or folded without assistance.

The Auster extending back shield, which can also be used as a table in the rear compartment of the car.

The Auster plunger lock, which is fitted to the upper edge of the door, and is of water-tight design. There is no handle on the outside of the door-panel.

Auto Machinery Co., Ltd. STAND 275.

The new Auto indestructible roller bearing, so made that they are interchangeable with the same size standard journal ball-bearings made by the same firm.

Bailey (W. H.) and Co., Ltd.

The "Pilojet" auxiliary carburettor, designed to convert an ordinary carburettor into one of the bi-jet variety, thus facilitating starting and running at slow speeds.

The improved "open-door" spare wheel carrier, which, being mounted on hinges, facilitates access to the driver's seat from the off-side.

Berliet Motors. STAND 167.

The "Rawlence" single lever, toothed-lock wind-screens, which may be raised or lowered from the driver's seat, and are adjustable to any position.

The "La Grippe" rubber pedal pads, which fit over the pedal, and prevent the foot slipping off.

Blériot, Ltd. STAND 194.

The Blériot dynamo lighting set, in which the mechanical control of the output has been replaced by a separate electrically-operated cut-out.

The manufacturers guarantee the set, as long as the seal on the case containing this cut-out remains unbroken.

Bosch Magneto Co., Ltd. STAND 256.

A new entirely enclosed magneto, which has its working parts protected from dust or damp by felt washers where the casings join. Two special points are the design of the adjustment on the control coupling, and the serrated poles that give easy starting.

Bowden Wire, Ltd. STAND 266.

The Bowden speedometer, in which centrifugal force causes balls to slide outwards in guides on an inclined plane, thus raising a plate that operates the recording needle by means of a rack and pinion gear.

Bransom, Kent, and Co., Ltd. STAND 210.

The "Darop" multiple sparking plugs, as supplied for use on the petrol engines of the British Naval submarines.

Brooks (J. B.) and Co., Ltd. STAND 214.

The Brooks magneto, in which the pole pieces of the magnets rotate with the advance and retard of the contact breaker, so that the break always occurs when the current is at its maximum intensity.

Other features are the absence of gearing in the two-to-one reduction drive for the distributor, and that the contact breaker is detachable without undoing any nuts.

Brown and Barlow, Ltd. STAND 279.

The B. and B. carburettor, and a collection of float chambers suitable for every type of carburettor.

Brown Bros., Ltd. STAND 217.

The Gleason-Peters "Quick Service" and "Ideal Duplex" pumps. The latter is worked by a two-and-fro movement of a lever instead of an up-and-down action.

The unit-lock wind-screen, in which the upper and lower halves are interconnected so as to open and close by the use of one lever.

The "Ashcroft" valve grinder, which reverses its direction of rotation at each revolution, but nevertheless makes slow positive progress in clockwise rotation, in order to prevent scoring through working constantly on one spot.

Connolly Bros. STAND 192.

Special hides in various delicate shades for the interior upholstery of motor bodies.

Japanned and enamelled leather for seats.

County Chemical Co., Ltd. STAND 228.

The "Chemico" Reliance stiff-back patch, coated on its face with pure Para rubber, and backed with stiff cardboard to prevent curling when the solution is applied.

This backing can be instantly removed, as soon as the patch is set.

Coventry Chain Co., Ltd. STAND 162.

The Coventry silent chain drives for cam-shafts and gear-boxes, which are now so much in vogue.

This firm advocates the non-adjustable two-centre drive.

Coventry Motor Fittings Co., Ltd. 259.

Flat tube, or film radiators, as used on the Vauxhall car in the Russian Imperial Reliability Trials.

Cowey Engineering Co., Ltd. 269.

The new small car speed indicator, similar in design to, but cheaper in price than the earlier models.

The "lock-up" maximum speed indicator hand, which can be fitted to any model of the Cowey speedometer.

Davenport (G.) and Co. STAND 184.

The "Bee" tyre lever, which by means of an auxiliary lever and slide, still further reduces the trouble and exertion of removing or fitting tyres.

Donne and Willans, Ltd. STAND 170.

Improved "Kopalapso" hoods, designed to be strapped to the front wind-screen.

These, when provided with the side-screens, completely enclose the driver's seat.

They can be erected and folded by one man without assistance.

Dover, Ltd.

Lever handles covered in exonite on the same principle as the well-known Dover steering wheels, which have had such a vogue on account of their good appearance, comfortable grip, and lasting cleanliness.

Drummond Bros., Ltd. STAND 238.

"The lathe for the corner" of the work-shop, and other foot-power machine tools indispensable to the motorist who takes a pride in his garage equipment.

The new radial drill, as supplied to the Mechanical Transport Section of the Army Service Corps.

Dunhill, Ltd. STAND 276.

A new three-arm bracket for mounting on garage walls so as to hold Stepney wheels or spare rims while the tyre is being changed.

Electric and Ordnance Accessories Co., Ltd. STAND 255.

Vickers' Duralumin, for brake levers and the like; as strong as mild steel, and slightly heavier than aluminium.

The V.S.M. dual magnetos, in which the dual high-tension distributor, working behind a glass cover, is skew-gear driven from the armature spindle.

Fair and Co. STAND 273.

Some new gear-boxes and back-axles made by Dewalde, a Parisian firm new to the English market.

The Scott-Robinson carburettor, which has a variable jet, interconnected with the throttle.

Godin (A. A.). STAND 222.

The Ducellier dynamo lighting set, which is furnished with a separate winding on the field magnets, connected to a third brush on the commutator, by means of which a constant output is maintained, irrespective of speed variation.

The automatic magnetic cut-out is separate from the dynamo and switch-board.

Harding and Co., Ltd.

Harding's rubber paint for preserving and improving the appearance of rubber automobile fittings, such as tyres, mats, and tubing.

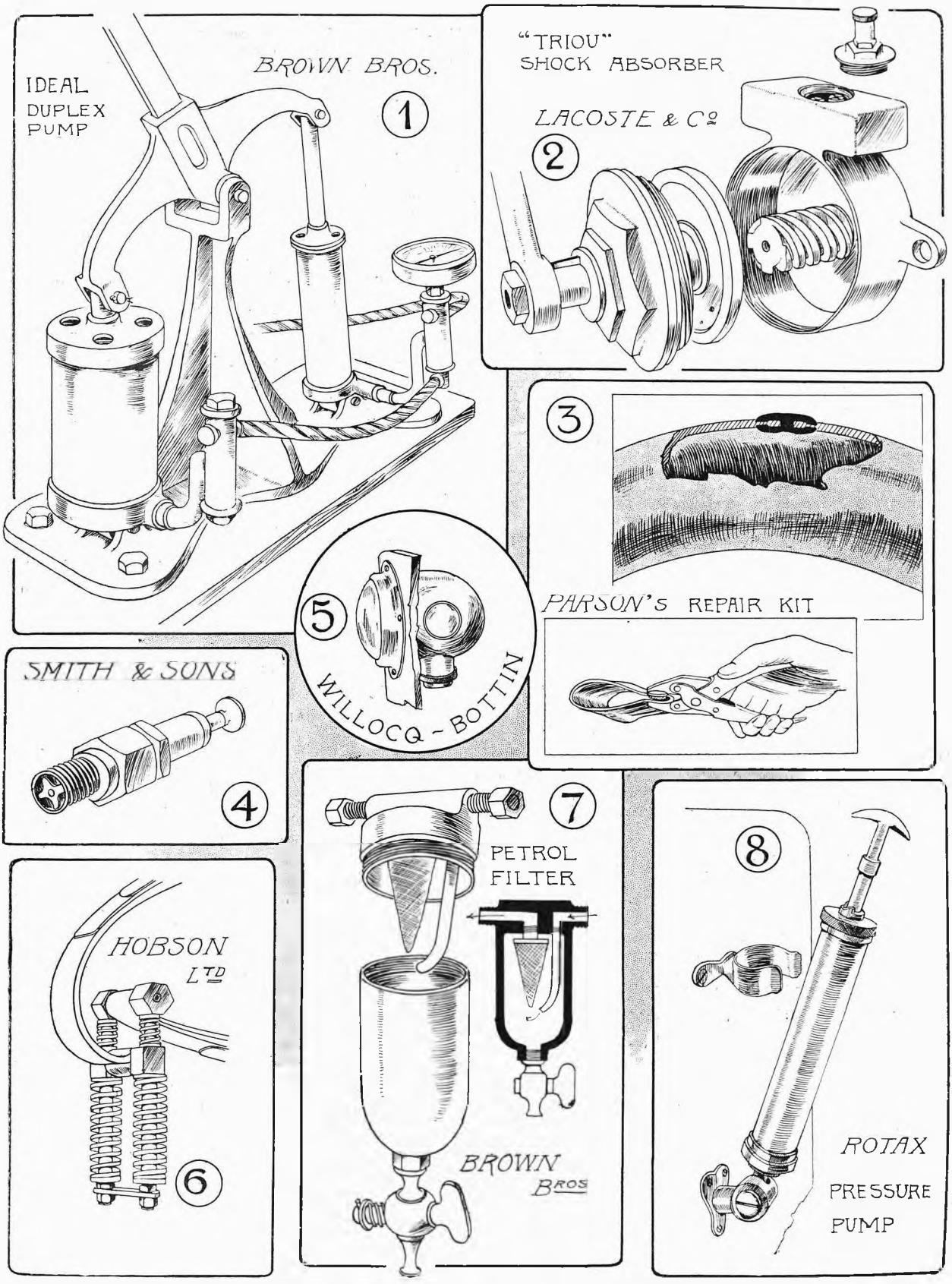
Hardy and Co., Ltd. STAND 163.

The "Auto-Musica" selective three-note horn, on which distinctive signals can be played.

Harris and Samuels. STAND 190.

The "Rhineland" ball-bearings, which, owing to the peculiar construction of the ball cages, are claimed to contain more balls for their size than any other bearing.

"Eyquem" sparking-plugs, which can be cleaned by opening the tap at the top, this being also useful as a compression release.



SOME SKETCHES OF ACCESSORIES AT OLYMPIA.—1. Brown Bros.' Ideal Duplex pump, in which the lever is moved in a to-and-fro direction. 2. Lacoste and Co.'s Triou shock-absorber, which is adjustable in its resistance to movement in either direction. 3. The Parsons tyre-repair kit, showing a section of the metal plug in position, and the plug being clamped. 4. One of S. Smith and Son's new "Perfect" plugs. 5. The Willocq-Bottin combined dashboard and side lamp. 6. Hobson's new auxiliary springs; note the still smaller supplementary springs on these. 7. Brown Bros.' new petrol filter. 8. A dashboard pressure-pump by Rotax, which turns itself off when set upright in its clip on the dash.

Harvey Frost and Co., Ltd. STAND 206.
A new compound called H. F. Plastene, which reduces both the time and heat required to effect a vulcanised repair.
The H.F. vulcanisers from the "Baby" upwards.

Harvey, Ltd. STAND 172.
"Diamondlite," "Moonlite," and "Sunlite"—three kinds of electric lamps, giving white, green, and amber rays respectively.

High Tension Co. STAND 183.
The C. J. L. mica magnetolite, which has permanent magnets; their fixed capacity automatically limits the output at high speeds, owing to the natural demagnetising effect of the armature reaction.

Hill (E. H.), Ltd. STAND 243.
The "Nesthill" three-cylinder compound pump, and the "Sphynx" two-cylinder pump, both of which facilitate tyre inflation and the attainment of high pressures by hand labour.

Hobson (H. M.), Ltd. STAND 216.
The new Hobson shock absorber, of the spiral-spring type, in which the expansion of the main springs is resisted by other weaker ones, with the result that oscillations are more quickly damped out. The springs are exposed, and the weight of the apparatus is less than is usual with this class of fitting.

Hoffmann Manufacturing Co., Ltd. 286.
A combined roller and ball-bearing, in which the rollers take the journal loads while the balls take the end thrust.

Hunt (Hedley S.) and Co. STAND 199.
The "Magnet grip" by means of which nuts, screws, spanners, or the like may be rescued from inaccessible positions.
Quite heavy weights can be lifted with this tool, and inside the electro-magnetic head (or rather hand) is a small electric lamp.

Imperial Motor Industries, Ltd. STAND 253.
The "Tangye" garage jack, in which the worm can be taken out of mesh with the wheel by pulling up the operating handle.
Escargot horns, in which a special alloy is used in the brass to intensify the sound.

Kalker and Co. STAND 204.
Metallic braided electric light flex for motor lamps, armoured with galvanised steel, tinned copper, or brass wire braid, to reduce wear.

Lacoste and Co. STAND 225.
The "Vulcan" vulcaniser, which automatically regulates the flame of its burner by controlling the amount of air in the combustion-chamber.
The "Triou" shock absorber, an adjustable resistance on the hydraulic principle, using thick oil.

Lake and Elliott, Ltd. STAND 207.
The "Millennium" compound jack, which raises by leverage on the handle and lowers by rotating the same.
The "Millenium" auto-grip, which with ordinary plier handles, gives a heavy grip and parallel jaws.

Laystall Motor Engineering Works, Ltd. STAND 193.
Specialise on repair and over-hauling work, and for this purpose have just installed a number of the latest cylinder grinding machines and other up-to-date apparatus.

Lodge Bros. and Co. STAND 267.
The new Lodge "two ignitions" plug, for combined magneto and coil and battery ignition.
It is really two sparking-plugs in one, for the central portion contains two separate electrodes, each of which terminates in a nickel ring. The outer casing is fitted with a spark point opposite each ring.
The new Lodge combined ignition and electric lighting set.

Longstreths, Ltd. STAND 178.
A new Lithanode double electric headlamp, consisting of two lamps secured together side by side. The bulbs have each a separate adjustment, so that one may be focussed for distance and the other for illuminating the sides of the road.

Lucas, Ltd. STAND 209.
The Lucas "King-of-the-Road" dynamo lighting set, in which the speed of revolution of the armature is governed by a slipping clutch.

Markt and Co. STAND 231.
The "Jones" journey recorder, recently described and illustrated in the AUTO., which not only gives the speed at which the car travelled at any time, but also the time and duration of the stops.
The Truffault-Hartford shock absorber, which operates on the adjustable friction system.

Melhuish (Richard), Ltd. STAND 241.
A very accurate internal micrometer and cylinder gauge, measuring from 2¼ ins. to 8 ins., and recording errors to $\frac{1}{10000}$ of an inch.
Some new self-centring chucks, of excellent workmanship and low price.
A neat breast-drill support, in which the machine is held firmly by its body so that the handle can be easily turned, while the base is made to rise towards the drill.

Mestre and Blatge. STAND 233.
The M. and B. Hermes shock absorber, of the spiral-spring type.
The nightingale whistle, for motors aad motor cycles; the valve in this is very interesting.
"Kleervu," a preparation for freeing wind-screens, mirrors, and the like from moisture and steam. Demonstrations will be made of this preparation at the Exhibition.

Motor Accessories Co. STAND 226.
The A1 three-bead accumulators, in which the position of the beads tell at a glance the condition of the charge.
The Klaxon horn, and the "Turnover" acetylene generators, which start generating when they are turned over, and stop when they are turned back.

Motor Radiator Manufacturing Co.
Zimmermann radiators, with circular section tubes, strong, light, and efficient.

Motor Schools, Ltd. STAND 224.
Particulars of a new postal correspondence course in motoring which has been inaugurated, with a special series of drawings.
The Motor Schools Book of Questions and the corresponding Book of Answers.

Motor Supply Co., Ltd. STAND 223.
The Ogden Konkora tyre levers, which, although of very small size, are designed to deal with the heaviest tyres.

Norton (T.), Ltd. STAND 187.
The "Notron" garage heating stoves, which burn a special smokeless fuel, overcoming by their design any danger of fire through waste petrol or other inflammable vapour.

Panhard and Levassor (W. & G.). STAND 218.
An aluminium solder, which it is claimed overcomes the difficulty that has always been encountered in soldering this metal.
Monogram oils, a brand of which is specially made for Knight sleeve valve engines.

Parsons Non-Skid Co., Ltd. STAND 161.
The Parsons rapid repair kit, which uses metal rubber-covered patches that are clamped into position like rivets.
The Parsons tyre pressure indicator, which acts as a security bolt, and gives an indication as to whether the tyre is sufficiently inflated or not, without the possibility of the escape of any air.

Peto and Radford, Ltd. STAND 174.
The "P. and R." car lighting dynamo, which is regulated by a centrifugal governor.

Price's Patent Candle Co., Ltd. STAND 249.
A full range of lubricating oils and greases, including Motorine C, which was used during the Rolls-Royce, London to Edinburgh and back, top-gear run.
"Manulav," the grease and oil-removing toilet-soap.

Riches and Co., Ltd. STAND 168.
The Orno safety starting-handle, which has a self-contained ratchet-and-friction clutch, the latter being automatically engaged when the handle is revolved in the starting direction.
When a back-fire takes place, the ratchet stops the starting from being revolved backwards, while the friction clutch allows enough slip to save the ratchet from injury.
The Facility rim, in which the outer edge of the rim itself is detachable by loosening 12 nuts.

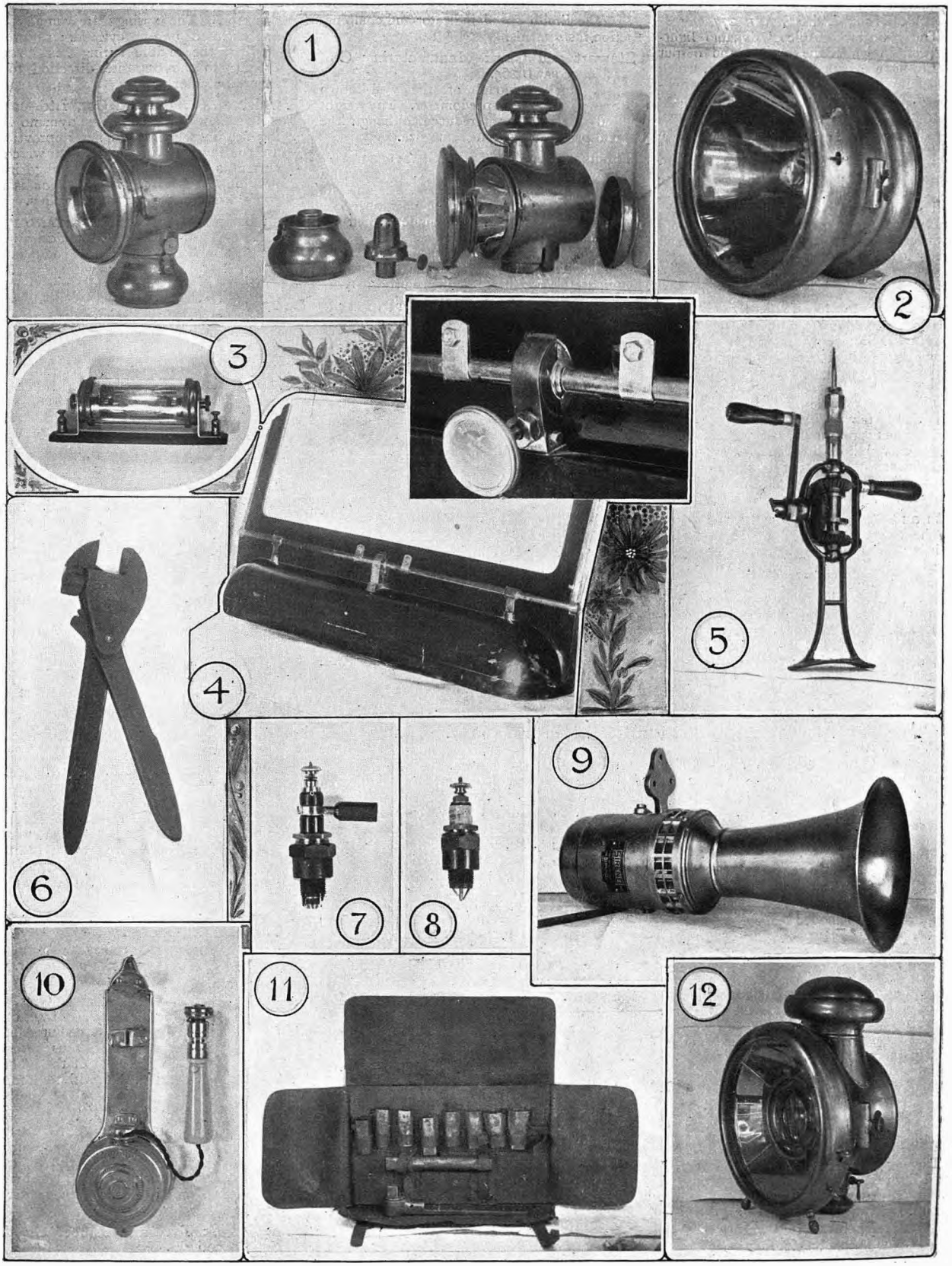
Ripault and Co. STAND 264.
An exhibit showing the making, moulding and turning of the porcelains used in the construction of the "Oleo" plugs.
A screwless jack.

Ross, Courtney and Co., Ltd. STAND 220.
A new greaser, specially designed to be secure against the worst vibration.

Rotax Motor Accessories Co., Ltd. 169.
The "Leitner" constant-current lighting installation, in which the output is governed by a supplementary winding connected to a pair of secondary brushes.
A neat dash-board pressure pump, which, when placed out of use in its clip on the dash, automatically closes the cock in its base.
Swivelling lamp brackets, inter-connected with the steering gear, to cause the headlights to direct their rays round the corner in advance of the car.

Rushmore Lamps, Ltd. STAND 272.
New patterns in side and tail-lamps that are very accessible for cleaning, as they may be taken to pieces.
Note the catch on the front door of these lamps.

Russell and Co., Ltd. STAND 203.
The "Jurus" speed and journey recorders, which have been improved, and in which the paper recording roll now unwinds into a cavity under the instrument, making it easier to take out, read, and to replace.
The "Russell" wind-screens, operated by a single worm and wheel, which can be worked by the driver's left hand while the car is in motion. These screens are made by Messrs. Alfred Russell and Co., an old-established Walsall firm who have recently started in London.



SOME ACCESSORIES AT OLYMPIA.—1. The new Rushmore side lamp, notable for its ease of cleaning. 2. A Ducellier electric headlight. 3. A neat Rotax tubular roof lamp. 4. The Russell wind-screen, operated from the driver's seat by one hand. Inset is the milled operating-nut. 5. The "Ashcroft" valve-grinder, exhibited by Brown Bros. 6. The Millenium autogrip spanner. 7. The new Lodge "Two Ignitions" plug. 8. Messrs. S. Smith and Son's "Perfect" plug. 9. The "Sireno" electric horn. 10. Smith's electric cigar lighter. 11. The "Beeco" reversible box-spanner set by Brown Bros. 12. One of Messrs. Godin's Ducellier headlights.

Seabrook Bros., Ltd. STAND 277.

The "Seabrook-Aplco" dynamo lighting set, in which the cut-out and output controller are both in the same box, which is separate from the dynamo and the switchboard. The cut-out is of the ordinary magnetic type, but the controller is of novel design. It consists of two pieces of a substance resembling carbon in that their resistance to the passage of current is a co-efficient of the pressure with which they are forced into contact. In the ordinary way a coil spring keeps them in close connection, but when the current is excessive a solenoid connected to one of them is energised and tends to draw it out of contact. By this means a remarkably steady output is obtained.

Simms Magneto Co., Ltd. STAND 251.

The "Seebright" combined magneto and electric lighting set, which will be marketed as a simple or dual ignition magneto, combined with a dynamo for charging batteries or lighting lamps.

The new automatic advance of the ordinary Simms magneto, which operates by balls sliding outwards under centrifugal force along curved slides between the driven shaft and the armature shaft of the machine, thus causing the latter to run somewhat in advance of its normal position.

Smith and Sons, Ltd. STAND 212.

The Smith "Perfect" dynamo for car lighting, built by the famous Rugby electrical engineers, the British Thompson-Houston Co.

It has the Tirrell voltage regulator, which is in use in many of the great central electric-light stations about the country. A description appeared in last week's AUTO.

The Goldenlight lamp that penetrates fog.

The Smith speed indicator and combination instruments.

Stewart and Clark Manufacturing Co., Ltd. STAND 264.

A smaller model of the well-known Stewart magnetic speedometer. The weight and size have been reduced, although the dial has been kept the same size.

Thomson-Bennett, Ltd. STAND 229.

The new model Welsh carburettor, in which a neat device allows of the throttle being moved past its closed position, so as to admit pure air to the cylinders when descending hills.

The "Nevajah" shock absorber.

The Thomson-Bennett exhaust car heating apparatus, recently described in the AUTO.

Tormo Manufacturing Co. STAND 214.

The F. and S. ball bearings, which are now made in all the standard English sizes, as well as in metric sizes as heretofore. The ball cages are made of a light aluminium alloy.

Trier and Martin, Ltd. STAND 261.

The T. and M. multiple-jet carburettor, which is fitted with a by-pass, so that the engine does not stop if the throttle is quite closed when the car is standing still.

The T. and M. dynamo lighting system mounted on a new type of bed-plate which allows of the driving belt being more easily tightened.

United Motor Industries, Ltd. 171.

The Magician dynamos, in which the output is controlled by the movement of the magnets in their ball-bearing trunnions. A description appeared in the AUTO. the week before last.

A new suspension shock absorber, in which three helical springs form the compensator. The springs are annular, and are enclosed in one cylinder; to prevent binding, the middle spring has its helix running in the opposite direction to the inner and outer springs.

Vandervell (C. A.) and Co., Ltd. 242.

The C.A.V. self-contained dynamo lighting set, in which the chief improvements are the lowering of the speed at which the current is "cut in," and the change in the position of the free wheel, which is now contained in and a part of the pulley.

Van Raden and Co., Ltd. STAND 173.

A new dash-board switch, which with one handle allows of four different combinations of the lamps, including switching off the entire set. In the first lighting position, the tail-lamp is full on, and the side-lamps at half-strength. In the next, the side and tail-lamps are full on, and in the last all the lamps, including the head-lights, are at their maximum strength.

White and Poppe, Ltd. STAND 281.

An improvement in the White and Poppe carburettor, whereby the familiar whistling noise caused by the intake of air is obviated. This is accomplished by the introduction of baffle plates in the air orifice, so that the air cannot rush across the edge of the throttle.

Willocq-Bottin Motor Lamp Co. 234.

The new Willocq-Bottin acetylene double-lens head-light, spun from one piece of brass. By means of the combination of the two lenses, a combined long focus and short wide focus-light is obtained.

A specially-designed lamp for fitting into scuttle-dashes, which gives a neat finished appearance outside, and is provided with a lens inside for reading speedometers, oil gauges, and the like.

TYRES AND WHEELS AT OLYMPIA.

The Calmon Asbestos and Rubber Works, Ltd. STAND 296.

The well-known Calmon steel-studded tyres, which are guaranteed for 2,000 miles.

Also a tyre for taxi-cabs, which is warranted for 3,000 miles.

Collier Tyre Co., Ltd. STAND 302.

The Collier detachable wheel, made under Short's patent, and the Collier (Pirelli manufactured) tyre covers, in a square ribbed tread, and steel-studded leather and rubber treads.

Continental Tyre & Rubber Co., Ltd. STAND 299.

The improved Continental detachable rim, which is detachable by removing five nuts. There are no wedges, and the flanges form an integral part of the rim, so there are no loose parts to cause wear.

Improved models of the red-black steel studded non-skid tyres, also of the three-ribbed and flat-tread tyres in all sizes.

Dunlop Pneumatic Tyre Co., Ltd. STAND 282.

The new Dunlop steel-studded leather treaded tyre, which has been the subject of exhaustive tests during the last twelve-month.

The Dunlop detachable wheel, with its positive and visible locking device.

Gaulois Tyres (1909) Ltd. STAND 284.

The Gaulois detachable rim, which can also be used as a twin rim for heavy vehicles.

The Gaulois square grey tread and square white tread tyres.

Grose, Ltd. STAND 287.

The Grose detachable non-skid leather steel-studded tyre covers.

The Warland dual rim, in its improved form, fitted on the Tenax steel tubular wheel, for which the Warland Rim Co. have obtained the selling rights for the British Isles. The feature of the Warland rim is that covers may be fitted by hand without stretching the bead.

Harvey, Frost and Co., Ltd. STAND 206.

A new vulcanising compound, blue in colour, which greatly facilitates the process of vulcanising tyre repairs. It reduces the heat necessary and the time required, and it stops its action directly the baking is finished.

The H.F. vulcaniser for the private owner; it repairs punctures securely and greatly helps to reduce the tyre bill.

Kempshall Tyre Co. (of Europe), Ltd. STAND 295.

The Kempshall ribbed non-skid tyre, the only tyre to obtain the R.A.C. certificate for non-skidding.

The Kempshall anti-skid tyre, which, having a round tread, obtains its non-slipping properties by rubber studs on either side.

The Kempshall emergency patch for outer covers, which is held in position by small spikes; an accessory that should be in every kit.

J. Liversidge and Son, Ltd. STAND 292.

The Liversidge non-skid tyre.

The new Segment detachable rim with improved method of operation. It is made in four sections, so that covers may be fitted without straining the head, this also makes the carrying of spare rims without covers very easy.

Michelin Tyre Co., Ltd. STAND 304.

The Michelin square tread tyres, which, by a special method of moulding, have their treads in compression when the tyre is inflated, so that cuts and holes tend to close.

The Michelin bolt valve, a combined security bolt and air valve, which, in some cases, may be used instead of the ordinary security bolts.

New Motor and General Rubber Co., Ltd. STAND 309.

Rubber tubing that resists petrol and acid. A very useful thing to have on the car.

Osborn and Co Ltd.

The Lynton wheels and tyres, the resiliency of which is obtained by securing the tyre between two discs, the outer one of which can rock on its hub, thus absorbing shocks by the displacement of the rubber to a much greater extent than with the ordinary solid tyre.

Oylers, Ltd. STAND 180.

The Skew non-skid and anti-skid tyres. The former are suitable for the driving wheels, having a serrated square tread, while the latter having a round tread with a castellation on either side are lighter for steering.

The Polack Tyre and Rubber Co., Ltd. STAND 306.

The Polack pneumatic and solid rubber tyres, the former including both steel-studded rubber tread and steel-studded leather tread tyres. A special method has been devised for fixing the steel studs, which are themselves of great toughness.

The Riley Cycle Co., Ltd. STAND 208.
The Riley detachable wire wheels, in various patterns, such as were used in the 15,000 miles test of the J. D. S. Deasy car recently at Brooklands.

Rudge-Whitworth, Ltd. STAND 301.
The famous Rudge-Whitworth detachable wheels in wire and wood.

No alterations have been made in these wheels during the last twelve months, which is to the great credit of a firm who have achieved so much in such a short time. Rudge-Whitworth wire wheels not only look well on a car, but the wire wheel improves suspension and, being lighter in the rim, facilitates acceleration, as well as reduces the braking effort required to stop the car.

J. Sankey & Sons, Ltd. STAND 290.
The Sankey pressed steel detachable wheels.

G. Spencer Moulton & Co., Ltd. STAND 298.
The Spencer Moulton detachable divided rim, which is chiefly noticeable for the ease with which tyres can be fitted and removed without the use of levers. Only a small spanner is required to operate this wheel.

The Stepney Spare Motor Wheel, Ltd. 286.
The improved Stepney wheel for flange attachment, which shortens the time required for fixing.

The Stepney corset for burst or worn covers, which only requires moistening with petrol to make it stick to the cover.

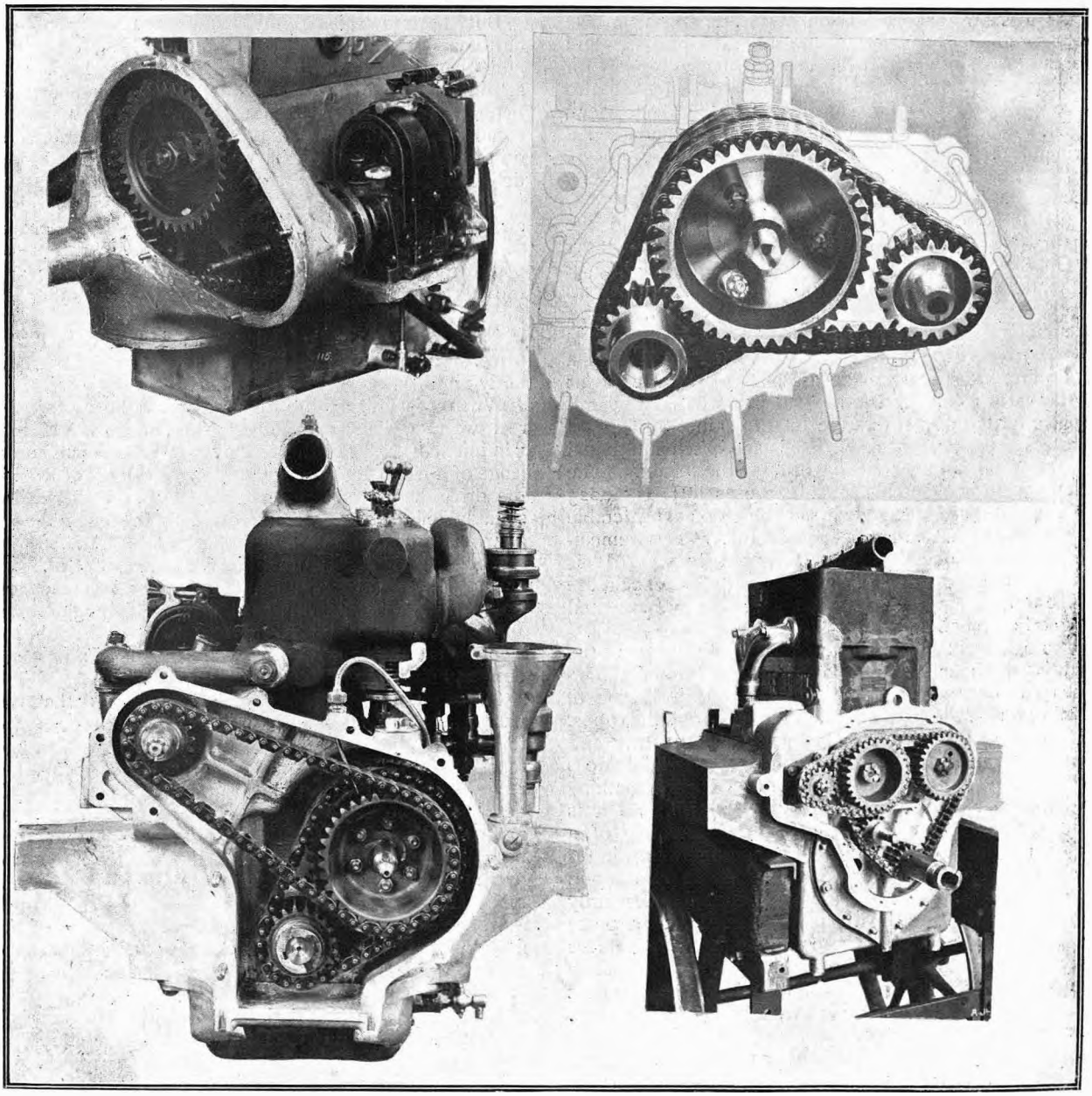
Vieo, Ltd. STAND 293.
The Vieo resilient wheel with solid tyres.

The Vieo steel-studded solid rubber tyre, in which the chief point of interest is the means devised to secure the studs.

A Vieo resilient wheel that has been run on a heavy car for two years.

The Gyroscopic non-skid, which was described recently in the AUTO., April 29th and May 6th, 1911. This device, as readers are aware, consists of a flywheel mounted on gimbals (gyroscope) in front of the engine and driven by a belt from the fan-pulley.

The Atlas puncture-proof inner casing for motor tyres.



The chain-driven cam-shaft is the feature of 1912 engine design, and the above photographs illustrate some typical examples. In the upper left-hand view is the Crossley three-point transmission, with adjustable magneto-bracket and adjustable toothed-clutch for re-setting the cam-shaft. In this system a Hans Renold chain is used. Below is the Wolseley double-chain drive, with two Coventry chains running on fixed centres. The engine drives the cam-shaft and the cam-shaft drives the magneto. Above, on the right, is a similar arrangement on the White and Poppe engine, and underneath is a view of the drive on the new Sizaire, which has a four-point transmission over two cam-shafts, and an ideal adjustable pinion. Also, the magneto is driven by a separate chain from one of the cam-shafts.

DISCUSSION ON THE CHAIN-DRIVING OF CAM-SHAFTS.

By A. S. HILL.

Last week we published an article by Mr. D. S. Simpson, of Messrs. Hans Renold, setting forth the principles of chain-driving of cam-shafts as understood and practised by that firm. Below, Mr. A. S. Hill, Managing Director of the Coventry Chain Co.—which, by the way, owes its foundation and phenomenal growth to his personal enterprise and ability—takes a diametrically opposite view on some of the essential points laid down in the first article.

Whereas Mr. D. H. Simpson holds the view that an adjustment for a chain-drive is essential—which means the standardization of the triangular drive, since the centres of the crank-shaft and cam-shaft are fixed—Mr. A. S. Hill contends that an adjustment is unnecessary. Mr. Hill's point of view is that all the initial apparent stretch is due, in reality, to the bedding down of the links, and can be taken out of the chain in advance by a "finishing" process consisting of running it in on adjustable jigs.

When the opinions of the two leading authorities differ in such an important matter, it is only natural that their remarks should be read with interest, and their statements given the very serious consideration that they deserve.

As the introductory portion of Mr. Simpson's article very comprehensively covers the intended purposes and conditions of using a chain instead of gear wheels for driving cam-shafts, it will be permissable, and will also save space, to join issue at the point where our views differ, which is in respect of the following fundamental principles :—

(i) That it is impossible to make a chain exactly accurate in length.

(ii) It is essential to provide an adjustment in the chain drive as fitted to cam-shafts of motor car engines.

On the first question of accuracy in manufacture, it rather depends to what extent the manufacturing processes are carried by the chain maker as to what degree of accuracy can be obtained.

It is, of course, quite true that the moment when a chain first forms a complete assembly of its constituent parts that it is not dead to reputed measure in its overall length, for the reason that the total tolerance, or allowed error, is the average tolerance of each pitch multiplied by the total number of pitches in the chain. The tolerance in one pitch itself may be as little as ·00025 ins., but the total tolerance in any chain of considerable length must, naturally, be perceptible, always remembering that the total is within reputed length. It is obvious, therefore, that the integral parts of a chain are made to a standard of accuracy higher than that accepted in good automobile practice.

Motorists will admit that there is good purpose in the additional labour employed on the production of a first-class car over and above that required in the mere turning out of the bare article as it comes from the shops. The one may basically be as good as the other and equally suitable for general purposes, but it certainly does not meet the requirements of those who desire something with a higher degree of accuracy and finish. So it is with the chain, for although the mere assembly of a number of links fastened together undoubtedly constitutes a chain, and is sold as such for innumerable purposes in all branches of general engineering, it does not necessarily follow that where special chains for particular purposes are required, a great deal more work and extra refinement may not be to great advantage. In fact, such processes are almost unlimited, bearing in mind the constant progress that is being made in increased accuracy to-day. It remains, therefore, to consider whether a finished chain, as ordinarily understood, and as used in general engineering, can be refined in accuracy by further processes in order to render it serviceable to the special requirements of the automobile engineer.

I maintain it can, and such is the practice with my firm, which I know is appreciated by my clients.

But beyond this, at my instigation, many of my customers use a jig with specially cut wheels on adjustable centres to run in the chains under load, thus settling down the wearing surfaces to a good bearing before actual fitting to the engine. This process compares with the accepted practice of running an engine on the bench and driving a chassis on the road before delivery to the customer.

Of course, if a motorist preferred, he could doubtless arrange to go without this refining process in the chains as well as in engine and chassis, and possibly this is one of the essential differences between the cheap car and the more costly machine. The wear that takes place in these "running in" processes is essentially superficial in in its character; the "bedding down" is bound to take place, and in the very nature of things the process is fairly rapid.

When it is finished the apparent wear ceases and the real wear, which is infinitely slow, begins. I say "infinitely slow" for the reason that I have no knowledge of a chain showing any appreciable signs of wear if the drive has been properly designed and the chains suitably refined before being fitted to the engine, even after running 6,000 miles.

The conditions that obtain in the cam-shaft drive are at once better and worse than those under which chains ordinarily work in other branches of engineering. Inasmuch as the chain is enclosed in an oil bath, the conditions are infinitely better, and the life of a properly designed chain drive is greatly increased.

Of one thing there is no reason to doubt whatever, namely, that the life of a chain can easily be proportioned to that of other wearing parts requiring inspection and renewal from time to time, and this is, after all, the recognised standard of the fitness of things in all departments of engineering. On the other hand, the nature of the load on the chain is intermittent, due to the periodic action of the cams, but this difficulty is met and overcome by fitting such chains as allow a generous safety factor.

In the elaboration, from my own point of view, of the first point raised, I have touched to some extent the second, which is the necessity of providing an adjustment for chain drives.

It must be borne in mind that dispositions of cam-shaft chain drives are numerous, and an argument for the adjustment of one may not be applicable to others. In certain forms of drives, as where two wheels only are employed, it has usually been set forth by prospective users as a fundamental that centres are to remain fixed. Far be it from me to deprecate adjustment of centres for chain drives generally, as I recognise their benefits in

general practice, but in the type under consideration the complications necessitated by the introduction of adjustable centres is not warranted when my previous remarks are borne in mind as to refinement both by the chain and automobile manufacturer.

Undoubtedly an adjustment is advisable if the chain is to go into the engine without being refined, but the principal use of such adjustment will obviously be to take up the sag caused by the initial bedding in. Thereafter there should be little need for its use.

It stands to reason that to fit an adjustment on every engine for the sake of taking up the sag in its own individual chain is an unnecessarily expensive proceeding when all the chains can be separately run in to length on one adjustable jig specially made for the purpose.

In another disposition of design employing one chain as a triangular drive over three wheels adjustment is essential because, in this case, a much longer chain must be used, and the wear is more rapid by reason of the smaller arc of contact between each of the three wheels and the chain. Moreover, the provision of adjustment on this type of drive is comparatively simple.

Again, adjustment is useful to decrease the flapping of the free portion of the chain due to the intermittent load of the cam-shaft and magneto.

The necessity of designing for some specific pitch and an exact 2–1 ratio arbitrarily locates the cam-shaft centre independently of any other consideration.

From my own point of view, as a chain maker, therefore, I would summarise the present position by urging the necessity, on the part of automobile engineers, to regard the following points as essential :—

(1) Acceptance of the experience of the chain maker in determining suitable widths and pitches.

(2) Rigorous exactitude in the setting of the chain wheel centres.

The reason for this latter should be obvious in the light of what has already been said. Any inaccuracy of chain wheel centres frustrates the object of the refining processes to which the chain has been subjected, and cannot possibly be corrected afterwards.

If regard has been given to the above points, the purchaser of a car with chain-driven cam-shaft need have no fear but that this member of his engine will be silent and have a long life.

It will, of course, be unnecessary to point out to engineers that it is only by accident that existing gear-driven cam-shafts can be converted to chain drive.

In conclusion, there is one other point of great interest where chain drives are concerned, and for which some provision for adjustment should always be made. I refer to the question of end float in crank-shaft, cam-shaft and magneto spindles. This is a question not for the chain maker but for the engine designer, and must be borne in mind, for it will be obvious that if wheels have the ability to float fore and aft on the line of their spindles, troubles of cutting of guide plates and mounting of teeth are likely to occur.

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Reflex Lights in Scotland.

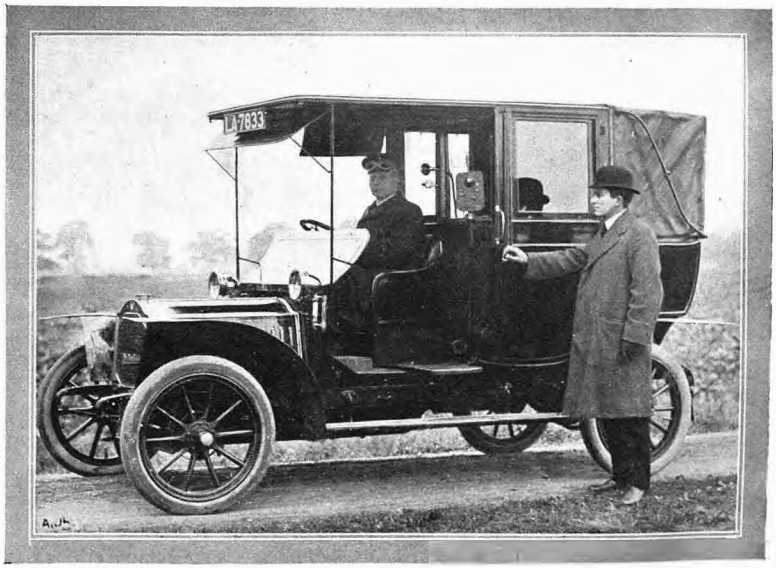
FOLLOWING the example of the Royal A.C. and other Automobile Clubs in England, the Scottish A.C. has decided to endeavour to popularise the reflex light amongst farmers and cyclists in Scotland. A number of the lights are to be purchased and sent to the Farmers' and Agricultural Associations, Carrying Contractors' Associations, Cycling Clubs, and other organisations of road users throughout Scotland. Samples are also to be sent to various Chief Constables for distribution amongst the cycling members of their forces.

New Municipal Vehicles for Paris.

PARIS has been a bit slow in adopting the motor vehicle for Municipal services, but at last a start has been made, and a couple of road-sweeping and watering vehicles have been put into service. One vehicle is a 24–30-h.p. De Dion chassis, carrying a 2,500 litre water-tank, the water, which is sufficient to sprinkle 1 kilom. of road, being distributed by two sprayers at the front of the vehicle. The broom is arranged diagonally across the centre of the chassis, and driven by a chain. The other type of vehicle is mounted on an 18–24-h.p. Brasier chassis, and has the broom arranged at the rear, while the sprinklers are arranged in the centre.

A Taxicab for Demonstration Purposes.

QUITE good and very practical is the idea put into force by the United Motor Industries, Ltd., of having a taxicab of their own property for the purpose of showing in operation the Company's various specialities, such as the "Magician" electric-lighting set, their suspension compensator, their "L.N." plugs, &c. The cab, which is a 14-h.p. 4-cylinder De Dion, is fully licensed by the police and carries an ordinary taximeter, and when not in use for business purposes by the U.M.I. is out in the West End of London plying for hire in the ordinary course at the regulation rate of 8*d.* per mile. Mr. Hoffmann, the very energetic managing director of the Company, is seen standing by the side of the cab in our photograph, which we reproduce on this page.



The United Motor Industries special taxicab which plies for hire under ordinary police regulations in London, and is used for demonstration purposes of the special accessories which are handled by the U.M.I. We refer more in detail on this page to this very practical innovation.

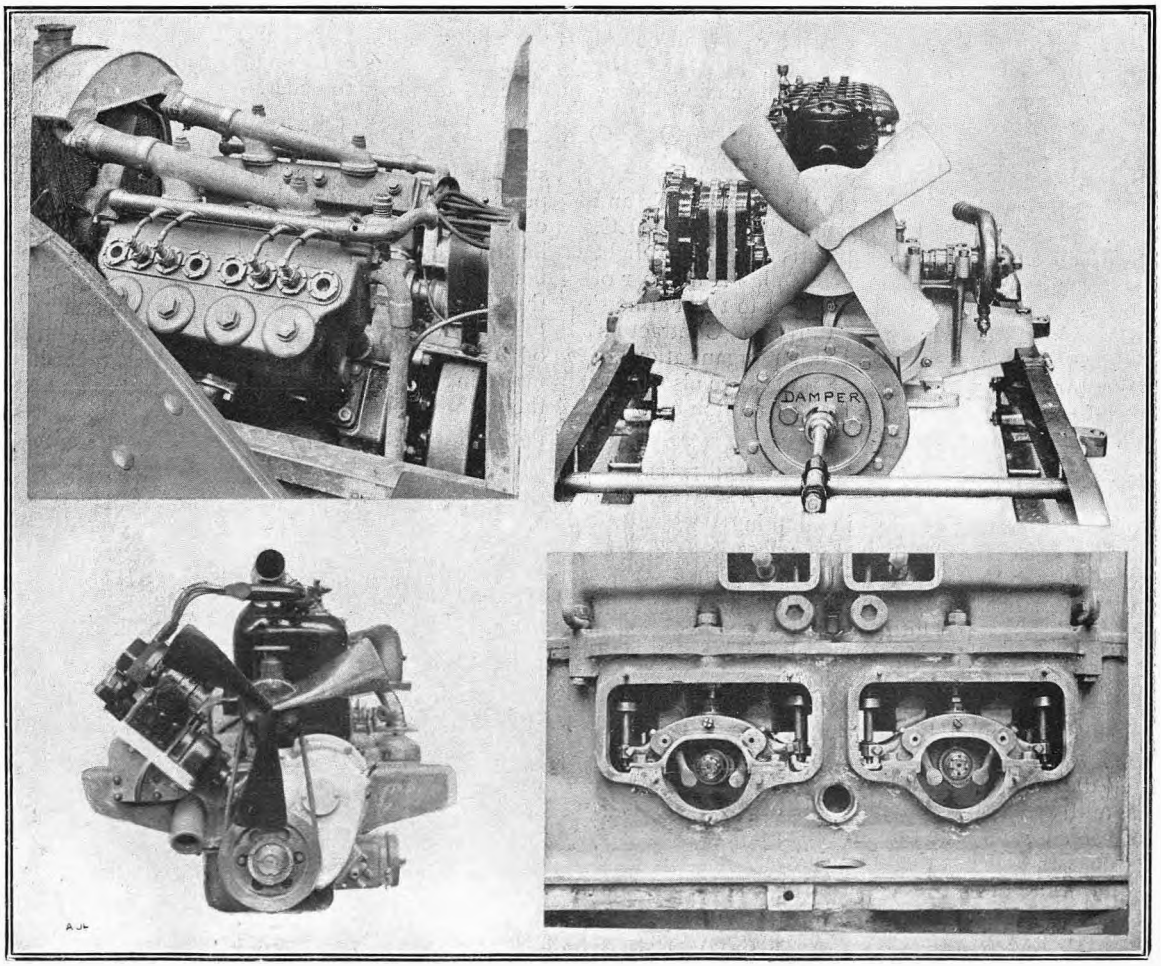
ENGINES IN 1912.

AT a time when the motor car is a mere body on four wheels to most people, and the journalistic profession has grown tired of ringing the changes on "cylinders cast in pairs, with valves on opposite sides," there comes the present Olympia Show to relieve the situation with a new sleeve-valve engine, two new rotary-valve engines, and a host of motors in which silent chains have replaced the spur-gearing formerly employed to drive their cam-shafts. And when, besides all this, there is still the original Silent Knight Daimler as flourishing as ever, the Hewitt piston-valve engine (on the Crowdy cars), and the Dodson valveless motor, which has no valves at all, who can possibly have the face to say that even the superficial side of motor engineering has grown, in the course of time, unchangeable features.

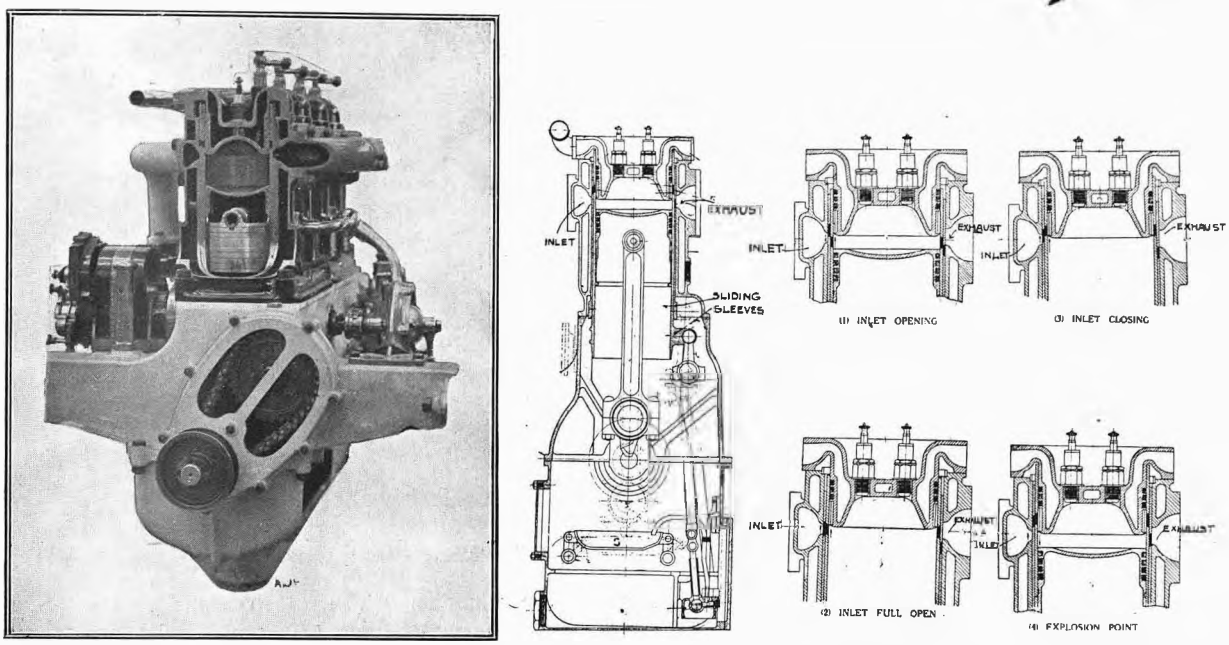
Truly, some of the older firms have been in less hurry to alter, knowing by past experience that it is easier to discard something that is good than to adopt something else that is better, but in their own field even these have accomplished much that is equally remarkable, although it may be less obvious to the eye. The public, at any rate, is still satisfied to buy poppet-valve engines in large quantities, even if it does give a thoroughly substantial support to the newer ideas. In this way progess is encouraged, and the balance of commercial interest, indispensable to the welfare of the industry, retained.

The Daimler sleeve-valve engine is too well known to need detail reference, but those unacquainted with its principle of action will find our original article in the AUTO., of September 19th, 1908, while much interesting literature is also provided by the makers.

The new Argyll sleeve-valve engine fundamentally differs from the Daimler in having one sleeve instead of two, and those who wish to study its construction will find a description in our last week's issue. Briefly described, the moving sleeve, situated between the piston and the cylinder wall, makes a combined up-and-down and rotary motion, such that any point on its surface draws the figure of an ellipse in space during two revolutions of the engine. Near the top of the sleeve is a row of holes or ports that uncover corresponding ports in the cylinder wall. Three of the latter communicate



FOUR INTERESTING ENGINE DETAILS.—Below, on the left, is the 25-h.p. Sheffield-Simplex with the inclined magneto, which is driven by a shaft carrying a worm interposed between the crank-shaft and cam-shaft skew gear-wheels. To the right of this view is a photograph showing the transverse cam-shafts on the Spyker engine, which are likewise skew-gear-driven from the crank-shaft, but are situated horizontally between the connecting-rods. Above, on the right, is an end view of the Daimler engine, showing the damper for eliminating critical speed vibration or thrash. This consists of a small multiple-disc clutch, half the plates in which are fixed to the crank-shaft while the others are fixed to the fan-pulley. On the left is the 8-cyl. V-type De Dion engine.



The original Daimler silent Knight engine, with its two sliding sleeves.

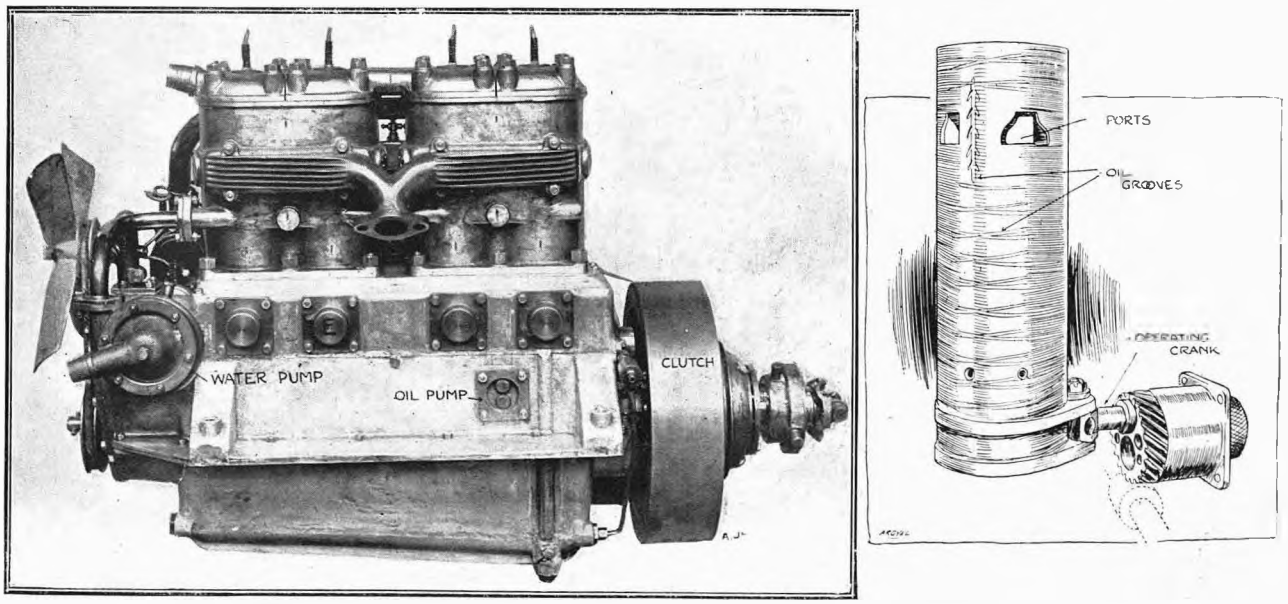
with the inlet, while the other three lead to the exhaust. As the sleeve descends, the exhaust is opened, and, as it rotates after descending, the inlet is opened; thus does the one sleeve serve the double purpose.

Manufacturing under license, Messrs. Piccard Pictet of Geneva, Switzerland, are building the Argyll single-sleeve engine with a longer stroke. They were independently experimenting along the same lines, but, unfortunately for themselves, were anticipated by a matter of three months in the patent. It is at least some evidence that they thoroughly believe in the principle that this set back should in no way have abated their enthusiam, and it is to be hoped that both firms will reap a fitting reward for their enterprise.

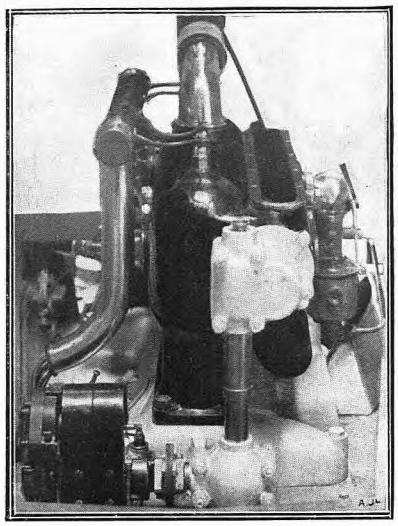
Of the new rotary-valve engines, the Itala utilises two rotary valves to perform the functions of the eight poppet valves ordinarily employed on a 4-cylinder engine, while the Darracq engine, based on the Henriod principle, utilises four rotary valves, all of which are mounted on the same spindle, which is skew-gear driven from the crank-shaft.

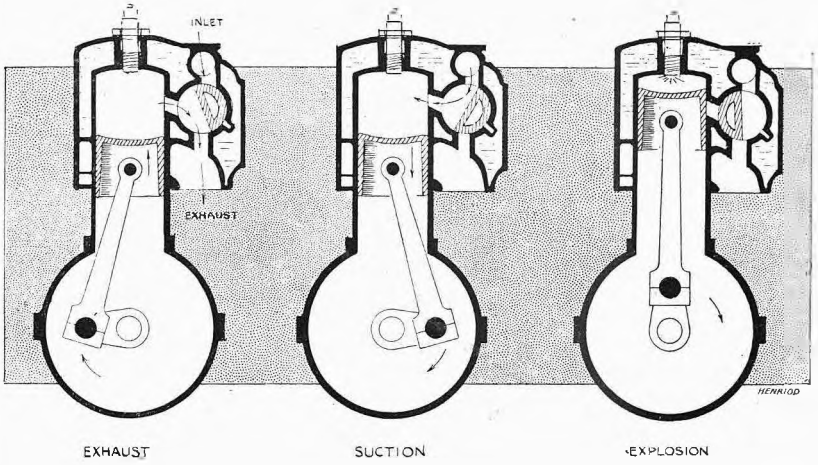
In the Itala engine the rotary valves are vertical and nearly as big as the main piston. Each is driven by a vertical spindle, skew-gear driven from the half-time shaft. These valves revolve at one-quarter the engine speed, and have duplicate parts; it has been explained, however, that each valve serves both the inlets and the exhausts of two cylinders. The most important point about the Darracq engine is the fact that the port in the cylinder walls is covered by the piston at the time of the explosion so as to protect the rotary valve from the greatest pressure and heat to which it would otherwise be exposed.

The Hewitt piston-valve engine is already familiar to our readers from the fully-illustrated descriptions thereof



The new Argyll single-sleeve valve engine, showing the crank motion that controls the sleeve.





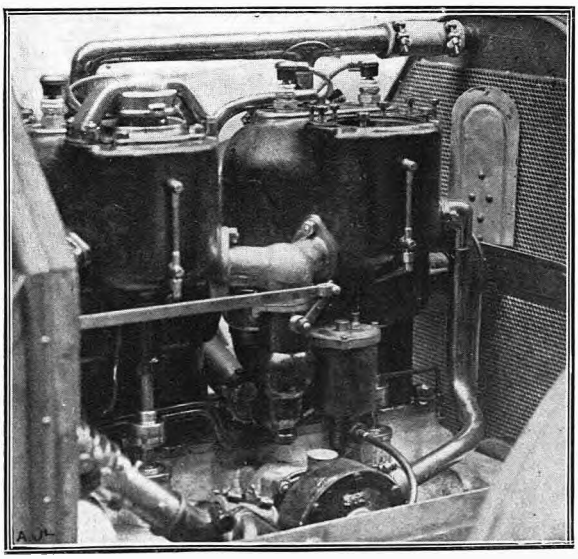
The new Darracq rotary-valve engine, with a diagram illustrating three positions of the valve.

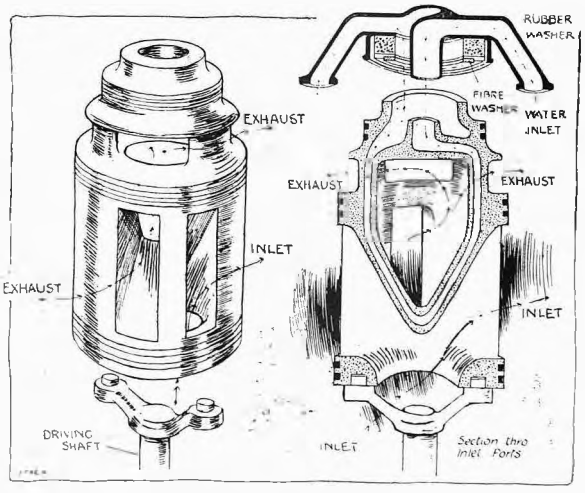
that appeared in the AUTO. of November 20th, 1909, and April 29th, 1911, and as with the exception of the adoption of a chain-drive in place of gear-wheels, it remains unchanged, there is no need to refer to it here at any great length. In principle, it consists merely in the substitution of sliding pistons for the ordinary poppet valves in order to secure the potential silence of a sliding contact. These pistons are controlled by a half-time crank-shaft, and the setting is such that the pressure of the explosion on the piston valves augments the torque on the main crank-shaft.

The Dodson valveless motor has likewise been fully described in this journal, and it, as our readers know, is a peculiar form of two-stroke cycle engine in which two adjacent cylinders have a common combustion space, and contain pistons that operate in synchronism upon parallel crank-shafts geared together and rotating in opposite directions. As in all two-stroke cycle engines, the inlet and exhaust ports are situated at the bottom of the cylinder-walls, and are closed and uncovered by the movement of the piston. An explosion takes place once every revolution of the crank-shaft instead of every two revolutions, which is, of course, the essential distinction between a two and a four-stroke cycle engine.

These are, so far as we know at present, the outstanding exceptions to the standard poppet-valve engine, which has done such good service these many years, and is likely to go on doing good service these many years more. There is, after all, not very much the matter with the poppet-valve engine now that manufacturers have been able to secure the material of which it should be made and have learned the various little tricks that go to make it perfect. Moreover, the public is accustomed to the principle, and though it may not, perhaps, keep the valves of its engines in the pink of condition, nevertheless finds little to grumble at either in their presence or operation. It is very seldom that valves want grinding in nowadays, and it is not often that they require adjustment, although a little more attention in both particulars would help some engines to render better service.

Much has also been learned about valve setting and the shape of cams, so that by this means alone manufacturers find it within their power to vary considerably the output and characteristics of their engines without





The Itala rotary-valve engine, with a sketch illustrating the flow of the gases.

altering the dimensions of bore and stroke, which so many people unwisely regard as the only indication of a motor's capacity. Needless to say, too, manufacturers design for the particular object they desire to obtain, and the degree to which one places silence before everything, while another makes a fetish of power, depends, of course, upon the class of user that he is endeavouring to attract to his goods.

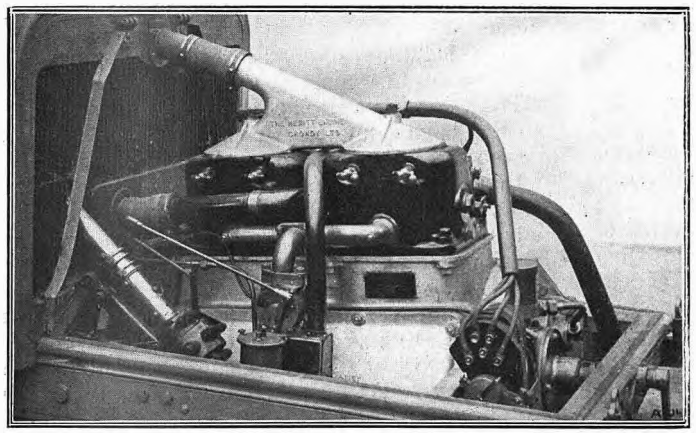
This subject is too complicated to lend itself readily to a direct analysis, and there is really very little that the intending purchaser can use as a guide to lead him to consider the merits of engines that are out of the ordinary in their capabilities, except it be a study of the current advertisements showing what special performance has been accomplished by each. In this also he must bear in mind whether it is the kind of performance that appeals to him as indicating the class of car that he desires. Also it is as well that he should satisfy himself that the compression, cam form and carburettor adjustment are the same as ordinarily provided on the same cars that are placed on the market. Where performances of this character are obviously intended to set up special records in speed or some corresponding quality, without any pretence at using a standard car, the inference is that the exhibition is intended to show the skill of which the manufacturers in question are capable, and, presumably, embody in their standard cars, which they may design just as specifically for another purpose.

Nowadays, cars have reached such a dead-level of excellence that a normal performance shows nothing at all, and it is truly difficult to devise any sort of a test that is at once sufficiently sensational and of real merit. Of late, attention has been mainly directed to top-gear journeys over the London to Edinburgh route, from Land's End fo John o' Groats and on Brooklands track, but we need only refer our readers to our current advertisement pages in order to make them fully acquainted with the respective merits of the different achievements, all of which have received their editorial recognition in these columns some time since.

Briefly reviewing the tendency of modern-engine design among englnes of the poppet-valve type, it is difficult to find any pronounced change from the corresponding period of last year. There is still the same predominant output of motors of the smaller dimensions notably of the 80, 90 and 100 mm. classes, and indeed the last category is now very widely considered to represent a limit in size.

British manufacturers are producing between them somewhere about 130 different engines, the majority of which are of the 4-cylinder type, and, as we have remarked, mostly belong to either one of the three classes specified. In the 80 mm. class it seems almost proper to state that the normal stroke has been increased above its former value of 120 mm., for what with the Sunbeam and Calthorpe strokes of 150 mm., the Arrol-Johnston stroke of 140 mm., the Armstrong-Whitworth with 135 mm., and several more with strokes of 130 mm., it really seems as if the 120 mm. dimension were being gracefully pushed back towards the lower limit of the scale. Among the British makes of 90 mm. cars the Sunbeam is again abnormal with a stroke of 160 mm., with the Calthorpe 150 mm. next in length. Then follow the Talbot and Argyll with 140 mm., and a dozen or more with strokes of 130 mm.

As the bore increases the bore-stroke ratio diminishes, as may be seen from a glance at our tables in our "Buyers' Guide." In the 100 mm. class, for instance, not only is there less evidence of long strokes, but there is, on the whole, more evidence of engines having even shorter strokes than characterise the motors in the other classes. Again taking the British makers, the lower limit in this respect is represented by the Bentall with a stroke of 95 mm., the Lanchester with 100 mm., and the Clement with 110 mm. The longest stroke of all among the British cars in this class is 140 mm., which is the dimension of the Crossley and Bell engines. For the most part, motors in this category have a stroke of 130 mm.



The Hewitt piston-valve engine, with a sectional drawing illustrating the arrangement of the valves.

Little support is extended by British manufacturers to 4-cylinder engines exceeding four inches in bore, above which limit the tendency is to build 6-cylinder motors. Used as they are only by men of means and on cars luxuriantly appointed, it is natural that the 6-cylinder engines should be comparatively few in number. Nevertheless, British manufacturers produce nearly thirty different motors of this kind between them. At the upper end of the scale of sizes is the very powerful Napier 90-h.p., with a bore of 155 mm., which is somewhat beyond the requirements and certainly beyond the purse of most motorists. Then comes the Napier 65-h.p. with a bore of 127 mm., and thereafter there is the first evidence of a "class" as established by the Rolls-Royce, Sheffield Simplex and Wolseley, which all have engines of approximately 115 mm. bore. The greatest number of 6-cylinder British cars, however, is included in the 90 mm. class, and considerable support is also extended to 6-cylinder motors having bores as low as 80 mm.

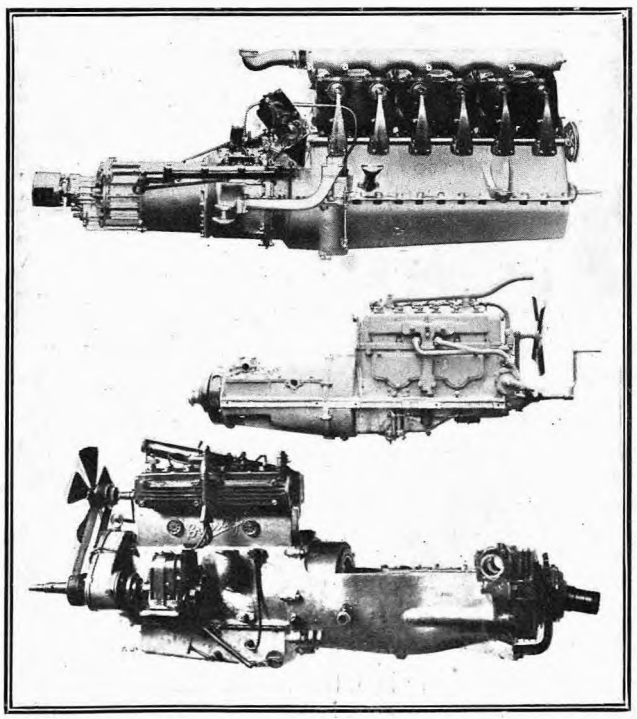
Turning to the Continental section, it is interesting to

note that the whole of the Continental industry represented on the British market produces about twice as many engines as the British manufacturers turn out by themselves.

In the six-cylinder category, the Continental representation is about the same as the British, and therefore in smaller proportion to the whole, which is fairly clear evidence of the position that this country has established for itself as the leader in refinement of car construction. The explanation, of course, is not far to seek, for manufacturers necessarily build chiefly for the home market, however much they may appreciate the "open door" abroad. In England the qualities of a good six-cylinder engine are perhaps more apparent than elsewhere, and indeed the inveterate long-distance driver who does most of his motoring on the endless straight roads of France is not always averse to the vigorous impulses of a powerful "four."

On the other hand, it is particularly interesting that Messrs. De Dion should have brought out two eight-cylinder engines, which are further remarkable for the V-setting of the cylinders. Speaking generally, we rather gather the impression that Messrs. Delaunay-Belleville are about the only Continental firm that is at present making a really serious set at the six-cylinder-market, or are particularly anxious to have their name identified with the production of this class of car.

In the four-cylinder category, the Continental and the British manufacturers appear to be building under much the same influence; that is to say, the 80 mm. class is predominant in popularity, with the 90 and 100 mm. classes in high favour. The remarkable feature about Continental four-cylinder cars, however, is the large number of 65 and 70 mm. models produced. Either of these classes contains more Continental machines than both sections put together contain of British-built models. Even the great Mercedes firm, which at one time was identified with nothing but cars of the highest power, is included in the 70 mm. class. Messrs. De Dion, whose great forte has always been the production of low-powered cars, is represented by 4-cylinder cars ranging from 66 mm. upwards.



Three examples of the unit system of erecting the engine and gear-box. Above is the Lanchester, in the centre is the Spyker, and beneath is the Crossley.

In the matter of length of stroke, there is not quite the same uniform tendency on the part of Continental makers to develop the long-stroke engine, although individual instances of an abnormal dimension are not wanting, as for example the 160 mm. stroke on the La Buire "fifteen," which has a bore of 80 mm. This is longer than anything in the British section, and even the Chenard-Walcker 16–20-h.p., with a stroke of 150 mm., has the same ratio as the new long-stroke Sunbeam. Excluding these and the 140 mm. stroke of the De Dion "eighteen," however, the remainder give, perhaps, less support to strokes exceeding 120 mm. than do our own makers.

In the 90 mm. class on the other hand, strokes are rather longer on the Continental engines than on the British, for not only is there nothing below 130 mm., but many of the manufacturers use 140 mm., and the La Buire is again abnormal with a stroke of 160 mm. The Gobron engine in this class, which has a nominal stroke of 180 mm., must be considered as something apart from the rest on account of its double-piston engine.

There is little or no tendency to increase beyond these stroke values in engines of greater bore, for although the Mercedes 90 has a stroke of 180 with a bore of 130 mm., the very large Continental 4-cylinder engines do not, for the most part, exceed 150 or 160 mm. stroke.

In view of our remarks about the Continental and British development of the six-cylinder principle, it is only to be expected that the Continental makers should be more extensively represented by large four-cylinder machines. If, as is quite fair, we place the limiting dimension of the average four-cylinder car at 100 mm. bore, then there are about twice as many Continental vehicles as British that have engines with a bore exceeding this amount. On the other hand, of course, the market for motors of this kind is still very limited, for they are necessarily expensive to buy; but, be that as it may, for the most powerful four-cylinder engine it is still necessary to go abroad, as no British firm builds four-cylinder motors as large as the Mercedes 70-h.p. and 90-h.p., or the Opel that is so modestly given the R.A.C. rating of 42-h.p., but has a bore of 130 mm. and a stroke of 165 mm.

Discussing this question of engine classification serves at least as an interesting analysis of the industry, and there is also one point that emerges therefrom—the question of the limiting dimension of the average type of four-cylinder car—on which we would make a few further remarks. From the day of the "four-inch" race we have always regarded the four-inch engine as representing the higher limit of popular four-cylinder motors, and the statistics certainly prove that such is the case to-day.

In a four-inch four-cylinder engine you can have as much power as you are likely to want for any ordinary purpose. It will give you a fast open touring car, and it will pull a landaulette with ease. If, however, you want an unusually large or powerful machine of especially luxurious character then the six-cylinder engine is almost necessarily associated, at any rate, in the British mind, with the type of car required. And, the increasing popularity of the six-cylinder engine itself has resulted in the development of smaller motors of this type, which in turn

has placed manufacturers who confine their attentions to building perhaps only two models somewhat on the horns of a dilemma.

The six-cylinder 4-inch engine is a distinctly powerful motor, considerably larger than many makers can easily sell; on the other hand, a six-cylinder engine of 90 mm. bore clashes somewhat with the four-cylinder 4-inch class. As a result, there is a tendency at the present time in England, which has as yet not become very pronounced, to standardize the 90 mm. bore in the four- and six-cylinder classes, and in view of the extraordinary amount of power that is now obtainable from a good engine of the 90 mm. class, we must confess to be rather favourably impressed with this general policy, which seems to us to be equally in the interests of the average motorist and to the commercial advantage of the manufacturing firms.

So much of the detail of engine design is governed by considerations of manufacturing facility that it is impossible to draw the attention of intending purchasers to superficial matters that are really of any moment to them. According to the nature of each man's particular misfortune, whether it be a choked jet, a broken valve spring, a slipping fan belt, or some other trouble to which individual motorists rather than individual engines seem prone, so is the interested observer able to take note for himself whether any particular design meets with his approval in regard to accessibility, simplicity of appearance or elaboration of detail, as the case may be.

Of what there is inside, he must in a large measure be prepared to take the word of the manufacturer and to use his own judgment in weighing its value in the light of the reputation and standing of the firm. It may or it may not eventually be proved to be a matter of moment whether the valves are placed together or on opposite sides, whether an engine has thermo-syphon cooling or pump, or whether it has some other feature that serves as a ready-talking point, the main essential is that makers should take care to give their customers well-fitting moving parts and a thoroughly long lasting job. And in this regard perhaps our remarks in another place on the automobile industry and the British car may be perused with interest if the reader has hitherto only glanced at the page.

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THE VITAL JOINT.

To the failure of the ball joint in the steering mechanism of his car, Prince Henry of Prussia's serious accident last August was, so far as is known, attributable. He was driving home through Germany, after his visit to England with the teams that took part in the "Prince Henry Tour," when suddenly he found that his steering-wheel was disconnected; an instant later his car ran full tilt into a tree.

In the annals of modern motoring this is an unparalleled breakdown, and that it should have happened to Prince Henry of Prussia, of all men in the world, only more strongly emphasises the singularity of the misfortune. At the same time, of course, it reminds us of the fallibility of human endeavour, for never did any one man deserve better of motoring's presiding deity than his Royal Highness—who has himself done so much to foster that deity's charge—and never, perhaps, was any motorist better served by his manufacturers than Prince Henry has been by the famous old Benz Co. The accident made no difference in his loyalty as a patron of the firm—and, true sportsman that he is, the Prince took the earliest opportunity of saying so publicly.

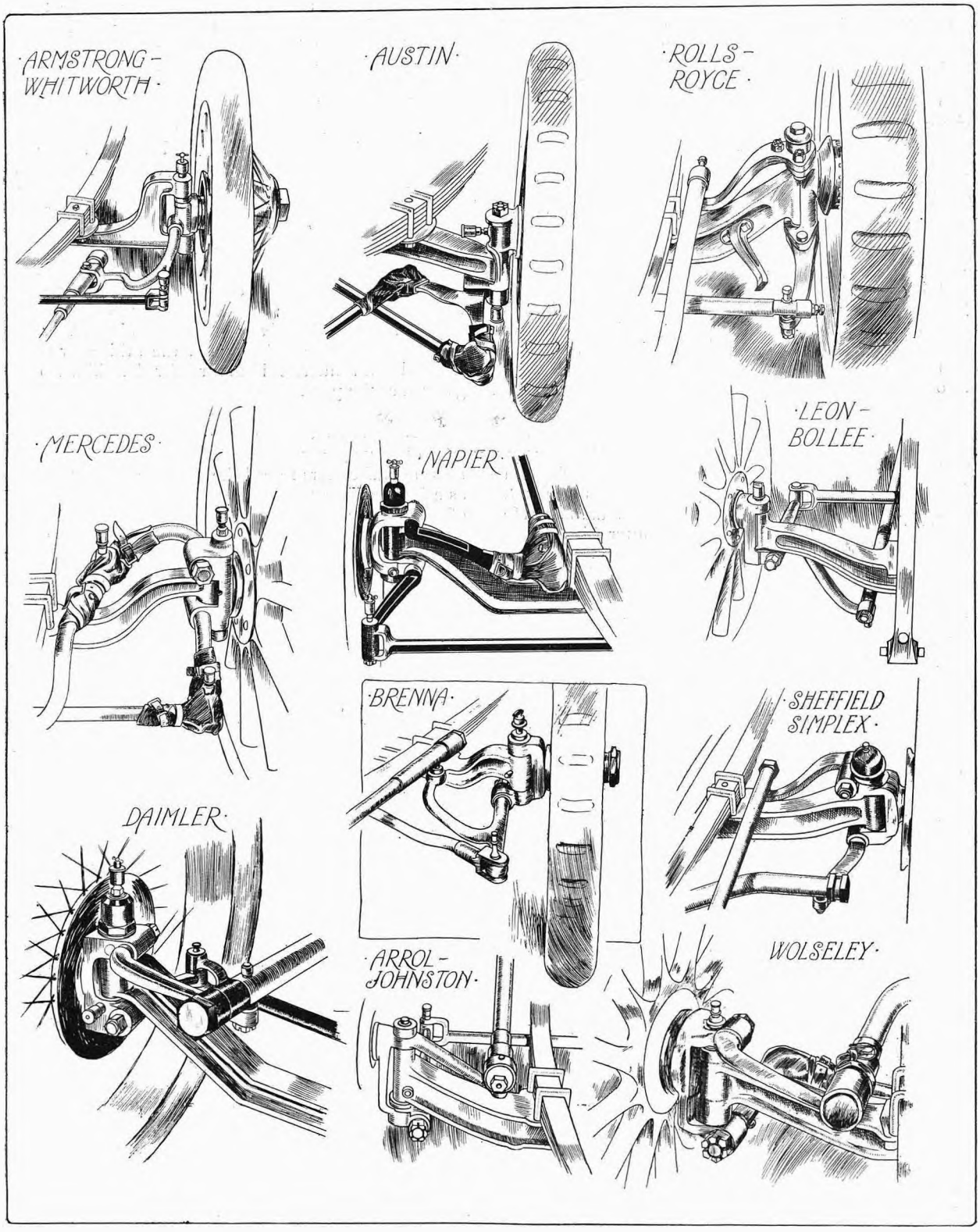
Well, the story is interesting in itself, having the human element and a royalty at that, but the point of it all in this place is to emphasise, by the light of the exception that proves the rule, how safe a car is in a general way, and how that it might be worth while if those in charge of motor vehicles cast a more parental glance than is their custom at the working state of the "vital joint," some examples of which are illustrated on the next page. Any joint in the steering connections is equally important, but we have illustrated the attachment to the off-side road wheel, for the reason that it makes the more interesting picture.

For example, you will notice that the arms to which the tie bar coupling the front wheels is hinged do not project at right angles from the axes of their steering pivots. On the contrary, they are either set considerably inside these centres or else slope inwards, which has just the same effect in making the tie bar *shorter* than the axle between the steering pivots. If the tie bar lies in front of the axle, the arms slope outwards so as to make it longer, but this is a less common arrangement, because most manufacturers regard the position behind the axle as affording some protection against serious consequences of a slight collision.

Why the tie-bar should be shorter than the axle will only be really apparent to those who take pencil and paper and make a diagram of what the front wheels of a car have to do when steering. Because the rear wheels are fixed, the car must always turn upon a circle, having its centre located on the axis of the back axle extended. This will be apparent directly you set the scheme down on paper. It will also be apparent that both front wheels must be at right angles to radii drawn from the *same* centre, if they are to really roll round the corner and not skid sideways. It will further be evident that the inside wheel must turn through a larger angle than the outside wheel in order to satisfy this condition, and if you watch the simultaneous movement of the two front wheels when the steering wheel is turned you will find that this is precisely what the shortened tie-bar causes to happen.

There are other points of interest, too, about this detail of motor car construction that is shown by these sketches, but space does not permit of anything like a complete explanation of them. There is, for instance, the fact that some wheels are splayed, while others stand vertically on the ground, which is well worth thinking about from the driver's point of view. In those cases where the wheel is vertical it may often be noticed that the axis of the steering pivot is sloped to meet the tyre where it touches the ground. This comes to the same thing as splaying the wheel, for the object in both cases is to give what is known as "centre-point" steering.

For mechanical reasons that will be obvious directly you look at the wheel, it is impracticable to put the steering pivot inside the hub, and consequently the wheel as a whole overhangs the hinge, and the road shocks react upon the mechanism through this amount of leverage, thus making it harder to steer as well as imposing more stress on the joints. In "centre-point" steering this leverage is much reduced, and in consequence the steering is lighter, but, all the same, some manufacturers disapprove of the system, and this, like many other arguments, will doubtless take its turn to be thrashed out in the discussion columns of the AUTO.



THE VITAL JOINT.—Of all the parts of the car the steering connections are of the most vital importance to safety. So long as the steering is intact the driver can still make an effort against fate, but if the steering fails, good luck alone can save the car from disaster. Above are various steering-knuckles, showing the variety that characterises their design. We would urge upon chauffeurs the desirability of seeing that these joints are always kept clean and well lubricated.

The National Society of Chauffeurs

OFFICIAL NOTICES

President.

The Hon. RUPERT GUINNESS, C.M.G.

Vice-Presidents.—Hon. ARTHUR STANLEY, M.P.; JOHN CATES, ESQ.

Trustees.

Messrs. S. F. EDGE, P. L. H. DODSON, C. W. NAIRNE, A. F. EASTON.

Chairman of Committee.—Mr. C. W. NAIRNE.

Deputy.—Mr. A. ALLISON.

General Secretary.

ARTHUR SEXTON, Halkin Street, S.W. Kensington 4220.

Objects.

To endeavour by all constitutional methods to procure the following amendments to the Motor Car Act:—

1. That driving licenses shall only be endorsed on conviction of an offence involving actual and wilful damage or injury to the public.
2. That endorsements shall lapse after a reasonable period.
3. That fines shall be imposed in accordance with the earnings of the defendant, and not those of his employer.
4. That licenses to drive motor vehicles shall only be granted to applicants who have satisfied the authorities of their competence to drive to the safety of the public.
5. To protect the interests of Chauffeurs generally.
6. To promote amicable relations between employers and employees.
7. To provide legal assistance for members.
8. To assist members to find employment.

Official Notices.

The usual weekly meeting of the Management Committee was held at the Society's offices at 8 p.m. on Monday last, when there were present Mr. C. W. Nairne, presiding; Mr. A. J. Allison, Deputy Chairman; Mr. J. Cates, Vice-President. Committee: Messrs. Curson, Holmes, Adey and Pye.

The minutes of the previous meeting were read and confirmed.

N.S.C. Garages.

Applications for honorary membership were made by:—

Messrs. W. R. McTaggart, 43–45 Sth. King Street, Dublin.

Messrs. Willis and Son, Central Garage, Market Place, Devizes, Wilts.

Messrs. W. R. Page, Central Motor Works, Epsom, Surrey.

Messrs. E. W. Jackson and Son, Hall Gate, Doncaster, Yorks.

Messrs. F. Press and Co., Cornhill Motor and Cycle Works, Chard, Somerset.

All the applications were granted subject to the usual conditions.

MEMBERS PLEASE NOTE.—By some unexplained reason the name of the N.S.C. Garage for Guildford, Surrey, was omitted from the booklet. Please write on margin of page containing garages:—

Guildford. Archibald Gray, Falcon Road, York Road.

General Meeting.

The agenda for the meeting was arranged as follows:—

1. Election of chairman.
2. Secretary's report.
3. Resolution, Mr. C. W. Nairne (London), *re* number to form the Committee of Management.
4. Resolution, Mr. A. J. Allison (London), *re* constitution of Committee.
5. Resolution, Mr. C. W. Nairne (London), *re* position of ex-officio members on Committee.
6. Election of Committee of Management.
7. Status of secretary. Recommendation by Committee.
8. Resolution, Mr. J. Hunt (Enfield), *re* reduction of subscription if paying yearly or half-yearly in advance.
9. Report of Newport Branch by Mr. A. L. Jones, representative for South Wales.
10. Resolution, Mr. C. W. Nairne, *re* acquiring billiard table for h quarters.
11. Resolution, Mr. H. Warren, Chairman of the Newport Branch. Vote of thanks *re* Parliamentary campaign.
12. Ratification of Committee's action in appointing the Hon. Arthur Stanley, M.P., Vice-President.
13. Ratification of the Committee's action in appointing the AUTOMOTOR JOURNAL official organ to the Society.
14. Political campaign. By Mr. Brokenbrow (Liverpool) *re* age limit for granting of licenses.
15. Board of Trade examination.

The meeting will be held on Thursday, November 9th, in Caxton Hall, Westminster, at 8 p.m. sharp. Members of the Committee please note that the Committee will meet at 6 o'clock sharp in the hall for the transaction of the usual weekly business, and deal with any further business likely to be brought forward at the general meeting.

General Business.—The Secretary asked for instructions in reference to claim for wages by a member from his late employer. After consideration it was agreed to ask for further particulars, and the case was deferred until the next meeting.

Mr. Allison brought before the notice of the Committee the existence of the Auto Club, Piccadilly, which had been formed in order to create social relations among chauffeurs. He contended that every club of this description helped to bring about the aims and objects of the National Society of Chauffeurs, and therefore should be supported. The Committee present signified their intention to become members of the Auto Club.

Political Campaign.—The Secretary reported that on the return of the Hon. Arthur Stanley, active operations would be commenced in the third stage of the campaign.

Newport, Mon., Branch.

Committee meeting held October 25th, 1911. Present: R. Walters, Secretary; H. Warren, Chairman; A. L. Jones, Representative; A. Warren, Treasurer. Committee: Messrs. Nelmes, Little, Guest, Davies, Hobbs, Nash, Allen, Padfield, Taylor, Huggett, Sullivan, Selwood and Bird.

The Chairman expressed his pleasure at seeing so many members present. The Secretary reported that a challenge had been received from a local billiard club asking for a match. It was agreed to accept the challenge. The match with St. Paul's had made the members practice more, and, although defeated by 40, they were in no way disgraced.

It was agreed to employ the billiard marker, his week's trial being very satisfactory. Mr. Fred Taylor was elected a member of the Committee.

It was agreed to send a letter of sympathy to Mr. Bob Scard, with wishes for a speedy recovery.

Arrangements were made for the journey to the Motor Show, and the General Secretary was thanked for arranging with Messrs. Harvey, Frost and Co. for a vulcanizing demonstration, and to Mr. J. Cates for his offer of free admission to the Show for all members who undertook the journey.

The arranging by the Committee of Management to hold the general meeting on the same date was much appreciated.

The meeting closed with a vote of thanks to the Chairman.

Accepted for Membership.

F. C. Mumford, Walton-on-Thames
F. G. Wibberly, Woking
R. D. Duff, Lockerbie, N.B.
T. D. Brook, Burnham Beeches
H. L. Watson, Leicester
W. Johnson, Chester
John Cole, London
G. E. Gough, Chester
J. H. James, N. Wales
A. L. Chalker, Smethwick, Birmingham
P. A. Randall, London, N.W.
Leonard Francis, Cardiff.

Applications for Membership.

Alfred Dennis, Kingston, Surrey
Malcolm Ross, Wandsworth
W. A. Vanleer, Wood Green.
J. D. Hill, Shepherds Bush.
R. G. Philpott, Farnborough.
B. M. Probert, Basingstoke.

Any member wishing to raise an objection to the election of an applicant for membership is requested to communicate with the Secretary without delay.

The Committee trust that members will do their utmost to assist the Editor by sending to him any item they may consider of interest to motorists and chauffeurs generally.

Tickets for the Motor Show may be had at half-price by calling at the office or sending P.O. for number required, with stamped envelope for reply.

ARTHUR SEXTON.

Particulars of Membership.

Applicants must have at least 12 months' experience as paid

drivers of motor vehicles, and must be men of undoubted good character.

First month's subscription (*including entrance fee*), *2s. 6d.* Subsequent subscriptions, *2s.* per month. Payable in advance on the 1st of each month. Badges, *1s. 1d.*, post free. A copy of the AUTO. is posted weekly to all members whose subscriptions are not in arrears, in order that they may be kept well posted in the progress made by the Society.

Six Sound Reasons.

Every *bona fide* chauffeur should join the N.S.C. for the following reasons:—

1. It is not controlled directly or indirectly by any other organisation.
2. It is pledged to discourage sweated labour.
3. It is entirely self-supporting, and is on a sound financial basis.
4. It is the largest and most powerful chauffeurs' society in the world, and is managed by a committee of chauffeurs.
5. All members are equal and have equal rights.
6. Every member has a voice in its management.

APPLICATION FORM.

TO THE SECRETARY OF THE NATIONAL SOCIETY OF CHAUFFEURS.

Halkin Street,
Hyde Park Corner, S.W.

SIR,—Please send me a form of application for membership of the above Society. I enclose herewith P.O. *2s. 6d.* (entrance fee and one month's subscription) same to be returned to me in the event of my application not being accepted.

Signed

Address

NOTE.—Only *bona fide* Chauffeurs who have had at least one year's experience as paid drivers, and whose references will stand strict investigation, are eligible for membership.



COMMUNICATED by the A.A. and M.U. Road Department.

NORTH.

GREAT NORTH ROAD.—Members are requested to proceed with special caution at Potter's Bar, also through Stevenage, and in other towns and villages in the county. Under repair at Tempsford, Eaton Socon, Little Paxton, Wansford, from Baldock to Arlesey Station, between Foxton and Long Bennington; also between 4th and 5th milestones south of Doncaster (loose metal), 500 yards south of Neville's Cross and 1 mile north of Scotch Corner (unrolled metal); also between 82nd and 83rd milestones south of Wansford (lighted at night); at the latter place a speed limit is now in force.

CHESHIRE.—*Chester–Frodsham Road.*—Under repair 1¼ miles from Frodsham. Not protected at night.

Chester–Liverpool Road.—Between 1 and 2 miles north of Chester tarring operations are in hand.

LANCASHIRE.—*Lancaster–Kendal Road.*—Special care is necessary in the vicinity of and through Galgate; also in Lancaster.

Preston-Garstang Road.—Under repair 4 miles from Preston.

Preston–Lancaster Road.—Repairs are in hand at Broughton.

Warrington.—Bridge construction in progress.

DURHAM.—Special care is advisable at West Auckland.

YORKSHIRE.—*Leeds–Roundhay Road.*—Control working on tramlines between Gathorne Terrace and Franklin Place; movable controls are also working in other parts of Leeds; special caution is, therefore, advised in the vicinity of and through all parts of Leeds.

Otley–Skipton Road.—Members are again reminded of the 10-mile speed limit through Burley-in-Wharfedale; numerous complaints have been received concerning the speed of cars through this town.

Tadcaster–Leeds Road.—Remetalling in hand between 1 and 2 miles from Tadcaster.

Leeds–Huddersfield Road.—Under repair 1½ miles from Birstal, half width (lighted at night); also at Geldered Hill, Gildersome; at Mirfield Moor, 3 miles from Liversedge; and at Bradley, ½ mile from Huddersfield tram terminus.

Driffield–Bridlington Road.—Drains are being laid at Nafferton.

MIDLANDS.

LEICESTERSHIRE.—Repairs are still in progress on the Derby–Leicester Road from 114th to 118th milestones between Ashby and Kegworth.

NORTHANTS.—Members are reminded of the speed limit through Stony Stratford.

SALOP.—Tarring operations are in hand at St. George's, near Wellington, on the Birmingham–Wolverhampton–Shrewsbury Road.

STAFFS.—*Birmingham–Lichfield Road.*—Under repair at Mere Green, 1½ miles from Sutton-Coldfield (lighted at night); also near Four Oaks Station (protected at night).

Birmingham–Shrewsbury Road.—Under repair at Wednesbury.

WARWICKSHIRE.—Repairs are in hand at Kenilworth, centre of town (protected at night).

Warwick–Stratford Road.—Under repair 1 mile from Stratford-on-Avon.

WORCESTERSHIRE.—*Birmingham–Worcester Road.*—Widening operations are in hand at Upton Warren; under repair at Marlbrook, 2½ miles from Bromsgrove.

WEST.

DEVON.—Special caution is necessary between Saltash and Mutley (Plymouth). A new ferry bridge is being built across the River Tamar. On the road to North Devon, near the Exeter boundary, remetalling is in progress (clear at night).

WILTS.—Canal bridge at Telford Road, Rodbourne (near Swindon) is being repaired; alternative route *via* Cricklade Road.

WALES.

RADNORSHIRE.—*Wye Valley.*—A 10-mile speed limit is now in force through Rhayader.

EAST.

CAMBS.—Under repair between Melbourne and Foxton, 4½ miles from Royston (lighted at night).

ESSEX.—Colchester Road is under repair, full width at Feering Hill, near railway crossing; also between 43rd and 44th milestones. Full width being repaired between Colchester North Station and Botolpha Hill, West Bergholt; alternative route *via* Baker's Lane and Lexden. Members are reminded of the 10-mile limit through Witham.

SOUTH.

BATH ROAD.—Special caution is advisable 1 mile west of Brentford, just west of Hounslow church; also at Slough (members are requested to observe the 10-mile limit here). Measured distance working on the Bath side of Hungerford. Under repair between Reading tramlines; also between Chippenham and Devizes for about 5 miles.

BERKSHIRE.—Controls are frequently worked in Windsor Great Park. Cattle frequently stray on the Staines–Windsor Road at Runnymede; special caution is necessary at night.

BRIGHTON ROAD.—Measured distances are in frequent operation between Banstead and Belmont Station, 200 yards south of Sutton, from Tooting Junction to Figg's Marsh, Mitcham; also ½ mile south of Mitcham Station, 2 miles south of Purley (working both ways) and at Burgh Heath between Beale's (butcher) and 16th milestone. Under repair between Crawley and Pease Pottage; Handcross to Slaugham cross roads; also from Bolney to Hickstead.

HANTS.—*Fareham–Portsmouth Road.*—Steam-roller at work under railway arch, over Fareham Mill pond. Control working 1 mile east of Porchester.

Fareham–Catisfield Road.—Whole width under repair 1½ miles west of Fareham (loose metal).

Basingstoke–Salisbury Road.—Control in operation at Overton.

KENT.—*Hastings Road.*—At foot of Station Hill, Bromley, repairs are in hand.

Old Romney–Lydd Road.—Whole width being repaired for ½ mile; alternative route *via* Old Romney Wall to Hammond's Corner.

Wrotham–Maidstone Road.—Remetalling in progress at foot of Malling Hill.

Canterbury–Margate Road.—Measured distance working from Birchington to Westgate.

Ten-mile limit in operation at Chatham.

MIDDLESEX.—On the Edgware Road a measured distance is working from Welsh Harp to Cricklewood.

Sunbury–Staines Road.—Half width being tarred 1¾ miles west of Sunbury.

OXON.—At Henley-on-Thames special care is advisable on leaving for the Marlow Road.

SOUTHAMPTON ROAD.—Under repair from "Jolly Farmer" to Camberley; control working from Hartford Bridge Flats to Blackwater; also at Star Hill, near Hartley Row. Special care is necessary on approaching Southampton, owing to repairs; High Street, Shirley, is blocked for half width.

SURREY.—*Dorking Road.*—A measured distance is operating at Ewell, between Organ Inn and Spring Hotel; also at Workhouse Hill, Epsom. Special caution is advisable through Leatherhead, also through Mickleham, where a new speed limit is in force.

Redhill–Balcombe Road—Measured distance operating between "King's Head" (½ mile south of "The Chequers," Horley) and the "Coppingham Arms"; also worked at night.

SUSSEX.—*Brighton–Shoreham Road.*—Special care is necessary in and near Fisher's Gate, Southwick.

Hastings Road.—Under repair between Robertsbridge and Mountfield.

Tunbridge Wells–Lewes Road.—Members are reminded of the speed limit through Crowborough and at Uckfield.

Brighton–Portsmouth Road.—At Emsworth spring tides come up from the creek and flood the bridge and roadway; alternative route *via* Westbourne.

LONDON.—Measured distance operating up Fitzjohn's Avenue, South Hampstead; also between Barnes Common and Richmond (Queen's Road to Sheen Road); on Clapham Common from Cedars Road to Battersea Rise; on the Finchley Road at Golders Green and Childs Hill; also at Blackheath, in Shooter's Hill Road (Kidbrooke Grove to Kidbrooke Park Road).

Members are requested to stop and interrogate the patrols.

LOST.

Brown leather suit case between Manchester and Southport.

Grey squirrel muff between Barnet and St. Albans.

From a tool bag, a Triumph bracket spring, oil can, belt, bag of bolts, nuts and sundries between Egham and Hampton Court.

AA. badge in Hove, Brighton.

AA. badge on the Chester Road.

AA. badges, numbers 7,306, 14,619, 17,504.

Reservoir of tail lamp between London and Tonbridge.

Canvas cover for Cape cart hood; also a carpet between Cheadle and Macclesfield, near Alderley Edge.

STOLEN.

Motor cycle, No. L.A. 486, 3½-h.p. Triumph engine, painted black, enamelled tank, with green panels.

A.A. AND M.U. NOTES.

COMMUNICATED FROM FANUM HOUSE.

Official.—New members can be enrolled at the Olympia Motor Show, the proprietors of several of the motoring journals having kindly afforded the Association the use of their stands for the purpose. Owing to the enormous demand for Exhibition space, the A.A. and M.U. will not have its own stand this year.

Touring Department.—*Continental Passes.*—The following passes on the Continent are at present open to motor traffic: Arlberg Pass, Col de la Faucille (Lono-le-Saunier to Geneva). The Brenner Pass is still open, but may be closed by November 15th; (during the winter this pass is sometimes closed by snow for two or three days at a time, but it frequently remains open at intervals until the end of December). The Lantaret Pass is still open. On the route to the Riviera the section *via* Roanne, St. Etienne, Annonay and the Rhone Valley is still open; it may, however, be closed by snow at any time, therefore the Paris–Dijon road is preferable. The Stelvio Pass is closed. The St. Gothard Pass is snowed up, but cars can be put on the train at Goeschennen for Airolo on the southern side of the Pass.

Roads in the Isle of Wight.—Regarding several complaints by members concerning the state of the roads outside the towns in the Isle of Wight, the Isle of Wight Rural District Council has just notified the Association that it has been decided to purchase a steam tractor and a steam-heated tar sprayer. Experiments conducted on the Island have satisfied the Council that tar-spraying the roads is a sound financial procedure, and that tarred roads are thoroughly appreciated by road users.

Overhanging Trees.—While a member's car was passing along the Leatherhead Road on the 22nd ult., a heavy bough snapped off an overhanging tree and narrowly escaped falling on the car. There are several old elms along this road, and in view of their danger to vehicular traffic, the Association immediately placed the facts before the Epsom Rural District Council. The surveyor has since informed the Association that the necessary notices to the owners to lop the trees in question have been served.

Bridge Tolls for Motor Cyclists.—The Association is endeavouring to obtain special toll charges for naval officers driving motor cycles over Swale Bridge (Sheerness). Officers using cars are entitled to pay half the usual car tolls, but motor cyclist officers are at present compelled to pay the full fare of 4*d.* each way.

Road Signs.—During the past month the Association has erected 137 signs, as follows:—28 danger, 21 direction, 87 school signs, also one village sign.

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CORRESPONDENCE.

New Indian Patent Act.

SIR,—May I through the columns of your paper bring to the notice of such of your readers as are interested in Indian Patents, the fact that a new Act comes into force in India on January 1st, 1912, which will alter the conditions under which valid patents are obtainable? The particular point to which I should like to draw attention is, that, under the new Act, valid Letters Patent cannot be obtained for an invention which has been previously used or published (as by the printed British specification) in India. Under the present Act, however, it is allowable to file an application at any time within one year of the filing of the British Application, or of the actual sealing of the British Letters Patent. Therefore, any intending applicants for Indian patents of which the corresponding British specifications are now published, or will be published by December 31st next, should take care to have their applications filed before that date.

128, Colmore Row, Birmingham. CHAS. B. KETLEY.

Strengths of Wood.

SIR,—Since my last letter it occurred to me that Sir Hiram Maxim had mentioned, in a lecture, the high strength for weight of some woods. I now find in his book, "Artificial and Natural Flight," a very complete table giving the highest value to Honduras mahogany. The weight of this is 35 lbs. per cubic foot, and the tensile strength per square inch 21,000 lbs.; consequently, the breaking pull of a piece 1 ft. long weighing 1 lb. is no less than 86,400 lbs. JOHN V. PUGH.

Motor Advertisments.

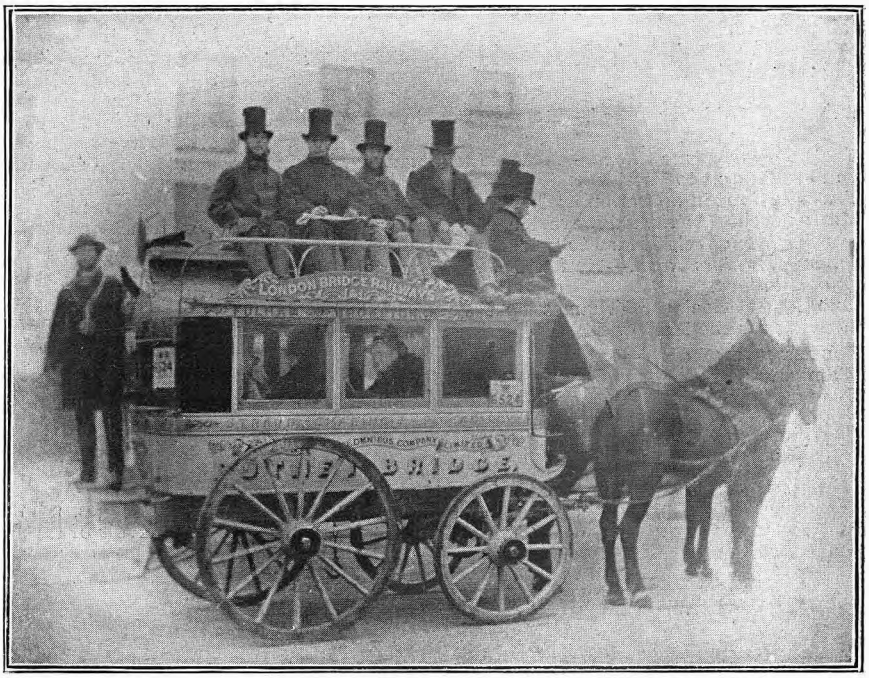
SIR,—My company have had their attention called to an anonymous letter referring to my firm, and I am directed to state that if the anonymous writer or writers will sign their name or names the matter will then be dealt with in a manner suited to the case.

14, New Burlington Street. S. F. EDGE, LIMITED.

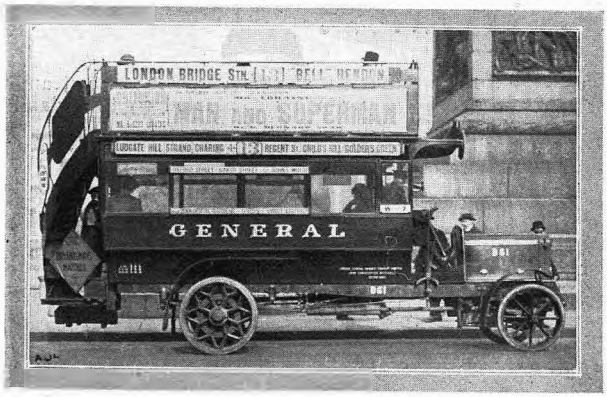
Oct. 25th. J. W. GILDERSLEVE, Secretary.

THE VICTORY OF THE MOTOR 'BUS.

ALTHOUGH there have been many landmarks in the romantic history of the London General Omnibus Co., Ltd., since the time when as the Société en Commandite it invaded London from Paris, October 25th, 1911, must stand out from all the other red-letter days. For fifty-six years the 'buses of the company had been drawn by horses, but on the 57th anniversary of Balaclava the horse 'bus finally gave way before the attack of its self-propelled rival. The *coup de grace* occurred on Wednesday evening of last week when a London Bridge to Moorgate Street 'bus entered the depôt in Pinfield Road. The records of the Company show that at one time it owned as many as 17,800 horses, 900 of which were in one stable, but the past twelve months has seen the various stables broken up and the horses sold off, until now they are all gone.



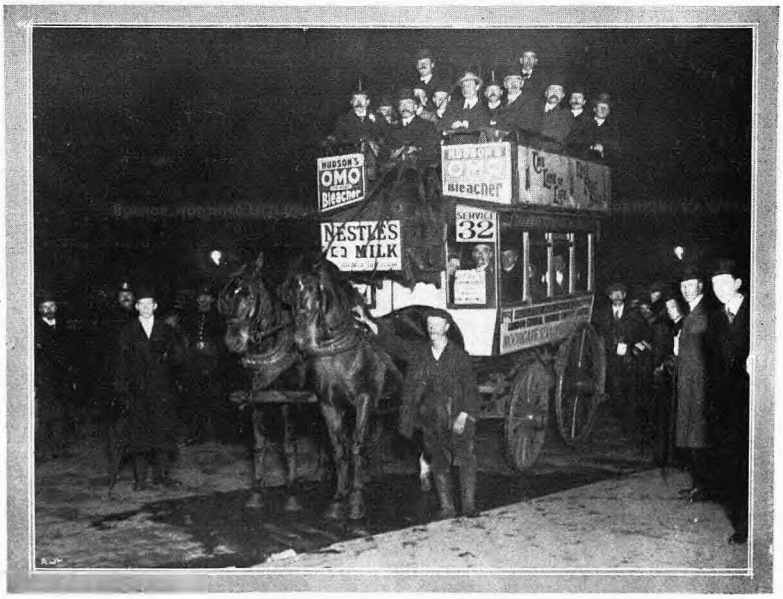
One of the first 'buses of the London General Omnibus Co., Ltd., in which the old knife-board marked the period. Note the curious scroll which finishes off the front of the vehicle. This 'bus plied between London Bridge railway and Putney Bridge *via* Sloane Street and Fulham Road.



The all-conquering motor 'bus of to-day with the "B" on its bonnet, not in its bonnet, as the Secretary pointed out recently, which has brought back such huge prosperity to this great undertaking, the profit for their 1911 financial year being stated to amount to no less a sum than £450,000.

officials set to work to design a motor vehicle to meet their requirements, and success has been their reward. The photos which we publish this week will no doubt be welcomed by our readers, showing as they do in a most graphic way the progress of the omnibus, the first being one of the vehicles with which our fathers had to be content, another the last of the horse 'buses to be owned by the London General Omnibus Co., and the "B" type motor 'bus, which has enabled the Company to take the momentous step of transforming its entire fleet.

The victory has not been achieved without a struggle, however, and many of the most ardent supporters of the motor 'bus have in the past at times been inclined to be despondent, and doubt whether they would succeed. The failures of unsuitable chassis crudely adapted to carry an omnibus body, the antipathy of the public, roused by the noise, vibration, and smell of the early contraptions, and the onerous restrictions imposed by a far-seeing Commissioner of Police, might well have made the stoutest heart quail. But the victors should take as their motto, "*Experientia docet*," for that sums up in a nutshell the story of the last phase. Out of the accumulated experience of those early struggles, the



The last of the L.G.O. Co.'s horse 'buses on its final run between London Bridge and Moorgate Street.

Races, Records & Trials.

New Brooklands Records.

LAST week fresh times were made in the 21-h.p. Brooklands Standard Class, by Mr. R. S. Witchell, driving a 20-h.p. Straker-Squire car. His time for the flying kilometre was 23·14 seconds, equal to 96·67-m.p.h., while for the flying mile the new time is 36·68 seconds, representing a speed of 95·54 m.p.h. The previous records stood to the credit of Mr. Percy Lambert. In an attempt on the half-mile record Mr. Witchell got up to 97·09 m.p.h., but his time was just under one second outside the previous record.

New Motor-Cycle Records.

FOUR new motor-cycle records for Class B machines were made by Mr. S. Wright on a twin-cylinder Humber at Brooklands last week. He beat O. C. Godfrey's record for 50 miles, cutting the figure down from 54 mins. 57 secs. to 51 mins. 9⅕ secs, and the 100 miles record was also beaten in 1 hr. 45 mins., which was 20 mins. 47⅘ secs. better than the previous best by Mr. H. J. Cox. In the hour, 58 miles 1,408 yds. were ridden, beating Godfrey's record by over 4 miles, while in two hours 109 miles 980 yds. were accomplished, being 14 miles better than Cox's old record.

A Six-Hour Ride at Brooklands.

LAST week at Brooklands, D. Resta, testing one of the 12·9-h.p. Arrol-Johnston cars, from a standing start, covered 303 miles 282 yards in six hours. During the last 50 of the 101 laps which were run the timing showed that in any instance there was a variation of not more than 10 seconds per lap. The fastest lap was timed in 2 mins. 65 secs., equal to a speed of over 56 m-p.h. It will be seen that the little car was very close up to the times and speeds made in the Standard Car Race for 15·9-h.p. cars. Incidentally an amusing incident occurred after the trial, when, while the tanks were being filled, about a quarter of a tumbler of "Shell" found its way into a glass which Resta was holding. Unsuspectingly he drank the contents, and for some five hours afterwards he complained that he was absolutely permeated with spirit and could "taste it in his feet."

The Thomas-Transmission Trial.

THE official certificate has just been issued by the R.A.C. regarding the trial from London to Edinburgh of a set of Thomas-Transmission fitted to a 13·96 h.p. Delahaye car. The car had a 4-cylinder engine, 75 mm. bore, 110 mm. stroke, and weighed 3,219 lbs. empty, while its running weight was 4,258 lbs., the gear ratio on direct drive 5·42 to 1, and the size of tyres 815 mm. by 105 mm. A special point about the following official figures is the very high figure shown for ton-miles per gallon, which it is claimed is a record.

The total distance travelled was 794·5 miles. Rain fell on two days, and some fog was met with. The route traversed was from London to Edinburgh and back.

Throughout the trial no adjustments were made. The car was driven at an average speed (running time only) of 19·15 miles per hour throughout the trial. The engine was stopped at the discretion of the driver when descending hills.

The petrol consumed was 22·236 gallons, being a consumption of 35·73 miles per gallon, and 67·92 ton-miles per gallon.

The lubricating oil consumed was 4·495 pints, being a consumption of 1,417·35 miles per gallon.

Throughout the trial the engine was started electrically through the medium of the transmission, and the electric lamps were supplied with current from the same source.

The Dewar Trophy.

EACH year the R.A.C. awards the Dewar Challenge Trophy for what is deemed to be the best performance made in an R.A.C. certified trial during the preceding twelve months. Hitherto the trophy has been awarded at the end of December, but it will be seen from the following regulations, which will in future apply to the award of this trophy, that next year the competition will end on the 15th of October. The present holder is a 65-h.p. 6-cylinder Napier car and the winning performance was made in the shape of a non-stop run from London to Edinburgh and back, followed by a speed trial at Brooklands. The following are the new regulations:—

1. The trophy shall be awarded subject to the proviso contained in Clause 3 below, every twelve calendar months for the most meritorious performance made under the general regulations for certified trials, or any other regulations which may hereafter take their place.

2. The award shall be made by the technical committee of the club, and its decision shall be final.

3. The technical committee may withhold the award if, in its opinion, there has not been any certified trial, the result of which shows sufficient merit, or for any other reason.

4. The trophy shall be awarded for 1913, and each subsequent year on October 15th in that year on the results of the certified trials held during the preceding twelve months. The trophy shall be held until October 15th in the year following the award.

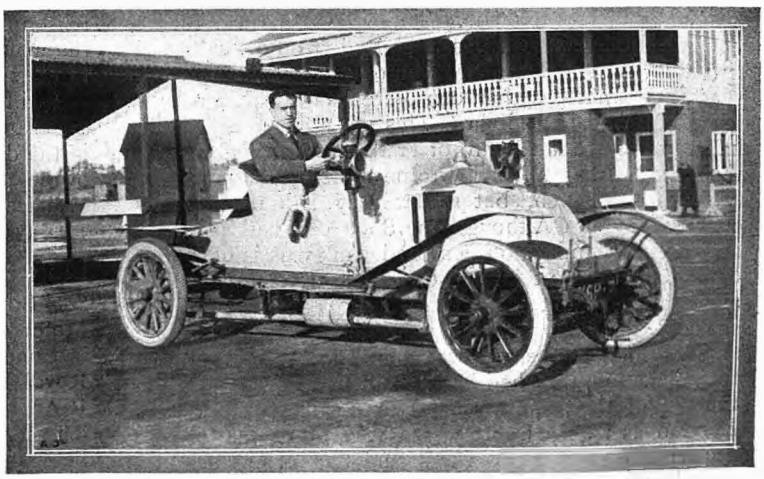
For 1911, however, it shall be awarded on certificates issued prior to December 31st, 1911, and shall be held until December 31st, 1912.

For 1912 it shall be awarded on certificates issued prior to October 15th, 1912, and shall be held from January 1st, 1913, until October 15th, 1913.

5. A certificate will be issued to the winner with the trophy.

Another London to Edinburgh Run.

THE series of London to Edinburgh runs goes merrily on, and the latest to be arranged is by Mr. S. F.



Resta on the 11·9-h.p. Arrol-Johnston car, with which he put up his fine six hours' performance at Brooklands last week-end.

Edge, who intends to send a 65-h.p. 6-cylinder Napier car for a top-speed petrol-consumption trial from London to Edinburgh and back, followed by a speed test over the flying half-mile at Brooklands. It was a similar performance for which the Dewar Trophy was awarded last year.

The Next Prince Henry Cup.

ALTHOUGH when it was originally put up it was announced that competitions for the Prince Henry Trophy would be held for three years, it was subsequently decided by Prince Henry that the R.A.C. should have permanent possession of the Trophy. Prince Henry then decided to offer another Trophy for competition next year, but, in deference to the wishes of the German manufacturers, this idea has now been abandoned, and the next Prince Henry Trophy will not be held until 1913, when a prominent feature of the competition will be some speed trials.

A Grand Prix for Belgium.

INSPIRED no doubt by the attempt to revive road racing in France, the Belgian A.C. is endeavouring to arrange for a big race to be held next year, to be known as the Ostend Grand Prix. Its success or otherwise will, of course, depend a great deal on whether the French races are carried through, as the entrants in the two races would be similar.

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MOTOR AND AVIATION DINNER.

ONCE again the delightful gathering, which takes place annually at the invitation of Mr. Samuel Samuel, was held at the Savoy Hotel on Monday evening, when fully 120 guests sat down to the very unique banquet which forms such an important part in this annual function. The guests were mainly representative of the various branches of the motor industry and aviation, although amongst their number was a large proportion of well-known public men, including Lord Montagu of Beaulieu, Lord Kinnaird, Sir Marcus Samuel, Sir Henry Kimber, Bart, M.P., Sir Joseph Dimsdale, Bart., Sir Albert de Rutzen, Sir Fortescue Flannery, Bart., Sir Walter Howell, Sir Thomas D. Pile, Bart., Sir Henry Cunningham, Col. H. C. Holden, Mr. Leicester Harmsworth, Mr. Manville, &c.

Sir Marcus Samuel, in proposing the toast of "Motor Vessels, Motors, Motor Vehicles, Commercial and Pleasure, and Aviation and Petrol," referred to the great danger of a petrol famine in London if some fresh regulations were not speedily made. The recent strikes had brought it home to the public, when motor spirit was practically unobtainable, and it was now a case of living from day to day in danger of an absolute famine. There should be no misapprehension, he said, upon whom the fault would lie. The public convenience and the public need should not be sacrificed to private interests. At present the storage of petrol was a monopoly in the hands of one company, and their storage depôt was situated 32 miles away from London. The Shell Co., who were the importers and distributors of the spirit, would not hold themselves responsible under such conditions for a petrol famine, which he predicted was absolutely certain to come. Three days' fog in the river and the famine was with us. This all arose owing to the regulations which have been enforced for the past ten years, and what was then considered sufficient was still regarded in the same light. This was a mistake. They had appealed to the Board of Trade against this ruling of the Port Authorities, asking to be allowed to store petrol at Thames Haven, but so far they had received no encouragement. Although the Shell Co. had installed an internal-combustion engined tank-vessel of about 6,500 tons, the Port Authorities had absolutely refused to allow this very up-to-date vessel to unload her petrol, as she did not take steam for working power from the shore. Such a position was an absurdity. Owing to this regulation, they had been compelled to carry out the refining of their spirit abroad, and ship the petrol to London as required. It was a very grave matter that greater care was not taken to secure that proper supplies were kept in the country.

Continuing, Sir Marcus said that he considered the future of automobilism lay very much in the industrial vehicle, and that the solution of road traffic was in the motor 'bus. Tramway stock, he was of opinion, would be scrapped by the million in the next ten years.

Lord Montagu responded on behalf of Motor Vessels, and Mr. Edmund Manville, in replying on behalf of Commercial Motors, confessed that although in his connection with the installation of tramways he had thought that progress had been phenomenal as against the horse omnibus, that progress had been as nothing in comparison to motor vehicles, through the introduction of the internal-combustion engine.

Mr. Roger W. Wallace, K.C., responding for Aviation, stated that, although aviation was not at present a very great absorber of petrol, the time would come when that industry would be the greatest user of petrol in the world. The great stumbling block to its rapid progress was the lack of monetary support, although great thanks were due to Sir Marcus Samuel, the *Daily Mail*, the *Standard*, and the Michelin Co., for their generous support.

Mr. A. Armitage. J.P., in handling the toast of "The Houses of Parliament," gave an exceptionally witty and clever speech, commentary of the revolutionary changes at work in the political world. His remarks were followed with the keenest delight, and were greeted with a continuous ripple of appreciation from the guests.

Lord Kinnaird replied for the House of Lords, and Mr. Joynson Hicks, M.P., for the House of Commons.

The toast of "The Host of the Evening," Mr. Samuel Samuel, was heartily received after a few words by Sir Joseph Dimsdale, and Mr. Samuel, in reply, said he looked to the great future of the commercial vehicle by reason of its great economy, and he, moreover, looked to the manufacturers of Great Britain to place this country in the supreme position in the world in supplying them.

Incidentally, the evening will be remembered as associated with the "creation" of two knighthoods by one of the daily papers the following morning in their *résumé* of the proceedings, Mr. Samuel Samuel and Mr. Roger Wallace, K.C., both being accorded this honour.

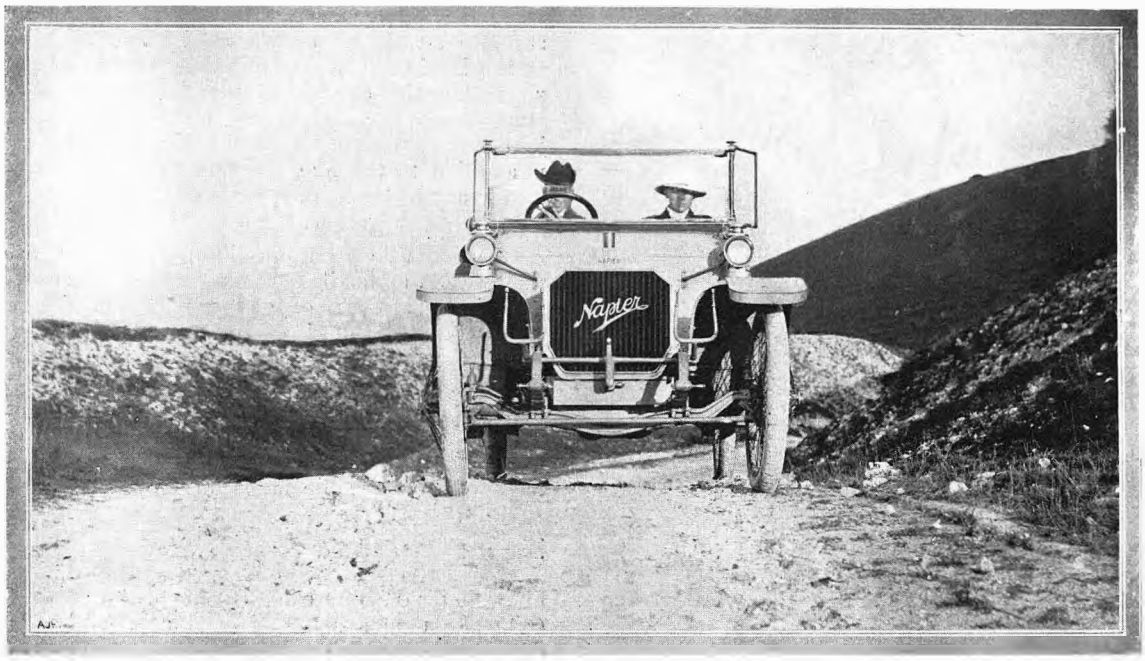
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Motor Boating Dinners.

BOTH the Royal Motor Yacht Club and the British Motor Boat Club are arranging to hold house dinners in London during the winter session. The first of the Royal Motor Yacht Club dinners will be held at the R.A.C. House on Thursday next, the 9th inst., at 7.45 p.m. The B.M.B.C. dinners will commence with that to be held at the Club House on Wednesday next, the 8th nst., which will be followed by a musical entertainment arranged by Mr. L. Bauer.

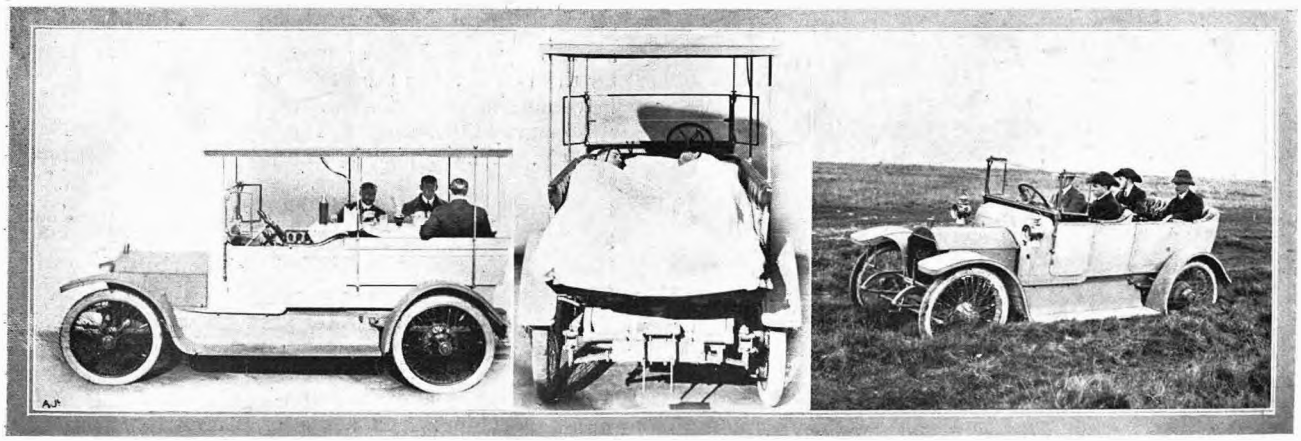
USES OF THE 15-H.P. COLONIAL NAPIER.

SPECIALISING in the supply of cars for Colonial use, Messrs. S. F. Edge have studied with no small degree of care the requirements of those who use cars in places distant from the ordinary haunts of the motorists. Not only is it necessary for machines that go to the Colonies to be very strongly built, to have a good clearance from the ground, and to keep cool, when climbing hills that cannot possibly be negotiated on the smooth, direct top, but it is also desirable that manufacturers should be able where necessary to supply cars that are convertible from one type of body to another or specially equipped almost in the nature of a touring caravan.



between the axle and the ground. In the other photograph, the same car is shown converted into a wagonette with canopy and table, with an equipment for a camping or shooting party. When not in use the table fastens to the roof. By removing the seats of the wagonette the car can be used for luggage, or at night mattresses can be fitted, which afford comfortable sleeping accommodation.

Alternatively, this particular arrangement serves as a hospital wagon, and as such has a utility not limited to Colonial districts. All these extra strong Colonial Napiers have specially low-geared hill-climbing speeds,



In our pictures, the top one shows the afore-mentioned aspects, and in the other views the 15-h.p. Colonial Napier is shown with torpedo tousing body standing on soft grass to show the necessity for ample clearance and that they stand up to their work may be judged from the fact that consulting engineers to the Agents for the Crown Colonies have selected them for Government official use.

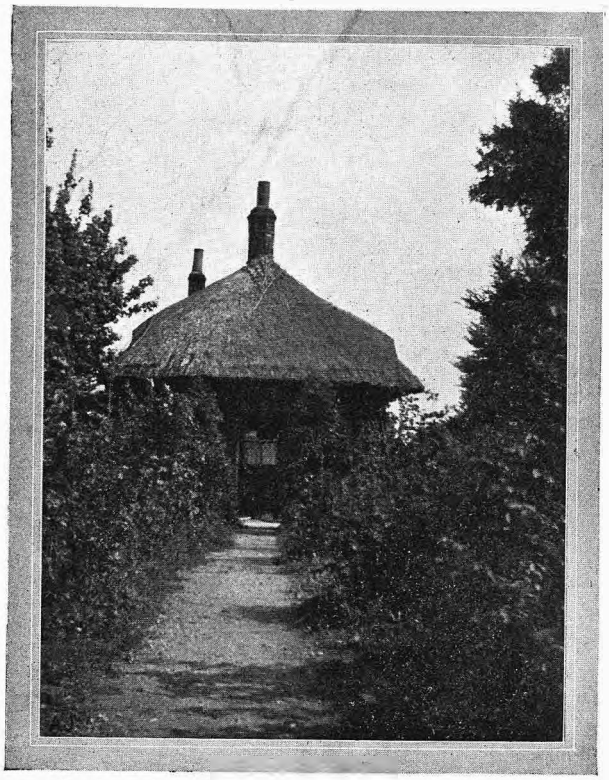
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The R.A.C. Golfing Society.

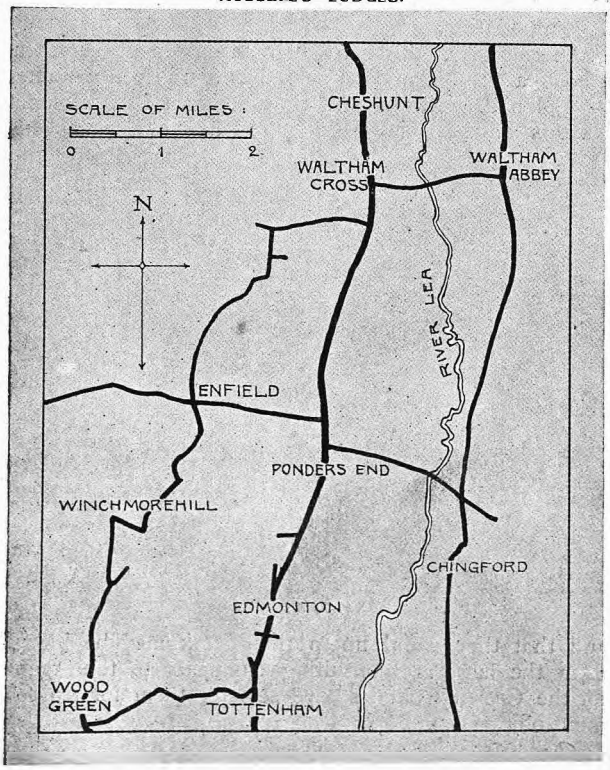
THE competitions held by the R.A.C. Golfing Society continue to be very popular, and, out of a large entry, Mr. D. Stoner Crowther, with a score of 80, won the Hele Shaw Challenge Trophy on the Bleakdown Course, Byfleet, on October 25th.

WAY-SIDE CURIOS.

Those willing to assist in maintaining the reputation of their favourite districts for beauty and interest are requested to send photographs for publication in these columns.



RUSSELL'S LODGES.



Standing about a hundred yards apart on the high road between Waltham Cross and Cheshunt, these low-built structures are known as Russell's Lodges. They were erected by a local squire of that name, and were intended to mark the entrance to a more stately residence behind. For some reason or other, however, the mansion itself was never built, but the old thatch-covered cottages with their rose-entwined porticos still remain as picturesque landmarks in Lamb's "Hearty, Homely, Loving Hertfordshire."

CURRENT ITEMS OF INTEREST.

The Northern Branch of the I.A.E.

AT the Albion Hotel, Manchester, on the 25th ult., a number of gentlemen interested in the automobile industry met to consider the possibility of forming a North Country Branch of the Institution of Automobile Engineers. The chair was taken by Mr. Edgar Stafford, and after an address by Mr. Basil H. Joy, the Secretary of the Institution, a resolution was unanimously passed requesting the council to permit the formation of a branch. Some 35 gentlemen expressed their desire to join, from all parts of Lancashire, Yorkshire and Cheshire, in addition to the 42 gentlemen in those counties who are already members of the Institution.

"Motoring Made Easier"

Is the title given to a little book just published by the Royal Automobile Club with a view to showing the motorist how he may derive the greatest possible pleasure and usefulness from his car by taking advantage of the facilities placed at his disposal by the various departments of the R.A.C. A copy will be sent to any motorist on request to the Secretary of the R.A.C., Pall Mall, S.W., or visitors to the Olympia Show can obtain a copy by making personal application at the R.A.C. Associates' Stand, which will be found just by the gates at the Addison Road entrance.

Kensington and the Ideal Road.

THE Kensington Borough Council have decided to burn the tar off the road at the northern end of Queen's Gate, and then re-surface it with ashphalte and granite chippings. A thin coat of liquid ashphalte will first be applied, then a heavy dressing of half-inch granite chippings, then a light dressing of liquid asphalte, and a top dressing of three-eighths of an inch granite chippings, after which the surface will be rolled. This is by way of experimenting to find a real solution to the dust and surface-wearing problems.

The Delhi Durbar Garage.

WHAT is believed to be the largest temporary garage ever erected will be situated not far from the scene of the assembling of all India's gorgeously-arrayed native princes for the Durbar. In the way of equipment the garage will leave nothing to be desired, and during his recent visit to this country the Managing Director of the French Motor Car Co., Ltd., of Calcutta, who has charge of the arrangements, fixed up with Messrs. Harvey, Frost and Co., Ltd., to instal their H. F. vulcanising plant in the section of the garage specially set apart for tyre repairs, and to have their special demonstrator in attendance.

The Aberdonia Car—a Correction.

IN the description of the interesting new British-built chassis that has been placed on the market under the name "Aberdonia," we associated the name of Messrs. Brown, Hughes, and Strachan with the actual construction of the machine. As a matter of fact, it is only Mr. J. M. Strachan who has an interest in this other business, which is registered as a separate Company under the title Aberdonia Cars, Ltd., Aberdonia Works, Aldine Place, Shepherd's Bush, W.

As coachbuilders who specialise in the design of bodies for many different makes of chassis, Messrs. Brown, Hughes, and Strachan naturally disclaim very strongly any suggestion that they are in competition with their clients, and we take this opportunity of explaining the situation as it really is, and of tendering our apologies to the firm for the misunderstanding.

The S.M.M.T. Agents' Dinner.

IN the rush of Show time, motor agents should not forget the dinner of the S.M.M.T. Agents' Section, which will be held in the King's Hall on Tuesday next, the reception being at half-past six in the Throne Room. To meet the conveniencies of those engaged at Olympia during the day, morning dress will be worn. The guests will be received by Mr. E. Manville, while Mr. A. R. Atken, chairman of the section, will preside at the dinner. The price of the tickets is 5*s.* each, and after the dinner there will be an entertainment. Already about 400 seats have been booked up, and early application should be made to Mr. J. Stafford, Maxwell House, Arundel Street, Strand, W.C.

Mr. Balfour's Foresight.

MANY old friendships were renewed at a cheery little gathering held at the R.A.C. on the 26th ult. in the shape of a dinner to mark the anniversary of the first trials for commercial vehicles held by the Liverpool Self-Propelled Traffic Association. In the course of an interesting speech the Right Hon. Walter Long said that ten years ago Mr. Balfour was, he believed, not only the first man, but the only man, to foresee that the improvement and development of motor traffic was going to solve, not only many questions affecting the prosperity of the country, but ultimately, in two or three different ways, the very vexed problem of the housing of the poor in our great towns. He indicated that motor vehicles, if properly constructed, and driven under reasonable conditions, would enable the poor to work in the towns and live in the country, while in all probability the great commercial difficulty of having to store goods in the town would be met by the lurry system, which would connect the store-houses with the markets. Mr. Long thought that this was a great tribute to the prevision and capacity of one the greatest men, he believed, we had ever had connected with the government of this country.

Unauthorised Use of Cars by Chauffeurs.

OWING to complaints by members, the Legal Department of the R.A.C. has been giving it's attention to the question of the unauthorised use of their masters' cars by chauffeurs, and in this connection the club prosecuted a chauffeur at the West London Police Court in a case the facts of which were brought to its notice by a member of the club. It appears that a lady associate of the club was away from home for a period of a month during the summer and placed her car in a garage, allowing the chauffeur meantime to have a holiday and full wages. Immediately after she had gone away the chauffeur went to the garage, and on the pretext that his mistress required the car, he obtained possession of it and used it for the remainder of the month, covering, as far as the owner can ascertain, some 2,000 miles.

Having regard to the state of the law as it now stands, it was, unfortunately, not possible to prosecute the chauffeur for the illegal use of the car, but on inquiry being made it was discovered that he had pawned a rug and had obtained an advance of a sum of money on a set of spanners. He was accordingly prosecuted for the larceny of the spanners, and was convicted by the West London magistrate to two months' hard labour. The magistrate agreed that there was a difficulty as the law stands at present in taking proceedings for the illegal use of motor-cars, and the Club is now considering what steps can be taken with a view to amending the existing law so that a punishment may be provided for this offence.

ROUNDABOUT NOTES.

The Benevolent Fund Membership.—It has been decided by the Executive Committee of the Cycle and Motor Trade Benevolent Fund that the clerical staffs engaged in the motor manufacturing departments of omnibus and taxicab companies are to be regarded as engaged in the motor trade, and, therefore, eligible for election as members of the Fund. The annual general meeting of the Fund will be held on December 14th, and notices of motions should be sent to the Secretary before November 30th.

A PLEASING little incident at the end of the Lorraine-Dietrich trial was the presentation of a souvenir to Mr. Sorel, who had driven the car throughout the 7,000 miles. It took the shape of a gold cigarette case, suitably inscribed, and, in making the presentation, Mr. W. M. Letts alluded briefly to the difficulties of the task and the objects of the trial, which were to prove the reliability of this well-known trial. Mr. G. Boorman, who acted as Mr. Sorel's mechanic, was also presented with a silver cigarette case. Mr. Sorel reports that the C.J.L. Magnetolite, fitted to the car, which was also under R.A.C. observation during the last 3,500 miles of the trial, gave every satisfaction during the long evenings, the light given being excellent and ample for driving purposes.

MESSRS. BROWN, HUGHES AND STRACHAN, LTD., the well-known car body builders, of Netherwood Road, Shepherd's Bush, wish it to be clearly understood that they do not construct chassis of any description, their business being solely confined to high-class coachwork and general repairs.

How soon, do you suppose, will detachable wheels or detachable rims be fitted as standard on every car turned out? Tyre troubles lose more time in a day than is accounted for in a year by the faults of a car's machinery.

THE annual Austin excursion to Olympia takes place to-day (Saturday), and it is anticipated that over 800 employees at the Northfield works will visit London to take a peep at the Show.

"WHAT'S IN A NAME?" quoth Shakespeare. Messrs. Warwick Wright, Ltd., realise there is a great deal in it, and as they have for some considerable time controlled the sales of Metallurgique in the greater part of the world, it has been decided that in future the title of the firm will be Metallurgique, Ltd. Otherwise the Company remains the same for all legal purposes.

AVON tyres are down again in price and the 810 by 90 mm. tyre for instance, is being sold for £3 10*s.* 3*d.*, in either the round or the square patterns, while the studded type cost £4 17*s.* 3*d.*, and the tube £1 3*s.* 7*d.* Other prices have been reduced in proportion.

DURING the 1912 season the London and Parisian Motor Co., Ltd., will be represented in Manchester by the Union Motor Co., of 308, Deansgate, Manchester. They will have a stock of Hotchkiss and Delage cars on view and be able to arrange for trial runs.

MANY thanks to Frank Shorland for his thoughtfulness in having a most useful condensed summary of particulars regarding Talbot exhibit printed. It was the very thing that was wanted. The very long list of Talbot successes during the past season is eloquent testimony to the care which is bestowed upon the manufacture of these cars.

THE performance of the Delahaye car in the Thomas-Transmission trial should induce many people to visit Stand 216 at Olympia, where Delahaye carslwill be seen. 67·92 ton miles to the gallon is no mean performance.

INCIDENTALLY, the Delahaye car which went through the Thomas-Transmission Trial was fitted with Dunlop tyres, those fitted on the back wheels being of the grooved pattern, while those on the front wheels were smooth. At the end of the trial the tyres were scarcely marked.

ONE of the stands which attracted quite a deal of attention at the recent Automobile Show in Berlin was that on which the Lever Spring suspension was exhibited. We hear that quite a large batch of orders have been received as a result of the Exhibition.

ANOTHER feather in the cap of the Stewart-Precision carburettor is its adoption by the Argyll Co. The new carburettor is made by the Stewart-Precision Carburettor (Ltd.) Co., under the Stewart-Precision patents.

AS they have been unable to obtain space at Olympia to exhibit their electrical equipment the Poulky-Jarrott Electric Equipment Co. are making special arrangements for their various models to be shown at 35, Sackville Street, Piccadilly, W., during the time of the Show. In addition to the existing tyres a new set for light cars is being put on the market, the cost being £23 complete.

Company Doings

The Rover Company, Ltd.

FROM the directors' report and accounts to August 31st last it appears that the trading profit for the year amounts to £24,882 4s. 10d., a very prosperous state of affairs being divulged. After adding transfer fees, the balance forward from last year, and providing for depreciation and repairs of machinery, plant, tools, &c., debenture interest, directors' fees, reserves for income tax and leasehold sinking fund as per income and expenditure account, there remains an available balance of £19,257 1s. From this it is proposed to pay a dividend of 5 per cent. per annum less tax, and to carry the balance, £12,728 2s., forward to next year's account.

Ariel and General Repairs, Limited.

AT a board meeting of the above company held last week, it was resolved to again pay a dividend at the rate of 10 per cent. per annum for the year ending August 31st, 1911, which will leave a substantial credit balance to be carried forward. In the year's trading under review a substantial increase is shown in the sale of Ariel and Hurtu cars, also repairs, and good results have already been shown from a new department recently started for scientifically re-boring worn cylinders by means of a special attachment of the company's own design.

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NEW COMPANIES REGISTERED.

Grampian Engineering and Motor Co., Ltd., Causeway-head, Stirling.—Capital £8,000, in £1 shares. Acquiring the business carried on by a company of the same name at Causeway-head, Stirling. First directors, R. H. Barnwell, A. S. Barnwell, J. Simpson, and W. B. McHardy.

Private Companies.

British Gregoire Agency, Ltd., 67A, Shaftesbury Avenue, W.—Capital £2,000, in £1 shares. Manufacturers of motor bodies, motor cars and cycles, &c.

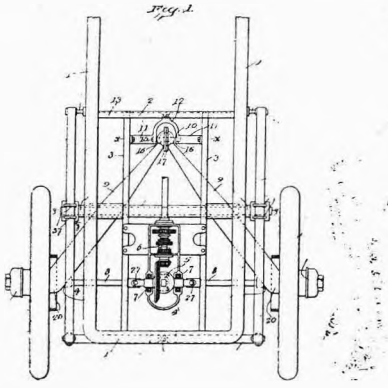
Crescent Motors, Ltd.—Capital £5,000, in £1 shares. Acquiring business of a manufacturer of Crescent motor carried on by J. Bailey at 143, Pleck Road, Walsall.

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

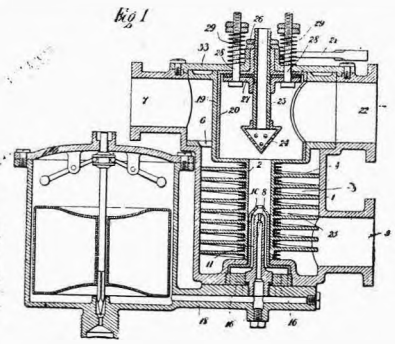
The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the complete specification

11,722. May 15th, 1911. Improvements in Automobiles. E. Koeb and R. P. Thompson, both of Springfield, Clark, Ohio, U.S.A.—This invention relates to the spring-supporting mechanism by means of which the body portion of the machine is secured to the running gear. Fig. 1 is a plan view of the rear portion of an automobile. The main frame, 1, is provided with a transverse member, 2, at a point between the front and rear ends. A secondary frame, 3, is mounted upon the main frame, and consists of two longitudinal members extending between the transverse member, 2, and the rear transverse member of the main frame. The gear-casing, 4, is supported from the secondary frame, 3, and contains the differential gear, 5, and transmission gearing, 6. The casing, 4, is provided in its opposite sides with bearings, 7, in which is journaled the driving-shaft, 8. A supplemental frame, comprising two side-members or legs, 9, converging forwardly, is rigidly secured together at the forward ends, and are pivotally connected to the main frame by a ball-and-socket joint.



This connection is made by providing a supporting bracket, 10, consisting of upwardly-extending arms, 11, which are secured to the side-members of the frame, 3, and a forwardly-extending yoke, 12, which is rigidly secured to a transverse member, 13. A ball is arranged between the two members, 11, of the bracket, 10, and is provided with trunnions, 15, extending from the opposite sides through the side-members, 11, of the bracket, 10. These trunnions may either be formed integral with the ball or may be in the form of a bolt extending through the ball and through the side-members, 11, of the bracket. The forward end of the supplemental frame has a socket, adapted to receive the ball and complete the ball-and-socket joint. This socket is formed by providing the end of each leg, 9, with a semi-spherical socket, 16. The sockets, 16, have a flange, 17, by means of which the two are secured one to the other to form the spherical socket within which the ball is mounted. The trunnions, 15, pass through a vertically-arranged slot. Thus it will be seen that the supplemental frame is free to move both about a horizontal axis, arranged transversely to the main frame, and to a limited extent about a horizontal axis extending longitudinally of the main frame, the movement about the longitudinal axis being limited by the length of the slots. The wheels are connected to the supplemental frame, and exert a forward thrust upon the main frame through the ball-and-socket joint. The two legs of the frames are provided with spindles, 20, and wheels are journaled directly upon these spindles. Thus the supplemental frame forms what is in effect a V-shaped axle, pivotally connected at one end to the main frame and having wheels mounted on the outer or rear ends. The drive-shaft, 8, which extends through the sides of the gear-casing, 4, is flexible, being provided on opposite sides of the gearing, 5, and on the outside of the casing, 4, with universal joints, 27. The outer ends of the drive-shaft, 8, are connected directly to the drive-wheels, and are provided at points near the drive-wheels with universal joints.—October 11th, 1911.

10,988. May 6th, 1911. Improvements in Apparatus for Atomizing or Vaporising Liquid Fuel for Internal-Combustion Engines. C. T. B. Sangster and William Evans, both of Dale Road, Bournbrook, Birmingham.—This invention relates to apparatus for atomizing or vaporising liquid fuel for internal-combustion engines, and has for its object to provide an improved appliance which is particularly applicable for use in connection with paraffin and other heavy



hydro-carbon oils. Fig. 1 is a longitudinal section through the improved vaporiser. An outer chamber, 1, contains a central sleeve, 2, separated from the walls of the chamber, 1, by an annular-space, 3, constituting a hot jacket, which contains the spiral or helical radiator-rib, 4, carried by the sleeve, 2. The jacket, 3, is provided with an inlet, 5, through which the exhaust gases from the engine can be admitted, the gases being caused by the rib, 4, to ascend in a spiral course, and to escape by the passage, 6, and outlet, 7. The apparatus is arranged to be heated when starting by electric wires, 25, wound around the sleeve, 2, and connected with a suitable battery. Within the sleeve, 2, is the nozzle, 8, supplied with fuel from the float-chamber. It is surrounded by the choke-tube, 10, having a conical end provided with a central aperture, but it is separated from the said tube by an annular air-passage, 11. This passage communicates at its lower end by grooves with holes, 16, in the part carried by the petrol-tube, 18. The sleeve, 2, leads into the throttle-chamber, 19, containing the rotary throttle-valve, 20, operated by the lever, 21, and controlling the passage of the mixture through the outlet, 22, leading to the engine. Depending into the interior of the throttle, which forms a mixing-chamber, is a tube, 23, having a perforated conical lower end 24. Through this tube hot air is supplied, either under pressure or by the suction of the engine, and this supplementary air supply, assisted by the conical formation of the end, 24, of the tube, 23, effects, within the interior of the valve, 20, the thorough atomization of the fuel and its intimate mixture with the air. To admit of the adjustment in the height of the tube, 23, its upper end is screwed, and is fitted with lock-nuts, 26. The position of the tube is regulated by the power of the engine. By lowering it, the coned end reduces the flow of air past the nozzle, and diminishes the suction, whereas by raising the tube the suction is increased. A supply of cold air is admitted into the mixing-chamber, formed by the valve, 20, past the automatic-valve, 27, slidable upon the tube, 23, and carrying a pair of rods, 28, 28, passing to the outside of the apparatus and surrounded by the springs, 29, 29 which tend to close the valve. Curved quadrant-slots are provided in the crown of the valve, 20, through which pass the rods, 28, so as to allow of the relative rotary movements of said valve. The slots also co-operate with apertures in the cap, 33, and form air-inlets which are uncovered by the valve, 27, under the influence of the suction of the engine As the speed increases, so more air is admitted, the quality of the mixture being thereby automatically regulated.—October 11th, 1911.

Patent Specifications Published.

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

Applied for in 1910.

Published November 2nd, 1911.

5,632. C. T. WOOLLER AND OTHERS. I.C. engines.
12,655. L. ARANSON-FORSTER AND A. G. ARCHER. Direction indicators.
20,780. M. B. B. BOYD AND J. RICKARD. Carburettors and vaporisers.
23,300. — BEECH. I.C. engines.
23,593. J. WOLSTENHOLME. Jet carburettors.
23,823. H. V. J. JOUFFRET AND J. M. RENÉE. Carburettors.
24,100. H. BLACKBURN. Carburettors.
24,151. DAIMLER MOTOREN GES Friction clutches.
25,620. W. MURDOCH. Non-skid device.
25 643. F. LAMPLOUGH AND OTHERS. Radiators.
26,570. M. GOLDBERGER. Four-stroke cycle I.C. engine for flying machines.
26,634. F. POUNTNEY AND RUDGE-WHITWORTH, LTD. Friction clutches.
28,174. H. C. S. GRANT AND G. E. GUMBRELL. Rotary engines.
28,317. H. C. BROWNE. Epicyclic variable gears.
28,935. H. G. LONGFORD AND W. G. ASTON. Carburettors.

Applied for in 1911.

Published October 26th, 1911.

3,811. T. JONES. Two-stroke I.C. engines.
10,988. C. T. B. SANGSTER AND W. EVANS. Vaporisers.
11,722. E. KOEB AND R. P. THOMPSON. Automobiles.
12,847. SOC. ANON. PEUGEOT. Oil-emptying mechanism.
12,986. W. M. APPLETON. I.C. engines.
15,644. SULZER BROTHERS. I.C. engines.
15,689. WALK AUTO TYRE CO. Spring wheels.
16,775. SULZER BROTHERS. I.C. engines.
17,191. V. J. CHANTRAINE. I.C. engines.