Saturday, December 25th, 1909.

THE AUTOCAR

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

EDITED BY H. WALTER STANER.

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Notes.

The Coming General Election.

On page 1026 we refer further to the excellent election scheme for motorists which has been put forth by the Automobile Association. We cordially commend this scheme to all motorists, and earnestly urge them to adopt the plan if they use their cars for electoral purposes. Whatever their political leanings may be, the simple plan proposed by the A.A. will in no way clash with them. It wisely takes advantage of the fact that a general election affords a remarkably wide demonstration to the non-motoring classes of the extraordinary safety and ease of control of the modern motor car, and it is merely a proposition to focus the results of these widespread demonstrations into a tangible expression of public opinion. It entails practically no trouble upon the motorist, and we hope that everyone of our readers who proposes to lend his car will put himself into communication with the secretary of the Automobile Association, Whitcomb Street, Coventry Street, W.

Discussions.

At a recent meeting of the Institution of Mechanical Engineers, the President made a very practical suggestion which at this time of the year, when papers and discussions are more or less numerous, it would be well if it were generally followed. After an extremely interesting and valuable paper had been read by one of the members, the Chairman, when opening the discussion upon it, pointed out that a great deal of time might be saved if those who wished to criticise the paper would refrain from opening their remarks by stating that it was a valuable paper, or words to that effect. He pointed out that this had become a time-honoured method of tempering criticism, and he begged the participants in the discussion to take all this as said. There is undoubtedly a natural desire on the part of any appreciative person who wishes to criticise a paper to pay a tribute to the author, as he probably knows how much labour and research have been necessary before the paper could be written, and he feels that he ought to pay some tribute of appreciation before commencing to bombard the writer with questions or criticisms. This is a very proper feeling, but when anything like an interesting discussion takes place, in which a number of speakers participate, it wastes a great deal of time and bores the audience. There is no need to say more.

Conscientious County Officials.

In the matter of its roads and road authorities Cheshire is a fortunate county. This fact is brought to our notice by the receipt of a report by the chairman (Mr. C. H. Pedley) and vice-chairman (Mr. F. G. Grafton) of the Main Roads and Bridges Committee of the County Council of Cheshire. This report has been kindly sent us by the Clerk of the Council, and we must congratulate the chairman and the vice-chairman on what they have done, as their report is based upon a personal inspection of all the roads in the county. What we particularly wish to dwell upon at the moment is the thoroughness which characterises the effort. It is true that every councillor on the Roads Committee of his county has a more or less general acquaintance with the roads of his county, but we wonder how many have taken the trouble or devoted the time to a really systematic and careful inspection such as that dealt with in the report before us. The main conclusions are that very great damage is done to the roads, especially after a spell of frost, by traction engines and heavy motor lorries, while the lighter and faster private cars are stated to have a bad effect upon the roads where the traffic is exceptionally heavy and the road narrow. On the other hand, when the road is wide and the up and down traffic keep to two distinct lines much less damage results.

Useful Hints and Tips.

The Use of the Soldering Bit.

IN view of the number of joints about the engine of a motor car, the radiator and petrol tank, that depend on soft solder for their union, it is advisable for every motorist to acquire knowledge of how to properly re-unite them, as well as to include the necessary details in his outfit as a precaution against being stranded miles from anywhere. It is imperative that the surfaces to be united should be thoroughly clean and bright, devoid of dirt, grease, and scale, and the true surface of the metal exposed to the action of the flux. Secondly, unless the nose of the bit is thoroughly clean and well tinned, it is impossible to get solder to run properly and unite, however clean the surface of the work may be.

Preparing the Tools.

The reason why soldering bits are often discovered in a lamentable and useless condition is owing to the want of a little care in heating up, and the absence of the necessary accessories which would ensure the bit, while in use, being maintained in perfect working condition, despite its size or the number of times it may be found necessary to reheat it. Directly the temperature of the bit is allowed to approach red heat, the tin is burned off its nose, and the copper scales and carbonises; it is therefore essential that, while maintaining a high degree of heat to enable the best results to be arrived at, the temperature must not be carried to such a degree as to necessitate frequent refiling and retinning.

The first point to aim at towards becoming a competent manipulator of the soldering bit is to put the latter in order. There are two methods that can be employed—one by contact with a sal-ammoniac block and the other by dipping. Personally, I prefer the former as being by far and away the best and most efficient, not only in the preliminary tinning of the nose of the bit, but in maintaining it in good working order. The latter can, of course, be done equally well by dipping, but it means either that the nose of the bit has to be dipped each time it is removed from the fire into the soldering flux, and thus quickly convert it into mud; or, as an alternative, reserving a separate receptacle containing sal-ammoniac in solution; this does not answer nearly so well as the block, and is always liable to being spilled and to evaporation. Therefore, procure a fair-sized block of sal-ammoniac and embed it partially in a block of wood as a rigid base and to protect it from breakage; then scoop a shallow hole in the centre, which latter is to contain a globule of solder. Now heat the soldering bit to a dull red heat, quickly grip it in a vice, and file up all four faces of the nose, and slightly round the corners and point (any old file will answer for the purpose), and then insert it in the hole in the sal-ammoniac block, giving it a few twists, simultaneously feeding a little solder against the nose, which will result in the copper bit being cleansed or fluxed and tinned at the same time. If the bit has previously had all the scale removed by filing, the nose will be well tinned close up to the shoulder, and, with proper care, the application of its nose to the sal-ammoniac and solder each time it is removed from the fire will clean and keep it in working order.

With regard to the flux, this, for ordinary work, consists of what is generally termed spirits of salts, but more correctly is hydrochloric acid killed by or saturated with zinc, after which it is usually termed killed spirit. To kill it for after use, a stone jam-pot is the best type of receptacle in which both to kill it and to use it, especially when using it also as a dip for the copper bit. The pot should be about one-third full of acid, carried out into the open, and sufficient strips of zinc added to kill and take the fire out of the acid. The acid always boils and gives off noxious fumes and vapour, with the natural result that if the acid is killed inside the workshop any tools or machinery will be rusted by it. All work to be soldered must be thoroughly cleaned or scraped, a little of the flux applied, and a hot bit used to melt and run the solder, remembering all the time that a thin neat joint is stronger and more workmanlike than a thick, clumsy deposit.

Of course, in electrical work, especially when soldering wired joints, resin must be substituted for the acid flux, otherwise chemical action will be set up, and the wires and their insulation destroyed very quickly. In soldering zinc the unkilled acid is the correct flux to use, and it is well, in all cases where acid flux is employed, to well wash or wipe the parts after soldering.

It is said that cast-iron cannot be soldered. Quite a mistake. Cast-iron can be soldered as easily as any other metal, provided the breakage or joint is filed down to a true surface, cleaned, and made slightly hot.

We now come to another aspect of soft soldering, termed "sweating." This is performed partly with or entirely without the aid of the copper bit—in the former case, chiefly in coating the joint surfaces of bearing brasses as a preliminary to securing them together, preparatory to boring and turning them, the whole when evenly coated being made sufficiently hot to melt the solder, so that, when the two halves are closed together in a vice or under weights, the surplus solder will be squeezed out and the two parts unite. It must be borne in mind that the closer the joint, the stronger will be the resistance to their breaking apart in the process of machining.

Soldering Union Joints.

The process of simple sweating applies mainly to pipe joints, such as the union connections of petrol and oil pipes. There are some thousands of such joints made daily, and it would surprise a vast majority of the makers if they were informed that they were anything but sound joints. To properly unite a pipe and union, the end of the tube must be a good fit in the union, well cleaned and tinned, which may be done by holding the pipe in a blue gas flame (or spirit flame), dipping the solder in the acid, and applying it to the tube, and when evenly coated just wiping it round with a clean rag. If the union is clean, it will only be necessary to dip the cold tube in the killed acid and insert it in the union, having first warmed the latter sufficiently to enable the surplus solder to give way. The whole is then heated up to a heat sufficiently high to melt a little solder off the end of the stick, and by the continuous application in minute proportion of both acid and solder, and continuous heat, the solder can easily be induced to run through and make a perfectly full and sound joint, which nothing short of heat will dislodge. A few minutes spent in experimenting will readily demonstrate the efficiency of the joint made in the way directed.

H.C.B.

Christmas, 1909.

On the Road.

Modern Improvements which Lessen the Motorist's Troubles.

The Blue Bird.

A MAN told me at the show that, generally speaking, all cars were so alike nowadays he found the Gallery much more interesting. "If it were not," said he, "for the absurd habit the management of the show has of grouping things interesting together in a lump." I think my friend was not far off the truth, and certainly to the writer on motor matters there was more to talk about above than below. Years ago, before Stepney wheels and detachable rims were and "tyres were tyres," I generally came home with something patent in the tyre lever line, but this year I took no interest in them, and my best acquisition is what is known as a Rossignol whistle. It is supposed to be fitted to the silencer, and is provided with a pad that shuts the end of the exhaust pipe at the same time as the whistle is opened. I carefully explained this to Messrs. Coxeter, of Oxford, and left the car to their mercies to be fitted. When I returned for it I found they had put a T-piece on the exhaust pipe on the engine end, and made such a successful job of it that there was no need to complicate matters by blocking up the end of the pipe at all. A brass ring on a Bowden wire comes close to my right hand when dropped, and now I can either imitate the queen of song in low, guttural sobs that make passers-by look up in the trees, play yip-i-yip-i-yadi-iyay, or, if necessary, get a move on the slowest and weariest carrier's cart that exists with its yell. But the Rossignol's suavest accents are its most useful ones, and where the grunt of an ordinary motor horn only brought a scowl and no response its dulcet warbling invariably produces a smile in answer to my own. My neighbours admire it immensely, and the more up-to-date ones—who read the London papers—have taken to calling my car "the blue bird."

Finding that the Republican Guards posted in the Rue de la Paix, Paris, were ineffectual in the attempted regulations of the Paris traffic, the authorities have had to resort to the drastic measures illustrated above. The difference in the traffic compared with that as shown in our issue of December 11th is noticeable.

Tyre Experiences.

The behaviour of tyres is always interesting, especially when one can get the truth about them. I started in February with a set of studded Samson de Luxe, and, using them on the back wheels only, I averaged a life of about 3,000 miles out of each. Two of them are still in use, which is a very good record, considering I have driven very fast on them—abroad, of course—and carried a good deal of weight as well. On the front wheels I had a pair of grooved Dunlops, and, owing to a connecting rod having got out of truth, wore them down to the canvas before I had done 1,300 miles on each. The Dunlop people retreaded them, and now both have done 5,000 miles more, and one looks almost as good as new. The other looks a little bulgy in places, but I purpose trying one of the new reinforced tubes inside it and giving it a real test of its usefulness. My last 700 miles I have run with studded Avons on the back wheels, and, though it's early days yet, I am more than pleased with their qualities. I daresay if I were one of those fortunately gifted people who love vulcanising, stopping up cuts, and generally taking trouble with their cars I could show even better results, but I am happy in that I have nothing to complain of with regard to any of the tyres, and, in the light of past experiences, consider myself quite satisfied. My Dunlop rims have been a delight, and I can truly say that the knowledge of their presence and expediency has quite abolished the feelings of "*atra cura*" that used to "*sedet post equitem.*" Now I do hope and trust that the printer and I have got that right, because it is, to many people, much worse to misquote than to run without lubricating oil. One of our most famous lady novelists once used the quotation, and explained in a footnote that *atra cura*, etc., meant the black curate who always sat behind the condemned criminal when he was being taken in a cart to the gallows at Tyburn. Which was a bull's eye, but on the wrong target. But motorists, and especially chauffeurless motorists, can realise the real meaning of the fear that was once never absent in those early days of punctures and bursts. Five years ago I wrote, and forgot to sign, this verse:

The burden of tyre troubles. Thou shalt start
And seem to spurn the earth upon thy way,
No bird so fleet—till chill upon thy heart
The knowledge comes that needs not speech to say;
And all the road that was so fair seems gray,
And sorrow's sorrow crowds around thy tyre,
Till bruised hands make tongues speak what they may:
This is the end of every man's desire.

But nowadays, though a nuisance, a flat tyre should never mean more than five minutes' delay, and it is nearly three years since I have handled an inner tube on the open road. Punctures seem to be going out of fashion, too, possibly because the fiend who is in charge of that department has realised they do not imply the disturbance they once did, though more likely the reason is that all the loose nails have been picked up, and the supply now is unequal to the demand. This latter is Mr. Edge's view, and there is no truer prophet concerning things automobile than he. Tyre makers will probably account for the

decrease by pointing to the improvement in the manufacture of tyres, but I do not think that is the answer, because abroad, where cars are smaller in numbers than in England, one still collects nails just in the old unpleasant way.

And while on the topic of mishaps I should like to make a few remarks on motor insurance, and I am not alone in thinking that the insurance companies are not keeping abreast with the times in their policies and conditions. Not many years ago most accidents happened either because motor drivers were not so expert, horse drivers not so alert, horses themselves much more frightened, and steering gears and wheels much less reliable than at present. But insurance rates have not come down, and the reductions allowed to a man who is his own driver or who only uses his car occasionally do not anything like meet the case. A director of a large insurance company who is also a motorist and his own driver was talking to me on the subject a few weeks ago, and he agreed that it was impossible that a hard and fast rule could be anything but most unfair. Personally, since 1903 I have paid about £80 and only drawn £6, and since I have agreed to stand the first £5 myself, I have not drawn anything at all. Nevertheless, it is very necessary to insure, especially against third party risks, for in the minds of juries all motorists are millionaires, and, like prisoners on trial in France, guilty until their innocence is proved.

There is another side to the insurance question on which there is a deal of misconception. Because a person insures his car for, say, £500, and after three years' running it is destroyed by fire, some folk imagine he would get £500. As a matter of fact, he would only get about £200, or the estimated value of the car at the time, for the company would point out that it issues "indemnity" policies, and it would be inexpedient to make it worth his while to have an accident. I see the argument, but I do not see why it is right for the company to go on allowing a person to insure a car for £500, knowing full well that in case of its destruction they will only have to pay half that sum. Please understand I write open to correction, and do not pose as an authority or a victim in the matter, though if I can arouse discussion or provoke a correct opinion I shall feel I may have been of some service to my fellow insurers.

OWEN JOHN.

The Motor Union General Committee.

At the monthly meeting of the General Committee of the Motor Union, on Wednesday, December 15th, Capt. Hon. Robert Lygon reported the steps which are being taken by the Aviation Committee of the Union to develop this new section of the Union's activities. It is negotiating for experimental and practice grounds for the use of members and preparing a scheme to educate the younger population of the country in the science of aeronautics and the possibilities of aerial locomotion. A Models Sub-committee is also drawing up a scheme for the encouragement of the construction of model aeroplanes.

The Legal Cases Committee reported the arrangements in connection with the free legal defence scheme which has been adopted by the Union, under which members are entitled to free legal defence for offences under the Motor Car Act, 1903, in addition to the advantages for free legal advice and financial assistance in appeals to Quarter Sessions and the Divisional Courts when points of general interest are involved. Forty applications for legal assistance were dealt with during the month by the Union, several outstanding cases being successfully disposed of.

The Highways Protection Committee have supplied two mirrors for erection at a dangerous corner in Huntingdon, with a view to minimising the risk of accident at that spot. The committee have also taken action in four complaints of inconsiderate driving and a case of stone throwing. The Union has decided to take up the case of the fatal accident which occurred owing to the bolting of an unattended horse. The matter has been placed in the hands of the Union's local solicitor with a view to a prosecution.

Reports were also presented by the Engineering, Organisation, Motor Cycling, Executive, and Finance Committees. The incorporation of the Aeroplane Club has considerably increased the membership of the Motor Union. Its individual members now number over 10,000, and its affiliated members over 4,000, 153 new members joining during the first two weeks in December. The Motor Union is moving into its new offices at Caxton House, Westminster.

Institution of Automobile Engineers.

At a Council meeting on Wednesday, 8th Dec., a letter was read from the S.M.M.T., stating that, with regard to the threads of sparking plugs, what is known as the De Dion standard was in their opinion in general use in this country. It was decided that this should be referred to the Screw Threads Committee. A letter was read from the S.M.M.T., stating that they would agree to bear the expense of collecting the information needed to enable the Horse-power Formula Committee to complete its labours, provided same did not exceed £100. The report of the Graduates' Section Committee was received and adopted. The sum of £68 5s. had already been contributed to the Graduates' Prize Fund, and the committee had approved a circular to be issued which was read and approved. Mr. Dugald Clerk and Mr. T. B. Browne promised to make a contribution of £10 10s. each towards the prize fund.

Tarred roads have certainly proved their value during this, so far, record rainy month. Whereas macadam roads take days to dry, the tarred surface will dry in as many hours with a favourable wind.

Museum of Motor Car Models.

The Royal Automobile Club has from time to time received offers of models of cars or of parts of cars to form a museum which would allow those interested in the automobile movement to estimate the progress made from year to year in motor car construction. The Secretary reports that regulations have now been drafted under which it will be possible for anyone to submit for approval the model of a car or part of a car to be placed in this museum. Other objects of historical interest in connection with the movement may also be accepted if the committee is of opinion that the inclusion of such would help to strengthen the instructive character of the proposed museum.

The 12 h.p. Vulcan Car.

By a slip of the pen in our last week's description of this interesting car, we wrote Stockport for Southport, whence, as is well known, the Vulcan cars issue from the works of the Vulcan Motor and Engineering Co. The mistake was, of course, obvious. Vulcan and Southport hang as naturally together as Daimler and Coventry or Star and Wolverhampton.

"The Autocar League."

Motor Cars at the Forthcoming General Election.

OBJECTS: TO PROMOTE UNITY OF ACTION AND PURPOSE IN THE MOTOR WORLD, SO THAT ALL INDIVIDUAL MOTORISTS, CLUBS, AND SOCIETIES MAY WORK ON THE SAME LINES TO ABOLISH OR LESSEN GRIEVANCES AND TO HELP EACH OTHER. DISUNION AND INDIFFERENCE ARE THE TWO MAIN REASONS FOR MOST OF THE ILLS IN THE MOTOR WORLD TO-DAY, AND THE AIM OF THE LEAGUE IS TO BAND ALL MOTORISTS TOGETHER SO THAT INJUSTICE AND UNDUE RESTRICTIONS MAY BE OVERCOME. IT DOES NOT AIM TO HELP THE SCORCHER OR INCONSIDERATE DRIVER, AND IT WORKS WITH, NOT AGAINST, ALL EXISTING CLUBS AND MOTORING ORGANISATIONS. IT HAS NO SUBSCRIPTION.

The General Election.

RECENTLY we expressed the opinion that it would be out of the question to make any hard and fast recommendation to motorists that they should only lend their cars for election purposes to Parliamentary candidates who were reasonably inclined towards automobilism. We take no credit for this view, as it was merely a commonsense one, and it is the attitude which has since been taken up by the Royal Automobile Club, the Motor Union, and the Automobile Association. Each one recognises that political feeling is far too strong for any general recommendation to be adopted. However, the Automobile Association, as we announced last week, has no intention of altogether missing the opportunity provided by the General Election, and it is therefore organising a system whereby each motorist who conveys voters to the poll may assist the cause of automobilism by obtaining an expression of opinion from the voters who use his car. Cards will be provided for signature to all motorists who apply for them to the Automobile Association, Whitcomb Street, Coventry Street, W. These will contain a statement that the "undersigned parliamentary voters" are in favour of motor cars being subjected to the same restrictions as those which obtain for other forms of traffic. These cards will be forwarded to all who apply for them, whether they be members of the A.A. or not, and we cordially recommend the plan to all members of the League. At the same time, it must not be imagined that either the A.A., the Royal A.C., or the Motor Union is opposed to motorists trying to obtain some definite guarantee from the candidate whose election they assist by means of their cars. While many will unquestionably lend their cars unconditionally, others have no intention of doing this, and we have had many requests for a series of simple questions which the motorist may well put to his candidate before finally promising to lend his car. It is not easy to draft a set of simple questions, but several members of the League have sent suggestions, and one set from a valued member north of the border is so good that we think we cannot do better than adopt it. With very slight alteration, the questions he suggests are as follow:

(1) Is the candidate in favour of the abolition of the ten-mile limit in sparsely inhabited country villages?

(2) Is the candidate prepared to vote in favour of the abolition of the twenty-mile limit in uninhabited parts of the country?

(3) Is the candidate in favour of placing motor cars under the same traffic restrictions as those which apply to other vehicles?

(4) Is the candidate prepared to vote in favour of the abolition of the petrol tax and any other tax which is likely to damage an already much-hampered though rising industry?

Any candidate who answers the four questions set forth above in the affirmative may fairly be regarded as an unprejudiced man, and one who will not go out of his way to vote in favour of restrictions or taxation which will hamper traffic or impede industry. On the other hand, a candidate who replies in the negative may safely be regarded as a person so much out of sympathy with modern requirements that he can hardly be regarded as a fit and proper person to represent a constituency in Parliament.

The Advantages of a Militant Policy.

In a certain well-known town in Surrey there is an arbitrary ten mile speed limit which has been sanctioned through pressure brought to bear by the local council of high stomached and narrow-minded "townees." This limit is aggravated by short-distance controls set on the main roads of the borough against the expressed assurance of the Chief Constable that he would hold himself responsible for the public safety without the aid of such restrictions.

We now learn that considerable difficulty is being met with, by those responsible for the setting up of the warning posts at the extremities of the limit distances, from the resolute refusals of the tradesmen to allow the warnings to be placed anywhere near their business premises. Their reason for doing so is obvious; there is no motorist who would give them their patronage with such a label at their doors. We also hear that some of the motoring residents in this town have notified certain tradesmen that because of

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THE AUTOCAR LEAGUE MEMBERSHIP FORM.

I am the owner of a ..... h.p. ....., and will undertake to vote by postcard or letter on any important matter concerning the welfare of automobilism.

Name .....

Address .....

To the Secretary, "The Autocar League," 20, Tudor Street, London, E.C.

the prejudiced attitude of the town towards motorists as shown by its elected representatives on the council, they will transfer their custom to more favourably disposed neighbourhoods.

While we sincerely sympathise with the tradesmen and the motorists we are glad to see that both the aggrieved parties are inclined rather to show fight than surrender, and that the form of protest adopted respectively is calculated to attain the object desired, namely, the removal of an unnecessary grievance which is felt alike by motoring and non-motoring sections of the community.

The pressure of the council on the police authorities to make an improper use of their function, as robbers of a particular class rather than as guardians of the common weal, involves the discomfiture of two classes of victims, and they both naturally use the weapon at their command to put up some practical and effective opposition against their oppressors.

There is a type of person, and there are many motorists who are included in the species, who always regard with peculiar reverence anything bearing the stamp of official sanction, and are willing to have thrust down their throats any nauseous mixture which is labelled "law and order" regardless of whether the law is administered fairly or unfairly. We deplore the existence of these invertebrates amongst motorists. Their pacifity hinders the progress of automobilism. Patient endurance under continual persecution is an admirable trait, but it does not preclude the taking of moderate and reasonable measures of defence, and now is the time when a firm stand is necessary. The meek and mild doctrine has had its day, it has been tried for a long time and found wanting, and must give way to strenuous and sustained resistance. The policy of humble acquiescence has proved its own futility in persecuted areas, and we should welcome the development of a fighting spirit in these localities by encouraging the use of every proper and legitimate retaliatory weapon to which the motorist can put his hand. No grievance will be remedied and no injustice is likely to be redressed by suffering in silence, though some people profess to think otherwise.

The advance of automobilism all over the country demands a firmer attitude and brooks no waste of time. We therefore exhort all motorists to enrol themselves in the League and to carry out the suggestions made in our columns for the betterment of the existing conditions. If they will at this time of the year, even though it may be at some slight personal inconvenience, discourage trap-ridden districts by transferring their custom to places where motorists are treated with justice, they may confidently look for a remarkable change in the official attitude towards users of motor cars, despite all assurances to the contrary.

Some Extracts from "The Autocar League" Correspondence.

BERKSHIRE.

Only one of your reasons for excluding Berkshire from the list of clean counties is good. The London-Basingstoke road is not in the county, and if the traps on the other two roads are where they are said to be they are in very proper places. Anyone who drives in a reasonable manner is quite safe, and is not at all likely to be caught in a trap.

Your second reason about the state of the roads is, unfortunately, correct. Not only is there no improvement, but the more complaints that are made the more is the quantity of mud that is put on the road. Between Maidenhead Bridge and Reading, with the exception of perhaps a mile and a half, the road is a disgrace to England. The worst places are those lately repaired (?). The stones are covered with what would make good garden soil, and it looks much more like preparing the ground for sowing grass seeds than for a road. In the days of the turnpikes this road was in excellent condition, and cost only £35 a mile. The County Council by the increasing use of dirt mixed with very large stones have run up the cost to £174 a mile!—GILBERT A. CLAYTON EAST, Bart.

DEVONSHIRE.

May I suggest that you omit Devon from your list of "clean" counties? It is true that prosecutions under the Motor Car Act are few, but the state of the roads is a disgrace to the county. The excuse usually given—that the skids used by carts on the numerous hills cut up the surface—is untenable, in view of the fact that the level portions are at least as bad as the hills. Notable examples are the road from Exeter to Tiverton, Exeter to Honiton, part of the Yealmpton Road into Plymouth, and Exeter to Okehampton; this last should be seen to be believed. The real reasons are (1) the material used (I have constantly seen mud from the ditches used as a binding material, and the stone is itself often little better than mud) and (2) the method adopted, which is such that newly rolled portions are frequently as bad as the rest.

I shall take out all my licences (which amount to £20 or £30) in Somerset or Dorset. The roads in Cornwall are also fair, but there appear to be numerous police traps. The County Council in Devon is in the main strongly opposed to motor cars.—S. G. RENDAL.

FIFESHIRE, FORFARSHIRE, AND PERTHSHIRE.

I think you should add Fifeshire to your list of clean counties. There has been a certain amount of "trapping" during the present season, but it was entirely at the instigation of certain county councillors, although the chief constable informed them at one of their meetings that he thought it was quite unnecessary, but they plainly let him know that he had to carry out their instructions. I may say, however, that no motorist is ever summoned there for a first offence. A polite letter is sent intimating that the car had been timed and found to be exceeding the speed limit, but that if again found doing so a summons will be issued.

Forfarshire and Perthshire are now two of the worst counties in Scotland. The only time I have got into trouble in ten years' motoring was in Perthshire this autumn, at Ballinluig village, where there is a ten-mile limit. There is a very dangerous corner at the entrance to the village. The police were careful, however, to set their trap after this corner was passed, and also most of the cottages, extending the trap to the end of the ten-mile limit, which is some distance beyond the village, to include a school. I was quite aware of the school, but, as it was a Saturday, I admitted going faster than ten miles per hour when clear of the cottages. The result was a fine of four guineas.

In Forfarshire motorists have been fined for exceeding on a Saturday a ten-mile limit, which was granted solely in the interests of a school, no other buildings being near. This is the height of absurdity.—T. S.

FAIR ADMINISTRATION OF THE LAW.

Will you permit me to express my admiration for your League? There is no doubt that you have (if I may respectfully say so) embodied a great principle in your organisation.

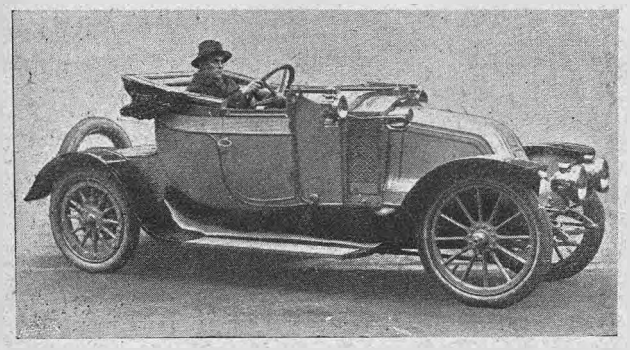
It has been said that "minorities must suffer." This may be true, but it is even more true that inarticulate entities will receive no consideration. It is obvious when you consider the scant respect with which motorists are treated by the Legislature that those bodies which have hitherto "purported" to represent and to protect motorists have done neither. So that motorists up to the present have been practically "inarticulate." Naturally, therefore, they have been "jumped on." Your League will alter all that.

It would seem somewhat difficult (in view of the remarkable prejudice shown by certain benches) to secure that fair administration of the law which is so desirable in every case. What action on the part of motorists, however united, can change the views of blindly bigoted people? In some cases, no doubt, a change of opinion might be brought about, but would it not be easier to secure that the laws were fair to motorists in the first instance. Mr. Moresby White says "that laws peculiar to motoring will be enforced upon them (the motorists) for some years yet." Cannot motorists obtain such modifications of these laws that it would not be in the power of every little Mr. Justice Shallow to inflict great harm upon them, however rabid he might be? *e.g.*, if the speed limit cannot be abolished the maximum fine for merely exceeding might be very considerably reduced.—E. W. S.

Small Car Talk. By Runabout.

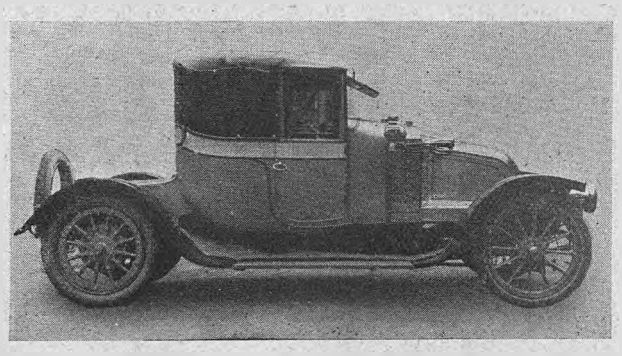
Petrol Consumption.

NOTHING surprises me more than the entire ignorance of the average motorist as to the amount of petrol his car consumes. The ordinary owner strikes a sort of average at the end of the year, based on the supply invoices from the local



Mr. Paddon, of Paddon Bros. Ltd., at the wheel of his Renault car, the bodywork of which has been carried out with a view to comfort.

garage, as compared with his supposed mileage. Both data are very loosely arrived at. As recently demonstrated, petrol cans by no means invariably contain two gallons; deductions have to be made for cans loaned or given away, borrowed by the domestic authorities for cleaning greasy garments, some is used in the garage for cleaning purposes, some is wasted, and so on. The mileage is similarly inexact. Even when a speedometer is fitted, it is occasionally *hors de combat*, and no allowance is made for the distance covered without the recorder working, and when no speedometer is used at all the distances are very loosely reckoned indeed. When any owner claims a definite mileage per gallon in my hearing I always ask a few pertinent (or impertinent?) questions about the data, and generally form the conclusion that I would as soon trust the average policeman's trap timing. No doubt such calculations are approximately accurate when they are based on a very large mileage, but I should infinitely prefer a single 100 mile test run, made over an exactly measured distance, including a fair percentage of hills and traffic, and with a precisely measured supply of fuel. My own plan is to make one of these tests every quarter, and the results are often illuminating. They have already convinced me that if the claims for economy urged on behalf of several famous patent carburetters be accurate, it will more than pay me to scrap my present vaporiser and go to the outlay of several pounds for a new one. My personal belief is that a very large percentage of the cars on the road are actually using more than a gallon for every twenty miles, and that there are very few cars indeed which cannot be improved, up to the twenty miles per gallon mark at any rate. If every reader of these notes emptied his tank to-morrow, measured exactly four gallons of spirit into it, and then drove over a route containing two or three big towns, one bad hill, and several miles of ordinary gradient until the tank were empty, I venture to suggest that there would be quite a number of astounded and indignant motorists tossing sleeplessly in bed during the following nights.

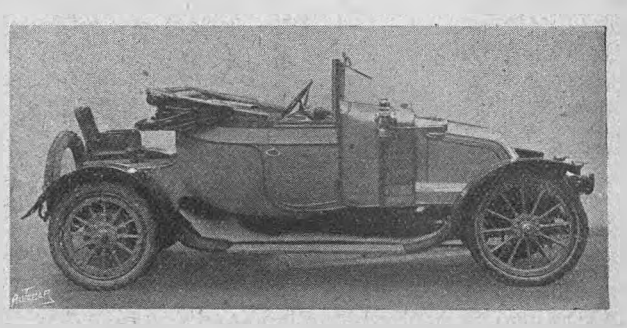


The car has a deep scuttle dash, deep low seat, and can be closed completely as shown.

The Driver's Worst Time.

If anyone asked me what was the least happy of all motoring experiences I should say that descending really greasy hills of severe gradient is more calculated to turn one's hair grey than 100 miles per hour on Brooklands. Two or three times lately when driving over strange roads I have suddenly been confronted with steep down gradients smeared with side-slippy mud of the "first water." The car, with plain rear tyres, has been moving along at legal limit when the steep pitch is struck, and no power on earth seems able to bring it to a standstill except with its nose in the hedge. A touch of either foot or side brakes seems to lock the wheels, so slight is the resistance offered them by the greasy roads, and often this actually has the effect of accelerating the speed, as the car slides down like a sledge on ball bearings. My own car, with studded rear covers, is a good deal safer, and will respond to *gentle* application of the brakes under these conditions, though there are hills in Devon and Derbyshire on which I dare not guarantee to bring it to a sudden standstill when the roads are greasy. Under such circumstances, if the pace of the car be above walking speeds when the hill is struck, firm application of the brakes means either a skid sideways or a slide forward—a slide that spells acceleration. The prime essential is to approach all down grades very, very slowly. The worst thing of all is to declutch, as the car instantly gathers speed in the fraction of time that elapses before the touch of the brakes, and by the end of that period brake application is even more likely to induce a skid or a slide.

For gentle grades I find coasting down with the throttle shut on top gear the best way to escape from a dilemma. The wheels maintain their grip better against the light friction so created than they do against the more masterful grip of the brake. For really steep grades I similarly employ a shut throttle



The hood folded down and the dickey seat opened up.

on a lower gear. It is here that I espy a great opening for front wheel brakes. We can certainly descend steep, greasy hills at a moderate pace without front wheel brakes, but there are cars on the road which perhaps cannot come to a standstill halfway down a four-furlong pitch of greasy 1 in 10 without skidding into the ditch. It is claimed that front wheel brakes of sound design can be locked hard on quite suddenly without creating the faintest tendency to side-slip. If this be true, I shall specify such brakes on my next car, for already this winter I have found myself in two or three situations where I would not have tried to stop the car suddenly for a king's ransom.

Carrying the Second Spare Wheel

I search my motor journals weekly without discovering a really convenient and sightly method of carrying a second spare wheel on a low open car. One of my chief joys in the emergency wheel system is that it ensures me against a couple of punctures. I have no serious objection to one tyre repair job *per diem;* it is when one has laboured perspiringly for three-quarters of an hour and a second nail penetrates a cover within a few miles of the first stoppage that one begins to grow really irate, and such experiences not infrequently befall the long distance tourist. A single emergency wheel, whether Stepney, wire or loose rim, is a mere gamble to me. Let me have my brace of wheels in reserve, each shod with its nice white rotund disc of progress, before I essay a longish drive. The puzzle is where to carry the second wheel. If I strap it beside my seat alongside of number one it projects outside the utmost edge of the car track, and I am apt to forget its presence and shave carts with it. If I fasten it in the tonneau at the back of the front seat it looks unspeakably ugly. If I sling it from the stern of the car it gets into a terrible mess in bad weather, and constantly obstructs access to the pressure tank. If I dig niches in my running boards for it there is no room for anything else, and my car is not large enough to possess a neat "boot" under the back seat capable of carrying an 810 mm. rim. It appears likely that I shall have to hinge a large triangular bracket to the rear cross member of the frame, mount my second wheel on it, and fit a locking catch at the top of the back of the rear seats, so that the wheel could be swung down to permit access to the petrol tank whenever it be necessary to fill the latter.

A Gradually Variable Gear.

IT will probably be generally admitted that the greatest godsend, especially to cars of low power, would be a gradually variable gear with a direct drive on all speeds, and a high efficiency without any compensating disadvantages. With such a gear, a car with a low powered engine would be able to do work at present accomplished only by much larger engines and the step by step indirect gearing common nowadays. We think, therefore, that any practical form of variable gear should be of interest, and from time to time we have dealt with forms of such gear. The most prominent hitherto have been hydraulic gears, such as the Hall and Janney Williams. In mechanical variable gears the frictional system is the only one which has really had an innings, and its disadvantages are very obvious. The very name of this type of gear suggests inefficiency, for to enable transmission to be effected through frictional contact there must be a considerable loss of power.

We have recently seen running a form of variable gear which has been constructed by Aston Motor Accessories Limited, of Talford Street, Birmingham, and we think that more may be heard of this gear in the near future. It is not possible to give a detailed description of it without a large number of drawings and photographs, but broadly speaking it consists of a co-axial driving shaft and a driven shaft passing through a stationary gear box or casing. The driving shaft actuates by means of a cam a number of oscillating discs arranged equi-distantly around the axis of the gear. These discs which oscillate or swing on ball bearings transmit such oscillation in a variable quantity to spindles upon which are mounted planet pinions. Each pinion can be clutched to its spindle during the swinging in one direction of its spindle. As such swing can be varied in quantity the motion of the planet pinions can be varied, such variable motion being transmitted to a sun pinion on the driven shaft. The clutches provided are of a very ingenious positive form, and are actuated by rockers and a cam.

The gear has been designed to give a gradual variation over a very wide range with uniform movement at all times during forward rotation. Uniform action can also be obtained on the reverse, which is obtained in the gear itself, that is to say the gear can be reduced from a maximum gradually down to a minimum and zero, when further movement of the control lever effects rotation in the reverse direction. The gear which we saw running certainly seemed extraordinarily controllable, and is shortly to undergo some comprehensive tests, the result of which we hope to announce at a future date.

It is early to talk about next year's Stanley Show, but we already have the intimation from the managing director and secretary, Mr. A. E. Lamb, that it will be held at the Royal Agricultural Hall, London, N., on November 18th to 26th, 1910, both dates inclusive.

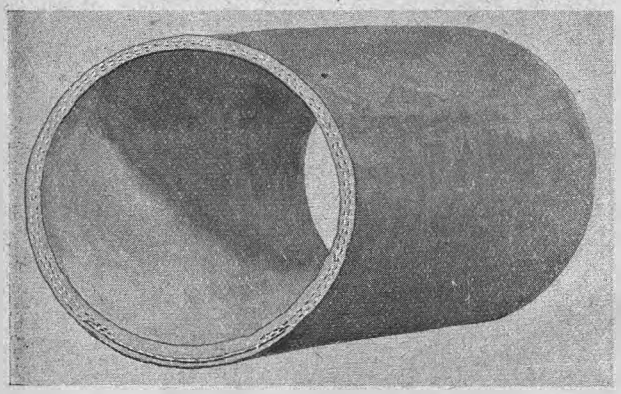
* * *

The Midland Automobile Club, which now meets at the Grand Hotel, Birmingham, is considering the question of obtaining a clubroom in Birmingham with a motor house adjoining. The financial position of the club is reported to be very strong. At the annual meeting on Friday last week Mr. A. F. Bird was elected president for the ensuing year, and the hon. secretary is Mr. Lichfield Meek.

Recently we had a very interesting experience with a Challenge reinforced air tube. We fitted the tube into an old repaired steel-studded cover on one of the back wheels of a car, which weighs about 26 cwts. unloaded. It looked all right externally, but we had not very much faith in the repair. The tyre began to creak and groan in a most extraordinary manner when inflated. After having driven the car some fifty-five miles we examined the cover and found that it had split along the tread for thirteen inches. There was a tremendous swelling on it from side to side a foot in length, but, wonderful to relate, the air tube had not burst. No better demonstration of the reinforced principle could be desired. The same tube is now at work in another cover.

The Reinforced Inner Tube. An Important Feature.

It will be idle to deny that now the Reinforced inner tube has more than won its spurs. It is to a large extent used to-day throughout the length and breadth of the country, but nevertheless those responsible for it lose no opportunity of further improving its construction and manufacture. Our attention was drawn recently to an improvement in this tube which is claimed to be of more than ordinary importance. By the sketch herewith it will be seen that, in addition to



the two-ply fabric insertion which encircles four-fifths of the tube itself, leaving the thickened portion of pure rubber where the tube beds into the rim. another insertion of a segmental piece of elastic bound in the best Egyptian cotton has been embodied. The outer ends of this latter insertion slightly overlap and lie upon the edges of the fabric proper. It has been added for the purpose of preventing any failure of the tube at the point where the liner fabric ends, while reserving to the thickened rubber portion all the elasticity necessary for the proper expansion of the inner tube within the tyre cover.

The Motor Union and the General Election.

The following statement has been issued by the secretary of the Motor Union:

"The Motor Union has had under consideration the policy to be adopted by motorists at the forthcoming General Election.

"After carefully weighing all the circumstances the Motor Union is of opinion that the issues before the electors are of such importance that it is not desirable in the interests of the movement to attempt to force the motor question into prominence by requiring pledges on the subject as a condition of support.

"The motor car will undoubtedly play an important part in the election, and, without asking for pledges, motorists can well point out to those candidates whom they assist, the convenience and national value of this means of transport. If this be systematically done the Motor Union is of opinion that gratitude for services rendered will be more likely to engender a sympathetic feeling towards motorists on the part of Parliamentary candidates than would any attempt of organised motorists to secure promises which, in the present condition of affairs, would probably cause irritation and resentment, instead of gaining support.

"After the election the Union will address a letter to the successful candidates drawing their attention to the legislative requirements of the motoring and aviation movements."

The Associated Clubs and Co-operative Trading.

A special meeting of the General Committee of the Royal Automobile Club was held on Thursday last week to consider and discuss the question of the advisability or otherwise of associated clubs identifying themselves in any scheme of co-operative trading. The meeting was thoroughly representative in character, there being present representatives of the Royal, Scottish, and Irish Automobile Clubs, the Auto Cycle Union, and of the provincial clubs generally. A full discussion of the subject took place, and subsequently the following resolution was passed unanimously:

That the General Committee of the Royal Automobile and associated clubs, while considering that the question of adopting co-operation in any way is one on which every associated club is perfectly free to take whatever action it thinks best, is of opinion that it is undesirable that any club in the association become directly or indirectly affiliated to or officially connected with any trading association co-operative or otherwise.

Hall v. Stepney Spare Wheel, Ltd.

Mr. J. H. Hall is the inventor of the spare wheel which bears his name, and which was described in our issue of July 17th, 1909. His application for Letters Patent was opposed by the Stepney Spare Wheel, Ltd., but was ultimately granted in somewhat amended form. Recently a firm who were considering the matter of doing business in Hall wheels wrote to the Stepney Spare Wheel, Ltd., and asked if, in their opinion, the Hall wheel infringed their patent. The Stepney Co. replied that they should take proceedings against the firm if they sold these wheels. In consequence of this, Mr. Hall commenced an action against the Stepney Spare Wheel, Ltd., and on Thursday of last week moved the court for an injunction to restrain them from continuing such threats. The proceedings were taken under Sec. 36 of the Patents and Designs Act, 1907, which contains a proviso that the section shall not apply if the person making the threats shall, with due diligence, commence and prosecute an action for infringement of his patent. It appeared that the Stepney Co. were applying to amend their specification, which might complicate the situation; but ultimately, on their undertaking to issue a writ that day, the motion was ordered to stand over generally.

A German Aeroplane Destroyer.

The question of the best means of combating the use of aeroplanes and airships in war time is receiving the attention of nearly all European military authorities. The German War Office is experimenting with a vertically mounted gun carried on a 50 h.p. motor car chassis, the steering wheels of which are iron-tyred and the drivers provided with solid rubber tyres. The total weight of the vehicle and gun is 4 tons 4 cwts. 3 qrs. The gun fires a 3in. explosive shell, weighing 12 lbs., with an effective range of 7,000 yards. The chassis has seating capacity for several gunners, in addition to the motor driver and mechanics, and the space under the seats will accommodate ammunition to the extent of sixty-two shells. In moderately hilly country this aeroplane destroyer is said to attain a speed of twenty-eight miles an hour and to climb hills easily with an average gradient of 1 in 5. The famous Krupp firm is responsible for the manufacture of this machine, and in addition has made another type of gun which can be carried on a car. This latter is a 2½in. gun throwing an 8¾ lbs. shell.

Motor Union Notes.

(Communicated by the Secretary.)

The Motor Union extends to all its members the greetings of the season, and wishes them a Happy Christmas and a Prosperous New Year.

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Members will learn with great regret that the health of their chairman, Mr. W. Joynson-Hicks, M.P., has broken down, after his arduous and protracted labours in the House of Commons and in the country. Mr. Joynson-Hicks has taken the keenest interest in the welfare of the Motor Union and of motoring in this country, and he has the sincerest wishes of the Union for his speedy recovery of good health.

◇ ◇ ◇ ◇

The Union has received a number of enquiries as to the policy that should be adopted by its members at the forthcoming general election. Attention is, therefore, directed to a statement on this subject which has been issued by the Motor Union. [This statement appears on page 1030 of the present issue.—Ed.] From this it will be seen that, in the opinion of the Union, it is not desirable to endeavour, by requiring pledges from Parliamentary candidates, to enlist their sympathetic interest in motoring matters. The motor car has been an important factor in the elections of recent years, and it is likely to play a more important part in the forthcoming struggle than on previous occasions. There is no doubt that every Parliamentary candidate will be anxious to secure the help of motorists, and that the co-operation of private car owners in any constituency will be a valuable asset to him. The Motor Union hopes that the unconditional assistance of motorists on this occasion will do more to secure the sympathy of the members of the new House of Parliament than would any coercive methods that might be adopted.

◇ ◇ ◇ ◇

Members are reminded that their annual subscriptions to the Motor Union become due on January 1st. Renewal forms have been despatched to those who have not already forwarded their subscriptions for 1910, and members are particularly asked to return these forms, together with the amount of their subscriptions, with as little delay as possible, in order that the Union may be spared the expense of sending out reminders. Every saving of this character in the establishment expenses means that a larger sum is available to be spent in the interests of members. It may also be well to point out that the prompt renewal of subscriptions will obviate any interruption in the weekly supply of *The Autocar*.

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At the meeting of the General Committee, which was held last week, the following additional representatives of individual members were elected: Capt. Hon. Robert Lygon, Major J. N. C. Kennedy, Capt. J. G. Flemming, Mr. D. Lewis Poole, and Mr. H. D. Swan. During 1910 the monthly meetings of the General Committee will be held on the fourth Wednesday in each month at Caxton House, Westminster.

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The Union will take possession of its new offices next week, and after the 29th inst. members are requested to address all communications to Caxton House, Westminster. Caxton House is situate on the site of the old Aquarium, and is a few minutes' walk from Westminster Abbey and the Houses of Parliament. The nearest station is St. James's Park, which is only a few hundred yards from the new offices.

153 new individual members were enrolled during the first two weeks of December. The total individual membership of the Union now exceeds 9,000, in addition to which over 4,000 members of local clubs are affiliated to the Union. Members are reminded that the new free legal defence scheme comes into operation on January 1st next, and they are asked to bring the increased advantages of membership to the notice of those among their motoring friends who have not, so far, become members of the Union.

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The Union is investigating the circumstances of a case in which a serious accident resulted from the insufficient lighting of a horse-drawn vehicle. The Lights on Vehicles Act, 1907 (Section 1, Sub-section 1), provides that on all vehicles there must be affixed a lamp which, when lighted, will "display to the front a white light, visible for a reasonable distance." In the case under notice the vehicle, being a heavy one, was drawn by two powerful horses, and the lamp which should have been "visible for a reasonable distance," was entirely concealed behind the horses. The lane down which the waggon and a motor car were unconsciously approaching was narrow and dark, and the motorist only became aware of the presence of the former when the horses' heads crashed into the screen of the car. If, upon investigation, the facts as reported prove to be correct, the Union will institute legal proceedings against the person responsible for the lighting of the waggon. The inadequate lighting of horse-drawn vehicles has too often been the cause of serious accidents, and it is desirable in the public interest that whenever possible such negligence should be punished.

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The committee of the Croydon Centre of the Union is endeavouring to secure the re-erection of the signs indicating the ten-mile speed limit, in positions in which they will be more easily seen by motorists. By moving them only a few yards they can be re-erected within the zone of light gven by the street lamps, whereas in their present position they are easily passed unnoticed. Several motorists who have been summoned for exceeding the speed limit at this place have stated that they were unaware that they had entered the speed limit area.

◇ ◇ ◇ ◇

A conference was held on the 20th inst. at the Guildhall, Westminster, S.W., between the Middlesex C.C., the Motor Union, and other objectors to the council's application for a ten-mile speed limit at Harrow-on-the-Hill and Harrow Weald, with a view to seeing if an amicable arrangement could be arrived at.

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Annual Election of Representatives of Individual Members.

NOTICE IS HEREBY GIVEN, that all nominations for the representatives of individual members upon the General Committee of the UNION must be in my hands by the 31st January next. Only members of the UNION joining in an individual capacity are eligible to serve as representatives, and they must be nominated and seconded by members of this class.

If the number of nominations exceeds the number of vacancies, a postal ballot of individual members will be taken.

W. REES JEFFREYS,
Secretary.

December 20th, 1909.

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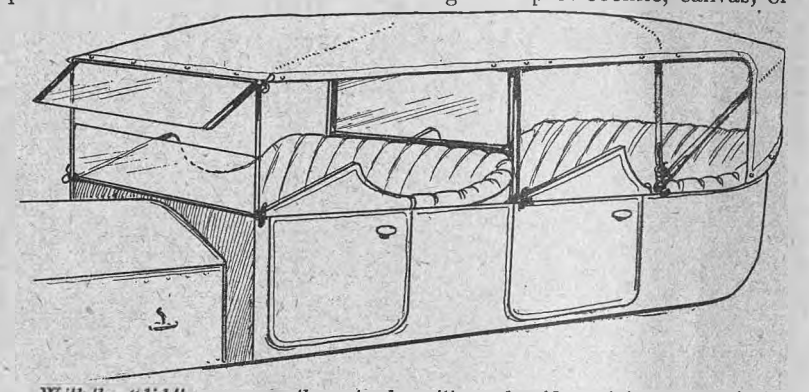
The Motor Union. Chairman: W. Joynson Hicks, M.P. Albemarle Street, London, W. "Speedway, London." 9090 Gerrard.

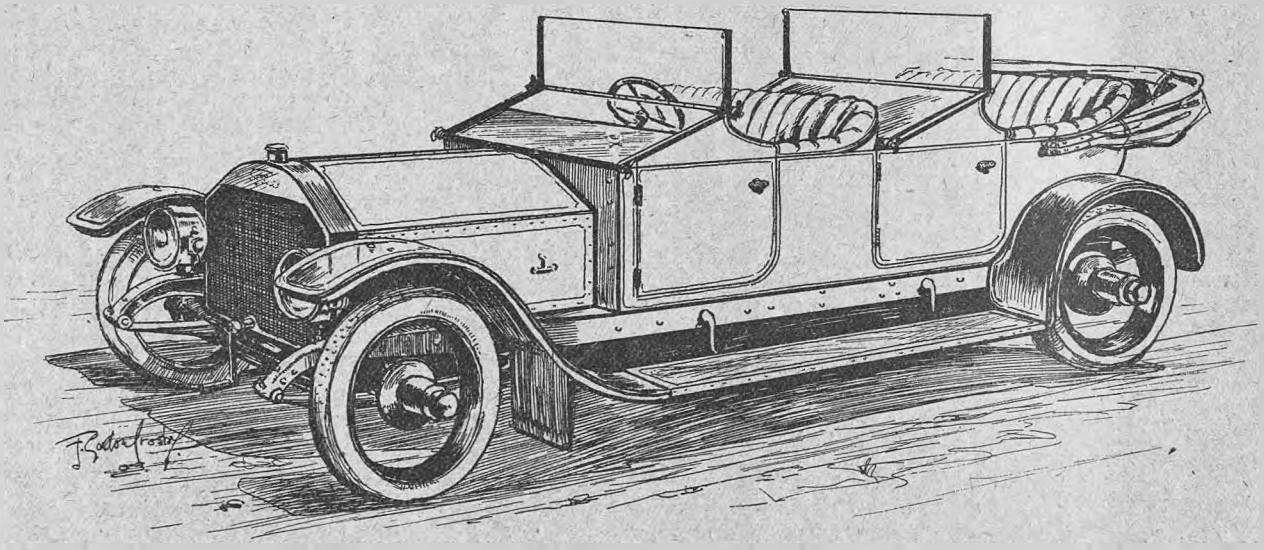
Body Design and Construction.

A Novel Combination Body.

MANY attempts are being made to design a simple form of body which shall be satisfactory either as an open car or as a closed vehicle. This may be regarded as attempting the impossible, for if the desire be to combine in one body all the advantages of a landaulet or limousine and an open car with none of their objections, it may safely be asserted that the quest is an impossible one. The first question for the motorist to ask himself is whether he will most often use the car open or closed, and if monetary considerations do not weigh it is perfectly simple to settle the matter by deciding to have either a landaulet or an open car with a Cape hood and screen as his requirements dictate. At the same time there is a large and growing class of motorists who more often use their cars as open vehicles, but who nevertheless require a near approximation to a closed carriage for certain purposes, and particularly for night work. An ingenious attempt to meet the requirements of this class has been made by Charlesworth Bodies, Ltd., Much Park Street, Coventry. They have designed what they call a Dreadnought body. Our illustration shows it with a flush-sided body, but of course it is equally applicable to any car on which high side doors are adopted. It will be seen that the doors have triangular additions to them, and that for both back and front seats a hinged screen drops down on to the top of these door extensions, thereby providing what is practically a glazed edition of the scuttle dash. Both these screens are fitted with short folding screens, which can be set up vertically in front of the occupants of each seat. When it is desired to use the car entirely enclosed, the big screens are swung right up, and as there is a filling-in piece of canvas on the hood, the back screen entirely encloses the seats when the hood is up, and by means of side curtains the car becomes to all intents and purposes a closed one. So far as the front seats are concerned, there is no need to put the large screen up into its vertical position unless desired, so that the car can be used with the back part entirely enclosed and the front wholly or partially closed, just as preferred. We should add that the "lid" portion of the front screen has a filling-in strip of ebonite, canvas, or any other suitable material to fill in the space made vacant when the rear portion is used as a vertical screen as shown in the lower illustration, so that all the advantages of the scuttle dash with a short driving screen are obtained. To get in or out of the car the screen is lifted up. For those who object to glass, the front screen may be made of transparent celluloid, and the back may be opaque if desired. There are a number of possible modifications of the design, which we consider a very clever one, but they are so obvious to anyone who studies the two drawings that we need not enlarge upon them.



With the "lid" screens in the vertical position only side curtains are required to completely enclose the back seats.

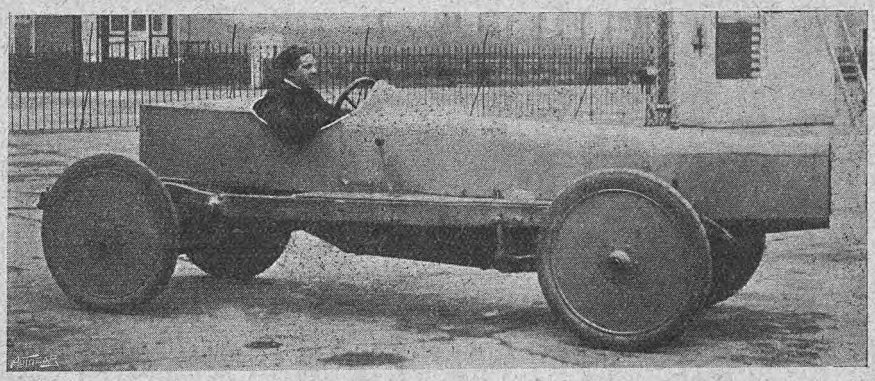


With the "lid' screens closed down on to the top of the doors, and the short hinged screens set vertically. Either of the short screens can be folded down on to the large "lid" screen if desired.

This new type of body is the design of Mr. C. Steane, one of the directors of Charlesworth Bodies, Ltd., who has also designed a system of inter-connection whereby the screens can be linked to their doors, so that the opening of a door raises the screen, and suitable springs stop the screen from slamming down as the door is closed.

On the Track. By H. C. Lafone.

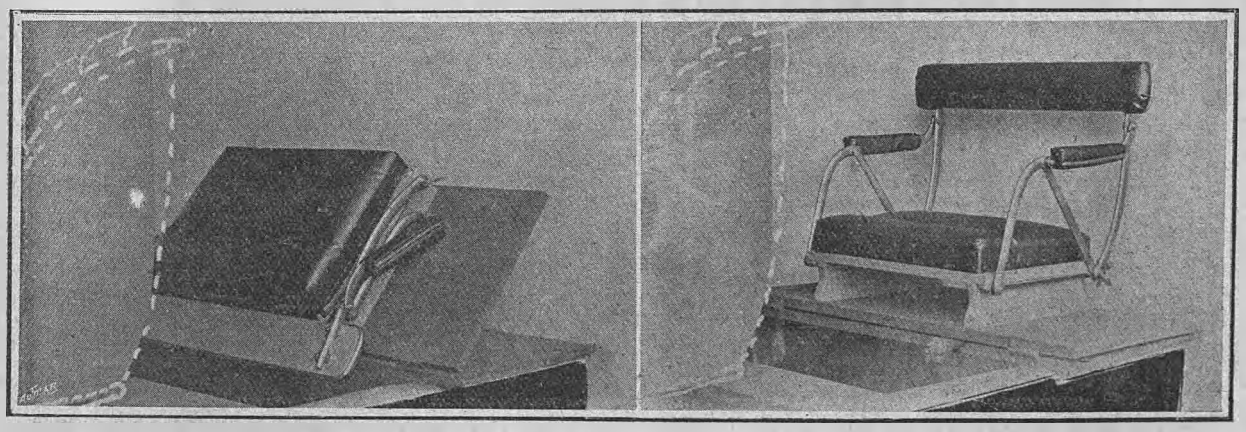
OWING to the Christmas holidays, the powers that be have ordained that I must send off these notes earlier than usual this week, the result being that I am unable to deal with the Vauxhall-Star match set for decision last Tuesday morning. All I can say is that, whatever the result of the skirmish, the preliminary canters have been something marvellous. I shall be more than surprised if these small machines have not both shown themselves, by the time this article appears in print, capable of putting up speeds practically equal to those achieved by the 26 h.p. Hutton during the past summer. I have not had much spare time to be on the track these last few days, but friends have told me that the spectacle of an 18 h.p. car travelling at ninety miles an hour has become quite ordinary. The Star's acceleration powers, according to Mr. Astley, appear to resemble those of a 120 h.p. Mercédès, and the way it gets off the mark is simply phenomenal. Well, there will be more to say about this match, which is quite the most sporting affair ever held on the track, in next week's *Autocar*.



The 20 h.p. Vauxhall on which Mr. A. T. Hancock made such splendid times on December 14th. Mr. Hancock has established two 21 h.p. Class records. This car made better times than the 26 h.p. Class records.

The craze for very high-powered racing cars among amateur drivers seems to be on the wane. Mr. Baker White has got rid of his stud, which included one or two big machines, and now Mr. Astley has returned his fast Napier to its makers, vowing that there is not much real sport to be extracted from the largest variety of speed projectiles. I must say I shall not be sorry to see amateurs next season confining themselves entirely to machines coming within the "four-inch" class. After all the very big cars are not much good in this country except at Brooklands, while the four-inchers make splendid touring vehicles when dressed in all their clothes. Though not a four-inch car, the venerable "Pobble" is a good example of a typical amateur's racer-touring machine. The lessons learned in tuning it up for the Brooklands race meetings have proved of the greatest advantage in rendering it an ideal touring car in its spare time. Any really well-built, medium-powered machine can stand a good deal of racing without doing it any permanent damage, and, as I have already said, its owner has a most efficient all-work car when the touring body is put on.

Matters aeronautical have been somewhat at a standstill for the past week. The ground has been very soft, and starting has been a big strain on the engines and framework of the machines. Mr. Astley's monoplane came to grief on Saturday afternoon through one of its wheels collapsing under it. Here again the soft ground was to blame, for the wheel sank in instead of running along the surface. The 40 h.p. N.E.C. engine on this machine is a most fascinating little affair. I call it "little" advisedly, for if it were an ordinary car engine its dimensions would lead one to imagine that it was of some 15 h.p. As a matter of fact its four cylinders work on the two-stroke principle, and the most wonderful thing about it is the enormous speed at which it will run. One is accustomed to put the maximum efficient speed of a two-stroke motor at about 1,400 r.p.m., but Mr. Astley told me that he had watched his engine on the test bench run from very low speed up to 2,100 r.p.m., the power curve being not a "curve" at all, but a straight line, which proved the motor's exceptionally steady power production throughout the range of its speed—a range limited only by the ability of the magneto to give the necessary sparks. When the monoplane's wheel collapsed Mr. Astley was thrown out, and gave his knee a nasty scrape. The machine itself was undamaged.



BODY DESIGN AND CONSTRUCTION. A provisional patent has been taken out by the Ellis Motor Works, 200, Wells Road, Goldhawk Road, W., for the dickey seat illustrated herewith, which has no loose parts. To lower the seat two side thumbscrews are loosened, the seat is lifted slightly and folded ready to turn over into the rear of the body.

Correspondence.

EDITORIAL NOTICES.

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

Letters of a personal nature will be withheld.

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

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

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

INDICTMENT OF THE MOTOR CAR TAXES.

[15063.]—The questions involved in the controversy on the Finance Bill were of such constitutional importance that I did not feel justified in discussing in the House of Lords the motor taxes which are included in its multifarious embrace. That I may not be thought, however, to approve of them, I will crave your indulgence to set forth, as briefly as may be, the following contentions with regard to these taxes:

1. No principle can be discovered to justify them. Two years ago Mr. Asquith said that motors were a luxury fast degenerating into a nuisance. This year Mr. Lloyd George said that motors "had not been given an opportunity" of contributing to the upkeep of the roads, and that the appalling list of casualties made it a question that demanded immediate notice; and later he stated that "one of the chief reasons for imposing additional taxation on motor cars is the fact that the increase in their numbers necessitates a reorganisation of our main road system." These sum up all the reasons which appear to have been given to excuse additional taxation. Mr. Asquith's statement that a motor is a luxury is just as true and just as untrue as would be the statement that horses are a luxury. A small percentage of motors are luxuries: the rest are not. But all racehorses are luxuries; all racecourses are luxuries, and do far more harm to the country than any ever ascribed to motors: but these are not to be taxed. A landau with its pair of horses is as expensive both in first cost and in upkeep as a motor, and is an undoubted luxury: but this is not to be taxed. Diamonds are luxuries; yachts are luxuries; valuable pictures are luxuries: but none of these are to be specially taxed as luxuries. As to the wear and tear of the roads, Mr. Lloyd George gives motorists no opportunity of contributing to this by his motor taxes. They are, of course, already among the largest payers of rates and taxes in the country—a fact which the anti-motorist wilfully overlooks. It is contrary to admitted principle that those who use the roads should pay for them, but if this principle were admitted and a scientific enquiry into wear and tear were made, the light pleasure car would not be called upon for a large share of the total maintenance cost. These taxes cannot be justified as taxes on luxuries: they cannot be justified as required by the use of, nor are they devoted to the maintenance of, existing roads. They are the most popular taxes in the Budget, says Mr. Lloyd George, and I agree—popular precisely for the reason that they are not founded on logic, but on prejudice and class hatred.

2. Motorists have not been consulted. On account of the very prejudice and unpopularity to which I have just referred, motorists have been treated with contempt by the Chancellor of the Exchequer as an insignificant minority. In his Budget speech he said they were willing and anxious to subscribe to the improvement of the roads, and in a later speech he said that he had consulted the R.A.C. Since the Budget speech we have learnt what this consultation amounted to. Mr. Arthur Stanley the other day said it was not a question of whether we were to be birched, but of what birch was to be used. The Chancellor's own supporter, Sir Henry Norman, said, "We were in the position of being asked from the beginning what sauces we would prefer to be cooked with!" Since the proposals were made public, Mr. Lloyd George has refused to receive a deputation from the leading trade society, and I think he has also refused one from the R.A.C., although this body—the least democratic body in the motor world—is the only one he consulted even nominally. But Mr. Lloyd George cannot point to a single motoring organisation which has accepted the taxes as just or reasonable.

3. They are excessive and oppressive. The retail price of petrol is 10d.; the tax is 3d., or 30%. Sir Henry Norman endeavoured to show that the petrol companies would bear a portion of this tax; the truth is, as probably even he will now admit, that the retail price to the public has been increased by 4d. The taxes on the cars themselves have suddenly been increased from two or four guineas to about six to ten or twenty guineas for ordinary sizes. Taxes so severe as these defeat their own object. Paraffin is already being adopted instead of petrol. People are selling their cars and dismissing their servants. In my own case, by reducing the number of my cars, which involves getting rid of an engineer, and by doing without armorial bearings (a mere vanity), I propose to reduce my taxes by three guineas instead of increasing them. The yield will not come up to the expectation. In the domain of commercial vehicles, the Society of Motor Manufacturers and Traders would have shown Mr. Lloyd George, had he condescended to receive them, that £100,000 worth of orders had been withheld in consequence of the Budget. Moreover, the moment chosen for striking at the motor trade was that on which it was just emerging from a disastrous year, and, considering that it supports well over a million individuals of the working classes in this country, it might have seemed undesirable to increase the chances of unemployment by these imposts.

Incidentally, these taxes violate a sound constitutional principle. in that no man can say what he will have to pay by looking at the Taxing Statute. What is motor spirit, and what is horse-power, depends on the caprice of the Treasury, as expressed in regulations which have not been submitted to the House of Commons, and which are liable to be varied from time to time. Mr. Lloyd George asked for a definition of motor spirit when receiving a deputation from the Motor Union, and had it before him at that moment in one of the amendments submitted, viz., "Petroleum spirit not exceeding a specific gravity of .800." He has preferred to retain the definition in the Bill, which includes paraffin, coal, and wood. Whether an individual car is to pay ten guineas or twenty guineas per annum depends on the formula selected by the Treasury, which has never been submitted for discussion or comment.

4. Special cases of hardship have received no attention. It has been pointed out that taxation by classes instead of by unit of horse-power would necessarily involve hardship to individuals, and would embarrass manufacturers in choosing their standard sizes. It has been pointed out that of two cars rated at 30 h.p. the modern one may give it, while that three or four years old gives only 12 h.p. Because motorists are an insignificant minority and are not united, and because the Chancellor of the Exchequer is more interested in his political proposals, he has refused to receive deputations, and has given no thought to the instances of injustice which have been brought to his notice, and taken no heed of the remonstrances which have been addressed to him. This necessarily leaves in the minds of the oppressed minority a rankling sense of injustice, contrary to the interests of good administration.

RUSSELL.

AXLE DESIGN.

[15064.]—Your correspondent [No. 15012] says that carriage wheels are dished for strength. I know of no reason why a dished carriage wheel should be stronger than a flat one. The case is different in a wire wheel, where the dishing is the other way round, and where one has the advantage of a wide spoke base. A carriage wheel is dished because of the method employed in its construction. The iron felloe is expanded by heat, then put on to the wooden wheel and allowed to shrink in place, thus bonding the whole wheel together. If the wheel were not quite flat the spokes would not compress at all, and the wheel, instead of being approximately a true circle, would become polygon, the number of angles of which would correspond to the number of the spokes, and, moreover, any shrinkage in the wood due to dryness of atmosphere would decrease the length of the spokes and make the wheel hopelessly loose.

With a dished wheel the conditions are different; the shrinkage of the felloe increases the dish of the wheel and actually bends each of the spokes outwards, so that when the spokes shrink they are able to compensate for the decrease in length by becoming straighter, and at the same time reducing the dish of the wheels.

It is quite true that motor car wooden wheels are in most cases not dished; the reason is that the spokes have to be

made so robust that the bending that would result from shrinking the felloe on to the dished wheel would not result in a bending of the spokes sufficient to compensate for the shrinking due to subsequent drying of the wood. As a consequence of this the wheel assumes the polygon shape, but the wooden rim is fairly stout, so that the results are not so serious as in the case of a large carriage wheel. Moreover, the disadvantage of the angles is taken off to a great extent by the pneumatic tyre.

I do not think that bicycle wheels, although they run under very good conditions, are always employed under even approximately ideal conditions, otherwise it would not be necessary to pay so much attention to avoid buckling by employing a very rigid rim and the widest spoke base possible having due regard to the general appearance of the machine.

As to the desirability of making the centre line of the steering swivel intersect the contact of the road and tyre, and thus secure easy steering, unless abnormal size hubs are used there is, as far as I know, no way of securing this with an angle of not greater than 5° except by employing the Rudge-Whitworth triple spoked wheel, an illustration of which arranged for this purpose appeared in your issue of September 25th (page 492). JOHN V. PUGH.

[15065.]—Letter 15012 suggests that carriage wheels are dished for strength, and axles arched to splay the wheels. A carriage wheel is held together by shrinking on an iron or steel tyre. If the wheel were built in a plane it might buckle during the process of tyring, so it is slightly dished to ensure its remaining true. This, however, does not add strength, and, unfortunately, every time it is retyred the dishing becomes more pronounced.

This dishing makes it necessary to stagger the spokes and cone the tread to bring it at right angles to the inner spoke and to set the axle arms between the collar and the butterfly in order to bring the inner spoke vertical. The arms are also slightly gathered forward to give the wheel a tendency to run on. The butterflies are in the same plane, and any shape the axle may take between these has nothing to do with the splay of the wheels. It may be arched, inverted, straight, or cranked. H. SKINNER.

PNEUMATIC SUSPENSION.

[15066.]—With reference to the article published in your issue of the 4th inst. relating to the Amans Puemo suspension, may I be allowed to ask some pertinent questions regarding the action of this device?

Firstly, as to the size of the cylinders and to the extremely modest dimensions of the air cushion, being about one-thousandth of that of medium sized pneumatic tyres, which, as we know, are barely sufficient to take up light road shocks, it being claimed for this device to cancel even the heaviest shocks.

Secondly, as to the means of preventing the inevitable heating of the air enclosed in the cylinders, inseparable from air compression, with the additional friction of the leather cup against the cylinder walls. We have that example of heating every day when blowing up a tyre, only that, in favour of a tyre pump, it not only admits fresh air at every stroke, but its work is ended when the full pressure is attained, while in the Amans shock absorber the working then only commences.

In my opinion the result can only be obtained with a freshly packed ram, when the leather holds a certain quantity of oil; the leather cup is bound to dry and shrivel up after a time and the apparatus becomes inoperative.

Thirdly, it is a well-known fact that the action of an air pump piston is slow, and the explanation given of the theory of the operation of this device shows that in order to be effective the piston would have to be allowed a fairly slow and long trail. This, however, is a condition unattainable with the high frequency of road shocks, and, in my opinion, a jerky motion would be the result. It does not follow that because there is an inelastic connection between the rocking arm and the articulated rod, the rising of the axle will produce a corresponding motion of the piston in the air cylinder. The probability is that but for a very restricted movement, the balance of the impulse will raise the chassis and suspension with it

Inasmuch as your article refers to results obtained on a trial run on a car fitted with this suspension, I am driven to the conclusion that what results were obtained would have mainly to be ascribed to a freshly packed ram, which, as mentioned before, would for a short time allow the play described in your article, and this in combination with an unduly weak laminated spring, which would yield before any energetic action can take place in the air cylinders.

I am fairly sure, however, that after a few hundred miles the leather cup having dried up, the air cushion would be destroyed, and the weak laminated spring unable to protect the car from disastrous effects resulting from a single excessive road shock.

My experience as an engineer taught me years ago that pneumatic devices applied to motor car practice (excluding pneumatic tyres) are useless. To obtain an efficient air cushion the dimensions of such devices are altogether too unwieldy, the difficulty of preventing air leakage being insuperable; whilst the provisions made against this defect in the device under notice apparently overcome the drawback, it must be evident that this is only operative in the initial stages of leakage, not when the ram has practically ceased to compress the air.

After this I think it is unnecessary to dwell upon the tricks which ball valves are in the habit of playing, nor to mention that the manner in which the apparatus "automatically proportions its air pressure to varying loads" is hardly explained. A. J. CRUMP.

[15067.]—I would strongly advise a trial run, and can assure "Engineer" [letter No. 15027] that he will be taken over some of the most awful places at a pace that will surprise him, without feeling anything like the jars and bumps he would get in an ordinary pneumatic tyred car. Let him try thirty miles per hour on a bumpy road in his own car (if he is mad enough), and then change to the Amans, and he will be more than convinced that the system is all that is claimed for it.

During the trial given to my chauffeur and myself I noticed both axles seemed to be in violent action, but there was no vibration, nor could either of us detect any chatter of the radius rods. The most awful holes and unfinished crossings, with a clear drop of five to six inches on both sides, were taken at high speed with scarcely any movement of the car body, though what the poor axles thought of such treatment I do not dare to contemplate. At the finish of the trial I felt the air cylinders, expecting them to be very hot, and was surprised to find them quite cool. We all know how hot a cycle pump gets, even with ordinary hand pressure.

Finally, I have ordered the Amans for a new 30 h.p. Itala chassis, and will gladly let "Engineer" know how I get on. Should it work to my expectations, I shall have the system fitted to a 2-ton Itala I already have, although this latter car has given so much satisfaction to all my family that I feel loth to interfere with it.

I hear the Amans has been taken up by taxicab companies in Oxford and London, and they are not likely to look at anything likely to hurt their differentials, which was the only question in my mind. H. TAYLOR.

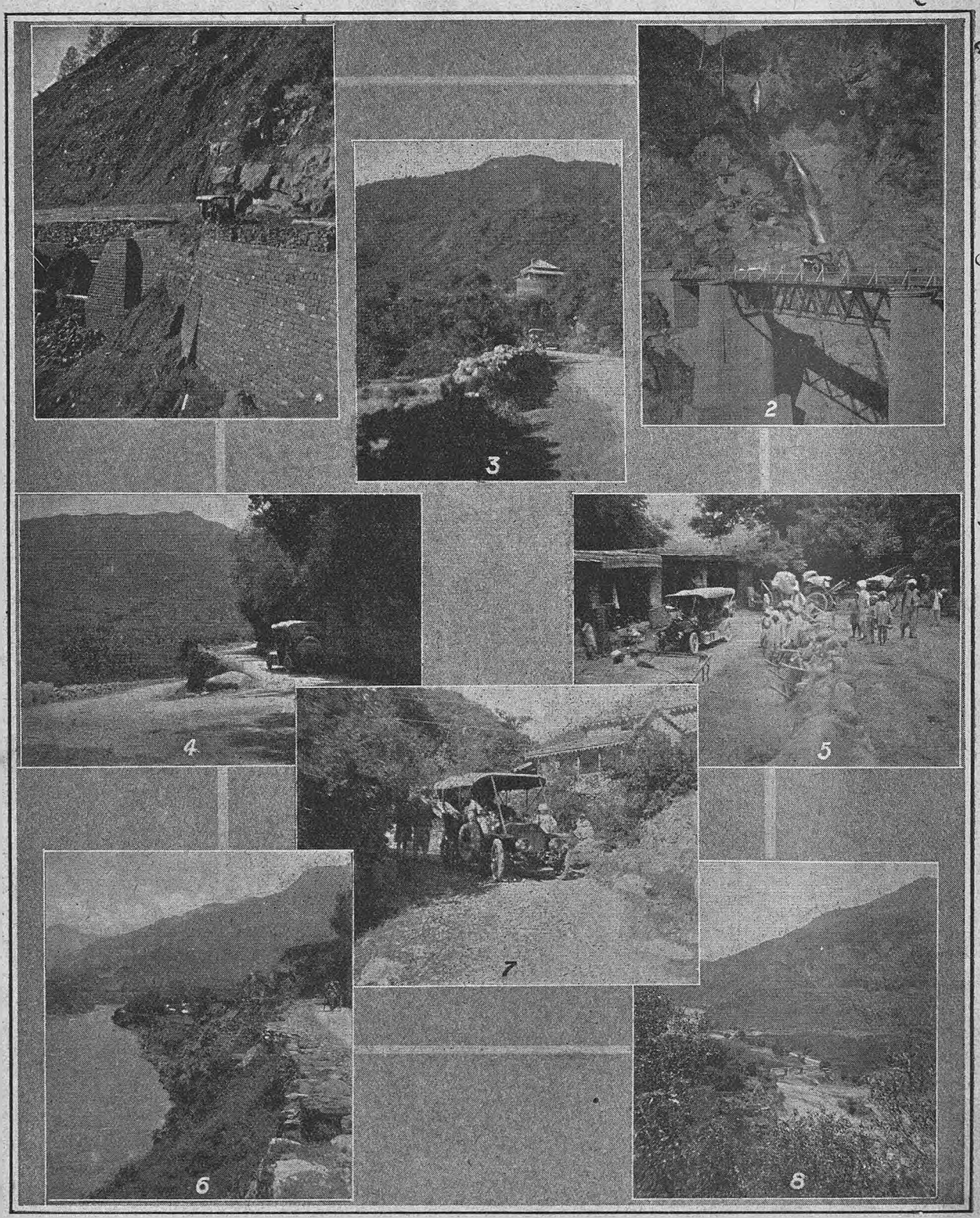
TOURING IN THE PUNJAB.

[15068.]—I enclose some photographs of the road into Srinagar, Kashmer, from Murru, the hill station of Northern Punjab, distance about 160 miles. Murru is about 7,400 feet. The road drops to about 2,000 feet in the first twenty-seven and threequarter miles, then gradually rises, going along the east banks of the Jhelum River to Domel, from here due east along southern bank to Baramullah, where the Srinagar Plateau, some 5,000 feet high, is reached, and from here thirty-four miles over the flat into Srinagar. The road is full of twists and turns and right angle turns across bridges over the innumerable small hill streams running into the Jhelum; also to add to this the surface of the road is very bad, especially about September, being the rainy season, and the traffic, which is pretty heavy, consists chiefly of strings of bullock carts. Rules of the road to all intents and purposes do not exist. It is a severe test of both the car and driver.

A party of four with a child went in for a fifteen days trip in a 14-16 h.p. Darracq, 1908 pattern. It was a severe test, for the roads were bad and very heavy; the car was fully laden, or more than so. There are severe climbs and descents to be negotiated. Even with the heavy state of roads, in certain steep bits only had first speed to be requisitioned.

As there was no hurry the trip was performed in three days in and three out, the remainder being spent in and about Srinagar. The whole trip was performed without any mishap. Nothing had to be done to the engine and car beyond the daily cleaning. This took time, too, as the roads were inches thick as a rule in mud and slush. On the return journey on the last twenty-seven mile hill-climb the only trouble experienced was from the carburetter, the supply being for some unknown reason constantly choked, and

TOURING IN THE PUNJAB. (See page 1035.)



(1) The approach from Kurbruim to the bridge shown in No. 2; the turn is almost a right angle with the end of the bridge. (2) The bridge over the stream leading into the Thelum. (3) The Chakoti Dale or Rut Bungalow. (4) The centre hairpin bend, which looks broader than it really is. (5) The top hairpin bend with a small bazaar at the turn, making it more difficult. (6) Portion of road, looking up stream, the white specks being the houses at Domel; in the foreground is a native two-wheeler known as an "Elha"; the road can be seen beyond the town on the river bank. (7) Coming down from Chakoti Bungalow, which is some 100ft. above the road; the road surface would not commend itself to the stay-at-home motorist. (8) Taken from the summit, showing road in distance along the river bed.

necessitating fourteen stops to clean it. In spite of this and working on second speed, the car did the whole distance in three and a quarter hours, which, considering the heavy state of the roads, the load, and gradients, was fairly good.

There are some exciting "hairpins" on the route, two photographs of which I enclose [page 1036.—Ed.] Heavy rain was experienced during the journey. Petrol worked out at seventeen miles to the gallon.

The road is a severe test on tyres, springs, and body. All stood it well.

I thought the illustrations might be of interest to the readers of your valuable paper, *The Autocar*.

RAWAL PINDI.

PLAIN *V.* BALL BEARINGS.

[15069.]—"B's" letter and experiments (page 983, December 11th) fully bear out the contention I have long held, that the reduction of friction by the use of ball or roller instead of plain bearings is practically infinitesimal. When ball bearings first came out for bicycles, in conjunction with a friend (an engineer, like myself) I got two new machines, identical in every respect save the bearings. We rode these machines for the whole year, and tested them in all possible ways one against the other, the result being that so long as the one with plain bearings was kept well supplied with oil, no difference could be found in the running.

Some five years ago I had a 10 h.p. car fitted with ball bearings to road wheels. These might be, and probably were, of somewhat primitive design. They certainly gave me so much trouble that when I bought a new 18 h.p. car in 1904 I was careful to select one with plain bearings throughout. This car is still running, having now done over 30,000 miles, and, so far as the bearings are concerned, has given complete satisfaction. The wheel bushes have never been renewed, and seem good for at least double the mileage. It is often said that plain bearings need constant attention. I once, to show the fallacy of this, ran the front wheels for over two years without supplying any fresh oil or grease. The experiment came to an untimely end owing to the car being badly smashed in a collision.

Again, no one is capable of forming a better judgment or keener on reduction of friction, and consequently saving of fuel, than the locomotive superintendent of our great lines. To my own knowledge, several forms of roller and ball bearings for railway coaches and waggons have been patented and tried. Had they been successful, they would certainly have been adopted, but to the best of my belief there is not at the present time a single bearing of this kind running in the United Kingdom.

A point that is often overlooked is that the friction of a plain bearing properly lubricated is only about one per cent., and consequently the saving of friction by using balls can only be some portion of one per cent.; in other words, it is, and always must be, a negligible quantity.

It is now usual practice to force oil under pressure through all the bearings of a high speed engine, and were the same method extended to all other bearings about a car it would be found equally efficient, and save the unnecessary expense and complication of ball bearings. WM. CROSS, C.E.

[15070.]—In regard to your article in *The Autocar* of December 11th, on the influence of the motor bicycle on motor car construction, there is one point, in comparing the use of ball bearings on the crankshaft of motor bicycles and motor cars, which you have omitted to deal with, and that is the reason why I should say that the ball bearing crankshaft has not been very successful with motor cars, viz., the fact that it has a tendency to make a noisy engine.

S. F. EDGE.

FRONT AXLE BEARINGS.

[15071.]—We should like to add what weight we can to the important consideration brought up by Mr. John V. Pugh in his letter [15036.]

The successful application of ball bearings is controlled to a very large extent indeed by strict attention to the point he raises, namely, the entire exclusion of water and dirt. The only really successful way of doing this is to cram, not only the bearings themselves, but all the space in the housing surrounding them, with a suitable grease which must be free from acid.

There is a great difficulty in getting engineers to realise the importance of this, and they look upon the quantity of grease which is at first necessary as extravagant, failing to realise that when once the whole housing is full of grease very little, if any, renewal will be required afterwards.

The best way to prevent dirt and moisture getting in through the joint between the stationary and the revolving part is to make a mechanical joint as well as possible with leather washers and then to force, by means of a grease pump of the kind mentioned, an excess of grease into the housing until it starts to ooze out at the joint. Dust and dirt will then stick to this grease and somewhat harden it so as to form a mechanical barrier against dirt and water, and the grease in and around the joint makes it almost air-tight.

The necessity for having the whole housing itself full of grease is also to exclude the air, as, owing to differences of temperature in the atmosphere, moisture will condense upon the cold ball races if there be any dampness in the air inside the housing.

THE HOFFMANN MFG. CO., LTD.

THE HOPKINS DUPLEX ENGINE.

[15072.]—In the discussion now proceeding in your columns upon a certain two-stroke motor invented by J. H. Hopkins, there is a reference to Kelly's duplex engine, the patent rights of which are our property. We cordially endorse your correspondent's remarks [letter No. 15002] that the Hopkins engine is a copy of our Duplex engine. We claim that the arrangement of twin cylinders with duplex pistons and cranks at 180° is ours by patent right, as also is the arrangement of cross-wise pipes by means of which the charge is transferred from the lower portion of one cylinder to the upper portion of the second cylinder. The statement of Mr. Hopkins that we use eight valves on our two-cylinder engines is incorrect. There are only four valves (entirely automatic) on our two-cylinder engines, viz., two per cylinder. With our air scavenging device, which is entirely automatic, we entirely do away with even the possibility of a backfire at the highest possible speeds, and we always are assured of a clean mixture in the working cylinder. In the case of an engine working on a system similar to that of Hopkins, there is always likely to be a loss of new mixture through the exhaust ports, and consequent waste of fuel, but in our duplex engine the quantity of scavenging air always adjusts itself in such a manner that there is constant compression in the explosion cylinders, and the only thing that can possibly be wasted is the scavenging air. On our latest engine, shown on Stand 141 at Olympia, the amount of scavenging air can be controlled by a lever on the dashboard. We find that this arrangement greatly facilitates starting, and is also a decided advantage as a fuel economiser when the engine is running light or under an easy load, for it enables us to use only a small charge of petrol vapour and yet fill the remainder of the cylinder with a cushion of clean air and thus ensure correct compression.

BRITISH DUPLEX MOTOR ENGINE SYND. LTD.

[15073.]—Your correspondent "LN 4606" [letter No. 15002] is quite correct in stating that a lot of useless negative work must be done in the Hopkins engine in producing the suction pressure, and, strange to say, Mr. Hopkins's own figures, instead of contradicting it, actually confirm it. According to Mr. Hopkins, the pressure at the end of compression in the pump cylinder varies from, say, 8 to 15 lbs. per square inch. Now, since atmospheric pressure may be reckoned at 15 lbs. per square inch, it follows that the clearance volume of the Hopkins engine is equal to the working volume (in the lower or pump cylinders).

The ratio $\frac{\text{maximum volume}}{\text{minimum volume}}$ or $\frac{\text{clearance volume + working volume}}{\text{clearance volume}}$ must be equal to two to produce the said result. But now, if we consider the suction stroke of the lower or pump piston, the minus or negative pressure at the end of suction will be determined solely by the ratio $\frac{\text{minimum volume}}{\text{maximum volume}}$ and hence the suction pressure when the ports are uncovered in the lower cylinder is exactly half what it was at the commencement of the suction stroke in the cylinder. Allowing the pressure at the end of delivery in the lower cylinder to be 16 lbs. per square inch above absolute zero, or 1 lb. per square inch above atmosphere, we find that the suction pressure is 8 lbs. per square inch above absolute zero, or 7 lbs. per square inch below atmosphere when the new charge is admitted.

In a well-designed engine it is not necessary to have the

Correspondence.

suction pressure more than about 2 lbs. per square inch below atmosphere, and hence the excess complained of by "LN 4606" in the Hopkins engine, which, as he rightly says, cannot be beneficial to the carburation when it is applied suddenly by the piston uncovering the lower ports.

Mr. Hopkins's statement that in Kelly's Duplex engine there are of necessity eight valves for controlling two explosion cylinders is grossly incorrect. I saw Kelly's first duplex engine, and this had only six valves for the two explosion cylinders; that was in 1906. Since then I have been in close touch with two-stroke motor practice, and in particular with Kelly's motors, the patent rights of which are held by the British Duplex Motor Engine Syndicate, Ltd.

In the 1908 type of Duplex motor there were only four valves for the two explosion cylinders, and surely Mr. Hopkins must know this. Moreover, the very title of "Duplex Motor" was first used by the British Duplex Motor Engine Syndicate, and the idea of the cylinders working in "pairs" originated with their patent, so far as I have been able to ascertain.

I also note that Mr. Hopkins claims a speed of 2,070 revolutions per minute for his two-cylinder engine. Will he be good enough to give us the name of the firm who made his tachometer or speed indicator? It surely cannot have been correctly adjusted. I would like to draw his attention to the Prini and Berthand, licence Cotte, motor, which was recently tested at the laboratories of the Royal Automobile Club of France. This motor is almost identically the same as his (Hopkins), and yet the official maximum speed is 1,464 revolutions per minute! Mr. Hopkins also claims that the new charge cannot be fired as it enters the cylinder, owing to the low pressure in the pump chambers. I wish to point out to Mr. Hopkins that low pressure only is no real safeguard to preignition; the only real safeguard is to protect the new charge by interposing a cushion of non-flammable material (pure air) between it and the burning gases, as is done in the real Duplex engines. But this necessitates the use of an air valve.

F. J. KEAN, B.Sc. (Lond.), M.I.M.E.

BODY DESIGN AND CONSTRUCTION.

[15074.]—With reference to the illustrations at foot of page 990 of your December 18th issue, I quite agree that the alteration you have made in the design of the Million Guiet body improves the appearance, but it gives the reader the impression that the clearance shown in the untouched reproduction was purposely designed by the body builders in question.

I should say that this is another instance where the body builder has been led astray by faithfully following the dimensions given on the blue print. This distance given on the print from ground to top of chassis side member does not always tally with the chassis when delivered, especially at the rear end. Wheels are not always as mentioned, and strength of hind springs has not always been properly calculated.

In my experience I have found that the only satisfactory way of obtaining the proper vertical clearance is to see the actual chassis, especially if it happens to be the first one of a new series or make.

H. J. BUTLER,
Automobile and Carriage Builders' Association.

THE STAR *V.* VAUXHALL MATCH.

[15075.]—In connection with the speed put up by the Star car recently it might be of interest to recall the speed effected last year by the L.K. car which had a smaller engine than the Star. The bore was 86 and the stroke reputed to be 150, and the speed for the flying half-mile at Brooklands was 73.7 miles per hour.

ERIC W. WALFORD.

WHITE AND POPPE CARBURETTERS.

[15076.]—In *The Autocar* of December 11th last, page 982, appeared a short description of a new White and Poppe carburetter improvement, which has apparently attracted considerable attention. In order to save Messrs. White and Poppe, Ltd., any inconvenience, I think it right to state that, although the feature in question has been patented, Messrs. White and Poppe, Ltd., have no intention of using it at present. The means employed afford an easy manner of effecting the desired object, but this firm is now obtaining the same object with even better results without employing the improvement in question. I have been favoured with one of the more recent forms of carburetter which are at present a standard article of this firm, and the results obtained with it are certainly extraordinary, and all that can be desired. For instance, with a 16-20 h.p. engine, 85 × 110 mm., and a car weighing 21 cwts. without passengers, and with two up, driving at an average of thirty miles an hour, I have travelled just over thirty miles to the gallon, whilst the acceleration obtained with the same setting is certainly every bit as good as can be expected from a carburetter of this size and car of the weight stated.

I make these remarks, as I understand that many of the present users of White and Poppe carburetters, as a result of my reference to this patent, have corresponded with the firm with a view to having the patented improvement fitted to their carburetters, and Messrs. White and Poppe wish it to be understood that they are not using, and do not at present propose to use, the improvement covered by their recent patent.

THE WRITER.

PROVINCIAL CLUBS AND THE MOTOR UNION.

[15077.]—If the Motor Union secretary, instead of attempting to discredit the truth of my letter [15039] in the matter of provincial clubs, had refrained from innuendoes and airing his knowledge of the poet Tennyson, and published the remarkable letter which has caused this correspondence, the members of provincial clubs in particular, and readers of your excellent journal in general, would have been afforded an opportunity of judging whether there has been any attempt to mislead, or state half the truth on my part. In his lame and halting explanation, the Motor Union secretary, after expressing the paternal interest of his organisation in the welfare of the clubs, states "their expenses will be paid," but suppresses the fact the members' subscriptions first of all are to be remitted to the Motor Union. Is this not half of the truth? Also, it is easy to be generous with other people's money. The circular letter of the Motor Union, dated November 29th, communicating the free legal defence scheme to provincial club secretaries, expresses regret at the impossibility of including the affiliated club members, "as the cost to the Union of each affiliated member is at present greater than the affiliation fee." It further states, *inter alia*, free legal defence is a tangible benefit, which it has been represented to the Motor Union would be appreciated, and with a view to extending it to local clubs the Motor Union invites the committees to consider the following proposals:

(a.) That in future subscriptions of affiliated clubs shall be collected by the Motor Union, and shall be fixed at the uniform rate of one guinea.

(b.) That the existing committees of local clubs shall continue as district committees of the Motor Union and the expenditure incurred by them to be refunded by the Motor Union.

(c.) That all members of local clubs who pay their subscriptions direct shall be deemed individual members of the Motor Union and be entitled to the full benefits of membership.

(d.) That the routine work, such as issuing circulars, etc., shall so far as possible be done by the Motor Union from headquarters at the request of the local committee.

And, as a wind up, it is pointed out to affiliated club members they may pay a further 16s. to the Motor Union, which, with the present affiliation fee of 5s., will mean a guinea subscription and thus remove the stigma under which they at present lie, viz., a loss to the Motor Union.

The plain English of this is, the Motor Union wants not only the members but the money also of the local clubs, thereby rendering the clubs mere appendages of the Motor Union. It is difficult to believe the genesis of this scheme is simply the decay of a few clubs; if so, then the executive of the Motor Union is easily dismayed, but it is evident there is more in this than meets the eye.

FOREWARNED.

HUMPHREY INTERNAL COMBUSTION PUMP.

[15078.]—In a recent article (page 927) on the new Humphrey internal combustion pump you mention that it is only in a distant way similar to the Vogt engine. This is really an injustice to Mr. Vogt, as he designed and built some years ago an engine which pumped water against a pressure and was then to be used in a Pelton wheel.

Without wishing to belittle Mr. Humphrey's achievement it is only right to point out that Mr. Vogt was the originator of the idea. The engine of Mr. Vogt's which was described in *The Autocar* was, of course, only very little like Mr. Humphrey's, and possessed a piston, etc. Mr. Vogt's other engine was, in the main, exactly similar to Mr. Humphrey's.

ROTZ.

Notification of Change of Ownership.

Impending Wholesale Prosecutions.

"FIRST impressions are generally lasting," but, it might be added, "often misleading." That this is an evident truth is exemplified by the unintentional neglect on the part of many motorists to comply with the Local Government Board regulation regarding the change of ownership of motor cars.

For a number of years *The Autocar* published the official returns of motor cars and cycles registered, but, as many of the registrars supplying the figures were unable to differentiate between registered cars and cycles still in use and those which had become void by change of ownership or other reasons, and of which no notice had been given by owners, it was concluded the figures were becoming more misleading each year, and consequently useless for purposes of comparison.

The regulation of the Local Government Board is quite clear on the duty of motorists in giving notice of cancellation or change of ownership. It reads as follows:

THE MOTOR CAR REGISTRATION AND LICENSING ORDER, 1903.

Article IV.—If the ownership of a motor car is changed notice of the change shall be given either by the new or the old owner to the council with whom the motor car is registered, and an application shall also be made either to cancel the registration of the car or to continue the existing registration under the new ownership.

If an application is so made to cancel the registration of the motor car, and no application is made to continue the existing registration of the car, the registration of the car shall be cancelled accordingly, but if an application is made to continue the existing registration of the car, the new owner shall furnish the necessary particulars as to ownership, and on receipt of a fee of five shillings in the case of a motor car not being a motor cycle, or of one shilling in the case of a motor cycle (which fees the council are hereby authorised to charge), the council shall cause the necessary alterations to be made in the register of motor cars, and shall furnish the new owner with a copy of the altered entries in the register.

Any notice may be given or application or alteration made under this Article before the date of the actual change of ownership so as to take effect from that date.

If the provisions of this Article as to notice and application are not complied with the registration of the motor car shall be void.

At first impression, one is inclined to the view that on the sale of a car or cycle, *provided the numbers are removed*—thus necessitating re-registration—there is no obligation on the part of the previous owner to give any notice of cancellation. In his mind the car or cycle has gone out of his possession, and he has, so to speak, washed his hands of the business. The last sentence of the regulation further increases this impression: "If the provisions of this article as to notice and application are not complied with, the registration of the motor car shall be void."

But this does not absolve him from his liability, and every seller of a motor car is legally *responsible for giving notice of cancellation* should he remove the number and sell the car.

Also the regulation makes it imperative that "If the ownership of a motor car is changed, notice of the change shall be given either by the new or the old owner."

Again it is clear the onus to give notice is on both the seller and the purchaser, and neglect of either does not absolve the other. It is essential, therefore, that either the old or the new owner must give notice to the council with whom the motor car is registered, and the new owner must also take care that the car is transferred to his name by paying the necessary fees—5s. for a car, and 1s. for a motor cycle.

In the majority of cases where a car has changed hands with the registered number intact, we believe that the notices have been given by old and new owners, but as regards a very large number of second-hand cars sold, both privately and by auction, the registered numbers have been removed, and the cars re-registered by the purchasers under fresh numbers.

The old owners of those cars who have neglected to cancel these registrations are liable to prosecution under Article IV. of the Local Government Board Regulations. We have good reason to believe that, now the collection of the Inland Revenue carriage tax as regards motors has been transferred to the various county and borough councils, those who have neglected to comply with this regulation are in for a wholesale system of prosecution.

In one county alone some 700 cars and cycles are still on the register which cannot be traced. No carriage tax has been taken out by the registered owners, and the vehicles have evidently changed hands.

The register is therefore misleading, and the old owners, having failed to give notice of cancellation, are liable to a penalty. Also those old owners who have sold cars without removing the numbers, in cases where no notice has been given by either the old or new owners, are similarly liable.

The penalty for failure to comply with the Local Government Board Regulation is a maximum of £10, as under the Locomotives on Highways Act, 1896, Section 7, "a breach of any byelaw or regulation made under this Act, or of any provision of this Act, may on summary conviction be punished by a fine not exceeding ten pounds."

The Motor Car Act, 1903, Section 11, also provides that "a person guilty of an offence under this Act for which no special penalty is provided shall be liable on summary conviction in respect of each offence to a fine not exceeding twenty pounds, or in the case of a second or subsequent conviction to a fine not exceeding fifty pounds, or in the discretion of the court to imprisonment for a period not exceeding three months."

These provisions appear to cover the omission to notify a change of ownership of a car to which no specific penalty is attached.

Fortunately, the L.G.B. regulations do not put a limit on the time in which the notice may be given of cancellation, though as regards change of ownership it is implied that it should be at the time of the transfer of the car.

In order, therefore, to avoid any risk of conviction for any offence as regards cancellation under the above regulations, we recommend those of our readers who have sold cars and failed to comply with the requirements of the L.G.B. order—

In case of sale of a registered car or cycle without the registered numbers, to immediately give notice of cancellation.

In case of sale with registered numbers and where it is uncertain that the owner gave notice, to immediately give notice of the transfer.

Otherwise proceedings for the following offences may possibly be taken by the authorities:

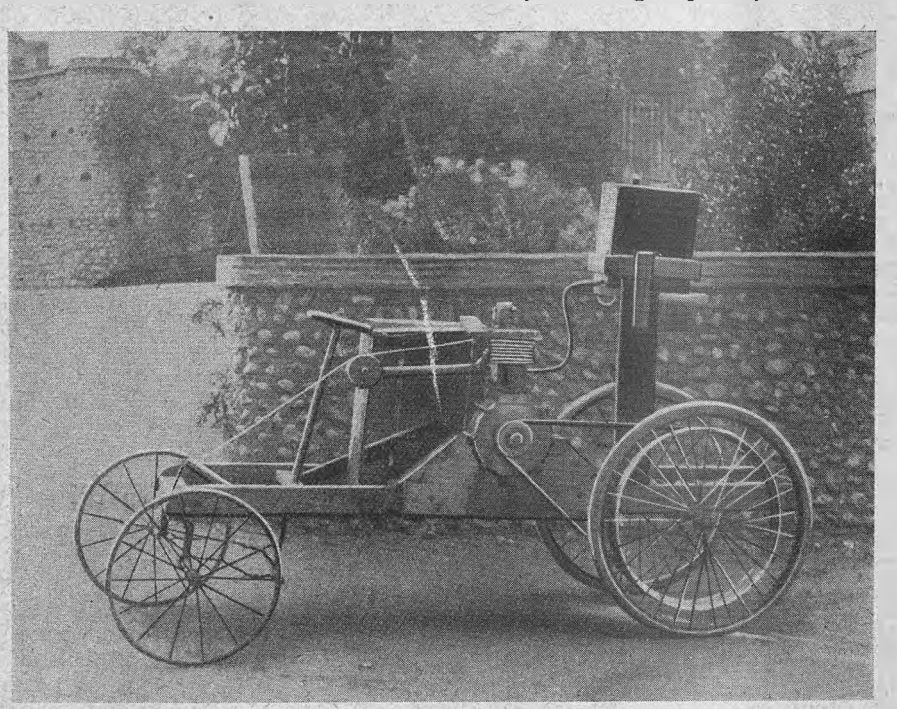
Against the old owner—For failure to cancel registration; penalty, £10. For failure to give notice of transfer of registered car or cycle, £10.

Against a new owner—For failure to give notice of ownership of old registered car, £10. For driving an unregistered car, £10.

Under a very old leading case which was tried long before motor cars or cycles were ever dreamed of (the King v. Jas. Harris, 4 T.R.) it was held to be an indictable offence to break an order in council made under Act of Parliament, so that it is quite possible for the authorities to proceed by indictment, and not by summons. There is very little likelihood of this, however, though the case cited, tried as it was in 1791, serves to show how hide-bound is the law, and that we are well advised to keep outside its clutches, although the offence may arise from neglect, and not intent. It therefore behoves those who might be involved to move in the matter.

Discouragement of Boyish Ingenuity.

THE Norfolk police and magistrates are so fair to motorists that we are sorry to have to say that one police constable at least seems to be somewhat over-officious. It seems that some ingenious pupils of the Rev. F. Meyrick Jones, of Home Place, Holt, Norfolk, had built themselves a "motor car." It will be seen that it was composed of an assemblage of oddments, such as an old motor bicycle engine and an assortment of motor cycle and perambulator wheels, united by a crude quadrangular wooden frame. Last, but not least, the petrol tank consisted of an ordinary two-gallon petrol tin placed on a wooden standard to ensure a good head of fuel. With this machine the boys amused themselves, and two of them eventually ventured on to the road, where a lynx-eyed constable caught them driving "what was in the nature of a motor car." He observed it had no identification plate, and, further, the driver, Mr. Wentworth Bewick, had no licence. He also observed there was no brake, and, although the intrepid driver explained that his companion jumped off and applied a ground brake by means of his boot on occasion, he was not satisfied, and the driver was summoned for breaches of the Motor Car Act. The magistrates could not well rebuke the constable for over-zeal, whatever they may have thought, and they contented themselves by inflicting a penalty of 10s., with 10s. costs, but we understand that no application will be made for the payment of registration or driving licence fees, though the "car" would do fifteen miles an hour. Truly has it been said that we are nowadays governed in a grandmotherly manner!



Proposed Restrictions in Aberdeenshire.

Following upon the proposals to restrict the speed of motor cars to ten miles an hour in the various districts of the county of Aberdeen, the County Road Board held a meeting in Aberdeen on the 10th inst., Mr. Duff, of Hatton, presiding. After a general discussion on the proposals, a deputation from the Scottish Automobile Club was received in order that they might submit their views on the subject.

Mr. R. J. Smith, secretary of the Club, explained the leading considerations underlying the opposition to the proposed restrictions. He said that, if the Legislature had intended that a ten mile limit should apply to all the towns, villages, and populous places in a county, as was proposed here, they would have said so in the Act when it was framed; that the Club took the view that the ten mile limit, which was an arbitrary limit, was misleading in its results, did not contribute to the safety of the public; removed the feeling of responsibility from the drivers, and weakened the effect of Section 1 of the Motor Car Act. They contended that circumstances should be the true basis of speed at all times, and that, until the County Council had satisfied themselves that the existing regulations under Section 1 and Section 9 of the Act had been sufficiently tried and found ineffective in preventing excessive or reckless driving in the county, they were not justified in imposing upon motorists what was a further penal offence and a restriction which was both unnecessary and vexatious.

He stated that the Automobile Club were at one with the county in their efforts to secure the careful and considerate driving of cars, and that they were prepared to co-operate with them and their officials towards securing that end.

Councillor Wilkie said he hoped that the County Board would follow the Aberdeen Town Council in their recent refusal to go in for restrictions.

After the deputation had withdrawn, it was agreed, that the matter be remitted back to the various districts for further consideration and information.

The Automatic Air Valve.

THERE are many motorists who consider the acquisition of an automatic air valve as being the one thing wanting to put an end to extravagant petrol consumption, and to obtain better running. No doubt for certain makes of cars of an older pattern, this device may induce better results, but it is a moot point whether a valve of this description is beneficial, or even possible, on a modern car with a really first class carburetter that will give very slow running on the top gear without staggering. In the opinion of many well qualified to give an opinion, the automatic valve will soon be obsolete, and the reason of its extinction is well worth some consideration. It is one of the many requirements of the present day motorist that his car shall pull strongly and evenly when running on the top gear at five or six miles per hour—say with a gear of 3¼ to 1 on the direct drive with an engine of about 18 to 20 h.p. Now, to obtain efficiency of this kind, a two-jet carburetter is, in the writer's opinion, practically essential. In this type of carburetter the main jet is entirely out of use when the engine is running slowly, the feed being from a small jet which is surrounded by a very small choke tube, there being perhaps an annular space round the jet of about ¼in. Considering the engine as an air pump, it will be seen that it is taking the whole of its supply from this very small opening, consequently the velocity of the air past the jet, even when the engine is only just turning round, is very great, and the petrol is violently sprayed, giving a rich, well-mixed gas, and enabling the engine to give off considerable power when turning round slowly. In the ordinary single jet carburetter, the throttle is usually placed some little distance above the jet, and it will be readily understood that when the throttle is only slightly open, the rush of air past the jet surrounded by its large choke tube is comparatively feeble, and probably the petrol comes out of the jet very slowly, being drawn up into the induction pipe through evaporation. Unless the throttle is opened wider to allow a stronger suction to pass the jet, not much power can be obtained, for the mixture is weak, and staggering takes place.

Now with a single-jet carburetter to obtain better results, the main choke tube must be restricted. This, of course, gives improved running at slow speeds, but at high speeds the power soon begins to fall off, owing to the lack of volume, and it is at that point an automatic valve should act to supply the greater volume required; but it is manifest that if it does act, an indication is given that the vacuum or throttling effect is greatest when it is least wanted, and a greater vacuum exists at high speeds than at low; consequently when running very slowly, the vacuum is insufficient. A negative pressure is, of course, essential, otherwise petrol would not leave the jet, but as any vacuum or negative pressure represents a throttle on the engine, it is only desirable when maximum quantities of gas are not required. It is essential to have an abnormally strong vacuum in the induction pipe when very slow running is to be obtained—a greater vacuum than when the engine is running very fast—consequently it will be seen that an automatic valve which would open when the engine was running fast would open when it was running slowly, and so defeat its object. Further, it will be seen that if an automatic valve be fitted on a two-jet carburetter, it must be below the throttle on the small jet, and above the throttle on the large jet, but it is a well-known fact, although somewhat a curious one, that the two openings past the large and small jets on some two-jet carburetters can be so graded as to give such good results that the adoption of a hand operated air valve fails to give any appreciable increased efficiency. This mainly applies to carburetters of that type which feed the engine from both jets at full power. In these carburetters when running very slowly the main throttle is shut right off, and the engine is run by a small jet which gives a rich mixture. When greater power is required, the main throttle is opened. The effect of this is to dilute the gas somewhat as it is being admitted past the small jet, which has the effect of increasing it in volume without weakening it beyond a useful extent; soon after this the main throttle is opened, and before the gas from the small jet is weakened to any serious extent the main jet comes into operation, and both work together. The writer noticed a year ago on a certain make of car a carburetter in which the main choke tube was so restricted to obtain slow running on the top gear that the automatic valve with which it was fitted would open at two periods—at high and low speeds—the latter causing the unfortunate owner a great deal of annoyance by weakening the mixture when the little required should have been rich.—C.B.

ROAD DAMAGE DEBITED TO MOTOR CARS. The wheels of this trailer, which is loaded with huge tree trunks, broke through the road surface, and necessitated a ramp being dug in the road to enable the waggon to be extricated.

The French Reliability Trials.

(*Continued from page* 1011 *last week*)

Eighth Day—Sunday, December 12th. Beauvais, 168 Kilometres.

TWO of the Coore-la-Licorne cars could not be started for some time. One driver spent two hours and a half cranking his engine, and finally emptied his petrol tank and refilled it, when the motor went off at once. A protest was lodged by the Grégoire Co. against one of the Alcyon cars, which during the run on the 12th was said to have taken a route which diminished the distance by eight kilometres.

Ninth Day—Monday, December 13th. Compeigne, 174 Kilometres.

The only loss of marks was credited to the Grégoire I. for a broken rear spring. At the conclusion of the ninth run the following cars were in the running for first prize, having lost no marks: Sizaire-Naudin II., Sizaire-Naudin III., Grégoire II., Grégoire III., Delage, Hurtu I., Barre III.. Doriot-Flandrin-Parrant I., Corre-la-Licorne III., Turicum I., Alcyon I., Alcyon II., Alcyon III., Demeester, Rolland-Pilain I., and Rolland-Pilain II.

Tenth Day—Tuesday, December 14th. Beauvais, 168 Kilometres.

For the third time the route lay to Beauvais and back. No accident occurred throughout the day to cause any loss of marks to a single competitor, and the twenty-two cars which left Suresnes in the morning all returned at night, seventeen out of that number being in the running for first position. Those which have lost marks on previous days are Doriot-Flandrin-Parrant III., Grégoire I.. Turicum II., Barre I., and Hurtu II.

Eleventh Day—Wednesday, December 15th. Evreux, 186 Kilometres.

The searching weather of the last few days has made the French Reliability Trials anything but enjoyable for those concerned. A day's run of 100 miles under ordinary weather conditions is most enjoyable, but when the thermometer hovers round about freezing point the roads are heavy, and it becomes a difficult matter for drivers and observers to keep warm. A small repair to the Sizaire-Naudin II. caused this vehicle to lose a few marks, but no other vehicle was penalised during the run to Evreux. The number of competitors eligible for first award is now reduced to sixteen.

Twelfth Day—Thursday, December 16th. Chartres, 168 Kilometres.

For the third and last time during the trials the competitors journeyed to Chartres, and made the return journey without a single failure of any kind, the whole of the vehicles being parked at Suresnes before 3.15 p.m.

Thirteenth Day—Friday, December 17th. Chartres, 168 Kilometres.

Despite the continuing bad state of the roads, the whole of the competing vehicles which are eligible for first award completed this day's run without loss of marks. Unfortunately an accident occurred to the Hurtu II., which was withdrawn. The accident was caused by a collision between the Hurtu car and a cyclist. The latter, fortunately, was not injured, but his bicycle was smashed to pieces. and one of the parts was driven through the gear box of the car, damaging the transmission gear.

Fourteenth Day—Saturday, December 18th. Compeigne, 174 Kilometres.

No loss of marks occurred to the twenty-one cars left in the trials, sixteen of which have completed fourteen daily journeys without the slightest failure or loss of marks. At the completion of the day's run all the cars remaining in the competition were weighed, but the weights were not communicated to the press.

Last Day—Sunday, December 19th. Evreux, 186 Kilometres.

The last day's run was completed without accident, and when all the competitors had returned to Suresnes, the judges announced that, in accordance with Rule 13 of the regulations, sixteen competitors had covered the fifteen days' trials without incurring any loss of marks. The names of the winning cars are as follows: Sizaire-Naudin III., Grégoire II., Grégoire III., Delage, Hurtu I., Barre III., Doriot-Flandrin-Parrant I., Corre-la-Licorne I., Corre-la-Licorne III., Turicum I., Alcyon I., Alcyon II., Alcyon III., Demeester, Rolland-Pilain I., and Rolland-Pilain II.

It will be seen that more than half of the vehicles which started in the trials on the first day, December 5th, have accomplished a performance which few expected they would be able to complete.

Already next year's trial is being discussed, and 400 kilometres a day and an average speed of 30 kilometres an hour have been suggested.

Remarkable Performances at Brooklands.

The new 21 h.p. (R.A.C. rating) class had not been long established at Brooklands before a remarkable performance was put up. On the 14th inst. Mr. A. J. Hancock, driving the 20 h.p. standard Vauxhall chassis in racing trim, covered the half-mile from a flying start at 88.618 miles an hour. He also did ten laps at an average speed of 81.33 miles an hour, thus establishing "short and long" records for the class. As a matter of fact, he did more than this, as these extraordinary performances are faster than the long and short records of the 26 h.p. class, and the long record is actually better than that of the 40 h.p. class. In other words, with a 3½in. engine the Vauxhall has beaten the performances of engines with 4in. bore and 5in. stroke. Besides the two new records mentioned, Mr. Hancock made a very fine run over the flying kilometre at 88.26 m.p.h.

Road Warnings.

HERTFORDSHIRE.

The ten miles speed limit at St. Albans is being enforced by police and magisterial proceedings.

LONDON.

On the Eltham Road, Eltham.

MIDDLESEX.

On the Great North Road at Potters Bar.

SURREY.

Traps are in operation at the following places: Brighton Road and High Street, Croydon: London Road, Mitcham; High Street, Guildford; also at Kingston; the Broadway, Wimbledon; and Barnes.

YORKSHIRE.

The police are working a trap again between Hambleton (Selby side) and a point near Monk Fryston where the road is almost a straight line for one and a half miles. This is an old trap revived. Hambleton is four miles from Selby, and Monk Fryston seven, and the former village is included in the trap.

Slide-rule and Sounding-stick.

By E. N. D.

WHEN one's engine, despite the fact that it is harnessed to three thousand pounds weight of chassis and coachwork, and notwithstanding that the fourth speed gear is engaged, is turning smoothly and pulling perceptibly at a pace of less than eight miles per hour on a steady upgrade, doing its work silently, economically, and satisfactorily all round, to whom does one give credit?

Perhaps to the man who advised one to purchase this particular car. Possibly to one's self, in view of the fact that to nobody else can admiration for the car's general excellence of condition be vouchsafed. Or, maybe, to the man who for a couple of pounds per week and a little of the milk of human kindness keeps one's car clean and in tune.

All very well it is to credit either or all of these worthies, but in reality the majority of our gratitude should go out to two men of whom the average car owner knows but little. We may have taken delivery of a new car at the works, and walked around their captivating complexity, with a few minutes' halt in what struck us as being the more interesting departments. But, if so, when our cicerone said, "And this is the drawing office," we may not have felt really excited at the sight of a dozen young fellows bent over drawing boards. One of them in particular, who was not even holding a pair of "bows," but was fiddling abstractedly with a slide-rule, seemed about the least inspiring creature we had ever met. He had before him a sheet of paper bearing a few figures —results only, not workings. He does those with that slide-rule—a piece of white enamelled wood about a foot in length, with a deep groove rabbeted along its upmost surface, in which slides smoothly another strip of white enamelled wood, whose surface, like that of the major member, is closely engraven with vertical marks and figures. The two pieces of wood are held loosely together by a sliding frame fitted with a piece of glass. What a fiddling arrangement—what an unmanly tool! Not even the amount of awe that is conceivably associated with a decent T-square in that slide-rule.

But, difficult as it may be to believe it, that young fellow with the slide-rule, if his appointment was decently well advised, is one of the two most important units of a car manufacturing company's staff. Gang warily when you feel like sneering at his slide-rule. At the expense of a few moves to left or right of that slighter of the two strips of wood and the glass frame that young fellow can figure out reckonings whose solution, even in four or five hours, would call for the use of all my fingers, two or three sheets of foolscap, and a box of Koh-i-noors.

That same slide-rule, if you will pardon my apparent obsession, is the most wonderful tool in the Works. All the lathes, drillers, borers, shapers, and screw-cutters in the place are easily understandable. One can see—even *I* can see—how they do their work. I am not going to claim that I could make the simplest of them, but, given material and tools, I could produce in time a machine that would do the work—crudely, but certainly—of any one of them. Each of them was wanted. Each of them was designed and built, however, by men who were merely good mechanics—simply able wielders of tools.

In my simply arranged mind the slide-rule whacks the whole lot. Newton gave it to us, I believe. He wanted a calculating instrument. He pondered on its simplest attainable form. Hence—no, not the pyramids—the slide-rule. With it even a tyro in mathematics can work calculations in five minutes that would keep occupied for a whole day a master of algebra—a past master of arithmetic.

Now I fear by now you are saying, "But why should I grovel before this chap with the slide-rule?"

The Brain of a Works.

He is the man who thought out your car. Before even the frame of the first of its type was pressed, before even the drawings for the dies for its frame were sketched out, the man with the slide-rule knew exactly what it would do. He could tell one its lowest engine speed. Mere knowledge of its number of cylinders and their bore and stroke had enabled him to tell one what was its effective brake horse-power output at any of its engine speeds, ranging from 150 to 2,500 revolutions per minute. He could tell one to an ounce the amount of compression to which every charge it sucked would be subjected on its second stroke. He could tell one the precise area and lift of valves that, considered in relation to its cylinder capacity, would make it most efficient. He could tell one to an ounce the weight to which its crankshaft should be machined after forging—could draw for one exactly the contour that would give its cams and their shaft the most productive functioning.

With that same weird little slide-rule he could tell one its road speeds on the various progressive gears with varying numbers of teeth in its back axle pinions. He could calculate to the weight of a single frond of an ostrich feather how much pressure would be needed to compress each valve spring.

Now do you begin to respect him. He is not very often called a designer. The man I have in mind as I write is designated "chief draughtsman," and when first I heard his title I conjured visions of an inky-sleeved, tracing-cloth-scented, bitten-finger-nailed, anæmic-looking individual whose soul aspired to nought beyond straight lines, which he could not help producing so long as the head of his T-square was kept snugly home against the left-hand edge of his drawing board.

You may ask my idol if you would get, say, 42 miles per hour out of your four-cylindered 85 by 102 mm. car, with a running weight of 3,000 lbs. on the flat, windage disregarded, if you kept the engine turning at 1,600 r.p.m., with your direct third in mesh. Out comes his slide-rule—slip-slip-slip-slip! Slip-slip! He pockets the rule again, and says, "43.562 miles per hour at 1,700." Take out the car, warm it up, set it along the railway straight at Brooklands, with a trusty B.A.R.C. man in the clock house, and your speed is certified as 43.56 miles per hour.

Now do you begin to like him? Possibly my admiration is greater than yours, because I can never feel sure that the waiter has not done me over the "breads"—because, frankly, mine is not the arithmetical type of mentality. I know nobody like my little man with the slide-rule.

In the Running Shop.

Well, you never saw him at the works, but did you, after you passed with well-dissembled boredom from the drawing office, notice that young man who seemed to be strolling idly about the running shop? No fop;

his clothing had nothing to distinguish it from that of the men in the same shop whose pay for a working week of fifty-four hours is thirty-four shillings, handed out in a little tin box each Saturday.

Possibly you may think him rather a "passenger" sort of fellow, who seems eternally strolling around the benches, just pausing for a moment now and then to look at one of the dozen or more engines which are undergoing bench tests. Hallo! He's actually doing something at last!

He takes a slip stick of cedar from his vest pocket. Its length is about ten inches. He places it on the cylinder head of one of those engines. One end rests on the engine casting. He inserts the other between his teeth. He puts a finger into each ear. He shuts his eyes. Surely he is not going to sleep! . . . Above the hum of the running engines you hear a boyish half-treble-half-baritone, "Not nearly so good," he says to one Jones.

He puts the end of his cedar stick on the crank case. Again he lays its upper end between his teeth. Once more he plugs his ears. . . . . "Won't do, Jones! Take it down."

Petrol pipe and magneto wiring are disconnected, and off comes the engine. Jones looks—er, thoughtful.

This is about the stage when you wonder if I am ever going to say something worth hearing. I am afraid you are bound to disappointment. I can, if your patience holds out, describe how our young friend watches gears under test—feels them, listens to them, watches the variations their revolutions effect in the surface of the half-box-full of lubricant in which they are running. But he's no more heroic than my little slide-rule fanatic.

He watches, feels, listens. He has eyes like a lynx. His ears are those of an organ tuner (who, I am credibly informed, has the best-developed ear of the whole musical brotherhood), and his sense of feeling is almost that of a man born without the blessing of vision.

He can see, when the engine is doing 1,000 r.p.m., a sixty-fourth of an inch of tappet rise. He can feel the effect of a single speck of soot on a valve seating. He can hear the difference in the sounds produced by the action of valves whose "lifts" vary only a millimetre. He knows, after a feel, a look, and a listen, whether an engine's tuning has attained attainable perfection. You say, "This engine is not dead silent." He replies that it is as noiseless in running as you can get it, if you are going to retain ideally efficient spring strengths and lifts. He is right. Do not doubt him, audibly, gentle sceptic! To do so will be to court your own undoing.

He has spent over a year doing nothing but watch, feel, and listen to engines on their bench tests. No trainer of racehorses notes more keenly the moods, the deteriorations, the improvements of his equine charges than does our second young man take count of the vagaries of his engines and gear sets. For forty-five weeks in the year he does nothing but overlook the running shop. For another five he is busy in consultation with my little slide-rule man, evolving next year's model. For two weeks in the fifty-two he takes his "holidays"—probably tuning up and driving his company's car in the Scottish A.C. Reliability Trial. He takes a half-day occasionally for a hill-climb, or may have an occasional burst at Brooklands. But he does not take these respites too seriously.

He is known as "Mr. Jackson, in charge of the running shop." That describes him, mind and body, if not estate. He *is* "in charge of the running shop." It is his business in life to be in the running shop, to take engines into the running shop, to run them in the running shop, and to permit their issue from the running shop as soon, but only as soon, as they are running efficiently, satisfactorily, in a manner consonant with the traditions of the firm.

I fear ours has been but a dull talk. It has been one-sided, sir. But until a few weeks ago, *I* had not a due appreciation of the importance of the "chief draughtsman" and the man "in charge of the running shop." To-day I value them adequately; I hope you do the same, and that you will now give honour where honour is due.

An Internal Combustion Turbine.

AN interesting account of a new design of internal combustion turbine appeared in the issue of our contemporary *The Motor Cycle* dated the 13th inst. This turbine is the invention of Mr. R. E. Morgan, 60, St. Oswalds Road, Small Heath, Birmingham, and, although up to the present time the idea has been worked out solely on paper, there are possibilities apparent which may lead to practical results when an actual working model is completed. A brief outline of the idea is appended.

One or more reciprocating double-ended pistons compress air, which passes through a form of Bunsen burner, carrying with it petrol from a separate jet into the combustion space, where it is ignited by a spark at a sparking plug of the usual type, though among the advantages claimed for this invention is that of self-ignition when once the turbine has started. The only form of compression of the gases is that brought about by the petrol vapour mingling with the compressed air. It is claimed that the expansion of the ignited charge of compressed air and vapour, acting upon vanes cast on the inside of the casing, will give continuous impulse to the flywheel when two compressor pistons are employed.

The matter of cooling is one which presents great difficulty, and the method devised to effect this is one which embodies the process of spraying water on to the vanes of the turbine, the resulting steam finding an outlet with the exhaust gases through the ports provided. The only reciprocating part is in the piston, driven by an eccentric, which forms the air compressor referred to.

The idea naturally embodies some new theories in the design, and it is impossible to judge whether the inventor has gone astray on some of the essential points without practical demonstration by a working model. Mr. Morgan has designed two types of this turbine, one especially for motor cycles and the other in a form suitable for cars.

We would refer those of our readers who are interested in the subject to the copy of *The Motor Cycle* previously mentioned, in which the details of the idea are very clearly described and illustrated.

The police are working a trap again between Hambleton (Selby side) and a point near Monk Fryston where the road is almost a straight line for one and a half miles. This is an old trap revived. Hambleton is four miles from Selby, and Monk Fryston seven, and the former village is included in the trap.

Earthed!

A Tale of the Shortest Day. By "Owen John."

THERE had been no excitement to compare with it in the memory of living man. At least, not on the top of Mendip. Noah Tynings, who lives at Ellick in the same house his father was born in and is getting on for ninety, says that the time when the Mendip Volunteers were raised by Mr. Addington, who had been Prime Minister—"when Prime Ministers *were* Prime Ministers," he added—must have been much the same, because his father always said there never was anything like that, and you could see the colours now, all full of bullet holes, hanging up in Burrington Church with "Who's Afraid?" printed on them for all the world to see. Noah is quite right about where they are, but I say that spring cleanings and moths have done them more damage than bullets, and perhaps that is why they have come to seek refuge in a church. But this has nothing to do with the story, only to show how really big the excitement was. And it was all owing to the Antiquaries. Now no end of learned men with books, and hammers, and such like, had been digging away at the bottom of big stones at Avebury and had had no luck. And then they went on to the Lake Villages under the mud at Glastonbury, and, after they had been flooded out there, two of them, in an idle moment, had come up on to the top of the hills and begun pecking away round the Seven Barrows that give Blackdown in Somerset such a wavy look as you come over the big hills out of Bristol town and see the West Country for the first time. These two men were by no means the first who had tried their hands at the Seven Barrows; indeed, there had been a local expert who had written about them and connected them with a number of big earth crosses that lay on the sides of the same hill. He was proving that either the Barrows were not so old as they were thought to be, or else that Christianity was not so young; but his theories had a nasty knock when the Duke's keeper said that the crosses were only fox-traps, and he himself used to have the job of keeping them up when he was a boy. And after that someone found a prehistoric man in Cheddar Caves, and somebody else a cup of Becket's blood at Woodspring Priory, and yet another expert wrote an article reflecting on the life and times of Miss Hannah More; so that the Seven Barrows were left all alone except when there were jubilee bonfires and such like, or when the North Somerset Yeomanry wanted a nice quiet place to put a scout. Until, of course, the Professors came. And also, of course, they arrived in their motor, which, being all-round scientific men, they drove themselves, proving themselves also to be men of commonsense and strong character. Now, as they are such important folk, it will be as well to give their names and make sure that nobody else gets the credit for their discovery. They were both Somerset men, Peter Gurney being the elder, and looking anything between an admiral and a retired trainer, and Dr. Ambrose Foote the younger, clean-shaven also, with a face like a polished apple and a head as bald as a door handle.

"The fight was over now, and only an occasional bump showed that our enemies were still in existence."

On the first two or three occasions they came up to Charterhouse—for the Seven Barrows lie in Charterhouse parish, which, I believe, used to be a part of Glastonbury Abbey itself, twenty miles away—they drove up from Wells. But when they got more interested in their discoveries they gave up the long drive every day and settled down at that big gloomy old coaching house now called the Castle of Comfort Inn. Here not only were they but a few miles from their work, but had the advantage of quiet and privacy, for folk on Mendip are not inquisitive, and are really, I believe, rather frightened nowadays at things which have to do with matters underground.

The things that Mr. Gurney and Dr. Foote did at the Barrows were not of very great interest at first to the general public, although they are recorded at length in the complete story of their excavations in the scientific journals, and it was not until well on in December that whispers of their doings began to get about amongst the hill-dwellers. It seems that after they had paid a couple of visits they engaged two middle-aged miners from Green Ore to do their excavating, and the rumours either came from these men or else from idle and curious onlookers whom no amount of trouble could keep away.

For instance, it was common report that the scientists no longer worked above ground, but on arrival quickly disappeared until the evening, and this of course led

to conjectures as to what they had found and where they spent their time. Accordingly on Sundays, and sometimes on weekdays as well, the Barrows were a centre of attraction, and complete failure to solve the problem only made the mystery the more fascinating.

So the days went on, the explorers coming back to the inn later and later at nights, and a more deadening pall of ignorance shrouded all. To the great surprise of the landlord, Job Stevens, one morning before starting Dr. Foote told him they had determined to spend Christmas Day at the inn, and that he might make any preparations he liked for keeping that function as it ought to be kept. As this was on St. Thomas's Day, the shortest day of the whole year and but three off Christmas Day, Job himself went into Bristol to get the provisions. It was a still grey day, with no wind, no blue, no rain, and only that long dull rumbling seawards that sets the old women talking round their fires. As Job drove home out of the big city, and the hoof-beats of his old horse echoed back from every wall and house, even his market spirits sank and a dismal feeling began to take their place. It seemed to get darker earlier that day than on any he ever remembered, the hill through Chewton seemed steeper, the horse older, and all the world more gloomy. He had lit his lamps before he came to the Priory—more for company than anything else—and for much the same reason he had got out and was leading his weary beast of burden up the last bit that brings the road out on to the moor. He says he had just let go the bridle and had gone forward to see if the off-lamp was burning, when the old horse regularly slewed half-round into the side of the road, neighed, and fell in a heap "just as if 'a wur dead." At the same time he heard the footsteps of men running, go by, and die away round the corner into the darkness of the wood. And after them—big, colourless, and with rigid neck and tail—galloped a great dog. Job told them at the inn that night that he had to finish the bottle of brandy out of the cart before he could look to the horse, and when he did it was all white with sweat, and went home as it hadn't gone for the last ten years.

. . . . . .

It was just after he had reached home that I came on the scene on my way to spend another Christmas at Ellick with my old friends the Tynings. I must confess to coming down earlier than I was asked because of my curiosity as to the explorations on the Barrows, and I thought at the same time that it would be a good opportunity to test quietly the new idea in motors I had just thought out. The car had run perfectly all the way from London, and my only excuse for putting in at what Noah Tynings had told me was the headquarters of the enthusiastic Antiquarians was the hackneyed one as to tightening up a possibly slipping fan belt.

There was a big fire in the smoking room, the maid of all work had just lit the hanging lamp, the kettle was spouting merrily on the hob, and Job Stevens seemed more than pleased to see company. Cautiously—perhaps for fear that I should think he had been keeping Christmas too early—he let me have his tale in easy stages, almost laughing at himself when he told me about the horse falling down. Then he came closer to me, looked all round, and half whispered, "You be Mr. Wilson, baint you—him as was carried into Ellick this time two years back?"

I remembered him then as one who had called in on that Boxing Day on his way to a starling shooting match at Banwell, and we shook hands like old friends.

"Then I'll tell you something I've seen to-night as I wouldn't tell many another, but I know you won't laugh, for Noah told me about how you met the ghost of the old steam carriage." And with no more ado I heard of the invisible footsteps and the big dog that came down off the hill into Chewton.

I asked him if he had any ideas as to it all, and he replied:

"Not about the men, but the dog—well, have 'ee ever heard of the wolf as bites the Blackstone?"

"Yes," said I, "now you mention it, old Sam said something about it when he was telling how the steam carriage people came to their deaths, but I didn't hear what it was."

"Well," said Job, "one of these days I'll get the old woman of Priddy to tell you, but tain't a time for such things now. But they say 'a only comes out when there's trouble on."

"Trouble for the things it was after, I expect," I said. And then there was a noise of wheels outside, and the lamps of a big carriage shone in at the window.

Job jumped up. "Horses! I hoped 'twas the Professor's motor; but whoever can it be?"

Before he could go out and see the door flew open, and a big, red faced, angry-looking man in a thick frieze coat came in, closely followed by a tall, veiled girl smothered in furs.

"Evening," he said loudly. "My name is Osborne—Sir Jasper Osborne—of Pyt, in Dorset. I've got to get on to Gaveston Court to-night. I don't know what the dickens is the matter with my horses, but I can't get 'em to move. The devil's in 'em, I should think. They do nothing but sweat and jump across the road from one side to the other. Can you lend me some? I'll leave mine here."

"I'm sorry, Sir Jasper," said Job, "but I've only one. He's just come in with me from Bristol, and I'm thinking the devil's in him, too, on the way home, and he won't touch his feed."

"Good Lord," muttered the stranger, "what on earth are we to do, Anna? They can't begin without me; they can't do anything—anything at all, damn it—I've got the key! And the irascible man looked as if he would burst.

Now was my chance to do a kind action, perhaps—a stroke of business, perhaps; who knows? But I always looked for romance, and never got it, except in the shape of shattered castles in the air. I stood up and bowed. I felt that was the right thing to do.

"Permit me, sir, to place my motor at your service. It is ready and waiting."

I bowed again, and caught a bright, twinkling glance from the veiled eyes of Miss Osborne as I looked up.

Sir Jasper was silent, but I could hear him visibly inflate himself and see him grow more and more crimson than ever. At last he exploded like a tyre going at the beaded edge.

"Me! me in a motor? This beats cock-fighting—beats anything! Good Lord; but that young ass Pocklington was right. He said I'd have to come to it, and I shall lose my fiver. Good Lord!"

Then he recollected his manners, for, after all, he was a courtly gentleman, though of a former generation.

"I am much indebted to you, sir, for your kind offer, but, pray, do not trouble. No doubt my horses will be themselves again in a short time, and I—er, er—I do not motor. In fact, I object to them strongly. To put it more strongly, only this morning

I wanted to send six of their drivers to spend Christmas in prison, and they richly deserved it, too. But, thank you all the same, sir, I think I'll trust to my horses at present."

For reply there came an unmistakable rattle of kicking hoofs on the boards, the clatter of steel shoes striking upon stones, the smashing of wood, and, that rare and horrifying sound, the scream of a horse in fear.

The girl looked at her father. His self-control was really wonderful. He merely said:

"I wonder if we might have some tea while we are waiting," and the maid bustled off to get it.

Then from Sir Jasper's groom came the intelligence that one of the pair was down, and the other had kicked it badly and got its own leg over the partition, all of which news the owner received without remark, excepting a request to Job to go and see if the devil was in the groom as well.

Then the tea came, with several unexpected accompaniments, for which they were indebted to the Antiquarians. While they were eating it Job returned, sadly shaking his head and full of bad news about the horses. Sir Jasper finished his second cup and spoke.

"Gaveston is only ten miles off, and the dinner is not till eight. Something is sure to come along, isn't it, landlord?"

But Job could give him no hope, for the Castle of Comfort is not on the line of much cross traffic, besides which it was pitch black outside.

During the silence that followed I looked up and caught a meaning frown on the face of the daughter, so I asked again.

"Sir Jasper, please let me renew my offer. Trust me; I am a careful driver, and it is my own car. Get in with me, and I'll have you and your daughter and the luggage at Gaveston Court long before seven."

He hesitated, and began to murmur something. He who hesitates needs little persuasion. I went out to light the big lamps. He followed me.

"Look here, Mr. Wilson," he said, "I've sworn often that I'd never go in one of those—er—things. In fact, I backed myself for a fiver not to only this morning, but luck's too strong, and since you are good enough to offer it, I'll accept, but only on my daughter's account—oh, solely!" Then he added, half humorously, "But you won't give me away, will you?"

I laughed at him, telling him his secret was safe with me till he bought his own car, and we went inside to get our coats. Then he came out to the stables to tell the coachman to stay with the horses, and bring them on as soon as he could on the morrow. Also to dispose of the luggage as I directed upon the motor car.

Very soon Miss Osborne was snugly tucked up in one corner of the car, surrounded with the baggage from the dogcart. I made Sir Jasper sit alongside of me, though he cast longing eyes at the vacant back seat. The motor started on the switch, and glided out into the road on the very top of her form. My companion had glued his hands on to the bodywork in anticipation of being thrown all over the place, but as we sped along I could see his grip relax, till at last he even put his hands in his coat pockets and looked elsewhere than in front. Then I knew he was conquered. The night was too dark for pace, even if I had wanted it, but we were going well up to the legal limit, when he remarked:

"By gad, but it beats sailing."

I nodded, and the car shot up the ascent which leads to the place whence one can see in the daytime the Bristol Channel, the Welsh mountains, and the far off slopes of Exmoor.

On our left, about threequarters of a mile away, were the Seven Barrows, and a dull glare showed me which one was the scene of the Antiquarians' attack. I pointed it out to my companion, and mentioned their names in the event of his not having heard about the excavations.

"Ambrose Foote!" he exclaimed. "Ambrose Foote! Good Lord! He's my brother-in-law. He always was a crank, but—you don't say he's up there now?"

"Certainly I do," I replied. "He and Mr. Gurney sleep at the inn we came from, but spend all the remainder of their time pursuing their investigations at the Barrows."

I heard him mutter, "How extraordinary—Ambrose up there." Then to me, "Is there a road to the place? We've got time, haven't we? I should like to surprise him?" And, turning round to his daughter, he added, "What do you say, Anna?"

"Don't you think," she replied, "we ought to be getting on, if only out of kindness to Mr. Wilson."

"Don't mind me," I replied; "I'm as keen to see what is going on up there as anyone," for the light about the Barrows was growing, and curious shadows kept coming and going all the time.

We passed through the gate that keeps the moor cattle at home and turned left over the new road made for their motors. Suddenly there was a faint cry from behind.

"Daddy, I don't like it! I don't like it! Can't you hear people running behind?"

I stopped—we were only going slowly—and I could hear above the hum of the engine the crackling of trodden bracken and the clatter of loose stones. Then all was quiet. I raced the engine, and I could hear the noise of startled feet. I turned cold, but it was no time to show what I felt, so I took off a side lamp and shone it round behind the car. There was nothing there, so with a laugh I put the lamp back, and said, "The hill-ponies looking for company, that's all." But the innkeeper's tale came back to me as I spoke, and I am afraid my shaky voice gave my brave words away.

However, had we wished it, there was no room to turn, so on we went, our "King of the Roads" showing up the track in front as a beam from a lighthouse does the mist. There were no ponies or sheep ahead, not even a rabbit; but behind we could all hear the sounds of running—not the spark-striking hoofs of horses or the crunch of thick boots, but simply the soft pad-padding of naked feet. The sound, without my recognising at once what was causing it, took me back to the West Coast of Africa, but it was not until Sir Jasper called out "Niggers, by Jove!" that I knew he and I were thinking of the same thing. But there was nothing to be seen. Suddenly the whole hillside was illuminated; an enormous volume of flame shot up from the Barrows, and a crash as of a thousand guns rent the very firmament. Then all was still again. Sir Jasper turned round to his daughter, and, in defiance of the possible consequences, bodily dragged her from the back seat. I opened the throttle to hurry to find a place to turn. As the car shot forward the front mudguards bent as if hitting something, and the wheels bumped and lifted as if they were passing over many bodies, while above the noise of the raced engine I fancied I could

hear the squelch and stuttering groan of crushed corpses as when the gunwheels drive over them out of the battle. The lamps showed nothing but empty air. And now we were close upon the scene of the explosion, and white against the pall of smoke I could see the outline of a motor. Our beams illuminated it, and I could make out a figure of a man—white faced and staring—crouching between the two front seats, with both his hands crossed over his breast. I slewed the car so that the big lights fell on him.

"By God, it's Ambrose Foote!" shouted my companion. "Ambrose, Ambrose, what the devil's the matter, man?"

The terror-stricken figure gazed round, speechless and lacklustre. Sir Jasper made a move to get out of the car to go to him. Then, with a fearful effort—I could see the words coming—the figure called out:

"Stop! stop where you are! Don't leave the car. They'll kill you, too." And despairingly—"Can't you feel them all round you. Oh, my God!" And his head fell over his chest again. There was plenty of room to turn now, so, feeling braver—they tell me the sight of another in worse distress has a wonderful effect—I brought my car alongside of the other. As the front wheels edged along his sideboards I could feel the wings nipping things I could not see, and the car almost stop and quiver against forces I could only feel. I stopped my car near by, and Sir Jasper reached out for the man to bring him in with us. No sooner was he touched than with a shriek he tried to tear himself away. But Sir Jasper held on, and, in spite of his struggles, swung him bodily on board the car. Not till then did Dr. Foote open his eyes, and I never saw greater change in any face in all my life. He turned to and yelled:

"Go on, out of hell! Get on; get—no, by heaven, not without Peter. Peter! Peter! where's Peter? Oh, I know, I dragged him from them. Peter! Peter!" and he burst into floods of tears.

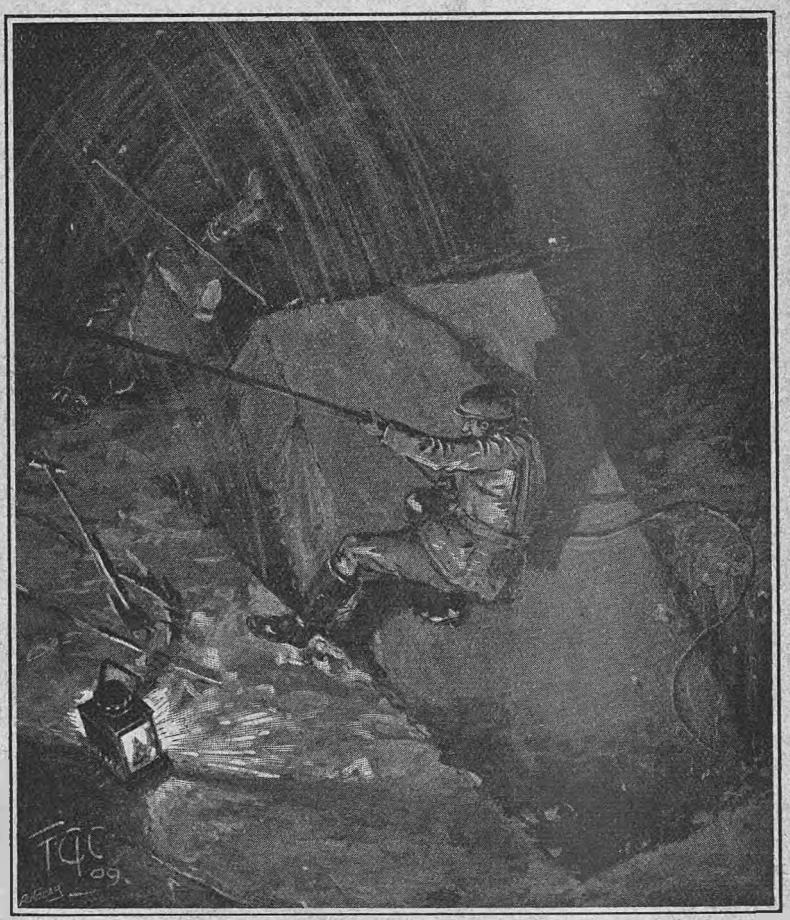
An idea crossed my mind, and I stood up and looked into the back of the other car. Amid a heap of rugs, spades, and hampers lay something huddled up. I backed the car till it was flush with the side door, and, leaning out, Sir Jasper and I hove in the apparently lifeless body of Mr. Gurney, and put it the back of our own car.

As our successful efforts to come alongside the Professor's car had resulted in our facing again the road we had come up, with no more ceremony I let her go on her homeward path. But though the engine raced with the clutch out and I was on my lowest speed, something seemed to hinder her progress more and more, till, not fifty yards from the Barrow, she absolutely refused to move. I slammed in the reverse, and she bounded back. Then once more the first speed, and again I charged the invisible obstruction. It gave way at first, but slowly; as before, it became immovable, and the most curious part of it was, the front wheels seemed to be raised clean off the ground. I looked at Sir Jasper; he was gazing fiercely in front of him and speechless; then at his daughter; luckily in a dead faint, knowing nothing; then at Dr. Foote—who returned my gaze with a meaningless eye.

"What is it?" I yelled, and, to my surprise, I heard a droning voice reply:

"Their contempt for the individual life was such that no obstruction was too great, no ditch too deep, but that its object could be defeated by the self-sacrifice of the thousands who would willingly die if the ultimate victory could be thus attained by their comrades."

Then I understood. These unseen Things were stopping the car by sheer weight of numbers. There was one chance more. I put in the reverse again



"The whole stone swung round . . . revealing a deep hole immediately beneath me."

and ran her right up, so that the back wheels were on the side of the Barrow itself. Then I put her in the second and let her rip.

"Hang on!" I yelled. "Look out for the bump."

When it came it well nigh threw us out; but the good car never stopped, though once or twice I thought it was all over. High in the air we seemed, the ground yards below us; but on we went—on, and on, and on—racing the big engine, smoking with oil, and water boiling over, thanking heaven for the sweetest of clutches, which had enabled us to conquer the unknown. The fight was over now, and only an occasional bump showed that our enemies were still in existence. So we came to the high road again. Though there was no need for haste now, I let her out, until an untidy heap in the middle of our path

made me jam on the brakes. It was a dead horse with its throat horribly torn open, and after that, before we came to the Castle of Comfort, we passed three more of the like—one immediately outside the inn itself. Never were men more glad to see lights and other men than we. I just remember drawing up outside the door, and they tell me I stopped the engine as I should, but I knew no more that night, for I am told I was carried in and put to bed almost as much of a corpse as the poor Professor we had salved from the back seat of the stranded car.

. . . . . .

(Being the account by Ambrose Foote, M.D., of the strange occurrences that befell Professor Gurney and himself on St. Thomas's Day, 1907, at the Seven Barrows, on the top of the Mendip Hills. Written by request, in order to put an end to the much exaggerated and untrue stories which have been circulated.)

I would begin by stating that the reason for our investigation of the most eastern of the Seven Barrows was with the idea of determining as to whether or not these mounds were connected with the caves that are so common in the neighbourhood. In the course of an ordinary tourist visit to Goatchurch Cavern, in Westerbrook, leading into Burrington Combe, we were simultaneously struck by the artificial appearance of the rock at the end of the passage, and, on making experiments, with the fact of the constant out-current of air that was present all through it. The opinion of the warrener, who is responsible for the preservation of the extraordinary stalactites and stalagmites against the crowds of holiday-makers who throng it all through the summer, is that this draught is owing to the underground watercourse; but in that he is undoubtedly wrong, for all subterranean streams are accompanied by their own air currents.

It is well known that the Mendip Hills present the curious phenomenon of being exactly of the same nature as regards soil and productiveness as the summits of mountains more than five times their height, and, to use a popular definition, appear to be, as it were, the tops of a very high range sunk several thousand feet in the surrounding earth. While the contorted strata, split cliffs, and the abundant presence of minerals show ordinary volcanic action, the abrupt termination of glacier marks at certain heights shows that the hills never existed under the same conditions as almost all other British ranges.

Very well, then. For these reasons my friend Professor Gurney—perhaps better known as a geologist than what is popularly called an antiquary—persuaded me that careful exploration, with a new idea in view, of the Barrows might lead to discoveries which would link up the ages in a manner hitherto unimagined. My own studies had never taken me to dates previous to the time when men inhabited this world under much the same conditions as ourselves, but my friend's hopes and arguments were far too sanguine to keep me from joining him. Therefore, as Mr. Wilson—who, as a slight return for his bravery in saving our lives at the risk of his own, I am supplying with the missing part of his extraordinary narrative—has said, we procured the assistance of the two skilled Mendip miners and began our excavation. The Barrow we opened up was the smallest of the seven, and probably for that reason the only one not previously dug into. Although at first it seemed to contain even less of interest than most of these tombs, the absence of the things we had made certain of finding was in itself a curious discovery. Moreover, instead of the floor being covered with loose earth, as is usual, it was baked hard, shiny, and black, almost as if it were of polished lava. Gurney was the quickest to notice this, and the first inkling I had that we were in touch with more than we were looking for was when he asked me if I remembered the mud road outside the shrine of Kali at Pooree in India. That brought it all back to me—the sun-baked, million-trodden, smooth path, the silence, and the stench, for as I heard his words I could almost smell that immemorial odour of the crowded cities of the East. We came out into the sunlight to discuss the question, and, though there was still an hour before dark, we did not go back again into the Barrow that night. But next morning a jolly, laughing, blusterous south-west wind, with blue sky between the showers, gave us new heart, and by ten o'clock we were back inside the mound and wondering if we had come by mistake into the ball room of the Blackdown rabbits. Near our opening the rain of the night had formed pools on the floor, but even that seemed to have made but little impression on the mud. The want of remains seemed to point to the fact that the tomb had once been rifled, but the absence of any entrance or working raised the question as to how or when the intruder had entered. We ourselves had only arrived by hoisting back one of the big end leaning-stones, and it had taken us the best part of a week, assisted by a drum on the mainshaft of the motor, to effect an entrance by hauling it out of the way.

But, search as we might, three days of it brought us no nearer the solution of the mystery, and it was not until the fateful St. Thomas's Day that we made any progress. On that morning Gurney noticed that the flooring in the south-eastern corner was higher and less caked than elsewhere. Taking one of the picks our miners had left, he began breaking the soil. To our surprise, almost at once it rang true on what sounded like a hollow stone. Some hurried spadework revealed the presence of an artificially made lid, apparently immovable; but an hour's work at it showed that it was undoubtedly made to tilt at one end, and thus afford room for human entrance. With great caution against a too sudden movement I stood on what can be described as the fulcrum end while Gurney prised at the other. I had taken the precaution to hold a well-tied rope as I stood on the rock, and it was lucky for me I did, for directly the big end was raised clear of the ground the whole stone swung round and pointed perpendicularly, revealing a deep hole immediately beneath me. In a natural movement, such as an avalanche, the fall of a tree, or even a ship being launched, there is a steady and perfectly accountable motion, but here it seemed as if a force were at work that only began halfway through the natural movement, and as I swung clear by the providential rope I saw my friend bowl over and over backwards as if struck down by an unseen hand. I ran to him, and as he picked himself up he exclaimed:

"By Jove! Ambrose, what in the world was that? I felt as if something had come out of the hole, like a rabbit out of a burrow with a ferret after him, and cannoned me over.

We went to our entrance, and just where the rains had slightly softened the earth we saw a footprint—not of a whole foot, but of the forepart of one—the balls of the toes clearly defined, with the toe marks themselves apparently ending in deep, clawlike

scratches in the ground. There was another in the mud at the outside of our excavation, but no more, though while we yet wondered there was a sound of returning feet, and the same thing, whatever it was, came back, rushed through the Barrow, and the sounds it made faded away under the great swinging stone. We went outside, had lunch, and smoked a pipe. Then Peter said:

"I'm going back to see what is down that hole."

I knew that even if I said no power on earth would take me with him he would go alone; therefore I agreed, and together we went. As we were both wearing long indiarubber "gum" boots and our very oldest shooting clothes, no fear of spoiling our garments in the unknown depths helped to keep us back. We carried a small electric torch each and a compact acetylene lamp that Lucas has specially designed for us, with four spare refils of carbide. Gurney went first, as he always did, and, plumbing with his long stick at that end of the hole he had prised the stone up at, he found bottom first about four feet down, then lower still, and again, till it dawned on us that we were descending a rude flight of irregular steps. Straight down they went for a couple of hundred feet or so, until we reached an oblique natural passage evidently hollowed out between the obliging strata of the earth.

The curious thing about the floor was that it was trodden even harder and shinier than had been that of the Barrow itself. On we went. There were no side turnings or caves to perplex or divert us until, all at once, the passage enlarged into an enormous hall. We shone the light around, and for all the world it looked as if we were in a great opera house. Tier above tier what seemed to be boxes rose all round, while on the floor itself rough stone slabs were ranged in regular order in the centre. Between them there were rude heaps of things thrown higgledy-piggledy, as it were, to be out of the way. We inspected something I tumbled over that gave out a metallic sound, and found it to be an ancient headpiece reposing amid a medley of iron shields, spear heads, and the like. Other heaps contained similar remains, and there were even gold ornaments, twisted and punched, lying amidst rusty chains and swords. Gurney looked at them.

"Romans," he said. "But why on earth are they all thrown about like this? Why aren't they each in their proper niche?" For we both realised that we were in some vast catacomb, and that it had been pillaged, or rather upset, since the bodies had been laid there to rest. But what manner of vandal had done it beat us, for gold ornaments of a deep red colour and occasionally inset with rough jewels lay all around, and my historical researches failed to think of any race who disdained treasure or knew not its use.

Then we inspected the "boxes" or niches hewn out of the living rock. They were very similar to those cut out by the roadside in the "Street of the Dead," at Syracuse, only, instead of being full of dust and dry mortal remains, they were empty and almost as polished as the floor itself. It was this last feature that disturbed us so much. Of course, we were delighted with our discoveries and progress, but all the time there seemed to be something we could not understand and, as we afterwards confided in each other, we both had the feeling that we were being overlooked all the time.

We explored and carefully examined the many passages to this vast charnel-house, but all of them seemed to be exactly similar to the one we had entered by, being merely adapted natural caves.

Very soon I proposed going back to the world we had left, and, to my surprise, Gurney readily assented. First of all we chose the wrong passage for the exit, and only a descent of a hundred yards or so revealed our mistake. So we returned to the big hall, and as we stood trying to pick out the right path, I could swear to hearing again the sounds of creeping feet. Then all became still. The Roman headpiece we had noticed as we came in gave us at last the right clue, and with thankful hearts we found ourselves at the foot of the long earthen staircase we had discovered. Here we were forced to halt for a minute to change the cartridges in the acetylene lamp, and as we waited we could hear the unmistakable sounds of many footsteps in our rear. Nearer and nearer they came. Then they ceased again. The lamp going once more I swung it round, but it flashed merely on the bare walls and glassy floor. We began climbing the stairs. So did the feet. Fifty, a hundred, two hundred we counted, and then above us the open stone. We passed it and came once more into the Barrow. Gurney announced his intention of swinging the great rock back into its place. Though I had not a thought beyond getting out again into the open air I put the lamp down on a box to give him a hand. It started easily enough, and at first the job seemed to be quite a simple matter, but—just as it was settling down in its old groove—something from below caught it and swung it back again to the perpendicular, almost throwing me down into its counterhole.

As luck would have it, I managed to jump clear, though knocking the lamp off its place with such force as to smash the container and liberate the water within reach of the still burning flame. Up the whole thing flared, lapping round the box and scorching against the roof.

"Run, Peter!" I yelled. "Drop everything, and go as fast as ever you can. Dynamite!"

He needed no further bidding, and together we tore up the ladder and out of the hole into the still night air. Side by side we ran to where the motor lay, and it was not until I reached the car that I missed my companion. I turned back, pulled out my pocket electric lamp, and by its light saw him stretched out in the road. I yelled at him, but he lay as if stunned. So, putting the torch away, I made to pick him up, but I could feel as I lifted that more than I had hold of him. Move him I could not. I fumbled for my lamp again and pressed the switch. The effect was extraordinary. Although I could see nothing, I could feel invisible hands letting go of him, unknown weights releasing their force, so torch in hand I bore him to the car and put him in the back. Again I could hear the trampling of feet pressing round, holding and rubbing against the car. Then behind me I heard the roar of an explosion, silence, and the thud of falling substances all around. After that I remember little, save—as in a dream—the big lights of another car, voices calling me by name, a horrible idea I had left Peter behind, and—precious little else till I found myself at the door of the "Castle of Comfort."

. . . . . .

(A possible explanation of the adventure by Professor Bernhard Heinz, of Munich, rendered into English by Mr. Wilson.)

I have no doubt that the *savants* unwittingly intruded on a Lodge (I can find no more suitable translation of the German.—B.W.) of Earthmen or Netherworldlings,

by a fortuitous coincidence at a time when they were particularly demonstrative.

It is very possible that the Roman remains alluded to in the catacombs were those of soldiers who made similar discoveries without the happy result of escaping alive, though it would seem that they had been permitted to use the place without opportunity of molestation for many years. It should be remembered that the particular day of the incident happened to be the shortest for 169 years (here the Professor alludes to some famous Netherland astronomical calculations), and for that reason the Under-powers would be expected to be at their strongest.

From a scientific point of view it is extremely unfortunate that the explosion of the box of dynamite should have had such an enormous effect on the surrounding rock that further investigations are completely out of the question, although from a higher standpoint, common knowledge of what can only be suspected could have had nothing but an evil effect. The comparative immunity of Dr. Foote may possibly be attributed to his insulation, owing to rubber boots and the pneumatic tyres of the car. It will be noticed that Professor Gurney was only attacked when lying on the ground.

(The conclusion by Mr. Wilson.)

The results of Sir Jasper Osborne's first motor ride; his absence at the dinner where it was of the utmost importance he and his daughter should be present; cannot be included in this tale of an unaccountable event.

[THE END.]

Some Motors and a Chancellor.

THIS is a dream. It was quite a silly dream.

The Chancellor of the Exchequer sat in his chair and read the following letter:

"Sir,—As a humble but fervent admirer of yours, will you allow me, as a mark of esteem, to present you with a motor car.—Yours faithfully, JAMES SMITH."

Two days later the car arrived. It was a sumptuous vehicle, with nothing very peculiar about it, except that the six cylinders of the engine were all of them extremely short and broad.

However, the Chancellor was not sufficiently interested in machinery to look inside the bonnet, and his chauffeur having reported the trial trip satisfactory, he added the car to his stud, which had hitherto consisted of a somewhat ancient Daimler. The Chancellor lolled on the soft cushions during his first ride in the new car and thought to himself how nice it was to have admirers.

A week later there came another letter:

"Sir,—I am placed in an extremely painful situation. Several months ago I evolved the idea of presenting you with a motor car, especially designed by me, as a mark of my intense admiration for you. I regret to say that my brother James (with whom I have a family quarrel, the details of which I need not burden you with), in some way or other discovered my idea, and has forestalled me!

"It is difficult for me to think what you can do with two motor cars, but may I press this gift upon you? By accepting it you will confer a very great favour upon me.—Yours faithfully, BILLINGS SMITH."

The Chancellor wrote quite a nice letter to Mr. Billings Smith, accepting his offer; and a few days later a still more sumptuous motor car arrived, which also had large bore cylinders; but, as before, the Chancellor did not look inside the bonnet!

A week later there came a third letter, which was from one De Montmorency, stating that he was an American citizen who made his pile in Chicago, and, coming over to England, had been struck by the fact that the Chancellor was a man after his own heart. He had lots of cars in the United States, and thought that he would like to present the one that he had been using in England to the Chancellor as a mark of esteem.

The Chancellor remarked to himself that in view of the near approach of a General Election, an extra car might always be handy, and Mr. De Montmorency having already departed for the United States, his car also was added to the Chancellor's stud. It also had six very broad and short cylinders; but, as before, the Chancellor did not look inside the bonnet!

Two days later the Chancellor received the following telegram:

"Llangallangllagllwyll.—Unanimously decided at a meeting of your constituents here to-night to present you with a couple of motor cars to enable you to tour the country and explain the advantages of the Budget. —PRYCE-AP-PRYCE."

The Chancellor had no option but to accept. He had barely done so when there came another telegram:

"Machyllpwyll.—Though we are not your constituents we are your supporters, and we are not going to be outdone by Llangallangllagllwyll. A whip round is sending you four motor cars.—JONES-AP-JONES."

It was somewhere about this time that the Chancellor began to think that he had motor cars enough, and he took the occasion at his next speech at Limehouse to remark that, much as he appreciated the admiration, he would prefer to receive tokens of esteem in some other form than motor cars, because he was beginning to find garage expenses rather heavy.

For the next day or two he was deluged with telegrams from all over the country, regretting that it was impossible to countermand the motor car ordered for him, as a novel present out of public subscriptions. Motor cars poured in upon him till he lost all count of them. A General Election being imminent, it was impossible for him to sell any of these gifts without running risks. Half the garages in London had to be hired to contain his motor fleet.

Somewhere about January 1st following, a paragraph appeared in one of the motor newspapers: "There is only one type of car which by the official R.A.C. rating is over 60 h.p. By a curious coincidence, the whole of the cars of this make are the property of the Chancellor of the Exchequer."

Next day an army of official inspectors invaded the Chancellor's garages, and two days later the Chancellor sat staring at a taxation demand that ran into several thousand pounds.

. . . . . .

I can't quite remember how the dream ended. But it had something in it of a bankrupt ex-politician, living in seclusion in a little cottage in Wales, owner of an enormous number of motor cars that nobody would buy, and an Australian millionaire wandering back to the Antipodes, chuckling to himself and saying, "You can always hit 'em if you happen on the right way to do it."

"Old Invincible."

The Autobiography of Chassis No. 804. By Sidney Smith.

"OLD Invincible" they called me, and so I was in 1907 when I got a square deal. Talk about speed—I revelled in it, and there wasn't a car in the whole world I cared the snap of a brake rod for. Foreigners I despised utterly, and it was seldom the Britishers would come out after the first meeting at Brooklands. But I'm going too fast; I'm afraid it's become a habit with me. I'll reverse and get back to the mark.

I believe it was in 1905 I was spawned as a type. I had some little difficulty to start with, and did not approve of all my adjustments. There are few men, by-the-by, who know how to tune and get the "innards" of a car right. What's the good of having one part of you tuned, say, to D flat, and another to F sharp; they don't harmonise, and it racks the soul of you to pieces. A car wants peace and rhythm, not discord; but eventually I found myself on the hard, crisp road, one frosty morning, on the way for a test run.

Conceit is foolish, but self-respect and pride in one's self are different, and as I glided through the factory gates, with the warm petrol mixture within me and the cool morning air in my gills, I felt every inch a car and fit to "hop it" with the best. The man in charge was addressed as "the driver." I protest against the idea of being driven; it is an insult to one's self-respect; I'm British, and don't need it—it's merely a question of my being allowed to go. We went along nicely, feeling well pleased with ourselves.

The Driver—I prefer to call him Pilot—expressed himself in warm terms. He spoke of my "picking up." I couldn't for the life of me make out what he meant; as far as I knew I hadn't picked up anything, but of course I was very young and inexperienced. I have learnt since what it means. He said I "pulled well." This sounds horsey; it suggests traces and shafts. Besides, I don't pull—I rotate. He also said I didn't "wag my tail." This annoyed me. At that time I had the greatest contempt for cat's meat, and to be talked about as if I were a mere animal made me cross; indeed, on the way back I felt quite hot about it. My Pilot noticed this, and got down to tighten up my fan belt, but it wasn't that—it was annoyance.

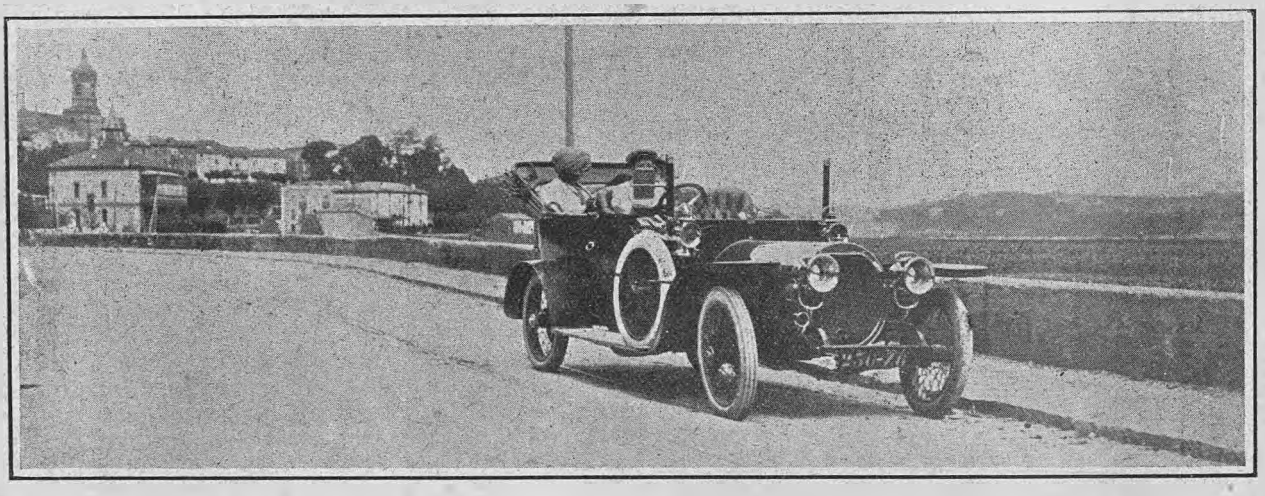
I was not long before I met my future owner. He was a dark, keen-visaged man, all energy and nerves. I liked him at once; he was so frankly enthusiastic about me, and I admit I was flattered, but when I came to know him better I found he was equally enthusiastic and keen about everything. It seems to be the way with men—keen ones are keen, and slack ones slack, about everything. Cars are different, though this is often due to sheer neglect on the driver's part.

I learned with joy that I was to be fitted with an open touring body. All bodies are degrading; open bodies least of all. Life can only really be enjoyed with two bucket seats and a toolbox.

I once heard a big limousine with a 15 h.p. engine talking about the "dignity of labour." Dignity of labour! Rot! A navvy doesn't compare in dignity with a policeman. I loathe policemen; they have a depressing effect. The mere sight of one on the road reduces the speed by twenty to fifty per cent., and if there are two the speed goes far below legal limit.

I was sent to the coachbuilder. I hate coachbuilders; they pile on useless weight, heavy absurdly-designed iron constructions that ought to be steel; but, of course, any deviation from the traditions of the past would imply that the coachbuilder had brains. I believe I was not more than two months late in delivery as a finished car, and was very pleased to be free of the stuffy atmosphere of the paint shop.

Of my experience as a touring car there is not much to say. My body slowed me considerably, though of my qualities as a car my owner never tired in his praise. Till the end of 1906 I had a comparatively uneventful life. Week-end jaunts to the seaside formed my chief recreation. I had a week in Cornwall, and ran back from the Lizard to London on top gear. I simply revelled in this. I think the way I acquitted myself here may have accounted for my owner deciding to race me at Brooklands and in hill-climbs in 1907. What a year it was! I ran away every time.



A 45 h.p. six-cylinder gearboxless Sheffield-Simplex car in Spain. The photograph was taken at Fuentarrabia.

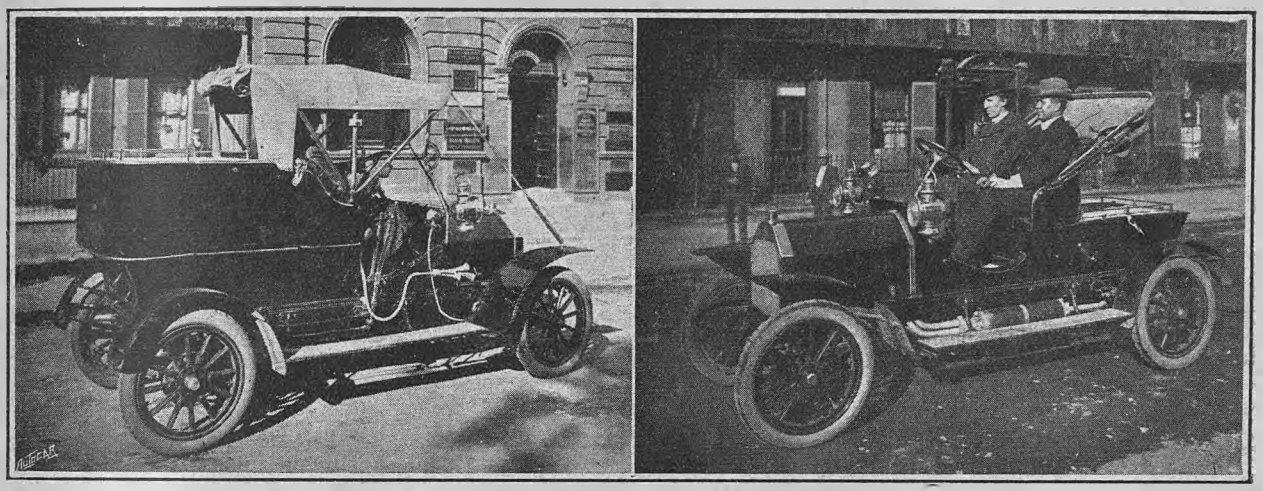
Other cars of the same type were produced from the factory, but I was supreme. I hold the twenty-four hours' record even yet. It was one June I secured it. I had made fastest time in several events previously, and there was a close bond of sympathy between my usual Pilot and me. I had some very narrow squeaks sliding round corners at great speed on two wheels in hill-climbs, but the steering was always turned to bring all the wheels into use again at the right moment, and, though I hit a bank occasionally, I was always

fortunate enough to escape serious hurt.

I believe this particular Pilot was the only one who was really confident of my going through the twenty-four hours at the speed with a non-stop, but I was confident, and smiled when they got made ready two spare cars to replace me in the event of failure. Failure, indeed, with "Old Invincible!"

It was a red letter day for Brooklands. The Press became excited; the governor had his pulse recorded, made a speech, went to bed, and was up at 8.30 next morning. I was as fresh as a daisy after the jaunt.

knew what had happened I commenced gyrating, and left the track by an unauthorised route, contrary to the red tape rules of the B.A.R.C., and after flying through the air for some distance and collecting a telegraph pole in passing I dropped right side up, as usual, near the culvert. My Pilot was not much the worse, but I was taken carefully home on a lorry. I never felt so humiliated. To contemplate being hauled by cat's meat with the fifty miles speed record in my boots, so to speak, is too galling for words, and I am sure my pilot shared my feelings.



A 10 h.p. live axle Star car at present running in Sydney, N.S.W. The car is the property of Mr. T. W. Kelly, and is used as a traveller's car, the increase in business through its use being very considerable. The car can be arranged for use as a pleasure or business vehicle.

I'm not going to tell you of all the hill-climbs I attended or the races I won, but perhaps one of the most exciting times I had was when a front tyre came off almost at the commencement of a race at Brooklands. I had some rather keen rivals in this event, and so my Pilot and I decided to run on three tyres. My poor rim got an awful gruelling, and I just managed to push over the line a winner with a wobbly wheel and none too many spokes remaining. Had my wheel actually collapsed, as it would probably have done had it been of the traditional wooden type, I don't think I should have turned over—it's not my way—I should merely have slid along the cement track.

I must tell of my one accident that might have ended tragically. I was going for records on the Track, and after securing the fifty miles something went wrong at the back. I've never quite been able to trace cause and effect myself, but before I quite

During convalescence I learnt that a big foreign car had gained the fifty miles record. A mere man cannot realise my joy upon hearing that I was to be allowed to try again. Everything went well this time. I felt absolutely fit, and records fell like ninepins—fifty miles, one hundred miles, and two hours. I forget the actual figures, but over 170 miles in two hours is not bad; and here my racing career ends. Passing into the hands of a new owner, I was utterly depressed when I found myself in the hands of those horrid coach-builders again to be fitted with a touring body, but it was a relief to know that my new owner was a motorist of experience. Since then my life has been comfortable, though uneventful; but at times on looking back I feel an irresistible, uncontrollable yearning to return to the old life. If this humdrum touring existence continues, though I cannot complain of ill-treatment, I feel I shall succumb prematurely to *ennui*.

Reviews.

"The Motorists' and Aviators' Year Book and Diary, 1910," published by E. J. Larby, 1, Paternoster Avenue, E.C. This handy little volume is now making its second appearance. It contains in a compact form much information likely to be required when touring at home and abroad, in the garage, and at club competitions, international or otherwise.

The diary section which is accompanied with expenditure, mileage, and other charts, is a useful feature, while the article on motor law, specially written by Mr. C. C. Macklin, of Messrs. Amery Parkes, Macklin, and Co., solicitors to the Automobile Association, is a guide by which the motorist can inform himself of his legal position in matters connected with automobilism.

Many leading British routes are given also to the principal Continental centres, while the "distance from London" table, "Steep British Gradients," "A List of Garages in Great Britain," a British hotel directory, and speed limits in Great Britain and abroad, etc., go to make up a most useful handbook.

A further section contains a carefully compiled list of the results of all the important contests in motoring, motor boating, motor cycling, and aerial navigation held during 1909. This little work can be obtained from Messrs. Iliffe and Sons Ltd., 20, Tudor Street, E.C., 2s. nett.

No. 128 of the Red Books of the British Fire Prevention Committee contains interesting details with regard to fire tests with fire extinguishers, buckets of water, hand pumps, etc., that are in common use, while No. 133 gives details of asbestos cloths, sand, and steam as applied to burning petrol, etc. The latter will have particular interest for motorists generally.

The "Oldest Inhabitant" and the Motor Car.

Retold by J. Fairfax Blakeborough.

EVERY village has its "oldest inhabitant" whose local knowledge and memory of bygone doings and events give him the right to pose as something of an authority on matters introspective as well as retrospective. Seeing that he invariably views questions through the spectacles of a bygone epoch, his opinions are generally quaint, original, and, because of these two qualities, interesting. It is a platitude that the "oldest inhabitant" is, as a rule, somewhat conservative. His day is gone, he lives in the past, and considers the old way the best. Loth to smile upon machinery of any kind, because he imagines it takes away labour (failing to see that labour must be employed to produce the same), he has no very kindly word either for later day agricultural implements or those which improve locomotion. Here is the opinion of an "oldest inhabitant" regarding the motor car given, as nearly as dialect will allow, in his own language.

"If the Lord had intended folks to go flying aboot the country same as these motter carists, it's my opinion he'd have given 'em wings. But it's the same now with ivvery thing. Clash, rush, hustle an' bustle to get there, an' mair clash an' hurry ti get away again. Mind you I don't say they arn't clever things these motter cars becoz they are, an' he's been a clever fellow what could think it all out to make 'em, but when you're said that you've said all you can. They did without 'em when I was a lad, they did without 'em when I was a young man, an' if the devil hadn't got such a hold of the world and all its pomps and vanities they would have gone on doing without 'em.

"There's nothing in the Scriptures to back 'em up, but there's a great deal to put 'em down. When I was a lad about eight I started work tenting pigs and cows by the roadside. In them days the coaches and their four spanking Cleveland bays used to come by. The guard used to blow his horn and cottage doors would fly open to see the High Flyer or the Red Rover roll by. You can't tent pigs nor cows now, for if a pig was in the middle of the road when yan o' these motter cars came by it would be pork in no time.

"If you go to the door when you hear a motter horn you have to be precious quick if you would see even the cloud of dust they leave behind. Now I don't know how much a motter car costs, but a good bacon pig is worth six pounds any day and ten good bacon pigs is worth sixty pounds, but if they're suddenly made into pork by a whizz, a flash, and a cloud of dust, they aren't worth much at all.

"I reads about motter cars regularly an' know mair an' what most folks think, though it caps me how they stop 'em and how they get 'em started. I can understand t'bloomin' things going once they get 'em started, but when I used to go out to help on threshing days they had to light the fires and get up steam before they could commence. Now they tell me there's neither fire nor steam in these motter cars. If that's the case where does t' smoke an' stink come from? It's an old saying—a vast older than motters—'Where there's smoke there's fire,' and that's what licks me.

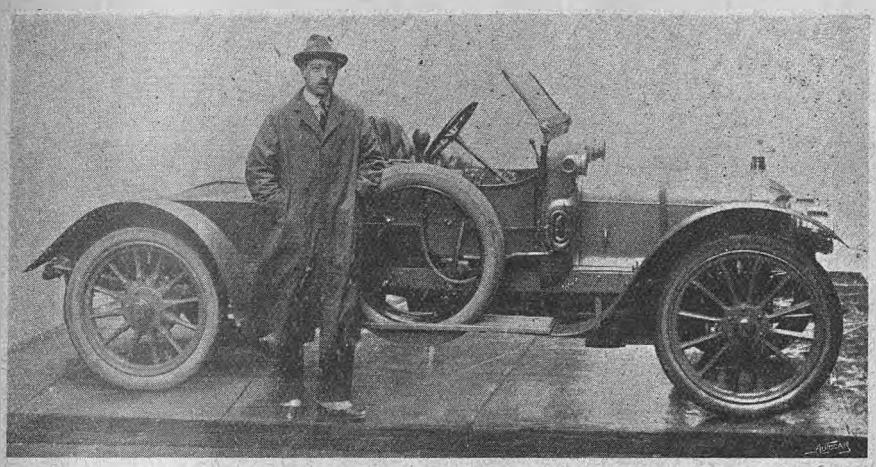
"I shall never believe that horses will go clean out o' fashion, though a few of them what used to keep the very best dray horses—the miller, them at t' brewery, and the hall home farm—all have motter things in front of their waggons, and big loads they can pull too in less time than with horses. It seems to me the world is going motter-mad, for everyone has to know something about 'em. I wonder what old Willie would think if he could come back and see his grandson crawling under a motter car. I don't think he would be desperate pleased, for he prided himself on shoeing all t' hosses from t' halls hereabouts. Then if George could rise from the dead and see *his* great-grandson, what has a face with 'hoss' stamped all over it, in a black leather cap, a black coat, and black leggings, opening the door of a carriage which he drives without horses, what would *he* say? *He* wouldn't be very setten up to think one of his breed had left hosses for motter cars! But that's not all, if I know anything, and read t' weekly paper aright. They're going to have motter-ploughs, motter grass cutters, an' if they car' on long enough, motter milking and sheep-shearing machines. With all these improvements corn isn't t' price it was when I was a lad and wool isn't neither, so where comes the benefit of all this clash an' hurry? All t' farm lads will hev to be men with that French name, but they won't do it for the same money, and they'll get that stucken up with pride they'll never condescend to clean pigs out. It'll be a sad thing if pig styes and cow houses never get cleaned out simply because some clever man has invented a wonderful machine and spoiled all t' young men with pride. I could say a lot more about motter cars but I aren't everyboddy, and all I can say is I'll nivver trust myself in one. I've gone t' market now for seventy years in a gig trailed wiv a horse, an' when there's no horses left to trail me—if ever it should come to that—I'll either walk or stop at 'ome; anyhow I won't motter—no, never."

Preventable Accidents to Children.

On November 27th (writes the Secretary of the A.A.), a boy, ten years of age, met his death in Ecclesall Road, Sheffield, through being run over by a motor car while he was indulging in the dangerous pastime of propelling himself down a slope in the road on a board on wheels. It was proved to the satisfaction of the coroner's jury that the motorist was entirely free from all blame, because the road was badly lighted, the accident being after dark. The Association's records of fatalities and injuries caused by horsed and motor vehicles show that during the two months just past—Oct. 1st to Nov. 30th—no fewer than twelve children have been killed as a result of another dangerous practice, "riding behind," and that three have been dangerously injured. This sad record calls for the attention of the authorities, who, by the aid of the police, could easily reduce the number of these preventable accidents. At present children appear to be allowed to ride behind vehicles without any interference whatever, notwithstanding the terrible risks. Cannot the law step in and effect the necessary reform? If the admonitions of parents, guardians, and teachers are insufficient, there are the children's courts, recently instituted, where magistrates should be able to make examples of a few culprits, for the general benefit of our children. The A.A.'s records of traffic accidents for the past two months show that only one motor car has been responsible for death from this cause.

Flashes.

We understand that Messrs. Crossley Bros., Ltd., have received an order for a 12-14 h.p. Crossley car from H.H. the Nizam's Government, Hyderabad.



Mr. W. R. Younger, of Auchene Castle, Moffat, N.B., whose coming of age was recently celebrated, and his 18-24 h.p. Austin car with two-seated body, specially built by Croal and Croal, of Edinburgh.

The Davis Paraffin Carburetter Co. inform us that great improvements have been made recently in their paraffin atomiser, and they are now prepared to supply a specially-designed carburetter for automobile and marine work.

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It may be of interest to some of the motorists who have had the pleasure of meeting him upon the Portsmouth Road to know that Sergeant Jarratt has retired, and is living in a small cottage on the road he loves so well, and not far from the scene of his most strenuous activities.

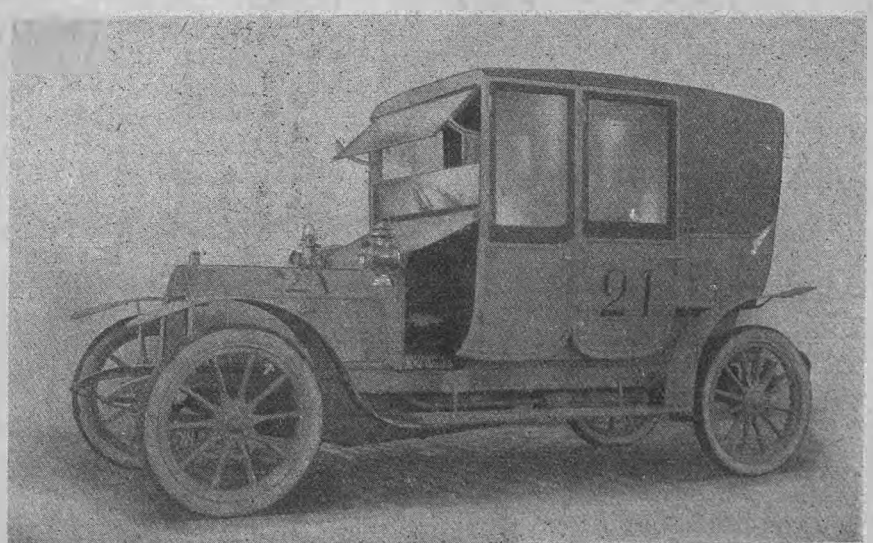
* * *

One can hardly pick up a newspaper without finding evidence of the harsh treatment of motorists by magistrates and the comparative leniency shown towards other offenders. A correspondent calls our attention to the following cases reported in the *Yorkshire Evening Post* of December 13th: On Sunday evening in one of the busiest streets of Bradford a drunken driver of a horse and trap dashed amongst the crowd and knocked down a man and woman, while a large number of people had to rush out of the way. A policeman seized the horse's head and managed to bring it to a standstill, despite the efforts of the driver to lash it forward. This drunken ruffian was fined 20s. and 15s. costs. Surely this was a far more serious offence than that of inadvertently exceeding the speed limit of twenty miles an hour over a measured distance on a safe road between Selby and Leeds without the slightest suggestion of danger to anyone. Yet for this offence two motorists were fined £2 each and another £3 and costs at the Selby Petty Sessions.

Another charge under the Offences Against the Person Act preferred against a motor car driver has been dismissed. The driver concerned was Mr. Bernard Ebel, who at Woking was charged with wantonly or with wilful neglect causing bodily harm to Mrs. Cross while he was driving a car at Ripley. The action of the police appears to have been particularly harsh in the preliminary stages of working up the case, but in the end they received a well-merited rebuff which will probably deter them from taking such high-handed action in future. The facts were that the car skidded owing to a burst tyre and collided with a horse and cart, which was upset, with the result that Mrs. Cross, one of the occupants, was injured. The defendant, it appears, was waiting about for more than an hour after the accident, when he was arrested and his car impounded. "He was first charged with an offence under the Motor Car Act, for which the police had no power of arrest, and finding themselves in the position of having effected an illegal arrest (says the *Chauffeur*), they saved their faces by substituting the more serious charge. Thus do the Surrey constabulary perform their duty without fear or favour. Truly a delightful county—to keep away from."

* * *

Motorists desirous of presenting their friends with something acceptable at Christmas time should send them a copy of the "Charles Jarrott Record Book," which has been specially compiled with a view to enable the owner of a car to see at a glance the cost of running. The work is well bound, each leaf being perforated in order that the report of the week's running can be extracted if necessary. Particulars of the day's run, the report, breakages, repairs, condition of the roads, general notes, and summary of expenditure are automatically tabulated on each page in compact form.



BODY DESIGN AND CONSTRUCTION. A limousine landaulet on a Corre car running in the French reliability trials which concluded on December 19th. One of its very few good points is the large area of its windows due to the low sides.

Flashes.

We understand that a 14-16 h.p. Argyll car has climbed a by-road in the well-known Glencroe, which makes the dreaded Devil's Elbow pale into insignificance.

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A popular appointment in Victorian military circles is the recent promotion of Capt. Harley Tarrant, officer in charge of the Australian Volunteer Automobile Corps, to the rank of major (writes our Sydney correspondent on November 15th). Major Tarrant's career in military life has extended over a period of many years, dating back to the days of the Victorian Mounted commission as lieutenant. From the V.M.R. Lieut. Tarrant transferred to the Army Service Corps, with whom he served twelve months, when he again transferred to the Field Artillery, where, at a later date, he obtained his captaincy. After a service with this body for some fifteen years, he retired from active military service. Upon the formation of the Automobile Corps, Capt. Tarrant was offered, and accepted, the position of Commanding Officer, and by examination has since received his appointment as major, and is now entitled to the Long Service Medal. Major Tarrant is a principal in the well-known Melbourne firm of motor importers, the Tarrant Motor Co.

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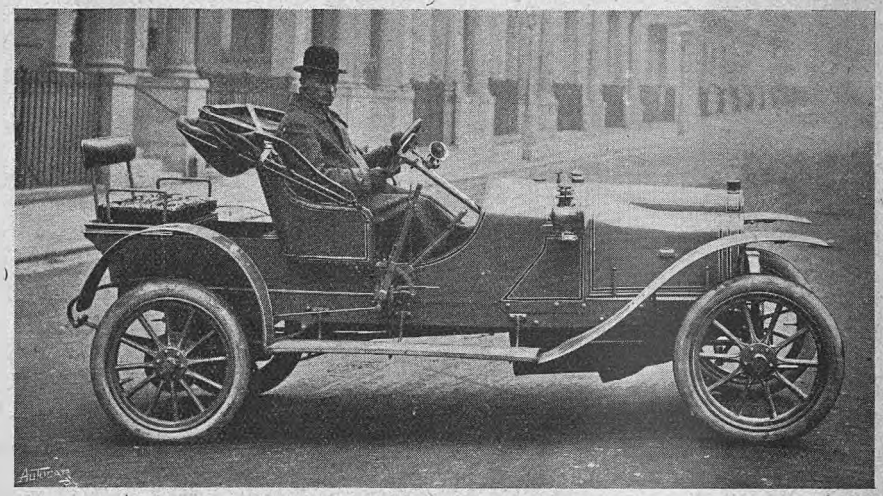
The British Electromobile Co., Ltd., of 5 and 6, Halkin Street, Hyde Park Corner, S.W., the British agents for Opel cars, inform us that they have been honoured by H.S.H. Prince Louis of Battenberg with an order for a 50 h.p. Opel landaulet, with body similar to those already supplied to H.I.M. the German Emperor, H.R.H. the Grand Duke of Hesse, and Prince Alexandrowitsch.

Messrs. Vauxhall Motors, Ltd., ask us to state that there is absolutely no foundation for rumours that are afloat to the effect that a severance is impending of the connection with their company of either or both of the joint managing directors, Messrs. Percy C. Kidner and Leslie Walton. So far from this being true, Messrs. Walton and Kidner have recently increased the amount of their shares until they hold practically the whole of the capital. These two gentlemen have been the conductors of the business ever since the registration of the company.



Monsieur G. Sizaire at the wheel of the newest type of the Sizaire car. It embodies the same characteristics as the well-known two-seated vehicle, which, however, it will not supersede but supplement. The chassis is longer, three-quarter springs are fitted at the back, whilst the back seat folds into the well, leaving a platform for the accommodation of luggage. The cars should appeal to the owner driver, as they are practically devoid of any bright metal or inaccessible oil holes.

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The New Engine Company ask us to state that the somewhat serious fire which took place recently at the factory adjoining their works was successfully overcome without causing damage to any of the New Engine Company's premises or stock.

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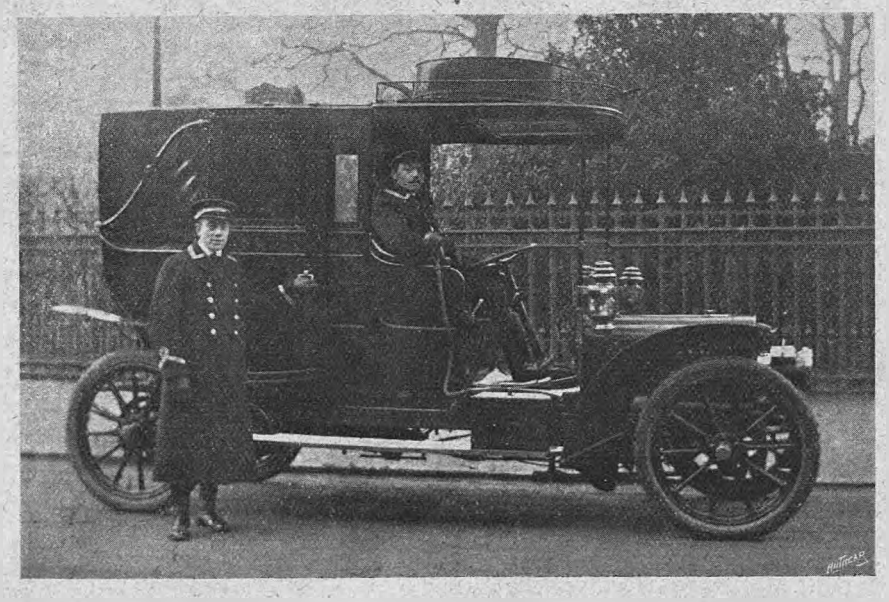
At the instigation of the Royal Automobile Club Legal Department, application was recently made to the Middlesex Quarter Sessions to state a case for the opinion of a higher court in connection with the conviction of Mr. Pelissier, who, whilst sitting at the back of his car, was found guilty as an aider and abettor, and convicted as a principal of driving at a speed dangerous to the public. The justices have, however, refused to state a case, and the R.A.C. is unable therefore to take the matter further. It is hoped (says the secretary of the R.A.C. in his weekly report) that if any motorist is summoned in similar circumstances in the future he will at once place the facts of the case before the Legal Department, so that they may take the necessary steps for having the matter decided by the highest tribunal to which it is possible to go.



A 15 h.p. Mors landaulet the property of the Chinese Ambassador to London, which is run by Mr. Alfred Wastnage, 5, Park Crescent Mews East, Great Portland Street. It was also found most useful to the Chinese Naval Commission in London.