

THE AUTOCAR

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

EDITED BY H. WALTER STANER.

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THE AUTOCAR.

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CONTENTS.

	Page
NOTES: THE DUST PROBLEM—To Mitigate the Dust Nuisance	
—Appreciative Registration	677-678
A 20 H.P. TALBOT CAR (Illustration)	678
USEFUL HINTS AND TIPS: SELF-STARTING ENGINES—RETURNING TO THE SLOW SPEED GEAR—TAKE NOTHING FOR GRANTED—	
—To Protect the Engine and Gear Box—Starting a Single-Cylinder Engine (Illustrated)	679
HOODS AND CANOPIES. By A. J. Wilson (Illustrated)	680-682
TRIAL OF EDISON'S ACCUMULATOR	683
A HANDSOME DELIVERY VAN (Illustration)	683
THE GOLIATH MAGNETIC CLUTCH (Illustrated)	684-685
MECHANICALLY OPERATED VERSUS AUTOMATIC VALVES	685
B. & M. NEW TREMBLER AND SPARKING PLUG (Illustrated)	686
THE ILLUMINATION OF NUMBERS (Illustration)	686
THE DUNLOP CARBURETTER (Illustrated)	687-688
INTERESTING EXPERIENCES WITH MOTOR SPIRIT	688
CONTINENTAL NOTES AND NEWS: INFLUENCE OF RACING ON TRADE	
—AN OVER PRODUCTION OF CARS—REFORMS IN THE INTEREST OF TRADE—THE GORDON-BENNETT CUP COURSE	689-690
A NEW SPARKING PLUG (Illustration)	690
CORRESPONDENCE: THE MOTOR GADABOUT—HEAVY MOTOR TRAFFIC—ELECTRIC IGNITION AND RECHARGING TYRES—NON-SLIPPING BANDS—PRIVATE TOUTING: A SUGGESTION—THE OLDSMOBILE—PUNCTURE-PROOF BANDS—PROPOSED INSTITUTE OF MOTOR ENGINEERS—STEAM CARS	691-693
"THE AUTOCAR" DIARY	694
FLASHES (Illustrated)	694-696
HONISTER PASS (Illustration)	696
SOME QUERIES AND REPLIES: INLET VALVES BREAKING—LAYING UP A CAR FOR THE WINTER—RADIATOR PROTECTION—ACCUMULATORS IN INDIA	697
MOTOR CARS. By Alex. Govan (continued)	698
THE NEW REGULATIONS: LONDON COUNTY COUNCIL—SEEKING COUNSEL FROM THE TRADE ASSOCIATION—WEAK POINTS—SCOTLAND AND THE ACT—WILD SUGGESTIONS FROM IRELAND	699
MOTOR VAN AND WAGON USERS' ASSOCIATION	699
THE DUST PROBLEM. By Col. Crompton and Mr. C. W. S. Crawley	700-701
VIEWS OF GLADIATOR WORKS (Illustrations)	701
A NOTABLE GATHERING	702-703
CLUB DOINGS: HERFORDSHIRE—THE SOUTHERN MOTOR CLUB—BURNLEY AND DISTRICT A.C.—THE SCOTTISH A.C. (Historical Sketch)	703
PROPOSED FEDERATION OF PROVINCIAL CLUBS	703
A USEFUL TOOL (Illustrated)	704
LIGHTING THE NUMBERS (Illustrated)	704

"THE AUTOCAR" SUBSCRIPTION RATES.

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Notes.

The Dust Problem.

No more valuable or instructive paper has ever been read before the Automobile Club, or, indeed, any body connected with automobilism, than that presented by Colonel Crompton and Mr. C. W. S. Crawley on the evening of the 26th ult. Although this most important question has not pressed quite so vividly upon public attention of late, there is no doubt whatever that it calls for the closest possible study. If automobilism is rapidly to live down the prejudice still so much in evidence against it, some steps must be taken to grapple with this matter, and those right early. In the past much has been said as to the good effect to be obtained by the

improvement in road surfaces, but it cannot be denied that very many years will probably elapse before dustless road surfaces become the rule. To put it briefly—and in this contention we are largely supported by the evidences of the Crompton-Crawley paper—the mitigation of the nuisance (for a nuisance, and a great nuisance, it undoubtedly is) must come from within. By that expression we would be understood to infer the matter of chassis design and body construction. The inferences drawn from the photographs of the dust trials by Colonel Crompton and his *confrère* but bear out suggestions we have from time to time advanced in these columns. Without reciting the points made by the authors of the paper in too great detail, we think it will be agreed that the dust trials showed that the dominating cause of dust-raising by automobiles is bottom hamper. By that we mean the projections, angular and cellular, made from the underside of the floor of the car by crank chambers, gear boxes, silencers, and tool chests.

To Mitigate the Dust Nuisance.

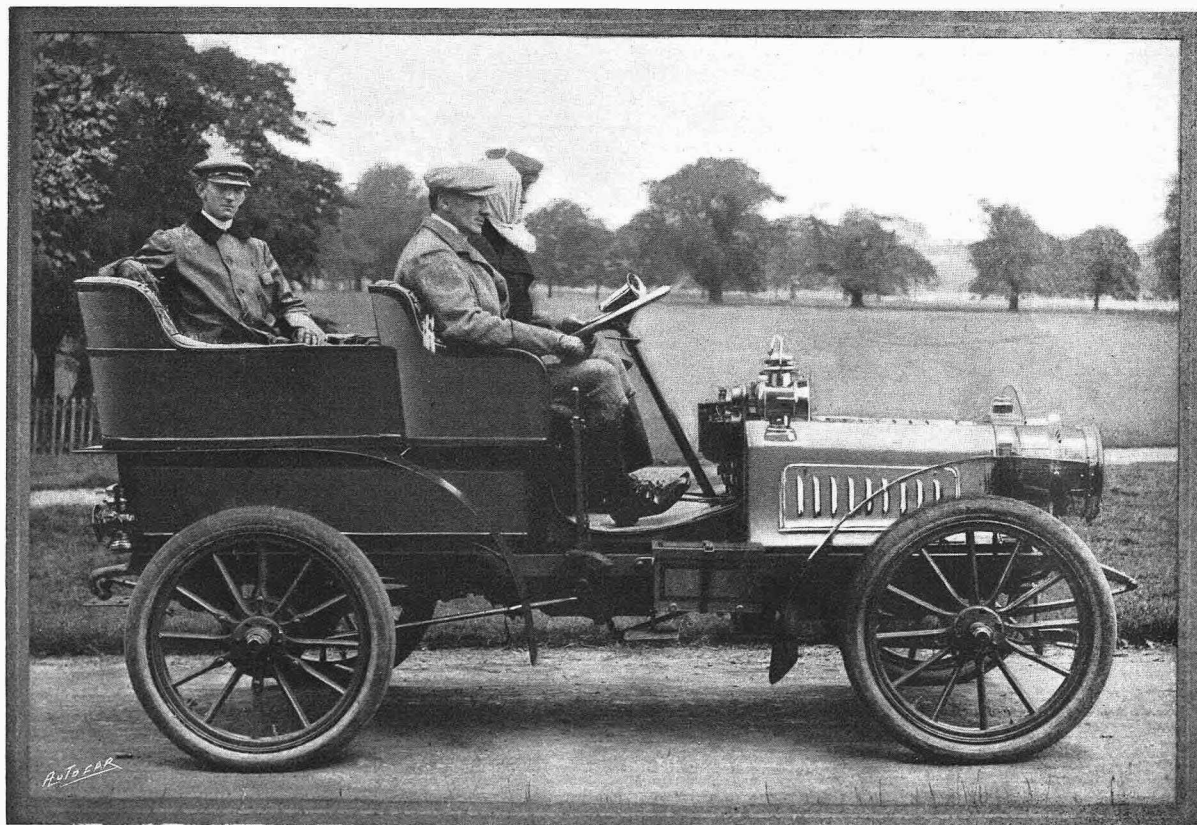
Although the experiments on the cycle track at the Crystal Palace in the autumn are said to require amplification by those most closely connected with them, the results appear sufficiently clear to show that in the future the dust nuisance may be very largely mitigated by attention to what is said in the paper under discussion with regard to the under-current of air, the shape of its entry and exit, and the absolute necessity for a clear run. Provided that these points, together with the effect of splayed and low-built mudguards to the front wheels, are taken into consideration, the results of the further experiments foreshadowed can be awaited before alterations in the design of the cross-sections of bodies need be contemplated. The excellent practice of protecting the engine, flywheel, and gear box from mud and wet by sheet metal casing suspended from the frame is now so general that no difficulty should be experienced in so shaping these protective casings that they may largely tend to afford the clear run, smaller entry, and larger exit for the under-current of air suggested by the authors of the paper under review. Of the truth of these deductions, we have lately had proof in connection with one of our cars. Simply to preserve the engine, flywheel, and gear box from flying mud and wet, we had a waterproofed canvas sheet slung from the frame, the effect of which was to reduce the area of entry for the under-current of air, and the canvas sheet sloping smoothly upwards and backwards gave very much the under run suggested by Colonel Crompton and Mr. Crawley. Beforetime, although we had always congratulated ourselves that this car raised much less dust than the majority, we were troubled with the fact that a cloud of some proportions did rise about thirty yards to the rear of the vehicle. Since the canvas screen was

fitted we have driven on two or three dusty days, and have been gratified to note that this cloud in the rear was nothing like so dense as formerly. As we have suggested, this goes far to bear out the findings of the trials, and the consideration of the effects of such a necessary protective covering should weigh with constructors who make a feature of fitting them in more lasting material. It seems to us that good effects might result if the metal casing were so formed beneath the chassis and mechanism as to make the cubical area available to the under air current of the shape suggested in the paper. In conclusion, we should like to add our appreciation to that expressed by those who listened to the paper, of the immense pains and care bestowed upon the conduct and record of the dust trials and the very able manner in which the results have been formulated.

Appreciative Registration.

Attention has not as yet been drawn to the fact that, while an automobilist who desires to drive his own car must take out his license from the County Council upon whose territory he resides—for which license he is required to pay the nominal sum of 5s.—no such obligation obtains in regard to the registration of his car. Both the Act of 1903 and the Local Government Board regulations drafted for its administration leave the car owner an absolute freedom of choice with regard to the County Council with whom he may register his car. This being so, it is hardly likely that automobilists, who,

after all, are only human, will scramble over one another to pour their registration fees into the coffers of—well, let us say, for example, the county councils of Huntingdonshire, Surrey, Sussex, Bucks, and such-like places, where constables have never ceased from annoying law-abiding motorists, or magistrates failed to show bias and prejudice. It is more than human to expect automobilists to swell the funds of these bodies when the infinitely more progressive and broad-minded administrations of such counties as those of London, Herts, Hants, Notts, and Kent will serve the purpose equally well. If automobilists will but to themselves be true and will spare a thought for what they and their kind have suffered at the hands of the councils, magistrates, and police of certain counties, the treasuries of such counties will remain bare of automobile registration fees. In order that information for the guidance of automobilists may be available, Mr. Rees Jeffreys has addressed a letter to the clerks of most of the administrative counties of England and Wales, in which he asks several questions bearing upon the subject. He not only asks whether the authorities permit the setting of police traps, but he also enquires as to the policy of the County Councils with regard to road maintenance and improvement generally. Autocarists, therefore, will be well advised to delay making application for the registration of their cars for a short time, until replies have been received from the County Councils. The substance of these replies will be published in due course.



Capt. B. da Corbet, late 1st Life Guards, on his 20 h.p. Talbot, accompanied by Mrs. Corbet. Capt. Corbet has driven several thousand miles, including two trips to the Highlands and back. He is extremely pleased with his car, particularly on account of the flexibility of the engine, which enables it to be driven up comparatively heavy gradients on the fourth speed.

USEFUL HINTS AND TIPS.

Self-starting Engines.

Nothing is more soothing to the owner of a car propelled by a four-cylinder motor than to be able to start it from rest by movement of the ignition lever only. Very few, if any, engines will thus perform every time, but the chances of their so doing are increased if just before they are stopped by switching off the current, the engine is raced for a second or two.

Returning to the Slow Speed Gear.

When one has run up to, and come to rest at a point at which it is desired to stop on top speed, a little difficulty will sometimes be found in returning the change speed lever to the neutral notch in the quadrant. The teeth of the toothed wheels on the sliding sleeve on the clutchshaft do not at the moment exactly coincide with the gaps in the toothed wheels on the gearshaft, and the wheels will not pass each other. Of course, the clutch can be let in slightly, which would alter their position with regard to each other, but not infrequently the teeth still foul. The depression of the brake pedal, however, and the consequent grip of the brake bands, or blocks, on the brake drum will, permitted by the slight play in the propeller-shaft, cause the gearshaft to move just enough to permit the passage of the wheels on the sliding sleeve through their fellows, and allow the neutral notch to be at once attained.

Take Nothing for Granted.

Nothing should be taken for granted in the lubrication of an automobile. Everything should be done to make the work of lubrication as easy as possible by having every convenience at hand. The plugs and cocks designed for the drawing off of the spent oil from crank cases should be carefully looked after to see that they cannot work loose while running. If an undue amount of oil drips from any particular point of the vehicle it may indicate either that the supply is excessive, that means for retaining it are not proper, or that the oil is too thin. Thick oil, on the whole, gives little trouble from working out of bearings, especially when everything is worn. The cleaning down of a car is a duty which no one having the instincts of a mechanic will shirk, as the dust which an excess of oil on the outside surfaces of the wearing parts is constantly collecting may prove very injurious to the mechanism.

To Protect the Engine and Gear Box.

Automobilists whose engines and gear boxes are so exposed as to collect dirt and mud from the road will be well advised to fix a protecting sheet underneath. The best method of affording such protection is obviously a sheet aluminium apron, which can be attached in many instances to the frame of the car. There are, of course, some objections to this form of protection, as in the event of one having to get at the lower part of the crank chamber or gear case for inspection or adjustment, it is necessary to remove the apron. This would entail the unbolting of this part, and thus add to the difficulties of the work in hand. We recently adopted on one of our cars an excellent method of affording

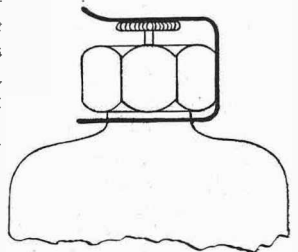
the necessary protection for the mechanism. This takes the form of a sheet of waterproof canvas, which is provided with straps and buckles for its ready attachment to the frame, and also with three eyelet holes at the lowest points, whereby any oil or water which may find its way on to the inside of the apron may drain away at once. So far, we are highly satisfied with the results obtained by the use of this very simple protecting device. On dry roads, also, when running at speed, it appears to us to have somewhat lessened the dust-raising effects.

Starting a Single-cylinder Engine.

In your "Useful Hints and Tips" (page 418) you mention the case of one of your correspondents having a fractured arm from back-firing. This is not an isolated case. I had through my hands recently a 9 h.p. Aster motor that had the reputation of a demon. It would back-fire from no apparent reason, and in the exaggerated language of the sufferers, had nearly killed four people before the car into which it was built had got out of the workshop, and was sold by the original purchaser for this reason. I also know of several cases in which 8 h.p. De Dion motors had injured those attempting to start them, but in all these cases, although the person suffering cannot always be brought to see it in this light, there is no doubt that carelessness in not setting levers right, or in pushing down instead of pulling up the starting handle, has been the cause. I have been a sufferer in this respect myself,

owing to trying to start with the sparking fully advanced, and in this case I was *pulling* the lever up when the explosion took place, the result being that my hand was nearly pulled out of the socket, and I carried my right arm in a sling for three months. This occurred about thirty miles from home, and I had to drive with the left hand. This led me to devise a very simple preventive—a sample of which I enclose, and which you are at liberty to illustrate if you wish. This goes under the head of the pin which fastens the inlet dome, and is set to suit an 8 h.p. De Dion, but can be set for any other type or size. The effect is, that the compression is eased just so much that the starting handle can be turned round and round quickly and easily, and usually results in the motor starting the first time round, when the "Easy starter" is taken off. I fitted this to the demon Aster with perfect results. It will be noticed that it is sufficiently flexible to act as a spring, which holds the inlet valve open, but which is overcome before *all* the compression is lost. If it loses all the compression it will not act, and can be pulled wider open with the fingers. If it does *not* allow of the handle being turned fairly freely at speed it requires slightly closing (it should be tested with the electricity cut off), but when once set it is stiff enough to remain so without any alteration.

C. H. GUEST (Draycott).



HOODS AND CANOPIES.

By A. J. Wilson.

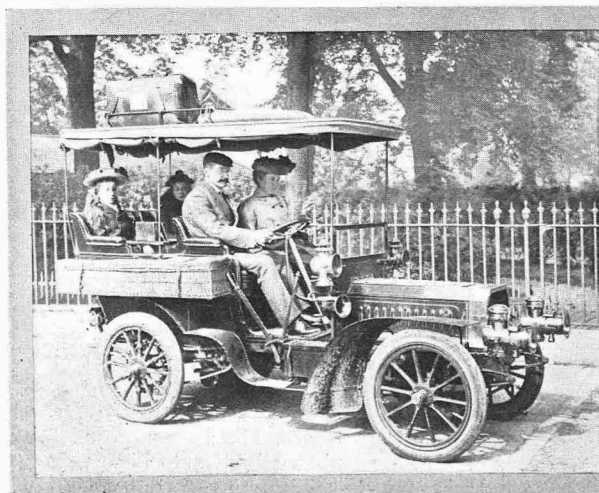
UNTIL ABOUT TWO YEARS AGO, WHEN THE KING SET THE FASHION OF USING COVERED OR PARTLY COVERED AUTOCARS, AUTOMOBILISTS SEEMED TO EVINCE A STRANGE APATHY REGARDING THE USE OF HOODS OR CANOPIES.

I cannot help thinking that the mania for exaggerated "motor clothing" is attributable to the unprotected state of the passengers in the ordinary motor car. The British and Irish climate is such that only the most robust people can safely endure motoring all the year round in a perfectly open vehicle; and even the robust find it necessary to muffle themselves up in garments of a ludicrously bulky character such as have made the typical motorist a fit butt for the pencil of the caricaturist; and even then a drive through the rain is an unpleasant experience to all but the most hardy protected by mackintosh coats and sou'-wester hats. Nay, even then the rain is liable to descend to the floor of the car, with consequent discomfort to the passengers' pedal extremities. I have been for many years an enthusiastic all-the-year-round cyclist, and glory in the single-handed management of a yacht in all weathers, so that I shall not be accused of sybaritic tendencies when I point out the advantages, and advocate the more widespread adoption of more adequate protection from the weather when motoring.

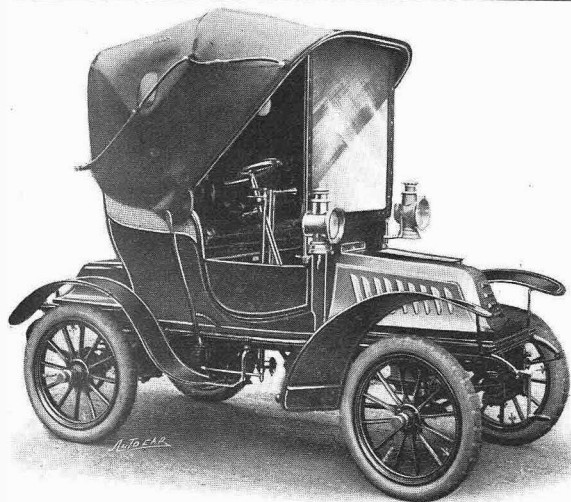
My first practical experience of driving a motor with a hood was a revelation. The primary impression conveyed by the appearance of a hooded motor car is that the hood must be practically no protection, because it can only act much in the same way as an umbrella carried slopingly over one shoulder when the rain beats from behind. Even at a moderate pace, it might be thought, not only would the rain drive in from in front of the hood, but the rush of cold air would also be felt by the driver and passengers to practically as great an extent as though there were no hood on the car. But upon the very first occasion when I raised the hood of my Swift voiturette I discovered that not only did it act as a very sensible protection from rain, but to

a much greater extent it kept out the cold air; even when travelling dead against a head wind the hood seems to drive the air before it and maintain the passengers in a sensibly higher temperature than when the hood is not raised. So that, whenever the weather is too cold for comfort, the raising of the hood has the effect of lessening the biting rush of air against the faces of the passengers, whilst at the same time they enjoy all its invigorating freshness. A precisely similar effect was experienced with a De Dion car, which had the additional advantage of a substantial solid leather apron fixed to the floor against the edge of the dashboard and with side flaps hanging down, affording such comfort that even in the coldest weather it was seldom necessary to use knee rugs. In heavy rain, however, the disadvantage of this form of apron is that the water runs down the leather and finds its way on to the footboard, where it accumulates and soaks through the boots. A better arrangement would be to fix a leather apron to the top of the dashboard, with a hole for the steering column to pass through, so that the rain would be forced to flow off in front of the dashboard and at the sides. For the coldest weather it might even be preferable to raise the apron so that it would cover the steering wheel completely, a strap on the end of the apron slinging it up round the driver's neck; thus the driver's arms as well as the steering wheel and the levers would be completely protected from the wet and cold.

For large cars by which I mean all cars with more than a single seat for two passengers—the hood is not so successful, but a canopy is preferable. I owe the fact that I have enjoyed the late exceptionally inclement summer with perfect comfort and freedom from colds to the circumstance that I had the forethought to have a very excellent canopy

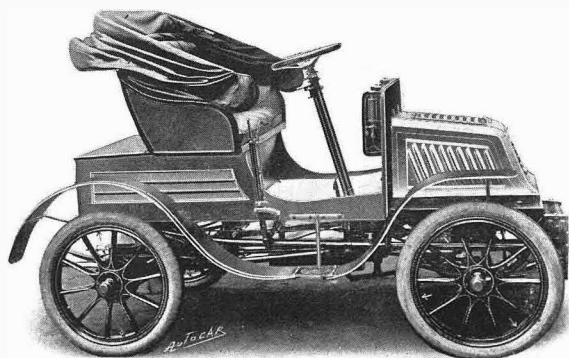


The author's Gladiator with curtains up and down.



De Dion Populaire with hood and glass panel raised.

fitted to my 12 h.p. Gladiator car, upon which I toured in Ireland for a month when it rained more or less nearly every day. The canopy, consisting of a flat roof supported on six vertical tubes, is never in the way, whatever the weather may be. In fine weather the passengers can enjoy to the utmost the rush through the air. When it is too cold and wet for comfort, the glass panel can be swung down from the roof in a moment and fixed in front of the driver, who can then discard goggles, and if it rains so heavily as to incommode the passengers in the tonneau, the waterproof curtains can be unrolled, from where they are strapped up along the edges of the roof, and fastened down to the sides of the tonneau, and if desired also to the rear. Under these circumstances the passengers in the tonneau are perfectly comfortable; they obtain as much pleasant fresh air as they want, and yet are never cold or wet. If the rain is driven heavily by the wind the driver and his companion on the front seat must don mackintoshes, because it would not be safe to close the sides of the car right up to the glass panel, although anyone desiring exceptional protection could have glass panels placed at the sides through which his view of the road would not be impeded. Even on the darkest nights I have very seldom found the rain obscure the glass panel to such an extent as to interfere with safe driving, although under exceptional circumstances, when traversing traffic-laden thoroughfares, I have sometimes deemed it expedient to raise the glass.



Swift car with hood down.



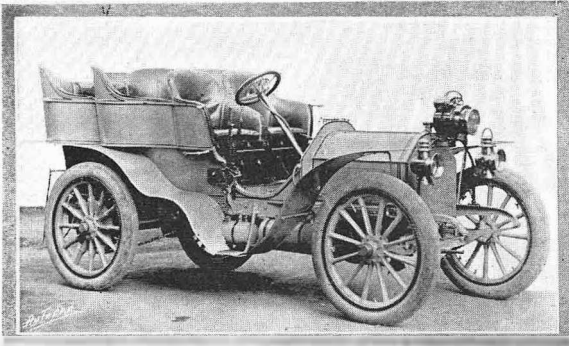
De Dion Populaire with hood down.

Even when it is not raining, but when the air merely gets more chilly than is altogether pleasant, the glass panel in front affords just sufficient protection to make the driving of the car with such a canopy most delightful, the absence of the curtains at the side and behind leaving the vehicle free for the circulation of air around both passengers and driver. One peculiar effect that becomes noticeable is that while the air does not rush at the driver's face from in front, the panel pushes the air forward in such a manner as to create a vortex of air on both sides, so that directly the panel is lowered the sensation felt is as though a following wind was blowing from the rear; the driver feels the wind blowing on the back of his neck even although he is travelling against a head wind. Incidentally, this sometimes produces a rather unpleasant sensation, inasmuch as the smell of the engine, instead of being carried away behind the car, is drawn upward by the vortex of air, and the driver is made uncomfortably conscious of any objectionable smell that may be proceeding from his exhaust; this is the only disadvantage that I have so far been able to discover.

In very hot weather the canopy gives the additional advantage of preventing the lady passengers becoming sunburnt.



Swift car with hood raised.

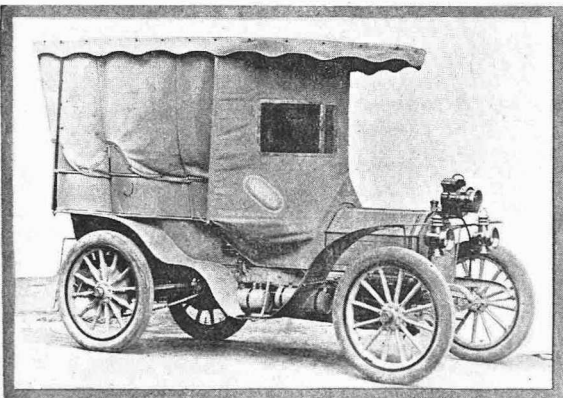


The German military car, with storm protectors removed.

The use of the hood is likely to be somewhat restricted so far as concerns the County of London, where, I understand, a byelaw is to come into force on the 1st of January next prohibiting the use of the dangerous "covered van," which every experienced driver must have realised to be a source of such grave risks in traffic; the London County Council have announced that they will prohibit the use of such vans as prevent the driver having a clear view to the sides as well as in front, and the hoods upon motor cars will undoubtedly be included in the prohibition. This will, however, not affect the use of canopies, so long as the side curtains do not extend so far forward as to impede the driver's vision. A similar bye-law is already in force in some few provincial towns, but I know of no such prohibition apart from urban districts.

One advantage of the canopy is that it protects the upholstery of the car from wet. I have on occasion been compelled to leave my car standing out in the open all night, with the curtains fastened down, the lamps taken inside, a waterproof sheet thrown over the wheel, and another over the bonnet; it has been free from the slightest trace of rust or tarnish from the downpouring rain in the morning.

It is a great thing to be able to draw down the curtains when picnicking. I have often pulled up by the roadside in a tremendous downpour of rain, got out the lunch basket, boiled the kettle, and enjoyed lunch or tea in perfect snugness, when, without a canopy, such *al fresco* meals would have been outside the range of practical politics.



The German military car showing front windows and the ample protection for the driver.

The canopy also gets over the luggage difficulty, provided it be made sufficiently strong to carry the weight. My Gladiator has an iron rail firmly screwed to the roof, surrounding a quadrangular space inside which four substantial kit bags were carried all over Ireland. The forepart of the canopy is furnished with screw eyes, to which spare tyres are lashed. Inside the canopy, other screw eyes are fixed, to which I hang calico bags made to fit straw hats, which are thus conveyed perfectly free from crushing, and protected from dust.

One disadvantage of the canopy was discovered during one of our earliest drives in Ireland, when we—unprepared for the eccentricities of the Irish highway—shot over one of the terribly sharp rises called culverts, with disastrous results to the ladies in the tonneau, who were catapulted from their seats with such violence as to strike their heads against the roof. The experience was so unpleasant as to make me very cautious throughout the remainder of my tour in the distressful country.



Napier car with cape cart hood.

A recently introduced hood of rather a taking design is that known as the Cape cart hood. Fitted to a big Napier car, it seems as effective as a canopy, with the exception that there is no glass panel in front. The hood, however, extends well forward of the dashboard, and is furnished with roll-up curtains. When the front straps are unbuckled, the whole arrangement swings back out of the way, like an ordinary hood. All such collapsable hoods have the advantage of keeping a lot of dust out of the car, even when they are out of use.

A German military car is made with a canopy giving complete protection to the occupants, there being a canvas front which completely closes in the whole interior from the dashboard. Two windows of mica are provided, through which the driver can see straight ahead; but the canvas front must intercept a clear view of the road ahead and aside.

Several cars have lately been on the road with an additional refinement in the form of a glass panel behind, which not only makes the tonneau pleasanter for its occupants, but enables the driver to see behind when he has occasion to drive backwards.

THE TRIAL OF EDISON'S ACCUMULATOR.

The more we are allowed to know about Edison's new invention—the iron and nickel storage battery—the more apparent it is that whoever is responsible for the notices which were given out when the battery was first invented did the inventor himself a serious injury. It is now over three years since at a meeting of the Institute of Mechanical Engineers, in the course of a discussion on a paper dealing with automobiles, it was pointed out that if the electrical accumulator was to be successfully applied to the driving of motor cars, new ground must be broken. Lead plates must be given up, and some other metal, such as steel or aluminium, substituted. It was also pointed out by the same speaker that the lead plate in the storage battery merely acted as a carrier, and as an electrode, for the active material, and that if some substance could be employed as a carrier which was lighter and stronger, and some other substance for the active material, which would not set up electro-chemical action with the carrier plate, a light and economical storage battery could be made. Whether the perusal of these remarks led Mr. Edison to the train of investigation which resulted in the two forms of storage battery that have since been brought forward under his name or not, he must have taken up the investigation at about that period, and he is entitled to the full credit for having broken new ground, and for having produced something totally different from anything that had preceded it. The credit due to him for this is substantial, and the results may in time become substantial commercially, but, like everything else new, it requires to be tested, and probably the very worst thing that can happen to a new invention is to be introduced with the flourish of trumpets with which this was, and above all for enthusiastic statements to be made in connection with it, unless they can be very fully substantiated. The recent automobile trial run on the Edison battery, reports of which have just arrived from America, show the invention to be satisfactorily progressing. For a new battery, the test came out fairly well. Everyone who has dabbled in inventions knows how very difficult it is to foresee everything that will happen when a new invention is tried practically.

The trial run was with a single-seated carriage specially converted from a tonneau for the occasion. As a four-seated car it had previously been worked by forty-four cells of a lead battery, and these were replaced by sixty-eight of the Edison cells, the weight, it is stated, being about the same. It is not quite clear if the space occupied were the same, but it rather looks as if the alteration of the carriage were to make room for additional cells. It will be remembered that the Edison accumulator has a much lower voltage than the lead cell, though it has hitherto been claimed that this was more than made up for by the additional current that could be taken from each cell. It will be noted also that the sixty-eight Edison cells were apparently put to drive a carriage with one passenger—the driver—while the forty-four lead cells had driven passengers as well as the driver.

The course was from Boston, Mass., to Worcester, thence to Springfield, Hartford, Newhaven, Bridge-

port, Stamford, and on to New York. The journey which totals, according to English maps, 225 miles, but which is stated to have measured 249½ miles on the cyclometer, took four whole days to complete. On only one day does more than forty miles appear to have been done. On the third day a stop for two hours was made at Hartford in the middle of the day, and a charge at forty amperes taken. The longest run appears to have been about six hours. Complaints are made in the report that the stations where charges were taken in were not adapted for the work, but it appears that the battery was put on charge at every available opportunity. After the first day's run of five and a quarter hours, from Boston to Worcester, a distance of forty miles according to the English maps, the battery was on charge from 4.45 p.m. till the next morning, and again in the morning, so that a start was not made on the second day till 12.30 p.m. The car seems to have negotiated several fairly steep hills, and to have behaved pretty well over the course generally, but it does not appear to have done anything that has not been very much exceeded on this side with the latest forms of lead batteries. The weight of the accumulators is not given, nor their capacity in ampère hours, so that it is difficult to form any opinion as to their behaviour in comparison with lead batteries of similar weight and capacity, but we may say that so far nothing startling has been done. The Edison invention may enter the field with other accumulators. It may or may not be able to hold its own with those already in the market when the rough test of continuous work is applied to it, but there is at present nothing to make shareholders in lead accumulator companies uneasy. There is also another troublesome question that will have to be faced when the question of whether the battery is really a practical one or not has been settled, and that is the cost of materials. Inventions have more than once been wrecked by the difficulty of obtaining the materials with which they were to be constructed.



A HANDSOME DELIVERY VAN. One of the smartest looking delivery vans we have seen is that which has just been completed for Messrs. Liberty & Co., of Regent Street. It is a standard pattern 10 h.p. White steam chassis, fitted with a special top. The facility of the machine for stopping and restarting continually throughout the day will make it particularly suitable for its work, and it will undoubtedly have a good effect upon other up-to-date firms to see that so celebrated a house as Liberty's has taken up the motor for business purposes.

THE GOLIATH MAGNETIC CLUTCH.

The Goliath magnetic clutch, which is now a feature of the well-known Pipe cars, is a particularly interesting and ingenious device by which an electric current is made to serve delicately and effectively as the slightly or powerfully gripping agent between the driving and driven portions of this mechanical arrangement for the transmission of engine drive to the gearshafts of an automobile.

The Goliath clutch is formed in three parts, which are distinguished clearly in the accompanying plan and vertical section by the letters, A the flywheel, B the driving disc, and C the clutch plate.

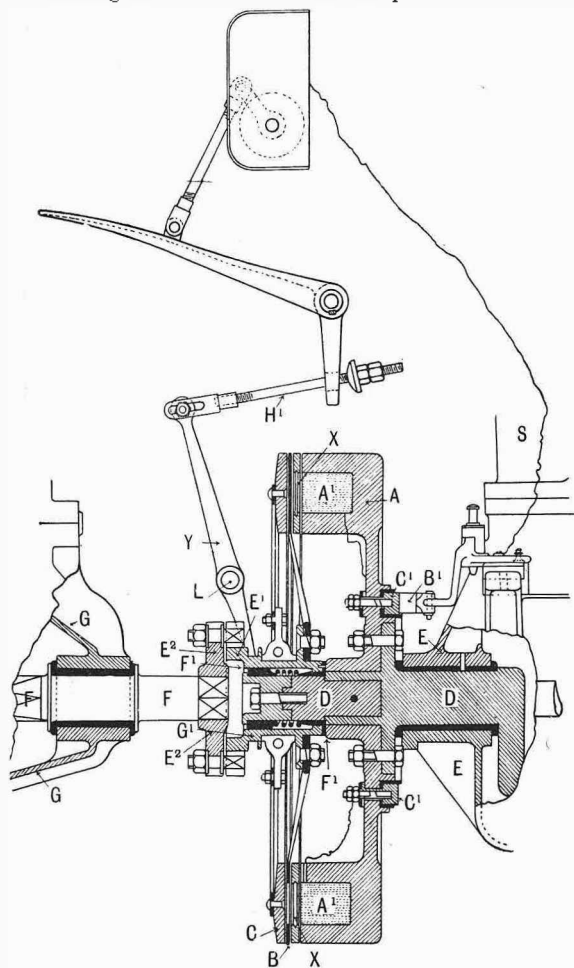


Fig. 1.—Sectional elevation of the Goliath clutch.

- | | |
|--|---|
| A, flywheel | F F, gearshaft |
| A¹ A¹, induction coil within fly-wheel | F¹ F², bearings carrying sleeve E² E² |
| B, driving disc | G G, gear-box |
| B¹, brush (insulated) | G², clutch fork |
| C, clutch plate | H¹, clutch link rod |
| C¹ C¹, collecting ring | I¹, clutch fork spindle |
| D D, crankshaft | R, resistance-box |
| E E, crank chamber | S, cylinder |
| E¹ E¹, universal joint, rear portion | X X¹, depressions in driving disc fitted with anti-friction metal |
| E² E², universal joint sleeve, front portion | Y, clutch lever |

The steel flywheel A, which, as shown in the section, is bolted to a flange, forming part of the rear end of the crankshaft, where it issues from the crank chamber, contains within its inner and outer

flanges a winding of insulated wire forming an induction coil A¹ suitable for the duty it has to perform. A low tension current is served to the insulated winding of this coil, either from accumulators, from a magneto, or from both. The current passes to the coil within and solid with the flywheel by means of the brush B¹ connected to the positive pole of the accumulators or magneto, but otherwise insulated. This brush is in contact with the collector C carried on the forward face of, but insulated from, the flywheel A. This collector is connected to the primary winding of the coil by the wires shown in the section. The current after having passed through the windings of the coil earths to the mass of the flywheel itself by a suitably placed and attached wire. Thus the circuit of the current is completed.

The second part of the whole device consists of a steel disc B of very light construction, which is bolted to the sleeve of the forward portion of the universal joint E¹ introduced between the flywheel and the clutchshaft, and connecting these two together when the clutch is in drive. This sleeve E¹ is free on the rear end of the engineshaft, where it projects through it, running on the gun-metal bearings F¹ F¹ shown solid in the section. This sleeve is thrust towards the flywheel by a coiled spring seen in section between the bearings F¹ F¹.

The third part consists of a steel armed ring C bolted to the inner ends of its arms to a radial brass boss running loose on the universal joint sleeve E¹.

As already suggested, when unclutching—that is, when the electric circuit is broken—the driving

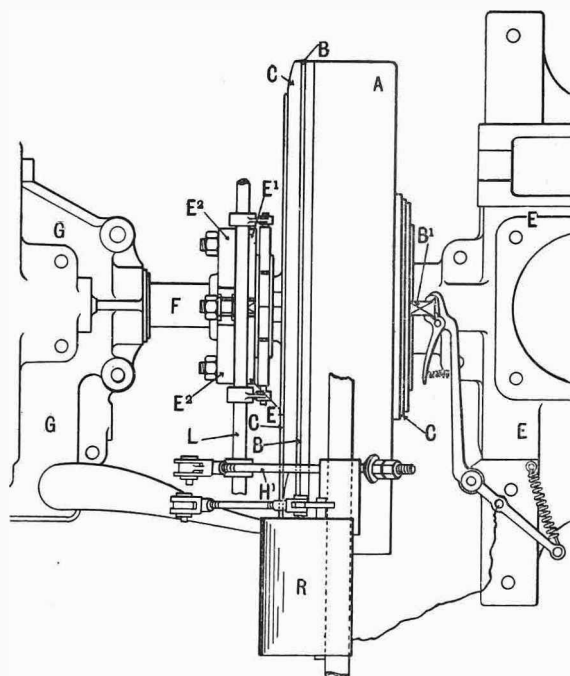


Fig. 2.—Plan of the Goliath clutch. See reference letters to fig. 1.

disc and the clutch plate are quite independent of the flywheel. We have already pointed out that the driving disc B is of very light construction, so that when free of the flywheel the rotative impulse thereof

is reduced to a minimum, and the changing of speed is made sweetly and without noise.

The act of clutching and declutching is very simply performed with the Goliath clutch. When the driver desires to declutch, he gently releases the pedal, which immediately rises and successively throws into the electric circuit a series of resistances in a resistance box. The successive cutting out or in of these resistances permits a proportional ampérage of the electric current to pass through the coil within the flywheel. The magnetic force so engendered in the coil is proportionately affected. The light driving disc B and the clutch plate or stiffening ring C are attracted and held to the flywheel with an attraction whose intensity varies as the resistances above-mentioned are cut in or out by the downward or upward movement of the clutch pedal. When the last remaining resistance is cut out, the driving disc B and the clutch plate C are attracted and held absolutely fast, by the magnetic force produced in the coil, to the flywheel, and the whole runs solidly together. The driving disc C has depressions X X formed upon its forward face, which are filled in with anti-friction metal to prevent heating when, by reducing the strength of the current passing to the coil, slip is permitted between the

surfaces of the flywheel A and the driving disc B while in contact. When wholly declutching, the pedal is pressed down to the point of throwing in the last resistance, and by means of the link rod H¹ and the forked lever G¹ moving on its spindle L the sleeve E¹ is drawn backwards against the spring and the driving disc B removed from all contact with the rear face of the flywheel A.

It is claimed for this device that the very light construction of the driving disc and clutch plate permits the gears of the car to be changed without putting any stress upon the teeth of the gear wheels, which consequently receive no damage when slid into mesh the one with the other. That this was so was demonstrated to us some time back in the summer, when we experimented upon the Ripley Road with a car so fitted. The ordinary ignition accumulators suffice for the service of current to the coil at the moment of starting the engine, after which these are switched out and the magneto driven by the engine comes into operation. If it is found necessary at any time to increase the magnetic attraction, the accumulators can be switched in to the aid of the magneto for as long as is required, or, should the magneto become inoperative from any cause, the accumulators carried on the car may be resorted to.

MECHANICALLY OPERATED VERSUS AUTOMATIC VALVES.

The mechanically operated inlet valve has been subjected to severe criticism at the hands of not a few manufacturers who are not desirous of altering their methods of construction, as well as by those whose experiments with it have ended in failure. I therefore propose within the limits of a brief article to weigh, in a perfectly impartial spirit, the pros and cons of the automatic valve in its most perfect form as compared with its rival the mechanically operated valve.

The atmospheric valve is certainly the simpler, whilst being cheaper to manufacture, and, be it mentioned, particularly favourable to efficient carburation; but, on the other hand, it opens after a certain definite pressure has been reached, and is slack in closing. It also possesses the objectionable propensity of sticking, and, moreover, depends on the perfect adjustment of the spring. In a multi-cylinder motor this adjustment of the spring should be identical in each cylinder, for if the tension of the spring prove insufficient, the valve will obviously not close rapidly enough (thus permitting the gases to escape on the compression stroke), subsequently being forced violently against its seat, with an attendant risk of damage. If, however, the tension of the spring be too great, it resists the inrush of mixture, and, consequently, impairs the power of the motor. So considerable is the effect of the tension on the spring that certain constructors have in the past profitably turned it to advantage for governing the engine (Darracq). Moreover, the inertia of the valve becomes more pronounced as the speed of the motor increases, to the detriment of the volume of the intake, whilst the metallic noise of the valve is particularly objectionable.

Let us now examine why the automatic valve lends itself particularly to efficient carburation.

The valve leaves its seat as soon as the vacuum in the cylinder exceeds the tension of the spring; its lift is, consequently, sudden, permitting a considerable inrush of mixture, when after closing it repeats this operation several times in rapid succession during the suction stroke. The demand on the carburettor is, therefore, pulsative, or intermittent, but the speed of the mixture emitted from the carburettor is always relatively high.

The mechanically operated valve, on the other hand, only permits of a more protracted intake of mixture, the flow of which is for the time continuous, and, consequently, the demands on the carburettor are more exhausting, rendering the question of satisfactory carburation far more difficult of solution.

This would perhaps explain the reason why certain manufacturers who have failed to obtain satisfactory results with the mechanically operated valve have had to abandon it in despair, whilst others have in obedience to the popular demand supplied it commercially, whilst still winning races with the old system of automatic valve.

From the above explanation it will be fair to infer that the mechanically operated valve is excellent in operation, provided its demands are satiated by a carburettor adapted to its peculiar needs; the power developed is directly proportionate to the speed of the motor; it is precise in operation, seeing that it opens and closes at the psychological moments; it can be made interchangeable with the exhaust valve; it does not stick; it is stronger weight for weight; and the trivial mechanical complication which it entails (since it is merely a repetition of the construction necessary for the exhaust) is after all scarcely worthy of mention.

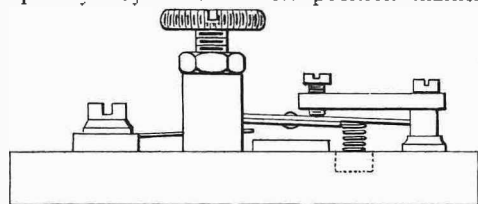
HENRI WALCKER.

A NEW TREMBLER, SPARKING PLUG, AND MAGNETO.

In their latest coils Messrs. Bassée and Michel employ a new magnetic trembler which is stated to be faster than anything else of this description yet produced. The trembler itself is extremely simple, as will be seen on reference to the elevation and plan given herewith. These show the trembler proper to be supported at one end on a pillar, while at the opposite end it carries the platinum point, making contact with an adjustable screw. This is provided with the usual soft iron disc (seen better in the plan) which comes opposite the core of the coil. Immediately in the rear of this is a light coil spring, while above it is an adjustable stop limiting the extent of the coiled spring's action in addition to that provided by the platinum points themselves. When contact is made and the core of the coil becomes magnetised, the trembler blade approaches the core, and in so doing rests upon a light spring attached to a bridge directly opposite that which carries the trembler blade. Directly the current is broken this light spring accelerates the end of the trembler, causing it to vibrate rapidly on the points before the core is again magnetised.

In the Bassée plug the metal in the body is very considerably reduced, while the porcelain is correspondingly enlarged. The latter is secured to the body by means of asbestos packing and a locking ring, which is sunk into the body of the plug. The sparking points themselves are different from anything seen in any other plug, inasmuch as the extremities of the wires do not approach each other, the spark jumping the gap from one side of the wire to the other, the wires presenting the appearance of the sign +.

Another good feature of the plug is the very large contact surface allowed for the connection of the high tension wire. In addition to this there is an adjustable sparking gap, which may or may not be employed as desired. This sparking gap is easily and quickly adjusted, and its position maintained

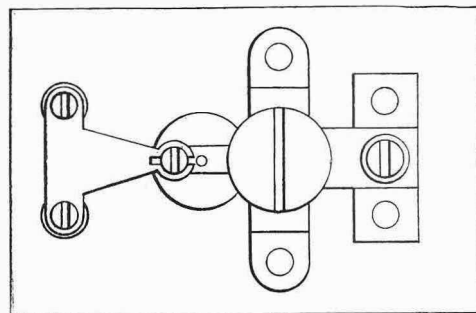


Elevation of the new B. and M. Trembler.

by a small lock-nut. This also forms a ready means of putting the plug out of action for the testing of the sparking of any particular cylinder to which the plug may be fitted.

The Nilmelior magneto gives a direct current at a high tension, and may be directly connected to ordinary sparking plugs, such as are used with induction coils. The magneto has three circuits—(1) inductor circuit composed of magnets, (2) armature circuit, (3) high tension induced circuit, this being obtained through the agency of a coil. The advance and retard of the ignition is obtained by the turning of the entire magneto upon its supporting collars. The magneto can be supplied with different attachments to enable it to be placed either on the dashboard, the mudguard, or, better still, on the frame.

The machine should work at the same speed as the motor, and the transmission may be either with a chain or by gearing. The lubrication of the magneto is accomplished by supplying oil to the bushes, but there must not be too much in the bearings. In order to avoid this an exact measure is given with the magneto. This measure of oil is to be put into the bearings of the high tension distributor side,

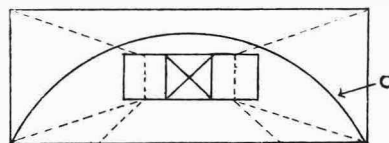
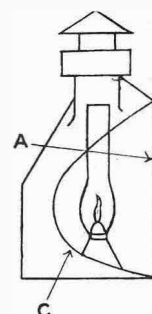


Plan of the new B. and M. Trembler

but only half a measure in the opposite side. This quantity of oil should suffice for about fifteen days, if the magneto should be required to work daily. Before putting in fresh oil the old oil must be emptied out by the waste hole.

These new features are shown by the United Motor Industries, Ltd., of 45, Great Marlborough Street, London, W., who are the sole British agents for Messrs. Bassée and Michel.

Last week we mentioned that the Passe-Partout had found a home in Wales, having been bought by Mr. B. Harris from Messrs. Friswell. Messrs. F. F. Wellington, Ltd., now write stating that we were in error, and that they bought the machine from Messrs. Friswell and sold it to Dr. Rutherford Harris, of Llangibby Castle, Mon.



THE ILLUMINATION OF NUMBERS. The above design for an illuminated numbered rear light has been sent us by a correspondent. An oil lamp is employed to give the necessary light. A is an opal glass front upon which the letters and figures are painted. B is a sheet steel body, and C the reflector.

THE DUNLOP CARBURETTER.

The Dunlop carburetter has often been mentioned in these pages, and a description was promised some months ago. This description, however, has been delayed for some time, owing to foreign patents pending, but, these having been obtained, we are now in a position to explain and illustrate the carburetter, which, whilst claiming to be perfectly automatic, at the same time claims to dispense with any moving parts or springs to obtain its automatic action. How far these statements are

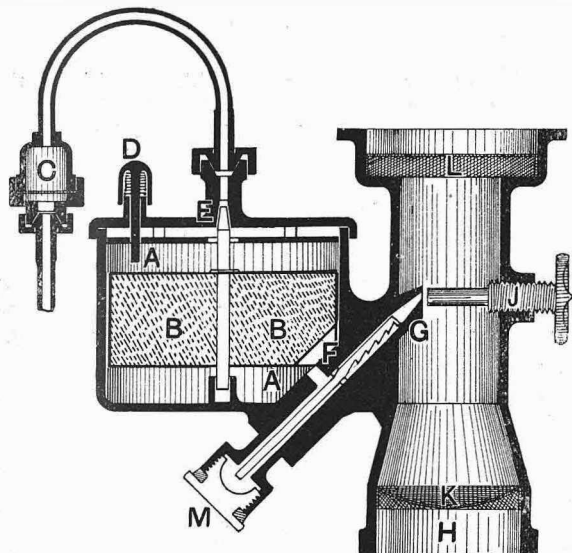


Fig. 1.—Sectional elevation of the Dunlop carburetter.

- | | |
|-------------------------|------------------------------|
| A A, float feed chamber | G, petrol nozzle |
| B B, cork float | H, air intake |
| C, petrol strainer | J, screw to adjust spray |
| D, float depressor | K and L, wire gauze screens |
| E, float feed valve | M, cap covering petrol spray |
| F, petrol passage | jet |

carried out the reader can decide for himself after perusing the description and examining the illustrations.

Fig. 1 is a sectional elevation of the carburetter, in which A A is the float chamber feed from the top by the curved pipe connected centrally to the float chamber cover. C is a filter box, containing a fine gauze partition, which arrests foreign matter should there be any in the petrol. This gauge can be removed when necessary by unscrewing the bottom of the filter box. E is the needle valve seat formed in the float chamber lid. This lid is made double, one part fitting down over the edges of the float chamber and the other entering it, there being short distance pieces between the two. This false lid is fitted to prevent waste of petrol when flooding the carburetter. B B is a cork float carrying the needle valve, which is simply passed through it centrally, the lower end of the needle working in a small boss on the bottom of the float chamber, which keeps it perfectly central, and prevents the float from binding against the walls of the chamber. D is the flooding plunger. The movable cap is made to fit down over the boss, this design being adopted so that it is impossible for any water to enter the float chamber. The spraying chamber of the carburetter, if, indeed, it may be so called, is just a

straight pipe, forming an extension of the induction pipe of the engine. The petrol enters this tube through a nozzle G, which communicates with the float chamber by an inclined hole F. The cork float is cut away to clear the metal about F, so that there is a free passage for the petrol. The diagonal tube, one end of which forms the petrol outlet, terminates in an internally screwed stuffing box, and here the run off plug M is located, a petrol tight joint being obtained by leather washers. Exactly opposite the petrol orifice there is a flat-ended screw J, having a milled head. This screw is horizontal, and is capable of being brought into contact with the nozzle G, the face of which is cut diagonally, so as to coincide with the flat end of the adjustment screw J. Normally, the screw is a certain small distance away from the face of the nozzle, this distance altering with each separate motor. The nozzle is set centrally in a straight tube, but above and below this tube widens out as seen in the illustration. Below G this expansion in the diameter takes a gradual conical formation, afterwards continuing as a parallel tube; above, the increase in diameter is sudden, coming to the greater diameter immediately. Below the nozzle and at the point of greatest diameter of the coned position of the pipe there is a wire gauze partition K, and this gauze is slightly dished as seen. Above the nozzle and just above the end of the pipe containing the nozzle, there is a second gauze partition L, which is perfectly flat. The action of these gauzes we will explain shortly.

Having thus followed the construction of the actual carburetter we must pass on to the automatic portion of it. This can be seen lying in the diagonal tube between the petrol orifice and the plug M, and is called the wire. It is simply a piece of metal wire having a series of saw-like teeth cut deeply into it on one side. It can be seen more plainly in fig. 2, and the formation of the teeth is exactly as shown. This wire is just sufficiently bent to hold itself in position when pressed up the tube between the float chamber and the air pipe. The



Fig. 2.—Enlarged diagram of the Dunlop wire.

centre collar is cut away as shown to the right of the figure to permit the free flow of petrol. The plain extension beyond the collar is only for purposes of removal if necessary.

An examination of fig. 1 will make the exact disposition of the wire perfectly plain.

The proportions of fuel and air being required to remain constant at all times in a perfect mixture, no matter how much of that mixture is being supplied by the carburetter, they must also remain constant at all speeds. That is to say, supposing the speed of an engine to be doubled, and the amount of air drawn through the carburetter in a given time to be also doubled, the amount of petrol that is sucked through the jet is more than doubled, thus rendering the mixture faulty, as instanced by an increase of power if the air supply be opened to rectify the defect in the

mixture. Mr. Dunlop discovered that the action of the saw-like teeth on the wire corrects this tendency on the part of the engine to suck up too much fuel. If the reader studies the shape of the wire and its teeth and considers the effect of a stream of any fluid projected against them he will probably be able to grasp the idea of its action. The act of impinging on, and in the scope of the saw-like teeth causes the stream to be doubled back on itself as it were, and so obstruct the flow of the liquid behind it, with the effect that the resultant flow is not so rapid as that from a nozzle without a wire.

Thus with an increase of speed of the engine from any cause, or *vice versa*, there is an alteration of pressure in the air entering at H, and a corresponding amount of petrol is sucked through G, but owing to the action of the wire in the nozzle the violence of the suction is so tempered that only the exact quantity of petrol required to produce a perfect mixture is emitted. The more violent the suction the greater the retarding effect of the saw-like teeth, whilst at slower speeds, there being a less powerful suction, its delivery is greater. Hence, without a moving part, wear, or springs, a perfectly automatic action is obtained by a practically indestructible device. To put the matter in a nutshell, the automatic properties of the carburetter

are due simply and solely to the eddy currents in the stream of petrol caused by the interruptions by the serrated wire. This is the whole secret of the Dunlop carburetter. The petrol issuing at G strikes against J, which, by the way, is the sole adjustment, and part of it falls on the gauze J, part is carried on to the gauze I, direct, and the rest is scattered on to the walls of the pipes, whence it travels to one or other of the gauzes, but whichever it goes to the formation of either is such that it instantly presents the maximum amount of surface to the intruding air and is instantaneously vaporised.

To obtain the best results with any petrol, the pipe H is connected up to a hood, or sleeve, completely surrounding the exhaust pipe.

The carburetter is remarkably sensitive, the slightest alteration in the throttle being instantaneously responded to by the engine—a point that will be fully appreciated by those who at present first alter the position of the throttle lever and then manipulate the air lever to suit the throttle adjustment, or, which is more common on small cars and cycles, drive on the spark advance.

Many months have been spent in careful experiment by the inventor before he decided that the device had reached a stage making it suitable for general use.

INTERESTING EXPERIMENTS WITH MOTOR SPIRIT.

Some time since a quantity of motor spirit was forwarded to us by the British Refined Motor Spirit Co., of Silverthorne Lane, St. Phillip's, Bristol, for test, the senders claiming that it was much more economical and powerful than the petrol of a density of, say, .700 in general use. We were informed that excellent results had been obtained by the refiners when using it with a 12-16 h.p. Talbot car, and as we possess an identical vehicle we were able to put our correspondent's claims to proof on our own car. Our first tests were carried out in company with Mr. A. Boon, in Richmond Park, two runs being made with a quart each of Pratt's A motor spirit and two with the same quantity of the oil supplied by the British Refined Motor Spirit Co. The mileages were as follow:

1st run.	One quart Pratt's A. ...	4.37 miles.
2nd run.	One quart B.R.M.S. ...	5.85 ..
3rd run.	One quart Pratt's A. ...	4.85 ..
4th run.	One quart B.R.M.S. ...	5.62 ..

The afternoon was well advanced by the time the third and fourth runs were made, and a considerable amount of traffic was encountered, which would account in part for the shorter distance covered on the fourth trip.

A few days later we made a further test, and this time Mr. Basil Joy, the technical secretary of the A.C.G.B. and L., was good enough to accompany us, and carefully check measurements and distances. On this occasion the route followed was the full circuit of the Park, the roads being in good condition, but the atmosphere very damp, cold, and foggy. Two runs were made, each upon a gallon of the two spirits, and upon the distances being carefully computed they worked out as follow:

1st trip.	One gallon Pratt's A. ...	17.2 miles.
2nd trip.	One gallon B.R.M.S. ...	20.3 ..

If the average distances of the quart trials are taken and multiplied by 4, it will be seen that they fully endorse the proportions of the gallon trials, as they work out at 18.44 and 22.94 miles respectively. We should say that in none of the trials did we drive for consumption, the engine being run clutched on all descents.

So far as the claim for the increased power to be obtained by the use of the British spirit, we cannot say that this was evident on our Talbot; indeed, upon ascending the Star and Garter and the Kingston Gate Hill on each occasion, we found we had to change speed some yards sooner with the British spirit than with the Pratt's A. The engine started and ran perfectly with both spirits, but upon removing the sparking plugs later we noticed a heavier deposit of carbon upon them than we had observed before. So far as we were able to test the British spirit for density with the densimeter ordinarily supplied to automobilists, the specific gravity of the British spirit seemed to exceed .750, but as our instrument was only marked to .725 we cannot be exact. We are making some further tests, and are also having an analysis made of the new spirit to learn whether it contains anything likely to prove injurious to valves or valve seatings.

Lieut.-Col. Mark Mayhew, commanding the Motor Volunteer Corps, will preside at the annual dinner of the Putney A.C. to-day (Saturday, December 5th). Any automobilist who cares to join in the function will, we are told, be most welcome. Dinner is announced at 6.30 for 7 p.m., and an excellent concert has been arranged to follow, at which several leading London artistes will assist. The venue is the Villa Restaurant, Gerrard Street, Shaftesbury Avenue, W.

CONTINENTAL NOTES AND NEWS.

Influence of Racing on Trade.

The efforts being made in France to revive racing are justified by the plea that they are necessary for the development of the autocar. This is no doubt true to a large extent, but we must look to something else to explain the active propaganda which is just now being carried on in favour of automobile racing. While long-distance speed contests have done a great deal in the way of improving the autocar, they have done still more in bringing business to manufacturers. Each race has seen new constructional methods tested and perfected, and it has also resulted in the placing of orders which have kept the successful makers fully employed all the year round. Racing has been the vital force of the industry, by stimulating an ever-increasing demand for the best and fastest cars, and this demand was only maintained so long as owners were able to drive them in races, and make the most of their costly purchases. At the time when speed contests were suppressed, the leading makers were well content to accept the situation, in the belief that the automobile movement had received such a good start that henceforth it would gather momentum without artificial aid, and that orders would continue to come forward without makers being obliged to seek them by building costly experimental racing cars. Unfortunately, the suppression of racing also suppressed the patronage of a class of wealthy buyers who had taken up automobilism for the sake of the sport. They did not abandon the autocar, of course, for there is probably no instance of a man giving up the pastime once he has enjoyed its charms, unless he is forced to do so; but, having little further use for speed cars, they no longer spent huge sums of money upon the purchase of racing machines, and contented themselves with vehicles which were more suitable for touring. This change was also accentuated by the speed restrictions and police persecutions, so that, while automobilists found themselves running risks of imprisonment for paltry offences, which may not have been offences at all except in the eyes of a policeman on the look-out for a case, others deemed it wiser to forego these risks by not taking to automobilism at all. Thus the movement was receiving a serious check as the result of repressive regulations at a moment when a considerable amount of capital had been sunk in new factories, and plants were being extended in all directions to keep pace with the demand which had been growing so rapidly so long as races were authorised.

An Over Production of Cars.

Probably few foreigners have any idea of the extent to which the industry has been developing in France. Last year there were seventy makers of complete chassis, turning out 15,000 vehicles. During the present year this number has been enormously increased, and for the first time it has been found impossible to provide room for them all in the Grand Palais. It is clear that if all these makers are to do a profitable business, there must be a rapid increase of demand. But this increase is limited by the cost of the vehicle. In France there

is only a comparatively small class who are able, or willing, to pay high prices for thoroughly reliable cars capable of carrying a fair load; or, rather, we should say that, while this class could undoubtedly take all the high-priced cars that are being turned out at the present time, the Gallic buyer is not usually disposed to go in for expensive luxuries unless he has a special inducement to do so. At one time he made a good investment by buying cars and disposing of them, after they had won a race or otherwise distinguished themselves, at more than he gave for them. But nowadays wealthy foreigners will not buy second-hand cars on the strength of their past performances when they can get new ones for the same price. Of course, it cannot be supposed that there will be an unlimited demand for high-class cars so long as they cost so much to make as they do at present, unless owners have special facilities for using them. Consequently the majority of makers have tried to cater for a much larger and almost unlimited class of buyers of moderate means, by turning out cheap cars, which are built by the hundred, when the cost of production is reduced to the lowest possible figure. They have put into practice the principle of turning out small vehicles in series, as they would bicycles or any other light mechanism. The results obtained by one or two firms show that with sound engineering experience this method may be successful; but others have done nothing like so well, and the cheap light carriage or voiturette is not always characterised by the very necessary quality of reliability. On the one hand, therefore, we have high-class cars that no doubt would find plenty of buyers if only people had special inducements to use them, and, on the other, a huge number of cheap cars and voiturettes, of which a large proportion are unsaleable because they are not suited to the needs of the tourist. In a word, there is a great over-production all round. Finding they are unable to dispose of all these vehicles on the home market, makers have been giving special attention to the export trade, which has grown at a phenomenal rate during the past two years, and as the value of autocars sent abroad during the first ten months of the year totalled nearly 44,000,000 francs, it is certain that the exports for 1903 will exceed £2,000,000. It is obvious that makers cannot depend entirely upon the foreign trade for the disposal of their vehicles, and, therefore, they are agitating for a return to the old condition of things as regards racing, and to a liberal legislation concerning automobile traffic, in the hope that, while races will revive the sporting instincts of the public and once more stimulate a demand for high-priced cars, the removal of all restrictions to speed will induce the public to take an increasingly practical interest in the automobile.

Reforms in the Interests of Trade.

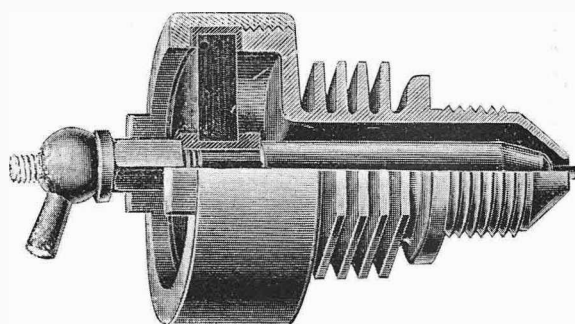
It is significant that the Extra-Parliamentary Commission, which is composed of representatives of all classes of the community, is taking in hand the cause of the manufacturer with a vigour that could scarcely have been suspected at the time this body was constituted by the Prime Minister. They see

that the construction of autocars is a great industry which, in view of the phenomenal character of its development, is destined to become one of the chief resources of the country, and all the representatives on the Commission consider that everything should be done to encourage this promising industry by removing restrictions that have done so much harm to automobilism during the past few months. The reports of the various committees, recommending almost absolute liberty and strongly advocating speed tests, would have been received with astonishment not so long ago. Now they are accepted as a perfectly logical result of the changed conditions of the industry. We have already summarised the report of M. Coutant, the Socialist deputy, in favour of a higher limit of speed and the sanction of racing. The same subject is now dealt with by M. Bourcier de Saint-Chaffray, who makes another plea in favour of racing on the strength of the technical results obtained in the past, but he would like to see races carried out under such conditions that they will tend to the development of the touring car instead of resulting in the creation of purely racing machines. For this reason the chassis should provide room for four persons, and as a test of solidity the full load should be carried when racing. The power of the engines should be limited by adopting a formula which takes into account the bore, stroke, and number of revolutions a minute. As a means of diminishing wind resistance the seats of racing machines are made as low as possible; in future races the author of the report would like to see them as high as they are in touring cars. In a word, the racing machine will have to conform as far as possible to the design and structural features of the touring carriage. The author also suggests methods of organisation which are obviously based upon the experience of the Irish meeting. The question of speed is also dealt with in the report of M. Henry Depasse-Dary, who, after explaining how it is that speed itself is not a cause of danger, since accidents are due to obstacles and obstructions which can be avoided by expert drivers, recommends that there should be no limitation of speed whatever, but seeing that everything depends upon the ability of the conductor he suggests that three classes of certificates should be issued to drivers—one authorising them to drive vehicles capable of travelling up to forty kilometres an hour, another for drivers of cars running up to sixty kilometres an hour, while the third will be for drivers of vehicles exceeding this limit, the last certificate only to be granted after the conductor has passed through the previous two stages and has been subjected to a thorough test of skill and a medical examination. Naturally, these certificates would be withdrawn in the event of the driver causing an accident, the suspension being temporary or permanent as may be deemed advisable. The author of the report also suggests the creation of a permanent automobile commission, which will examine the rules and regulations and all matters affecting autocar traffic. He further states that it is necessary to authorise races "with the consent and under the control of the proposed permanent automobile commission." If unlimited speed is to be allowed, it follows that every precaution should be taken to ensure the identity of drivers who may cause accidents, and for

this reason MM. F. M. Richard and C. Walckenaer, who report upon the question as to whether it is advisable to retain the system of numbering cars, urge that the numbers should be maintained; but they suggest the carrying out of certain modifications to avoid the mistakes which have been so prolific in the past. Instead of there being a number for each car, the owner will have a number which will be the same for all the vehicles he may have in his possession, and this number will be repeated on a card giving his complete identity; so that whoever drives the car, whether the mechanic or a friend, must have the card on him to show whenever called upon to do so. Thus the responsibility for accidents is fixed upon the owner. If he disposes of a vehicle he removes the number, which has then to bear the number of its new owner. To prove that the car is of a type that has been passed by the Department of Mines, it will have to bear a plate giving number, date, ratio of gear, and stamped with the mark of the manufacturer. It will thus be seen that the tendency of these reports is towards an absolute liberty as regards speed, the limiting of drivers' qualifications according to their skill, so that the driver will only be able to conduct vehicles he can safely handle, and the adoption of a system of identity which will inevitably bring home to the owner of a vehicle his responsibility in case of accident.

The Gordon-Bennett Cup Course.

As the result of the report submitted by the French representative, Chevalier René de Knyff, who recently prospected the route, the special commission of the Gordon-Bennett Cup race in Germany have unanimously decided to adopt the Taunus course, of which we gave a description last week. The commission has not yet fixed the date of the race, but the members were generally of the opinion that it would be preferable to run off the event at the end of June or the beginning of July. It is intended to organise an automobile week in connection with the race, when a variety of events will be held, together with fêtes and an exhibition, and as the Homburg season will then be in full swing it may be taken for granted that the social importance of the meeting will be as great as its sporting success.



A NEW SPARKING PLUG. The "Amac" sparking plug, a half sectional illustration of which is given above, contains many novel features, the chief of which is the long gas pocket formed around the insulation, thus preventing fouling. The mica insulation is of a very solid character, as shown by the section. The body of the plug is air-cooled, the radiation flanges shown being hexagonal in shape to take the spanner. The plug is said to be indestructible, and in proof thereof is guaranteed for twelve months. The makers are the Aston Motor Accessories Co., Perry Barr, Birmingham.

Correspondence.

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

THE MOTOR GADABOUT.

[3333].—Seeing a letter signed by "Captain" in your issue of the 28th ult. with regard to the design of the small cars now on the market, I do not think he has seen the 5 h.p. Humberette that is now being shown at 121, Long Acre, W.C., at the Victoria Carriage Works, Ltd. This car has a roomy body and plenty of leg room, while the steering wheel is capable of adjustment as to height. I think this car fully supplies the requirements of "Captain."

W. F. L. BUTCHER.

HEAVY MOTOR TRAFFIC.

[3334].—With reference to Edwin N. Henwood's letter (No. 3322) in last week's *Autocar*, I should like to give my opinion. Instead of rubber hubs it would be much better if the springs were made longer and four inches wide, with short intermediate plates between each spring plate with rubber pads to spring hanger, or, as they are called, scroll irons; it would be a great save on the driving wheels. In my opinion, a locomotive man would make the best driver; a marine engineer has no knowledge of vibration, and vibration comes to the locomotive man always.

W. E. SUGGETT.

ELECTRIC IGNITION AND RECHARGING.

[3335].—Probably few owners of cars have had such a varied experience of driving in such a limited space of time as myself. Most of my runs have been over hilly and otherwise obstructive ground in North Britain. I have consecutively driven no less than four types of cars—namely, an 8 h.p. Peugeot-Victoria, a 12 h.p. Darracq, a 6 h.p. De Dion, and a 16 h.p. Panhard. The most formidable enemy I had to encounter was ignition. I tried more than one type of magneto ignition, and at the onset must say that I obtained considerable satisfaction. I do not know if others have met with a like experience, but all the magneto ignition devices I have used always became considerably retarded by the inclemency of the weather, and slow for hill-climbing. This, naturally, led me to adopt high tension ignition; and without prejudice to any system, I must confess that the latter, from a practical standpoint (although both may have their defects), is vastly to be recommended over the former. In order to replenish my accumulators I purchased a set of Boron primary charging cells from the Boron Battery Co., of Liverpool. I have used these cells now for upwards of two years, and they have given me every satisfaction. I carry them when on the road in a small box, so that one accumulator is charging whilst the other is working. It is thus practically impossible to get stranded. I should strongly advise anyone who possesses a petrol car, and who wishes to save time and expense, to invest in one of these charging sets. Other cells, though cheaper in the first instance, are not sufficiently powerful for long charging.

I trust the few hints thrown out from one who has learnt by sheer experience may be at least of some slight benefit to anyone possessing a large petrol car.

H. McGRÉGOR (Colonel).

TYRES.

[3336].—I was very glad to see in a recent issue of your journal a discussion on tyres, and am sorry the subject was not carried further, as doubtless it could very well be to the mutual benefit of all car owners if they would only state their experiences as they found them. Letter 3289 (B. W. Valentin) is to practical motorists, I venture to think, an eye opener. Fancy anyone driving a hundred miles at full speed with two tyres down! Surely this must be a slip of the pen. I should rather think one hundred yards at full speed with two tyres down would mean a bad smash up in the ditch. I have been using the Collier tyres for two years, and found with one tyre down the greatest difficulty in keeping the car straight even at six miles an hour speed. Full speed would have meant destruction quickly. There is one redeeming feature in the letter—viz., B.W.V. does not advise anyone to follow

this practice, and I should think not indeed. My only purpose in writing is to caution any motorist who has not had an experience of punctured Collier tyres on the road not to try such mad things as to go full speed with a deflated tyre, even though that be a Collier tyre. The whole thing is an utter absurdity.

WEST COUNTRY.

[3337].—I think Mr. Bath is wrong in saying that vehicles with live axles will not stand solid tyres (rubber). The vibration on these is certainly less than with iron tyres, and there are many steam vans with live axles and iron tyres that have been doing hard running for years—not just being taken out now and then for a run at a week-end, but doing nine hours work a day six days in the week. In fact, the majority of these have come to live axles in some cases after trying dead ones.

I believe that solid tyres for some purposes would be a great advantage, but really to get good results out of them the car should be designed for them right through like a carriage is. Much bigger wheels than are usual in motor cars should be fitted, and very easy springs with plenty of clearance. Carriages are usually fitted for country work with wheels at least 48in. diameter, because they are found necessary for comfort. The springs are double elliptic about 4ft. long, equivalent to single springs some 6ft. long for the same reason.

I think Mr. Cross's experience with pneumatics was rather unfortunate. As I had the pleasure of getting him his first car and accompanying him on his first journey West, I may point out (1) that it was one of the very early cheap French voiturettes, (2) that the tyres supplied were not up to the weight of the car, (3) that they were of a make that was so unsatisfactory that they have since ceased to exist, and (4) that his present car is of later date than the other, and nearly twice the price. I venture to think that if he ever tries modern pneumatics of good make on a modern car also of good make he will have them in future on the back as well as on the front wheels.

With reference to Mr. B. Owen's complaint that engines are as a rule not run fast enough, I think he will find that the slow-speed engine exists almost entirely on paper. That is to say, that there are very few engines on the market that are not run up well over 1,200 revolutions when on the road. I certainly agree with him as to the advantages and also as to the wear on these engines not being excessive if they are properly designed. If not so designed the sooner this is altered the better.

FREDERICK STRICKLAND.

NON-SLIPPING BANDS.

[3338].—Can any of your readers favour me with their experience of Perfecta non-slipping tyre bands, which strap on to the spokes?

They sound perfect, and I am very anxious to get a pair, but being of most moderate means, I cannot afford to try experiments with new inventions; I have spent quite enough that way during the eighteen months of my motoring life.

SIDE-SLIP.

PRIVATE TOUTING—A SUGGESTION.

[3339].—I have read with interest the letters published by you under the above heading, and certainly agree with their authors that the motor trade from the agent's point of view is rapidly degenerating.

Why should members of this once exclusive business allow outsiders to annex the commissions given by makers which are certainly only due to bona-fide traders? Some time ago, after several unsuccessful visits, I managed to convince a client that a certain type of car was the most suitable for his requirements, with the result that he promised to forward a cheque as deposit for one on the following morning. The next day I received a letter from him stating that he had telephoned to the London agents, and they had offered to supply him at the price I had quoted, less the trade discount. On making enquiries, I discovered that this well-known and still-respected London firm had quoted him this discount owing to his being an auctioneer who had once conducted a sale of motor cars.

On another occasion a would-be customer, after accepting a trial on one of my stock cars, intimated that he would not place his order with me, as "the man down the

road," who repairs bicycles (also mangles) had offered to order the car for him if he would pay on *pro-forma* invoice and give him a couple of pounds for his trouble. What is the trade coming to? Let the motor traders form themselves into a society under the auspices of the Society of Motor Manufacturers and Traders or the Automobile Club of Great Britain and Ireland. A list of *bona-fide* traders who carry a stock of cars could then be published and issued to its members.

Manufacturers and sole agents would then be able to ascertain whom to supply, and in this way debar the amateur motorist from taking the bread out of the mouth of the agent who has risked his capital in the motor business. Any motor manufacturers or agents who supplied cars to any others than members of the society at trade price would be struck off the list of members.

WILLIAM GLASS.

THE OLDSMOBILE.

[3340].—As one who has used an Oldsmobile for some time, I am glad to afford some information to those contemplating the purchase of one of these handy little cars. I have now acquired one of the latest pattern (having previously used one of the 1902 type), and can speak from experience as to the great improvement in the car. The present carburetter is excellent and very simple, while the cooling is greatly improved. The arrangement of the petrol and water tanks is better, and the silencer is now in a very good position under the car, instead of inside the body, as it was in the old pattern. I invariably start my car from the seat with the greatest ease, and with one turn of the handle.

Now as to some minor defects in the car, which I think the makers would be well advised to remedy. The mudguards supplied with the car are almost useless. It has cost me £2 to put on efficient mudguards. Then the steps are dangerous, being too small and placed too much under the body of the car. These also I have had replaced by a roomy square step. The dry cells supplied with the car I have replaced by accumulators at an extra cost of £2 17s. The bell was replaced by a horn at 14s. 6d.

I have had a small handle fixed on the petrol tap and operated from the side of the body, so as to be able to turn on or off the petrol without reaching under the car.

I have also had a "cut-out" (operated from the seat) fitted to the silencer, which I find useful when climbing hills, etc., in the country, where some extra noise is not objectionable. I now consider my car much improved.

I can honestly speak of the Oldsmobile as a delightful little runabout for one or two people—preferably for one, as the seat is rather narrow for two. My only regret about the car is that it is not English built.

T. TELFORD-SMITH, M.D.

PUNCTURE PROOF BANDS.

[3341].—I saw advertised in your paper some time ago the Cox puncture proof device for motor and motor cycle tyres.

Can any of your readers kindly oblige me with any information or experience of it, or an address where I can procure it?

I am so bothered with punctures on the rough, flinty roads in this neighbourhood that any device for preventing punctures would be a godsend. H. W. JONES.

PROPOSED INSTITUTE OF MOTOR ENGINEERS.

[3342].—With reference to your capital suggestion in the leader of last week, I, as one deeply interested both financially and as a builder in a small way, shall be glad to act as Scottish honorary secretary and to do all in my power to further such an object. T. M. CAIRNS.

[3343].—Referring to your excellent article entitled "A Motor Engineers' Institute," as past-president of the Cycle Engineers' Institute and member of the other institute you mention I must say I quite agree with you, and, moreover, I have advocated for some considerable time past that the Cycle Engineers' Institute should consider the advisability of including within its scope and title the Automobile Engineers.

I repeat what I said in 1894, viz., that successful light and fast automobiles must take many leaves out of the

cycle engineer's book. Who brought to light the possibilities of the pneumatic tyre if not the cycle men? Would the present-day speed be possible without the numerous distinctive features of cycle construction, tyres, ball bearings, and the metallurgical refinements that many of the somewhat prominent automobile engineers are not yet fully acquainted with?

It is clear to anyone that both sides would profit immensely by studying the subjects together. As Mr. Weigel said at the British automobile trade dinner the other evening when addressing his agents: "It doesn't benefit us that cars sold by a competitor shall be bad cars. It does us harm. The customer talks to his friends, and they get a bad impression of automobilism generally."

But you must know, Mr. Editor, that there is much to be done yet before even we can collect together such a brilliant lot of papers as were read at the last Automobile Congress in Paris.

In conclusion, I would suggest that the C.E.I. consider some such title as "The Institute of Road Locomotion," or "The Institute of Mechanical Road Locomotion." Although the second title is more explanatory at first sight, the first is quite correct, as the cycle is, after all, muscularly propelled. C. R. GARRARD.

STEAM CARS.

[3344].—The letter in *The Autocar* of November 28th signed by "Roy" on the subject of steam cars, contains an inaccuracy which is likely to do us, and we presume also the manufacturers of the White cars, a considerable amount of damage.

Your correspondent, in the middle of his letter, after asking for information as to the cost of repairs to steam pipes, goes on to say that he "notifies Mr. S. R. Rhodes in the issue of October 24th, states that the gears of his last car required renewing, and that he found the makers quoted an excessive price for new gears."

Now, many of our prospective customers have called our attention to this letter, and have asked us if the suggestion is true, and we beg clearly and explicitly to point out that the correspondent in question has never had one of our cars, and that his remarks were obviously never intended to apply to the Miesse cars.

We have no gears on the Miesse cars, and in our opinion Mr. S. R. Rhodes is referring to a petrol car and not a steam car at all.

We are quite sure that your correspondent "Roy" would not have worded his letter so unfortunately had he known that it would give rise to any unfounded ideas.

As far as we are concerned as manufacturers of the Miesse steam cars, it is very rarely that we are asked for spare parts, but when we are we make it a point of treating all customers in an extremely liberal spirit.

TURNER'S MOTOR SFG. CO., LTD.

J. B. DUMBELL, managing director.

[3345].—I do not consider there is any danger in carrying petrol on a steam car, as the fact of it being under pressure is a safeguard, any leakage showing at once. Of course, it behoves one to see to taps, etc., and repair any that become worn or leaky. I can speak from experience with my Locomobile car, and must say that I have found it a great pleasure, the absence of sparking plug, coils, change-speed levers, clutches, etc., coming as a great relief after my petrol car, and I have had no trouble with sealing since I arranged better means of blowing off, details of which I gave in these columns a few months back. I find I can leave my car standing for a long time if I run down steam to, say, 150 lbs., and then turn down the main burner so that it will just keep alight. (My car is not fitted with a pilot light.) With careful treatment I can safely recommend the Locomobile type of car to give perfect satisfaction, but it requires practice to get the best results, as with any other car. I may add that I have replaced the throttle valve with a screw-down angle valve, worked by means of a wheel in place of lever. It answers its purpose admirably, and the feed of steam is positive, and should any obstruction be run against there is no tendency to jerk the handle forward and put on full steam. It is also much better for backing the car. Can anyone explain why multi-cylinder engines are dumped on to the motorist when all our great makers of gas engines seem to have abandoned even two-cylinder engines for industrial purposes? It may

be said that extra cylinders economise fuel, but they also increase complication, and it is quite possible to pay very dearly for economy. I think also that in heavily-engined cars much of the power is lost by the wheels skidding. This, of course, is a benefit to the tyre makers. Again, the practice of very small wheels by no means adds to the life of a car, as I take it that the smaller the wheels the greater the vibration. I don't consider that 40in. would be out of the way for the driving wheels, and, say, 32in. for front wheels. I have found that there was considerably more vibration on the same road in my car than in a faster ride in the ordinary hansom cab.

In answer to "Roy" (letter 3327), the petrol pipes of a steam car should have spring coils in them, and if solid drawn tubes are used, the chances of breakage are very rare. However, it would not be much trouble or expense to put a needle valve direct on the tank so that it could be shut off. One of the most important points in a steam car is to see that it is fitted with a perfect vaporiser. The spirit should pass at least twice through the boiler. This with the connection across the top gives about three feet of tube. It would be an advantage if the spirit passed through four boiler tubes. The importance of this is that should raw spirit get into the burner you will have a rush of flame up the tubes, which, though not very dangerous, is rather alarming. I do not consider the cost of running a steam car of the Loco. type to be any more expensive than a petrol car—if so much—the absence of gear, coils, etc., being taken as a set off, and certainly not any more trouble to keep in order, if as much. W.T.W.

[3346]—In your issue of November 28th, "Roy," in letter No. 3327, refers to certain statements in my letter which appeared in your issue of November 7th, but makes somewhat futile any reply which I might see fit to make in these columns by saying that he hoped to see answers from users and not from sellers of the car. Consequently I suppose it would be more graceful for me to withdraw from the discussion without taking any further part in it, except to answer the direct question by "Gwert," which is repeated by "Roy," as follows: "Suppose the car met with an accident, or by some means the petrol supply tank to the burner was fractured at the tank side of the valve, what would be the consequence?" My answer to this is: That an accident which would break the pipe, constructed and placed as it is, would have to be sufficiently severe in itself to totally demolish the car. On the supposition, however, that an accident might take place which would break the petrol pipe in spite of the splendid protection afforded to it by its position and special construction, the result would be (presumably, mind, for such a thing has never happened in our five years' experience) that the fire would be transferred, if near the burner, from the burner itself to the point of breakage. It would be prevented from going back towards the tank from the point of breakage by the wicks in the tubes. Inasmuch as the air pressure which forces the fuel into the burner is in the tank itself, which, by the way, is of seamless boiler steel and is tested to from 400 to 500 lbs. hydraulic pressure, the fuel would simply rush through the tubes to the point of breakage and there the blaze would be maintained until the main fuel tap were turned off. This main fuel tap is but a few inches from the top of the tank itself, and as the pipe which leads from the bottom of the tank leads through the tank and leaves it at its top, one can hardly imagine a breakage of the tube from where the fuel enters it until the tap is reached. But to answer this question thoroughly as it is put, suppose some portion of the fuel pipe, from where the fuel enters it to the point where the tap is placed, to be broken. The breakage would then be so far away from the fire that there would be no danger of ignition, and, in addition to this, the aperture caused by the breakage would immediately release the air pressure on the fuel, and thus cause the fire to instantly go out. Of course, all these suppository reasonings may seem to one person to be sound and to another to be the opposite. It is, indeed, an uninteresting question which cannot be argued in half a dozen ways. I have done the best I can to show what would be the result if it were possible that a certain event might take place, and it is only fair to the White steam cars that I should close by reminding every reader of this letter

that five years' experience of the most varied sort has taught us that none of these suppository accidents—or anything like them—have ever happened. We claim as makers of the White steam cars that our petrol pipe from tank to burner is so constructed and so placed that it cannot be broken, unless the car be reduced to scrap iron, and I must close this letter, as I did my previous one, with the reminder that space in the correspondence columns of *The Autocar* is altogether too much in demand for me to therein describe the construction of the White steam car. This I am willing to do, however, *in extenso* to anyone who is sufficiently interested in the subject to write to me and ask any questions they wish to have answered.

FREDERIC COLEMAN.

[3347].—In your issue of October 17th last one of your correspondents—"Steamer"—spoke of a steam car which he could leave standing for hours. Will "Steamer" kindly state the make of his car, if he uses paraffin or petrol as fuel, if a flash boiler, and whether fitted with solid or pneumatic tyres?

Like others, I fancy a steam car, and hope to buy in the new year, but cannot come to a decision as to the best type. Last week, November 28th, "Roy" says he understands that the White and the Miesse are the best. They may be, but what about the price?

My means are limited, and as I am told that there are many good petrol cars, as the 6 h.p. De Dion and others, to be got for under £200, I think that a good steam car should be got for the same.

If a man gives over £400 for a Miesse or other car he would expect it to last for years, and if need be for his life with care, but none will say this, and I think that a £200 car should see him on for some time, and if necessary in a few years he might try again. £400 is too much to lay out in order to gain experience.

The Toledo and the Stanley come in more reasonably as to price. Will some kind users give particulars of these as under:

(1.) Can paraffin be used? If not, what is the selling name of a cheap petrol at 10d. and 11d. per gallon, as mentioned by R.A.B.?

(2.) How long can they stand without injury to the boiler or burner?

(3.) Will they work with solid tyres? Are the wheels and frame strong?

(4.) How far will one gallon of fuel run car on level?

(5.) How do they wear as a whole? Are they durable properly used?

(6.) How long does the boiler last?

(7.) Are the engines and pumps supplied with oil automatically and certain in action? Are they handy to use and soon got into action?

I shall esteem kind replies, and if desirable letters can be sent direct (the editor has my address) if such are likely to be too much in the nature of an advertisement.

CENTRE PUNCH.

[Several other letters on the same subject have come to hand too late for inclusion this week. We hope to publish them in our next issue. In the meanwhile, we may say that more than one refers in the highest terms to the satisfactory behaviour of the White steam car.—Ed.]

At a recent meeting of the Newcastle-on-Tyne Council, it was arranged that a special committee meeting be convened to consider the rate of speed at which motor cars should be driven about the streets of the city, also the desirability of having a badge with the number of the car placed on the arm of the chauffeur, and the amount of money to be paid for the badge and the license to use such cars. It was suggested that the cost of the badge be 5s. per annum, and the license for the car £10 these charges to be independent of the fees to be levied. We presume this only applies to such cars as ply for public hire.

Flashes.

"The Motor Car Acts, 1896-1903," is now published, and copies can be obtained (post free, 7d.) from *The Autocar* publishing office, 3, St. Bride Street, E.C.

* * *

Several 100 h.p. six-cylinder Simms engines are in course of construction by the Simms Mfg. Co., Ltd. One of them, we understand, will be used for the propulsion of a competing launch in the Harmsworth cup race of 1904.

* * *

Before our next issue appears, the Paris automobile show will have opened. We hope next week to publish a preliminary article dealing with some of the main features characterising this year's exhibition. The Paris Show always takes a large gathering of English motorists into the French capital, and this year will be no exception to the rule. Not only do all enthusiastic amateurs who can spare the time make a point of visiting the Grand Palais, but practically everyone who is prominently connected with the industry is also to be found there. We already have intimation from the Weston Motor Syndicate that Mr. Cohen and Mr. Guttman will be at the Chenard-Walcker stand to explain to English visitors the latest improvements in 1904 Chenard and Walcker cars, while Messrs. Jarrott and Letts tell us they will be in Paris in the De Dietrich and Oldsmobile interests, Mr. Letts at the Grand Hotel and Mr. Jarrott at the Hotel d'Albe, Champs Elysées.

* * *

The Isle of Wight County Council has decided that it would be impracticable to apply the ten miles an hour limit in regard to motor traffic on the roads of the island.

* * *

Many are the conflicts that have taken place between the police and motorists before the Kingston-on-Thames bench of county magistrates. Most of the issues, however, have been plain and straightforward, but the other day a case was heard in which the motor car interest formed, as it were, only an under-current. Mr. C. A. Smith, proprietor of the White Lion, Cobham, was summoned for permitting drunkenness on his premises, and for the defence the suggestion was made that the proceedings were taken because Mr. Smith on more than one occasion, by giving timely warning, had thwarted the police in their attempts to entrap unsuspecting automobilists. Seeing that the case was dismissed, it seems apparent that this, like so many of the charges against motorists themselves, was a groundless affair.

An international automobile exhibition will be held at Frankfort-on-Maine from March 19th to 27th, 1904. Particulars can be obtained from the secretary of Motor Manufacturers and Traders, Norfolk House, Norfolk Street, Strand, W.C.

* * *

The Local Government Board regulations contain two clauses that do not seem to have attracted the notice they deserve. One is contained in Article VIII., where it is provided that, if the registering council is not satisfied with the position indicated by an applicant for license, they may direct that the number plates must be fixed in some other position. This is obviously a dangerous power to leave in the unfettered hands of the registering councils. The other point relates to the size of the letters and figures, which must be $2\frac{1}{4}$ in. wide, except in the case of the figure "1," but the same exception should have been made in the case of the letter "I," which is applied to all the counties and boroughs of Ireland.

* * *

Recently, in connection with the Harmsworth international cup race for motor boats, it was mentioned that a length of forty feet over all was the *only* restriction. The Technical Secretary of the Automobile Club writes pointing out that he used 'be wrong word, and should have said *chief*, as there are other points, such as that only two hands may be carried, that a boat must be built (in every part) in the country which it represents, and that some form of reversing gear must be fitted. The complete rules will be ready very shortly, and all intending competitors should send in an application for them to the Automobile Club, 119, Piccadilly, W.

* * *

A recently published novel has the somewhat startling title of "The Motor Pirate." The piratical person dealt with motors at a hundred miles an hour, and cries "Stand and deliver!" in all corners of the kingdom. Circumstances permitting, this seems quite sufficient to induce the shades of Turpin and Duval to revisit the pale glimpses of the moon.

* * *

Last week, when publishing an illustration of one of the White steam cars, which performed so conspicuously in the recent American reliability trials, we inadvertently did the car an injustice, as we said it had made the best performance of any steam propelled vehicles in the trials. This, while being perfectly true, might be misunderstood, as there were no steam vehicles in the trials except the two of the White make, and they are generally accepted to have made the best showing of any pair of cars of one make. That is to say, no two petrol cars surpassed their performance.

"THE AUTOCAR" DIARY.

- Dec. 7.—Scottish A.C. (W. Section). Annual Dinner, Glasgow.
 „ 8.—Burnley and District A.C. Annual Dinner.
 „ 8.—Motor Volunteer Corps. Annual Dinner.
 „ 8.—Yorkshire A.C. Paper, "The New Motor Act and its Effect on Motorists." By Mr. H. A. Jones.
 „ 10.—A.C.G.B. & I. Paper, "A Review of the Rules and Organisation of the Recent Club Speed and Reliability Trials, with Criticisms and Suggestions." By Mr. E. H. Cozens-Hardy.
 „ 10 to 25.—Paris Salon (A.C. de France).
 „ 11.—Annual Dinner Norfolk A.C.
 „ 31. Entries close for 1904 Gordon-Bennett Race.
 Jan 7.—Motor Car Act, 1903, comes into force.
 „ 15 to 23.—Madison Square, New York, Motor Show.
 „ 15 to 23.—Leeds Cycle and Motor Show.
 „ 18.—Scottish A.C. (W. Section). Paper, "Reminiscences of the Road." By Mr. C. Jarrott.
 „ 23 to Feb. 4.—Brussels Salon.
 „ 28.—A.C.G.B. and I. Paper, "Railway Companies and the Motor Problem." By Mr. G. Montagu, M.P.
 Feb. 12 to 24.—Crystal Palace Motor Car Show.
 A.C.G.B. and I. Side-ship Competition (date not fixed)

The Dunlop Motor Depot, of 55, Wale Street, Capetown, are anxious to receive lists and specifications of launches for river work and launches for sea work.

* * *

In a letter mentioning that they have just shipped one of their standard pattern 20-24 h.p. Simms-Welbeck chassis to Paris to the order of a well-known French firm, the Simms Mfg. Co. write: "May we also draw your attention to the fact that leading motor cycle and motor car makers are now adopting our method for mechanically operating their inlet and exhaust valves by means of one camshaft. We beg to quote such firms as the Motor Manufacturing Co., Messrs. Daimler, Messrs. Humber, Messrs. Renault, the Ariel Motor Co., Messrs. Werner Bros., the Coronet Motor Co., the Enfield Co., etc., which, we believe, tends to show that our Simms engines are now leading."

* * *

Members of the Automobile Club who contemplate taking part in the annual pilgrimage to the Paris Exhibition should remember that the first trip starts next Thursday, the 10th inst., the opening day of the show. If they have not already applied for their railway tickets to the secretary, they should do so at once.

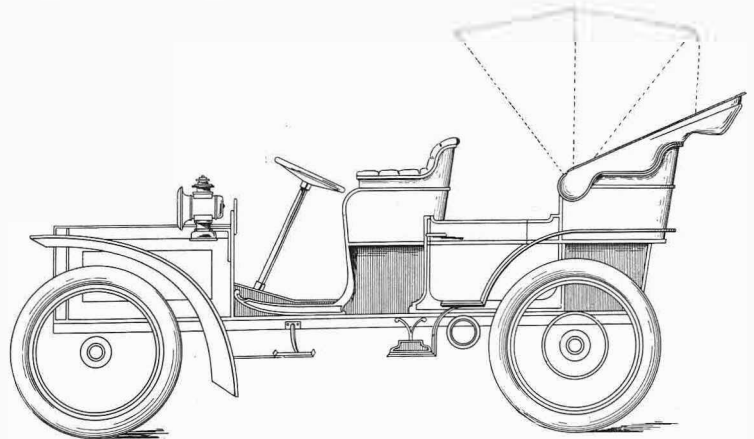
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The paper which the Hon. Chas. S. Rolls read before the Church Society for the Promotion of the Kindness to Animals on "The Indirect Advantages of the Motor Car to Horses Generally," has been published by the society in pamphlet form. Its distribution amongst those classes of the community to which the society in question more particularly appeals should do much towards removing existing prejudices against motor cars. Not only so, a perusal of the paper will show that the substitution of motor traction for horses in many of the more laborious and irksome walks of equine life would be to advance in a very definite manner the cause of kindness to animals.

* * *

Mr. R. Moffat Ford attended on Tuesday morning at the South-Western Police Court, in the matter of the summonses which he had taken out against ten drivers of the London County Council's trams for exceeding the legal speed limit. Mr. Ford stated that as his action was taken to show the absurdity of the ten miles limit, and the Highways Committee of the Council had, in their report on the Motor Car Act of 1903, expressed their full concurrence with the view of the Local Government Board that "the expedients provided by the Act for the reduction of the speed limit to ten miles an hour should not be resorted to until it is seen that the other provisions of the Act make such a course indispensable," he did not feel justified in carrying the matter further. He suggested that, pending the final decision of the County Council, the summonses should be adjourned *sine die*. A representative of the County Council concurred, and the summonses were adjourned accordingly.

At the second general meeting of the graduate section of the North of England Institution of Engineers and Shipbuilders, held at Newcastle, Mr. W. H. Waddingham presiding, Mr. A. E. Berriman read an interesting and informing paper on the "Future Prospects of Automobilmism." He showed the many vocations for which the motor car was suitable, and illustrated the practicability of its application in the principal traction schemes. On the question of the speed limit, he showed that it was evident that any system of limiting speeds could have no useful effect, and would only increase the mistrust which was so apparent among a certain class. Undoubtedly much of the present antagonism had arisen through a lack of reciprocal courtesy among the users of public highways in general. The line of least resistance and ultimate harmony lay in mutual consideration. On the question of motor cars *versus* trams and omnibuses in large cities, he was of opinion that an extensive and well-organised service of small cars having a seating capacity for, say, eight or ten passengers would prove of greatest use to the public, and provide the best financial results for the company owning them.



The above is a diagrammatic illustration of the new side door opening double phaeton body for the 30 h.p. Pipe. The body, which is by Labourdette & Co., will be shown mounted on its chassis at the coming show in Paris, after which it may be inspected on the premises of the London Motor Garage Co., the British agents for the well-known Pipe cars, at 33-37, Wardour Street, W.

Recently, many members have complained to the secretary of the Motor Union that they have been the victims of assaults when travelling upon their cars, but these complaints are seldom accompanied by sufficient evidence to enable the Motor Union to prosecute. At the last meeting of the committee, however, a letter was read from a member stating that when driving through Lexton a boy threw a stone which struck him in the eye, and asking whether the Union would take proceedings. The member stated that he had a witness to the assault. It need hardly be said that the committee immediately agreed to take up the case and to pay all expenses. It is of the utmost importance that the perpetrators of cowardly or thoughtless attacks upon automobilists should be brought to book, and any member of the Union may rest assured that the committee will be only too glad to prosecute in any case where the evidence is of such a character as to hold out reasonable hope of a conviction. Work of this kind should commend the Union to all users of motor vehicles, and we can only wonder every automobilist has not joined before now.

The Motor Volunteer Corps will hold their first annual dinner at the Trocadero Restaurant on Tuesday evening next.

* * *

Messrs. H. Andrew and Co., Yealmpton, Plymouth, inform us that they have received instructions to supply the South Hams motor carriers with motor 'buses, which are to be Milnes-Daimlers of the latest type.

Last week, in illustrating the motor mail van used by the Newcastle postal authorities, we referred to it as the Roots and Venables. We should have mentioned it as the Roots, as the name of the makers is the Roots Oil Motor and Motor Car, Ltd.

* * *

The Cardiff Public Works Committee has decided to take the necessary steps to carry out the provisions of the new Act. The borough engineer has been requested to report as to whether the Local Government Board should be asked to make regulations respecting traffic on certain of the borough roads, and whether it is necessary to place sign-posts on the dangerous corners and precipitous places.

* * *

The complete specification of Leon Bollée, the designer and constructor of the Bollée car, of which so much has been heard of late, has just been published, and a perusal of this demonstrates that the carburetter, which we illustrated and described in *The Autocar* of November 21 (p. 626), is not solely responsible for the remarkably quiet and easy running of the car. In the designing of the frame, and the disposition of the engine and change-speed gear box, every effort has been made to provide for the elasticity of the frame, which fact doubtless adds very much to the life of the car without interfering with the alignment of the bearings. In this construction there are many points which follow on similar lines to those of the Weller car, which was illustrated in *The Autocar* of June 6 and 13 last (pp. 659 and 688). The engine is provided with three-point suspension, spring washers being furnished to the holding-down bolts to allow of any spring in the frame being taken up. The forward end of the engine is supported by a pivotal bearing, while similar suspension is provided for the change-speed gear box.

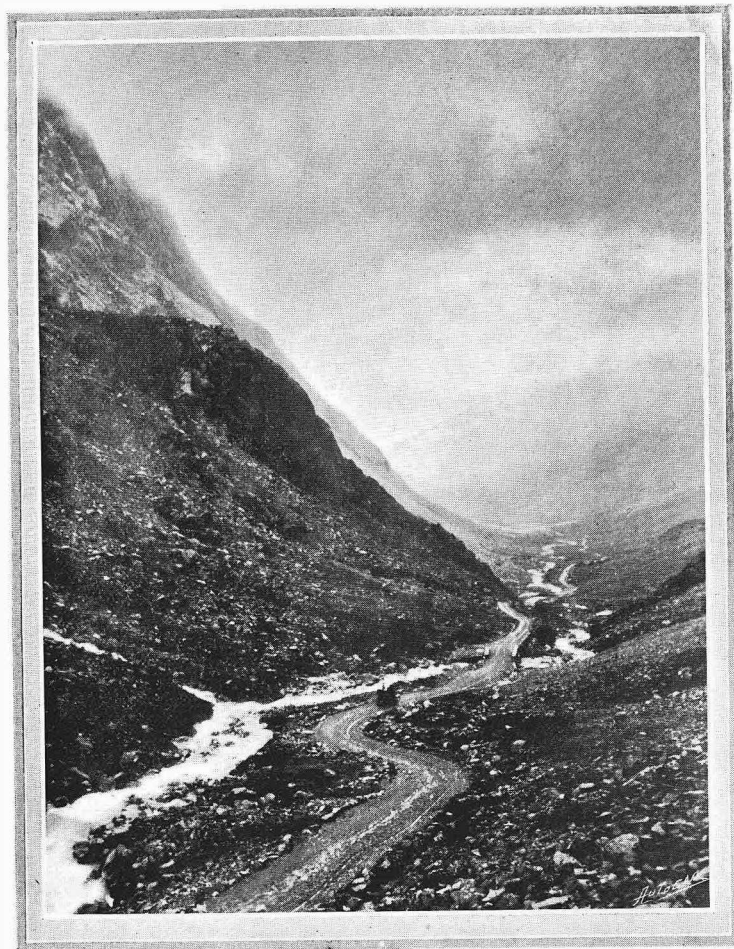
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There has been issued by *The Electrical Times* a handy book giving details of charging stations where power cells for the propulsion of electrically driven vehicles, and also ignition batteries, may be recharged and repaired. A map is

included in the book, showing the location of the central private charging stations and places where ignition cells may be purchased, together with indications as to where repair places and garages may be found. A special corner is devoted to the metropolitan district. The book is attractively finished, and may be obtained from the publishers, *The Electrical Times*, 8, Bream's Buildings, Chancery Lane, E.C. The price is 3s. 6d. bound in leather, or 2s. in cloth.

* * *

The Holbeach Rural District Council, which is mainly composed of well-to-do farmers, recently passed a resolution that motor cars should be restricted to a speed of ten miles an hour on the whole of the roads under their jurisdiction. Incidentally, the Chairman expressed the opinion that motor cars ought to be taxed at £50 and motor cycles at £10!



HONISTER PASS. A view of the pass, going towards Buttermere, on a wet day. The rough and winding character of the road is plainly shown. The above illustration is reproduced from a photograph lent us by Mr. J. Todd, whose crossing of the pass on a 10 h.p. Wolsley was recorded in "The Autocar" of November 21st, page 624.

The Emperor of China is said to have ordered three gorgeous automobiles for his own use, and twenty omnibus motor cars for the conveyance of his Celestial Majesty's suite.

* * *

Messrs. A. W. Gamage, Ltd., are now putting the "Cossor" densimeter on the market at a very low price, which includes a glass test tube in a tin case. This meter, while having the specific gravities from .675 to .725 marked upon it, has also three red lines—the upper thin one being the summer mark, the lower the winter, and a broad red mark, .725, the limit for the specific gravity of spirit which is to have good results. This neat little instrument is most carefully and accurately adjusted, and by experiment we have proved it to be very sensitive.

SOME QUERIES AND REPLIES.

We are always pleased to reply to queries, even if they be of an elementary and untechnical description, under this heading. Only a selection of those which are of general interest will be published, though all will be answered direct through the post, for which purpose a stamped and addressed envelope should be enclosed.

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

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

INLET VALVES BREAKING.

I should be glad if you could tell me the reason of my inlet valves breaking. I have had the stem of my back-cylinder inlet valve broken clean across twice within three months, and should be glad to know what is the reason. On each occasion the ignition has been faulty when it happened; once with bad adjustment of the tremblers on the coil, and once with bad insulation on the plug wire. Of course, the two causes were easily remedied, but was the faulty ignition the cause of the valve stem fracturing? The car is a 12 h.p. two-cylinder Darracq, and I have nothing but praise for the way it goes.—E.G.G.

The ignition trouble is only a contributory cause of the breaking of the inlet valves, the primary cause, in all probability, being the use of too strong a valve spring. The continual hammering of the valve upon its seat sets up what is technically known as a "short break" in the stem immediately beneath the head. The metal, by reason of this hammering action, sets up a form of crystallisation, causing the metal to become very brittle. Thus the combined influence of the forcible pull of the spring and the power exerted by the back fire produced sufficient force to complete the destruction of the valve. The remedy is, of course, the fitting of a new and somewhat weaker spring to the cylinder in question. It is possible that some other cause is responsible for the breakage, but as the position of the fractures is not stated, or the broken valve sent for inspection, there is of necessity an element of doubt in replying to such queries as this with such scant information at hand.

LAYING UP A CAR FOR THE WINTER.

I have been most interested in the series of articles "Laying up a car for the winter," but one point you do not refer to, and that is the water circulating system. (1.) Is it advisable to draw off all the water or to keep the tank filled? If the former, might not the pump and tubes get corroded? If, on the other hand, the water is left in, I presume it is advisable to add glycerine. (2.) Can you inform me where the paint "Pegamoid" can be obtained, and is it a sort of aluminium paint? (3.) When leaving a car unused for a few weeks only, and not long enough to warrant taking tyres off and packing away, I suppose it is best to block the car up just sufficient for the wheels to clear the ground? Is it then better to keep the tyres fully inflated or to let out a little or all of the air? When left in this way, is there any dressing or preparation which can with advantage be used to keep the covers in good condition, and to prevent them cracking and perishing?—A. T.

It is, of course, advisable to draw off all the water from the circulating system before laying the car by. So many queries have recently been replied to as to the protection of the radiators and other parts of the cooling system during the winter that it was not deemed necessary to deal with this part of the subject in the series of articles referred to. (1.) Glycerine is only to a certain extent an anti-freezing mixture, and it would not be an efficient protection in the event of extremely severe frosts. (2.) Pegamoid paint can be obtained through any first-class oil and colour merchant, and can be had in a variety of colours; it is not necessarily of an aluminium tint. (3.) It is certainly advisable, when a car has to stand for a few weeks, to jack it up completely, giving plenty of clearance from the floor. There is no method of treating the tyres while still on the wheels which would in any way contribute to

their protection; but as the car is only likely to be put by for a short period this would be hardly necessary. The chief points to observe are to protect the tyres from strong light and from keen draughts. The process of washing the tyres contributes in a measure to keeping them in good condition. It is, therefore, advisable to wash and dry them thoroughly before leaving the car. The tyres may be kept fully inflated during their period of inaction.

RADIATOR PROTECTION.

As my motor house is not heated, I shall have to run the the water out of the tank and radiators should a spell of frost set in. Would it be a good thing to run paraffin through the pipes and radiators after letting the water out, with a view of preventing their interior surface from rusting? Is there any better idea?—E.L.B.

As the whole of the water-cooling circulatory system, with the exception of the water-jacket of the cylinders, is of non-rusting metal, such as brass and copper, there is no necessity to take any precautions against the interior surfaces becoming rusted. So far as the cylinder jacket is concerned, it would be preferable, if the jacket were to remain empty for any long period, to take some precautions against such rusting, but as the amount of oxidation which would take place in the short intervals between the emptying and refilling of the water tank would be so minute, there is no real necessity for taking any precautions. Some such treatment as you suggest might be an advantage were the water jacket to remain empty for any length of time. It would then be necessary to disconnect the two water pipes from their connections to the water jacket, and to plug the lower one with a cork while oil was poured in through the upper one. When full, the lower cork could be withdrawn and the oil drained off, carrying with it the water and leaving a coating of oil over the surfaces of the water jacket.

ACCUMULATORS IN INDIA.

(1.) My car is fitted with Cologne accumulators. Do you know anything of this make of accumulator, and will it stand the Indian climate? (2.) What make of accumulator and coil would you recommend me to have fitted to my car for use in India? (3.) As I may be stationed in some place where it would be difficult or impossible to get my accumulators recharged, could you recommend me a good primary battery, which would stand a fair amount of knocking about, and from which I might recharge my accumulators myself without much trouble?—G.C.

(1.) The Cologne accumulator is very satisfactory, but, like every other accumulator, must be treated with consideration. There is no reason why it should not be suitable for the Indian climate, provided it is well protected. The box in which it is placed should be roomy, and should have air holes provided to allow for the circulation of air. In this instance it would perhaps be better to keep the coil and accumulator beneath the seat. (2.) It is very possible that Messrs. Peto and Radford's new accumulator with the semi-solid electrolyte would be most suitable for the Indian climate. If you apply to this firm, whose address is 55 57b, Hatton Garden, they will give you every information as to its suitability for the climate. (3.) The firm before mentioned would also advise you as to the primary battery suitable for recharging any make of accumulator.

MOTOR CARS. By Alex. Govan.

(Continued from page 675.)

After describing the methods of sight and splash feed lubrication, the subject of water cooling the cylinders was taken up, and the different types used at the present time were explained, as was also the construction of the honeycomb radiator. This we gave in *The Autocar* at the time it was first introduced, but for the benefit of our newer readers we reproduce that part of Mr. Govan's paper which deals with the honeycomb radiator and with the thermo-syphon system with which the majority of the Argyll cars are fitted.

The type of radiator known as the honeycomb consists of a properly-designed tank, which forms the front of the motor bonnet, into which is soldered a nest of square tubes, held apart at both ends by a square wire about 1-16 in. thick. The water runs through the spaces between the tubes, and the cooling is assisted by running a fan driven off the engineshaft immediately behind the radiator. This creates an air current through the square tubes. On the whole this system can be said to be very satisfactory. At first the tubes leaked very badly, but the manufacture had been improved. The space round the outside of the nest of tubes forms the water tank, so that a tank under the car is dispensed with. Of course, objections can be taken to the fan on the ground of increasing the working parts. A pump is used in this system to circulate the water.

The thermo-syphon, although it has proved its efficiency over and over again, has met with a deal of opposition. It is alleged that when fitted the engine will over-heat, and that the water will boil away in a short journey; further, that the engine will not develop so much power.

As the adoption of this system simplifies the motor car, it is worthy of full consideration. To ensure circulation the water tank is placed above the cylinders. A water pipe or tank surrounds the engine top and bottom. This also forms part of the engine bonnet. The two pipes or tanks are joined by vertical cooling pipes about 10 in. long, and on a 10 h.p. engine there may be pipes, the bottom horizontal tank or pipe being connected to the bottom of the engine water jacket. This forms a complete circuit for the water, which as it becomes heated rises into the top tank, and falls through the cooling vertical tubes, entering the engine jacket again at the bottom.

In the Argyll system when the car is being driven fast the temperature in the top tank rises to about 130°; the bottom tank will then register about 100°. Fifty-two pounds of water is carried in the system, and at this variation of temperature the water rises at the rate of 3.71 lbs. per minute; therefore, the whole of the water will be circulated in 14.13 minutes.

The system depends on slow circulation through the vertical pipes for efficiency. The quantity of water which rises into the top tank due to the heat of the cylinders is practically constant, and if this is allowed to fall through double the number of vertical tubes of equal length the water would pass through at half the speed, allowing double the time to cool.

Public trials have demonstrated the efficiency of the thermo-syphon system. In May this year a car fitted with one of these bonnets was driven in the Automobile Club's trial from Glasgow to London, only having one stop at Leeds, without adding a drop of water. In the thousand miles reliability trial, organised by the Automobile Club, and held round London, a car was also driven the total distance without adding water. This is probably the longest distance ever yet accomplished by a motor car without replenishing the water tank. It is to be noted also that a French car fitted with this system did the fastest time from Paris to Vienna in the great race held last year.

Friction Clutches.

Through a well-designed friction clutch of 11 in. diameter, 12 h.p. at 1,500 revolutions per minute can safely be transmitted. The angle of the conical face of the clutch should be 12°, and the spring should exert a pressure of

about 115 lbs. Clutches having this relation of diameter to power are found to give very satisfactory results, and require little or no attention.

The two types of conical clutch were described. One of these was that in which the male half of the clutch is thrust into action with the opposite member by means of a spring, thus causing a large amount of end thrust on the crankshaft bearings. The other method described was that in which the male member of the clutch is inserted in the flywheel, and engages with a conical plate bolted to the face of the flywheel, the spring in this instance exerting its pressure equally upon the flywheel and the male member of the clutch, so that the thrust is divided, there being to all intents and purposes insufficient thrust to call for special design of bearings, as it only became a positive quantity when the clutch was withdrawn, and to this end a ball bearing was fitted to the spring, so as to enable such thrust as was created at the time the clutch was out of action being taken up.

Change-speed Gears.

Change-speed gears came in for a lot of attention, that type which is commonly known as the Panhard being described in detail. Regarding this, Mr. Govan said it was not mechanical, but it enabled a very simple change-speed gear mechanism to be constructed, and when carefully handled much less damage was done to the teeth by their coming into mesh across the face of the teeth than would generally be supposed. A change-speed gear in which all the teeth were constantly in mesh was described, the required train of wheels being locked into engagement by means of spring keys, which normally rested in slots cut in the shaft, these being brought into action as required by a rod working through the centre of the shaft. With regard to the friction clutch operated change-speed gears, the opinion was given that these were always made too small in diameter, and that to make them large enough to get the clutches to work smoothly and to transmit the full power they would have to be of such a size as to make the gear box abnormally bulky. The Argyll gear was also described in detail, and Mr. Govan gave his reasons for the adoption of this gear. Its principal features are lightness, short shafts, wheels always in mesh on the two speeds which are most frequently used—the slow speed, which is only used for very bad hills, being slid into engagement—the small diameter of the wheels (their size being kept down by mounting the slow speed on the countershaft which is running at half the speed of the engine), and the top speed driving direct through from the engine to the rear live axle. Positive jaw clutches are employed, and to avoid the breaking of these when changing the gears a spring lever is fitted, which engages the clutches at the proper time.

Before changing gears the main friction clutch is withdrawn to take off the driving strain. This practice is followed in all systems. In this gear the countershaft is mounted alongside the mainshaft, enabling the lid to be easily detached and the gear wheels taken out without crawling underneath the car. This arrangement of gears also allows of the change-speed lever being moved in a T slot, so that the lever goes to a full stop when engaging either of the three speeds. This is an advantage when driving in the dark.

All gears now fitted to cars are contained in an aluminium box and run in grease, all the bearings being provided with oil-conducting grooves, oil replenishment either being done through a lid on the top of the gear box or from a reservoir on the dashboard fitted with pump for forcing the thick oil into the box.

Great trouble was at first experienced in getting the gear wheels to stand, but the steel makers have overcome this difficulty by finding a mixture suitable for this work. The shafts in the gear box are often made from nickel steel, and, of course, special steels are always used in motor cars to enable weight to be reduced.

(To be continued.)

THE NEW REGULATIONS.

London County Council.

Attention has already been given by the Highways Committee of the London County Council to the new Motor Car Act. For the information and guidance of the public they have arranged for the issue of an advertisement stating the date by which the Council will be prepared to register motor cars and motor cycles and to issue licenses for drivers, and further stating that, owing to the various forms of identification marks allowed by the Board's regulations, the Council will not provide plates for the use of owners. The committee propose to submit, after the Council shall have had an opportunity of judging of the working of the Act, a further report, if necessary, dealing in detail with the various matters arising thereunder, such as the prohibition of motor cars on special roads, the limitation of speed, and the erection of notice boards. In regard to the fee to be charged for the assignment of a general identification mark to a manufacturer or dealer, the committee recommended that this should be the maximum allowed by the Act, £3. The Council's solicitor did not consider it necessary for drivers' licenses to be issued under the seal of the Council, a course which would entail serious delay and inconvenience, and the committee had accordingly arranged for these to be issued by the clerk of the Council.

Seeking Counsel from the Trade Association.

As an instance of the reasonable attitude of local authorities towards motor carists in the carrying out of the new regulations, the case of Coventry may be cited. The town clerk and the chief constable of the borough have approached the Motor and Cycle Manufacturers' Association, which has its headquarters in Coventry, with a view to determining the lines upon which the Act and the regulations made thereunder shall be administered. This is particularly thoughtful on the part of the Coventry borough council, and it would tend to the smooth working of the Act if other county and county borough authorities would also consult the courteous secretary of the association (Mr. F. A. Bullock, of Coventry), who would be only too pleased to render what assistance he could in this matter.

Weak Points.

That some automobilists do not like the new Act is evidenced by an interview with a "prominent Manchester motorist" which appears in a daily paper. The account of the conversation is no doubt somewhat coloured by the reporter's imagination, but there are one or two points which deserve notice. One of these is the following: A policeman may take a number of a car in passing, refer to the register, and then summon the owner. A week or a fortnight may elapse ere the summons is served, and by that time an owner or driver has forgotten whether he travelled on the road and date named on the summons. How is the automobilist to rebut the evidence of a couple of policemen under these circumstances? is asked. "Then again," he continues, "there is a premium on convictions, and the officer who gets the most cases is generally pro-

moted. And is it not a great temptation to a man, when he knows his evidence counts against everything, to make convictions? The county councils encourage the police in every way, for the simple reason that every fine imposed goes into the coffers of the county and often enough helps to place the financial management in a better light than it otherwise would be in. My contention is that all fines against motorists should go into the Treasury coffers. Then there would be less encouragement from the county councils to the police to 'make' convictions."

Scotland and the Act.

The Secretary for Scotland (Mr. Graham Murray) has issued an order prescribing regulations under the new Act. In the covering letter a similar explanation is given to that which accompanied the orders for England and Wales. In regard to index letters it has been arranged that no use shall be made by English and Welsh registering authorities of the letters G, I, S, V, or Z, the letters G, S, and V being intended to be distinctive of Scottish, and the letters I and Z of Irish registering authorities. The single letters S, G, and V have been assigned to Edinburgh, Glasgow, and Lanarkshire respectively as the most populous areas for registration and licensing. The regulations as to the registering and numbering of cars and the illumination of number plates are practically identical with those relating to England and Wales.

Wild Suggestions from Ireland.

Some wild and smile-provoking suggestions, which, however, bear every trace of having been put forward in all seriousness, appear in *The Irish Times* above the signature "Francis C. Fitzgerald," of Newtownbutler. The writer's state of mind may be better imagined than described. He apparently starts off with the implied assumption that motorists as a body are ticket-of-leave men, who must report their every movement to the police. A "very efficient check" upon motorists not to exceed a safe rate of speed, he says, would be the following:

1st. To compel all owners of motor cars and bicycles to register their names in their own police district, specifying the form of car they own.

2nd. That each motorist be obliged to keep a record of all journeys made, which shall be open for police inspection when required.

3rd. That each of the four provinces in Ireland shall have a different and easily-distinguished colour for motors owned by people resident therein, such as—Ulster-owned motors to be painted red, Leinster to be yellow, Connaught to be white, and Munster to be black.

P.S.—All tourists motoring in Ireland to be made to register their names and keep a record of journeys.

A correspondent, who draws our attention to the above, says: "I think No. 3 about takes the cake. Fancy the unfortunate residents of Munster having to go about in motor cars painted a hearse-like hue, at great expense, to suit the taste of the author of this tastefully drawn-up set of regulations!"

MOTOR VAN AND WAGGON USERS' ASSOCIATION.

In view of the provisions in the new Act specially applying to motor vehicles used for heavy traffic, and for the mutual protection of the users of such vehicles, a proposal is on foot for the formation of an association under the above title as a section of the Motor Union. In a circular which has been issued by Mr. W. Rees Jeffreys (administrative secretary A.C.G.B. and I. and secretary to the Motor Union) it is stated that the Local Government Board has agreed to appoint a departmental committee to consider the existing conditions of usage, and to frame new regulations respecting tare weight, diameter of wheels, width of tyres, etc. As it is of the utmost importance that the opinions and requirements of users should be placed authoritatively before that departmental committee, the Automobile Club has appointed an expert committee to nominate witnesses and to collect and prepare evidence to lay before the departmental committee. Among the points under consideration are:

(a.) Amended regulations to provide for the construction

of machines having a greater carrying capacity than those at present in use.

(b.) Compulsory standard of tyre width in direct proportion to the gross moving weight in order to minimise damage to roads.

(c.) To provide that the new regulations shall not be retrospective so far as waggons now in use are concerned.

It is stated in the circular that in addition to looking after the interests of motor van and waggon users at the forthcoming Government inquiry, a vast field of utility is before the association in protecting its members against the restrictions which local authorities propose to impose upon them, collecting and distributing information with regard to the use of heavy vehicles, and securing for them legal protection. The circular has been sent to all who are interested, but we are asked to state that should any users have been inadvertently overlooked they may obtain copies from the secretary, Mr. Rees Jeffreys, 16, Down Street, Piccadilly, London, W.

THE DUST PROBLEM.

The Basis of the Subject.

On the evening of Thursday, 26th November, Colonel Crompton, C.B., R.E., and Mr. C. W. S. Crawley read a most interesting paper on the above subject before the Automobile Club. Their remarks were founded upon the deductions and observations made during the dust tests in connection with the late reliability trials. The authors considered that the facts observed and the conclusions arrived at from those tests would tend to the alteration in the design of cars. It was only after much consideration and counsel with several physicists that the system adopted for the tests was selected. Their first attempts to take dust photographs were unsatisfactory, but with the aid of the club photographers, Messrs. Campbell and Grey, a series of tests carried out upon the Ripley Road showed them that it was necessary to point the camera towards the sun, and let the car approach it, the picture being taken as the car approached with the sun behind it. In this way three photographs were taken of a White steam car running at eighteen, twenty-two, and thirty miles per hour, showing the size and shape of the dust cloud raised in each case clearly and distinctly.

The first idea was to prepare a special dust track at the Crystal Palace, but this was found too costly, and a suitable track was subsequently arranged on the cement cycle path, opposite the grand stand. To form an imitation of a dusty road, dust was raked over the surface of the track with suitable gauged rakes, but it was found that the sifted dust when run over by a car at one of the above given speeds did not rise in anything like the cloud it would have done had the dust been on the road. This was due to the absence of depressions upon the track, the plunging of the wheels of a car into such depressions where they occur on the roads being responsible for a good deal of the smother. Therefore, various grades of flour were experimented with, and in the mill sweepings supplied by Mr. Mark Mayhew the exact thing was obtained.

How the Tests were Made.

A section of the track, 60ft. long and about 15ft. wide, was covered with these sweepings to the depth of half an inch. The other half of the track was left clear for the pilot car, fitted with a speed recording apparatus. After several experiments, two cameras were placed on the inside of the track, and focussed on one point on the grand stand, indicated by the car number there held in a fixed position by an attendant. The pictures were taken simultaneously when the cars had sufficiently passed this point, so that the car number would be about the centre of the dust cloud raised. The photographs thrown on the screen during the evening showed that this arrangement worked very well. The atmospheric conditions luckily remained constant throughout the test, so that the colour of the prints was so alike as to obviate any difficulties in comparison. Upwards of 500 exposures were made, and proved that photography does permit a satisfactory judgment to be formed of the character and shape of the dust clouds raised. Nothing had hitherto been done, even in France, which could serve as a guide as to the effect of construction upon dust raising. All previous ideas had been formed on ordinary scientific lines. A motor car disturbed the road dust by its wheels, and the dust was carried to a height or distance by the wind or air draught of the car. Motorists not familiar with the laws of air currents thought the pneumatic tyres sucked up the dust themselves, and had not considered the effect of the air currents produced by the car. A White car, running on 800 mm. by 85 mm. tyres, was noticed to raise less dust than other cars of the same size and weight when running at the same speed, the space under this car being a good deal larger than that common to the other cars, and this space further was larger at the rear than at the front end of the car.

How Dust is Raised.

When a car is driven through still air at a speed of twenty miles per hour, air is displaced by it in proportion to its cross section. Part of the air so displaced passes over the top—part to the right and left, and part underneath the car. It was with the latter that the dust-raising question was concerned. All were familiar with dust clouds raised by wind sweeping over a dusty road. With some roads a small breeze would raise dust to a disagreeable extent. The heavier parts of the dust were blown from the prominences into the hollows, leaving the former bare, but the lighter parts drifted away in the form of a cloud. When a horse-drawn vehicle came along the dust in the hollows was disturbed by the animal's hoofs and the wheel tyres, and the dust so disturbed was caught by the breeze and formed a much larger cloud than the breeze could effect alone. With a car having pneumatic tyres a still larger amount of dust was disturbed and lifted to a height proportionate to the speed, and even on still days the artificial breeze set up played the most important part in throwing dust to a great height and distance. The under current and the side and back currents set up by the car rushing in to fill the vacuum were the most important. The same thing noticed in the swirling eddies in the rear of a broad-sterned boat took place in connection with the air disturbed by a car. Therefore, while it was expected that the size and shape of the pneumatic tyres used would have their effects, the shape of the car, the squareness of its stern, and the sectional area of the air inlet and exit were expected to play their parts. The dust raised by the tyres was expected to be a definite quantity, but if the air currents were small it was thought the dust would not rise high and would quickly settle, whereas if the draughts were larger the contrary effects were to be expected. They would now see how far these ideas were confirmed by the trials. The trials, although highly instructive, were not sufficient to permit the laying down of laws with absolute certainty. Although previous ideas had been largely corroborated, this was not so throughout, owing to the fact that in few cases did the cars possess all the features offering the best hopes of small dust raising. A number of most interesting slides were then thrown upon the screen, which showed the marked difference between what the authors regarded as good and bad cars from a dust-raising point of view.



THE HERMES MOTOR VAN. The Hermes pleasure car, which is a machine with distinctive features of its own, is not the only outlet for the energies of the Autocar Construction Co., of Openshaw, Manchester, who are giving a great deal of attention to motor delivery vans, one of which we illustrate above. This machine, which is driven by a 15 h.p. motor, and provided with four speeds and reverse, is constructed to carry a full load of 30 cwt. at speeds up to fourteen miles an hour. The over all dimensions are approximately 9ft. x 5ft. x 6ft., exclusive of cab, this giving about 270 cubic feet of carrying capacity. The rear axle is a live one, but both wheels are carried on the same through shaft. In fact, every part of the machine is specially designed for the work it is called upon to do. Among the detail points it may be mentioned that the side windows of the cab are curved and projected after the manner of the look-out on a railway guard's van, so that the driver can see what he is doing when reversing. Another very important point is the protecting of the mechanism, which is completely enclosed.

Tyres and Dust.

They had come to the conclusion that the difference caused by the sizes of the tyres themselves was not very marked. All else being equal, 120 mm. tyres would raise more dust than those of 90 mm., but this difference did not affect the total cloud to nearly the same extent as comparatively small alterations in the front wings, and in the air entrances and exits. Capt. Brady, R.E., had given the following clear explanation why all elastic driving tyres lifted dust. Cars were propelled by stress through these tyres. With cars at rest tyres were compressed vertically by the weight. When stress was applied by starting the tyres were strained tangentially, the rubber in front of the wheel being compressed, and that behind where it left the ground would be stretched in both cases in a direction parallel to the rim. As the car moved forward the particles of the tyre in front as they came under the wheel were brought into a state of tangential compression. The roughness of the road and the driving power of the engine prevented these particles from springing back until the forward movement of the car raised them from the ground. Then they suddenly changed their state of tangential compression to one of tangential tension; that was, they moved rapidly backwards along the rim to recover their original position. In so doing the tyre scraped or swept the road surface, and carried up the lighter dust. The difference of the speed of alternate compression and stretching is the speed at which the tyre sweeps the dust to the rear. Small stones were overturned, and all finer particles projected backwards and upwards. Therein the tyre was worse than a sweeping brush which smothered some of the dust it raised, but the tyre retreated and left the dust free to rise. A diagram was thrown upon the screen to illustrate this. In the case of deep tyres at a speed of twenty miles per hour the tyre particles might sweep the surface at a speed of seven miles per hour apart from their rolling velocity. Owing to the necessity of getting driving grip through the dust it might be said that the dust sweeping properties of tyres depended (1) on the elastic sensibility of the surface of the tyre, (2) on the width of tyre on road, (3) on the driving stress applied, (4) and on speed of wheels. The authors then described the method of conducting the trials, and the ingenious and careful way in which the photographs were judged.

Judging the Trials.

Eye judging of the clouds raised was a practical failure, and adequate reasons for this were given. Photography was the only reliable method of getting results. Mr. Crawley agreed with Colonel Crompton in all the deductions. All wheels, said Mr. Crawley, raised dust, some more than others, the best enough to make a dusty car if the latter was bad in other respects. Dust if left alone would fall quickly. Slides were shown exemplifying this, pictures of cars raising equal quantities of dust as to their wheels, but dealing with thereafter quite differently by

reason of their varied body form. The disturbing elements were two: (1.) Any air thrown out sideways by obstruction under the car. (2.) The inrush of air behind the car after the vehicle had passed. A low-placed cross silencer or tool-box, or, to a less extent, a tangle of gear caused the first. This had been shown by two of the slides. Anything in the shape of a cone pointing forwards was bad; a flaring mudguard was sometimes very bad, particularly when it was low at the back. A car had been tried with and without such mudguards, and the difference was very noticeable. A point they would like to impress strongly, although against all previously conceived ideas, was a low car was not necessarily a dusty one, nor was a high car necessarily dustless. When the bottom of the car had a tangle of gear and boxes, particularly with smaller air inlet than exit, that was bound to be a dusty car. Slides were shown to demonstrate these points, and reference was made to the good behaviour of a car which, although it had a dust sheet coming within six inches of the ground, gave excellent results.

To Improve a Dusty Car.

Mr. Crawley and his co-author were of opinion that many a bad dust raising car could be much improved, if not made absolutely dustless, by the use of such a plain sheet. They had not, greatly to their relief, found that draught-inducing fans provoked dust. There remained the further cause of dust—the rear inrush of air. This was in some cases negligible, in others very serious, but the facts were so numerous and varied, and so very little was known, that they had no respect for theories. Profiles of the backs of many of the cars had been taken, but little had been deduced from them. Careful and methodical examination of the matter was required. Before they saw the photographs they had theories, now they had a deal of practical experience of body shapes—they had no theories. The final results might be summed up as follows:

Hard tyres are better than soft.

Narrow tyres are better than broad.

Neither have a preponderating influence.

Flaring mudguards are probably bad, particularly when coming low down.

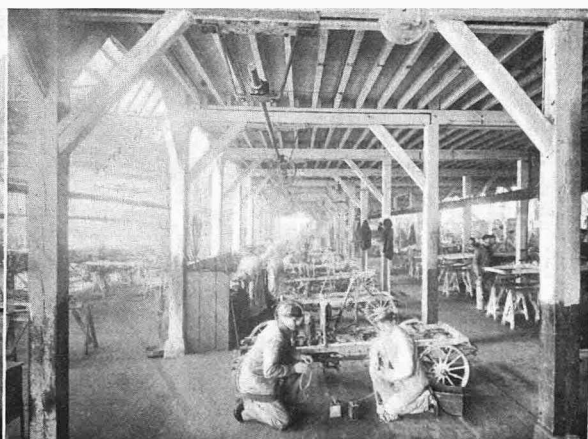
Cars low underneath are worse than cars well off the ground.

But smoothness of bottom shape and absence of forward coming are infinitely more important.

There is strong evidence that it is desirable that the car should slope upwards towards the back.

The shape of the car was of the greatest importance, but little would be known thereon until next year.

The club by carrying out experiments with a selected chassis fitted with average tyres could be of immense service to designers, these experiments being carried out with various forms of bodies, wings, mudguards, and other attachments. It is to be hoped that the club will act in the manner suggested, for the reduction of the dust nuisance is a matter of almost national importance.



Two views of the interior of the Gladiator works. The left hand illustration shows the machine shop where all the various parts of the cars are made, while the other shows the erecting shop in which the parts are assembled and adjusted. The factory is lighted throughout by electricity generated on the premises, and every detail of construction is very carefully studied.

A NOTABLE GATHERING. Some Interesting Speeches.

On the evening of Thursday, the 26th ult., one of the most successful dinners yet held in connection with the automobile industry was given by the British Automobile Commercial Syndicate at the Hotel Cecil.

The company, to the number of some 150 odd, were presided over by the Right Hon. the Earl of Shrewsbury and Talbot, K.C., who was supported by that eminent French automobile engineer, Mons. A. Clément, and MM. Lucas, Lamberjack, and A. Clément, jun., from the other side of the Channel, Messrs. H. Hollingdrake (Stockport), J. Newton (Manchester), A. Hutton (Birmingham), W. Norris (Manchester), W. Cox (Southsea), A. E. Major (Reading), W. M. Appleton (Bristol), W. Bailey (Stafford), W. M. McTaggart (Dublin), R. M. Wright (Lincoln), W. H. M. Burgess, Frank Wellington, H. E. Clarke (Leicester), H. Sanderson (Chiswick), R. Cripps (Nottingham), E. E. Coxeter (Oxford), J. Spiller, A. C. Instone, J. Jarvis, Oliver Stanton, Chas. Garrard, M. Wolff, E. Pye and H. Broadbent (Bradford), D. M. Weigel, C. Schofield, C. Cordingley, S. Spooner, C. New, C. W. Brown, C. L. Freeston, Harry J. Swindley, and others.

Their Majesties' Motoring.

After dinner the Chairman, who was greeted most enthusiastically, rose to give the toast of "The King," referring in terms which were frequently applauded to the regard in which His Majesty was held by his people throughout the empire. His Lordship spoke feelingly of the direct encouragement which His Majesty had given to the automobile movement, and testified, from personal knowledge, to the pleasure and enjoyment which the King derived from the use of his cars. Lord Shrewsbury said that he had personally had the honour of driving His Majesty in his own cars.

The Chairman was shortly up again giving the toast of "The Queen," whom, he said, he had also driven, and who, he assured his audience, was as keen upon and as interested in automobilism as the King himself. It was well known to all present that Her Majesty took the greatest pleasure in driving her own automobile about Sandringham, and upon the occasion upon which he had the honour of driving Her Majesty she had requested that he should take particular care with regard to the dogs encountered upon the road. The toast having been enthusiastically received, that of the Prince and Princess of Wales and the other members of the royal family followed, and was equally heartily received.

"The Automobile Industry" was given by Mr. Chas. Cordingley. Since 1896, before which it was illegal to drive a self-propelled car in this country, the movement had made astonishing progress. They had now secured another Act, which gave them certain further liberties with additions, and although some saw cause for disquietude with regard thereto, he did not share their fears. He coupled the toast with the name of their chairman that evening, who, as they all knew, had put himself at the head of an automobile industrial concern, which promised to mark a new era for the trade in this country.

Racing.

Lord Shrewsbury, upon rising to reply, met with a most cordial reception, having to wait some little time before the cheers had died away, and he could commit himself to his task. After thanking the company for the manner in which he had been received, he testified to the pleasure he and his colleagues felt in welcoming their guests of that evening. They had had no less than 168 acceptances, and their guests came from every part of the country. After briefly sketching the progress of the industry, his Lordship referred to automobile racing, which he noted some people were now suggesting was unnecessary. Personally, he could not concur in such views. They should consider how much the automobile had benefited by the numerous competitions that had taken place. Everything must have a beginning. Motors had to crawl before they could walk. He would ask them to recall the time when a three tons autocar was propelled by a 3 h.p. engine, that was one ton per horse-power, while this year they had seen cars propelled by motors of 100 h.p., which only weighed

19 cwt. That was now 21.28 lbs. per horse-power—something of an improvement they would admit. Racing was good because it revealed defects in the shortest possible time. That there was some value attached to racing at least by our friends across the Channel he thought some figures he could quote would adequately show.

The French Elimination Trials cost £195,000.

For the elimination trials in France next year for the Gordon Bennett race, an entry fee of £200 per car was required. Fifty firms had entered three cars each, which meant an aggregate sum of £30,000 in entry fees alone. The average price of these cars was £1,000, so that amounted to the huge sum of £180,000 to be laid out by the French automobile industry in order to determine which three cars should be selected to represent France in the great race. Allowing another £10,000 for men, stations, spare parts, and the incidental expenses, it would cost France certainly no less and probably much more than £195,000—£65,000 per car—to put their three champions in the field. So far as we were concerned the law had given France her great start, and he had long felt that the industry in this country must be crippled until it could be brought right up to date. It was because he was so thoroughly of this opinion that he had entered into partnership with Mons. A. Clément to build automobiles in this country. At the large works now nearing completion at Ladbroke Grove, the Talbot cars would be produced screw for screw, nut for nut, as they were built in Mons. Clément's huge workshops on the other side of the Channel. For some time, at least until the works under the careful direction of their talented friend, Mr. Chas. Garrard, were in full swing, parts of the Talbot cars would be brought over from France, but ultimately, and the sooner the better, the Talbot cars would be built from the ground upon English soil with English labour. After giving the reasons why the cars would no longer be known as Clément's, but as Talbots in this country, his Lordship went on to give some particulars with regard to the new works. So far as the site went they had plenty of room for expansion, and he had no doubt of its necessity. When, at the instigation of his friend Mr. Weigel, he had gone into the automobile industry he had already in his mind's eye some such development as was taking place. The business of the British Automobile Commercial Syndicate had always been a prosperous and a growing concern, and they were now watching the rapid upspringing of its offspring at Ladbroke Grove.

The Motor Equivalent of the Jockey Club.

The movement was growing very rapidly, and required a head. The Automobile Club had undoubtedly done excellent work. He had nothing to say against its members. But the control of many matters had passed beyond it. Rules and regulations required to be closely and loyally adhered to. He thought the time had arrived when a number of competent gentlemen outside the trade—a body constituted on the lines of the Jockey Club—should be formed for the purpose of settling all questions of automobilism, altogether apart from trade influence, to advise the latter and the Legislature in the general interests of those who were or who were likely to become automobilists. Such a body might take the Gordon-Bennett race into consideration, and endeavour to lessen the financial strain upon manufacturers who desired to compete.

The Reception of M. Clément.

Upon rising to reply in his turn Mons. Clément received the ovation of the evening. It was some minutes before, speaking in eloquent and nervous French, he was able to make himself heard. As one of the leading constructors of automobiles, it was unnecessary to say his heart was in the industry with which he had now been so closely connected for the last twelve years. He very much desired to give the warmest expression to the intense pleasure it had given him to be present, particularly as one of their hosts. It was perhaps unusual for a Frenchman to be in that position towards Englishmen, but the satisfaction was none the less to him. As they were aware, he had joined Lord Shrewsbury, Mr. D. M. Weigel, and others, in setting

up an automobile works in England, which works he had viewed that day, and which, he was pleased to find, were rapidly nearing completion. He believed it to be one of the finest engineering works in the world, and he had nothing but praise for the work of Mr. Garrard, under whose care they had been erected. He thought they would agree that France, which had taken the initiative in automobile construction, had more experience therein than England, but he was delighted and gratified to be in a position to place his experience and the results of his study and research at the service of the English industry. He would like to add that what had largely induced him to do so was the sound conviction that English workmen were fine, persevering workmen, capable of carrying out his designs and

experiences to a highly successful issue. As a good Frenchman, he should like to say that nothing was better calculated to foster and cement the friendship and kindly exchange of feeling, lately so conspicuous between his country and their own, than the fact of a Frenchman being at the head of, and financially interested in, works in England, managed by British labour.

The acclamation which greeted the close of M. Clément's moving speech excelled in warmth even the plaudits which had greeted his rising.

"The Agents (London and Provincial)" was most ably proposed by Mr. D. M. Weigel. As the proposal and replies were business speeches, dealing largely with matters of internal administration, we do not give them here.

CLUB DOINGS.

Hertfordshire.

Steps are being taken to form a centre of the Motor Union for Hertfordshire.

The Southern Motor Club.

The members and friends of the above club will hold their first dance of the season at the Avondale Hall, Lander Road, Clapham, S.W., on Thursday, Dec. 10th.

Burnley and District A.C.

The first annual dinner of the Burnley and District Automobile Club has been set down for the 8th December at the Bull Hotel. A series of meetings will be held during the winter months, at which papers on motoring topics will be given. The Burnley and District Automobile Club has decided not to support the federation scheme of the Reading Automobile Club. The main provisions for the affiliation agreement with the A.C.G.B.I. have been approved, but objection was taken to the requirement of a twelve months' notice to terminate the agreement coupled with a minimum fee of ten guineas, as the adoption of such a clause would place the officials of the club in the position of guarantors for the affiliation fee. Seeing that the Burnley and District Club objects to federation, and also to the terms of affiliation with the A.C.G.B.I., will it remain an entirely isolated body, or what?

The Scottish A.C. Historical Sketch.

The Scottish A.C. was formed in 1899, and was divided into two sections—the Western and the Eastern in 1901. Progress at first was slow, but latterly the club has advanced rapidly, the present membership being: Western section 199, Eastern section 113, total 312; the membership having thus more than doubled during the last year. The club did useful work in organising the local arrangements for the thousand miles trial of 1900, and by a local committee undertook all the local arrangements of the Glasgow Exhibition reliability trials of 1901. The S.A.C. has also organised several important events, including a hill-climb at Lanark in May, 1903, and the Glasgow to London non-stop trials of 1902 and 1903. The committee in charge of the events was composed entirely of amateurs i.e., no representatives of the trade were included. The Glasgow to London trial of 1904 will take place on the 19th and 20th of May next. The club also has regular 100 miles non-stop certificate trials from Glasgow, the course being that including Whistfield Hill, which formed one of the Glasgow Exhibition trial runs. The club has evening meetings and discussions during the winter, and while the subjects may not be so technical as those submitted to the A.C.G.B. and I., they arouse much interest, and are an important factor in developing automobilism in Scotland. Tours, meets, and runs take place regularly. The "anniversary" run of the Western section is a feature of the year, and never fails to attract much attention. These runs form an unmistakable indication of the progress of automobilism in the West of Scotland. In 1901 twenty cars took part; 1902, fifty; and in 1903 over seventy, one-half of these seventy being built in Scotland. The club has done much other useful work. It was the means of getting eliminated from an Edinburgh Corporation Bill certain objectionable restrictive clauses affecting motor cars. Except for the club's timely intervention the Glasgow parks would now be largely closed against motor vehicles, and the club has, by a strong representation to the Secretary

for Scotland, contributed largely to the modification of the regulations for identification, etc., just passed. It has also in many ways helped to mould public opinion, and to make the attitude of the police and of the authorities generally more favourable towards autocars. Consequently in Scotland the motorist's lot is a happier one than in many parts of England. If the S.A.C.'s work in the matter of trials and runs does not appeal to automobilists outside its ranks—although these all tend to their advantage in many ways—the other efforts that the club has made for the improvement of the conditions generally ought to constitute a strong claim on owners of motor cars or on persons interested in motor traction to join the Scottish club. No autocarist in Scotland should be outside its ranks. Much will have to be done within the next year or two for the protection of automobilists in Scotland—matters arising out of the Act and otherwise—which will be done much more effectively if the club is fully representative of all motorists in the country. The S.A.C. is affiliated to the A.C.G.B. and I., and, though farthest from headquarters of all the affiliated clubs, yet contains a very large number of members of the parent body. It is by far the largest affiliated club, and is held in high respect by the authorities in Piccadilly.

THE PROPOSED FEDERATION OF PROVINCIAL CLUBS.

On Wednesday afternoon last a meeting of representatives of provincial automobile clubs was held at the Inns of Court Hotel, London, Dr. Walters, of Reading, being in the chair. The Chairman introduced the question of federation by a speech in which he pointed out the advantages that would accrue to provincial clubs. Amongst other advantages would be the fact that by federation, apart from the Automobile Club, they would have effect in all legislative matters and retain their independence.

Mr. Dodd, of Reading, spoke in support of the project, and ultimately moved that, "In the opinion of this conference it is desirable to form a federation of automobile clubs in the United Kingdom." This was seconded by Mr. Butter, of the Manchester Motor Club. Dr. H. P. Fernald supported the idea of federation, and Mr. Aveling, of the Midland A.C., deprecated any immediate secession from the parent body.

After discussion, Mr. Moseley, Eastern Counties A.C., proposed an amendment as follows: "Owing to the necessity of working in line, it is the opinion of this meeting that the question of federation should be deferred until after the meeting of provincial clubs called by the A.C.G.B.I. in February next, when auto cycle clubs should have equal representation."

Mr. Ballin Hinde (Midland A.C.) supported this amendment in a strong and well-reasoned speech, and it was carried by seven votes to six.

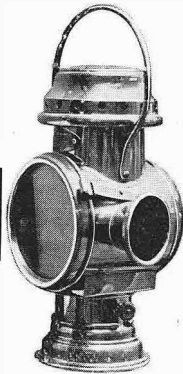
It was subsequently suggested that the representatives present should form a committee to approach the A.C.G.B. and I. with regard to the demands and views of provincial clubs.

The Gloucester, Eastern Counties, Halifax, Kent, Manchester, Midland, Oxford, Sheffield, Southern Motor, Southport, South Wales and Monmouthshire, and the Reading A.C.'s were represented at the conference.

LIGHTING THE NUMBERS.

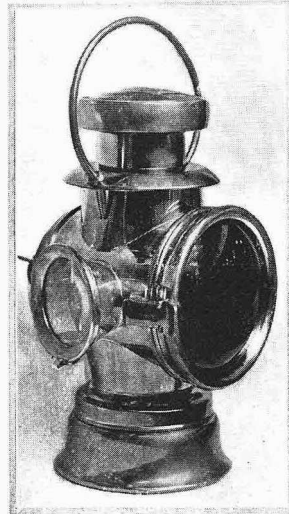
All the leading lamp makers are devoting attention to the production of a lamp which will conveniently illuminate the number upon the rear of the car, as enjoined by the new regulations. We reproduce photographs of a

AB-242



couple of lamps which have been submitted to us. The first one (with the number plate by the side) is by Messrs. Dunhill, and it almost explains itself. It will be seen that the lamp, instead of having its lens facing backward, is turned sidewise across the back of the car, so as to throw its light upon the number plate on the back of the car. The small dark glass in the

side of the lamp throws a red light directly backward, as at present. The other lamp is by Lucas. It may be described as being at right angles to the Dunhill lamp. That is to say, the large glass is red, and shows backward, but a lens is fitted at the side, so focussed by means of a reflector as to concentrate the light upon the plate. We have not yet had the opportunity of trying either lamp, so can express no opinion as to their merits from actual test, though both of them appear to be

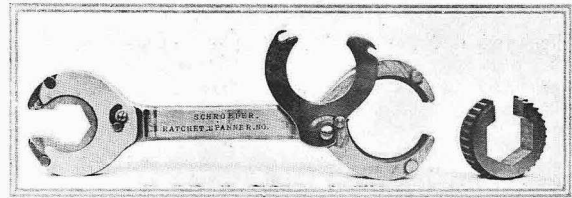


workmanlike arrangements. At the same time, as we have said before, we think that if a really good lamp with a transparent front, combining the duties of number plate by day and illuminated transparency by night, were submitted to the Local Government Board, it would be accepted, and in many ways would be superior to any device which has been shown to us.

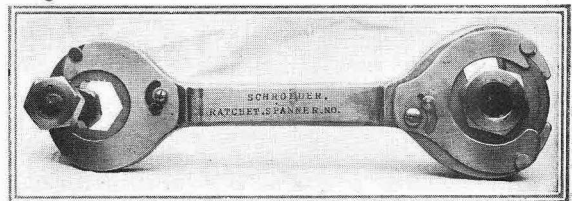
Some very useful dry batteries which can be carried on the car as a stand-by are being made by the American Electrical Novelty and Manufacturing Co. It is claimed that they will last a whole season, always ready should the working accumulators from any cause or other give out. Not only so, but refills can be obtained at a very reasonable price, and are procurable nearly everywhere in the country. We are testing a set and shall report upon their behaviour after they have undergone a variety of experimental and actual tests.

A USEFUL TOOL.

The accompanying illustrations depict one of the most useful small tools for automobilists which has yet been produced. The illustrations are in themselves almost self-explanatory. In the first the dies



for two different sized nuts are shown, one in position and the other out of position. In the latter it is seen that the nut die is provided with a series of ratchet teeth. In the stock which forms the spanner proper is a small spring pawl which engages in these teeth. The die is held in position by the engagement of the catch-plate with the studs shown. A die is placed in position in the stock, so that the pawl engages in the direction in which the movement is to be made. For screwing up a nut the die is inserted in one direction, while for unscrewing the opposite side is put in first. The one stock accommodates several dies. The principal feature of the



tool is, of course, the fact of its being able to be used in practically any position, and without the removal of the spanner from the nut until the operation of screwing or unscrewing is completed.

The general manager of the Car and General Insurance Co., Ltd., of College Hill Chambers, E.C., which was formed recently to deal specially with motor car insurances, informs us that the company is now in active operation. It should be understood that it does not confine itself to motor insurances and indemnities, but covers all sorts of accidents as well.

"THE AUTOCAR" COLONIAL AND FOREIGN EDITION.

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

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