


## The"NEW NOTEİM MotorHorns <br>  <br> A"no-trouble" warning signal-no oiling no cleaning, nothing to get out of order, and having a very loud high frequency note. <br> Your dealer will gladly demonstrate. <br> Illustrated Lcaffels fiom <br> ALFRED GRAHAM AND COMPANY (E. A. Grabum) St. Andrew's Works, CROFTONPARK,S.E. 4 <br> Shawroome: $25 / 26$, Savile Row. London, W. \& 79/82, Bligh Siecet. Clapham, S.W'. M. Manchester: 10 , End. Glasgow: 101, S: VincentSirect.

## Price ESTABLISHED 1911

気
TO THE READER. - By mentioning "The Light Car and Cyclecar" when replying to adverlisements, the progress of the small car movement will be assisted.


[^0] bullied. The blustering old wind can't move it, can't bend or break it-it's fixed
rigid . . . . . there to protect your rear seat passengers and able 10 do so better than any other rear screen in existence. But to you, the owner, the BEATONSON is very tractable; to enter or leave the car you just "persuade it"it sways easily, does not need to be dismantled. Moreover, it can be fixed at any desired distance from the passengers, and gives a wide and ample vision.
To fit it to your car would be the work of a momentyour garage man could do it while you wait; and as for storage-well, it requires none, but just folds away on the back of the front seat.
So have details of "the best of all rear screens"-for if you are to fit a rear screen at all (and you must) it must be the BEATONSON. Price $£ 7: 15: 0$ or with Triplex $£ 12: 5: 0$.

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to clean his ark with water and, at the same time, bitterly complain of the drudgery.
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## ATOMIST

The "WATERLESS" Car-Cleaner.
Removes Mud and Grease
WITHOUT WATER!
Polishes in the same opcration. Costs 2d. per clean.

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\\
\\
\\
\text { Ledium- }-3 / 6
\end{array} \\
\text { Large - }-5 / 6
\end{array}
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> and

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READERS, NOTE.- Hassists the small car movement and the advertiser, and ensures you prompl attention, to mention "The Light Car and Cyclecar" in your enquiries.

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A row of roller bearings placed between the second and third longest leaves of any type of car springs.
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Extract from"The Light Car and Cyclecar," March 13, 1925.
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thave tested the car and find springlag vasily Improved and that on corrugated and badly cambered roads one can take Iherties in driving that one would have been afrald to rlsk before your fitment was installed." l.WV.R
The heautiful pliding motion of my C- Is a urprise 10 my friends. Your claims re specholey ruads, there are none now. The comfort for so smill an autlay is hardly bellevable." E.H.L.
I have been motoring now for over 20 years, but have never iried any appliance which has had such beneficial resulis, and shall highly recommend your Neverskld Shock Absorber." C.G.
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F.W.B. .. $£ 180$ 4-Seater £182-10 4-Senter with F.W.B

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Full range of $A \cdot C$ Cars at 55/56, PALL MALL, LONDON, S.W. 1
"The Light Car and Cyclecar," December 18. 192.5.


THE BEND $\mathrm{A}_{i}$
SOUTHOE BELL.
An erstwhile danger spot in the one-time " 30 -mile skid" section of the North Road. The frozen surface has of late almost approximated the conditions which used to exist, and the curve must be taken carefully when there is a hard frost. The car is a $9-20 \mathrm{~h} . \mathrm{p}$. Humber, of which a road test report is in course of preparation.

## NOLIS, NTW COSS WO Of WIEK

Two Days Early Next Week.
Next week's issuc of The Light Cal "uide ('yclecar, dated Decemhere 25 th will he un sale on Werlnestlay; Decem ber 23 rd ; that is, wo days entice th:n usual. Advertisencuts for that issuc minst reach the manager hy firat l... (wI Monday next, Deeember 21st.

## This Week

The varied contents of this issue will make a wide nppeal, and amongst the interesting articles which are included we would divect the attention of reader: 10 test-run renorts of the De DionRouton :mad Spurs Tourn A.C.. incorprivated with the latter heing a descriptinn of how the car is made at the Thames Ditton works: the new $1: 3$ h.j. Clyno is also dealt with. Our centru pages are devoted to a description of the fastest eyclecar in the world, Mr 11. Peart's Morgan, which has attame:? th. phenomemal sperel of nser 101 miles an hour on lbrooklands track. The mincipal siberting event of the werk-end wns the Landon-fioneesterramdon trial. which is described and illustrated. whilst techmicml maders ar ratrerd for in an artiche rntitleel. " Plain liacts Abont Brakes."
No. 6§2. Vol XXVII

## ON OTHER PAGES

Cyclecar Commenis
Cartin Jacts About Diagnosis Road Test Report: The Le Dion Bonton
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LIGHTING-UP TIMES (Rear Lampg) Icr Saturdny, December 19th, 1925.

$$
\begin{aligned}
& \text { IAmdan . . . } 20 \text { Edinburgh . . } 4.6 \\
& \text { Nowcastie .. } 46 \text { Liverpool .. } \downarrow .21
\end{aligned}
$$

Birmingham 4.21 Bristol
1.30

Protesting Against the Raid
A resolution protesting ngainst tho *ontunplated raid on the Roall Fund is to be addressiol by the E.ssex Motor Clul) to the Clinucellor of the Wex chequer, Mr. Winston Churehill. Tin. example might well be followed by ,ther cluis. We comment on the matter umbre "Topies of the naty."

## Caution on Christmas Day

The R.A.C. road gaides ato brinim given a whole day's holidas on Christmas Day, and, in consequencer, a muraber of trallic points will be uncontrolled. The Club asks motorists to hear this in mind and to drive nith special caution. Christmas Day, Decomber 25 th, is the only day throughwut the year on which the li.A.C. rond guide service is suspended.

## Next Week.

The complete list of car competitors in the London-Exeter trin, with their numbers, will be siven in our next issue, whilst we shall also publish at minl of the most interesting part of the course. together with particulars showin: just when nod where spectators may see the competitors. This issue is beins published two days early un account of Friday, our normal publishing day, being also Christmas Day. Tonical interest will be lent to it by : number of Christmas features which we are sure will make a special apneal to readers. We have in course of preparntion an "On the Road and in the Making" artiele dealing with the lomber Nine.

## In Parliament.

Mamy subjects of interest to monorints hilve come before the llonse oi Cohrmons recently. A revamé, to which we diret the attentiun of our readirs, will he fonad on another bage.

## An Old-fashioned Chrisimas.

There is every indication that the cold weather will coutinus, and that, although there may be a temporary breah. motorists nill have the plessme (!) of expericucing a typiral wht iaxhiomm Christmas.

## Standardized Parts

l'ursuing its gool work of issuilur provisional standards in connection with the dimensions of mutorear parts. the S.M.M. nond $T$. have just issued details of provisional standards fur imbulse-starter conplines, and matome, niplles and muts.

## A Concession for the Horse

So slippery have the main roads of the conntry become that in certain distriets where there are very wide erravolled footpatlis mo action in beins taken against the drivers of horsedrann rehicles who use the path so as to enehle the amimals to obtain abetter grip

## Clyno Production.

We hear a lot in these elays of goneral trade demession and so on, ant it is all the more encomraging, therefore, to mote that, aceording to a statement issued by the Clyun Enginecting (2. (1! $2: 2$ ). Letc.. that thes are at present boducing as many Clyuos in one week as were prodaced durin: the whole si 1923.

## Radiator Lamps.

There are nerwous owner-flivers who. despite the guarantees of safety riven with the better-known makes of radiator hamp, hesitate to liave rine maler the linnet for any length of time. They may be inferested to know that, in is closid garage, freczing may be glarder against if the lamg is phaced on the worlbench within $n$ few feet of the car. where it serves to maintain throughout the zi.rage a temperature which cau be regarded as quite safe-provided, of conrse. that don's and winduws are a nooi fit and tightly eloseri.


LIGHT CAR LIMERICKS-No. 51. When Reggie descended on Reading, To act as best man at a wedding

For a bachelor gay
'Twas a dangerous day

> Readers are invited to supply the missing Fifth line. Only post-cards addressed to the Editor and marked "Limerick No. 51 will be considered. A prizc of One Guinea is offered for the most aptand original fifthline. If two or morc such lines are received the prize will No to the sender of the first to be judged. No judging will be done bcfore next Tuesdas. For result of No. So, sce this week"s Araund the Traie."

## 100 m.p.h. Bugatt.

Au accompanying photogralh show: the new 1 -litre fon-cylinder Grame Prix tyne Busarti which, it is claimed.
 at the relatively low price of $t G 00$. It follows very closely the lines of the famons straighteright Grand Prix chassis. The gear ratios are: top, 4 to 1: third. © to 1 ; second. (5.5) 10 I and first, 7.5 to 1 , zatios which should make for an extremely lively pertormance on the track. The gear lever, as rain be sen in the photorraph, passes thromgh a slot in the bedy side, the aloerture being masked, as it were, by a leather flat!. The body is similar on other Grand Prix Bugatis, and is of the type which one would expect to see on such at fast whicle. The sole concession for racing lugattis in this conntry is Jeld by Mriteolm Cammbill (Lomdun), LAl.. 42-4: : Sussex Place. South Kensinglon, London, S.W.7. ti whom imguiries should ber adilresserl.

Cheaper A.C
An amomement of considerable interest has been made by A.C. Cars. Ltat. Migh Steet, Thames Ditum. surres. to the efficet that the fouralinder 12-24 h.p. Sovercign model hax been reduced to f 2eno. The car calries a 12 munths gharantec.

The White Glove.
The Automobile Association is usius its best endeavours to persmade rar drivers to follow the example set liy the bolice and A.A. scouts in wearing white gloves for driving. The photograph ou this rake shows how cluarly it whitegloved hame is shown up, ly the lampis of an wertaking car. "They should be worn be every car driver, bus driver, lorry driver and motoreyclist." salys Mr. Stenson Cooke, secretary of the $A$


A night photograph showing kow plainly a white glove shows up in the beam of a headlamp.
L'Yrsan Price Reductions.

 their sport: for luxe and touring wase malde?: hase bern withdrawn :mal that thes shell daciner mondel wits aluminian borly has beera rolluend In £150. A similar mudel, but wibs sterd bundy, costs $£ 140$, whilse low standarl touring lype with firn then body has bean reduced from tide to
 ment is not included in the forequinz prices, a charge of ext heing mathe fou Ducellier amd fiff 10s. for Theas.


THE QUINTESSENCE $\qquad$ A side view of the latest 100 m.p.h., 1 -litre Eugatti. It is modelled on the lines OF SPEED.

## Eastbourne Road Landslide.

A landslide on the main Ensthournc road, between Nutley and Maresficld, thocked over hali the roadway, and, as the point in guestion is particularly 1. Un us, drivers are spmeinlly warned to exeresise great ente. 'Whe rond is


Increased French Taxes?
No more lonns: the Budget must be: balanced by taxes," saill M. LomGhenr, the Finance Minister for Prance, in the introduction to his financial prowo for 1026 . Tho French motorist will contribute his af ta as a result of ineransed taxes on both netral and car\%.

Dundee Sets an Example.
Statutory authority dealing with the" ruestion of red rear lights on all kinds of vehictes in use within the eity homblarios having been obtained by the Corporation of Dundee, eyelists, nummpst nthers. sure now obliged to cairy a red rear light within the boundaries of the city.
London- ${ }^{\text {xeter-A Record Entry }}$
The wonderful entry of 427 veliecies an the Motor Cyeling Club's elassice twial from Lomitnil to Weter and back will make this the biruest trial which lins ever been held. The start is from the Pridge Пonse Inotel, Stnines, nu Mondav evenine: December 2Sth, the commelitnes arriving in Jxeter at brenkfast time nu Truestay, Decemher 201 h. nud returning to staines, where they arrive the snome evening. Next werk we shall give the comulnte list of the can ontries and full details of the route. sil hat readers when wish in wateh thin -ampustitars mass or who nere kent in see the! performaneses on the oliserved hills mux know fxaclly when nall where in lake up their positions. The eatry is :artinally made up as follows:-
Suln motriesciles ... ... 1ts
Trtorcyele combinations ... $11: 3$
Three-wheled eyclecars ... 17
Cars $\quad . .9$
The total, as we have alreatly wharked, is 407, and with the halfminnto intervals between the motorcyeles תuld one-minute interenta betwenll -ave the 11. aerssion will be 71 miles in lengeth.

> As's for your copy next week on WEDNESDAY instead of
> FRIDAY.

## Concession to Foreign Buyers.

In order that foreigu biners at the British Industries Fair may he offered every possible facility, the Government has decided that holderes of official invitation cards maty obtain a vise to their nassporth to EMgland wihhout any rlaran bring made.

## THE 100 M.P.H MORGAN.

The record-breaking three-wheeler which is described this week in our centre pages. The two pipes projecting from the cowlinz lead to a special carburetter air intake.

## A.-C.U. Competition Rules.

A sub-committeo of the Geueral Council of tho Auto-Cycle Union has recently entirely redrafted the competition rules of the Union. The uew rules wero passed by the General Council it December 4th and will takn effect nu . Tanuary 1st, 1026.

## J.C.C. Linner.

The wumber of members and guests firesent at the Junior Car Club's dianer at the Connanght Rooms, London, last Tuesday, totalled more than 500 . As usnal with J.C.C. social functions, a very cheery spirit prevailed, and there were few present who left before tho very end of the proceedings- 1.15 n.m. The dinner was followed by specelies delivered by I'rof. $\Delta$. M. Low, the IIon. Sir Arthur Stanley (in the chair) and Let-Col. J. T. C. Moore-Erabnzon ; the , resentation of 200 -Mile Race prizes and a very elljoyable carnival dance.

## Increased Penalties for <br> \section*{Drunkenness.}

An inmportant alteration affectin! motorists was made in the Criminal . Wustice Dill, in Committec of the Housn of Lords on Tuesdny last. Earl Ruskell moved an amendment to ensure thate a motorear driver convieted of drunkenness should automatically have hi-1 licence suspended for 12 months, with the proviso that the driver might anply to the justices who made the order to reconsider it after three months, or. with leave of the Court, after a shorter period.
The Lord Chancellor said the Heme Onice nand the nolice were of opinion than the adoption of the mendment would not be in the public interest. The clause at present increased tho


WHAT DOES IT MEAN?
This constable has the unenviable job of controlling the tratic in Cirencester, where five roads intersect. Perhaps this accounts for the ambiguity of some of the signals he gives, one of which is shown above.

The Skidding Season.
The roads at this time of the yent alternate between a greasy and icebound surface, and skidding is one of the bugbears of motoring. Devices such in Neverskids are very much to the fore, nud in this connection our realers may be interested to know that the Neverskid Shack Absorber, Ltal. the central offices of which are at 137, Vietoria Street, London, S.W.1, have onemed a service station near the heal nfies, where the device can be fittol within is hours.
penalties for driving when dronk from 40 s . to 50 s . Drastic action often defeated itself, and automatic penalties, if tuo severe, were apt to prevent convictions. The amendment was carrich by 47 votes to 37.

## Magnetos and Snow.

No better test of the weather-pruofness of the magneto can be undertaken than to drive a car agninst a head-on sllowstorm, for snow hns a habit of penet:ating to the remotest nooks and erannies. Many small cars require hetter protection for the magneto.


IIGHTING ARRANGEMENTS SIMPLE DYNAMO SYSTEMSA SNAG-BELTS AGAINCOMPONENT PARTS

ARECENT maragran he"Focus in "Irich Mixture," headed "Dark Dass," draws attention to a subject which intimately concerns eyclecar owners. It is that of the most suitable, most easily: managed and most economical form of illumination for the car. These are very dark days. If one resides in or near the Metropolis, or, for the matter of that, in or near any of our large cities, overhead fogs may turn day into night, necessitating switching on the lamps of the car when, by all that is right and just. they should be enjoviny a well-earned rest.

In the old days we used to struggle cheerfully with acetylene, and it must be admitted that if one looked after it with meticulous care the average "wet" system worked quite well: but it was a nuisance at the best of times, and those of us who could afford the initial cost of them went in for dissolved acetylene cylinders.

These were about as near merfection as one hoped to get in the way of acetylene lighting, but they were inconvenient in that they had to be changed from time to time, and one ras, therefore, not a lot better off than if electric lighting were used, an accumulator of ample capacity being employed to suplly the combined head and side lamps and made easily detachable for recharging purposes.

Blectric lighting in these conditions was satisfactory up to a point, but to work really well it was essential to have two accumulators, one being on charge whilst the other was in use. Moreoyer, one was tied more or less to one's bose, as it were. especially if, as the Irishman said, driving after dark was the order of the day.

Frankls, I think the only solution to the problem is to banish all iteas of economy and to fit 4 really good dynamo lighting set: combined head rad side lamps can be used, of 12
consise and there is no need for a starter motor. This meatis that both dynamo and accumulator can be on the small side, which helps one to a considerable extent to keen down the weight and the cost.

In these enlightened times we are so accustomed to flooding a room with light br merely depressing a knob that to hare to employ anything more troublesome on a car meets with our instant displeasure, so I am all out for a really good system of electric lighting for the cyclecar. We may be able to put up with economical forms of hood, scauty mudguarding and so on, but we cannot aftord to take the risk of being stranded with a lighting set which will not work.

A suggestion which was put to me by a reader of these notes a few days ago centred in the feasibility of using cycle electric lighting sets for the crelecar. These, as my readers are mobably aware, consist usually of a dynamo driven direct off the frontwheel tyre, and my friend thought that even if a larger rynamo were used, the same system might be employed satisfactorily on a car.

Frankly. I cannot conceive why any cyclecar owner should wish to go to such extremes of economy, and with becoming severity I passed on this view to my friend.
" What possible objection can you see," he asked, "to a scheme which is the essence of simplicits, and which must work quite as well as any other system?'

Well, if anyone can see the advantage of such a primitive form of drive, compared with that which employss a short length of Whittle belt and a thoroughly protected position for the dynamo, I am at a loss for further argument. There is one other point which my friend over-looked-the dynamo feeds direct, as it were, to the lamp, and if one stops the machine one's lamps go out. Need more be sairt?

It will be recalled that it short time ago I commented uluon the batl luck experienced by a friend of mine. who rums an Aero Morgan, in constantly losing dynamo helt: thronts breakage. It is rather a coincilenere that the day following that on which ms remarks were published thw lolt for which my friend had such gre:in hopes broke, and this, like it: protecessors, was lost.

Utterly miserable about it, le resorted to a second plain, flat, i-in leather belt, the ents being wrow lapped and secured by a bifureafed rivet. Since then some 250 miles hare been corered, mostly at a fairly high speed, and still the belt is int position. Yet more strange is tho fact thit only one adjustment has been needed. all the stretch liaving scemingly taken place during the first 1 (ri miles. This seems to have solred definitely his trouble. and the: cost was only 1 s did.

Enthusiasts who have overhauled or reconstructed their orthorlox-rngrined G.N. cyclecars, and who ate anxious to oblain more speed will be interested to learn that the Vadum Co., 37-39, Beaconsfield Road, Willesden Grean, London, N.W:.10, ran supply complete o.h.s. conversion sets for 69 . This concern deals largely in (i,N゙. cyclecars, and usually has a mumber of second-hand morlefs reguiting orerhaul which are offerme at proportionately low mrices. Gwe of these bought now and overhanted fluring the winter would prove a useful machine next season.

Another concern from which I have heard recently is Messrs. Walter and Worth, 32, Craven Street. Strand, Ifondon, W.C., and I pass on the information to all my readers who may be interested that front and rear axles, springs, chains, and so forth are carried in stock by this firm: in fact, the home constructor will find, probably, that he can obtain all the parts he needs: under one roof.

A SIMPLE DIAGNOSIS.


The Expert: "Hum-just as I thought-no petrol."


T10 ohtain the best results from auy working part of a car it is advisable that the driver should not onls understand the principle which underlies its operition but should also be familiar with its construction. This applies with particular force to the braking system, Which is one of the most imporiant features of the cat Upon its efliciency depends the safety of the driver and


A form of assembly employing side-by-side, independently operated brakes, both working within the same drum.
passenger and that efliciency can be mamained to the best adrantage only by a thorough knowledge of the particular form of brake or brakes ditted. A brief review, therefore, of the more common types of light car hralie should not be without interest.

Braking systems may he divided roughly into two groups-- hose which employ drums rotating with the road wheels, the drums housing stationary brake shoes and brake-operating mechanism, and those known as Iransmission brakes, which, as their name implies, are arranged so that the braking effort is applied to the


## Internal-expanding Brakes.

lear or front-wheel brakes nowadays are nearly always of the internal-expanding type; that is to say, the shoes, which are lined with a friction material, are expanded inside and against the drum, so that the necessary retarding effect is obtained. On some makes of car extemal-contracting brakes are still popular, but these nearly always take the form of a friction band and not a contracting shoe. Owing to the difficulties of construction, transmission brakes are very seldom of the internal-expanding order, but it is not uncommon to find separate external-contracting shoes instead of a single contracting band.

The exsentials of smonth and certain brake operation are an ample friction area, rigid construction, an operating atm which gives a well-mefined movement to the?
shoes, and, of equal importance, a return sprme whint mulls the brakes of directly the pedal or lewn is in leased. It is also of prime importance for maki sat: that oil cannot leak on to the brake drums--a conditions which only too often occurs in the case of old cat:

The most common pratice is to employ onls shoes por drum, but cecasionally we lind that wher on transmission brake is fitted each rear-wheel drum that house form distinct shoes, the pairs being wither sible In side or in the shape of four short shomes all in 1 h. line. In cases where fromt-whed brakes are fittent shoe brake drums all romud are now very comms practice.

## Metal-to-metal Brakes.

Motal-tometal brakes, in which the dom is of stond and the shoce of cast-iron or bronze, have been usent in the past. but have given place nlonest universally fo: steel drum and fabric-lined shoes pressing against i The disadvantage of the metal-to-metal brake is that it is often noisy and too fieree, and may easily be: abusen by a driver who is not familiar with the limer foints of car contol. Apart from other "onsiderations, hownow it has been shown that a cast-iron shoe may sere ble sted drum. expecially if grit be allowed to coltor, ansl that the cost of renewing both shoe and drum, "Ir oi having the drum skimmed and cleanced un, is lar greath than going to the additional exprense of fitting friculod linings in the first phace.


Two methods of brake compensation. The main sketch shows the sliding-cable method, whilst inset is a whiffletree. $A$ is connected to the lever or pedal, $B$ and $C$ to each of the brake arms.

One concern is employing with the greatest succoss metal shoes with fabric insets, the latter being arranged diagonally. The combination of metal nud fabric friction material provides a means of braking which is remarkably smooth and very powerful.

Ton ansure that the bralies of a cat were almlice with ruat loree, it was customary, until recently, to introatuce some form of compensmting gear, but nowadays it is buroming increasingly common to rely mon accurate adjustment in the first pace amithus do away with a rariath amount of complication.

She most common form of compensating gear is known :is athillotree, this taking the form of a beam piwoted in the midlla on a pin secured to the end of the brake"hmating rot, the extremities of the beam being conbected by secondary rods or wires to the brake-rperating alrms.

A moter mokron form of brake compensation employs a hollow rerss-shatl titlod with a bell-mouthed bush at atch mbl, throlgh which passes a contimuous cable, nue "ht of which is comnected to the off-sible brake-operating
works, and it is worthy of note that this was one of the tirst light e:als to be efuluyed with this form of brake: operation.

Where unit construction of gearbox, clutch and engine is used, the controlling perlals being mounted on brackets cast integral with the fearbox, the extra mechanism necessary in connection wilh servo brakes is very easily arlapted and the unit loses none of its rompactuess. On

INTERESTING FORMS OF BRAKE CONSTRUCTION.
(Below) Showing the princiole of a simple form of servo-assisted brake operation. Application of shoc $A$ forces shoe $\mathbf{B}$ against the drum.

atin :and fhe other end to the mear-side arm. 'The cable is, of cullse, liree to move in the tube and round the julloys at the axtremity ot the cross-shaft drop arms.

## Servo Brakes.

A develonment in light-ear braking systoms which is lons overdue is that of the servo-operated system, more barticularly with regard to its combination with frontwheel braking. In its most simple form, servo-braking meclatnism consists merely of means whereby the brake shoe assembly ol a transmission brake rotates en bloc when that brake is applied, the rotary movement catused being conseyed by suitable linkage to the front-wheed lmake levers.

It will be seen, therefore, that the front-wheel brakes are applied atomatlatly and that the force of their application is in direct proportion to the amount of force "xerted by the transmission brake through the medium of the operating pedal. Servo mechanism generally necessitates the introduction of an internal-expanding fransmission brake for the most simple working, and is therefore one of the exceptions which proves the rule mevinusly mentioned with regard to the construction of fransmission brakes.
The principle may sombl somewhat compliented, but actually it is quite simple, and in its most common form the assembly incorporates a connecting rod between the brake-shoe assembly and a lever attached to a crossshaft, the last-named carrying a second lever, which fransmits the drag of the servo-brake to the operating arms of the front-wheel systems.

As the servobrake assembly oscillates, the ordinary means of expanding the shoes cannot be used, the actual method employed being to transmit the necessary morement by means of one spur wheel actuated by the pedal, engaging with a spuf wheel concentric with the brakeshoe assembly which operates the cam. This, in brief, is how the servo mechanism of the Imperia light enr
the score of expense, however, the system has its drawbacks, compared with front-wheel brakes, which are operited in the usual straightforward manner. Nesertheless, it is more than probable that the servo principle will make headway, and may in time become the standard form of braking equipment for small cars.

Another interesting form of servo-operated assembly is that in which the partial rotation of one internalexp)anding shoe exerts a wedging action on a second shoe and presses it against the drum. Both shoes are housed within the same drum, and the braking effort of the second shoe depends entirely on the amount of force upplied to it by the pressure applied to the tirst shoe.

Brake adjustment naturally plays a most important part in the satisfactory functioning of the mechanism, but even good brakes will not give long and lasting service if they are used brutally-especially if the driser is one who habitually drives " on his brakes."

In the hands of the arerage owner rear-wheel brake shoes should last for at least 12.000 miles before relining is necessary, and cases have been known where $\underline{2}, 000$ miles and more have been covered with the first set of linings. Obviously, howerer, it is all a question of whether the car is drisen mostly in traffic or not. One that is used almost entirely in the country will subject its brakes to far less wear than one which is used almost exclusirely in town.

Cubricators are generally supplied so that oil or grease may be fed to the brake-shoe pivot pins and brake camshafts, and it is most important that these should not be neglected. Many a binding brake shoe has been traced to the partial seizure of a brake camshaft or pirot shaft which permitted the brake to be applied but which caused it to "hang up " agniust the comparatirely weak return action of the spring.

Leakages of oil from the back-axle casing on to the brake drum hare been mentioned, and it may be stated here that such a condition nearly always can be aroided if care is taken never to orerfill the back-axle casing or, where lubricatiou can be fed to the hub bearings by the hub caps, not to orerload the bearings with grease. When the brake drums become oily, despite any of these straightforward weans of prevention, it is far better to have a new oil-retaining washer fitted at once in the back axle than it is to carry on in the forlorn hope? that the trouble will cure itself.

A FRENCH LIGHT CAR WITH A $1,328 \mathrm{c.c}$. ENGINE, PARTICULARLY ROOMY BODYWORK AND A PERFORMANCE WELL UP TO THE AVERAGESTURDINESS AND COMFORT ARE FEATURES.


Weighing $18 \frac{1}{2}$ cwt. and seating five in comfort, this English-bodied model is one of the largest light cars on the market.

DIS DION-BOUTON cars are made by one of the longest-estahlished firms of motorcar builders in the world, whilst Count de Dion, who gave his name to the concern, was a pioneer motorist and originato of one of the most successful early motor vehiclesthe famous De Dion tricycle.
The concern re-entered the light car field last summer with a $10-20$ l.p. four-cylinder model, which was fulty described in The Light Car and Cyclecar dated July $24 t h, 102 \mathrm{~J}$. We then gave our brief impressions of the performance of the car gained from a short run in the London district, and we are now able to supplement that information by publishing our opinion of the capabilities of the latest model fitted with English de luxe coachwork and costing $£ 350$ complete. A similar chassis with a French body costs $£ 29$.

Taking over the car from the Iondon showrooms at 10, Great Marlborough Street, London, W.1, we found that it was a very big improvement upon the car with French bodywork which we tried previously, and which was exhibited at the Motor Show: The English-bodied model seats five in comfort. It has a really excellent hood. windscreen and rigid side curtains, whilst the finish and appearance are particularls striking.

## Coachwork Details.

The body has four doors, real leather upholstery, anu a front seat arljustable both for its position endways and for the rake of the squab, whilst none of the retinements which are expected in a car of this class has been omitted.

Seated at the wheel, the driver finds that the controls are particularly well placed, whilst evershing likely to add to his comfort has been prosided. There are, for example, two horns, one an electric motordriven model and the other of the bulb type, and an electric windsereen wiper, whilst on the facia board are mounted a Smith clock and speedometer, 1 wo convenient cubby holes and the switcliboard of the Ducelliev ulectric lighting equipment.

Throttle and ignition controls are mounted on the steering column just beneath the whee, whilst the brake and gear levers are central and well within the reach of the driver. The hand brake of the push-on lyje-is interconnected with the foot brake, both controls operating the same set of shoes in all four wheels. At lirst the pushon hand brake is a little dificult to lecome areusiomed to, and we beliese it to be, so far B1G

As light cars are concerned, exclusive to the De DionBouton. As with the brake pedal, it weeded, in our opinion, undue force for its operation, and it womld seem that the various brake take-off simings could low made appreciably lighter with advantage.

The clutch pedal has a very short travel, and is marticularly easy to operate, whilst the accelerator-in the right of the brake dedal-is not titing in use, ant has a rery comfortable "feel." The electric-slarter switch undoubtedly needs some alteration, as, with the present arrangement, we found it distinctly dithicult th operate. The pedat is phaced almost touthing the petrol tank, so that one can get only the extrume tow of one's shoe on to it, whilst the spring is exceedingls strong. It could le made much more convenient will out much dificulty.

## Behaviour in Traffic.

In the London traflice we fonnd that the $10-20$ liffe De Lien-bouton was at very nice car to hanrle. Thate driver sits well above the wheef, can sed the tips of both front wings, and soon feeds fulte at home with the car.
Our introduction to it was on a frosty and very foges night, when driving was as difficult as it nossibly can be, but the driving position and the controls of the De Dion-Bumon inspire perfect confidence. After being in use for two or three honrs in the foggy London streets, the car was takell for at 30 -mile run into the countrs, although the dense fog had put an almost entire stop to motoring in many districts through which we massed. There is no denying the fact that, given : first-rate four-wheel braking system, a reliable windsereen wiper and headlamps which can be fairls readily tilted weld downwards and aljusted to the left, fog is robbed of much of its terror.

## The Four-wheel Brakes.

We have remarked already on the fact that rather undue strength is called for in the operation of the brakes, but the exercise of it certainly brings about an extremely gratifying result, for we found that the call could be pulled up in an extraordinarily shot distance, whist even on ice-Jound roads no tendency 10 skid was noliceable.

The sleering of the car which we tried was sensitive and gave a feeling of complete control. In our opinion, it would be still further improved if the spokes of tie steering wheel were formed differently so that the sharp
colges which at mresent characterize them were eliminated.

Gear-changing we found was sheer joy. So simple has it been made that an absolute beginner who had never driven a car before could learn to make conpletely silent changes up or down with no more than iive minutes' instruction. Double clitching is entirely monecessary, and it is impossible to make a "crash" even if the gear lever is moved from top to thited at 2. m.p.h. without making the slightest endearour to speed up the cluteh shaft.

Similaly, when changing up it is fuite umecessary (o) Watit in neutral-althongh if one is in the habit of fluing so, the gearbox appears not to have the least (h)jetion. At the other end of the seale it is equally amialife, for one may slam the gear lever from one posifion to another as rapidly as it is possible to move it :ant still obtain a dead ruiet change.
The gear ratios provided are $21.6,11.8,7.6$ and 1.9 to 1 . these giving speeds of about $10 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. in botton,
 (1)I). In whating these figures, we did not press the - mime unduly, as the car had previously covered only a bers small milease. We should say, however, that all minh. Womld be the absisute maximun on (rj) geat.

## Marked Flexibility.

 Whl up to its work, amd, dempite the fact that the car
 matin-tent hills in (on), whiks it would also accelerate wrill on the same geatr from speeds so low as if m.p.h. or $7 \mathrm{~m} . \mathrm{p}, \mathrm{h}$. The engine of the particular car which we trien was somewhat on the "roush" side, the gearbox alon hoing a trift: noisy under load. Roth these fea 1ums wore much more noticeable with the hood erected fham whon it was folded, and cannot be regarded as : serions objection to the car. At the same time, if smonther ruming erould be obtained we have little doubt Hatt the popularity of the rat would be naturalty increased.

Wie should imasime that this Lhe Dion-Bouton would bo in almost perfect war for hise on wery rough mads :as it is extremely sturdily buit, whilst the suspension is bery well carrich out by leng hall-cllipties in front ally massiw camilerers at the rear. These allow the


PARTICULARLY WELL EQUIPPED.
The hood and side curtains of the English-bodied De DionBouton are of a convenient type, whilst a rear screen is part of the standard equipment. The layout of the controls and instruments is neat and workmanlike.
car to be driven last over bad roads without any appreefalble discomfort being experienced, even by the ocellpants of the rear sents, whilst there is complete freedom from rolling on corners, and the car holds, the road well at its maximum speed. This is one of the very fo:v light cars which gives the impression that shork absorbers wouk be of littie use, the suspension system when uncontrolled being beyond reproach.

We were unabie to test the capabilities of the De Dion-Houton on any of the very well-known freaki fess hills, but with the aid of non-skid chains it made a most inpressire second-gear ascent of the notorious Slimy Tumnel Hill near Nettleden with plenty of pow to spare. This hill has often been the piece de reisistunce of sporting trials

## Satisfactory Consumption.

Whilst the car was in our rossession it covered a $t$ rifle more than $2(1)$ miles, and during this period the oil level in the sump did not fecome appreciably lowered. No water had to be added to the radiator and the petrol, consumption averaged $36 \mathrm{~m} . \mathrm{p} . \mathrm{g}$. So far as economy is concerned, the car is therefore very satisfactory, particularly in view of the fact that it is of such atn execptionally roomy huild.
Items of interest in the specification include a Solex carburetter, Bosch magneto, Ducellier dynamo, switchhoard and starter, C.A.V. lamps, Exide battery, RudgeWhitworth wire wheels and bunlop (French) 715 mm . hy 115 mm . balloon tyres. The track of the car is 3 ft . 11 ins., and the wheelbase 9 ft . 2 ins., whilst, in addition to the equipment which we have mentioned, the de luxe model has Wefco spring gaiters, a dashboard lamp, driving mirror, M.E. rear windsereen and :d luggage grid.

Alternative models on the same chassis are a sathon (Froneh), e 375 ; Enghish two-seater, f350; aud Lenglish



THE CAUSES OF DIFHICULI SIARTINC. - HOW OIL AFFECTS THIL QUESTION. - ASSISTING THE FUEI TO VAPORIZE. - THE USE OF

METHYL ETIHER

AMONGST He hundred thousand newcomers to motoring in this country since last winter must be many to whom the bugbear of a bad-starting engine has proved a source of amoyance during the: bast few weeks.

It is not easy to say why some engines never seem to have this habit, while others of the same make appear to be incurable. The older hands know suflicient of the subject to indicate successful treatment, but the dozen or so hints given below should the worth something in the saving of labour and temper to the others.
The causes of bnd starting are easily given. In cold weather lubricating oils become more viscous, or thick. and the engine becones harder to turn. At the same time, the fuel becones more diflicult to raporize into a suitable mixture. Thus the engiue will not fire, or, perhaps, fires once and no more, and the owner trice in vain to discover a position of the throttle that will cause the engine to run properly.
A closer examination of this mystery is rather instructire. Small throttle openings, by utilizing the pilot jet, give a rich mixture, and are, therefore, suitable? for starting under normal conditions. For hard pulling. howerer, as in ordinary ruming, the throttle must be opened wider.

## Flooding the Carburetter.

When the engine is sticky, as in cold weather, the small opening is unsuitable, as the load on the enginuis too great, but if the throtlle is opened wider thr. mixture is not rich enough to maintain running conditions. The mixture may be enriched temporarily hy flooding the carburetter, in which case the engine will fire with a wide throttle, but tends to peter out, unless flooding is again resorted to, this process beiug continued until the engine is warm enough to keep rumning.
There are four principal methods of improving starting, and ther may be classifien as follow:-
(1) By reducing the starting effort required.
(2) By eusuring a good spark.
(3) By ensuring a suitable mixture.
(4) By artificially maintaining a high temperature.

The first is, practicalls, confined to unsticking the pistons. The readiest way of doing this is by swinging the engine lung enough to achieve the desired result. 1f it requires 100 much work to do this, it is of great: nssistance to inject paraffin through the phug holes on to the cylinder walls.
Paraflin has the propery of thinning the lubricatimg oil, and quickly reduces the starting effort to something within the capacity of the carburetter, as explainerd ahove. A more lasting cure is to use an oil which dors: nut gum un the engint so badti in cold weather.

B18

Old oil. especially where benzole is used in the [turl, gels very gummy, and owners who have not rachnly chauged their oil mas find much henefit ly se domp. some oils contain regetable constituents, and as llese are sometimes bad for starting in cold weather, monorists whose engines suffer from this particular evil shmuld try a bure mineral oil, especially those rrom which the waxy constituent has been removed by special pro-



If the car is kept in a damp garage condensation on the plugs and wires will allow a leakage of current and starting will be difficult. Dampness is very harmful to a magneto.
tures. One of the abore mehods should cure a gummy engine.

Although ignition troubles are ofteu suspected as the caluse of bad starting, it is seldom that they are in any way to blame, for the engine that fires in watm weather should fire equally well in cold if it can be turned fast enough. If the weather is dry and frosty. the ignitiou may be passed over at once, but in damp weather it will be found that all the cold surfaces are covered with dew.
In this case it is necessary to prevent any leakage of high-tension current through the damp surfaces by carefully wiping the porcelaiu insulators, high-tension leads and so forth with a dre rag. It was at one time common to suggest heating the plugs in an oven, thr idea being that this helped to prevent similar colv
densation inside the budiy. It pluge, wheu removed, show signs of condensation across the points, this may be tried, liut it is sedom necessary.

The principal catuse of starting tronbles is that next to be discussed, vi\%.. the fuel difliculty. In warm weather the mixtme to be fired is composed of rapour uf petrob-or whatevor lum is used-and air. When the engine is cold, and particularly if it has a long inductinn pipe, the potrol does not readity vaporize, but even if it does, is still ready to condense again into liguicl on any cold surface.

All added trouble is that the vers act of vaporizing requires heat, and, conseguently, the mixture is actually reduced in temperature in a lower level eren than bhat of its surroundings. Those who have seen a dentist producing low temperatures hy vaporizing ather in a current of air will readily grasp the iden.

Vitpurized, however, the petrol must be, and our "ftorts are therefore directen to hreaking up or "atomi\%ing" the suray, or applying heat.

The most simple way of atomizing is by the use of a strampled in the intake, a fitting that is standardized on the majority of present-iay cars. Where mo slamslole is fittod, the same effert mas he oltatined by stufling a ritg into the carburetter intake while the (ngrine is hoing turned and before switching on.

In this way a very strong suction on the jot is whatnet, which, however, greatly increases the proprotion of petrol, and for this reason the engine should not the allowed to run with the strangler in operation.

## An Easy-starting Mixture.

Mention of wher, which is one of the most readily valutizahle of liquids, calls to mind a very effective inethot of starting in the coldest weather, much favoured hy doctors. This is to carly a botte comprising one-lhird ether and fwothirds petrol: some of the mixttre being put into the float chambor before forming on the main fuel supply.

The rether used is that sold at chemists as methyl. Gher, and in order to save the trouble of mising, it


Three aids to easy starting are depicted above. On the left is a safety warming lamp; top (right), an electric mixture-heater, and bottom (right), an "iron" for heating long induction pipes.
may be msed meat if desired. A trop or two may be injected directly into the rylinders with benclicial results.

Two warnings are necessary. One is to heware of the very infammable nature of the ether and the other is that hand-starting by the use of elher should only be attempted with the ignition retarded, otherwise the tirst explosion may canse the engine to turn in the reverse. direction and a broken wrist may result.

In the absence of ethor, ordinary petrol may be injected into the cylinder, and will assist both to ease the pistons and to produce: an inflammable mixture. As there can be little atomization by this method, it is not so effective as where ether is used. It is thus merely an additional method of enriching the mixture. Several tyous of spark julug are available which incorporate a revice for injecring liquils withont removing the plug.


The effects of cold on carburation. Hoar frost settles on the outside of the induction pipe and the fuel forms into globules which do not readily vaporize.
lerhans the most effective method of ensuring easy starting is the fourth antl last of our series, viz., by the application of heat. It is a radical cure, in that it destores the conditions under which a start is possible, instead of changing the method to suit dew conditions. It is, however, a matter of preparation to apply hear, and, consequently, is not so conrenient as the more readily adopted methods described above.

Shont of maintaining a heated garage, it is best to use fine of the safety lamp types of heater, which can he put under the bonnet oremight to ensure an easy start in the morning.

Another well-known tip is to pour hot water into the radiator just before starting. Where a car is not in daily use and the radiator is emptied to a void cracking the water-jackets by frost, the use of hol water in this way becomes a simple matter. Jike the other methods under this heading. howerer, it is not arailable after the engine has ben standing in the street, awas from home.

An altermative methoul, especially recommendert where there is a long induction
pipe, as in certain two-cylinder engines. is to bent the induction pipe. This may be done by wrapping a cloth round it and pouring boiling water on the cloth, but n method that is usunlly eflective and less messy is to get a L-shaped piece of metal made so that it can rest overthe incluction pipe.

This metal yoke nay be heated over the fire or a gas jet in the house and placed in position hy means of a pair of tongs. or it may be fitted with a handle. After a minute or so it is gencrally ensy to make a start.

There is also an electric heater of a irpe suitable to he placed in the induction pipe for the purpose of assisting in starting, known as the Instarter. Current is taken from the battery for heating and there is an alarm to provide against the possibility of leaving the current on.

The foregoing leares out of account the faults of ola engines. where the conditions may be affected by leaky valve stems or joints or weak magnets, the remerly for which is ohvious. The mixture must not he diluted in any way if easy starting is to he obtained.

If the novice tries the above hints he should find that his rlfticulties will vanish.

## THE LATEST 13 H.P. CLYNO FOUR-SEATER

## COACHWORK IMPROVEMENTS SINCE THE MOTOR SHOW - IMPRESSIONS GAINEI) DURING A BRIEF DEMONSTRATION RUN.



WE had an opportunity last week of taking a short run in one of the latest $13 \mathrm{~h} . \mathrm{p}$. four-seater Clyno cars. This morlel is now fitted with a larger and better-finished body than the car exhibited at olympia. proriding exceptionally rooms accommodation and very complete expipment.

As the photographs show, the side curtains are of the most up-to-date type, which restrict visibility to a minimum, the hood is arranged so that it can be raised and folded with particular ease, whilst a rear screeu is fitted as standard. The hack seat is amply wide for 1 wo and the front seat is also roomy and can be adjusted over a wide range.

The car, it will be seen. has a very good abourance. but we ure of the opinion that the lines of the near side are spoiled by the position of the sjare wheel. which, we think. could be carried with greater advantage at the rear.
louring the short run, entirely in traflic, which we had in the car, it was noticed that it ran very sweetly, was well sprung and had realls excellent brakes. In all, there are six brakes, the foot brake expanding shoes in front and rear-wheel drums, whilst the hand brake operates a separate set of shoes acting on the rear wheek.
The controls fall comfortahly to the hamls, the steering being light and positive. whilst the hand brake and gear lever, situated on the right, are pasily onerated, B20
but are well out of the drivers way. Only three forward speeds are provided.

The acceleration on secome gear is rery goon, athe about $25 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. can be gatined in it without the mgint showing any signs of becoming ill-at-wase. In (on) gean the engine will pull well down to about if m.j.h. In 7 m.p.h., :und we miderstand that the maximum sperd is about $50 \mathrm{~m} . \mathrm{p} . \mathrm{h}$.

As one of the photographs shows, the power unit is very accessible. Whilst large lillers are provided for the petrol tank and the sump; they are both on the same side of the engine, and so can recose antention by lifting only one sille of the bonnet.

Dunlop balloon tyres (28 ins. by 4.9.5 ins.) are fitterd and these. with the hatf-elliptic front springing and single cantilerer rear suspension, give very comfortabla riding. On rough roads, however, the impression is given that shock absorbers would be desirable.

The general equipment of the car is extremely com brehensive: so much so, in fact, that lack of simec prevents our giving it in detail. A few of the ifems, which cannot be seen in the photoglaphs may be men tioned. These include spring gaters, petrol gange. motor-driven electric horn, atomatic sereen wiper, Calometer and a driving mirror. The electric lighting and starting equipuent is of the 12 -volt type hy CA.V., the starter being particularly powerful.

The price of the enr illustrated is $£ 260$.

## Ore the Bored THE <br> 60 M.P.H. A.C.

A Car Which Admirably Conforms to the Require mints of a Sports Tourer - How A.C.s are Made at Thames Litton.

A

 low at 20 elegraces besom
 - Hilalife wren which to teat all
 Hit will initial journey lots the
 piton, bad to he mako in one al


How densest fogs that the metro. Politian area has experienced in its extensive annals of real " beat-soupurs," that the road surfaces were more
 these sematic conditions gave way in a rapid that, fuming hard, slippery roads into veritable quagmires. it will be whions that our luck was dead out.

Tho me was only one ling to do--make the best of it; so, titling buy lean gs which we may have hat towards a fire the an armchair, we persevered, and thereafter mankind to form a tolerably accurate impression of the
 en-between of the stmelard mod and the pukka To mph. sports modn-which sills for ex 3 万.

Apart from its polished aluminium body and real wings, there is bite to distinguish the car under disfusion from the standard type, unless it be the $V$ windare en atm such a comparatively minor detail as the


HANDY CONTROLS.

Coaxing the engine into life, when starting from cold, by means of the strangler and slow running lever. The photo conveys an excellent impression also of the interior equipment of the car.
illusion of Hartford shock absoriters at the front, but its performance is naturally far livelier, due to the hotting-up" of the (mgine, and it really substantiates the title given to it.

## A Side-by-side Three-seater.

The controls follow standard A.C. practice, the chassis details are much the same and the body adheres in general outline to the mouldings of the standard touring type, so that whilst three adults can be seated comformally side by side in the front sent, the effect of the car is not lubber. This is avoided by cleverly upswept scuttle lines and by extending the body sides over the ruming-looards. There is, of course, a roomy dickey.
Summing up, it may be sat id that the general appearante of the car is well in keeping with that which is misally asomedated with a sports model of this type.

One of the principal characteristics of the A.C. is the mounting of the gearbox as part and parcel of the back axle, or, perhaps one could say, with equal accuracy, on bloc with the rear end of the torque tube. Many years of practical experience with this form of construction hare convinced the makers that it is a sound idea, and certainly it works well in practice.

The final drive employs an warhead worm, the tail end of the worm shaft carrying the disc for the handoperated brake. For the rest, the carhas a four-cylinder threc-bearing A.C. engine, 69 mm . by 100 mm . ( 1.496 c.c.. fiE tax), thermosiphon cooling, no fin, forcel-feed lubrication to crankshaft joumals and big-ends, a Soles carburetter, DI.-L. magneto and Lucas starting and five-lamp lighting set.

However admirable a V windscreen may be on a sports model, on the one in question it was too far away from the occupants of the front seat for comfort, and was, possibly, a contributors factor to the formation of a noticeable draught which swilled round the feet of both driver and passingers. Naturally, this draught made itself very evident under the weather romblitions mentioned in our opening b:Alagraph.

Brake and gear levers are on the right. The Iatter would be improved if the reverse trigger were longer, whilst, ou the car in question, lack of adjustment of the clutch stop made protracted pauses in neutral necessary -an anmoyance with a sports car, of which an essential is a "suappy" gear change. The action of the clutch was extremely good, but it was addicted 10 emitting a squeal if engaged too riciously.

The hand-brake lever fell readily to the hand, and the brake itself, which operates the disc on the tail shaft, was well up to its work, but the foot brake, which aets within drums on the rear wheels, was not so definite iu action as one could desire on a car capable of such high speeds and excellent acceleration. Front-wheel brakes, of course, are arailable at an extra charge.

The engine is distinctly lively, and it is also very flexible; it will tick over sweedy with the car travelling at $S$ to 10 wiles per hour in top ( 4.5 to 1 ), or, by way of contrast, will rev. up with refreshing celerity is $43 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. in second ( 7.9 to 1). Higher speeds are attain able in second, but the engine then becomes somewhat rough, and an easy" 40 " in that gear should satisfy the: most meticulous owner of a car of this type.

## Delightful at High Road Speeds.

The maximum speed we attained in top gear was fin m.p.h.. when dictates of safetr-suggested by the vers treacherous road surface-made higher spects a game only for a confirmed aud rery optimistic gambler. There seemed to be an ample margin of power, however, to secure the extria 5 w.p.h. which are guaranteed. At high road speeds the car is delightful to handle. there is no suggestion of vibration, and it holds the rond in a very reassuring manuer.

With its bottom gear of 14.7 to I. ihis A.C. proved to be a fast "stunt" hill-climber, and we found that a very rapid get-amay could be made on a realls steep hill, the clutch taking up, its load rlecisicely and without hesitation.

A rug thrown over the radiator at the end of the first day's run was deemed suflicient protection against frost. but on entering the garage in the morning we found a coating of ice on the water in the spare can. an indication that the engine must hare been really cold
when we shut the air strangler, switched on and, with ontimism which was at once rewarded, bressod the starter knol.

By manipulating the strangler with the right hand and the slow-rmming lever with the left, is shown in one of the illustrations, the engine required litle coaxing before it was rumning erenly and swerlly
steering is really delightlul, and wat als "asy at the end of our test as at the bogiming. Ahbongh an ignifon lever is fitted, we had no real oceasion (0) use it. for we soon discovered that maximmm advanor. sermed to be the riglat position to suit the ensime moler all conditions.

## Comfortable Riding.

Why, we venture to ask, is the ebocirn bom switel attached to the rim of the sleering whate Ham. like some inamimate scarlet Jimpernel, it evales oncos fingers when the wheel is lorked oror, ultom just when it is most urgently recpuired. A matter of personat taste, perhaps, but we should profer ion find it on the sop of the steuring column or at the sibu of the hody.

The suspension is gool, not hatsin at Inw shmerls, and ideal at high m.jo.h. As already mentionch, hot shemg-
 whilst at the rear Werd hevelizers sorve afortively to damp out rebound. The riding is madnoblolly fullare improved by the banlon ballown (yras.

Jrom the point of view of mathtename thor A. (: has many points to commend it. Gearlow and back axlo both draw on the sambernply of lumecant, whilst the forward spherical joint of the torgue tube allin is fed from that source. Gureasers ine fitted onts where a

carried out on a large scate. The works tackice the whole jol) of production with the exception of castings. drop forgings and so on, which are "imported" from ontside firms speeializing in the work.
One of the first departments which we visited was the pattern shop. Pattern making is ant art itself, amf we examined with particular interest a number of patlems which show the care exercised in this initial but very important operation.
The engine is, ot conrse, of A. $\therefore$ design ; it is assembed from start for finish and tested in the works. farticular attention is directed towards accurate workmanwhif, this being exemplified by the care which is taken in balancing connecting rods and pistons. Wach one of these combonents is surplied to the erecting shon comforming to certain very harrow weight limits, and mach sot of four for any particulat engine is then rebalanced, so that individual gmwer mits shatl be hataneed as :4romately as is possible.

## Ensuring Accuracy.

The actual machine emphecel for this operation is one Which is being used only in a lew modern high-class motorcar fatories and consists really of two separate Weything machines, each of which supports one and of the con. rod. To insure alnsolute accuract, the con. rods rest on bushes having point contacts, the whole machine is sel with spirit lerels aud no con, rod is passed until it is in at state of perfect egnilibrium on these combined scales, the readings ot which must agree with ratangs laken for the master rod of any set.
The same care is exercised in batancing the erankshaft, ench shat being mounted in beatiogs havin: riminutive rubber bedplates, so that the whole shaft will "uiver " as the result of bat halance when it is rerolved at at high speed. An adjustable needle acts as at detector and shows which is the heavy side of the crankshaft, accurate balance gradually being obtained by mbluecting the bobweights to individual grinding operaionss.
The crankshatt is carefulty berfled in each of its thee hearings in the crankcase itself, whilst the big-ends receive similar treatment. On these operations depends much of the smooth rumning of the engine.

- There are, of conuse, experts for every jul) in the


4) Here is the practically completed framework for a four-seater saloon body. The skeleton shows at a glance the enormous amount of detail work which is involved. (5) A back axle, gearbox and torque tube (inverted) read; for the final test previous to being passed into the creating shop. (6) In the hood and upholstery department. The portable electric machine in the foreground will cut through a couple of dozen thicknesses of material.
engine assembly shop, and when coreh mit is complete it goes straight 10 at test bed, where skilled craftsmen, who form part of an independent department, judge of its capabilities. They hare the power to accept or rejeet and also superintend the tinal tuning-up, ready for assembling in the chassis.

The back axle and torque tube units are assembled in a separate shop, and, as the assembly proceeds, the biats are subjected to no fewer than four separate tests of accuracy. The rumning-in process then follows.

To ensure accuracy in the gearwheels, an elaborate viewing department has been established, one of the most interesting machines in which is the Parkson biatent gear tester, the object of which is to ensure absoJute uniformits of production.

The machine consists, in brief, of a master gearwheel. With which the production wheel is meshed, having been set to the medetermined centres which are fixed by the design of the gearbox. 'The master wheel is rotated by hand, when any irregularity, such as a slight ovality of the protuction wheel, is rellected in the swing of a pointer moving round a dial graduated in divisions which represent thousandths of an inch. Here it may be mentioned that on every ear turned out there are no fewer than three thousand riewing operations. Canshafts are tested for uniformity hy snother ingenious machine, cach camshaft being compared with a master shate.

The A.C. works is one of the few up-to-date factories where the conreyor system of erection on mass-production lines is not employed, each chassis being treated individually and as an entirely separate job. At present the erecting shop is capable of turning out about 40 chassis a week.
Whilst operations are going on in the main works, the body shop is busy producing all types of two-seater,


> There are no bonnet lasteners of the usual kind. "Lift and pull" is the formula to be followed for obtaining access to the engine. Hartford shock absorbers are fitted at the front, as can be seen-in this photo.

four-seater and sports body, up-todate machinery being employed for cutting and shaping the frame members. Much of the panel beating is done by hand, but four automatic: machines are used for shaping the larger. gracefulls curred panels. liach machine consists of a small anvil, immediately above which is a rectanjular lammer with a very small travel and capable of edivering fabout two thousand blows per minute, The uperator B24
feeds the flat sheet of aluminium between the jatws thus formed, but it would not be correct to say that the machine does the rest. Constant practice, resulling in the exact handliug of the sheet, so that the correct contour is obtained in a minimum of time, is the essemtial part of the mocess. It matr truthfully be said that the men who oporate these machings are atrtists.

No better example of their skill is provieled than the racing bodies which have figured on A. (. chassis. Hare elaborate patel beating is necessary so as 10 ohtaiu rual streamline formation, and the success which has attended the efforts of the panel bealers rall le jutged by examining these racing machines at cose fuatorm.

## The Finish

Painting nnd rarmishing are done hy hathl, amet considerable attention is given to each indivilual body: The result can be ganged by the excellence ol the workmanship which characterizes the finish of "ury A.C. learing the Thames Ditton Works.

Few motorists realize what an immenso amoinat of work is involved by upholstering a car with all-weather equipment


The A.C. Works has a speciall denarmenf for dealing with this branch of the construction of a car, antl mon who have served a long and careful apprenticeship may be seen engaged on the hundred-and-one operations which are necessary. The equipment includes a number of sewing machines-beside which the average domestio sewing machine would look rallier like a lilliputianimmense cutting out tables, and, amongst other items of portable machinery, an electrically operated cuttor, which will work its way like lightning through a counle of dozen thicknesses of material such as that which is used for backing.

This machine is not constructed on the scissors frinciple, but has a kind of rough-toothed hacksaw blate, which works up and down with amazing swiftness and thus saws its way through the material.

From the foregoing it will be seen that evers job necessary in the construction of the A.C. is looked after in an expert craftsman, who has been engaged in tho? task of perfecting himself in that particular aperation for many rears, and therein lies the secret of the success of the A.C. Unquestionably, it is a car which is a ribute to lititish brains and worlimanship.

The next article of the series "On the Road and in the Making" will deal with the 9-20 h.p. Humber.

## THE LONDON-GLOUCESTERIOONDON


favolirable weather CONDITIONS MAKE THE COURSE FAR EASIER.

Mrs. R. Urquhart-Dykes (Alvis) at the top of Stancombe. (2) H. F. S. Morgan and (3) W. J. Milton (Austin) on the same hill. (4) The check in Cirencester beneath the shadow of the fine old Cathedral. (5) F. J. Chessum (Alvis) on Stancombe.

N1:, 1: 1.2 one humdededries of car: - theewhe ters were recewed bily trial from London to last under the organizution of the South Midlaml Centre A.C.U.
The , milicials had chosen what would have been, under unfavourable weather conditions, fuite a stift course, includins? n number of observed hills of apmeciabl $l_{j}$ severe gradients. Execlleni weother was experienced throughont the ren, however, and consecpuently all the observed hills, with the possible exception of Stancombe, twoubled the cons petitors hat little.

The trial started al 7 a.m. in semidarkness, a!though by the time the ear Jriwers were locing sent off on their 240 mile journey it was muceessary to use lamps, a precaution adopted by a large number of the motorcyelists for the first fiew miles.
From the startins point, at the Pytelieley Autocar Co.'s premises, the route led along the main Bath road to Maidenheal, thence via I'inkey's Green, Quarey Hill, Marlow, Beacon Lill, Lame EBnd, Gusset 1 ill Wood, Midale Assender, IBix Mill. Nẹtlebed and Dorchester in Oxford. Probably iln worst ascent n this section was that known as

1;ateon Hill, where a hiek carpet of leaves covered the half-frozen ruts which edged the sides of the ascent.

From Uxford, main roads continued to be followed thraugh Faringdon, Lech lade and l'airford to Cirencester, where a time check was beld, The competitors did not have to stop here, but were checked in by watch. From there ouwards the course becamo rathe: more wiuding, and when live-mile House was reached a turn to the left had to be taken in a roundnbout way through Winston and Cawdele Green to Stancombe Hill. The lanes from Fivemile House were narrow, with a somewhat slippery surface, and several small hills had to be ascended and descended during the ten miles to Stancombe. The hill itself is wiuding, with a fairly sharp gradicut in places, which, with a generous supply of fallen leaves, made a somewhin tricky surface for the unknowledgeable driver to tackle.

Generally speaking the performaue.. were fnir. The Alvis driven by F. J. Chessum was spitting badly on the lower reaches, and in consequence was combaratively slow, but higher up the trouble evidently righted itself, as it was guito fast on the top bend. This Alvis had $n$ rather curious all-weallion
arrangement, a hood being erected above the front seats and a tomeau cover over the rear. II. H. Haywill, in a -martly painted Jowett, made an ensy climb of the bill.
One of the best aseents of the they was made by V. G. Wallsarove (Riley fourseater), who, although baulked by the competitor preceding him, made a fine restart and continued up the hill at speed. The ear did guite a big skid on the top hair-pin, but it did not seem to unset the driver in the least. Anothey Riley. driven by J. Havers, practically emmlated Wallsgrove's performance, although he did not appear to be quite so fast. One of the two wumen driversMrs. R. Urquart-Dykes, who is becoming an experienced competitor-drow her Alvis in a confident mauner nail appeared to be enjoying the fun.

An uusual procedure was adopted by H. N. Edwards, for be arrived at the lower hair-pin with his engine merely ticking over and eventually came to a tandstill. Upon engagine tirst gear, fowever, he reved up and went away ntite merrily. The little Austin Seven driven by WFallace J. Miltou thoroughly apheld the reputation of this wonderful little car; it elimbed without a falter,

Smodily and fist. All the Morzins did well, but perhaps the stan ascont was thint of Hall, who, in smmewhat ancicut-looking vehicle, showed remarkable aceeleration and pewer, alehoumh the stecring gear seemed a litule ancertain.
R. C. Aleroft, whose Alis was suffering from an overdose of habricant. math full use of his Klaxon horn iu his endeavour to mose the prededing comperitor. who eventually batked him. Tho car was fitced with larsons chains, lowever, and made an exellent resiart. althongh the engine nas only fring un three eylinders. The Dariace driven hy $1 \cdot$. II. Dupre apmeared to he wared rather too high, as he stopped low down
on the hill. had wheed-spin and expericamd some ditticulty in getting :1Way.
From the inp of Ntancombe 14 miles of harrow, twisting lames continmed via Nherbscombe and I'ortway 1 Iill to the main raad into Glouenster, where : lunch ston of 1 hir. 27 mins. was allowed. It was decided that. after the congu. tion lasi year in the C'utswolds, wheve must of the competitors ascended the hilts in the dark, it would be better to wnt all the "sticky portion" over hifore lumed. so only one hill that could be called at all serions: was included. hais berng stucblall. It is a fairls stobly rise for rather less than half a mild, with a fairly wod surface. anl



TThil subject of traffic couditions in London is again occupying the attention of Members of Parliament. Major Clyu asked the Fome Secretary if his ateution had been drawn to the surious congestion in the vicinity of Albremarle and Dover Sireets, Lomidon. with :hm consequent ill-effects int Christmas trade, and if he would diresel the Conmissioner of Police to institule noe-way traflic motil Berkeley Street W:S romented for traflic. Sir 15 Tovnson-Tlaks replied that he had ronsulter the Gomimissioner of Police but was adrised that undor present combl. tioms it was impracticable to make these two thoroughfares inte onr-w:ay traftic streets.

Jn reply to Mr. Jay (iol. Ashley. Ministor of 'Tramspori, mated that ho hand refermel the question of the prosposed St. Paul's Bridye to the Iomidon Traflic Committen. De hoped to receiw. their romommendations as sorm as the? had lind time to study then wider problem of Thames bridges as a whole.

Questioued by Tat.-Col. Morlick ans tw whether he had given consideration in The gyratory system of dealiner will raflic at any of the more important street crossiugs in Central Landon. Cal. Ashley said the mater hard, at his reguest. been ensaging the attention of the adtisory committee for some time past. They had recommendel, as the result of a detailed examination of the traflic conditions in Parliament Nguare and neighbourhood, a trixl of the system used thre. He jroposed to commence the experiment immediately after Parliamunt rose. The question of trying similar experiments at other cungested crossings was under consideration.

In answer to Mr. Morrison, Cul. Ashles said that he understood vegotiations were still in progress between the lecal authorities and other mbile 1325

Borlies and undertakings affected by the proposed widening scheme frott 'Tottenhan to Walthamstow, via Ferry Tane. It was uivikely that the work would be commenced this winter. Ie also said that certain improvement schemes on main roads were being held over owing to the fact that: the sums available for grants from the Joand Fund b:al bern fully allocated for the eurrent financial year.

The guestion of the abolition of tolsgates was raiser] liy Mr. Pemms, who was told by the Minister that while he was prepared to receive abulications from local atuhorities, for contributions law:arl frecing the highways and

Several fat climbe were made, netably those of $\mathfrak{k}^{\prime}$. Liall (Morsim), who had is cole unt as low mertouk :hother competitor. Niltmis Austin Seven wis statdy, fist abll cenmparatively quiet, while the Itileg wore all food and lowk mattors vasily.
Frons the (0]) of stockh:1l the course lay to the left and tholl right (immediately before: Wimcheomb: w:ts reached) 1.10 Andoversford and obl to ble math landon-Oxford roand tor atheck at Witney. soceral of the competitors were late amd were loy this time elriving in the dark. but as the yomamoler of the roll was wer math mads ma serious difleulties were cxprornowl :mal makin:


 Lhe wiven from the Roand
Sir Burton Chadwick, whlying on irr. Groves. said that the Whights and Ifeashres (Amembum l:all. introdured rin Xowember -inh. ambained
 to make regnlatims amblime local anthorities to test futrol jampo withiu wheir areas. EIn frated thias ditur wenld
 this sessinn. In that (...nt ho herped to reintroluce it caty
 Transport would comsidee the intrulnction of seasen tirkerls frit muturists using London barkink stations. Tha
 he could mith mitertain 1 la
Captain D'Arey Hall :akial it Corl. A haley propmed in latke : why action in the immediate future (fowarls makine the maintenance of maint roads a mational charge Con . Abley: "The :answer is in the nagative." In reply tor Ar. Clayton, who askel if any part of the Boad Fund was allocillad for rescarch in the construction of roats. the Ministere stated that :athonity for expenditure from the Frunt oll wemern work was only conforred hy the I? madm Jomprozement Act of last :Allamation of moness for the purpesse hated yont mean made, but he was eonsiderins what strps usefully coould be takin.

## THE AMAZING ELDRIDGE

## TAKES TWO-IITRE RECORDS WITH $1 \frac{1}{2}$ LITRE MACHINF.

TTAVING collected mearly all the -1, 1 (K) c.e. international elass records with his famous little single-spater "spectial" at Monthery, Mr. E. A. D. Fldridge decided to attempt rersords jn the two-litre class with the same car.
lior this it was necessury to lead uf the car so as co bring it up to the preseribed weight limit for the new class. Jhis was done by bolting ug, two massive bars of steel-about $\sigma$ ius. in diameter-longitudiually in the frame. Curiously enough, wilh this extra burdon, the cor seemed to be faster than ever.

Starting just before dark on Saturday, Decenber 12th, Eldridge obtained all the two-litre class records u1) (1) 10 miles. Incidentally he broke his own 1,500 c.c. chass records recently obbatued over the same distances with tho sime car! The fastest lap wos made in 46.74 sees., in average speed of very
mearly m.p.h.

The engiue was the same liritish Ahzani with which the previous records were whathed, as the intoresting now overhead-valve model unom which Fhilridge has been workine for some time bust was mot quite ready

It is interesting to bouce that the spereds obtained on the track are rapidly appoathing those of the famous olit riat; that is in say, a li-litue car has accomplished very nearly as murh as one of 213 litres did a year agn!

The iwn-lites recolds obtained were as follow:-

| kiloms. | 1 |  |
| :---: | :---: | :---: |
| 5 miles | 2 | $27.80=195.955 \mathrm{k} .1 \mathrm{~h} . \mathrm{h}$ |
| 10 kiloms. | 3 | $3.6 ; 196.01+k .1 .11$ |
| 10 milew | 4 |  |
|  |  |  |
| Finstest |  |  |

## CONFUSION WORSE CONFOUNDED.



When white safety lines first made their appearance it was impossible to deny their utility, but to-day, apart from familiarity baving bred contempt of them, they are often so badly arranged that they bewilder rather than assist a driver.


Light Car Comment
$\qquad$
By


## Baffling Symptoms--

TIII: owner of an 11.4 hip. Standard, 1924 finpage, told me of a rather extraordinary expertfence he had the other day when, for no apparent reason, the engine started to thump and misfire in a most alarming manner. The change from perfectly sweet running to the symptoms which I have mentioned was so sudden that the alarm felt by the driver was hardly greater than his bewildermelt, and he stopped at once to investigate. Believe me, he spent fifteen minutes exactly going over the engine externally, but could find nothing wrong. He switched on, pressed the starter, and away it went as though nothing whatever was the matter. All went well for a matter of 30 miles or 40 miles. when, without the slightest warning, the symptoms again developed.

## -And the Cause.

T.Un s time my friend noticed that the thumping and misfiring started when he had shifted his ilion in the driving seat. during which he sisfooted he caught his knee in the air strangler cord which hangs from the steering column. Slowing down he tried the tension of the cord, and it acermainly felt as though the strangler must be shut He then slipped the gear lever into neutral and switched off the engine. As the power mit cambto rest the string became taunt and the cause of: the trouble was manifest. The particular type of air strangler takes the form of a hinged flap-not a hutherfy-and unless the return spring is of suficlient strength, the suction of the engine will keep l it hard shut. if it be pulled, as was done in this ane. by accident into the closed position, when the engine is rumbaing fairly fast.

## Wood or Brick?

IT appears that quite a number of light ear wooers are fighting shy of wooden garages because they fear that their life will be short. The price is attractive compared with brick work. which in some cases they cannot really afford, and so the problem arises, shall the smaller amount bo invested in a wooden garage which will serve its purpose for only a limited number of years, or shall the owner "plunge" and build at brick struttore? I am afraid that a lot of these people are suffering from lack of observation, otherwise they would see all round them wooden structures which have already lasted the life of the average man. and which look as though they have plenty of usefol rears still in front of then.

I was told by a temporary-building expert hat even if $\Omega$ good wooden garage was given man allendion beyond the initial coat of ereonsold it should last for 30 rears; but if the owner gene 10 the trouble, and it is very lithe trouble, of panting the exterior of the garage, say, once at ran, with a good creosote. the inside wood being protected with a coat of white fat, the life of the huiddines should beextented almost ad intinitum. Whitewash is, of course, a substitute for that, aud is mach charapor. but it has the disadvantage that it Intakes off ant makes the interior of the garage unsightly

## Pleasing Ignorance.

THE originator of the saying. Pglorame is bliss," must have been a motorist. I am comwinced that those who can drive, but know factically nothing about "the works." derive the greatest pleasure from motoring, provided they arm not of a nervous disposition.

The knowledgeable driver becomes suspicious al the least soma which appears to be abnormal, and gets quite worried if it cannot be traced. The trusting owner who does not possess any mechanical sense just carries on and is perfectly hashes not for him is the mental torture of jagged nerves combined with a " knock-hanter's ear."

Having driven a friend's car for a few days, I returned it to him with thanks. of course ho asked what I thought of it. Knowing him sullicientry well to be brutally candid, I gave a cataloger of the adjustments repaired. He was genuinely surprised. and stated that in all the 10,000 miles he had driven the car he had noticed nothing wrong with it. She is still fuming the car in the same condition. and swears he cannot deter anything wrong. Lucky soul! I was fag agony all the time 1 drove it.

## Where Railway Travellers Score.

TWHE other day I had to undertake a long railway journey -a rarity with me, for I belief" that with a $£ 10$ tax, $£ 12$ insurance premium and the other overheads charged to a car whether it is idle or at work. cheap motoring can hest be achieved by using the car all day and every day for long and short journeys alike. But on this particular journey I was compelled to go by rail, and a quite entertaining experience it proved to be. For some reason the folk whom one meets in railway carriages are so extraordinarily true 1 . type-or, at least, true to the polar conception of them. On this Journey, for example, 1 en-
countured an atetor complete with astrakhan collar. an American with true Harold Lhoyd glasses, and the incevitable country clergyman, of massive proportions, who walked into the restamant car at teatime, protested that he was "pxtremely hungry" and ordered one boiled egg.

The railway traveller who is intrested in types of that most complicated animat, the human being, centainly has a pull over those of us who travel in solitary state by road.

## Pocket Lamps.

SriNC: inspection lamps became such a common fitmont nse of the portable electric torch has derdined, but during the winter months it is still advisable to earry one in the cats. If all the lights fail the inspection light plugged into the dash fails also atme the drivers only means of making it work is to comment it directly to the accumulator-a task Whath is not always easy in the dark.

A1H Wetric torel is a boon in these momenencies. amb Frrsomally. I would merer low whout one. It is usalin, tok, for revaling the natme or number on : gato whon ome is making a call at night, casting : beam rombl the wheels attur the eat has bern -tambing for a dime. and lowking on the floor for



## Motoring by the Fireside.

Wrat orportunties for driving wotully curminem restricted to week-mbl runs must lonf for a $1 \cdot 114$

Whore falls not hail, or rain, or any stluw,
Nop "Mr wind hows loudly,"
fing inturat. when one hats hecome a motorist the Finglish wintor seems intolerably terlious. No one is at surh o bonse end in the winter as the cal
owner whose car is his one enthusiasm. This is where a diary, or at least a record of a season's runs, proves so nsaful, for on the long evenings one can ko over in memory all the jaunts, and, before the fire, recapture the pleasures of the road. An alhum of photographs greatly adde to the interest of such a diary, and to those who are no: versed in camera work I suggest that now is the fime to rhtain moficieney in this delightful pursuit. Iractice in developing and printing during the winter will be well rewarded when the season apuns atyitin.

## A Constant Overflow.

0CE or two readers have writen me, recently, complating of the manner in which water escanes from the radiator via the overllow pipe. Some cats are bad offenders in this respect. I know of one which. in hilly country, will lose nearly a duart in a hundrod miles, the fault lying in the shapo of the radiator ton, which. on rough roads or on gradients, callises the water to be thrown ul the filler oritice and so out of the vont pipe.

Mamufacturos mish bay attention to this point, and ulso to the whold ghestion of moviding adequate reserves of Water. Experience during the past season reveals that mans small cars refuire water replenishments fiar son often.

## Deceptive Hills.

EVIRIRONE is familiar with the rather amoyding and paradoxical fact that he can sale one hill quite easily, wheroas another of exactly the same gradient may make the engine labour, and may even call for a change to a lower gear; but how few realize the important part which is mayed in hill-climbing by the comdition of the surface of the reats.


Gathering fir cones with the aid of a Singer. They provide an even more cheerful Christmas fire than the proverbial Yule log, whilst they bave the merit of being easily collected and are very portable.

There is a certain hill with wheh I am very familar ; it has an average gratient of about 1 ia 9 , the steepest gradient being about 1 in S , and is just under a mile in length. Un to within the past few weeks the surface of the first half-mile has been very bad, causing the back wheels of an ascending car to dither considerably: No matter What the weather combitions were, I noticed that with the same car a change down was neally always necessary within tive or ten gards above or below a certain spot. Following repairs to tho road surface, however, the ammath is now of billiardtahle smoothness, and. hey presto! the point at which the essential gear change must ho made is at least 150 sards farther wh the hill.

## A Forlorn Hope.

ROATHACING in lingland contiules to be a live and pleasamt topic for after-linmer cluh speakers, but it still apmears to be as far off as ever. It is amazing to me that the British Government is not alive to the possibilities which roadracing presents. It is not as though it was confined 10 s say, one other foreign country ; it is a world-wide practice yet we stand aloof. No wonder the foreigner chuckles athl observes "Where jgnorance is bliss." and so on. When will the Govermment realize that in these days making motorears is a stern business, and that deliberately to sacrifice the commercial adrantages which are to be ohtathed from roadracing is to jeobardise the industry in this comntry in a manner which can be ganged only by those intimately concernerl on the manufacturing and selling side?

## Away with Level Crossings.

TLIl: recent level-crossing disaster at Fomm: Stratford camot be attributed solely to the presence of the level crossing itself. Nevertheless. this traredy emphasizes once more the undesirability of ronds and railways crossing in any other way than by bridges or subways. After all. if the level crossiug had not been there the accident would not have occurred.

Apart from thr
risks, howerer, the system is ath wrong ; minor delays are catused 10 ralway tradic and very great dehas to ruad users. It is only fon common an experience to have the gates of a level crossing shat in unes face, to have to wat several minutes befure the expected train arrives, and, very likels, to be still further held up liecallese, just as the first frain is leaving, another one in the opmsite direction is clue.

It would. perhalps, be too much to sugrest that lesislation should be introtheed for the abolition of level crossings, hut surely it should not be impossible to prevent the builing of any men ones. In the course of time bridges might be built to replace existing level crossings, and in the ond this bugbear of everg roat user might lan mblely rrallicared.

## Odd Uses for Headlamps.

HL.ADh.IMIPs call be used for morn purposes than merely revealing the messonce of whects ahead. When datlight is fading, an owertaking motorist can often make his prestme: komwn hy means of his headlamps to lorre drivere who cathnot hear his horn, a sulden switehine on hemes ats it rule, res effective. Aso, when the trees and bedges are bare of folinge, lights, wen int the daytime. can be used to give warning of onct: alpmotach to other drivers at eross-roads.

The most carions use of heallatups. if which I have heard came to my hotice How othom das. it friend of mine was taking a fiedel-pond across country at sumdown, whenthe was survomberd he a herd of huge and monatcing bullocks. They lowered their heals. and prosenmal to him an alfrighting circle of formidible horns. The hooter and shoating proved inefrective, athe the mestion Was hegiming to low decidedly Hyly when the Wriver accitlentally switchea on his hoadanmos. The: effect was magical. The herd immotiately dashed ofl panic-stricken, and from a far conner of the field Watched my friend as he marsmed his jombes in neace. Most animals are afraid of " fime" in any form, as any higyame hunfor kunws muly ton well.


The Rover Nine "Super" model will make its first appearance in an important competition on the occasion of D3:3

MIDLAND OFFICES: BIRMINGHAM: 16, Bennett's Hill

Phoone: Central 2572-3
COVENTRY: 6. Warwick Row
Phone : Corentre 1775.
NORTHERN OFFICES: MANCHESTER: 196. Dennsgate thonc: Central 2167

Blow io ל̀alloons.

ONE of the principal effects of the increatsing cost of tyres is likely to be a falling ofle the popmarity wi. hallown tyres among mutarists whan must keep : -lose - Bu on rumbing conts, find hallemityres dondot give,
 Wron at erool-milenges its tho nomal pessure variety, Whisi they enst more to buy, :that soltion caln be rebiander. It may be argued hatl the use of balloon tyres reduces repair hills by insulating the working parts of a car from robel shocks, hut it is diflicult to convince economically minden motorists of this when the difterence in upkerp (ast of $\mathfrak{f}$ sist of halloons and a set of mormal pressure tyies is so high als it is.

Another effect of the increasing tyre prices will bee that greater attention will be paid to securing the hest mossible mileages, whilst retreading worn woms is lakely again to become an important branch of the tyre business. In addition, attentlon will be directed to heary-section tubes, tyre liners, batches and gaters, which have fallen into disuse during the ara of very cheap tyres which we have 'onjoyed foi the past few years, whilst owner-drivers will be even more careful to keep their tyre pressures at the correct figure and to carry out fregluent examinations of their tyres with a view to finding gashes which need to be stopped and tlints (1) be extracted

## Let Every Club Follow Suit.

$\mathrm{A}_{1}^{\mathrm{T}}$$T$ the recent amual general meeting of the Essex Motor Club an important resolution, which, we hope, will inspire cery other chnb executive in the kingdom, was proposed, seconded and carried manimously. It was to the effect that a strong brotest should be addressed in the name of the club to the Chancellor of the Exchequer, Mr. Winston Churchill, in respect of his contemplated raid on the Road Fund. Everyone expects large and influential bodies such as the Royal Automohile (lub) and the Automobile Association to registhi their protests, but the Essex Motor Club is to保 congratulated on taking the first step towards what we hope will be a mated firont on the part of all motoring organizations.

It is essential that Mr. Churchill should be mate (1) apprecinte the fact that the feeling which his threarened raid has engendered is not only one


Which it is the duty of all the big motoring oryanizafions to express antmatically, but that motorists all wer the kingtom feel very keenly that a gigantic injustice is threatened, and this (an be done effectively in the manner indicaled. From bast experience we know that ministerial plerges are arey much like the proverhial pie-crust, but seldom have they been giren with such fervour and directness as was the case when the Road Fund was instituted. We urge erery motor cluh to follow the example of the E.M.C., and we trust that the wothing of their frotests will conrince the Chancellor of the Exchequer that motorists, who represent nowadays a very large proportion of the community, really mean what they say. After all, the main issue of a general election has centred in a subject of less importance thath the threatened raid on the Road Fund. Ferb. sal).

## Foreign Competition

IN a recent issue of The Light C'ar and C'yclccar a contributor drew attention to the fact that we are handing over to France the bulk of the market for the 1,000 c.c. four-wheeler, and it now becomes evident that foreign competition is going to be a very big factor in the future, not only with regard to the 1,000 c.c. car, but over the whole range of light car poduction. With the activities of French designers and builders our readers are familiar, but it is not so well known that both Germany and Belgium have entered the field with a determination to make good. Canada, too, is turning out small cars and finding a ready market for them in various parts of the world, whilst America also is becoming a convert to the light car. Uur only weapon of defence in the home market is a very lenient import duty, but it is by no means an unclimbable harrice.

Why, it may he asked, cannot John Bull estahlish himself in the Continental markets and thus obtain a quid pro qua which would balance matters satisfactorily? The answer lies in the fact that these markets are guarded hy duties which are far higher than that ruling in Great Britain; so high, in fact, that the British car has no chance in them. It is. of course, more than unfortunate, but there it is. The public should understand the position lest they form hasty conclusions.


NOM time ed time during the past brook lands season a quied, massuming young man was wont to afplear on the track with al Morgan cyclecar and proceed to lower existing speed records and to estah)lish of hers. continuing the process until, before the track closed for the winter, he hidd attained the amazing speed of 107 m.p.h. The driver in question was Mr. H. Beart, and his Morgan, although unlike any onher Murqun in external mpmarance, does not diffes very greaty in its gencral layout from the standard dero type.
liecently we had an oppurtunity of examining fhe mathine in detail at die Crupdon works of Messrs. H. Beirt and Co., where it is in "dry dock "for complete overhanl in reatiness for next season's actirities.

The chassis frame has been strengthened somewhat to withstamel the strains fo which it is subjected at high sperds, and the rear quarter-elliptic springs eath hare seven leaves of grathated thichness. A single Harlford shock absorber is mounted over the rear when by means of a bracket on the top of the berel box and a stirrun secured to the fork ends.

## The Front Suspension.

Whe difticulty of fittine shock alosorbers to the front suspension has been overcome in an ingonious manner. The standard bronze sliding gxles are replaced by others of cast-stech, on each of which is a forward projecting bracket 10 take one arm of the Hartforl Below the lower cross tube of the suspension assembly on each side is amother stend bracket which takes the etiver arm. These brackets are free to swivel on honga bushes so that the damparsis more with the wherels.

To strunghen tho assembly and to compensate for ally arded stresses which ming be set up by the tightly adjusted slack absorbers, the stamdard thbes on which the sliding axles move are replaced by hardened and around Thas steol pins screwed into josition aud arranged for prossure $\mathrm{m}_{\mathrm{u}}$ ph lulrication.

Spring-loadma bill joints are used for the stecring track-rut commertions, ant the steering is geared down by the ingenions use of Ford epicocelic steering reduction gear fitfed to the top of the column. This arrangement has been fimmiar to Morgan owners for some time. bit has nut !een generally arfopted owing to lack ni knowledge as to mothods of fitting aud as to how it wonld bohare in joractice. That Mr. Beart uses the grar for rerord heaking is suflicient proof of its suitfibility and roliability, whilst, as will he seen in an aceompanyitig sketch, the melhod of fitting is both neat and simple.

## Sun and Planet Gearing

The steerincrolumm casing is cut and slotted to re crive the casing which houses the internal toothed ring or anmulus. Neshing with this annulus are three pinions momed on a triangulated plate secured to the and of the column itself the lower end of which carries a forged steel drop arm slighty lomger than the standard fitting. A pinion on the end of a short shaft on the steering wheel meshes with the three planel pinions, the whole assembly being held in jlace by a cover which screws on to the ammulus casing. The actual rechuction oblained with this sestem is 4 to 1

In passing, it may be mentioned that Messes. II. IBual and Co. specialize in fitting the gear to standard Morgans of any type.

To return to nir descriplion. The front wheels ate
 Afins: : $2 \pi-\mathrm{in}$. ly $4.20-\mathrm{in}$. Dmhlop tye is used on the - rear wheel. The latter, incidentally, does not carry hrakes of any lind; in fact, the only brakes fithed aro an the front wheels and they are controlled by a hand Jever fitterl ontside the bolly. Thare is no fontGitrated brake control.

Monuted with the brake lever is the gear lever. It B:32

## The World's Fa <br> detailed description of the morgan cyclecar which has EXCEEDED 160 MPH. ON THE track and established many OTHER RECORDS

 Three
is ronnecter to the two sliding dege be tonk inwling in conjunction with spring-haded sefertor medanisith, Which obviates the possibility of at war jumping out at high spled. To facilitate changing mp in mashbution switch is fited to the tup of the irat term and commeted to the magneto, thas to whane suat there is no mead to slip the rluted or allar the throtlle opening pressure on the button whitat blo bowe is
 ghe in slow down momentarily and ont-in :latia the instant the gear is "home."

 so m.p.h. on the lower ratio. It low m.p.h. the mginm apeed is about 4,300 r.jn.m., as shown be the revelution indicator which is driven from the lwevthex combert shaft.
 box are copler piges which lead from a drip-foesl lubricator on a pressure-fed oil tank in the borly, sw that a constant supply of lubricant is fect on to the chatins and bevels-an important print whon maximum effeciency is refpuired.
 to mount the Hartford shock absorbers on the front suspension. The front wheels run on Timken roller bearings.

To ensure that the carharetter has an ample surphy of air ufon which 10 draw and to ensure also that the air is at atmosplaeric pressure a very clever device is in use. Reference to a picture of the machine in a news page in this issue shows a pipe projecting from cacta side of the cowling. Fach of the lwo pipes is lerl tw the sitle of a metal bowl set on edge, as it were, just behind the carburetter air intake.

At high speeds it is found that the air in the bowl is alnost exactly at atmospleric pressure, thas when thoing the carluretter equestions of correct air surply may be left out of the calculations. Mr. Prart is of upinion that, at present, nothins will be gained ly forced-induction devices on his car

## Petrol and Oil Supply

With the merem : arrangements a perol consumption, ori the track, of $9-2 \mathrm{E}$ m.j.g. has heen obtained during the season. This, of collse, is a very good avmage for a racing machine of this type. There are two pettol tanks, one heing fitted under the main frame whe and holding five gallons. Pressure-feed is entployed, the usual hand punp being fitted. For sprint runs and hill-climbs this tank only is used, hut for longer runs the seconsi tank. carried in the hodg, is tilled, the combined calacitirs of the two tanks being alout $1+4$ gallons.

Oil for the engine is carried in a large tank and supplied through two drip-feed lubricators, each of which is adjustable from the mechanic's seat.

A special radiator is fitted, the lower water pipes lecing led to the front of (his water jackets instead of to the rear, as in normal Morgan wactice. There is no special reason berond convenience for this altera1ion. The filling orifice of the radiator is fitted with a small condenser, and it is found that no water is lost during even the most prolonged high-speed runs.

The body of the car is a rery fine piece of work, snecial attention haring heen paid to streamlining. The underside is flat, the driver's and mechanic's seats being below the main frame tube. Including the aluminium cowl over the engine the complete body weighs 43 lb .

The track-holding gualities of the machine would apmear to be proved by Mr. Rearts statement that it is possible to drive "hands off" at $90 \mathrm{~m} . \mathrm{p} . \mathrm{h}$.

## One Day's Records.

On Spptember 18th last Mr. Beart secured the following records in Class HO:- 50 miles, 33 mins . 0.69 secs. $=00.8^{2} \mathrm{~m} . \mathrm{p} . \mathrm{l}$. ; 100 miles, 1 hr .5 mins. 32.68 secs. $=31$ int m.p.h.: 50 liiloms., 20 mins. 42.74 secs. $=$ $144.84 \mathrm{k} . \mathrm{p} . \mathrm{h}$. ; 100 kiloms.. 40 mins . $\mathbf{5 6 . 1 7}$ sees. $=146.5 \mathrm{t}$ k.p.h.; 1 hr., 91 miles 8.47 rds. $=91.48$ m.p.h.

Although the ceclecar is intended primarily for use on the track, it has figured more than once in hill-climbs and speed erents, whilst in a less commete and eflicient form it ran in the J.C.C. SorAite Race of $1924-$ the last year in which threewheclers were allowed to compete in that orent.

An interesting noint in connection with the machine is that no attempt has been made in cut down weight: in fact, probably it is hearier than other racing Morgans, Mr. Beart's opinion being that reasonable weight aids efliciences by helping the wachine to hold the track and hy tending to promote increased reliahility.
Questioned as to his future intentions, Mr. Beart said that he would continue his attempts on the farious records for which his machine was eligible, and mentioned, incidentally, that he might possibly he seen driving a Morgau with a new trpe of engine and other madifications next sinason.

We are not at liberty to give detaits of the proposed crelecar. but we can say that, should it materialize, it will be one of the most interesting three-wheeler: which has ever been produced in this countre.

W'e welcomz at all times letters sent to us by readers for publication in these columns, and whid iaking nc respansibility for the opinions expressed therein give preference to thosc lettera which deal with subjects of general interest. No anonymous communications will be accepted, bul th. writer may use a nom de plume if desired. To -nsure publication in the next issue, lettars mist reach this ofics not later than Montay morning. We reserve ihe right to make any alterations or deletions which we deem necessary.

## AVOIDING DOUBT AND DISAPPOINTMENT Users and Manufacturers' Views on the Sparking Plug Question.

## Eliminating Doubt.

1 brartily agree with those of your correspondents whan have writte, to complain about the lack of information respering the chaice of sparking plages. As at movice, without the least mechanical instinet. I have

## Choosing A Plug.

 men; if the tell me that such-ind-such a plut is the best I meckly buy it. Ii, however, I could refer to a chart I should linow what phur was suitable fur my engine ahd thus save many disappontments and moch wiste ont monesJg.ormas.

## In Favour of Charts.

Nlow me to join issue with Mr. N. Mascumbe, who ful lows up the recent correspondence on sparking-plug recommondations in at very telliag maner. I. like cther readers, have hat the bad luck to buy a complete Recommendations set of plugs, only in tind a few days Needed. later that they were of an absolutely mosuitable type for my ongine, and that my momey had been wasted. It is surely the duty of phy manufacturers to ensure that their rustomers are not disappointed $m$ this manner, as. even although one knows that they are not wholly to blame for a mischanee such ns mine. the finct remans that one experience of this kind leaves : masty taste in the month e:merning the makn in ghestion.

## hotten-tip.

## Sparking Plug Types.

White most whole-heartedly aprecing with your correspondents that we need authoritative gatibuce in the choice ni: sparking plugs, mendinjer its arrival, we can, I think, help nurselves, Assuming sound insulation

## Correct Reach Important.

 and electrodes so constructed as to awod overheating, the two main points on which plage differ are gan and reach The first we can adjust for ourselves. I'ersonally I find 2 () bhousandrhs most satistactory, but it is a malier readily amenable to indisiduat exprriment.'She reach of a plug is beyond our control, but it is, in my opunion, a point of the highest importance. All recent resarch into flame propagation and allied phenomena point 10 the desirability of having a combustion chamber as luarly splerienl as possible with the sparking moints at the ratirc.

It is this npmord on the stibre which gives the over13: 2
head-valye engine its ndrabatace, but whatever the shathe of mur combustion chamber, at piece uf stift wite and at enol scale will enable us to diad the distable 10 the min bomm of its depth, fund it is wise io chorse : blug which hits : reath us me:n lhis distarue as possible
. If. Sruart, lh.D., lis,
Our correspondent asames an engine with the plan in the centre of the heat, but correct reath is of rimat importance when the blug is situated in any oblone position. In the eatse on a side-valve ongite with bluge wor
 ono which gives safe clearance between the alectrodes allal the valve hend when the valve is open; the minimmen elathe ance should not be Iess than on in, on allow for the nowsibility of valve brumme to hish speets.-Fin.

## Facts About Sparking Plugs.

The: recent parastaph by "Focus" repsording the rhaice of sparking plugs is true in cocry respect. To whain easy starting, good slow muning, rapid acceleration and maximun power from modern high efticiency A Manufacturer's engines it is vitally mecessary that the Views. eorrect type of plag should be usad. 'The present necessity for so many difforent types is madoubtrdly due to the lack of any form of nogine stuadardization. 'ilhe plugs on some engines ant situated in deep bockets, which reguire a plag with a lons burrel ; in others the cylinder head is thick, whidh necessitates a long rench in order to bring the sparking points Hush with the inside face of the eylinder head
latge variations in compression ratios, maximmm reban., position of plugs and so forth all eall for special treatment in order to provide : sparking plug which will function monerly when the engine is illing, rapidly accelerating or pulling under full lond in top gear for long periods.

Such are a few of the couditions which the mannfacture has to overcome, but it can be taken as an established fact that no manufarturer, English or foreign, will todiny lit : phar as standard erfuipment moless it gives a satisfactory performance under both bench and road tests, which tests are usually much more severe than the owner-driver is ever likely to impose unon the pheg.
The question of sules cabinets, as mantioned by Mi'. I. I. Sharter, and recommendation charts as rofered to by "Puzaled" an I Mr. A. I'. (G. Willard, are to be fomm in the showronms of nearly all gooil garnges, but it is 10 be regretted that in so many instances the denler does not: trouble t: use the cor makers and plug monnfacturers

## OUR REAIDERS' OI'NIONS (comdI).

recommendilion when called unon by the client, lint ofines any standard plagi as referved to in the letter from $M$. (i. (i. Sells.
 stuff "are no doulit aware that mand of these events reathiting specially thmed super-highly eflirient engines, necessitate the use of iresk plags, which have no commercial value and eannot be obtained by the buying public, sud, even if they could, thase plugs would not function for five mites in $\operatorname{bO}$ per cent. of the avernge touring cars in use.

Sparkinfoluz advertisemachts featuring competition successes usually illustrate the standard commercially produced phng. but in the majority of cases a special type of plug has been used, costing in some instances from 1 5s. In $f 1$ cach, and it wonld be better if all phog manutacturers, in compotition work, wave a definite statement that standard bhas wor worl. the same as can be burchased from any arage, anal, "terever bossible, that particular plug should be illurt:atorl.


* 'I'fe micceding letter is Erom one of the best-known

Einglish nlum-monufncturing concerns, which, in order to nvoid iny suggestion of sulvertisement desires to remaia anonymous.-LD.

## Sparking-plug Selection.

For a considerable number of vears we have regularly issued chats showisg the correct models of our sparking plugs that should be used for various engines. We have distributed these chats to all dealers in

## Charts <br> Available.

 Their enstomers. It is evident, however, frow the reeent letters in your conrespondence columns that this is not sufficient.We are always very pleased to rective recommendations from sparking-phag users as to how we can help them. and we will certaints arrange for these lists of cars. with the correct model of plug, to be published periorlically.
L.odge Plugs. Litd.

## Springless Suspension-Then and Now-" The Evil Eye."

## The Gnome Cyclecar.

1 Win wh indorested iu "shacklepin's" remarks in your ssate of laceanbor tha regatding the finome car. I am an owner wif one wi these litele cans, and find that the springing Satisfactory $\quad$ is bebsise liant that on some much more: with high-pressure Suspension. fires. One can drive over uneven grennd without very mach diseomfort.
 but the: baiz ballann lases equalize any unevenness due to roal sutiacッ.
The ensine senms quite puwerfal: I towed Sunth Devon last Septombr with a passemger and as much luggage as 1 could back
1 woukd suphest that the: makers lit a normal type of magnole insteal of the existing "ywher tybe, and also " hand-starise:
$\Delta T I \ddot{14} 14$.

## In " The Good Old Days."

I sumetimms womber how the people who ride about nowadiass in japid, wiable, camfortable cars, tund grouse over a bit of rounh road or sume nemligible trifle, would have

> Motoring
> 20 Years Ago. cared to motor in the ently days when cals were not the ducile scrants of the bulblic that they are at mesent. Where was no need to seck sensation by hunting freak hills, or drivine from Tandon to Fxeter by night in the worst weather obtaimable! One got all, and more, than omir neded in pursuing one's lawfal arocations, and it needed a vast amount of patience and optimism to avoid worrsing oneselt into an carly grave!

I remomber saying to a friend that I had had a beakdown, hut now i had fombl nut the trouble I should know what to do in future. "My dear lady," he replied, "if yon find fifty ways of circumventing a car she'll promptly invent a 5lst and have yon," and I have certainly had ample pronf of his dictum since.
Cars developed "whinseys" in those days. I bad one with n ronted objection to the Pristol road, and all the: fime I had it we nover got to Bristol nnd back without an involuntary stop; the car would cheerfully take its full complement of five passengers in muy other direction, wrovided one did not include a stranger, when it usually inade a point of coming to grief, and an aunt of mine, who disliked motors, proved an absolute Jonah in this respect, and ileclared the car objected to having her on board!

A cyclecar I lad used to make a point of getting superfluous oil into its magneto and absolutely refusing to start when one was somewhere miles from linme. It also developed
at katack of detathing its steering apparatur from the road wheds, and after being spilt out on two occasions I felt 1 had had enongh, got it fixed up with wire and drove ir. verg gingerly some $1 \overline{5}$ miles to the marest garage to lo: remaired and sold.

I do not wish to return to the "good uld days," althourin they had their componsations. I woman driver was a rarity and regatded with sufficient apmedension to be given a very wide berth-one"s small "ar was not forced nearly into the diteh by lordly limousines, as occasionally occurs now, and there was a freemasonry amonest motorists which was rery delightful and gate one a fir higher uninion of the kindliness of one's fellow leings.

I have beon towed to a mivate gatage by an absolute stramger, given toa by his wife, had my car overhanled by his chanffeur and despatched with a spare accumulator to get me home-driven home, or to my objective, when held un on the road, by neonle $T$ never saw hefore, or sinee, and my pleasantest memories of those early days are of the immense amount of kindliness and courtess Y reerived trom nll classes of ms fellow inotorists.

A Dwferer in tie: Vale of Avilon.

## Hindhead is Bewitched.

Fumr correspument " A. P." anked last werk whether Mindhead was hewiteled, and I declare emphatically that it is. Last year 1 was trying to sell my Lagouda, and a friend who was about to buy it asked me if I would take him for a run in that dircetion, and on the

## Another <br> Coincidence.

 fortune same hove were about $2 S$ in.p.h.. the cugine suddenly betered out. This was the first failure of ang kind which I had had in over 10.000 miles, so, kuowing there was plenty of petrol in the nk, I naturally assumed that I had had the bad luck to jurn out the magneto. On examination. however, I foun: that the magneta was giving a perfectly good spark, that the plugs appeared all right, the jets wore clean and everything scemed absolutely $0 . \mathrm{K}_{\text {. }}$.After wasting a couple of hours making vain efforts to start the engine, we ultimately not a tow from a passing lorry to a parage, where a mechanic nyain went over all the parts which we had previously tested. without fiuding any trouble, reassembled everything aud the engine started with the first pulf-up of the handle. Naturally, by then my friend bad fiven un all idea of buying the car. and [ consequentls had to sell it at a much lower price than he had originally offered me.

Fes, Eindhead certainly is bewitched, ntherwise how am I to account for my uncanny experience?
A. J. Foster.

## OUR READERS' OPINZONS (contd.).

## Motoring by the Fireside.

Like Mr. I. L. T. S. Jitton, 1 thoroughly enjored Major Stenson Cooke's talks on motoring which have been broadenst receutly, and should certainly like them to be continued. Hroadeast A point which needs emphasizing, how
Broadcast
Instruction. ever, is that it is risiculous to put these motoring talks on carly in the evening, os many of us are unable to get home in time for them If the B.B.C. can arrauge for further motoring talks, would it not be possible for then to be broadeast at, say, 9. $30 \mathrm{p} . \mathrm{m}$.?

JISTFNEH-1N.

## Driving in Fog.

Referring to the article, "Whon Fog Prevails," in you 1ssue of November 20th, I wotice sour contributor advocates a spot lamp fitted on the nenr-side dumb-jron for fog driving. This would be far more useful fitted on

## Spot-light <br> Positions.

 the off-side dumb-irun and focused ta the near-side kerb. It enn then be used to pick out eyclists, in addition to being a nseful titting in fog. On a car I tried recently a spotlight was fitted under the off-side headlamp. The headlamps were switched on by the usual switeh, and under the stecring column was a handy turn-button. which cut out the headlights and switched on the spot-light. It is the finest dimming device that can be desired, as it gives a strong enough light to piek out any cyclists or pedestrians, and eauses no incenvenience to other road users.> II. P. Carpifr.

## Electric Heater in Demand.

Your comments concerninir methods fur protecting engines from frost recall an idea which I once had, but on which, sn far, I have never receired an authoritutive opinion. The idea in question takes the form of an

## hermostatic <br> Control.

 clectric henter comected with the water nipes of the erigine and controlled by a thermostatic switeh so that, immediafely the temperature of the eooling water falls to, say, :30 degrees Falir., the switch is closed and the heater comes into operation, taking its eurrent from the battery of the car. What would be the disadrantages, and why should the cost be excessive?I appreciate, of course, that auy form of electric beatev takes rather a lut of eurrent, and for this reason it seems ats thourh the iden might not be workable, using the ear hattery. But in any ease it should be quite simple to arrange to plug in the house eurrent to a socket specially arlawged on the heater. Why does not some enterpising acerssory anamufacturer put an accessory of this kind on the market?
F. 1. Joblinom.

## Sidecar or Three-wheeler?

May I explain for the lemefit of "Seeptieal" that ill moturing parlance a motoreycle with sidecar attached is tisually referred to as a "combination" or "sidecar outfit," and that a eyclecar or rumabout

## A Critt's

Compríson. runabout with three wheels is called a "threcwherler:" Also that a modern combination with suitable shock absorbers and stevtiug damber, usually included in the standard equipment, is perfectly manageable at spects in excess of $60 \mathrm{~m} . \mathrm{f} . \mathrm{h}$. ; to eonirm this "Sceptical" has only to refer to the results of the 'T.' sidecar race, held wer the winding and mountainous Isle of Man course.

Now to enlighten "N.K.T." Without consulting eatalngucs for exact prises, I may mention the following makes of motorcrele that will attaiu $75 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. With a sideeal, and yet cost considerably less than $£ 180$ : The 588 c.e. o.h.v. Norton, 182 : the double-port 49 S c.c. H.R.1)., £104. :and the Oying madel Coventry-Eagle, nlso the Zenith, \&10\% Idd a fi5 sidectar to any of these: and not one will rest inore than $£ 120$.
In cold print my ideal of a fast cyelecar seems impossible. specially so when dissected hy Mr. R. M. V. Sutton. But 1 still maintain that a cyelecar can be built to be quite reliable and yot be capable of $75 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. for $£ 200$ or less.

If the Morcan can lie marketed for about $£ 150$, with -lectric lights, front-wheel brakes. Moseley float-on-air cushions and be capable of $75 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. , surely 4 four-wheeler on the same lines would not be so tery much more expensive. And nobody can accuse the Morgan of being a mass production job of of beines only "fit for the scrap lieap" after two years' hsage.

11336

The Austin \% sorts model nud similar inexpensise bars do not twist their front axles every time the front-whel brakes are applied, and coachbuidding has become such an a't that surely a non-ratting two-seated body on the Weymann principle could be produced ruite chenply.

1 hope that this want for a real'y fast cyclecer will rent fitde awiy as the clusive $\mathbf{f 1 0 0}$ ear has done.

गK!.

## Silencers and the Law.

On page !t of The Light C'or and Cyclircer of Diawor ber 11th there is a paragraph entitled "Silencers ant the: Police." It is the en stated that the demands at the latw

## The Wording of the Act. "are that the engine should be fitterl with an eflicient expansions (hamber." 1 beg to noint out that the latw rlows

 not so demand, but gives every latitude as to the device employed. All it reguires is an aflicient silenecr. I think it would be useful if yons were to print the material part of the Motor Car (V.a alml romstruction) Amendanent Otder (No. II) nf 1912. S.l: and ().
 there nere added as para. (7) oi that $\Delta$ rtiold the followimp Regulation; that is to say:-
(7) Me slaall not use any cut-out, fitting ou wher alpatat Lus or device, which will allow the exhanst $\quad \underset{\text { mas }}{ }$ from the engine of the motorcar to eseape into the fatmaphere wibl out first passing through a silencer, expansion thamber on wher contrivance, suitable and sulticient for reduebly as far as may reasomably be practicable the noise which would otherwise be caused hy the escape of the said will 1roo vided that this regulation shall apply only 10 a mondrear propelled by an internal-combustion engine."
It is to be observed that the test is the reasemblale rechartion of the noise and nothing else. A technisal annisetion on the ground that no expansion ehamber was filfod is, therefore, bad, although there will usually he eviflame: that the car was noisy.

As your other jourmals hase sometimes marle similat observations I think the printing of the regnlation would assist unite a number of readers.

Th the ease of the owner of a standard eat or matomeyde who is prosecuted successfully on the froumel that his machine has not a reasombly silent exhansi, fle nworer should return the velijele to the makers on fle ground flat it is not properly adapted to the purgose for which it is sold. There could then be a pretey fight with the 1 . 1 . on
 the ILonse of Ierds, with much profit to the lus:al grofension!
1.11. K゙NG.

## CONDENSED CORRESPONDENCE.

Mr. II. J. A. Cooper writes to point out to Mr. I. L). Stephens and other reatiers who may be interested that his club, the Twickenham Motor Chub, eaters esuecially for the socially inclined member. 'The subseription is 10 s . per anmm and there are no entrance fees for the wrinus lums and competitions. 'Jhe address of the hon. see. is Wrestbourne ITouse, !ichmond Rond, Twickenham.
lieplying to "J.H.G:s" recent lelter, "In Praise of the dustin Seven," "Constant Reader" remarks that the windsereen does not obscure his vision, but suggests that if would he better if the $t$ wn panels overlapped by in. or so. Me thinks that the raking power is ample and that it would le no jmprovement to fit the lamps on the mudguards inwiead of on the windsercen base as at present. Ife honem whirtly 10 inke deli wery of a 1 eso model.

## INFORMATION WANTED.

T.! 1r.p. Swirr.-An instruction book on this car not being available, hints as to how ensy starling in cold weather may be obtained and opinions as to the most suitable brands of oil and petrol for ecomomy and efficieney are requested.IיW.G., S7, Gilfach Strect, I'argoed, nenr Curdiff.

Costs Compantsons.- What is the difiemence lielween the yearly ruuning costs of a solo motoreycle and a small car of the two-seater and dickey or chummy tyw? Recommendations from personal experience with a suitahle smult car will be useful.-West Countryman, care of The Lighe C'ar and Cyelecar, 7-15, Rosebery Avenue, R.A.4.


# In Australia-as in Englandthe $9 / 20 \mathrm{~h} . \mathrm{p}$. Rover is on top 

Latest news to hand from Australia proves that the $9 / 20 \mathrm{~h} . \mathrm{p}$. Rover is more than equal to the hardest conditions overseas as well as at home. In the Eight Days Reliability and Touring Contest promoted by the Royal Automobile Club of Australia only four out of 30 cars secured full points for reliability. One of them was a $9 / 20$ h.p. Rover (Sports Model). The other four were all cars costing hundreds of pounds (in one case £1200) more than the Rover. Here's a sample of the conditions: "The second day was absolutely the worst the writer (Nr. C. B. Bradley, of Sydney) has ever experienced. The thermometer showed 35 deg . all day, with alternate squalls of hail and snow. The route
lay across heavy mountain ranges and the surface in some parts was extremely bad." No wonder some of the cars fcund trouble! But the Rover finished the trial without the loss of a single point for reliability the only "small" car to do so-in fact, one of the official examiners reported that the Rover was one of the only two cars in the whole contest to have no defects recorded on their examination cards! So hesitate no longer - a 9/20 h.p. Rover is the car for you. There are models from $£ 185$ to $£ 285$ (the De Lixe 4 -seater illustrated costs £205). The Sports Model is $£ 220$ - the finest value in British Sports cars. Write for full particulars. Do it to-day!


THE ROVER COMPANY LTD., 61. NEW BOND ST., W.1, AND COVENTRY



SPARKING PLUGS.

## Details of performance:

Mr. E. A. D. ELDRIDGE, driving a 1,500 c.c. Eldridge Special at Monthery on Saturday, Dec. 12th, 1925, broke the following World's Records (subject to official confirmation) :-
5 Kilometres 1 min .31 .73 secs. Average 196.228 k.p.h.
5 Miles $\quad 2 \mathrm{~min} .27 .83$ secs. .. $\quad 121.760$ m.p.h.
10 Kilometres $3 \mathrm{~min} .3 .66 \mathrm{secs} . \quad$, $\quad 196.014 \mathrm{k} . \mathrm{p} . \mathrm{h}$
10 Miles $\quad 4 \mathrm{~min} .55 .92$ secs. ., 121.654 m.p.h

## "Fit and forget."

Sole Munufactuecrs:
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PUTNEY VALE, LONDON, S.W.IS. Teliohone-PUTNEY 2132/3. Sole Expert Asents: Afessrs. S. Smith \& Sons (M.A.), Led., Crickleubod Works, N.W.2.



We inwite readers 10 send us hints cained from their own experience for inclusion in this feature. Five hillings will be paid to the sender f any hint published.

## Heating the Air

A supply of heated air to the carbun retter is witen hencficial, particulanly in cold weather. I muff on the exhitusi pipe mas deliver too much heat, in which case the radiator ean be used as the source of wamml. This idea may be carried ont with advantage in the calse of Jowent mas mot having water-heated inlet pip.

Two thin dmestanetal phates are re. quived "t any simithle shape. to fix ane: on ench side of the radiator bleck. "Ihe front alle is sain, but that at the rear


> A device for beating the air before it enters the carburetter of Jowett cars not fitted with water-heated induction pipes.

hins at hale in the centre and has fixed in it. by means of soldering or brazing, : trumpet-xhinped pipe, which, in turn, is connected to the carbmerter air intake. By this mmans air has to pass through the space between the plates and is heated en route. Asbestos lagging for the inlet pipe is desirable to preserve the lient.

## Filling the Back Axle.

When verifying the level of the lubriatat in the back axle it is not sufteient merely to remove the plug and glance casually through the orifice -especially if greasu is the mediun employed. In cold weather partiati-
larly a small amount of grease witen becomes wedged, as it were, in the filler neek and gives one the impressinu that the easing is full. A round stich slightly smaller than the dinmeter of the orifice sliould be thrust into the rasing, so that, if the above condition axists, the grease will be forced into the cusing and a better idea oblained of the actual amount of lubricant in rirculation.

## Temporary Fan Belt.

A good temporary sulnstitute for a flat fun belt is a length of ordinary flat lanp wiek of suitable width. The wiek should be pared in position on the builleys and cont off so that when pulted tight the ends just meet. Conrse thread ow fine string may then be used to sen the ends logetlier and the job will be complate. If the work is properly married out the substitute should work quite well nad last for a considerable time.

## Leaky Tyre Valves

lt sometimes happens that a fre vah leaks slightly dun to the plomare not seating moperly: Grit is ofton the rabse, of perhaps a worn planger may be the source of the trouble. In these cases the lenk is usunlly not great chongh to brevent the tyre from being puninerd to the necessary pressure. I enod plan is to inflate the tyre and then give n sharp down stroke of the pump. followed immediately by a very shary川wand stroke. This will frectnently dis:

Queries of general interest will be
answered under this heading whenanswered under this heading whenever possibie, but a siamped adreply. Telephonic enquiries cannot be answered.
. T.M.S. (Llandudno).-Too low an ait pressure is most probnbly the cause of the crerping of the beaded-edged tyres to which you refer. These are held by in thation pressure only, unless bolt vulves of seconrity valves are used, and we gather that these are not fitted.
K.N. (Swmmea).-Les, it is certamly possible to change genr eitber up or down without dechutching. but it is not a pracrice to be recommerided in the ease of the werage driver, as the judgment of :e:arwhed speeds has to be of a very high order to avid damage.
lodge any grit irom the tatue, while if a worn plunger is the cruse the sudden suction of the pump. aideal by the air pressure in the tube, will force the plunger hard down on its seating ami cffertively seal the leak.
Tlis, of course, is not all infallible mure, but it will sery fregumenty be fonnd effective and may well be trind betore reftating the tyre and dis mantling the valre.

## Excluding Snow and Rain.

Cars fitted with siugle-panel windwerens bsually have no positive conneclion betwren the front of the hood nud the top of the screcn, with the result that show and rain are sometimes hown into the interior of the car. Moving


How an American cloth strip can be fitted to the front hood stick to prevent rain or snow being blown over the top of the windscreen.
the sereen forward to tonch the hoorl may canse rattles to develop aud often "urevents the seren wiper from workill.

A cheap cure consists of fixing a tlay to the front of the hood so as to makr rubbing contact with the screen. Amerienn cloth, folded double and tacked or stuck nu to the frout hood rail, will be found satisfactory; rubber strip is stiffer, but more expensive. Avoid too large a flap, which hangs down and obseures the driver's vision. and do not forget to provide for the free workin! of the sermell wipme

J.J. (Lomdun. Fi. $)$.-It the threnwheeler in question weighs wer \& cwt. it will be taxed as a motorear.
T.C. (Uereford).-In the desigmation of the horse-power of a car, as, for example, $0-20$, the first figure usually denotes the maker's horis-power or Creasury rating and the second figure the brake horse-power.
G.S.S. (Loughborough). -The eable: unerating the front-wheel brakes of your Morgan can be adjusted by sliding the hatake lever cuadrant backwards or forwards on the proncller shaft housing to wacken or tighten the cable as required.
A.R. (Brixham).-As the oil-filer waluze is so badly choked jou will probathly find the quickest way to clean it is to boil the fiter in a solution of caustis: sodia, after which it should be dried and wiped wirh an cily rag to prevent rust. C'anstie sula dissolves the doprnir.

IN ANSTEER TU YOUR QEVRF (contd.).
J.(.) (Matlock).-The fact thet the side plates of both rear-wheel driving -hains are worn on one side only is nencrally an indieation that the surockets are out of line. The wheel adjustment in the forks needs corree: ion.
W.II.D. (Lineoln).-There is un caust: for alarm becaus: the new gudgeon-pin bushes are too small to take the pins sine they have been fitted to the conrecting rods. This is quite nsunl, and is alne to the compression of the bushes when foreed into the rods. You will have to reamer out the bearings slightly.
(i.LIU. (Inawick).-The fact that ehanginz down is very difficult, whereas unward changes are easily effected. pints to maladjustment of the clutch stop. It is coming into operation ton carly and stopping the cluteh exen when the pedal is depressed slightly. Set the siop so that the braking action foes not oceur until the pedal is almost fully dewnsend.
F.IT. (Bromsgrove).-Your suggeslion will not work satisfactorily. An inner tube, even of the correct size, will not function properly in a wellbase rim unless it is designed for that fitting, as the valvo brojects sideways. and an ordinary tube fored into place would som give trouble.
W.13.F. (Kiendal).-Yon need have no fear that a henting lamp underneath the bomet will be likely to cause fire. The brinciple employed is usually that of the miner's snfety lamp, in which wire gaume is used to mrevent any possibility of the flame in the hamp eoming into eontact with explosive fumes.
W.H.W. (Welling(on).-Whe drum ming maise which you have diseovered to be due to the petrol tank can be cured hy strengthening ribs soldered on the outside. It is adrisable, of course. to remove the tank and allow two or three days for drying before attempt. ing any soldering operations. The stipse conlab be made nut of sheet metal. and we do not anticipate lhat you ald have any difticulty in beating liem out yourself: chamel section would be the most rigit.
П. A.TI. (Barnstaple).-Che: slipung eluteh on your new Jowett is most prohably due to the cone not slisling freely on the splined shaft. Take a longspouted oilcan and pow a few dropss at : time on to the cross-shaft earrying the clutch-operatiug arms, from which point the oil will drip on to the ball thanst and splined shaft. 'The shaft runs areoss the aperture in the nywheel housins. It is best to operate the duteh peotal dowly whilst oiling in order that the lubricant may find its way in the shaft mone casily.
S.M.L. (Mameloster).-The reason for the constant breaking of chains on your eyclecar appears to be due to the. introduction of a new brinth af chath nto an old piece. The worn links have cloubtless stretched ennsiderablj, then altering the piteh to a certain extent. The new section, of course, is not su worn, and the rupid changr-over from old to new every time the chath somes round causes it to attempe to jumb whe prockets; you camnot obtain proper adjustment when a chatin is crmplem:t of two pieese in a differebt stat, oi wior.

## CLUB ITEMS AND SPORTING EVENTS.

## LONDON AEROPLANE CLUB

The inaugural privale dance of the Lemiton Aurolanc Club will be held nt tho sulfolk Gallerices Sutlolk Strect Inndon. W.1, on Wcd-
 ment, may 10 obtained from Capt. F. G. M Sparks, London Acroplane Club. Stag Lan Acrodromus. Edgwarc, and tho hon, eceretary of tho dauce commi!gcr, Mra. Elioth-Lynn, Ladies Athenarum Club, 19, Stratford Place. Iondon,

## MORGAN CLUB'S DINNER.

Somn 120 macmbers and triends altended ilu. Rubu on Friday, December 11th. The chair was laken by Mr. H. F. S. Morgan, and prlze were distributcd by Mrs. Morgan, nfter which foring was resiened the office of hon scre anc of the club. that popition now being occu nied by Mr. J. W. Bnrr Hamilton, Et. Mary

## FOR COMPETITIONS

> We are always willing to sunply, free ol eliarge to club socretaries and other responsible officlalg, useful and wellprinted road notices to aid them In organizing their trials and other events. Specimen wording will be forwarded on request.

## PORTSMOUTH DISTRICT JOWETY CLUB

A whist drive and socinl was held by the Kimmouth and Diatrict Jowet Car Club an Kimbell s Calk, Ostornc Road, suthsea, on No wer.; prescit. Whist was commenecd at
 interval the parly adjourned for refreshnumts. and on their return they were outcrtainct by
Mr. Pickford sroke of the activitice of the Club duriug the past season and of the waparics of a good number of members had tiken parl. He regarded the eccond year of a club's existenco to be tho most critical, and 11 was un to all to make a mupremo effort to torge alicad in 1926 The hon. Eccretary. Mr. Mlattord-Donne. thanked thoasc present lor turning up and making the presenicd the prizes. It aliowed enthusiasul and gavo him couladence, with tho assistanco of his commit:ec, to work with energy for the future Reliablity Cap of which hoke of the promisel to pivo full letaile later The prizes wero then preecnicd by Mrs. Farrar. gouthsea. in anxious to recruit new mennbers. and all particulats will bo gladly forwarded on B40

## PERMIT

A closed permit has been issured by tho RA. A.C
for tho Rochdalo and District Molor Club's ro for the Rochdalo nnd District Molor Club's ro
liahilty trinl on Februars 28in.

## BRIGHTON AND HOVE M.C.

On Saturday. December 12 th , 1 bo Brighton and 1 orc Motor Chuh beld its annaji dinncr and Prizhton. Tho nresident of tho Club, Mr, w Chater Lea, took tho chnir, and nmong tho visitors were tho Mayor and Mayorebs of Brichlon and the Mayor nnd Mayoress of Hove tho prosperity of tho club and mentioned that its membership had, this ycar. increased by 54 It was a great pleasur, ho gaid. to ece iho Mayors -nd Mayorcsses of Brighton and Hore present, and in torken of that pleasura lo nsked Club. Tho presentation of prizes by Mre. Chaler Yea then followed, after which a danom took placo.

## FORTHCOMING EVENTS

Deceniber 19.
Ealing and District M.C.C Annual Diuner nud Dance
Sculhport M.O. Coast-2.Co.Const Tinl
C.C. December 28-29.
I.C.C. London-Exeter-London Trial

Siverpool M.C. Regularity Trial.
Suthport M.C. Race Mecting.
London Aeronlaní (Vy 13. Dance
February 2
zochdalo and District M.C. Reliability Trial.

Marels $10-20$
loyal Automobilo Clul, of Victoria
(Australia). islpine Coutcat.

KNOCK M.C.C.
Jho anotial socin! nnel distribution of prizes held by tho Knock M.C.C. in Beltast on Frida the procecelines throughout wero most ended, and Cap procecelings throughout wero most enjoynble. Captain tho Rt Hon. Herbert Dixon, D.L M.P. president of tho club, occupied the chair and included the prizes won in tha car class in the club's 12-bour night reliability trial. Tlio prewler ward, the J. O. Ilolland Cup and rc plica, was presented to J. C. Munn, who, with a Projan, sownieted the courace without the loss of
 an crem of 4 seconds at the secret check receirel a bijuer vase, and If. Stanley Smith (Gwyniog 8), who was thjer with an error During tho evgning there was mosic medal dancing.

## UXBRIDGE M.C

Ou Weduesday, December 9th, the Labidige insoy, Uxbridge, tha president of the club, r. Tucning prizes won in the tho chair. During presented. Tho asalstand pres =erviart Mr. C. H. Lawiord, pointer out in his apeech that tho memborshif had increased tom fivo in
1921 , when the club was formed, 10113 at tho
present time. Thic cyeniog was volwd wesent time. The eve


#### Abstract

BRADFORD CLUB'S DIPNER. The annual dinner of the Bradiord vinior Hotel, Bradight, Car Club, held at the Midland hy 237 members and fricnds. Mr. Mr. J. F. Fearnles, tho president of tha Clot, was in the Fearnley, tho President of tha Clois, was in the loast of "The King, proposed by tho President, "The Auto-Cycle Union anrl tha York- fife Centro" wng toasted by Mr. T. W. Monkhouse, a vice-preqident of tho Centre. During the conrso of an interesting epecel fin mon- tioned that the iwo bodies liad been far froma


## TO CLUB SECRETARIES.

Reports and announcements intended for inclusion in next I riday's issue of "The Light Car and Cyclecar" mus! reach us by the first post on Nonday morning.
united during the present year. That trouble, however, was now pasl and they were working
in completo unison. Cayt. A. W. Phillips, M.O.
 dont of the Centre, wero very capable respondents.
In proposing "Tho Club," Mr. 'T. F. Bullus re. minded those pressont that it was tho unbyorts. had causcd tho ban on these events, unless helit hn priveto pronerly. Nevortheless, tlic clab had had a wonderfully successtut scasom. Mr. W. A. Dosceer, the popular hon. secretary of the club, replice with an interesting specelh. "Tho was proposed by Mr T. His. Wilsorn and rewas pronosed by Mr Tr. II. Wilsons. and rend Cant. $\Lambda$ y. Mr. Frazer-Nash. Thi next Loakt was Tha Press," proposed by Mr. 11 . ${ }^{2}$ Vitelycll. with responses by Messra.
during tho Smening there wero a number of first-class a curical items, nod wero nimumber fizes for tho icar wero distributed by Mrs. Brady, of Sctice. year wero distributed by Mrs. Brady, of Nethed Mrs. F.. S. Myers, of Bradiord. Tho last loast of the eveuing was "The President." pruposed by Arr. 1. Conthar nad regnonded

## " Built up to a standard not down to a price."



There is a subtle sense of satisfaction in owning something out of the common ruck-some article which has a distinct individuality, known at sight as a desirable possession.
The Wolseley owner experiences this in full degree. Built with unrivalled care and attention to detail, his car is a pride to possess and a delight to drive. He feels he has got "something better." Fitted with Four Doors. Specially effective All-weather equipment. Dunlop cord balloon tyres. Body painted brown or blue to choice.

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Light Saloon
£290

FACIIITATE BUSINESS, and ensure prompl attention to your enquiries, by mentioning "The Light Car and Cyclecar" when writing to advertisers. They will appreciate it.

## AROUND THE TRADE.

Welding Makes a lefter Joh" is the title of all illustrated borklet which has been issued by 12. Jenkins and Co., Ltd., liohlerham.

Our attention is called by Murris Motors. Letd.. to the fart that two rehicles manofactured by them were whibited at lan Lirussels Motor Nhow


Mr. J. G. Orford, an enthusiastic amateur who has secured many competition successes at the wheel of an Austin Seven during the past two years. He has ob tained an award in every trial in which he has taken part with this make of car.

Rutax (Motor Aeressuries), Ltd., have recently appuinted Mr. A. Ji. Fpps, Thulridge hoad, Maidstone. and C. J. Lindsill and Co, Broad street, Deal, as theils battery sgents in Kent.

David Mewilley ahd Sons, Led., Chapel. Field Works, Wed wick, Nanchester, amounce that the sustained hight price oi rubber hats compelled them to raise the price of andseles 1 yres by 20 per espt. and of Fitont-on-Air cushimes hy 10 per eent. Renders should note that these increases tunk fliect on December 10ill.

Uemlys. Letel., have converted the whele of the gromed flour of their "xlensive garage at Epper Gloucester Dlace, Somdon, N.W.I, Entn a giant showronm for seremblhand "ars. 'Whis new showroom is perlaps the latyest of its kind in London, the wide selection af cars on viow making a most imposing sight.
 don. Sill, are sending out ash-trays as Christmas mifis to the trade, and would be glad to hear from :uny dealers who wish to nunal themselves of this ofter. The :anthans are moukder in Dagenite, the specinl compasition usiri in the: mampacture of Prito and Lealford hattreios

In connection with, the article whiel apman: on our rentre pages this week, Morgan wwers maly bre imme....... to learn that Messrs. If. Beart and Co., בe, Bmpire Chambers, Kingston-on Thames, Surrey, are oflicial Marman re pairers and specialize in fittiner iner hords, सtwrille rembetion gears and interconneted brake systems of thar own design and manufacture.

## RESULT OF LIMERICK No. 50.

The wimmer of last week's Limerick Competition Bdward harker, 4!), Skipton Road, Ilkley, L'orkshin wiming line appears below:-

Since the Robinsons purchased a cill Full of self-satisfnction they are:

The Smiths and the Browns
Look with envious frowns And wish thrir "dull" shares were "I
Another elever line ran:-" And now read the Lighte C'ar:'

## YOU Areabout to buy a car


maybe you have narrowed your
choice to three makes. The deciding factor will be the reputation and integrity of the Dealer. You want to know that you can come back after you have purchased the car and have willing service. Your confidence in us is based on your knowledge that we were established in 1889 and have been in the motor business since the "red flag" days. There is also the important consideration that we sell for Cash, Exchange, or Easy Payments, and the total first cost, including Accessories, Insurance, Tax. Licence, etc. can be paid as to one-fith down and
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A dangerous, skiddy road surface is inevitable with a finely divided aggregate. Hence the official recommendation to apply non-skid dressings to make them safe, which, incidentally, takes no account of the way grit interferes with binding material used in such roads.
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THE MODERN CAR AND HOW IT WORKS.
An Explanatory Treatise in which the Function of Every Chassis Part is Described in Simple Language.
FIGHTING JACK FROST.
Guarding against Starting Difficulties and Damage Due to Freezing.
CHRISTMAS GIFTS FOR THE MOTORIST.
Inexpensive and Utilitarian Presents for the Owner-Driver.
LEADING FEATURES OF GERMAN DESIGN,
As Revcaled at the Beriin Motor Show.
IS SUPERCHARGING JUSTIFIED?
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AMERICANS AND THE BRITISH INDUSTRY.
What will the British Public Say?
ROAD TESTS SHOWING PRINCIPAL CHARACTERISTICS.

The $12-50$ h.p. Alvis. The 33.6 h.p. Six-cylinder Delage Sports.
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Coblainthe Best hes
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Specify lay stall ar Special Molor-Refars
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To avoid gumming up, hard starting and " obstinacy " when cold, use Sternol W.W. Motor Oil-it has been proved to flow freely at an except.onally low temperature.
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batiened, securely held by bands, gudzcons, bar bolts, lock and key baltened, securely held by bands, gudrcons, bar bolts, lock and key provided. Welliramed windowat each side, with 21 oze ciearglasa. THORNBER EROS., 11, Mytholmrosd, Yorks. If thin Gerage doen not meet your
neede and post-card for free book Those interested in
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## and specially glad I got it from



ITo be specially glad and specially satisfied is the experience of most people who buy (or Exchange) at ALLEN-BENNETT'S. The reason for this is simple; it is merely that Allen-Bennett's do everything they possibly can to please and to help their customers, They have always been noted as Specialists in Economy Motoring, and they have made an intensive study of the needs of those who must do their motoring on relatively modest mearis. Allen-Bennett's REALLİ CONVENIENT TERMS - SPREAD. OVFR 18 MONTHS, undoubtedly offer the safest, fairest way of buying a car "out ol income" that has yet been devised. For "alter salles" service, AllenBennett's have one of the most completely equipped service depots to be found anywhere.

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READERS, NOTE. - H as ists the small car movement and the aduertiser, and ensures you prompl

## SECOND-HAND AND NEW

## LIGHT CARS. CYCLECARS. and ACCESSORIES FOR SALE


#### Abstract

The Light Car and Cyclecar" deals with its own types of machines exclusively. Old carsproduced before 1912 as distinct from modern lisht cars, and cars with an enginc of a cubic capacity excecdeng 1.500 c.c., cannot be accepted for tts adiertisement columns.


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 F'or tho convennence and 三ecurity of our readers wo have an approval-
deposit हystem. The intending buyer forwards to our afice the amount al deposit sjatetn. The intendigg buyer forwards to our cifice the amount of

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whose decision shall bo final nnd binding on both parties
WARNING Acknowlecigments of deposits or instructsuns to forwara WARNING-Acknowlecigments of deposits or instructsuns to forward
gods advertisd nre on! writen nn our anecial hesded naper. which Hacr shoult ACKNOWLEDGE, 1MMEDIATELY any such lettor apparcatly coming trom 11, and dolay forwarding the goods for a day or 6 a Shoald we, onn receiring such an neknowledginent, ind that no letter bas
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 ound st the cnd of this bection.

## IMPORTANT NOTICE.

Advertisements for the issue dated Deccmber 25 th must reach us not later than first post Monday, 21st December.

## SECONDHAND <br> LIGHT CARS AND CYCLECARS FOR SALE

A.B.C. A. B.C M Jora, L.ud. Walion-on-Thames. 'Phone, repaira mana
 A.B.C. cars rarica yut by experte at the factory. ABC. ownera shonld
writo for catalogio of improvements. A.B.C. lato 1922 sports. dsnamo lighting. Dunlap cork, ais round, wind Acreen wiper, Laxed, Derfect concition, E47 los.; exchungee. 67 Firit
ive., Morthke.
$682-\mathrm{ge} 43$

 A.B.C. 1926, super sports model. In stock, absolutely a rovelation: any A.akn of car taken in part exchange. Belora.
A.B.C., $192 \bar{S}_{\text {, }}$ sporiz, ororhanled and reminted, dsnamo lighting, mang
 Wardiand Co., 51 CpDcr Richmond Rd., East Putney. Putres 2818.19. A. ..C. A. B.C., 1922. 2-scater and dickes. C5̄5: fully couipned and aunrantecd. Roudong. Mone. Mnseum Josi. Ligat Car Co., 404-914 Eustun Red. 682.81
A.B.c. 1921, sports 2.scater, fool condition, 563 ; axchaño motnr A.ycle, balanco doterred. Nasnliamis Shoviooms. Heath rd. Twíckenham.
682-72
ithone, Richmond 3293 . A.B.C It. F. Edwards otter 1924 -acater, completely equipped, excel
lent condition, 80 Elit
Below. ient condition, 80 gun. Below.
A.B.C. 1923 , 4 -gester. completely eqripped, execllent condítion. 74
A.B.C. $192 \Omega$ Regent 2 -seater, sunk dicker, fully equinned, cast-iron

 A.B.c. Sprosen, Litd. West End agents for A.B.C. Eschanges. De. 1926 new super sports motel in atock.

A.B.C. 4 -scater, 1924 model, mall mileake, perlect condition, 28710 s. or nesr ofler, yeen by appuintment. Morgan. Migh Rd., Whetgtone
N. 20. Tel. Harnet 2059 . A.B.c. 192210 he 2 -scater and doublo dickey, dsnawo, thoroughly orer-
 l'honc, Wimb. 2043. and 406 Gartatl Lanc, larlaueli, S. 682.8 A.B.C.s, chatee of 2 special sup ippots, aloo special water-cooleti, 4 -

A.C., £140; late 19242 -seater, fully equipied and revarnished as new.

A.C., 1925, Royal 2 -seater and dlekcy. 11.9 hp , all-weather equipment many other utheras, balloon tries, paint and upholatery and mechanicai

A.C., 1921, 2-siater, colour urey. Hllating re-ticiselled, whole rar in ex-


 Juls, 1924، e150, detered terms. Barlerta, 93 Gi. Porland St. 682957 A.C., 1924. ailwwather 2 -seater, then carctully need, 2 spure wheetPhone. Strmitinm 3440 , A.c., $1922,11.9$ conpe tax pail, halloun tyrws, excellent condition, lid., London. A.C., 1922 Rossh 4 -smater. antique huthor aplolstery, painted blue. lightury, stio curtaine, complite. tased, numerous extras, very carifuiy uscel, aid an banutitul order throughori, $\pm 125$ cash, exthanges, injerrei

 Nichrthy's Motors 49 Green Lanes, Newington Girecin, N.16. Clixandid
$682-\mathrm{e} 966$ A.C. I. F. Edwards offer 1925 Royal 2 2geater, completels equipped. leather uphelsters; excelleat condition, 125 gaineas. Below.
A.C. 192011.92. enter, completelr cuupped starter, excellent condition,

 Alvis, 1921 . $10-40$ up. semi-sports 2 -sealer. 65 m. p.h. in perfect conback of No. 9 B'acklriars St., salford. 'rel.. 2191 Cent. A. Grean, AMILCARS.
Vernon Balle.'Plinne, 1995 Putney.
AMILCAR epares.
Veruou Balls. Luadon.
AMILCAR acrice.
Veraon Balle.
25 High St., Fa!ham.
$232 \cdot 50$

## SECONDHAND <br> LIGHT CARS AND CYCLECARS FOR SALE (continued)

 ALVIS cars from e95: 2 -scaters, 4 -siatore, salonna and sporte, 1924 and

 erw. our stock. Henlys, Used Car Depu., 682.54
 amilear.
Boon and
Porter, Lid.
Bul comensionnares.
Ofer tho lollowing guarautem uscd miodels
1925 eports 2-saticr, tared, small milengo, s 145
1925 G . eports 3 -sealer, soou condition, specialls equipped, s210. 1925 sports 2 -seater, finished bluc, new condilion, guaranfed, $£ 180$. 159.161 Castelnav, Harnes, S.W.13. TClose Mammersarith Broadway. 1
 AMILCAR, 1922. 8hn, 2-metev, dickes, sporta moulek, diynamo, smart
 ARIEL, do luxo 2-senter, June, 1925. 3.000 milea, condléon inclin-

ARIEL 10. 11. F. Edwards olfer 1925 -cylinder 4 -scater, complelely 'quiphend. stnrler,

ARIEL 日, 1924, chummy, completely cquipped, all-wealluer curtainil, | anpre rondition 75 chan. Farhanges or deferred. 175 Gt. Porllann |
| :--- |
| $682-35$ | ARIEL 日, 3 -4-nenter, new from mikern Anguat, 1923, fully malpped, Aarclally Jriven by owner thruughout, e80. Willey, 13 Birminghamo

Rd., Kidderminster. AUSTIN 7, 1923, remainata, renondidioned an new, $£ 90$ eash, d-acrned, exrdanges, Blockhy Molors, Mochdabs Jd, HLackles. Mancherer


AUSTIN 7, iate 1925 2-beater sporla, cicelirle starter, speedometer shock absorbera, unused, motorcyclo or aldecar combinaifon part ex-
elinnge, balance cash or deferred. Colmere Depot. $\overline{3} 1$ Colnane Row Birminghna.
682.820

AUSTINS. Y'car.n inaumance. Sce parg 25. Bumanotors, 30-32 llich RI
Wandswort. S. W. 18. Baticrate 1509. AUSTIN 7 s . Five 1924 and 1925 models in 2 tock, all fully equipped
 AUSTIN, 7hp, ports bods, one month old only, aaxe bluc, blacke wing",
 AUSTIN 7, 1924, sell-atarter, clock, speedameter, all-weather rquipmenl, luggage grid, shock absorber., in new condtían, 2100, or exclianco
motorcsele and cash. 51 Upper Richmond Rd., East Putacy. G82-s894 AUSTIN 19247 hp chumms, starter, excellent ensinc, 880 . Aartletta, AUSTIN 7, 1925 model, chammor, shock absorberw, ail-weatiser, muipped,
AUSTIN 7, 1924 chumms, atarter, speedorncter, mhock absos bera, all.

 AUSTIN, 7hp, 1925, small mileage, $1 a x$ pait, filed with automatic
 AUSTIN 7, 1923 (Laic), splenelid condition and appearanee, f77 10, ;
 AUSTIN 7, 1925 , icw weeks" use, otherwiso brand new, $\mathbf{2} 120$. Llonel AUSTIN 7, 1926, chummy, starter, dll weather equipment; exchango chealor ear, motorcyclo: balance deferred. Newnham's Showromas
IItath Rd., Twickenham. Phone, Richmond 3293. AUSTIN, 7hp, 1924 , chummy, self-starler, fully equipped, new con

 A.V. bicar, seating accommodation 2 adults 2 child, usual rquipment price onls feg. M.V. Motora.
A.V. manocar, rery last aud sporting, only c24. A.V. Molora
A.V. Lypu monocar good condition, nrlca $£ 10$. A.V. Motara, Park
Ru, Tedington. Telerhone, Kingnton 710.

BAYLISS THOMAS, 1925 model, 4 -scater, $11-22 \mathrm{hp}$, rigid equipment,



## SECONDHAND

## LIGHT CARS AND CYCLEC ARS FOR SALE

 (continued)bayliss rhomas 1923, 10hp, 4 -mater do luxe, marter and lighting.



 8 859. 682-981






 berles, surres:




## CALTHORPE, 1925-4, 2-acater, doulio dickey seat, nioo conithan, e"

 MLanchestar. Phone, Chcotham 11shl MU2. CALTHORPE, 1922, 10hp, de luxo 2-scatcr, dynamo, start
 CALTHORPE, 65 guimean, $1922-25$. 4 -gcalor do laxe, starter, all-westi.
 CALTHORPE Speclalist. Exchangen, delerred payments. 1922 do Ill.

 CALTHORPE do 1uxe, 1922 , 4 -seator, laxed, many cxiras, well whinpem ibridgo. Ealing Broadway. Phono 3265 . CARDENS. Ca-denes. Cardons. Thoroughly orethazhal 2 -atere, side
 CHARRONCAYCOCK, 3927 2.3-scaleriand largo dickcy, 2 apare whecto Siotors, Bromicy 2. eater 1925 (April), Licensed Deceriber, mileage

 CITROEN, 11.4 hp , 1925 , 4 -scator, Einglith body, Rrey, black wing, dyuamo slartor, weedomehr, clock, mirror. mechantca! windscreen winor,
 CITROEN 7.5 hm 3-scator, inalloon 15 rac almolutely now condztion
 citroen 1925. 7 5, 3 -seater, used for demonstrating, excellent con$1925^{\circ}$ Auquat) 7.5 Cilitromple 2seater, bluc, excellent condition, ans
 trator, condition as new, a snin, $£ 170$, complute
CITROEN Specialista, Old Weluh Harp Giaraze, IIendon. 'Phone, Ifen. on 1020

682 -g804

 CITROEN 7, cloperleal J-scater, starter, all-wenther equinment, 1926

 CITROEN, $1925,7 \mathrm{hp}$, compr, small miteage sparo wheed ubused, taolt.
les, 110 guineas. Clarks, 225 Hammerstaith Rd., W.6. 682.121 CITROEN, 1925, 2-scatcr, lighting and atorthe, execllent conditlon inintwork as new, balloon 15 rev, $12 x e d$ s soo: exchangos ald deforrce Cirnoen CITROEN, 10.4hp 4.teater terms 27 10s. and 10 pagmenta of if7 10 s .


For immediate allention, address G.P.O. Box 147, "' The Light Car and Cyclecar," 7-15, Rosebery
$B_{52}$ Avenue, London, E.C.l.

## SECONDHAND <br> LIGHT CARS AND CYCLECARS FOR SALE (continued).

 citpoens. Spiusth, Hel, fut Citiocen: exchnages and deferred pas

 uncal Largain, ©iso. Below. Apentiation, milenge anly 1,400,



 CITROEN, 1924, 11.4 inn 4 ....cr; all-wealher equipment, lallonn Gren. paintwoln. jorland $\mathrm{S} \mathrm{\ell}$. $682-960$



 CITEOEN, 1924 (Anhili), $7.5 \mathrm{hp}, 3$ gealer, startcr, nnd lighting, good lires.
 CITROEN, $1921,10.81$ y, 4 water, starter and lighting, tyxes exed.


 CITROEN 1925 2-scatcr, as new, s100: 1920-conpe, s50 Lill fullg equipped ar.d 2naramiecd, Fhanges or deferred torms. 'Tho Light Car CItnoen, 1924, 11.4, A waler Pmalish bods, rear and side sercens,

CITROEN, 1921, A-scalcr, lircneh model, 10.4 hp . 3 specds and reverse dynamo lighting, aparo whicel, enerlomeicr, hisill cquipment, licensed,
 CITROEN, 1925. English hods 4-acatce, new in Mas, sory fully vatels owiucrl.
Screnoaks
SO. CITROEN, 7 hp . 1925. fillal will Fgola greasc.gun latrication, epring


 CLEMENT-BAYARD, 2-scalor, Bhp, ratcr-cooled, 4-cylinder, 3 specda and reverse, hightung acl, horn, usual equipment, all byies ad new, CLULEY H. F. Ěß wards offer 1922 JObn 2 -senter, sumk dickey, starter, pectometer, leather upholstery, oxcellent condition, 65 guincas: ex CLYNO, do luxe 4-ceater, Ghod aciled odis, Ust prico 2210 . aceet $£ 170$. CLYNO, 1025, 2-seater dn luxe blue, completels equipped, eondltion 120. Wolmaro D'pot, 49 .John bright St., Jirmingham. 815

CLYNO. el35. Cosh over e300. 1925, Euncr-sporte, 4,000 xera. on
 CLYNO, 1925, $\operatorname{c} 172$ 10s. model, 4 -scater, starter, lightisn zo sido soneens, lared, unpunctured, clock, rpedometer, dash lamp, absolutoly

CLYNO, 1926, 4-scater, 11 hp , atarter, all-weather equibment; exchange cheaper car, motorcvele; balance deferred. Newnham"s Showrooms. IIcath Rd. Twictenliam. Phone. Richmond 5293.

 CLYNO. M. F. EJwards oller 1925 11hp 4 -door saloon, completely



## SECONDHAND LIGHT CARS AND CYCLECARS FOR SALE (continued).

 fiir 4433 .
COVENTRY-PREMIER, 1922, 4-wheclet, 2-scaler and Hickey painted gres.: etoctric lighling, licensed to Decsmber, prico 235. Box No. 3200 , $682-x 99$ tho Lighs Car and Csclecar."
c.0. COVENTRY.PREMIER, 1922, 8hp, 2-scater, dynamo, tyres and pon-

 COVENTRY-PREMIER 1922,2 -seater, doublo dheke9, dynamo speods, roverza, balloon tyron, olco model $£ 55$ : a nolber at $£ 50$ is dolerred COVENTRY-PREMIER, 1922, BlıR. 2-scater and dlekey, dynumo,
 COVENTRY.PREMIER. 1922 in excollent condition, Lased, \&60. COVENTRY-PREMIER, 3-whecler, 1921, in thorongbly good condition
 CROUCH. 1r. F. Filwarde oftcr 192510 hp 4 -cylinder, 2-reater, all weatition 89 culincas Exchances or delerred. 175 Gt . Portand W.1. Masfair 6977.
-3

ERIC.CAMPBELL, $1924,10 \mathrm{hp}, 4$-cylinder 1.496 c.o. Coventry-Simplex Entine (not to bu conluted wilh the Bhn chilmmy Eric-Campbell). A powerful do huzo model wilh clock, speedometer, electrio lighting and btarting, spring gailors and combincd boot and bood corer, in excellect

ERIC-CAMPBELL (above). Room for 2 adnils and child in frone scat. also has a roomy dickey for two, starta easily and sefa nway in recond gear on tho hal: top-scar car in tho country.
ERIC.CAMPBELL (above), lately been repainted and re-uphoistered, weil worth examinatian, private or trade. E155 or near other. Box No. 2924 .
c.o. The Light Car and Cyclecar." or phono Finchley 3367 afler 7 p.m.

EAIC.CAMPBELL, 1924, chummy dyamo and atartor, e95: 1923 sorls 2-micer,
 5081.

ERIC-CAMPBELL, 59 guincas, late $192 \overline{3}$ super-sports 2 -seater, drnamo.

ERIC.CAMPBELL. F. F. Edwards oller immedialo dollvery of brand-口ew 1926 8-2 0 , chunmy. complolely cqupped, starter, elock specdomoter. elcelric horn, ant-weather equipt

ERIC-CAMPBELL, 1925 model, 8-20, chumms. completely equipped. ERIC-CAMPBELL, $192 \overline{5}, 10-22,2$-sealer, with anio donble dictey, Ensther equipment, hather upbolst
 FIAT, luxurious English saloon, $10-15 \mathrm{bp}$. Lig balloon tyren, aplendid condítion, pncuinatle seating, Sorbo under carpels. foldimg tablo and
acceasorics. Tho Deposilory, Arundel Terrace, S.W.i3.
$682-799$ FIAT cars. Aocredited agents, Moore's Presto, North Lind and Tam-
worth Red., Croydon. Phono $262 \overline{3}$. FRAZER.NASH, aports, 1925, 2-seaser, aluminium body, snzani en-
 FRAZER.NASH. Sprowen, Litd., for sports card. Exchanges, Noferred pasmentr.
FRAZER-NASH, 1925, 2-acater, suaranteed $\overline{7} 5$ mp.b., in perfect condition, taxed.
FRAZER-NASH, 1925! J-mater, Anzani engine, unleage neglisible, absolutely as now, taxed. 111 Gt. Portland St., W.1. Phonergang-
C.N.FRAZER.NASH, 1924-25. sports iwin, live asle, mohogany panelled lail, wido conocaled aeat, prachicalls new car; part exchanges. deferred
forms. Denman. 4 Denman Place. Piecadilly Circus. Reg. 986 . G.N. Before deciding to purchaso an ordinary second-hand G.N. Erita for narticulara of rebuitt G.Nis in gaaranteed condition. Godfrey
Yotora, Manor Ru., Richmond. Fhonc J024.
 G.N.s. Fadum for outstanditig value in carelults ororhanied G.N s. with wirten Eusantice for 3 months.
C.N., lato 1922 . Frazer-Nash o.h.t. engina, 2 amtnitum platons, big Soles
 last, orechauled. goaranteed, repainted, tared, $£ 49$.
C.N., 1922, dickey. fally equipped, good treer, taxed, c56
G. N., 1920 sports, roller-bearing eagine, nolished Iluminum bonnot,
G.N., superb 1922-3. repaintcu, orerbaulid, taxal, Eiwranicet. E 44
C.N., 1921 models. from E16, laxed.
G.N.s Vadnm Oo.. G.N. perialiste and repalreri, 37 Heaconslicid Rd-


## SECONDHAND <br> LIGHT CARS AND CYCLECARS FOR SALE (continued).



 GN., f3R: 1922, dsnamo lighting, fagt and aporty, excellent condition,
Gilmoro Depot, 178 Belgrizo Ginte, Leicester.
 G.N.s. ] rls, Lid, for rock-bottom prices and good ralue.
G.N. of evers descripiton in stock, prices from . $\mathbf{C 2 0}$ to $\boldsymbol{C} 65$.
C.N.s repaired, bought, reconditinneil anhì sold. Farla, i,za., The Valo of Health. IIampstead. Phone, IImmpsead 3287 . Open till 9 p.m.
Friday and aturday. Book to Iampstead Tuba Station
682.906 G. N. 1921 juat thoroughly overhauled and in execptiount condition,
dynnmo lighting, f35. South Ealing Garage. Ealing 2983 . $582-881$ G N., 1921,2 -seater, eickey, clectrice, good tsres, any trial or examinn-
 G.N., 1922 , olock, specionneter, bood corer, good order, $£ 33$; or ex-
change anotorcycle, Bolow.
G.N., 1921, 2-acater, dyramo lightinf, requires little attention, $£ 20$ Word and Co., O1 Upper Richmend Rd. East Putnes 682-g 395 G.N., 229: exchanges. deferred payments. $1920-21$ G.N. 2-scnecr, dy namo, spare wheel, speedometar, amart, good condition. Seabridge. 35
Hansler Rd. East Dulwich. Sydenham 2452. C.N., $1921-22$, dynamo lightng, specdometer, clock, spars, whacl, anfety
 C.N., 1921 . mileage only 8,000, flared wings, smart and fast, f40 or $682-\mathrm{c} 921$
near ofler. Phone, Richmond 875.
 Si. Wandsworth (T'own Station).
C.N. Very special sporta model G.N. Eleamlined body, witb staggered
 G.N. from f25: deferred terma and exchanges. Andrewf Mator Mart,
151 Whito Hart Lane, Barnes. C.N., I egero Rpoits, sory fast, completely orerhauled, electrio lighting,
40 guinens Baxter. 27 Borough Fd., Bridington.
682 -g 940 G.N., 1921. Jehting. Epeedometer, excellent condition. 220; excbango
motorcycle. Ealing Car Mart, Spring Bridgc, Ealing Broadway. Phono, motorcscle. Ealing Car Mart, Spring Bridge, Ealing Broadwas'. Phone,
3265 .
38212 C.N., 1922 model dynamn, dickey, painled nary, gocd tyres, oplendid
 C.W.K., 1922, 4-seater, all-weather equipment, mechanlcally periect. litlio need uplendid condition, dynamo lighting, $255 . \quad$ Owner, 2
Einlington Rd., Leston. G.W.K. 1924 model, 2 -scater, $£ 115$, nlso 1924 model, 4 -scater, balloon tyres, a-wheet brakma
fitl. 50 Whitcomb St., Leicester Squarc. Regent 3i16-7. G. Nicholl.
$682-865$
 G.W.K.: 1921. 2 seater, A-cylinder, taxed, insured, exchango motorham. 'Phone, Rlchmond 3295. GWYNNE B, secondhanrl rars, all models, orcrhauled and guaranteed, GWY \&85. Chinery, Gwynne Speclalint, 1 Ilammersmith Rd., Ken-
rington. Phone Western 3568 .
GWYNNE, Gbp, 2 -scater do luxc. 1924 medel, self stapler, apecdometer, all-weather equipment. balloons on rear whecha, repainted dark bluc, fast and econnmical. £95 or near olfer; exchnnge Acro Morgan or Ausiln ${ }^{7}$.
Fernaide, Ollerbarrow Rd., Male, Cheabire.
$682-g 924$ HILLMAN, 1921 , sports 2 -sester. $£ 85$ fully eqnipped and guarantect.
 HIIIMAN, 2seater: terms: £7 and 10 myments of $£ 7$ or cash 970 .

HORSTMAN, eenuine 200 miles racer. Thla car bis been fitted up



## SECONDHAND <br> LIGHT CARS AND CYCLEC ARS FOR SALE (continued)

HUMBER A, ehummy, ${ }^{1923}$, frat ued 1924, exceptional condilion,
 HUMBER. 2-acater, 1924 , 8.18hp, in magnificent conditlon, printed including shoek absorbers, halloon tyres, etc., \&145 Pasy and joyre,



 cellent
sowett Service Station (London), minin agents and specialisis Als Als Lambeth Palaco Ri.. S.int. Hop 5279

Jowert. F.O.C.IT. Itrl.. tho London Depot and Servicn Station for
OWETT 1924 A-seater, clectrio hotn, starter anil liche mieror, ap

Jowerts. Year'sinsuranco. Sco pago 25. Benmotors, $30-32$ Tlizh S1.,
W'andsworth, S.W. 18 . Batiersca 1509.
JOWETT. R. G. Gamble, Cryatal Palace, authorized agent, specialin JOWETT, new and guarantecd second-hand cars. Exchanges, hite pur-

JOWETT. Repaira, spares, impiorements and specinl aocessorics. Wrilo dowert Scrvice Depot, 22a Gipss llill, Crystal Palace 'Phonc, Eilant JOWETT: Sercral nsed cars, iu food condition, carrylng omr nsuan
 JOWETT light 4, full particulars lowest price. 82 Atickleton Ril. 682 -g
JOWETT, 1924, $7 \mathrm{hp}, 2$-scaher nad touble dickey, balloon tyrex wan extras very nice order ono owner sinco new, 80 Eunneak. Fxchanges mith Rd., W.6. Riserside 2250.

LAGONDA coupe, registercd 1921, 13 Lllo nsed, C.A.V. Hghtind and start.

 LAGONDA, 1924, 12hp, A-door all-weather, compleicly equipped, prent exchanges or ceferred. 175 Gt . Portland St.z W. I. Maylar 6977. 682.52
 LAGONDA, 4-seator tonrer, goud order, 235. Smith Motors, Guodmayes,
$682-22$
Hord. LAGONDA, $\boldsymbol{\ell 6 5}$, 1923 , coupe, dowbla aunk dickey, atarter, repainted 986. LAGONDA, 1924, A-scater, must sell, es155, genulne barging $682-\mathrm{g} 941$ LEAFRANCIS, Atted with speciat 2-seater borly, doubln 《lckey, HghtEecleston SL. VIctoria 1366 .

MARSEAL, $1923,10 h n, 2$-scater and djckey, nluminium aports borly.

MATHIS, ihon coiled only, 1926 model, 9 hp sorls 2 -sealer, lighting.

MATHIS, 1921, 9hp sperle, eplendid aluminium body, dilekey, shock

MORGAN Sersice Depot, Omeial appointed repalrors by tho Morgan Lotor Co. for London. Full range of spares carricd. New and sccond 243 Lower Clapion Rd., E. 5. Clissold 2408 zerial MORGANS, now and accond hand; cash oxchange. deterred. Wo buy
Norgans. Oiympla, wakeñeld. MORGANS. James and Co. (Shefficld). Jtd., 261-7 Ecelesall 1id. Shef hand machinca nearly Good siock of marcs warrica. difficulty telephon 2460 Central, or wire "Tact, Shefficld." When in dificuly zzz-48t

## SECONDHAND LIGHT CARS AND CYCLECARS FOR SALE (conlinued)

MORGAN, Aclu, 1925, ofis. Blackbirmo f.w. brakes, balloon S.s. 1yree







MORGAN, FOC.JP, Lem, hare scremal. Hargans. 5 Itwath St. Hamp.





 NORGAN 3921, do luse, 8hp, water-cooled. Wwamo lightiog, good MORCANS. SNCGM Nivint. © or dulerred. Vixchanges. 45




1924 de luac: w.ec, Anzwn, dynimo, speedometer, $\mathfrak{L 8 5}$
1924 te husc, wo. Anzmh, dynimo, speedometre. 885

 Auy of the ahonimachince sisn be suppliced on defersed terms fiom

 MORGAN J921 de luxe, waler-cuoled M..l Gi., electric lightiagg, specdoMORGAN 1923 Panily motel, JOhp. M. W. Water-cooled, specdometer,


 moncan. ${ }^{1921}$ water-cooled, dynamo lighting overhauled and nuw 682.966


MORGAN 1921, do luyn model, emall mileage. M A G. water-cooled, ac

 MORGAN, Aero, 1925 (M:M, h), Thly Blackharne, o.h. electric horn

 MORGAN, 13 ans. 1921 do lixec, w.e. J.A.r., very knart, perfort anges. Eupirc Notors, 325 ligh RU. Chawnich

MORGAN, 1924 (latn), G.P., Anzani eoginc, dynamo, specdometer, dise. benutilul condition s85.' Below.


MOnCAN Aern, 1926, braud new super-sporls J.A.P., Lucas" dyamin Mightimk ilared wings. 700 uy 80 ts res, clectric horn, full minher.



## SECONDHAND <br> LIGHT CARS AND CYCLECARS FOR SALE (conlinued)



 682-m944

 MORGAN, 1919, inmily, a.-r. M.A.S. dymator linhting. eelf-starter.

MORGAN, August, 1924,7 Acm, nian extras, 「ers, wnalf milcage, new
NEW CARDENS Ilall : dozin 1924 Family rookeln in took, in rundiLon aholutcly "qual to new. 7 hp engine, 2 epeedn, eleckric lighting.
 RENAULT, 8.3. 1924, 2-sczter and dickey, been caruifus driven for RENAULT, $9.3,1924$, 2 -scater and dicker, been carivils driven for

RENAULTS. Sprosen, Led. for Renanhlis: exchasges. deferred pismeala-
 oxtrns,
RENAULT, 1925 wodel, 8.3hp, long chassis, 2-eealer coupe, exceflent

 e1. 5 : duferred or part ischange. Gcorgo Numanan and Co., 269 Furton
$582-899$ ПHODE, 122 J, light 4 scater. dyunmo lighling. all weather erinipmenl.

 RICHARDSON, 1921 , 2-ealer aurl ricker. 9hp J.A.P. engine. ${ }^{4}$ spmids and reverse hiod, screen and electric lampar in good runainz
 RICHARDSONS. We hara 2 in etock, 8lip, dickey eqat, gond order.
 RILEY. Lewes Molor Works, Susser. All Rileys completels overhanied AILEY, 88 guinens, tho weck's barkain, 1922, guaranteed, 4 seater,
 peciometer, bulb and electric horns, yres a new. laggage earrier, eef. paintwork and mechanical condition cxpelient. Hax paid. exchanged

ROVER, 1925, 9hp, de luxe, 4-seatrr model, slighels tised condition,


ROVER, 1923. 8hp, 2 -scater do Iuxe coupei, d., 1. and z., leather apho terg, specdometer, clock, comlition throughoul as new, laxcd December.
 ROVER, 1924 , 8lin. 4-swater, finished Nito bluc, black wiags, upholtored in keather, selt-starter, spedometer, elock, dashlight, wexceleris Nu., No. 2944 Royal.
ROVER 8, 1921 (Decrmber). 2-seathr, dynamo, spars phcel, now rear axlo and brako linings. perfect, cxtra abr taxed and complete, lull com
 ROVER, super bargain, $1921,8 \mathrm{kp}$, brown with biack wings sat wheel-



RaVER 8,1925 . 2-scater, doublo dickey seat, starter, clock, speedemeter, balloon ifres; this car is brand new, uareriatered. and his nol benn used for demonstrat ion nork, lizt 2165, our prico f125, cash, dn 'Phome, Cheethan IIill 102 . ROVER 8, 1921 , dynamo lighling, head and sidv happs, good tryes. in
 ROVER 8, 1923 , S-scater, dynumo lifhling rowns dicker, liceucro cxecplioually good cundition, f38: a lsu veveral olbers. 63 Sulon Rd.
 ROVER 8, 1921, 2-seater, dicker, dynamo. nepainted, good tyres, fjy; axchnages. Alfber Garage, Thorusell Rd., Earlsficld, S.W. Latchariä
489.898.

 ROVER, $\overline{3}$ guineas, 1921 , 2-zaler, dramo lighting, taxed, in excep


## SECONDHAND <br> LIGHT CARS AND CYCLECARS FOR SALE (continued).

ROVER 89, 1923, 2 -seaters, really execptional condition, choice of 2 , ROVER 8, 1923, zalwon coupe, starker, rery snial maleag", e80. Bciow, ROVER 8s, 1924, 4-3watecs starter, Dew tjres, choico of 2, c90. Delow: ROVER 8, 1924 , 2-seaker, statles, suluken dickes, original isTes, only
 ROVER, 44 grineag 1925 natel. 2 -seater. dickes seat, iaxed repanded ROVER, 68 guineas, 1924 , full 4 -mater, leather heorl and upholsters.

 ROVER 8, 1922,2 -acater and doubla dick. 9 , dynamn ljpliting and sate whecl
682.857


ROVER 8, 1920, 2 -s-aler, in pericet conditaon, just hat t20 orarhaul,
c60, or nin reasonshin oller peluped. Also 1921 Cronch, in parts, less C60, or no reasonathin ofter teluked. Also 1921 Cronch, in parts, wess hurat. Sussex.
 ROVER, 1924-25, 8hy do fuxc, 2-seater, sumken dickcy, polf-starter,


HOVER 8, 1922 moilcl, taxed, good tyres, allweather, excelleht condi-

ROVER 8, 1923 . chummy, fully equipped, excellent condition. 65
guineat exchanges or deferred. Clark. 223 IInmmeramith lid. Wh. W.

ROVER, 1922, 2-sealor, dynamn linhting, a.w. curtains sukual nccessorine, condition excesele, smart, taxed, x35. Herbert, .. 3 Oval 682 -5961
S.W. 8.

 ROVER. 1924, 8hy. 4 -вeater; torins, 59 and 10 paymeuls of $£ 9$, or ciosil
 ROVER 8s, sereral, f45 to Ers5; exchar, ge motoreseles, balance demond 3293.
ROVER 8. Finebley Molers offer 1924 2-seater and domble ion, bargain, f80. 132 lligh lid, F. Finchles. Phone, 2338. ROVER 1922 84n 2-seater, A 45; exchangen or deferred terma, The Light Car Co., 404-414 Euston IRd., I.ondon. 'Phone. Muscum 3081.
ROVER 8, 1924, 4-seator, resr scrern, elock. specdometer, lax paid and guavanter, any triat, © 90 . Emparo Motor Co., Withinglon, Manchesier.

ROVER 8, 1923, 2-sanabs dy luxe, dytamo, speedoncter, ojock, leather uphalstery. sixne wheel, extitioally now lyre, very good appearince and 151 White Ilart lathe: Barnes.
ROVER, 1925, Thn do suxe, 2-seater and double dickey, kearker and ighting, clock, specromeser, guarantead dons 100 milics only, positirely

ROVER, 192 J. 8hp, churms, dywamo, spare wheel, tyses as new, very
ROVER, 1922, 8up, 2-sealer, dsnamo, ejuare whit, almast new tores,
nOVER, 1924, 8hp, 2-Eealcr, dsnamo, as Drw, £ЄA; cholce of 2. Betow,
 nOVER 8, kato 1924, 4-fater, ipceduncter, eok, mileage 3,000, excelHd., Jlolloway. ROVER 8, 1924. 4-beator, jike brand uew. c75: exchanges. NorringROVER 8 intc 1 G22 speciny finished meroon and completols equiped oock, speriometer, ah-neather efuipmimi, screet wiper, stepmal, drivivg

 ROVER 8, 1921, 2-scater, laved, all In very good ordcr, paintwork
 ROVER 9,1024 , 4-seater, de lixe, عנJ0: exchanfen delerred pay-
 SALMSON. Apris to the London distributars, Gordon Watnes and Co.
 Whanged nend apeclal deterred

## SECONDHAND <br> LIGHT CARS AND CYCLECARS FOR SALE (conlinued).

SALMSON 2 senter. dickey, excellent condition: torms, 27 10. 11.810








 SALMSON. K.J. Motors. Dionuley, olfer 1925 sports painted hill
 SALMSON. 1H. F. Elwards olter 1924 10up, do luxe Ving lish hing





SALmsod. Sprosen, Lhal, Ror Salmsons; exchanges, deforrel phiwell



 SINGER, 1925 , saloon, as now, inilwage 2,000 , C235. Su:nncr Rrin.





 SINGER. Saloty firtl Crncet (irimaldi, I, Mh, authorizil Sinver 682.92 h




 SINGER, 1924, 4-sater de luxe starter and highting. alp-uxather Gquel




SINGER winter bargaina at Xcwnhame!


Another, slighty carli, fr, f155.
Hohy 4 seater do luxe. gond conditio

 SINGER, 1925. 2-ssater. pincumatic usbolstery. Taxed, ingured, new
 taxce, 277 10s. 49 Litle Alliany St. N.IW 1. Musum 5515.5 . 6951 SINGER, 1925. 10.26hp. 4-E ater de luxi. pmeumatic whotatery, Tripicy
 SINGER. 104p, 1924 did Iuxo - - -scaler, painted buc teathe uphol-
 ar, SINGER, 1920, $10 \mathrm{hp}, 2$ 2sector aud dickny, starting and light ${ }^{22 z}$. 9 tic


## SECONDHAND <br> LIGHT CARS AND CYCLECARS FOR SALE (conlinucd).












 SINGER 1926 d why 1 Obp. slarler, all weather equipment: exchange


 ton. "Plione 1 , W-1..n 2933 .

 STANDARD, 1920, 11 3, 4woles, in 1925 condition, £145: exlended

 STANDARD, 11.41 p . 2 -e.atir, ownet-lrisen, excellent condition, lato



 STANDARD, 1924. 11.4, 2-seater, ners conchition, laxed. \& 110 . Below.
 STANDARD 1925111 p Pigsully saloon, halloon lyres, poriect condi-


 STANDARD, 1924 11.4. 2-nealer, doubla difkey, marter, clock, apecdo

 STANDARD, $1923,11.4 \mathrm{hp}, 2$ sealer and double sunken dickey, starter and limheing, lavishly equipped, all-weather side screens, tyres as mew
 STANDARD. Mradeliorpe Molors, of 31 a IIflethorpe Rd.. Hailiaing offer tho following skavdards lus alo or exctiange: deferned terms. Pbone

STANDARD, 1924, 2-paler sle luxe, blue, in exoclent order, $£ 98$ §TANDARD, 1923 (Oclober), 4 seater a!l-weather, 11.4 , pain:worls. STANDARD, 1923 , 2-seater, 11.4, 5 new Dumlop cords: this ear
geaune larrinl
$682-851$
 STONELEIGH, 1924. Shp 2 -scaler, chumms model, in parlect condition
 SWIFT, 192 $3,10 h n, 2$ malor, excellent order, any inspection or trial.

 SWifTS. F.O.C.IT.. Ltel., have sweral from £20. 5 Tisath St.. HamnSWIFT, $192 J$, chumms. A cialer, 2 -pieco windereen, rear ecreen, IIar.

SWIFT, 1921, 10 hp . sperinl 3 -scater clorer-leat. dynamo linhting and
 SWIFT, 192v-24. $10 h \mathrm{p}$, chammy, linhting ardi stsrting, wh- westher



SECONDHAND
LIGHT CARS AND CYCLECARS FOR SALE (continued). SWIFT, fino 2-ecater, water-cooled, spare whoel, hood, sereen, emeedo
incter, latnps, taxced, cheap: exchange motorcycle, weexly paymons. Wandsworth Motor Exchange, Ehnor St, Wandsperth (Town Station): SWIFT, 1921, 10tp, 2-mater and double dickey. slarter and lishtina.
 S.W. 18. 'Phoab Wimis, 2041.
 SWIFT, i92l, 10hp, 2-scatep, domblo dickes, slayter, fighting, ${ }^{\text {athernn }}$
 SWIFT, £60, 1921 , like new, lasilier upholstars, Nonble sunk dickey,
 SWIFT, 35 Euineas, 1920. 2 ceator, drnamo Lighting. spape whed, taxeld. gnod lres, any trial: cachangs uotoresete 325 II:gh Rd., Chiswick,
$\mathbf{W} .4$. Phi, 303. SWIFT, 1914, 7-9hp, 2-quater, 3 spends and reverse, alectric tizhtine
 Kingstou 2562 . TALBOT $192510-25 \mathrm{hp}$ ( $\boldsymbol{f 9}$ tax) 2-scater and aunk-fn dickey, conditiou throughout equal to nuw, taxed, $f 165$ or exchange. A. Green, back of
No. 9 Blackfriara Si., Salford. Tel., 2191 Cent. TALEOT, 1923, 8-18, many exiras, incioving Harifords, exceltent


 TALBOT. 11. F. Eimards olfm 1924 1023, 4-door minon, completely equipped, painted wino colour, with curd upholseers, woperb condition, 2a barnea. Below.
TALBOT, $19248-18,2$-sceter and dickey, conpletely cquipprd, superb
rondition, 225 gainead; exchangce or delerred. 175 Gt. Portiand Sy
 TALBOT, 1923 . 8hp. 2-seater and double dickey, in exceptionaliy nice oondition throaghout, taxed e95: exchango or termu. Chester Mighall. Stourcliffe St. Edeware IRi. Madd. 3553. (Fourth tarn right Irara
Varbio
682.967
TALBOT, 1925 10-23, 2-geater, magnificent Litlo rar, hardls user,
 TALBOT, $8-18$ conpe. dickey lato 1922,6 whecls, drop head, excellene condition. numperous extras, expert examination, could be socn 1.nndan. WOLSELEY, E25 will sca sou on tho road with new il 22 hD £ 235 model, tnx and insuranco paki lor ono year. befora buying a aecondMolor Co., 69 Gi . Qucen St: Kingsway. W.C.2. Ilolborn 5972. 68257 WOLSELEY, $1921,10 \mathrm{hp}, 2$-seater, tax paid, excellent condition, EPO ,

 W.6. $682-912$ WOLSELEY. II. F. S.drarda offer 1924 10hn do luxe 2-scater and dickey. compla
-ns. Below.
WOLSELEY, $192 J$, JOhp 2 -scater, sunk dickes completelr rapipper, starter. clork, speedimicter, excelient condition. lis4 gns. Below. WOLSELEY, $192 \overline{3}$. 7 hp 2 -seater, completely equinped, startar, excel-





## SPARE PARTS FOR LIGHT CARS.

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