> Intending Purchasers from abroad will obtain full information regarding shipment of models to all parts of the World from our Export Branch Office.

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$11.4 \mathrm{H} \cdot \mathrm{P}$.
ENCLISH BODY
4 SEATER


LITTLE STORIES OF SATISFACTION


## "Im glad I got a Singer"

"Comfortable car, isn't she? Just as cosy as an armchair by your own fireside. And with all her comfort and good looks, she practically runs herself. Had her over a year now, and she's needed no attention from anybody. And what a climber! We've just been touring through Devon and Cornwall, and I felt all the time that the car was enjoying the stiff climbs as much as I was. Quite an exception to, have to change down on a Singer."
A Singer owner is a satisfied owner ; he wants nothing better. May we send you a little book telling you all about the Singer and its latest models?
STNGER

The Par that Looks After Itself

| 1926 MODELS and PRICES <br> (Inclucing Four Wheel Brakes in every case) |  |
| :---: | :---: |
|  | Oher Mxd |
| cold |  |
| £280 | Iniolment Payment |

SINGER \& CO., LTD., COVENTRY London Showrooms and Distribulors for the London Area: 202 GREAT PORTLAND STREET. W.I (Phone: Muscum 8666.)


There is naturally more wear here than on any other part of the upholstery -and unless the covering fabric is remarkably durable and easily cleaned, the driving seat soon becomes shabby and dirty.
Owners who have had lengthy experience of "Rexine" Ieathercloth are unanimous in their opinion that this is the finest material-not merely because of its hard-wearing qualities, but also because it will not stain or fade, and is absolutely waterproof.
There are special grains and colourings -exact reproductions of actual hideat less than the cost of leather.
"Rexine" Rubbercloth is ideal for Hoods, Hood Envelopes, Spare Wheel and Tyre Covers, etc.


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FOR SERVICE AND SATISFACTION.


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The honours again went to competitors running on my spirit PRATTS.
THE SUTTON CUP was won by Mr. Bert Kershaw for the third year in succession.
THE HOOPER ROSE BOWL secured by Mr. H. P. O. Bradley. CARLESS CUP for the best performance on any machine went to Mr. McClean; and the TEAM PRIZE won by the Rhode team.

In addition to the above
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# On Top in all Road Tests 



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Years ago it was the exception rather than the rule to purchase a car upon any otherbasis than CASH. To-day there result that the Deferred Syistem of Poyment is popular amone all classes.
The advantage of our "AT.L-IN-POLICY" is that it enables vou 10 purchase a car by making a small payment down followed by regular monthly instalments which may le spread over $3,6,12,18$ or 24 months. In addition we are

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ance, which these days no motorist dare do without. Each iransaction is entircly financed by ourselves and in consequence is absolutely confidential. over 10,000 fect super, which are packed fulloms of all the loing and beat cars, to realise what a unique opportunity the House of Taylor offers you to examine, compare, try, and ielsurely decide upon the carmost suited to your parificuIarnecds. If you can't possibly call-don't forget that our
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$s$o simple, yet so effective, it makes grease gun filling a cleaner and quicker job. No bother,
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the Gun is fully loaded. M1ade in four gizes. Prices $1 / 8$ and the Gun is fully loaded. Made in lourgizes. Prices $1 / 8$ and
$2 /$ - according to size of Gun.


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On the 4th November, 1925. Mr. Juntice Romer. on the npplication of Brown Brother., Limited, of Browns Buildinga, Great Eantern Strect. London, and el acwhere, fecturera and Merchante, granted an injunction againat theturera and Merchanth, aranted an injunction ngianat Road, and 43, Renahnw Street, Liverpool, reatroining them from carrying on under the name of Brown Brothera, or any nimilar name or ony name of which nuch words form part any butinete of a nimilar nature to any businest carried on by Brown Brot herr, Limited, and
Grom
anins the nome of Brown Brothera or any timilar from uniny the name of Brown Broithern or any nimilar nome or ony name of which such word form port, coicu-
loted to lend to the erroneous belief that the buaineas of The said Thoman William Bell and Altred Push ia, or the said Thoman William Bell and Alred Pugh in, or
in in any way connected wilh the butineas of Brown in in ony way conn
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$1_{1}$ wan alao ordered that the said Thomas William Bell and Alfred Pugh ahould pay to Brown Brothera, Limiled,

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The 1926 Rhode Saloon jumps clean away from possible competitors. It is the finest light car in the world -a daring statement, but an indisputable fact.

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From walking pace to a mile a minute on top, engine and gear box so designed as to make the stiffest hill a joy ride, springing and coach building that cut right out closedcar rattle and vibration, brakes on four wheels that give perfece confidence whatever the speed or the traffic. and - not the least remarkable feature of this remarkable car-it costs $£ 350$ and runs at a penny a mile:
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Metal-framed side screens, opening with doors, and a snug filling hood, enable you to lace the coldest weather-in comfort.
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Trial run or catalogue cheerfully on request.
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 AT HENLYS SERVICE DEPOT, 7-13, UPPER GLOUCESTER PLACE, N.W.1.SOMETHING New, Something Big, Something entirely Different !!! Not an ordinary Sale of Old Cars, but a Gigantic Auction of the very Latest and Best High-Class Cars.
There is a Model for practically every purpose, and any Pocket. And all Cars are Guaranteed. Here are some of them :-


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

Lot 1923 Alvis 4 -atr. de Luxe.
1925 A.C de Luxe 4 -str.
1925 Wolseley 10 h.p. 2-atr.
1925 Austin 7 h.p. Chummy.
1925 Swift 10 h.p. Saloon. Unused
1925 Swift 10 h .p. 4 -str. Unused.
1925 Swift 10 h.p. 2 -str. Unused.
1925 Austin Saloon.
1924 Alvis 4 -str
1925 Fiat $10 / 15$ h.p. Saloon. Unused.
. 1925 Chenard-Walcker $11 / 22$ h.p.
4-door Saloon.
34. 1925 Austin 4 -str.
37. 1925 Austin 4 -str.

1925 Austin Saloon.
43. 1925 Singer 10 h.p. 4 -str.
44. 1922 Clyno 4 -str.
46. 1924 Swift 10 h.p. 2 -str. Coupc.

1924 Standard 4 -str.
1924 A.C 2 -str.
52. 1924 Citroen 2 -str. English Body.
53. 1924 Rover 8 h.p. 4 -str.
54. 1923 Standard 4-door Saloon.
55. 1923 Swift 2 -str.
56. 1923 Alvis 2 -stre de Luxe.
57. 1923 Alvis 4 -atr. de Luxe.
61. 1923 Standard 2 -str.
62. 1923 Riley 2 -str. Coupe.
66. 1923 Talbot $8 / 18$ h.p. 2-att.
67. 1923 Citroen 7 h.p. 2 -str.
68. 1923 Citroen if h.p. 2-str. English Body.
70. 1925 Singer 10 h.p. de Luxe 2 -str.
71. 1926 Alvis 4 -str.
74. 1922 Humber 11.4 -str.
75. 1922 Humber 4 -atr.
76. 1922 Austin 4 str.
79. 1924 Alvis Suocer-Sports 2 -str.
82. 1925 Citroen $11 / 4 \quad 4$-str. English

Body. 10115 ho 2 ser English
83. 1922 Fiat $10 / 15$ h.p. 2-str. English Body.
84. 1921 Alvis $10 / 30$ h.p. Sports 2 -str.
85. 1924 Standard 11.4 h.p. 4 -str.
92. 1923 Horstman 2 -str.
94. 1924 Bianchi 4 -str.
95. 1924 Alvis Super-Sports 4 -str.
105. 1923 A-C 2 -str. de Luxe.
108. 1923 Deemster 2 -str.

All Cars on View for Examination and Inspection two days before Sale. SALE COMMENCES at 11.30 a.m. prompt on THURSDAY, DECEMBER 3rd, 1925.

This List is subject to Alteration without Notice.


Dorset Mews, 7-13, Upper Gloucester Place, London, N.W.1. Near Baker Street Tube Station.

1920 A b'rt, 11 b p. 4-1tr.
1923 Ausín "" ${ }^{\circ}$ "Chummp. - 1923 Bayliss Thomas, 2-str. 1920 Belsize-1 radshaw. y-str * 19 Pesize-Fradstaw,

* 1920 Calthorpe, 2-:tr.
* 1920 Caltborpe, 2-!tr.
$\times 1921$ Citrjen, ${ }^{2}$-str.
*1921 Citrjen,

* 1922 Citroen, 4 -str.
* 1923 Gwyone " 8 " "Cbammy.
* 19201 andil 2 -str

1929 Jowelt, 2-5tr

- 1993 Rbode Cbammy

1922 Rhode Chummy 4 -itr.
 1993 Rover " 8 ," O-sth 1923 Rover Chummy, 4-st. - 1928 Rover " 8 , $^{\text {² }}$ Chummy Luxe
1923 ~ Almson, $\ddot{2}$-str. de Lux 1922 Salmson, 2-str.
192 Singer, 4 -str. 19 (C Model)
1922 Talbot. (as il


* 1921 Wolseley "10," 2-str.

We also alwavs have a ! w b
jast over £100, Including -
1024 Citro
$\$ 1924$ Citroen Coupe $\quad$. $£$ * 1924 Standard, $11-4.2-s^{\prime} r, ~ £ 125$
\$ 1924 Talbot 878 h.p., Laxe, 2-str.
Many others olways over 60 odd in stack.
 THE CLEARING HOUSE FOR SMALL CARS.

TERMS.
From ONE-TENTH diwn and 10 equal payments to 1/3id down and 18 monihly paymenis. Just state the sum you wish to deposit, we du the rest.
ONLY FIVE WEEKS BEFORE THE NEW YEAR WHEN PRICES WILL RISE AUTOMATICALLY WITH THE SPRING DEMAND UNDER

## OUR GUARANTEE

H IS
II To allow tho price prid agalnst any oiher used car should it not give satisfaction within 7 days of purchase, or to allnw falr market value at (1) This gumpantce makes a second•hand car aln


## ATYPICAL

Photo of one of the actual cars (choice of 3)
9223 TALBOT, 8. 18, 2 -str. Da Luxe, $89-10-0$ down, and 10 aqual payments; or cash ess. Get our Lists and Terms without obligation to purchase. Our everchanging

Any new Cars. linmediote deliveries of almost any make.
Our experience in the Used Car Market permits our giving the very best a low ance against any new car. EXCHANGE
Definite Allowance per refurn for your present car or motorcycle on recsipt of full particulars, inciuding coliaction and delivery charged Let us forward lists and lerms you will be pleased and surprised lo see how easily and pleasartly the whole transaction can be complated. tight to your very dogr, no matter what distance.

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We do mot deal in all Typesfrom a $0-50$ WaIo SPAECNOOTCyCICA SMALL CARS UNDER E100andUNDER12m.p Therefare you havethe FULI. ADVANTAGE Of ourlargestock andex pericnce of thls class All cars guaranteed gord mechanically, and open to A.A. and R.A.C. examination willingly.
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The brakes are the most vital safety factors on your car.
To have them operate efficiently-stopping the car when called upon, in any circumstances, any emergency-is the natural outcome of fitting


The linings that make motoring SAFE. FERODO LTD., CHAPEL - EN - LE-FRITH. DEPOTS and AGENCIES: L- -cn. Birmingham, Leeds, Mandiester, Briatcl, Belfast, Codosi'ru. Nescasle. G'-row, Aberdien, Carlisle, Arighton an Liverpool.

## Wrap up your radiator.

Chilly evenings, nippy mornings. raw days are ahead. Take care of your car. Buy it a good cosy, one that will weather the winter

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## 25th EDITION. (690th Thousand.)

EVERY recent development in motor car construction and motoring is dealt with in this new edition of "The Motor Manual." It has been largely re-written, completely revised, re-illustrated and brought up to date, and contains a very large amount of new and practical information.
It is an indispensable handbook for every motorist who wishes to understand his car from $A$ to $Z$, and how to maintain it in completely efficient condition.

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## A Complete Guide to the Adjustment, Repair and Overhaul of the Car.

## 4th Edition.

GREATLY ENLARGED. RE-WRITTEN, AND
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THE owner of a modern car can effect important economies in maintenance charges and save considerable time if he is in a position to carry out any simple repair, adjustment or overhaul. In "The Motor Repair Manual" the car owner will find detailed instructions on the subject.

There are sections on the lathe and its uses, descriptions and illustrations of tools, and how to use them, various mechanical processes and worksh p praclice, how to construct a serviceable motor house cheaply, the filting up of a repair shop and the provision of its tool outfit, and many new practical hints relating to car equipment.

The book is written throughout in non-technical language and practically every necessary tod and operation is shown in illustration.



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# TAXED $=$ INSURED <br> AND <br> <br> " ${ }^{*} \approx$, READY TO DRIVE AWAY 

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HIGHEST Possible Price allowed for your OLD CAR or Motorcycle in Part Exchange.
S.M.S. Ltd.

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31, Brook St., Bond St., London, W. $1 \begin{gathered}\text { Mayphoit } 2 \text { Pos } 5 / 6 \\ \text { Pho }\end{gathered}$ LO NOT HESITATE to send your enquirics to "The Light Car and Cyclecar."


Special Features in this week's issue (Nov. 24th):

T E ADVANTAGES OF THE OFF-SIDE RULE.

A Reply to the Critical Examination by "S.F." of the
Rule to Give Way to Traffic on the Right.
By Charles Buttar, M.D.

## IMPROVEMENTS IN ALL - WEATHER EQUIPMENT.

The Latest Methods of Excluding Rain and Wind.

## A GRAND PRIX TO ENCOURAGE

 ECONOMY.Two-litre Racers that Do Only $8 \mathrm{~m} . \mathrm{pg}$.

## THREE INTERESTING OIL ENGINES.

Sorme Novel Power Units Recently Designed for Running on Cheap Heavy Fuels. Cold Vaporization by Vacuum.

## ROAD TESTS SHOWING PRINCIPAL

 CHARACTERISTICS.The Three-litre Bentley Speed Model. The 1440 h.p
Sunbeam. The 12-40 h.p. Brooklands Lea-Francis.

Next Tuesday December 1st:

POLICE TRAPPING METHODS AND LONDON'S TRAFFIC PROBLEMS.

By Major H. O. D. Segrave.

## DISTINGUISHING BADGES FOR DOCTORS' CARS.

THE REAL MEANING OF ENGINE EFFICIENCY.

## HOW THE ENGINE ACTS

 AS A BRAKE.And all the News and News Pictures.

THE CARS OF 1926.
Appreciations and Criticisms from the Tourist's Point of View.
By Charles L. Freeston, F.R.G.S.

## MORRIS CAR TOPICS.

What 1 Think of the New 14 h.p. Saloon. A Compar: son with the 1924 Model.



JEAVONS is a thoroughly scientific protector of Car Springs from mud, wet and rust, and preserves their vitality by its cfficient means of constant positive lubrication.

## RAMSDENS TOUL - BAGS

Particularly well made tostand the rough usage they are called upon to endure in rough weather. In four styles and various grades to suit all purposea.


JEAVONS SPRING LUBRICANT is a light lubricating oil specially prepared for use with Jeavons Lubricating Spring Gaiters, and loses none of its essential properties in low temperatures.


Enablea you tolift 2 tons with one hand. No straining or tugging. no knecling in mud or dust and no possibility of danger.


## HEADLAMP LENSES

Make night driving a pleasure without the necessity of "Dimming," "Dipping," or any sort of manipulation. Parabolite Lenses eliminate dangerous glare, increase the spread of light, and give long range for safe Night Driving.


Grit, the enemy of fine canchwork. is here in abundance in the dirry wenther. A Ramsdens Duat sheet it mada with apecially chos penetrate. In sizes to fit all cara.

## rabram <br> RADIATOR COVER

1. necessary to easy atorting on a cold morning lts specially prepared felt lining. poseseaing excepliannl heat retaining prapertica, prevents of black wateraroof leather-cloth with mad frant.


A RELIABLE DYNAMO DRIVE

Non-slip, smoisth running, Alexible $V$ Belting, 65 per cent. st:onger than ordinary link belting.


##  <br> Motor Car Manufacturers since 1911. <br> New 1926 Chummy Model, £159 <br> Family Car at a price below a two-seater. <br> G.W.K. Limited, Cordvales $\begin{gathered}\text { Workses } \\ -1\end{gathered}$ Maidenhead.



MENTION of " The Light Car and Cyclecar" when correspanding with advertisers assisis


## When Phyllis starts

 for that week-endshe is able to assure Jack that he need not fuss the littlest bit about her safety on the road, for the Austin Seven is such a simple car to handle, and so utterly reliable. Truth to tell, she can manage it as well as he, although he won't, of course, admit it. She just loves to run down to Margaret's place occasionally and take her and her two bairns for a Sunday trip into the country. It does them a world of good-and, as Phyllis says, it s a whole family's happiness at less than a-penny-a-mile.The price of the "Seven" is

and its fealures include: 1-cylinder engine, electric starler, electric horn, A-wheel brakes, balloon tyres, a door for the driver, shock absorbers, two adjustable seats, automatic oiling, grease-gun sys!em, specdometer.

> Write for the "Seven" Booklet.

The AUSTIN MOTOR CO., Ltd., LONGBRIDGE, BIRMINGHAM.

479-483, OXFORD ST., W.1 (near Marble Arch).

READERS, NOTE. - It assists the smatl
allention, to mention "e The Light Car and Cud the advertiser.
in your enquiries. you prompi


A FAR
\ORTHERLY POINT.

The F.N. which recently journeyed from Glasgow to John o' Groat's and back in one day photographed outside the hotel at John o' Groat's. The journey occupied just over 22 hours.

## N TLE, NEWS ECOSSID of the WICEK

The Latest War Cry.
The latest complaint of the antimotoring public is agninst the use of powerful hooters. Usually those whon complain of a loud warning note are the very ones who take little or no noties of a melodious horn.

A Concrete Conclusion.
The all-conerete road is the solution of the road problem in this country said a speaker at the Cheshire County Council recently. In America, hie added, whore labour was twice as dear as in England, the cost of $n$ concrete read 8 ins. thick with two reinforcements was 12s. a yard, wherens here 15 s . a yard was paid for tarred macadam.

## This Week.

Our principal article this week is the first of the series entitled "On the Road and in the Making." It denls with one of the most popular of modern small cars, the Austin Scven, and, as the title of the series implies, factory methods as well as our impressions of the performance of the car are dealt with. "Ineffective Power" and "Absorbing the Torque" are the titles of sorbing ticles which will make an immediate appeal to our renders. An extended test report of a 1025 Morgnn is another very interesting feature.
No. 697. Vol. XXVII.

## ON OTHER PAGES

Cyclecar Comments
Ineflective Power
When Floods Are Out
Absorbing Torque
7,000 Miles in a 1925 Morgä The Shores of the Bristol Channel Rich Minture
opice of the Day
Actipities of the Inventor
On the Rond and in the Making: Motoring Matters in Parliament: Our Readers' Opinions Ideas for Owners.

Lighting-dp trmes (Rear lampg)
for Saturday, November 29, 1925.


Birmingham 4.37 Bristol
4.15
4.29

## Does Your Engine Groan?

Small car owners slould be on their guard against "creaks and groans" from their engines. When these are heard immediate attention must be given to them. We feel sure that this is the case, because the motoring correspondent of a daily paper remarks that " the private owner should regard creaks and groans in his conchwork almost as serinusly as similar noises in his engine."

The Road Fund.
An official statement has been made that no decision has been reached on the question of diverting any part of the Road Fund to purposes other than those for which it was established. Mcantine the Roads Improvement Association has passed a resolution protesting against the suggestion.

## Flat Rate Service.

In the U.S.A. great progress has been made in the direction of standardizing costs for repair jobs. In this country the scheme is in its infancy and, in the opinion of many owners, it should be developed without delay. Shortage of specialized-equipment in garages appears to be delaying matters to some extent.

## Next Week.

The article on night driving, which should have appeared in this issue, but which has been unavoidably held over, will appear next week, and will be accompanied by a special night cover picture. All types of slecve valve-in fact, any system that may be remarded as an alternative to the poppet-will form the subject of a very informative article. whilst "Skill at the Wheel" is the title of a contribution by "Focus," which deals with an important subject.

## Get Rich Quick.

At Ormskirk Petty Sessions recently the fines on motor drivers totalled $£(6 t$ in : i 0 minutes - over $£:$ a minute.

## Ducks and Breaks.

Driving through a fog a Birkenhear notorist the other evening hoard a crash. fonud his windsereen smashed, and discovered a wild duck flutteriug on the seat behind him.

## Devon Roads Closed.

The road from Dawlish to Teigumouth, which was opened only a short time afo, has been again closed. The alternative ronte is sia Kennford and Telegraph Hill. The road from Torquay to Newton Abbot is another which shoultl be avoided.

## M.C.C. Fixtures.

There will be vine important ceveuts in the caleudar of the Motor Cycling Club for 1926. The season's programme as usual will start with the LondonLand's End, Mpril 2nd and 3rd, and will conclude with the London-Cxeter, December 27 th and 2 Sth. Full details will be found under Club Items.

## An Amazing Motor Mix-up

A Buick rau into a motorbus: another motorbus ran into the Buick; a third motorbus ran into the second bus: a second private car ran into the third motorbus and, finally, $x$ third private ear collided with the assembled litter. Such was the umprecedented mix-upl on the fog-bound highway at Prenton, Birkenhead, the other day.

## Another New Road Opening

The Prince of Wales may open the new arterial road from Sideup to Orpinston, which is now finished. This, of course, links up with the London to Kent uew road and will livk up also with the Orpington to Pollill new bynass. This will wipe out Catford and Bromley, with their trams and traps. Farnborough, and the narrow and winding old road to Pollill. Sevenoaks.


A "CORDON ENGLAND" $\qquad$ Designed by Messrs. Gordon England, Ltd. this new Austin Seven saloon sells for $£ 210$. SALOON.


LIGHT CAR LIMERICKS.-No. 48.
Now, Archibald Robin Adair
Always drove with meticulous care,
When a trap came in view
He would slowly crawl through

Readers are invited to supply the missing fifth line. Only post-cards addressed to the Editor and morked "Limerick No. 48 " uill be considered. A prize of One Guinea is offered for the most aptand original fifth line.
If two or more such lines are recelved the If two or more such lines are recetved the prize will go to the sender of the first to be udged. Nojudging uill be done before next Tuesday. For result of No. 47, see this weet's

## A Sporting Function.

Lard Lonstale will take the chair at the Brooklands Automobile Racing Club's dinuer, which will be held in the Great Gallery of the Royal Automobile Club in December :3ird.

## Vehicle Laws.

A very comprehensive volume by Anthony Willinm Hall, sergeant of police in the Sliropshire Constabulary. has been published by W. B. Walker and Son, 25, High Street. Shrewsbury. The book is entitled "The Vehicle Laws," and Volume I, which we have perused, deals with registration, licensing and inxation in a very full and otraigitforward manner. As a work of reference it slould be in-

## The "Tell-tale."

The switeh controlling the rear light of every ear in Australia must be placed at the rear of the vehicle. The idea, fipparently is to prevent irivers; switching of in case of accident. Motorists seem to be treated as potential eriminals in other countries besides "III own.

## Race Track for Prague.

A motor racing track is being built in Lragne ; it will be Cecho-slovakia's lirst venture in this connection. The track is being constructed jointly by a number of Czecho-Slovakian ututomobile clubs, and we umderstand that the site "wild hot in the vieinity of the Kibely acrodrome.

## Changes in Racing Personnel.

l3moist and Divo, two of the foremost Delage racing drivers, and also well known in connection with small (an racing events, Lave left the Delage anncern, which has decided not to take bat in racing fluring 102G. Benoist has jnined the Alin-Romeo leam, whilst ) ise will be seen at the wheels of Inarracels.

## Trim Those Hedges.

An appeal to all frontage owners near blind corners on main roads to cut and trim the hedges so that nutorists may have clearer vision is made by the charman of the Cheshire Man Roads Committec. IIe might have pointed out that by doing so houscholders also mitigate the likehhood of $t(x)$ freauent use of their premises as temporary hospituls-or mortuarics.

Here, Too.
In Australia there is nuch outcry about the ollicial "boosting" of trams to the hindrance of other forms of trallic. State capital, it appears, finanees the tromways and more up-todute vehicles are bent in the background. As usual, the motoring and non-motoring public suffer by the condinuance of the antiquated tram in conmested arens.

## Road Fund for-the Roads.

The Cheshire Local Taxation and lioad Fund Licences Committeo has approved a rosolution passod by the Kesteven County Conncil to the effect lhat, in the opinion of the said Council, the whole of the income from the tuxation of motorists should be used for the improvement and maintenance of the roads and an no way diverted to any wther public service.

## Remarkable Regulations.

Some very amusing clauses appear in the regulations for the Livernool Notor Clubss "Revenge" trial, from which we quote the folluw ing:-" Neither chains nor horses will le allowed." "The organizers will do their utmost to ensure that no awards will be necessary, but as entrants are by repute somewhat wercenary in nature, the following awards will be beld in readiness . . ." "Fishing rights
are the exclusive property of the organizers." Further details will be found under Club Items.


Super-telephone boxes and illuminated sign-posts: the latest A.A. development.

## U.S. Roads Better than Ours.

"I visited the United States convineed that England possessed the tiuest highways in the world and that some of the best of th.ese were to be found in Cheshire; I have returned convinced, I restet, that the Americans can teach us quite a lot in this matter."-Capt. II. M. Benmes, a member of the Main Roads Committec of the Cheshire County Council.

## Off to Australia.

Mr. L. C. G. Mr. Le Champion will soon be in Australia, where he hopes to add to the laurels he has won in English sporting events. The star turn in his programme will be the $200 \mathrm{~h} . \mathrm{p}$. Fiat which he recently purchnsed from Mr. E. A. D. Eldridge. The rumour that Mr. J. G. Parry Thomas also intends going to Australia shortly with a large flect of racing cars bas not, according to Mr. Thomas himself, any foundation in fact at present.

## Big Auction Sale.

Over 100 cars of all sizes and make will be auctioned at a special sale whicis is being organized by Flenlys, Ltrl., Great Portland Strect, London, W.1, on December Burd.

## The Rule of the Road.

An informatice little book hy E. V. A. Christy, entitled ." The Rule of the Road,' and dealing with matters with which every driver should be familinr. has been published by Vinton and Co., Lid., 8, Brenm's Buildings, Chancery Laue, London, E.C.4, at 2 s .

## A.C. Front-wheel Brakes.

Front-whecl brakes are now standard on A.C. sports models, whilst they are obtainable at an extra charge on touring models. In making the aunouncement Mr. S. F. Edge points out that, owing to the high speed of the sports models, he considers that front-wheel brakes are desirable.

## Filling Stations.

To have the misfortune to run out of petrol in the City of Londun or even just outside its boundaries may be somewhat awkward for the prisate motorist, as haruges are not easy to find. There is a number of filling stations in the Gity aren, but they are exclusively for the use of commercial vehicles. Surely it would not be difficult to arrange for these stations to supply fuel to any type of car? Possibility of congestion can hardly be the objection.

## Peugeot Price Reductions.

Peugeot (England), Ltd., announce that the price of the 7-12 h.p. Peugeot cabriolet is reduced from $£ 185$ to $\mathbf{£ 1 6 5}$. The dickey seat, clock and specdometer are retained at the new price. The 7-12 h.p. Peugeot clorenleaf model, which also is erquipped with clock and speedometer, is reduced from $£ 185$ to £165. These price reductions came into effect on November 25 th. We understand that the 7-12 h.p. Pengeot allweather model is no longer to be marketed.


## The Camping Season

Now Zcafand muturing, papers nec now full of the prospects of camping, summer trips, pienicking and so on: in short. the motoring residents of the famous islands are just beginning to enjoy the summer months.

## Joy-ride Thefts

The netivities of the illegal joy-rider are murch in evidence at this time of arear. Cars left outside honses offer templation to those whose mechanical

## Fuel Research Report.

Interual-combustion engines (Ser tion V) and power alenhol (Section V1) are dealt with in the report of the Fuel hassearch Board, which has jnst been iswed by IIM. Stationery Office, price 1s. Gd. net.

The Importance of a Licence.
Charged with not having n driving licence and pleading that he had forgotten to renew it, a motorist asked the Liverpool Stipendiary if he did not


## POPULAR ON THE CONTINENT.

This method of mounting the dynamo on the forward end of the crankshaft is becoming increasingly popular for small cars on the Continent. In this country the Calthorpe is practically the only example.
knowledge is better than their morals. Secret switehes and other artificial starting difficulties go a long way in safeguarding a car when an unauthorized ride is the motive of the temporary theft. All electric starter aids the work of the light-fingered gentry.

## Helpful!

"Mi!" shouted the driver to the old nan with the cows. "Can you tell me where this ruad leads?"
"Ar, that I enn ; that I enn, inded," said the old fellow cheerfully. "It do learl past our varm to the village and through that to the big town bey:ant." --The Commercial Motor.

## White Lines-Latest News.

The latest development, as our readers are aware, is an illuminated white line, the introduction of which was followed up by a statement from Sir Ilenry Maybury to the effect that various methods of applying white lines permanently were being tested by the Middlesex County Council. The surreyor to the Guilford IR.D.C. claims to luve introduced the first white linenear Shere on the Guildford-Dorking road-five years ago.
The highways committee of the West Riding County Council reports that it has had under consideration the advisability of recommending the making of a by-law to enforce the observance of white lines placed at dangerous corners for the guidance of traffic. After full consideration, however, it has decided not to ds $\mathbf{~ 5} 0$.

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thiuk motorists should be notified when licences were about to expire. Heplying that be did not think anythiug of the hind, the Stipeudiary added: "Parliament takes a serious view of this kind of offence because, with so many ears about, it is diflicult to identify $a$ driver should he have no licence when no accident takes place: in fact, the maximum penalty for this offence is $£ 20$, and for a secoud offence $f=0$ or three months."

## Prosecute Pedestrians.

That in some cases a pedestrian should be prosecuted for negligence just :as much as the driver of a car is the view of the Leicester cormer. W'e have pleaded the same canse for years.

## Austin Successes

Of $\overline{0} 0$ trophy events in which Austin Seven cars have takem parl duriag 1905 no fewer than $4 \bar{\pi}$ of the trophies comneted for were cantured. Durnug this vear Austin sevens have established ten world's records and won 16 silver euns aud 21 gold medals.

## Benevolent Fund Total.

The second list of sulsecriptions to the Notor and Cycle 'Irades lionevolent Fund bas brought the total up to $£ \pm, 4 \ddot{S}$ 10s. Gol. An anmouncement concerning the Fund will be made at the banquet which will be held at the Connaught Looms on December 1st.

## I.A.E. Activities.

The evaporative method of couling has received much attention in the: U.S.A. Commander Cuse-Drown-Cave read :an interesting paper on this subject before the I..I.E. and Itoyal Seronautical Society recently. On November 27 th a marine conference will be held at Olympin with pnuers on the subjects of motor installation and twin screvs.

## Forewarned is

Following the appeal by the Lioynl Autumobile Club to all drivers to be particularly careful at Redbourn, which is on the main road from Sit. Albans to Coventry, we learn that the nuisance of which the Chief Constable of Hertfordshire complained has been so much cbated that the necessity for the technical prosecution of motorists has been avoided. The origimal IR. A.C. warning to motorists was nublished in The Light Car and C'yclecar. The R.A.C. now appeals to nll motorists to show the same consideration as was exercised in IRedburn when driving through IBishopis Stortford.


THE ARTIFICLAL HAIR-PIN.

Another suggestion for next year's 200 -Mile race. The Aketch was made during a recent French road event, when this artificial hair-pin was used.


'TWh) readers have written to me within the past week asking advice as to the building of threewhewled eyclecars. In one case a sketcll of the pronosed classis frame accompanied the description of the vehicle, which is to be built largely from A.IB.C. motorcycle parts.

The frame mentbers are of 24 -in. by 2t-in, ash, brated as required and sumporting at the rear the A.B.C. rorks and wheel; at tubular crossmember carrics the roller learings of the fork ends and the suspension is by helical springs. The front axle is of normal H-section type, incorporating ford :stul) axles and having helical spring suspensiou. A Wheelbase of 7 ft . and a track of about 4 ft . are shown in the drawing.

There seems to be nothing wrong with the gencral layout, but the use of helical springs all round may tend to cause rolling on corners, and it may be necessary to fit rebound dampers, either in the form of additional springs or by using a standard form of shock allsorber.
The frame sloould be fuite strong enough when made from 2 -in. square ashl, and it would be found, probably, that $21-\mathrm{in}$. by $2-\mathrm{in}$. members, suitably braced and set with the deepest section vertical, would have no tendency to whip or bend under load. Stecting will be improved if the wheel spindles are set to allow for centre-point contact with the road surface.

The A.B.C. rear whecl has a 26 -in. by $2 \nmid-\mathrm{in}$. tyre, which, to my mind, is much too small for satisfactory use on a passenger-carrying threewheeler; its life would be short and it would be prone to cause slidding on greasy tramlines. A tyre of at least $2 \frac{2}{2}-\mathrm{in}$. section should be used.
With regard to brakes, I suggest that these should be fitted to all wheels, the front pair heing cotipled to a pedal and the rear one onerated by a ratchet lever. Thus most use would be made of the f.w.b.t., which could hare plenty of surface and
would not tend to cause skidding. The rear brake could be used in an emergency and for holding the eyclecal on hills.
For use in a eyclecar the motorcycle gear ratios will need to be lowered; the A.l.C. standard ratios are, 1 believe, $5 \frac{1}{2}, 7 \frac{1}{3}$ and 93 to 1 , and these, of course, will be too high. Giren a light csclecar with not 100 much wind resistance, a top gear of 0 do 1 might not overload the engine unduly, but hill-climbing will be difticult on the lower rutios.

In my opinion. if ton gear is 63 to 1 , second should be about 9 to 1 and bottom 16 or 18 to 1 , but trouble might arise due to overheating unless a very cflicient fan were fitted. It would seem, then, that if a new gearbox is called for, the cost and trouble incolved would be out of all proportion to the value of the cyclecar and the service it may gire.

I have had experience with low nowered, low-geared cyclecars, and I can say that they are most unuleasant to drive; therefore, $I$ advise my querist to look out for a more yowerful jower unit; his chassis frame should be strong enough to carry a 5-6 h.p. engine.

My second inquirer should take heart at what I have written above, because he proposes to use a 7-9 h.p. Harley-Davidson engine, gearbox and rear wheel. I have no details of his chassis frame, but he wishes to fit his power unit at the rear, so as to keep the drising chains short.

It seems to me that by this arrangement a very long wheelbase will be required, because the dislance ietween the engine shaft and rear-wheel centres in the standard Harley-Davidson layout can hardly be less than 3 ft .

In front of the engine we have the seat and beyond this a reasonable amount of legroom will be required. The wheclbase of the cyclecar may, therefore, be somewhat longer than would seem advisable with n threcwheeler, althougl if the frame is well
briced no great difficulty should arise. In setting out the chassis dimensions due consideration must be given to weight distribution, so as to avoid overloading the rear wheel.

An artificial draught would be needed to cool the engine, and I would suggest two fans-one for each cylinder, and mounted in such a way that the draught impinged directly on the valre side of the heads. The diameter of the fans and the number and pitch of the blades would hare to be found by experiment, and would, of course, be governed largely by the speed at which they were driren.

The engine cockpit should be well ventilated by means of scoops, so that cool air could find its way in to feed the fans and the hot air have an easy path of escape. Means similar to those I have outlined were adopted in the A.V. bi-cars, and, so far as I can remember, overheating troubles were seldom experienced.

My recent suggestion to would-be cyclecar owners, who had not the facilities to build their own vehicles, that they should buy a second-hand G.N. or similar cyclecar and do a little " hotting-up," has brought me a number of letters from interested readers. Most of these enthusiasts wish to know where they can buy an old G.N. and how much they will have to pay for it.

Is my page of such great interest that no other part of the paper is deemed worthy of attention? What of the second-hand advertisement pages?

I glanced down the list of G.N.s for sale in a recent issue and counted no feiver than 27 , at prices ranging from $£ 16$ upwards. They are stocked by a number of dealers and it should be very casy to find just what is wanted at $\Omega$ very reasonable price.

Spare parts are obtainable from several concerns which specialize in G.N.s and whose advertisements are to ve found in this journal.


TYHENE is a popular belief that, figumatively speaking, all the fuel poured into the tank is delivered in the form of power at the rear wheels and is available for propelling the car along the road. Very far from it!

Roughly, only a quarter of the actual fuel value is used to drive the car, no less than threequarters, approximately, being lost in various ways. The actual percentage of useful and wasted fuel raries with different desigos, but the $2 \bar{j}$ per cent. turned into work mus be taken as applying to the normal touring morke light car.

Before dealing with the why and wherefore of power losses, it is necessary to understand where the wasto occurs. Only about 30 per cent. of the heat value of the fual actually is used in the cylinders to force the pistons downwards. Of this 30 per cent. a further 5 per cent. is lost in bearing friction, in the inlet and exhaust systems and in the transmission. Thus the result is three-quarters waste and one-quarter of the fuel used.


This dagram illustrates the thermal losses. Approximately 30 per cent. of the heat value of the fuel actually takes effect upon the pistons.

F'or the sake of clearness there are three types of loss, which will be referred to as (a) thermal, (b) pumping and (c) mechanical.

The thermal efliciency of an engine is the ratio of heat converted into work to the heat supplied. Assuming that a gnllon of petrol has a heat value of 144,300 33.Th.U.s, an engine which makes use of 43,290 B.Th.U.s out of every gallon has a thermal efliciency of 30 per cent. Up to date the maximum thermal efliciency obtained is harely 40 per cent. : 30 per cent. howerer, is nearer the mark for ordinary production engines. Steam engines are even worse off in this respect, as B16
their thermal efticiency may be set down at about 2 per cent.

Where does the 70 per cent. of the heat value of the fuel go? The water-jackets and radiator absorb some 29 per cent., and 41 per cent. passes out in the exhaust gases. At first sight it would appear that the cooling system is an expensive and unnecessary part of the engine if it causes such wastage, but, as in the case of the majority of engineering problems, it is a necessary compromise.

In the absence of direct air or water cooling, the heat generated in the cylinders would grow until the oil lem-


On the left is seen the process of induction which tends to retard the downward motion of the piston, whilst the expulsion of the exhaust, shown on the right, brakes the upward mavement of the piston. These power wastes are the pumping losses.
perature rose to such a pitch that its lubricating value was destroyed; this, of course, would mean seizure and distortion.
The heat loss can be readily understood if it is appreciated that petrol is being burned the whole of the time the car is in use for the purely wasteful purpose of maintaining three gallons or so of water almost at boiling point in the face of a powerful artificial cooling medium in the form of a radiator.

Having dealt with the heat loss via the cooling system, we next turn to the waste of fucl heat value by way of the exhaust. Three matters concern this losscarburation, combustion chamber design, and exhaustvalve timing. Taking carburetters first, these are improving slowly, but, scientifically speaking, their work is inefficiently done. They deliver a gas incapable of complete combustion, thus accounting for much of the waste.

Design of the combustion chambers to effect as complete combustion as possible is the second point. In this respect modern engines are superior to older types, as the results they give show a higher thermal eftiriency. Particularly in recent years the subject has
been dealt with in detail, and cylinder head shapes have undergone much alteration, in view of increased knowledge in this connection

The thitd cause of thermal loss vin the exhaust is Whe to the need for " early " exhaust-valve timing. The valyes open before the burning of the gases is complete, hhus permitting a portion of the mixture to expend its force in the exhaust pipe and silencer. This seems a waste, but it is again part of a compromise which is necessary in order to ensure that the cylinders are scavenged of exhaust gas to the maximum possible extent. Heat in the fuel is thus sacrificed to an in herent weakness in the four-stroke cycle.
rumping losses are the second type of power waste and can be described as the forces renuired to draw the gas into the cylinder:s and to expel the exhaust. This may seem 10 be of little importance, but in effect tho losses actually account for more power than the friction of the engine bearings. In the case of the induction mixture is drawn in by the sucking action of the piston. This oljviously tends to retard the downward movement of the piston, and therefore absorbs power. In a similar manner the burnt gases in the cylinder do not expel themselves; they have to be pushed out of the cylinder by the upward stroke of the piston, which, of course, absorbs more power. Features of design which alfect pumping losses are the diameter of the inlet and exhaust passages, their length, direction aud surface finish.

Thus far we have dealt with the power delivered at the pistons. Now we may trace it through to the rear wheels, diminishing as it goes, and come to mechanical losses which are the third link in the chain of power waste. Mechanical efficiency is the ratio of energy given out to energy supplied. The average percentage here is much greater than in the case of thermal effiriency, being about 90 per cent. to 94 per cent. The 10 ner cent. loss is caused by the friction of the pistons
entire friction in the engive takes place in the cylinders. A large amount of the area of piston skirts is unnecessary for taking wear, but heat conduction and the strength of the piston demand the presence of an adequate amount of metal.

An advocate of the slipper piston, Mr. Ricardo, has done much towards the reduction of friction by eliminat-


To minimize piston friction the familiar Ricardo type has drilled and cut-away skirts, whilst heat is conducted away by webs under the crown.
ing all that metal in the piston skirt which does no useful work in withstanding the stresses. In this type the area of the bearing surfaces is reduced to a minimum consisteut with safety and having due regard to the thrust to be taken. Portions of the piston skirt which normally surround the gudgeon-pin bosses are cut away, only two working faces being provided.

Further items affecting mechanical losses are the crankshaft bearings, valve gear and engine auxiliaries. The sum total of the waste arising from these parts is not very great in itself, being in the neighbourhood of 1 per cent., but it adds up, with other amounts, to form a considerable waste of the value of the fuel.

In order 10 realize the mechanical losses in an engine,


Approximately 75 per cent. of the heat value of the fuel is lost in the process of its boing converted into driving power at the rear wheels of a car. The arrows indicate the chief sources of waste, which are grouped inder three headings, thermal loss being the largest.
in the cylinders, the friction in the engine bearings, in the auxiliaries, in the gearbox and in the rear axle. friction increases with the engine speed; therefore a study of mechanical efficiency is of great importance in combection with light car engines which run at comparatively high rates of revolution.
Foremost, by reason of its relative size, is piston friction. This loss represents a quantity some four times greater than that of the friction of the engine bearings; between 40 per cent. and 60 per cent. of the one has but to turn the starting handle when the sparking plugs have been remored. As the speed rises the friction becomes greater, and it can be inmgined what un internal load, so to speak, has to be overcome before nower is a arailable for driving the car.
In the transmission of the power from the flywher to the road wheels, about 10 per cent. of the power developed in the former is lost, and even then there is wheel slip, which accounts for an additional 1 per cent. waste.

NEGOTIATING FLOODS AND WATER SPLASHES IN SAFETY-THE METHODS OF THE EXPERT-LESSONS TAUGIIT BY COMPETITIONS-MOST SUITABLE TYPE OF CAR FOR FLUOD CONDITIONS.

MOST light cars, if skilfully handed, cau negotiate a road which is flooded with water to a depth of about 15 ins., but there are not many drivers who care to attempt the feat. There is no reason why they should not, however, for no damage can be done to the car by negotiating floods and water-splashes, whilst circumstances are always likely to arise when it is absolutely necessary to do so.
The ability of cars $t 0$ cross quite deep fords has been brought about very largely by the frequency with which water-splashes are included in reliability trials, and, although promoters of these events are often criticised for including splashes in the route, it cannot be denied that they have had a good effect on car design, whilst they have also helped in no small degree to make the British light car suitable for overseas conditions.
It would astonish many owner-drivers if they could sec the depth of water which is necessary to bring a light car to al standstill when it is being handled by au experienced competition driver, whilst even motorcyeles nowadays ford rivers which are so deep that the engine is almost cutirely submerged. The riders, of course. know exactly the correct procedure to adopt, whilst they also fit upward extensions to their exhaust pipes and carburet ter air intakes. In addition, it is necessury, of comrse, tu prevent water from entering в18


The driver ot this Rover is acting wisely, the low speed of his car causing only a slight ripple on the water.
the magneto, by smearing it with grease or anclosing it in a waterproof fabric bag, whilst the suarking ylug or plugs reduire special waterproof terminals.
fortunately, none of these precautions is neoded for attempting to negotiate water-splashes in a light car, except in extreme cases, when it is sometimes adrisable to fit an upward extension to the silencer tail pipe.

The best type of car for crossing fords is one with an enclosed flywheel, and thase who own (ats will exposed flywheels are strongly advised not to attempt to negotiate water which is more than 8 ins. or so in depth, as an open flywheel throws up) quantitios of water which may swamp the feet and logs of the frontseat bassengers and will almost certainly make its way on to the sparking blugs, effectually stopping the engine in mid-stream. When this occurs, the occupants of the car generally have no alternative but to wade ashore and secure a tow assuming, of course, that the car cannot be pushed ont by hand.

A plan which is somerimes effective, however, when the engrine stops in the middle of a water-splash is to engage tirst gear or reverse and allow the electric starter to drive the car back to dry land. If it is incapable of doing so, the aid of otre of the passengers pulling round the spolies of one of the road wheels will generally prove suflicient, whilst helping the
clectric starler by rotating the starting handle in front allows one man to extricate a light car from quite a dillicult position.

Apart, however, from the tendency of an open flywheel to throw water on to the sparking plugs, there is the added disadvantage with this form of construction that the clutch is far from waterproof, and those who own such cars should be very careful, even when negotiating only a few inches of water, not to free the (1) Int oh on any account, as, if they do so, it will decline again to take up the drive, owing to water getting between the friction surfaces.

It will be seen, therefore, that what is popularly lermed "unit construction," in which the flywheel is either wholly or partially enclosed, is much the most satisfactory for a car which is to be used on floorled roals. With such a car there is no reason why water should not be crossed with certainty.

## Experience Helps.

A colvain amount of experience is, however, desirable; it is uedessalry to know, for example, that the car should lon ariven as slowly as possible, whilst if the water is sor deep that the exhaust pipe is submerged, the engine ruvolutions sionuld be kept comparatively high. Bottom吴cat is therefore clearly indicated, the clutch, if necesGary, being slipped in addition.

Apart from going slowly, using hottom gear, and keeping uf the revs., there is no other special linowledge werded when using flooded roads, but for crossing waterfulashes or fords it is advisable to know something of hoil characteristics. In the first: place, they are to he foumd in Great Britain only on tertiary rouds which are used almost solely by farm carts and so forth, and, as these are not affected particularly by the depth of water, the driver generally follows the straightest cumrse across. With a ear, therefore, i is olsvously wise to a woid the most direct route. where the water, owing to cart ruts and the bottom heing stirred up by horses' hools is at its deepest.

In eonsequence, an old hand, when he approaches If forl, notices first the direction in which the stream is flowing, and carefully chooses a semi-circular course from bank to hank, making a down-stream as listinct from an up-stream betour. 'Phe reason for lhis is becatuse the mud, gravel and so forth stirred (up) ly farm carts naturnlly lrifts with the current, and as a clirect consefuence of this a for fl which may be about 2 fl . leep if one takes a st raight couse, is nowhere deeper thon about 6 ins. or $x$ ins. if one starts by going slightly down-stream and

he road on the far side. This plan is adopted by almost all competition drivers, for whom a stop in a watersplash usually involves not only wet feet but loss of a premier award.

A series of three very interesting photograplis which is published on this page depicts a very wide watersplash which was included in a fairly recent reliability trial and which brought nearly all the inexperienced competitors to a standstill. The old hands, however, had no difficulty with it, simply because they adopted the necessary precautions.

Onc fact which the photographs clearly emphasize is that it is fatal to attempt to cross a water-splash at speed. The A.C., which is shown, approached the water at about 18 miles an hour in bottom gear, but, eren so, it was unable to get more than half-way across before the engine was flooded and the car came to a standstill.
Whilst the driver and his passenger were endeavouring to extricate the car from its unfortunate pusition, the driver of an Austin Seven approached the splash at a speed of about three miles per hour, made a semicircular down-stream detour, and reached the far side with perfect ease.

On the same day this water-splash was negotiated by a large number of motorcyclists, and here again it was noticeable that the secret of success was to travel as slowly as possible, consistent with maintaining balance.

A fact which is not commonly appreciated is that the braking effect of only a few inches of water is rery


IN THREE CHAPTERS
Through lack of lnowledge of the correct procedure or to impress the laokerson, the driver of this A.C. at tempted to cross a ford at speed. His ardour, his person and his engine were duly damped with ice-cold water.
considerable indeed, and for this reason, in addition to the need for keeping the revolutions high and thus preventing the engine from stopping when the exhaust pipe is submerged, the advisability of keeping up the revs. by slipping the clutch is obrious. We must repeat, however, our waraing to the effect that an exposed clutch, particularly one of the leatherlined variety, should never be freed in the slightest degree when water-splashes are being negotiated.

In the case of cyclecars with air-cooled engines, there is the added danger of fracturing the cylinder or cylinders owing to the too sudden cooling if a water-splash is taken at speed and the water allowed to surge un round the cylinders. The danger exists, also, to a minor degree, with a water-cooled engine which has, nerhaps, been slightly orerheated by rough going just previous to tackling the splash.


WHY are sowe propeller shafts enclosed and others open? Why is there sometimes a sort of girder extending forward from the back axle? and so forth, are the questions which novices often ask, and although the principles of torque and drive should be two of the first to be grasped by those who take the smallest interest in transmission systems, they are often sources of bewilderment or too troublesome to be more than half understood.


This diagram clearly shows what is meant by the term torque reaction. If the road wheel were immovable it is obvious that upon twisting the shaft in the direction shown by the small arrow, the small pinion would tend to climb round the crown wheel, as shown by the larger, dotted arrow.
There are two main forces which have to be provided for when a car is being driven in the conventional manner by means of, say, helical berel gearing in the back axle.

One is the torque reaction. This force can best be explained by assuming that we have a car with an enormously powerful engine, and that, having taken the precaution of rigidly anchoring the rear wheels so that they cannot move in any direction, we "bang" in the clutch with the engine turning orer at a high number of r.p.m.

It should be obrious that although the engine cannot drive the car forward, there yet remains an outlet for the energy being transmitted along the propeller shaft, the result being that the car would somersault backwards. piroting round the back axle. In practice, the force finds an outlet along the path of least resistance by turning the road whecls, but the tendency for the propeller shaft pinion to climb up and round the crown wheel exists all the same, and due provision must be made to prevent it.

An engine would, of course, have to be very powerful even to lift the front of the car of the ground against, say, the reaction caused by very heavily loaded rear wheels, but it is not dificult to conceive what would happen if the driving shaft were very long-it would
bow in the midale. It may be of interest to mention, however, that reaction is largely responsible for the backward somersault of a motorcycle having a large and powerful engine the driver of which is endeavour ing to coax it up a very steep freak gradient.

The second force is that which is required normally

to transmit the Jush of the back wheels to the chassis, and both of these forces are intimateiy associated with the design of torque members and so on.

First of all we may take the most simple instancethat of the Kotchkiss drive-wherein the road springs at the rear not only provide the necossary suspension for the car, but transmit the push of the back axle to the chassis, and prevent any rotary movement of the back axle due to torsional strains.

Such an assembly, when used with semi-elliptic

springs, gives every satisfaction, but very few light cars use this type of suspension at the rear and, consequently, Hotchkiss drive is not popular. It must be understood that with a quarter-elliptic assembly the


The contributor of "Cyclecar Con"nents" gives his experiences with an Aero Morgan during a season's running in 'own and country.

IT was in April last that: I took delivery of ma present Blackburne-eugined Aero Norgan from the LWorks at Malvern Link. My journey homeroughly, 150 miles-began about 11.30 a.m., and, as the car was new, I took care not to drive at more than 30 miles an hour, but for various reasons I did not arrive home until 7 p.m

Before many miles had been covenct I decided that the steering was unduly stiff and that there was a harshness which could not he due entirely to newnes: A stop by the roadsider for a careful examination showed that the majority of the moving parts, such as steering joints, dog clutches, clutch thrust races and so forth, were badly in need of lubricant, which I proceeded to supply. So soon as this was done the machive ran much more sweetly, and the remainder of my journey was accomplished without any untowari incident.

## Lubrication Important.

After a further 200 miles had been covered the car was carefully examined with a view to carrying out any adjustments which might be necessary. but beyond a slightly increased clearance of the ralve tappets here was nothing which reguired attention, although I made a point of Jubricating with oil or grease every moving part, not forgetting the inner thrust race of the clutch, which, as all Morgan owners know, is reached easily by slipping a foot or so of rubber tubing over the nozzle of an oil squirt and directing the end of the tube between the spokies of the clutch ring.

My early experiences with the car showed that the linod was rather pon', as its er ion caused an appal-s. of the mognt to be created, and the ne side pieces of the nood restricted the driving view to side pieces
extent Subsequent experionce has shown the th: providd a teasonable speed can be maintamed, on can leep very dry with the hood furled, as the lo satingposition and gencral build of the sero borl! secmen to sweep the rain over one's head.

A inie amount of the car's mileage has been dune in Londe traflic, and I have found that the Blackhomene engine, ahougb primarily intended for sjecti, can be throttled oven until it beromes almosit as docile as a steam engle, but for traflic driving the clutch, in ins opinion, cold bo better. The hrust race requires rather frequmlubrication, and any excess lubricant. is thrown on to he friction material with which the clutch ring is tace so that after a time slipping occurs, and it is not f easy in wash out the surplus lubricant.
This trouble whit be intirely iraider if the thrmst races were enosed and nuted wTh screlv-down greasers or sonthing of the kind.

## Jatisfactory Braking.

With regardo the brakes, I am loud in ing prases of those on trefront wheels, Which are very powerful and sweet in/acion, and they requrenext to ionatention. The fot orake also is pown 1 al nat relinble, but it seems to pre hat the norm-nient bake lever migh o made more nsy and be made mor
Iriving segt. denied thyt mearcition of eithifi
I think it cangrakes on foal
I think it cangorakes on figreasy road chine, inof the rear-wi-nilled tyoes fivading and, because of Dumlop streuder times cosidered the possibulity of volves er foreraking systh and compling the pedal reflatgnine
to the frout-wheel brakes and the central hand lever to the existing rear-wheel foot brake.

Similarly, at various times, $]$ have toyed with the idea of fitting an accelerator pedal. The closeness of the clutch and brake pedals to each other and to the side of the body aud the frame tube respectively indicate, however, that this might not be an easy job.

The road-holding qualities of the machine are quite good, but I have improved them by fitting B. and D. shock absorbers to the rear suspension. These fittings tend, perhaphs, to make the springing a little harsh at low speeds, but in the open country, when advantage -an be laken of the speediness of the Morgan, the lack wheel clings to the road like a leech, and even had pot-holes can be taken very fast.
I have never had the machine "clocked" for speed, tut, accoreling to speedometer, which I have every roason to bulieve is accurate, I have several times exreeded 70 m.p.h. in top gear, and $48-50$ m.p.h. may casily be obtatined in second, and these speeds are not accouplished at the saterifice of a good petrol consumplion, becatse, with the B. and 13. carburetter, consump tion on long rums is often so low as 50 miles per gallon.
I cannot give oil-consumption figures, becatuse the engine is so economical in this respect that the quantity rised is negligible; in fact, before I became thoroughly used to the machine it caused me no small amount of worry, because I could not rid myself of the idea that the engine was being starved of oil. This idea was dispelled, however, by a slight increase in the number of drips per minute passed by the I3est and Lloyd lubricator almost inmmediately cutting out one cylinder, due to an orer-oiled nlug.

## Engine Improvements.

s have very little fault to find with the Blackburne -mgine, but I must confess that it is a mystery to me why the makers dit inverted cups to the overhead valve rockers and use a hall at the top ends of the push rods. With this arrangement it is impossible to keep the balls and cups lubricated, and the escaping lubricant runs down the tappet rods, where it gathers dust and makes an unsighty mess. By cupping the top ends of the bush rools and fitting balls to the rockers this would be entiody oworconc and increased silence of oneration would result. In faimess to the makers 1 must remarl that this alteration, together with other improvements, is incorporated in their 1926 engines.

I am tonching wood as I write it, but I should like


To sit at the wheel of an Aero-Morgan gives the feeling of being in an aeroplane cockpit. The controls and facia-board dials are handily placed.
to place on record that during the entire wileage of the rar I have not suffered one single puncture, and it has never been necessary to give attention to the tyres beyond occasional slight inflation

I took the precaution, however, a little time ago of changing the rear tyre on to one of the front wheels, and it was whilst doing this that I felt myself inclined lo side with those readers who have written to me at vitrious times and deplored the fact that the Morgan
is not fitted with detachable wheels. The operation of changing the straight-sided tyres is, of course, simplicity itscif.

The chains have given me no trouble whatever and have very seldom required adjustment, whilst, as yet, they show very little signs of wear-a remark which may also be applied to the sprockets.

Being lied down rather closely to town during the week, I take advantage, whenever possible, of indulging in long runs during the week-ends, secure in the knowledge that my machine is as fast as anything I ain likely to meet on the road and that it will climis every hill on which the back wheel can obtain a grip. I feel that it would be superfluous to talk about times and speeds on hills, because everyone knows the capabilities of the Acro-Morgan in this direction, and those


To overcome the blanking effect of the hood sides, "Shacklepin" cut holes as shown in this photo. Weatherproofness was not greatly impaired.
who do not have only to imagine a machine weighing only 7 covt. laden and driven by an engine which will develop) 45 b.h.p. Eren with a bottom gear of 8 to 1 it would take something in the nature of the side of a louse to bring the machine to a standstill.

In counection with long week-end runs, especially at this time of the year, I have a grumble regarding the lighting equipment, which is that the dynamo itself is not large enough to supply the battery with sufficient current. When the headlights are fully on, in the case of my car, and with the dynamo charging, a discharge from the battery is laking place, and it is necessary from time to time to have this charged, a trouble which could be avoided by supplying a dynamo with a larger current output.

Another point which bears on long-distance touring is that of driving comfort. This would be improved considerably on my car by the fitting of a more adequately padded squab to the seats. The present one scems rery hard after a few hours at the wheel. Another 2 ins . or so in the widtl of the body would also be of advantage, especially during the winter months, when heary orercoats are the order of the day.

## Touring Speeds.

Still keeping in mind that we are dealing with long runs, I should say that a cruising speed of 35 to 40 m.p.h. seems rery comfortable, and at this speed the road-holding and steering are rery good, whilst, of course, the machine takes all main-road hills in its stride.

In spite of the fact that the machine has been used in all weathers and often is parked in open spaces for hours at a time, its appearance has not suffered in any way, which goes to show that the paint, rarnish and plating used in its construction are of the very best.

To sum up, I can say, without fear of contradiction, that the Aero-Morgan is a cyclecar which is particularly well adapted to the high-speed touring enthusiast, and at the same time it is a sufficiently all-round vehicle to be suitable also as a hack, but one which, nevertheless, can at all times he relied unon to make drivers of other cars "sit up and take notice."

ADELICBHTPUL road follows the shore of the Bristol Channel all the way from Bristol to Hartland, where the Devon coast runs out in ar rocky headland into the Channel ; along this road there is a wonderful variety of scenery and many ohjects of historic interest. At times it runs cluse to the water or wanders inland to avoid the rocky irregularities of the shore.

13 ristol, standing on the River Avon. is spanned at Clifton by the fine suspension bridge, linking Durdham Downs with the Leigh Wood region on the south, and over the perfect roads of Durdham Downs one may motor without let or hindrance. The view down the Valley of the Avon from the suspension bridge should not be missed. There is promise of an excellent roadway below, where work is at present in full swing along the northern bank of the river, seaward, to Aronmouth.

By Abbot's Leigh a fine road leads to Portisbead nnt Clevedon, a favourite outlet from Bristol ; and Coleridge's cottage may be seen in the Old Church. Road. In the church at Cleredou is the tomb of Arthur Hallam, the hero of Tennyson's "In Memoriam."

## Good Going.

From Clevedon one must bear inland to Congresbury, with its dangerous bridge and old market cross, and join the main road from Bristol to Weston-superMare, whence there is good going all the way to Weston. On Sundays and holidays hundreds of cars may be encountered on this road, and many may be seen on the hard sands at Weston throughout the day.

Pretty, well-wooded country lies south by Uphill, where the roofless church stands high on the hill, a landmark for sailors out at sea. Highloridge is reached by East Brent, and here will be noted a very imposing war memorial with four life-size figures, representing the Serrices. It bears the inscription:-

## "Ye that live on 'mid English paslures green Remember us and think uhat might have been."

The southward trek is checked at Bridgwater, where the westerly road must be taken for Minehead. Bridg. water, or the River Parrett, presents the curious pienomenon of a "bore" twice dails, when, at the turning of the tide, a miniature tidal wave rolls up the bed of the stream.

Thence the road runs under the northern slopes of the Quantock Hills through charming scenery, passing on the way Nether Stowey, where, on the left hand, as one leaves the rillage, stands the cottage inhabited by Coleridge from 1796 to 1798 . Here he wrote "The Ancient Mariner," and entertained Wordsworth, Hazlitt, Charles Lamb and other literary celebrities of his day

At Williton, if one would touch the seaboard, the branch road must be followed to Watchet and retraced to Washford. A little south of the road stand the ruins of Cleeve Abbey, an old Cistercian institution, approuched by a handsome gate-house. The roof of the refectory is of oak and the common room is a wonder fully spacious apartment.

## The " Luttrell Arms.'

The highs road to Minehead misses Dunster altogether, but it is worth while turning aside to pass through this delightful old village. surrounded by richls wooded hills and overlooked by the castle, a massive Flizabethan structure dating from the sixteenth cenlury but possessing a fourteenth-century doorway. The most arresting object of the village, however, is the market house, picturesque and quaint. The "Luttrell Arms," near bs, was probably the house of the Abbot: of Cleeve, and an lizabethan mantelpiece adorns the dining-room.

Twos miles farther west Minehead is entered. This is a pleasant seaside resort, but its beauly is barely recognized by those who merely see its modern streets and hare no time to climb 200 ft . to the higher town. To the sojourner Minehead can offer many delightful rambles about the cliffs and beautiful excursions inland D24


## BY THE SHORES OF-

## A WONDERFUL, VARIETY OI: SCENERY AND MANY OBJECTS OI INTEREST

The town would have been well advised not to disfigure the old fishing quarter will its ugly gasometer.

Soubtless, as one bears west, one's mind becomes engrossed with visions of l'orlock and its famous, or infamous, hill; but there need be no undue fear. lorlock itself, with its narrow streots aud jicturesque cottages, is worthy of inspection, and the enthusiastic climber may relish the thought of the ascent of Dunkery Beacon, the highest point of Exmoor. The riew from the top on a clear day, as might be expected, is particularly fine and extensive.

Those who come straight from the east and who may wish to explore Porlock without passing through Minehead should rememher that there is a by-pass road familiar to those who have taken part in LondonLand's Find runs. The road, which branches off to the left about a mile from Iomster, is hilly, narrow and winding, and one's foot often must be hard down on the accelerator so as to surmount the several hills which are encountered.

Along this road, also, will be found the turning to Porlock Weir, than which there are few more delightful spots on this picturesque coastline. From the Anchor Hotel, an old-fashioned hostelry which well repays a visit both from the point of view of interest and hospitality, one could throw a stone into the sea, and the riew which one gets across the Bristol Channel is one which will live long in the memory.

As a centre for those who propose to make an extended toni of the many surprises to be found in Devon


## A TOURFOR THE ENTHUSIASI WHRTHER IT BE WINTER OR SUMMER

anl Corbwall, the "Anchor " at Porlock Weir possesses beculiar advantages, for by doubling back on one's Iraclis one can soon rejoin the road to I'orlock, which, indeed, may be said to be the gateway of the wonderful (a)atiline which extents from the top of the hill to lliracombe. To return.

Porlock Hill is equal to its repute-very stiff and very awkward-but the toll road enables one to reach the summit by an casy gradient. It is somewhat narrow and has two hair-pin bends, but is most welcome to those who fear the great climb on the old road.

A pause should be made at the top to take in the beauty of the scenery, both inland and along the const, before continuing the run along the ridge of the Culbone hills to Countisbury. Countisbury Hill deserves respect, but need occasion no alarm if brakes be in good condition and one relies largely upon the engine for brake power, using the ordinary brakes to check the speed on the stifier portions of the descent. It is common talk at y,umouth that accidents-and very serious accidents are continually occurring on these North Devon hillsare almost always due to the prolonged use of the brakes instead of employing the engine furing the very steen descents.

Incidentally, it may be mentioned that the road actuilly commences to fall towards Lymouth for a couple of miles or more hefore the last steep descent is reached, and even on this section care must be exercised and blinding" indulged in on no account. Countisbury is in much better condition than it was of sore, haring
been slightly widenn' ${ }^{3}$ and its surface greatly improved.
At the foot of Countisbury is a narrow bridge over the River Lyn at the entrance to beautiful Lynmouth. Surely no town is so delightfully situated and so richly adorned by nature's wealth!

The descent of Countisbury may be avoided altogether by taking the road to Oare in the Badgworthy Valley, a district made famous for all time by Blackmore's "Lorna Doone." The road to Oare, however, is steep and narrow, and the whole way by Brendon to Watersmeet is so narrow that passing is difficult and mostly impossible. Chars-a-bancs use this road, bringing many passengers from Lynton to Lynmouth. Continuing, the road eventually comes out west of Lynton at Barbrook.

## Lynton and Lynmouth:

Here, if Lynton and Lynmouth are in the programme, one must turn right and take the left fork at the top of Lynton Hill. Cars ascend and descend Lynton Hill, for no hill is to day impossible; but, if the motorist has descended Countisbury and proposes ascending Lynton, he will be well advised to walk as far as the first sharp bend to familiarize himself with the nature of the rise, and then he can judge for himself whether it were not better to follow the easier route.marked out by A.A. signs from I,ynmouth to Watersmeet and to Barbrook. If the gradient of Lynton does not cast doubt upon the car's efliciency, the surface may make wheel grip appear a very dubious factor.

No one should leave Lynton without risiting the Valley of Rocks. A good road runs through the valley and the coast scenery here is particularly rugged and beautiful. The Castle Rock is a most imposing mass, rising sheer from the beach far below.

Once the valley of Lynmouth is passed, the road to Parracombe is good. The Parracombe hills, descending and ascending, are not so steep as those at Lynmouth, although the narrow street of the rillage and the turns at the bridge call for great care.

At Blackmoor Gate, where once stood an old toll-gate, as the name suggests, the road turns right and drops down to Combe Martin, a village which practically consists of a single street a mile and a quarter in length. Turning at the shore, one is contronted with pretty sea views more or less all the way to Ilfracombe, where the motorist will find himself at a disadvantage from the fact that no road skirts the sen front, and if he would see the best of the coastline he must be content to run to the harbour and leare the car.

## A Bridge with 24 Arches.

From Ilfracombe the road turns inland, climbing easily the long hill before dropping down to Barnstaple. Southward the road makes company with the River Torridge, running near the water's edge to Bideford, with its wonderful old bridge of 24 arches, no two of which are alike.

Ten miles beyond Bideford, at Clovelly Dykes, the road branches right for Clovelly, and at the top of the steep dip to the rillage, ample accommodation has been made for cars. Here they may be left while one descends this beantiful ravine, where the cobble stones, the steps, the whitewashed cottages, the ord pier and the donkeys seem to have undergone no change during the past half-century.

If one would enjoy Clovelly, it were well to arrive in the evening of a still summer day, when the tripners have taken their departure, and to experience the delight of the silence and the balmy air in this oldworld haunt of peace. The night may be spent at one of the many houses which offer most reasonable and comfortable accommodation. On the following morning one may bid farewell to the unique and memorable spot before the chars-a-bancs begin to arrive from far and near and the restfulness of the village gives place to the tramp of feet and the babel of voices. for Clovelly without silence and peace is surely not Clovelly at all!

Allan Philif.


## LIGHT CAR COMMENT AND ADVICE.

## To Keep Warm.

THE cold weather has revealed to many firstscason motorists chinks in their armour against severe weather. Cold air is very penetratho, and a powerful current coming up through the pedal slots soon causes chilly feet. Much can be done in the direction of excluding draughts with the aid of strips of indiarubber, but the nuisance cannot he entirely obviated. The best plan is to wear really stout boots with thick soles and good leather uppers. Spats are a further protection. The trousers should be secured at the boots with a pair of cycle clips or a cloth anklet. It is equally important to prevent cold air from entering at the sleeve. Warm clothing on the back and chest is of little use if air, finding its way up the sleeve, can pass behind it. Most storm conts have a strap for contracting the cuff, and this. used in conjunction with a pair of gauntlet gloves, provides an effective safeguard.

## A Classic Example.

$\mathrm{A}_{\mathrm{i}}$S the stecring wheel may chill the fingers in time, it is essential that glores should be well lined, and a thin silk glore slipped on first is an admirable heat retainer. On long journeys alcohol should be eschewed as its warmth-producing properties are illusory. There is much virtue, however, in a few lumps of sugar-a fact which minst of us discovered during the "Great Unpleasantness." Drivers should be on their guard against sitting too long at the wheel when cold. A brisk trot up and down the road does wonders in restoring the circulation.

Remember the classic example of the French writer, who kept himself warm throughout the winter on one bucket of coal by carrying it from the cellar to the garret and vice versa whenever he felt too cold to work!

## A Cold Engine Warning.

THIE necessity for treating a cold engine carefully for the first few minutes after starting up was, I think, never more strikingly emphasized than by a working model on view at the Commercial Motor Show. Through crankease windows one was able to see exactly the effect of splash lubrication on an engine runniug at about 150 r.p.m.-roughly "ticklng orer" speed. The bigends appeared to be dipping to a depth of about 1-32 in., and as each dipper struck the oll it merely flipped a small stream of globules of lubricant at в26
low eleration against the crankcase wall. Not any appeared to be thrown up inside the cylinders; in fact, it was obvious that when the big-end of any particular cylinder dipped, the mouth of that cylinder was effectively sealed by its piston. bxactly how much " mist" was hanging in suspension it was impossible to tell, but it may be taken for granted. I think, that with a cold engine mist is conspicuous by its absence. The oil employed in this demonstration engine was of an apparently thin-bodied consistency; if a thicker nil had been employed the significance of the condition no doubt would have been even more pronounced.

## When Starting Up.

T1HE question naturally arises: how, then, should one treat a cold engine? To let it tick over for, say, five minutes may ensure free circulation around the big-end bearings. but what of the cylinders, little-ends and camshaft? 1 would never advocate racing a cold engine, but it certainly seems that a speed greatly in excess of ticking over is mot only permissible but desirable. The views of oil and engine experts would make interesting reading.

## Radiator Lamps.

AFRIEND asked me recently what I considered to be the best place for a radiator safety lamp. and it is the usual practice. I know, to havg thls under the bonnet so that it is adjacent to the radiator. This, of course, is an excellent position, but it fails in one respect, for, whilst it keeps the cooling system well above freering. it does not have any warming effect on the oil in the sump. I make a practice of placing the lamp under the sump if 1 possibly can, or close to it if there is not sufficient ground clearance, so that the double purpose is served, first, of keeping the oil in a comparatively fluid condition. and, secondly, in preventing free\%ing of the cooling water, because the heat which arises from the lamp automatically circulates round the cylinder block and ultimutely finds its way out through the radiator.

## A Puzzled Buyer.

PRIOR to buying a new car, a nelghbour of mine was taken for a demonstration run. He came back wearing a hafled look; and he really could not state whether the car's performance was as good as it ought to be.

The cause of his uncertainty was psychological but simple: he is unused to driving in a car as a
passenger. On the rare occasions when he does so his nerves are on edge, his hair is on end, aud he is only too relieved if stodgy driving or a dirty engine precludes the liveliness to which he is accustomed when at the wheel himself. Having great faith in professionals, however, on this occasion he settled himself down without fear to study the behaviour of the car with a critical eye and ear. but he found the noint of view of a passenger so difterent from that of a driver that he guite distrusted his own judgment. Five minutes at the wheel would have told him more about the ear's suitability for his own requirements than an hour's "demonstration." but he did not care to suggest baking chatre reatizing that, for all the demonstrator knew, he might be a novice or a duffer-

## Demonstration Runs.

MOST of us have discovered that two quite apphle motorists may have decidedly diffurent driving methorls. Therein lies another whitacle in the way of judging a car from the passenger's scat. Recently I was taken out in a new light car myself, and I fancy I was expected to be impressed hy its athility to hang on to top gear at low sheeds withont apmarent distress. Certainly its achievement in this respect was remarkable, but I see little point in crawling up a hill at six miles an hour on tol gear when you can rip up at twenty on second. I'ossibly the engine was one of those we encounter now and then that simply will not rev. in a lively way on second gear, but I was griven no chance to judge of that.

A demonstration run in a new car seems to me to have very little value. Any attempt to make a new engine show off its paces is likely to be harmful; yet it must be diflicult for a demonstrator with a potential customer beside him to resist the temptation to push things up to or beyond prudevt limits. A new car had better be bought on the reputation of the makers and the opinions of owners. A second-hand car is quite another matter: from a trial run in this case there is much that one may learn.

## Counting Cars in Richmond Park.

Wbi had been discussing all-weather equipment, of which the rainproof and windproot qualities now permit us to motor in comfort all the year round. This was last Sunday. After an early lunch we set out for the Portsmouth Road via Richmond lark, and somebody suggested a small bet on the number of cars we should encounter between Richmond and Kingston gates. A lively recollection of the travelling queue that stretched from one end to the other of that road a few weeks ago prompted one of our party to guess "over a hundred." This was unanimously agreed to be absurd, and for the purposes of the wager he was allowed to reduce it to "over fifty." He found a taker, who also-with a shrewd eye on the thermometer and the bleakness of the skywagered another half-crown that the total tally would be under ten.

He was right. On the road in question we met exactly one car. And although the bet only


PUZZLE : FIND THE CAR PARK.

An official "car park," this side road at Sidmouth is blocked by boats, old rubbish, a heap of road-mending material and an old steam boiler. No wonder motorists are puzzled to know where to find the park!
covered cars travelling in the opposite direction to ourselves, we did not overtake any, neither were we overtaken. 'To be strictly accurate, let me add that one more was standing idle inside Kingston Gate.

## The Young Idea.

IWAS chatting the other day to a "Smith Minor" in the making, whose ideas on cars at present are, I regret to say, a little indefinite. The conversation turned on gear ratios, when my young frieud volunteered the information that gear ratios were something to do with the "confidential" or the "influential" in the back axle-he was not sure Which. I gently corrected him. When I retailed the incident to his mother a few moments afterwards she was rirtuously indignant with her erring offspring. "How stupid of bim!" she said. "His dad told him only yesterday that it was called the -deferential.' "

## Humorous Errors.

MOST of us have suffered from printers' errors at one time or another, but a friend of mine seems to be particularly unfortunate. Advertising his 8.3 h.p. Renault for sale in a local paper, he was shocked at seeing the advertisement begin, " $\delta / 3$ lenault car." On writing to point out the error he was given a free insertion; but this time the word Renault became "No fault" (a pardonable mistake but not helpful). Another free insertion was conceded, aud, to make doubly sure, my friend was sent a proof. At his third attempt the comp. had made no mistake; every detail was correct. But, alas! it passed out of his hands to the make-up man, who promptly put the announcement under the general heading of "Poultry and Rab)bits."

This is about as bad as the experience of the V.C. hero, who found himself described in the local paper as "the battle-scared veteran." On his remonstrating the newspaper apologized, adding. "of course, the words used should have been ' bottle-scarred ' ' '


INTERESTING FRENCH THREE-WHEELERS
(Above) The Villard and (right) the Sandford competing in the Gometz le Chatel hill-climb. The Villard, it will be noticed, is a reversal of the conventional arrangement of two wheels in front and one behind.


## sumpers.

IT is clear from the num1 her of letters which we hate received from readers and from the increasing number of minor accidents, that the time is rapidly :hbroaching when all cars will he ditted wi,h fenders fine and aft. This has been whe calse in the United Nitates for a number of Siatre, and American motorists lave found that the use of suitable types of fender plays an important part in protecting valnerable parts of is car when it is indadertently driven into some obstruction or, on the other hand, when some other driver accidentally backs into it.

A natural result of the increasing interest which is heing taken in this country in the use of fenders is the arrival on the market of a considerable number of proprietary fittings of this kind intended for attachment by owner-drivers, and alrady quite a large proportion of cars which are regularly driven in traflic are provided with these diments. A point which arises in connection with this comparatively important develonment is the urgent need for a standardized form of fender. particularly so far as its height above the ground is concerned. It would seem that the time is orerdue for the Royal Automobile Club to turn its attention to this matter and to arrange, perhaps with the Automobile Sub-Committee of the British Engineering Standards Association, to issue a standard schedule covering points in the design of fenders which in their opinion need to be uniform. The question of the height from the ground is ohviously all-important, whilst the distance which fenders should protrude beyond the wheels also needs considerat ${ }^{+}$m.

## Our New Series.

Wit believe that the new series of articles dealing with the performance and the production of prominent makes of small car, which starts in this issue. will prove remarkably attractive. We propose in describing road performance to pay much more attention to questions of fact than to matters of opinion. Thus information concerning consumption, speed on the various gears, braking power, seating accommodation, suspension efticiency and so forth will have first call upon the anace available, and each article will therefore be of useful to owners of the cars in question by

Topics of the Day

reason of the fact that it will show of what they should be capable when in reasonably good tune.

That part of the articles which deals with the production methods will be written, o fai as possible, with a view to describing methods of assembly and. thus helping the owner who carries out his own overhauls to adopt the most expeditious methods. The procedure adopted for testing cars and components, the efliciency of the factory methods and the quality of the workmanship will also come in for their share of praise or criticism, as information of this kind is invaluable for helping an experienced motorist to make up his mind with regard to the suitability of individual cars for his own particular needs. Our aim, howerer, is not to interest only the old hands; the man about to buy his first car will find in this new series no phraseology which he cannot understand and no technical matter which has not a direct bearing upon the desirability or otherwise of the cars under review.

## Why Petrol?

INCREASING attention is being turned to the possibilities of high efficiency car engines burning heavy oil. They offer cheaper power than is obtainable when light spirit is the fuel, whilst almost complete freedom from the risk of fire and the elimination of electrical ignition are among other advantages which they confer. The difficulty is, however, that at preser ${ }^{2}$ there is a number of factors which create the need for complications. Not the least of these is that special apparatus must be employed for starting a heavyoil engine "from cold." In addition, existing types of nower unlt burning heavy oil have not a sufficient range of speed for the purnose of rehicle propulsion, and as it is the range rather than the maximum crankshaft speed which is at fault the matter cannot be satisfactorily adjusted by gearing. Modern light-car petrol engines will operate from about 350 r.p.m. up to nearly 5,000 r.p.m., hat power units obtaining their energy from heavy fuels have a practicable speed range of from $160 \mathrm{r} . \mathrm{p} . \mathrm{m}$. to no more than $600 \mathrm{r} . \mathrm{p} . \mathrm{m}$. When the figures cease to show so wide a divergence and when the starting-up difficulty has been overcome, heary fuels will become widely used.


## ACTIVITIES OF THE INVENTOR.

ATTACKING THE DAZZLE PROBLEM - AN ORIGINAI TWU-STROKL ENGINE -- KEEPING GREASE NIPPLES CLEAN.

## Lamps with Tilting Reflectors.

TNSTEAD of dipping the lamp bodily, Mr. J. Ayer prefers the method of dipping a portion of the reflector in order to lessen the dazzle of lamps for drivers of oncoming velicles. With the exception of the control mechanism, there is nothing to indicate that the lamp is other than is standard type.

Divided rertically, the refector consists of a forward fixed portion (f) and a movable rear one (j). The former bears two arms (g), which carry the pivots (m). a slot is cut vertically in the moving reflector to allow


By dividing the reflector into two and hinging the rear portion the inventor of this lamp hopes to combat dazzle. The bulb remains stationary and is independent of the refector.
it to turn without interfering with the bulb, which is carried in a holder on the body of the lamp.

To pull the reflector downwards the driver operates a control which takes effect on the link (1). The springs (k) return the reflector to the normal position in which it is held by the stop (w).

## Sleeve-valve Two-stroke.

TWWO-STROKE engines always form an attraction for the inventor, and there is doubtless a great future in this direction. A recent patent in the name of M. M. C. A. Goubeaut deals with a type of tro-stroke engine embodying air cooling and a form of sleeve valve.

Working pistons (1) move inside piscon-shaped sleeve valves (4). These are connected by rods to cranks set at 180 degrees to each other, so that the working piston moves inwards as the valve piston slides outwards, and vice versa. The air-cooled cylinders have detachable
travels outwards through the ports (כ) who the anuulat passages and thence to the silencer.

Dual compression is a feature of the design, as can be seen by studying the illustration. The left-hand cylinder only is considered for the moment. As the sleeve moves towards the crankshaft in sucks in mixture throngh the valve (11), which closes when the sleere starts to rise. Compression takes place in the cylinder until the riug of ports in the sleeve register with the channels (7). The gas then rushes into the sleere head until the downward motion cuts it oft'. Trapped in the sleeve, a further compression of the gas occurs as the working piston (1) rises while the sleeve descends.

Overall length is somewhat great, and the reciprocating weight is above that of the conventional two-stroke engine. Deflector pistons, howerer, are olviated, and there seems less possibility of loss of incoming gas, via the exhaust ports, than is generally experienced.

## Dirt-proof Grease Nipples.

DESPITE the advance which the pressure grease gun represents orer former methods of chassis lubrication, many owners complain that they have to clean the majority of the nipples before applying the gun, as the inevitable collection of dirt makes the operation difticult. In this cleaning process clolhes, hands and tempers suffer.
M. A. IKinet deals with these troubles in a simple manner. His invention consists of a cover, similar in shape to the conventional oil cup which surrounds the nipple. All that has to be done is to ratise the springheld lid, and the mipple is then found to be clean and ready for the application of the gun.

On the right is depicted the simple protector for grease-gun nipples referred to in the text.



Piston-shaped sleeve-valves control the gas movements in the novel two-stroke engine illustrated on the left. Large port areas are employed and the inlet is regulated by popper valves.
heads and annular exhnust passages (10), which register with the ports (9) in the valve sleeves.

The course of action is as follows:-Mixture is drawn in through the valves (11) in the cylinder heads and through the channels (7) cut in the cylinder liners (14) and the ports (8) in the sleeves into the spaces between the pistons and the sleeves. So soon as the ports (8) come opposite the sparking plugs (36) the explosion occurs and the gas. when it has nerformed its work, B30

The idea has much to recommend it, the only dificulty which appears to present itself is that the nozzle end of grease guns of the screw-on type is usually. somewhat large, and a protector of sufficient diameter to permit easy engagement of the gun will be of collsiderable size and may be inconvenient in such place as the ends of shackle pins located underneath wing and in awkward crannies where dimensions musty kept small.

On the Road and in the Making.
The Austin Seven

This is the first of a new series of articles which is certain to prove of exceptional interest. The methods employed at the Austin works are as thorough as the performance of the car is rcmarkable.

W7 1: approathed the business of testing the 1026 Austin Seven with mixed feelings, becaluse it really seemed so very unnecessary. Everyone knows
to-day that these remarkable little cars atre capable of taking their recognized complement of passengers over practically any road in the British Isles with absolute certainty, and it therefore seemed quite needless to adopt our usual policy of determining the capabilities of the car on freak hills and so forth
We decided, in consequence. merely to use the car for everyday purposes for a week, making a daily 60 -mile out-and-home run to the oflice and attempting something rather more strenuous during the week-end.

Our first run was from the Austin works at Longbridge, near Birmingham, to London, the car at the time we took it over having completed some 350 miles. It was then a trifle sliff, but not sufliciently so to prevent it from maintaining an excellent average speedas good, in fact, as that of any of the numerous other touring light cars which we have driven along the same road.
The weather on this initial run was exceedingly cold, and the hood and side curtains were, consequently, erected. This moved to be a very simple matter, and the protection which they afforded when in place was really of a very high order indeed, the interior of the

car being quite warm and entirely free from draughts. The presence of the side curtains, however, certainly tends to restrict elbow room when there are two occupants in the front seats both wearing fairly heavy clothes. This criticism applies to most small cars. A further point which needs criticising in connection with the all-weather fquipment is that a driver of 5 ft .11 ins. finds that the forward edge of the hood interrupts his vision so that it is necessary to crouch somewhat in the seat in order to have an uninterrupted view ahead. The need for assuming an uncomfortable position is also noticeable when the hood is lowered, as the top rail of the windscreen comes somewhat in the line of sight. A windscreen half an inch higher would overcome the trouble-a still easier way being slightly to lower the seat, a job which would not present any particular difliculty.

So far as entering and leaving the car are concerned, the hood, when erected, causes little or no trouble, it being high enough to make it unnecessary to stoop unduly.

Our first impressions of the car were that it would be an advantage if the gear lever were closer to the driver-we had the adjustable seat well back-and that a slightly longer clutch travel would be acceptable. It does not take long, however, to accustom oneself to the
small range of morement of the controls, and once the knack has been acquired, full adrantage may be taken of an easy gear change and an ex tremely sweet and efficient clutch. It would not be difficult to improve matters further by eitending the gear lever upwards and backwards to bring. it closer to hand.
The engine of the Austin Seven is of I high-efficiency tyne which will rev. (1) to very high speeds, and if this quality is exploited there is probably no car which is more convenient, speedy or enjoyable to drive in traffic. A willing $30 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. is easily obtained in second speed and the acceleration on this gear is particularly good; the ratio is also low enough to allow a restart to be made from a standstill.
The very light steering, with ample lock, is also most ncceptable when driving in busy streets, for the car can be turned round easily in a road of normal width, whilst noe soon learns that it can be dodged in and out of traftic in a manner that is impossible with any other car.


Gearboxes on test. Every box is run for $1 \frac{1}{}$ hours, and must be silent on each ratio, before it is passed for assembly into a chassis.

We think it would be an advantage if the rear-wheel drums on which the fool brake operates were somewhat larger, as a rapid pull-up calls for the use of the hand brake-which oporates on the front wheels -in addition to the pedal. Uising both brakes together. the Austin Seven can be pulled up in approximately the same disinnce on dry roads as a car with powerful rear-wheel brakes only, but one feels the advantage of the front-wheel braking on greasy roads, when it is possible to apply the full braking force willout the suggesLion of a skid.

On the subject of the controls some mention should be made of the very convenient throttle and ignition levers, which work in a quadrant above the steering column. It is umusual to find accessible controls of this kind on an inexpensive car, and they certainly add materially to the pleasure of driving and to the general comenience of

THEIR FIRST ACQUAINTANCE.
Unlike other cars, the Austin is built on lines to suit the job rather than to follow convention. Note that the running boards and mudguards, for example, form part of the body assembly.


READY FOR THE ROAD.
Within a few minutes of the chassis entering the body shop it emerges as a complete car ready to be driven away to an agent's showroom. There is very little wiringup, etc., to be done.

## ON THE ASSEMBLY TRACK.

The chassis start at the far end of this track as bare frames and emerge ready for the bodies to be mounted. Each mechanic specializes in one particular detail of as sembly. arst to be shown the shops in which the engine is made and erected. Here we found that, from a constructional point of view, the design is every bit as grood as it is from the aspect of pure efficiency. On the assembly bench, for example, only six hours is occupied in putting the whole engine unit together, individual assemblies having been, of course, pre-
viously fitted. This six hours is actually the maximum time, in practice three or fou: being nearer the mark.
speed of assembly is not, howerer, so impressive to the owner-driver as ease of assembly, and on this score the Austin Seven is probably second to none for a four-cylinder unit. It embodies also features which make it particularly casy for an amateur mechanic to overhaul in his own garage. The crliuder block, for example, is separate from the crankcase, which allows the pistons to be inspected without the removal of the unit from the chassis; the cylinder head is also detachable.

The crankshaft, camshaft, and all of the subsidiary drives run on ball races, plain bearings being used only for the big-ends and small-ends. The whole design is idenl, not only from the point of view of sweet running and efliciency, but also from that of low repair bills and ease of overhaul.

Before being mounted in a chassis, each engine is run on the bench for an hour, starting at $800 \mathrm{r} . \mathrm{p} . \mathrm{m}$. and finishing at $1,600 \mathrm{r} . \mathrm{p} . \mathrm{m}$. It is then submitted to inspection before being given a run of a quarter of an hour under load, and during this test each unit must give 10 b.h.p. to 11 b.h.p. at 2,400 r.p.m.

A point which doubtless will interest dustin Seren
Testiny the axle and transmission assembly. Every back axle is run for thour on this

The petrol consumption of the model which we tried wats rather disappointing, being only slightly in excess of $40 \mathrm{~m} . \mathrm{p} . \mathrm{g}$., but this may be attributed, no doubt, to the fact that the engine was brand new and the carburetter sel to provide a mixture rather on the rich side. Oil consumption was negligible, there being no fall in the level during the ti50 miles which we drove the car.

The engine cooling was found to be adequate, no water being added to the radiator during the whole of the time that the car was in our hands.

Perhaps the most impressive feature of the Austin Seven is the exceptional case with which the ting engine does its work. If proner use is made of the gearbox, the engine never labours, there is no vibration from it, and it always sounds perfectly at ease, which is really rather wonderful, in riew of the fact that its capacity is only 749 c.c., whilst the car empty weighs $8 \frac{1}{2}$ cwt.
It was not unnatural, in view of these very praiseworthy attributes, that when we returned to the Austin works to see the methods admped in the production of

owners is the marking on the top of the heads of the aluminium pistons. Varions cabalistic signs will here be seen, the idea being to make it possible to follow the whole history of the engine, so that any fault which might be detected could be traced to the man concerned.

The gearboxes and back axles are tested with the sime care as the engines, machines as shown in the photographs on the preceding pages being used for the iurpose. These tests detect any noisiness or defects which may have escaped previous inspections, and they are conducted with very great care by men who are specialists at the job. The final axle test alone occupies three-quarters of an hour, whilst every gearloox is run for an hour and a half and rejected if the required degree of silence and free running is not obtained.
that the Austin Seven coachwork design is absolutely unique. Each body consists of two principal com ponents-one a sheet-steel frawework, which is secured to the chassis, and the other an aluminium panel, which is welded up to form a single piece and then secured to the steel frame which forms the base. The edges of the aluminium- (hat is, around the door and along the top rail-are then reinforced with a wood framing, the doors and the spare-wheel carrier are fitted, and the body is ready for painting.

This process consists first of spraying on a suitable undercoat and then of "flowing" on a coat of enamel The body is then conveyed on a runway through a heated tunnel, along which it travels, to enmerge at the other end two hours later dry and ready for the attach-


There are two distinct stages in the building of the Austin Seven body. The first is the construction of a sheet-metal framework, shown above, and the second the attachment of the aluminium panel to it, with the result shown in the top right picture. The bottom photograph shows the body being flow-painted.

So far as the testing of these three essential assemblies is concerned, the methods employed in the building of the Austin Seven are as thorough and complete as with the most expensire cars. It is only by this means that the subsequent reliability of the complete cars is assured.

In accordance with accepted up-to-date production methods, the chassis are assembled on a track, bare frames starting at one end of a long runway and travelling slowly down the shop, components being added during their passage; at the far end of the track each chassis emerges in completed form. A temporary radiator is then fitted, the engine is started up, and the chassis driven under its own power into another shop, where the body, complete in every respect, is mounted upon it. The temporary radiator takes the form of a simple length of tubing connecting the water oullet and inlet of the cylinder block.

## Extensive Road Tests.

On his way from the erecting track to the body shop the driver of each chassis is likely to be stopped by an inspector and instructed to deliver it to a department which conducts extensive road tests. Actually, about one chassis in every thirty receives this treatment, and, as there is no one save the responsible oflicial who knows whicl of the particular chassis coming through are to be selected for this special road testing, it is a system whiclı ensures painstaking assembly methods and has proved entirely satisfactory.

The principle of completely finishing the body before lixing it on the classis is very norel, and it has the advantage of facilitating production and avoiding wasteful delnys. As one of the photographs shows, even the wings and running boards are secured permanently in place on the body before it makes the acquaintauce of the chassis.

The body-building shops are of parlicular interest, in B34

ment of the hood, windscreen, mudguards, running boards and so forth.

Those who undersiand the costly nature of manufacturing a car which will give the marked reliability and splendid performance of the Austin Seven marvel that it is so cheap, but if they spent a day, as we did, watching the wonderfully clever production methods that are employed, they would appreciate how it is that the Austin company can give at least $\{200$ worth of value for $£ 149$. In no department does waste exist and in no respect is a costly plan adopted if as good a result can be obtained by overthrowing accepted principles and adopting scientific methods devised specially to facilitate each particular task. There is in the factory a special Efficiency Department, the sole purpose of which is to find better and still better ways of making the fewest pennies produce the largest possible number of parts.

It might be said at the present time that the organization of the Austin factory is an even more wonderful achievement than the performance of its smallest product. Administrative difficulties must be immense, but they have been tackled in a very able manner, with the result that to-day the concern employs over 8,000 workers in the production of the three Austin modelsthe Seven, the Twelve and the Twenty. This may seem a very large number, but it must be remembered that practically every item of the Austin cars is made in the one works, windscreens, hoods and even door hinges boing produced on the spot.

At the present time more than 200 Austin Sevens leave the works each week.

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BEING EXTRACTS FROM THE ADDRESS DELIVERED TO THE AMERICAN CHAMBER OF COMMERCE IN LONDON ON NOVEMBER I7th, 1925, BY MR. J. D. MOONEY, VICE-PRESIDENT OF GENERAL MOTORS CORPORATION

THE operations of a public Company such as the General Motors Corporation can safely be based only on a policy whereby the Corporation undertakes, wherever it operates, to carry on its operations to the advantage generally of public interest and welfare. The public interests of General Motors can be classified into four general groups of people:
Motor Car Owners, Motor Car Agents, the employees of the General Motors Corporation, and the shareholders of the Corporation.
What has been said of the policy and obligations of a public Company may be applied to Vauxhall Motors, Limited, which has been a public Company in Great Britain for many years. The history of this Company shows the same high regard for the interests of these groups and the same constructive endeavour to deal fairly with them.
We find here, then, two public Companies with the same general attitude toward their obligations and the same general policies governing their operations and development. The amalgamation of these two Companies cannot mean, therefore, any changes in their fundamental policies.
We find, in the management of Vauxhall Motors, men of the highest character, men whose conceptions of service to the public command the greatest respect. The Vauxhall car is a fine, high-grade mechanism and the Vauxhall manufacturing organisation a remarkable group of craftsmen. Both of these, the car and the organisation, express again the saying "The institution is but the shadow of the man."
As representatives of the public, who really own General Motors, we feel perfectly safe in leaving the management of the Vauxhall Company entirely in the hands of the men who have made it what it is to-daya Company to be respected and admired.

You will readily understand, therefore, that it is not for me to discuss the detailed plans of Vauxhall Motors, Limited. After all, these plans and policies are entirely in the hands of the present Managing Directors, and it is quite outside of my own direct responsibilities to create these plans or to interpret them to the public. The British public have continued for many years to display their confidence in the Managing Directors who created the Vauxhall Company. As these men will continue to operate the Company, it is to be expected that Vauxhall will continue to command the respect and confidence of the British Public. You may be interested in the reasons that led the General Motors Corporation to believe that a partnership arrangement with a British motor car manufacturing Company could be of mutual advantage to the various people concerned.
We feel that the motor vehicle will continue to occupy a position of increasing importance in relation to the various economic and social developments that will occur during the next several years in the affairs of the Nations of the World. Further, we believe that the use of motor cars will have a remarkable growth in the British Empire. During the next ten years the British Empire will move forward aggressively and rapidly in the development of its own economic coherence and strength. In this movement forward, broad and intensive use of motor transport will be made, as one of the readily available and valuable instruments. During this period we shall witness a rapid increase in the use of motor vchicles in the British Empire. The market for motor vehicles is assured.
For the purposes of sound investment it is necessary that the manufacturing position be determined. There are several economic factors entirely favourable to the manufacture of motor cars in England.
The raw materials are readily available. Industrial and production facilities exist within comparatively limited areas, and transport and communication are easy. There is a complete industrial background, including all of the elements of personnel, management, engineering and mechanical craftsmanship to support a broad manufacturing programme. Skilled labour of the right type is available.
I can summarise the position of the General Motors Corporation, therefore, by stating that we find here the general elements that provide a sound basis for investment in the motor industry: high character values, the amount and character of labour needed, the fundamental production facilities, and an expanding market.

The foregoing statements clearly define the obie:ts of the Gensral Motors Corporation in investing in the British Motor Car Industry. The sarious obligations whish accompany this action are fully recognised, and the values accruing to British manufacturing development, from the discharge of thess obligations, zull bs evident.

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## MOIORING MATTERS IN PARLIAMENT. <br> THE WHITE LINE-FOUR-WHEEL BRAKES-THE ROAD FU.ND - HOUKS OF PARKING - RECKLESS DRIVING.

WITMI the beginning of the autumn siltings of Parlinment, members of the Louse of Commons have lost vo time in directing attention to matters of interest to motorists.

The suestion of the white line in traflic: has been raised by Mr. Day, in reply to whum Col. Ashley, the Minister of Transport, stated that although ho was not nble to quote the number of local anthorities who had adopted the device, his own observation and the reports that he had received showed that it was being widely used. Consultations hand taken place with local autboritics. and the views of chicf constables were
 nble to issue n circular on the use of " white lines," for the suidance of local anthorities generally.
Col. Ashley also informed Mr. 1)ny that he did not think the time had yet arrived for laying down a reguircment makiur the use of four-wheel brakes compulsory. There was an incrensing tendency on the part of motor manafacturers to mavide four-whed brakes, at any rate on private cors.

## Petrol Pumps and Legislation.

The President of the Buard of Trade, in reply in questions, stated that he hoped to introduce legislation this session 10 bring petrol pumps within the full scope of the existing Weights
 legislation was desirnble, it was not anticipated that nny regulations which might be made will involve any material alterations to the pumps.

Mr. 'T' Kennedy asked the Minister nf "rmusport if any decision had bern reached on the subject of diverting nuy part of the Road Fund, permanently or iemporsrity, to purposes other than those for which the fund was estalilished? Lit.-Col. Moare-Brahazon, who replied, said: "The answer is in the nesutive.
Renlying to Col. Applin, Lt.-Col. Monre-Trabazon snid that he was nware of the incolnenicnce and danger arising from the fact that drivers of heavy lorries could not, in many cases, be made aware of overtaking traffic. The question of the compulsory use of reflectors wouli be considered in connection with the Road Vehicles Bill, which Col. Ashley hoped to introduce as soon as I'arliamentary time could be found.

## Rear Lights on Cycles.

No statement could yet be made, he added, with regard to the question of rear lights or red reflectors on cyeles. He had received many representations in regard to the danger to eyclists riding without rear lights on country ronds from overtaking motorcars.
The Fome Secretary told Sir Mever that three persons were reported for leaving cars for more than two hours at approved parking-places oll November 14th, sud one for exceeding the limit of one hour at another parking-place. None of them hod yet been summoned. Sir $F$ Meyer asked if the Home Secretory would consider extending the time limit to longer than two hours after 7 p.m., so that persons driving their
own cars might be able to use the parking-places when they went to a theatre? The Home Secretary said in meet the case of a visit to the thentre. particularly if preceded by dinuer and followed by supper, would involve a somewhat lengthy extension of tho period. If Sir F. Meyer desired it, however, he would consult with Col. Ashley on the matter.
The penalties for persous who were proved to be drunk in charge of motorcars were discussed by the House of Commons during the report stage of the Criminal Justice Bill. The Home Secretary stated that there was a fecling throughout the country that there should be a more severe penalty for a man who was drunk when in chnrge of a motorear.

## Capt. Brass.

Mr. Cassels moved to omit a provision that any person guilty of an offence under sub-section 1 of section 1 of tho Motor Car Act, 190\%, which related to reckless driving, should, on summary conviction, be liable in respect of each offence to imprisonment for a period not excecding four months, a $£$ £j0 fine, or both. Capt. Brass seconded the arnendment and said the wordine of the Act of 1903 with regard $t 0$ reckless driving was so loose that nurbody who exceeded the 20 -mile limit, without reference whatever to the Irafic on the road, could be prosecuted for driving recklessly.

The Home Secretary snid be would accept the amendment. While they wer: engaged in the reconsideration of the whole of the motor laws it would be: unfair to single out one particular offence. That could be dealt with when new motoring legislation was introduceri by Col. Ashley. Several Linbour memmers, however, opposed the amendment. Miss Wilkinson saying she could not understand why the Home Secretary proposed to leave the people of the country at the merey of the reckless motorist until some Bill was brought in next session. The pile of accidents every week, especially in summer, grew higher, and there was now a complete decay in motoring manners. Any yaun: fool nowadays in charge of a car could dash round corners into the midst of traffic without troubling at all. Only a dread of prizon would make a certain class of peopic in charge of cars have a care for other people. The clause was newhel in dinal with road-hnms, whe were making the roads an absolute bugbenr

Sir F. Meyer said that all motorista would be law-breakers until the law was codified and bronght up to date. They all wnnted to do away with reckless lriving, but they could not do it until they obtained the sapnort and sympathy of the motnring public. At present every motorist felt that the police were agninst him. The policemau was a bogy to motorists.

## The Veracity of Policemen.

Lt.-Commander Kenworthy said he was surprised that the "party of law and order" should impugn the veracity of policemen, but Capt. Brass retorted: "The point is that the police have never driven cars and do not know at what rate they are going.'

Eventun'lv the Mouse inrried the nmendment by a majority of 96 votes.

## IHE GOMETZ LE CHATEL HILI.-CLIMB. IMPORTANT MEETING WHICH IS BECOMING MORE AND MORE A SMALL CAR EVENT.

TCIIE sixth anuual Gometz lo Chatel bill-climb, the last Continental sporting event of the year, was held on Suuday last. This event tends each year to become more and more a purely voiturette and cyclecar affinir. Competitors in the big car ciasses were very few, and even the motorcycle classes were poorly supported as compared with previous years. The light car and eyclecar elasses, on the other hand, attracted $n$ most representative eutry of French machines.

Chassagne, in the 1,500 c.c. Darracg, made fastest time of the diy, and incidentally broke the record for the course (all categories). The distance is one kilometre, and the bill is perfectly straight, with a good surface. The last hundred yards are exceedingly steep, however, and this sudden change in the gradient is very decentive. Chassague covered the course in 24 secs., an average speed of 150 k.p.h.

The next best performance of the day was made, as had been expocted, by Mowel in the new racing Amilcar with supercharger. Morel's time was 2it sces., giving him an arerage of 142.557 k.p.h.

In the 1,100 c.c. sporting class, Valatte (Salmson) was first in 303 sees., Morel (Amilear) being second. These twi, makes liave many friendly duels in French sporting events.

In the $\mathbf{1 , 1 0 0}$ c.c. touring class Chretien and Lafont, both in G.A.R. cars, were first and second respectively. The little "Mnximag" (Motos』çoche), driven by Walbron, made a good impression, but was not quite so fast ns had been expected. Widbrou was placed fifth.

The cyclecar classes comprised 111 ferer than seven categories, and as a result nearly every competitor was tirst in his class. Nevertheless, sume of the times mada were really astonishing.

For instance, Doré, in the 750 c.e Sima-Violet, climbed the hill in 363 sers. an average of 98.36 k.p.h., whilst Villard, in his tiny 350 c.e. three wheeler, covered the course in 1 min .4 secs .
The weather was intensely cold, dark and foggy. As a result there was a vers small public attendance. The organiza tion, which was in the hands of M Masve and his belpers of the A.M.C.F' was, as usual, excellent. French hill climbs are run in the most businesslike manner in these days.
$5 S$


We welcome at all times letfers senv to us by readers for publication in these columns, and while taking no responsibility for the opinions expressed therein, glve preference to those letters which deal with subjects of gencral interest. No anonymous communications will be accepted, but the writer may use a nom de plume if desired. To ensure publication in the next issue, letters must reach this office not later than Monday morning. We reserve the right to make any alferations or deletions which we deem necessary.

## RETAINING OIL EFFICIENCY.

## Cast-iron Dust-"Lubricativeness"-A View on Scratch Races.

## Effects of Cast-iron on Oil.

I very interesting point is raised by Mr. House in your issue of Norember 20 th on the subject of what causes thinsing in lubricants. We all know that in use oils become

## What of the Gearbox?

 thin and " poor," due to various causes, and therefore the cust-iron-dust theory mentioned by Mr. Bouse would apneur to be reasonable in the case of engine oils, but I would ask him what light cars there are nowadays with gearboxes in which cast-iron finds a place, except, perhaps, as a cover ylate.So far as my experience goes the boxes are made of aluminium, the gearwheels and shafts of special hardoned steel and the bearings cither of bromze or stecl (ball bearing). It would seem, then, that cast-iron dust could not be present in a gearbox, but steel, being made from iron, may have the same effect, in powder form, upon lubricating oils What do other readers think?
M.J.Inst.E.

## The Definition of a Lubricant.

I was greatly interested in Mr. House's letter on the subject of oil thimning in your issue of November 20th. Unfortunately, I missed the previous correspondence on the subject of "Lubricativeness," but if this term

> What is
> "Oiliness"? is synonymous with "oiliness," I agree with Mr. House that this property of a lubricant lacks precise definition. Nevertheless, it does refer to a definite quality in n lubricant. No doubt Mr. House has referred to the stand:urd work on "Lubricants" bs Archbutt and Decley. This work now requires supplementing in view of the recent researches of Mardy and Doubleday (Proc. Royal Soc., Vol. 100, 101, et seq.) on "Boundary Lubrication."
In "complete" lubricatiou static friction is entirely absent and the surfaces are completely floated apart by a comparatively thick film of lubricant. The resistance varies directly with the viscosity. In " boundary" lubrication, the pressure is great enough to bring the solid surfaces so near that they can influence directly the physical properties of the lubricant. There is much evidence to show that, in such circumstances, the separating film is only one or two molecules thick.

In these circumstances, that lubriennt is most efficient in which the power to form a monomolecular layer is greatest. This power depends in great measure on the preseuce in the lubricant of unsaturated hydrocarbons. These unsaturated liydrocarbons possess certain active chemical groups, and it is presumed, in view of the work of Mardy nud lloubledny.

B40

What the active groups attach themselves to the solid surface :Ind so cause the molecule to orient itself normal to the surface.

The monomolecular layer then strongly resembles a pile carnet, the molecules being represented by the vertical threads. Each of the opposing surfaces is furnished with such a carpet, and sliding occurs where the inactive gronps of the molecules are in contact.
It has long been recognized that the addition of fatty ucids -the molecules of which contain active groups - to mineral oils materially improves their lubricating properties, and the explanation is to be sought in the above. It wild be seen that "oiliness" depends on a large number of factors, sad in the present state of our knowledge of absorption on solid surfaces, I doult if it is possible to define it in very precis? terns.
II. W. Gilmert, M.Sc. (Lond.).

## Cyclecar and Sidecar Races.

A sentence in Mr. H. F. S. Morgan's letter published in your issue dated November 20th might, unless very carefully

Morgans Not vey the impression that sidecars and
Always Scratch. cyclecars have not recently competed against oue another at Ibrooklands, whereas such is certainly not the case. Mr. Morgan says in his letter: " 'Two Wheels,' of course, is mistaken in snying that at B.M.C.R.C. meetings cyclecars are frequently "ligible to compete against sidecars." On the contrary, "Two Wheels" is not mistaken.
Certainly the races, so far as my recollection gocs, were handicaps, and the Morgans have gencrally been on the scratch mark; bat this is not surprising secing that they wave the advantage of 100 c.e. greater cajacity.

However, Morgans are not always scratch, as, on referring to a B.M.C.R.C. programme of the meeting to have been held on May 10th, 1924 (please do not accuse me of digging up ancient history, Mr. Morgan, as this is one of the only two programmes I possess!), I see that in the last race two 1,100 c.c. Morgans were down on the 15 sees. nud 30 secs. marks, against 1,000 c.c. sidecars on the 10 sees. and 15 sees. marks. In other words, one of the Morgans was given a start, despite its large engine. Furthermore, a four-cylinder water-cooled car of 749 c.c. was on the same mark as a $4 \mathrm{~h} . \mathrm{p}$. motorcycle and sidecar!

In not giving the result I am not attempting to conceal anything as the meeting was abandoned owing to a strike amongst the competitors as a protest against certain silencing regulations.

Nemesis.

## A farmous racine motoriose . <br>  <br> STRAIGHT SIDE TYRES

Read this letter from Mr. E. C. Gordon England - the famous Brooklands driver and winner of the 750 c.c. Class in the It has a moral for you.
" I feel that I must drop you a line to tell you how delighted I am with the Straight Side Dunlop Tyres on my racing Austin 7.

As you know, I had unfortunately the other day, while at the Track, a rather nasty crash with my car while travelling at a very high speed. I was conducting some special brake tests, and as a result of this and due to failure on the part of the car, I ran off the Track at about $60 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. and crashed into an iron fence. The car swung right round while-leaving the Track, all the wheels were buckled up, the tyres remained on their rims fully inflated.

1 feel certain that had they been Beaded Edge Covers they would never have stood such treatment, and would have pulled off the rim, and the matter might then have been very much more serious for me, as probably the car would have turned over.

It was in anticipation of such possibilities that I decided to fit Straight Side Dunlops, and you may be sure that my experience will quite determine me to keep to Dunlop Straight Side Tyres in future."

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Price List.
STANDARD FRENCH TOURER £295

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TWO OR FOURSEATER DE LUXE TORPEDO £350

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 NSPIRED by the success of its famous predecessor of pre-war days, the designers of this new De Dion Ten bring an irresistible appeal to the light car owner who prefers the quality built car and all that it implies.
A longer wheelbase than most light cars and a more roomy body in consequence. Cantilever rear springs and balloon tyres to insulate the shock of the roughest road. Four forward speeds, nicely blended to instil confidence on the steepest gradients. An engine that is flexible and fast, and yields approximately $40 \mathrm{~m} . \mathrm{p} . \mathrm{g}$. of fuel, and withal costing but $£ 295$.

If you did not see this model at the Motor Show, let us send you full particulars and the name of our nearest agent, who will be pleased to demonstrate the car and prove how good it really is.

Our Showrooms are only two minutes from Oxford Circus.

# Debion Bouton 

'Phone :
Regent 6533 ${ }_{10} G t . M a r l b o r o u g h S t$.

TO THE READER.-By mentioning "The Light Car and Cyclecar" when replying to

## OUR READERS OPINIONS (contd.).

## Dynamo Driving Belts.

With reference to "Shacklepiu's" recent remarks on tyunmo belts, I would sugarest that his friend, who suffers frow them breaking on inis Morgan, fits a larger pulley to
his dymano. In my case, so far as 1

## Suggestions for

 their Use. remember, Powell and Laumer, Lttd., fitted at Gin. pulley in place of a $4 \frac{1}{2}-\mathrm{in}$. I then had much Jess trouble, and possibly a 7 -in. one would have effected a complete cure. I think the trouble is only prominent on fast Morgans, ns mine never came off at less than 50 m.p.h. The darger pulley not ouly means a less sharp bend for the belt, but a arcater are of contact.1 remember a french Morgan in Madagascar with a friction drive off the fywhed, coupled to the dynamo by a licexible shaft. Athough nu old-fishiened idea, this secmed to zive no trouble nud, had I not sold my muchine, I would hane wiven it a trind.
Winh a strong bevel drive, a Magdyno might do rather well. What docs Mr. Morgan think? F. D. Scort.

* Our correspondeft does not explain how the dymamo - speed is maintained when the drive is geared down by the use of a larger dymmo pulley. $\Lambda$ corresponding increase in the diameter of the flywhecl pulley would not be सaisy to arrange.-ED.


## Off-side Passing.

l w'as following another light car along one of Londun's manin arterins recently when, to my astonishment, seeing the rom ahead blocked, the driver pulled across to the Is it off side so as to pass a taxicab. Correct? of forg wrong so far but, as a matter stationary and was the sole occupier of a lank on which there are usually a dozen vehicles. The action of my light can friend appeared to be just as heinous as bassing a refume on the wrong side. The question natarally arises: Is such a conrse lawful? If so, what is there to prevent one passing a string of taxis on the off side, providing they are all facing in the same direction ats one is travolling? Enquiren.


The point raised by "Enquirer" in the accompanying letter is here shown in pictorial form. Could the driver of car " $C$ " be accused of dangerous driving?

## Keeping the Windscreen Clean.

lecontly, after a loms drive in the rain. I was describing my discomforts to a friend, when he asked me if I lad heard of the lest remedy for a wet windsereen, namely, a

## A Hint and a Query.

 a lump of the rankest plue tabacco obtrica it on the mext wet day, wih excellent effect. It is necessary merely to rul the fanss all neve with the tobacen, and the result is mapical. The "quid" ean conveniently be carried in an oiled-silk bacey pouch, always ready for use. This dodge may be new to some of your readers.A point on which I should like to be enlightened is this. An ironmonger recently told me that it was dangerous to use Byrene co extinguish a fire indoors, as the inmates of the room ere liable to be "gassed" by the chemical, which absorbs all oxymen in the air. I nsed my Prrene on one occasion last zust to put out a Primus stove which was behaving v. The llames were extinguished at once, with no ineven to the wall-paper, and I was not conscious of any ,ions fumes. The windows were, of course, wide onen. it was a biggish room. It is possible that there might some donger in a small enclosed space. Perhaps you can ine sume information on this point?

It is an exculleni habit to carry one's Pyrene into the house every evening and keep it landy for putting out fires at the earliest possible stage, but if there is any risk of beiny erassed, it would le necessary to throw a window open befor" bringing the syringe into action. It would be desirable ta instruct all the inmates of the house in the use of the Pyrenc, and to hold occasional fire-drills to make sure that everyone understod what to do in fin emergency. Spac.

* The fumes of Pytene liguid are in no way harmful to the health, but when combined with those given rift by the extinguished fire might be unpleasant to breath:. therefore veutilation after the fire is desirable.-Ed.


## Bumpers or Fenders?

May we suggest that "fender" is a less aggressive und a more apmropriate term than "bumper"? $\Lambda s$ to height staudardization, it is not possible to make all cars conform

## Essentials of <br> Design.

 to the same figure, but we have surto the same figure, but we have sua,sested to the R.M.C. and to the police that 21 ins. from ground to centre of bat is about as nearly right as possible for the great majority, and they have approved that recommendation. The question of weight is one of very considerable importance to all car owners, but particularly to those for whom you cater. It may therefore interest your readers to know that the materinl of which our fenders is made is only one-thirel the weight of steel, and yet is 25 per cent. stronger.
Again, have your readers considered the pros and cons ot the rigid bar mounted on spring buffers as compared with the fexible bar? No matter how slightly the latter bends. it tends to draw the dumb-irons together and thus imposes straius which the frame was never designed to bear. Leery direct frontal blow is therefore converted to the equivalent of a blow at an angle. The rigid bar is free from that defect, and the spring buffers unon which it is mounted relieve the shock of impnet, but have a fixed and definite limit of yield, so that relief from shock is obtained without loss of protection and without submitting the frame to strains it was not desigued to bear.

Motor Necessities. Lid.

## Unfair Fines.

I notice, with interest, Mr. Douglas Seaton's letter in The Light Car and Cyclecar of November 20th, under the heading "Police Court Discrepancies." I think my own case might interest four readers, so $I$ will
Standardization sive the details. I was charged recently at Wetherby (Yorks.) with "driving to the danger of the public. having regard to the nature of the casc." The eridence for the prosecution was that $I$ was driving a motorcar on the King's highway (a main road) at a speed estimated at $60 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. . which constituted driving to the danger of the public. At the hearing it was agreed by the prosecution that . . . There was $n 0$ traffic on the road at the time There was no accident of any kind, and that I pulled up on my own account to retrieve a cap . . . The streteh of road was about a mile long with a very slight bend. That it was over 22 ft . wide. .. There were no crossroads, side turnings, houses or buildings of any kind on the stretch. . . At any point on the road one could see a quarter of a mile ahead, or more. . . I must know the road very well, having driven over it twice a day for twn years. .. . My car was fitted with f.w.b. and appeared to be under control. . . . It was my first driving offence in cight years.

Although I pleaded " not guilty" to driving to the public danger, I did not deny the estimated speed, and was fined f 10 and my licence was suspended for six months.
Now, for "racing against another car at $45 \mathrm{~m} . \mathrm{ph}$. past five road ends, it the suburbs of a town," a friend was fined $\star 10$ onls.

Another, "for driving through a 10 mile limit at a speed estimated at $45 \mathrm{~m} . \mathrm{p} . \mathrm{h} ., "$ was fined $\mathrm{f5}$ and his licence endorsed.

Agnin. "for driviug on the road at a speed of approsimately $40 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. . knocking down a crelist and causing him to be in hospital for several days," fined $£ 3$ and costs.

I ngree it is time that some standard scale of seutences were instituted.

Bugatti.

Letters intended for publication on these pages should be written clearly, and on one side of the paper only.

OUK READERS' OPINIONS (contd).

## Light Cars in the Colonies.

lieplying to "Antipodean's" letter in your issue of November Gth, there may be agents who are making a practice of charging exorbitant prices over and above the English selling price of the ear, but we,

## The Price

Comparison. as manufacturers, would point out that our agents for A.C. cars, the New Zealand Express Co., Ltd., do not in any way act as be suggests. We have a letter in front of us from our agents, and, comparing the bome price with the tigure they charise customers in New Zealand, plus duty, shipping and so forth, there is very little difference, and it is up to the motoring public to sumport those firms who believe in sumplying at a fair price.

Now, as regards springing for overseas use, A.C. cars are fitted with shock absorbers on the front axle and smubbers on the rear axle, together with stronger springs, which give an increased camber, so as to nllow greater freedon between body and whecls.

We find that there is a nice market for A.C. cars in New Zealand, and our agents are sending us repent orders. Two A.C. cars will be shown at the Exhibition which is being held at Dunedin from now onwards.

As regards spares, these can be obtained from our agents without nuy delay.

> G. J. C. Hurley.
> For A.C. Cars, Ltd.

## Fate of the Sussex Downs-A Reply.

Pause before grieving, J. J. Fall, Nor count the Downland lost because some jerry-builders build Along the southern const :
Hather reflect on all the miles, Virgin and verdant, too,
Where Sussex still can work her wiles On blokes like me and jou!

No houses speckle Ditchling's brow, Mount Caburn, too, is bare ;
Winds that caress the slopes of Firle Find no iutrusion there ;
Nor will you see fresh brick and paint To irk a Southdown rover
Where the slow Cuckmere winds beneath The bluft of Highandover.

Then, courage, brother; shun the vales "Twixt Falmer and the sea:
Peacchaven is past praying for (Nor sceks a prayer from thee).
But if you must have sea and down Together, you may test
How Birling Gap is better than
Those spoiled hills further west.
David II. M. Symon.

## Cold-weather Starting.

Owners of air-cooled twin-cylinder cars who are having dificulty in starting from cold now that wintry weather has arrived may find my experience helpful in solving The Importance their difficulty. Until a few weeks ago of Plugs. -in fact, since the first signs of nutumn-I found that awakening my B.S.A. Ten to life was a rather more liectic than pleasant performance, and, not being gifted with much brawn, I set out to solve the problem another way. In the first place, I washed out the oil sump-an attention that I found was long overdue.
There was on immediate improvement in consequence of the provision of a clean oil supply, but I considered atarting was still too strenuous a task, and consequently turned to the plugs. Excellent results were obtained with the K.L.G. G. 1 plugs (fitted standard), with the gaps set at less than normal, but rumning was not so smooth. I therefore asked the K.L.G. people's advice. This I have acted upon, fitting a pair of their 313 plugs, which have, I understand, only just been put upon the market. The result, so far as my engine is concerned, has been magical. During the past week's severe weather-and my garage is a bleak And draughty one-I have got going with delightful ease. After turning the engine over by hand three or four timen with the air inlet covered, the engine starts at the first application of the Rotax starter.

My experience with the B.S.A. Ten has been of the most pleasurable nature. It is a wonderful litele car, built for hard work and long service. Mine has run over $1(i, 500$ miles- 6.500 during my ownership-and is as good us new, both in nppearance and performance. Apart from the excellence of the car, what has particularly impressed me is the splendid servife of the makers, both in Dirmingham and Coventrs:
On the two oceasions that I have had to ask for spares from Birminghan my order has been executed by return of post. When 1 have run the ear to the Damler works for advice or adjustments, I have received as much consideration from the service department and the repair shon as if I were the owner of one of the firm's magnilient saloons. It is a delight to deal with a staff such as one dinds at the Daimer oflices, and certainly addls to the pleasures of car ownership.

Nicirolas.

## Clever Advertising.

The enclosed has been sent to me as a rejoinder to the advertisement, " No, no, Nancte." Don't you think it worth publishing?

Jowett Cars, Lid.,
If. G. Mrtchela General Manager.

* The nmusing skit referred to is published below, and we think its cleverness will not be questioned.--1'o.


## Over Proof.

That just describes the Jowett-over uroof in design, workmanship, and performance, dilated in nothing excent cost!
$A$ touch of the starter button turns the en. (iin and It sphings to life mmediatels ; once you've Burgundy-parting the Neat little twin will Whisky-ven a Saloon body away speedily.

If you are young and take out charming mad Moselles, perhaps you are not particulnr about comfort, lut just let your Martel you her opinion. Don't buy a car that will break every Heaune in your body, and hasten your friends into their Graves; the good springs and balloon tyres of the Jowett ensure perfect comfort
A full cargo does not mean a tight fit: there's plenty of roum for everybody, for Jowett is the $\mathbf{1 3}$ randy-noting fuality ; the coachwork is good-there's not Champagne ting about it ; the engine is always well oiled, so you need not fear that the water will get lBubhly! That is why it is the littlo engine with the Magnum Pull.
Those who are not for us are a Guinness-io their own cost. So choose wisely, buy a Jowett. Remember, if ever you have any difficulty our service department will Sauterne-ly Claret up for you.

Say When you would like our catalogue; now is the best time to send for it. We want the name and address of everyone who is interested in economical luxury-What's Yours?

## CONDENSED CORRESPONDENCE.

Mr. S. E. Evens, 37, Chestnut Road, West Norwood, London, S.E., writes to say that he will be pleased to co-opernte with ansone in the formation of a club for Austin Seven owners. Ue believes that such a elub, run on the right lines, would receive ample support.

Writing on the question of service, Mr. J. Moncrieff states that recently he suspected the battery of his light car as being the cause of the starter motor's lack of efliciency. He called at the Euston Iquition Co., Ltd., 329, Lisiton Lioad, London, N.W.1, where the battery was tested at once with special apparatus and found to be in good order, the trouble being in the starter switch. Although Mr. Moncrieff had no claim upon the company, the test was carried out fiee of charge.

## INFORMATION WANTED.

A.C.-Experiences wanted regarding the 192512 h.p. twoseater model. Is the seating capacity ample for thres abreast? Are there any special points relating to the com bined gearbox and rear axle?-Gco. Buckingham, 5S, Belvoi Road, St. Andrew's, Bristol.

Austin Seven.-Information required as to petrol c sumption, speed and average rumning costs for $5,000 \mathrm{~m}$ The experieuces of commercial travellers will be especi welcome. Are there any "gadgets" which really do impro the runuing of these care?-Lewis East, 29, Dulverton R Jeicester.

## Accept no other-insist on



When you buy sparking plugs insist on AC Sparking Plugs and you will be sure of good performance.
Because AC are better plugs, over 100 British motor manufacturers have selected them as standard equipment.
In addition, $80 \%$ of all American cars, excluding Ford, are factory equipped with AC Plugs.

Coventry and Warwickshire Annual One Day Reliability Trial October 24th
Driving a Lea-Francis car, Mr. G. Norman Norris was awarded a Gold Medal.

Sutton Coldfield and North Birmingham Automobile Club Reliability Trial

October 31st
Driving a Lea-Francis car, Mr. G. Norman Norris was awarded the Shell Cup and Silver Souvenir Cup for best performance by a Car.


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For all high efficiency Engines

In each case Standard 5/AC Sparking Plugs were used

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AC-SPHINX SPARKING PLUG Co., Ltd. BIRMINGHAM.

AC-OLEO Levallois-Perret FRANCE


# Clear Vision 

Add to your enjoyment by having clean wind screens. These are easily obtained by using Brasso to clean the celluloid. Simply apply Brasso freely and rub with a circular motion until a polish appears. Finish off with a clean cloth. BRASSO cleans celluloid

RECKITTAND SONS LTD.<br>HULL AND<br>LONDON.



> We invilc readers to send us hints sained from their oun experience for inclusion in this feature. Five shillings ulll be paid to the sender of any hint published.

## Cheap Spring Gaiters

Harsh spring action is one of the most ommon troubles on cars not equipped with spring gaiters, as mud and water find their waty in between the leaves. ausing rust and loss of fexibility This formation of rust can be prevented, at little cosit, by the use of the homemade spring gaiters described below It should be noted at the outset that lhese gaiters are mercly a means of kecping out dirt, and lubricant can only bes inserted by removing them. As, how "ver, there should be no need to do this 1, b more often than twice a year in "udinary cirumstances, the added confort well repays the work.
Cutting patherns is the first part of the selheme, brown phaper being a suitable material. Measure the lengths of springs to be covered in each case, reating a semi-clliptic spring as two suparate ones; it should be rememberod liat the front and rear portions of such at spring are often unequal in lenghth,


How a paper pattern should be marked out when making the inexpensive spring gaiters described in the accompanying paragraph. (Inset) The finished gaiter in position, showing the method of holding it in place.
therefore requiring two difierent patteras. The width of the top lenf is required in ench ease, also the two depths of each spring; that is to say, the thickness of the spring at the thickest and thinnest portions.

As shown in ouc of the accompnnying illustrations a fan-like pattern is cut for each differently proportioned spring. and pieces of American cloth are then cut out from the patterns.

After cleaning and lubricating the springs, wrappings of thin felt should be applied to hold the oil. Finally, the gaiter strips are put in place and fixed
with iusulating tape at as many foints as may be necessary. $\Delta$ coat of flexible hood paint adds a finishin: touch and helps to keep out moisture.

The cost is very low, as cheap carpet felt, American cloth and insulating tapo are the only materials required. The sum of 2 s. Gd. should represeut the total outlay for most light cars.

## For the $7.5 \mathrm{~h} . \mathrm{p}$. Citroen.

A fenture of the $7.5 \mathrm{~h} . \mathrm{p}$. Citroen is the fact that. with one exception, every sreaser or oiling point is readily accessible, the delinguent beins the clutchwithdrawal race spigot; in order to lubricate this bearing it is necessary to remove first the flonrboards, then the pedal plate, and, finally, the eluteh housing cover plate.

As regrlar and adequate lubrication is ensential, the following simple nud effective plan will be found to ense the task of maintenance considerably. $\Lambda$ $\frac{1}{1} \frac{1}{6}$-in. hole is dri!led in the centre of the cover plate, and a short length of copper tubing inserted and bent into position, so that the orifice come's lirectly over the point to be lubriented. There is plenty of room for this, and no fears need be entertained of fouling any rotating parts. A touch of solder at the junction with the cover plate will suffice to fix the tube firmly in nosition. leaving about 3 ins. projecting upwards
throunh a small clenrance bole, which should previously be drilled in the pedal plate. A spring-lid lubricator screwed into the top end of the tube completes the job. Oiling will then be found to be a particularly simple oporation, the need for removing of floorbonrds and so forth being entirely eliminated.

## Temporary Spring Repair.

When a road spring breakage occurs the driver is sometimes at a loss to know how to get bis ear to the nearest garage. If it is a semi-clliptic spring that has broken, the matter presents little difficulty, for a suitable block of wood tightly strapped in the position shown in the accompanying sketch will


A simple "get-you-home" device which can be used if a semi-elliptic spring breaks. The wooden block should be secured very firmly so that there is no possibility of it slipping.
satisfactorily support the chassis. The tyre of the wheel affected should be deflated until it is fairly soft, and the car must not be driven fast. In this way quite $n$ long distance may be covered without any damage resultin;.


Queries of general interest will be answered under this heading whenever possible, but a stamped addressed encelope must be enclosed for reply. Telephonlc enquiries cannot be answered.
T.H.f. (Mansfield).-You need bave no fear that the duralumin connecting rods fitted to your new Rhode car will be likely to fail. This metal is used satisfactorily by a large number of makers.
C.U.B. (Ulyerston). - As you canot obtain new brake drums and the old ones are worn so that distortion occurs, why not have flanges welded on to the edge of the drums at right angles to them? This will ensure that they remain circular.
W.J.I. (Waterloo).-No. Oil is not the best lubriennt for the serewed shaft of the Bendix gear of a starter. A little of the Bendix mear of a starter. but many prefer to run this part without lubricant. Thin oil or grease collects dust and the pinion tends.to jam.

WI.J.P. (St. Andrews).-So far is We can gather from the details given in your letter, there will be wo harm in anchoring the semi-ellintic rear springs of your cyclecar at the rear end and fitting the shackles at the forward end.
F.J. (Guildford).-The jerky action of the foot brake which you experience appears to be due to play in the rear axle drise, as the brake in the case tu which you refer acts on a drum behind the gearbox, and any play that may exist between the bevels canses th: snatching of which you comnlain.
C.J. (Millom).-We do not recommend you to change the water in the radiator so often as once a week. Every fresh lot of water contains a eertail amount of solid matter, and this will become deposited upon the water jackots and radiator. If you keep one lot of Water in the rarliator for a reasonabl length of time there is only one quantity of deposit obtained instead of a fresh nmount after each complete replenishment.

JN ANSWER TO YOUN QUERY (contd.).
K.N. (Leek).--Carburetter float needles are so cheap that we think it would hardly be worth your while to hother to grind in the old one, as its face is so badly worn. It is quite a lot if trouble, comparatively, and in the process the seating of the meedle in the bualy of the carbumetter will be unduly worn.
T.V. (Edmonton).-In order to obtain the most comfortable position for liolding the stecring wheel spokes of your $1 \geqslant-20 \mathrm{~h} . \mathrm{p}$. Caltborpe enr, when the front wheels are pointing straight slead, you an adjust the length of the drag link. This will provide a tine setting, but the arop arm shaft is splined, and by means of varying the position of the drop arm oin its shaift you can attain a greater degree of adjustment.
M.E.McD. (London, S.W.11).-To increase the pressure of oil in the engine of your Rover Nine car, the screw undernenth the oil pump in the erankcase, which will be found on the off side in front of the flywheel ensing, should be screwed inwards. Before attempting to move it you will have to slack off the locking nut, and this should be tightened again, of course, upon the completion of the work.
L.C. (Thornton Ifeath).-We do not think you will find it necessary to go to the length of hating a special bag made for the side curtains of your car to protect them when not in use. $\Delta$ straight strip of fannelette or similar material may be used, the projecting legs of the curtain being necommodated in small holes cut in the material, which can then be wrapped round the curtains. Two curtains will fit into a piece of eloth folded like an N .

- F. W. If. (Ǩndal.-You will not find an ordinary flash-lamp bulb satisfnctory in place of the broken one in the ignition warning lamp in your switchbond. The voltage in the case of your enr is six, wherens the standard flash-lamp bulb is not designed to take more than abost half that iressure.
M.C. (Derby).-You enn avoid busy tratlice arteries when leaving London from Euston Road for the North by guing via York Load (King's Cross) straight through to Highgate and joining the North IRoad about haif a mile below Last Fincliley station. You are then on $n$ main thorouglifare, it is true, but the road is wide, the tranlic is not dense, and driving is comparatively ensy. Going straight on, you will come to Tally Mo Corner, Whetstone and 13arnet, where turn left in the midde of the High strect for sit Albans, or carry straight on for Matfield.


## CLUB ITEMS AND SPORTING EVENTS.

## WEST SURREY A.C.

The West Surrey Automobile Club will hold an anti-dazale headinmp demonseration in I'eperliarow Park. Godalining. on Thursday December
loth, at 5.30 lim.

1926 M.C.C. EVENTS
Tino following arc the Notor Cycling Club's fixtures for 1926 :- London to Jand's End run. April 2nd-3rd: Jondon to Edinburgh run, Hay 2lat-22nd: Inter-Cluh, Team Trial, Junc
 August 14th; Iondon to Jugano run, end of August: onoday snoring trial. Oclober 2nd: Brooklands high-specd reliability trinl. October 16th; Lordon to Exeter run, December 27th-

PORTSMOUTM DISTRICT JOWETT CLUB
Tho Portamouth District 'Jowett Club will nold its first social on Saturday. December 5 th. $7^{6}$ Kinchell: Cafe. Oxlord Road, Southaca, at 7 p.m. A whint drive will commenco at 7.15 p.m. and musisamme. Tho price of tickets, including pight relreshments. is 2s. 6d., and thosa intending to bo prosent are requested to apply not later than Derember Srd to the hon. eccretary, Road, Southsca.

## TO CLUB SECRETARIES.

Reports and announcements intended for inclusion in next Friday's issue cf "The Light Car and Cyclecar" must reach us by the first post on Tuesday morning.

## SOUTMERN JOWETT R.C.C.

Tho next rally of the Southern Jowott Light Car Club will take place al Ripley on Sunday
 and ears can be parked Irec of charge at Tho ard garage. which is cloge to Ccdar Hiluse. 2 n . 6 d. . children hall price, ande a special room has been reserved for tho elub. Allor lunch here will be ashort run, and he conditions aro held. 'This will be the last rally $0!$ the scason of the Southern Jowett Tisht Car Club.

## LIVERPOOL M.C.

The second shnual "Revenge" trial will bo Whed hy the I.ircrpool Mutor Club on Norema.m. The course will be abont 70 miles in Irngth, car competitora being allowed a margin of bali a minute carly or late without penally. A snecd-judging test $x$ ill wo held orer a short aection, the result being takon into account in nlinish will bo at the "Shrewsbury irms," llinderton.
On the zame day the Norember sporting irial will be held for general and novice members of the club, this event being open to motnrnell be nit the samu places as for tho ". Revenge"
irial and the course will be about 70 miles in irial and the course will be ahout 70 m

1348

## ULSTER AUTOMOBILE SPORTS CLUB

A social will be beld by the Ulater Automobile
Sporis Clut in Thompson's Restaurant Belfast, Sporis Club in Thompson's Restaurnnt, Belfast,
on Wedncsday, Decembrr $\mathbf{J 6 t h}$, when tho prizes
 will bu dirtributed. The hon. accreary is Mr.
williant Simins, 29 , Clasenont Strect, Bellast.

FORTHCOMING EVENTS

$$
\text { November } 27 .
$$

Moran Club

## November 28.

Western Centro A.-C.ठ. Inter-team
Camberley and District M.C. Thomson
Cup Trial. Oxford M.C. nnd Oxford Unirersity M.C.C. Reliability Trial.

November 29.
Liverpool M.C. "R Revenge: Trial. Southern Jowett L.C.C. Rally.
Brodtord M.C. and L.C.C. Relia bility Triai.
Great Yarmouthmber nd 1.
Whistrict Drivo and Danco.

## December 4.

M.C.C. Annual Dinner.

Dccember 9.
Cxbridga M.C. Annual Dinner
December 10.
Eessx M.C. Annual General Mecting. Weat Surrey A.C. Abli-dazzlo Head lamp Domonstrations.

December 11
Morgan Club. Annual Dinner and December 12.
London-Glouccatcr-London Roliability Brighton and lloro M.C. Annual December 15
J.C.C. Annual Dinner.

December 1 G .
Ulster Automobile Sporia Club. Socia]
December 2 G-27.
Southport M.C. Ccast-to.Coast Trial.
M.C. Decenther 28-29.
M.C.C. L.nndon-Fixeter-Lundon Trial


OXFORD M.C.
To.morrow, November 2gth, the Oxlord
Motnr Clitb and the Oxford University Notor Motar Club and the oxford Unirersity Motor
Celing Club aro holding a reliability erial,
sfarting from Crownarghat 1 . 30 n.m. On Now Ycar's Day tho Oxford Motor Clnt will hold a danco at the Cariax Assembly llooms, Oxford starling at $8.30 \mathrm{p} . \mathrm{m}$.
The annual ESSEX M.C.
The annual general mecting of the Eace
Motor Club will be held at the IRoyal Muto-
mobilo Club (Commition Roosn), M.all Mall, Lon-
 nominationi for omifers should ho sent to the cery Lanc, loondon, W.C.2, not later than De-
M.C.C. LONDON.EXETEA REMINDER.

Intending entrants for the Motor Cscling Clubs annual I.ondon-Fixeter London run aro
reminded that entries closo on December 12 th . and should Lo sonnt to the trials secrectary, Mr.
F. T. Midinke. 84 North End lload, Gildera Green, London, N. W.iv. Anyone who wishea to apply for memberabip to tho Eeneral secrotary. don, W.11, not later thin -iovember Joth.

## WIMBLEDON M.C.'S THIAL

Tho Boon and Porter Cun Trial will he held by the Wimbledon Motor Club on December Gtb and 6th. Tha trial is open the thotorcyele, Jon, Catord, Sunbeam, Ealing and Ensom Arma." Competitors will mect at the "Berke!cy man leazing at 11.1 n.m. The finish wilt also bo sent to Mr. A. J. Clark (Jarvis and Sons,
Led.). Victoria Crescent, Wimbledon, closo to: morrow, November 28th. Tho premicr award fitho Boon and Porter Cup, and ailver cups and blver and bronze medals will also bo given
NEW URSTER AUTOMOBILE CLUB.


#### Abstract

At a well-attended meeting of motorista held in Bellagt on Tuesday, November 17 hh , it was decided to form an Ulster Automobilo Club, affiliated to the Royal Automolillo Club, Lonadiliated to the Royal Automolilo Club, Lon${ }^{\text {A Mr. A. Armitage, asantant secretary of tho }}$ R.A.O. would cstabliab an office in 13cliast to soon as suitable premises werce obtained. The annual subacription to the Dister Club would bencfits of tho R.A.C. and would include tha Eet-you-homo service. Tho R.A.C. Welcomed the idca of forming clubs affiliated to tho parent oody in Iondon, which would be willing to givo Mr. Armitago went on to posed omeo in Belfast would bo under the superintendenco of a manager and would work in conjuncton with the Ulster Automobile Club, the two bodies being practically ono, bnt the sporting sido of motoring would be controlled by the Ulator bods, as they were better awaro of tho local conditlons. Hibbordinato clubs could bo affliaicel to the Olister Automolilo Club, and ehrongh tho latier o the R.A.C. A financial relation between the win bodics was also propoacd. waa considered most generous, and themifage nanimously rianal aso accopted tho agrecment. $A$ pro ultable premises has leen appointed to accur: hose willing to Joln the club.




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## AROUND THE TRADE.

Of the tyres fitted to British ears exhibited at the Scottish Show, 97.21 per cent. were of Dunlop maufacture.

We have received a list of De I)ion-Jouton agents in Great Britain and Ireland, over 30 concerns being included.

We are asked to point out that the address of the head oflices of the Polmer Tyre, Ltil, is 100-10G, Cannon Street, London, E.C. 4, the concern having transfered their head oflices from Shaftesbury Avenue to these premises last April.

The many friends of Mr. lecriand belpech, sales director of the Triplex Safety Giass Co., will learn with regret that he had a serious accident whilst playing golf ial İdinburgh recently, falling heavily, breaking a leg and dislocating an ankle. We wish him a speedy recovery.


Messrs. Mebes and Mebes, 144, Gt. Portland St., London, W.1, have recently supplied the $12-20$ h.p. Calthorpe shown above to Mr. Joseph Holbrooke, the well-known composer.

The Christmas entalogne of Dunhills, Lid., $559-361$, Euston Road, London, N.W.1, has just been issued. it deseribes and illustrates a number of very attractive aceessories which would muke excellent Chrjstmas gifts. Copies of the booklet will be sent to readers on application to the above address.

We have received an attractive eatalogue deseribing the latest $9-20 \mathrm{~h} . \mathrm{p}$. Fover models. Features of the catalogue are excellent coloured illustrations and useful dingrams, showing the borly measurements of the varions models. Copies may be obtained on application to the liover Oo., Ltd., whose nddress is Meteor Works, Coventry.

Particulars have reached us from the Rapolac Co., Ltd., Coustonholm Works, Coustonholm Road, Newlands, Glasgow, of the Rajolac-Co Nitro Cellulose enameling process, which is claimed to give a super finish to motorear coachwork. The cost of finishing ears on the Rapolac-Co principle is rensonable, and it is claitned to be proof against weather, water, spirit, acid, oil, alkalies and beat up to 240 degrecs Fahr.

RESULT OF LIMERICK No. 47.
An exceptionally large entry, which ineluded several excellent lines, made the task of judging last week's Limerick Competition difficult, although amusing. It was eventually decided to award the prize to Mr. E. L. Jeffreys, 15, Oakwood Rond, Golders Green, London, N.W.11, nnd his last line is given below:-

Now Jones did a very rash thing
When he mended a brake-rod with string,
For a crisis arrived.
Through the windsereen he dived,
Said. "Excuse me, 1 must have my ' fing.'"
Among other good lines were:-" Folks said they saw Glass go near Tring." "And it cost him the price of a ring," and "His life hung by a thread tbrough that string."

The small advertiscment columms of "The Light Car and Cyclecar " form a unique marl for the


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## B. 216

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# DEAR SIRS. <br> 7th November, 1925 

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Your personal interest in the car, and the cxcellent service rendered by your expert staff in the few minor adjustments which have been necessary, have been very much appreciated by

Yours faithfully (Signed) D.C.M.
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#### Abstract

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 Other Basincas and Editorial Nollese and Subscription Rates will bo lound at tho end of this section.

## notice.

Uwing to poatal delaya and Irregularitice. it is adrisable to post advertisements EARLY ON MONDAY bi FIRST POST an lar as possible, that they resch us by the finst pooived un Taosulay Lately several adrartiacmento bavo bend rooss

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

A.B.C. A.B.C. Alstors. Led. Walton-on.Thamea. Phone reparirimana
 write for miatacuo i improvement the factury. A BC. owners should A.B.C., 1922. 10hp. 2-acater and doublo dickey, 1926 bods, dynnmo, cash, deferred. Naylors. 406 Garratt İate. Earlaficlechanirilly. S.W.iB. Wimbledon 2041. 9-589
 A.B.C., 1922 aporta 2 -scatcr, fuat overhauled. 1925 east-irnn eylinders flled, new battery, anlendid order, 548 . 5 Putney Bridge Rd., Wandg-
worth. Jutney 2728.591
 A.B.C. 1923 sporth 2seneter dickey eterter e1. 7,000, orerhaulerl.

 A.B.C., 1922 , Regent model, ticlocy, starver. Hartfords, Laxed, apl nd'd
 A.B.C. lato 19234 -seater, conipiole in ercry way, Including all-weathet
 A. 67 g .627
 A.B.C. 1922, 2-soater and diclicy, s55; fully muinped and kuaraniced
 A.B.C.a, ohoice of 2 special- ouper ${ }^{\text {sports; }}$ aleo spovial water-coloerl 4 .
 A.B.C.s Sce our display page No. 10. Benmotors. $50-32$ Iligh
Wandsworth, S.W.18. Latcraca 1509. A.B.C. II. F. Edwards offer 19244 -seater, completely equipped, excellent condition. 80 gus. Below.
A.B.C. 1923,4 -neater, completely equipped, excellent condition, 70
A.B.C., 1922 Regent 2-seater, sunk dickey, fully equinned, catiron
 A.BC., 1926 super-nporta, in stock. absolutely a revelation, 2275. Special bargalna this week-only. Below.
A.B.C. 1923 Regent, juat completels overhauled, repainted recently. apecial aluminium dash many extra fittinga, laxed. special exhanst. A.B.C., 1924 aporta, In Grat-clasa condition throunhout. Rapson tyres
all roind, open exhauat, polished bonnet, 90 gns. Below. A.B.c., 1922 aporta, overhanled and repaint.d, dynamo lighting. in good condition throughout. s60. Below.
Ward and Co. 51 Upper Richtnond Ru., East Puney, S.W. 15. One
minuto from East Putney (District) Station.
$679 \times 89$ A.Q, $1924,12 h \mathrm{p}, 2$ semter, paipred A.C. blue, fally eanipped and in perfect condition, lax paid; this cor was supplied now by us and has
boen in ono owner's hands onls. just_been revarnished as new. price
elf s.

Also 1925 model 2-soater in just as good condition, price 8245 ,
Carbness and Co., Led. 65 Gt . Porliand St., W. 1. Telephone, Lang.
A.C., 1923. Royal 2 seater and diekey, 11.9 Hp, all-weather eqnipment, condition equad to new. taxed to cad of seas, $£ 155$ or exchange. A. Groan, back of No. 9 Biackfriars Si.. Salford. Tel., 2191 Dens. zer-4 38 A.C., 1920, 2 -soater, dynamo lighting, cbock, speedometer, all-weather erupmonk, etc., uns

679 - 883
A.C. 2-seater, 192j-24, 3 - mesther model, rigid curtaing, dictrey, jan.
 A.C., $1921,11 \mathrm{hp}$, 2-aenter and double sunken dickey, starter and lisht-
 A.C., 1925 model 2 -scaler, firat-class throughout, $£ 180$; would uchacie for good Bhp car not carlicr then 1923, with cash balance. Nicssmayo.
Alrerton Arenuc. Poole. Dorset. A.C.1 1921 (lato), 2-seater. doublo dickey, startor and lighting, special with naw tyres, doublo windscreen, smart paintwork (maroon), taxed numerous other extras, very carefully used and in beautiful orcer
 A.c. H. F. Edwa dis ofter 1920 2-seater, ziamer, clock, speedometer, en-
octiont St., W.1. Mayfair 6977 .
 Newington Green, N,16. Clissold 6628 .
A.C. bargains as Nownhame.

192412 hp 4 -seater, absolutely first-class onder, 2225
1925-6 12hp Royal 2 -seater, only run 0,000 , 2270
1925 12hp any-weather, shop-sviled oniy, $£ 255$.
1924 12hp Royal 2-scater, exceplionally nice, s195.
192412 hp ans-weather 2 -seater, repainted. amall mileage, 5175
List of orer 50 used cars nt winter pilcer cent on request.
Nownhm Motor Co., $243-5$ ILammarsmith Rd. W 6 .
Nownham Motor C0., 24ラ-5 ILammarsmith Rd. W.6. 6:9-6G0

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

A.c.s. Soo our display mage No. 10.

Denmotora, 30-32 Migh St. $\begin{gathered}\text { St } \\ 679.639\end{gathered}$
 A.c. 11 hp August. 1921 . 2 sesater. double dickes, painted A.C. bluc. Wlack domed wings. leoks like 1925 model in appmarance, mechanicnlly

 A.C., 2-seater, 12101921 , cos! 9600 , apecially built for racing man, Anst been thoronghly orerhaulet, uned at Brookliand and for siti-elimb1 ng compelitions, trial run, \&125. D. Kennedy, 215 Selhurst Rd.
679 R895



## AMILCAR.

Sole British concenslodnatre for Amilcar parea and carm 'ernon Halla.
25 High St. Fuham. 8 W 6 . $\quad 22 z-83$
AMILCAR. Hoon and Torter. Led.,
Have in stock niselection of suaraniced and rerommended second-hand elors models. Within 5 mins. of Olympia. $159-161$ Castelnau. Barnes, $679-522$
s.W.13. AMILCAR March, 1925, Z-geater Grand Spora, many extran, taxed, acund mechanfical order, 200 guincas. 30 Bracken Gardens. Marnes.
879.524
 ARGO, 2 -seater, 9 hp, 4 -eylinder, w.e.. balloon tyren, repainted, excelIent condition cheap is buy and cheap to run, $£ 22$. Derrington, Gralton
Rd., New Nalden.
$679-$ e502
 Phonc. Museum josi. Light Car Oo., 404-414 Euston Rd., 679.679
ARIEL 9, obummy, speednmeter, dynmo lighbing and staring, 5 new
 AFIEL, 10 h p, 1925 do luxe model, bousht May, 1925, and carcially aned, apeechoundor. mifror, mala ndindsorcon, hood bag. tonnenu cover.

 ARIEL, 10hp. 1925. de luxe, complete and 2s new, car bought Juno and onds don about i, ion mines, nerlect condison, specdomater. horn Euarantecd, prico $£ 180$. Ardon Engibects. Lid. Phone, Brixion 4635 .
AUSTIN 7, 1924, chummy, aelf-slanter and lighter, sparo wheel and Eood equipmene, carefully lreated by ono owner only, suit lady driver,
x97. Fryer, Dove Walk. Uiloxeler.
 AUSTIN 7, 1926, chammy starter, all-weather equipment; exchango
 AUSTIN 7, ${ }^{1923}$ (latel. chummy, iplendid condilicn, owner indren only, Milf. $8 . E^{2} .23$. Private. 679-488 AUSTIN 7, 1925, chummp, fully equipped, as new, $£ 120$; choice of
 Portland St., W. 1. Langham A USTIN 7, 1924, self-starter, speedomoter, tryes good. special runnjng
 AUSTIN 7, dhon eilled, starter model, unrefletered. dono icw miles Roshdalo Rd.. B:ackles. Manchooter. Phone, Cheotham 1iil 102. $679-506$ Austin 7, clummy, 1925 , anall mileage, carclally used, any trial. AUSTiN 7, new, undelivered, olfered for s144 owlag illacss. Hodgen.

 AUSTIN 7, 1924, sports, specübucter, taxerl, iplendid condition, $£ 105$ AUSTIN 7, 1924, chummy, fuily equipped, lawd, brautiful condition,
AUSTIN 7, 1925, chummy, fully equipretet, taxed, new condition, sios.
AUSTIN 7, 1923. chummay, fully equipperl, excellent condition, sibO:

 AUSTIN 7, hato 1923, good condition, dsnamo lighting. A-wheel brakes. Now Malden.

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

 AUSTIN, 7hp, 1925, inxed, prifect little ear. Austin bluc, black winga,
 AUSTIN 7, 1923 Hatel. Just had Complete overhati, all-weather equipp
 ground.
AUSTIN 7, \&80; August, 1923, all-weather, 4 -wheel braken, head and
 AUSTIN 7 chummy, 1923 model, orerhanled, excellent condition, bar-
 AUTOCRAT. Present $11 / 1$ prico s325, my price 90 quincas; 1924


 A.V. registercd 1921, pporting car, dise whels, screen. 5 lamps, $\begin{array}{cc}\text { apecdometer. cheap; exchango motorcycle; weckly payments. } & \text { Wands- } \\ \text { Worth Motor Fxchange, Eibner St., Wandsxorth. }\end{array}$
 isl Whito Hari Lanc, Baract. BAYLISS.THOMAS 1923 10hp 4-scaler, starlicr and Highting, good

 6515 . 673 -0491

 BELSIZE-BRADSHAW, 1925, 2.genter and dickey, $£ 60$ fulls muipped and guaranteod. exohangos or dererred terms. Tho Light Car Ooi9-64.
414 Euston Rd. Loudon. 'Phonc, Muscum 3081. BELSIZEEBRADSHAW, 1924 (Junc), 9hp, all-weather, 2 -ceater, dickey,

 BELSIZERRADSHAW do lusc. 反75. 192\%-3, 2Aenter coupe, Mildine Srameless windowi. detachable bead for sumuier usce cexcellent cords. completo with dynamo ilighting, apecdorncter and oxtra hood ior ammor
 BELSIZERRADSHAW, 1023, dynamo lighting and self-starier, new out, bargain c75: oxchanges or delerred. Phone 3.338 Central Rhind out. Cargain, C75: oxchanges or delcricd. 'Phone 3338 Central. Rbind
and
679.764 EELSIZE-BRADSHAW, 4 -scatcr, oxcellent condition, terms $£ 8$ 10 ind
 BLERIOT.WHIPPET, 1920-21. 2-scator, 9hp, electric 11 ghting, apare
 2562 . $679-4447$


 BUCKINGHAM, $£ 35$; exobangea deforrid nasments, 1922.23 Bucking-


 CALCOTT coure. $10 h \mathrm{~h}$, dyamo ligheting, sunken dickey giod tyres,
 CALCOrT, 2ecolor wilh dickes, dynamo liedrejng, detachablo whecle,
 CALCOTT Servico Depol.
CALCOTT sparea Trado supplicd. Any Calcolt repaira, overhaule exchanges. Deferrect masments. Bargalna in accond-hand Calcoth cara. Also 1926 models in atock.
e79.e450 CALCOrT, 10bp, A-cyllnder, 2-scater; excbarge motoreycle. NownCALTHORPE, 48 gulnens. 1921, 10hp, sports 2 -senter, laxce, 679-704 Whel, now hood, smart anpuarance. splendid condillonj oxehnnges dcCALTHOPPE. Specialist, exchanges, diferred parmonis. Exceptionall nicu $192 \overline{3}-24$ nomi-coupc, all-urathor 2 -remier, dickey, Mghting. sharlar, 4

CALTHORPE do luxo f75, 1922 , 4 -scatcer, drnamo lighting and
 fino tuamer. Saundera Oralgand, Lid., Old Palaco Yard, Richmond, 679.505
Surros. Phone 1326 .

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

CALTHORPE, lato 1923, do luxe 4-ceatcr, smart appearance, fino
 CALTHORPES. See our Jisplay pago No. 10. Benmotors, $30-32$ Hiph
8L, Wandsworih, S.w.18. Hattersea 1509. CARDEN, 1921 , 2-seater, $7 \mathrm{hp}, 2$ speeds: overhauled and in aplendid run
 CARDEN, 1922 , 2-scalcr, electrlo lizhting, juot ovorhauled, enamelled roynl Llue, unart, $£ 15$. quick salc. Dotters only. Milt. Digby
drome, Lincs.

 Molborn, Jondon. 679.61 s
 CITROEN, 7.5hp, 1923 model, 2 seater, excollent condtion, small mile-


 CITROEN J 925 7hn coupe, excellent order, flo5; also $1925 \begin{gathered}679.655 \\ 2.5 \text { sater, }\end{gathered}$




 CITROEN Sprosen, I.td., for Citrocns.


 CITROEN 4 sealet. 11.4 hp , excellent conditlon, terms, 29 10, and 10



 oxtra
Knigitsluridge, s. W.7.
 CITROEN 7, 1925, 3-seater, starter, specdomoter, fully equipped, taxed,
 CITHOEN, $75 \mathrm{hp}, 2$-seater, 1925 (April), Kicensed. Deecmber, mideago. next Georgo Ilotel, South Woodlord, E. 19. Phone, Wanstcad 2595
 CITROEN 7. 1925, clororleal, \{n excellont rondtion, $\frac{f}{} 97$ 10s.i extenled semm 7600 .
 CITROEN 7, 2-acater, 1925, in execilent conditlon, milcago under 2,000,

 CITROEN, $1921,10.4 \mathrm{hp}$, 4 -seator, starter and highting. cood tyres, cr -
 CITNOEN, 1925, 2 -senter, Highting and Atarling, excollent conditton,
 CITROEN, 1926, Clorerleal, 7.5 , brown owner inst havipr taken dee


 CITROEN, $7 \mathrm{hp}, 1924$ model, nearly new condition, just back from Oitroen works, atarting, lightmg and mechanical nondition perioct, new
 CITROENS, choice of 3, 11.4 hp . Enelish fonrcts do luxe, 1925 , 1924.
 CITROEN, 1924, 7 hp , 2 -seater, 1Ighting starting, werf $\operatorname{sico}$ eondition, thronshoul, everhaulourt turn right irom Marble Arch.) Aixsys onen.
CITROEN (Reg, 1921), 2seater, dynamo Zighting, spare wheel, elft, 43 euincas.
Slalion).

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


 CITROEN, solloon, 1922, 3 doors, salf-slarter, speredometer, Lools, Lax paid, perfoct condition. guaranted, s72 10.: deterred paymena. 67 CITROEN, 1923 . 11.4 bp , 2-senter English hads. lange double dickes, speca3 binck alh-weasther equipmeni. filicd With mans extras and an el
CITROEN, $1925,11.4 \mathrm{hp}$, Engiish body, 4 -nator do laxe, completc to makers apecticationi rear screen, etc., appenanco and mechancally as Bishop, Lid., 225a and 287 Hammersmituh Rul., W. 6. Nirerside 679.567 . GITROEN 7, £98, 1924, coupe, dynano, slartor, balloon tyres, special body. luxuriousty equipped dashboard, 2 eboct ric horns, condition equal
 CITROEN $7,565,1923,2$ neater. dsnamo atarter, exceptionally amart

 CLIMAX, 10.日hp, 1925, acmi-sport, 2-senter, dickes, side gcrecna, long ighting and starting fully equipped, mileaze under 500, 8150 or near oiler. 63 ILamilton Rd., Cosentrs. 679 e485 CLULEY. If. F. Edwards offer 1922 10hp 2-scater, sunk dickey, starter,
 CLYNO, 1926 , $1 . \mathrm{w}$ b, occasional 4 -semur, all-weather demonstration mociel, usund futl equipment, makers' guatanice, tax paid, just nicely tun Espex. 679 - 3 SS CLYNO, ${ }^{11} 1$ pp. 1925 . full 4 -scater. exoellent order and appearance, mile
 CLYNO, 1925, starting, lighling, screen, balloona tax, unscratched ama: sileagiey 61.
CLYNO, 192 g model aper-sports, 70 m.p.h., apecial streamlined 2-seater and starline, condition new throughout, few miles only. delivered septem

 CLYNO, 1924, 11 hp 4 seater do luxe, rear screen, shock absorbers, amith Rd. . W.6. CLYNO, late 1925, 3 -6-scater de luxe, in wonderful condition ater litelo uso by only owner, fast and atcered with one tinger. Deloford.
North Row, Marble Arch.
o79-668 CLYNO, 1925, hrand new, shon-aoiled, 8135 , deferred payments, ex Cent. 8539 . CLYNO, 1926 , 4 scater: 11 hn , starter, alt-weather cquipment; exrhange
 CLYNO, occasional ${ }^{4}$-seatcr, is new terms $£ 11$ and 10 paymenta of
 CLYNO, 1924 chummy, fulty equipped, complotely orerhauled. ir High Iolborn, condon. E100, ensh or easy terma. Service Co.. 27.3 COVENTRY.PREMIER, 1922 , merhanacally perfect, electric light, prat
 COVENTRY-PREMIER, 1922, 8hp, 2-\&eator and donblo dickey, dynamo Nood tyres. spare whod, splendid mechanically. 242: ©ash or deferren COVENTRY-PREMIER, 1922, 8hn. 2-3-ceatar and donble dickey, dy
 trial, £70 or near offer. Aveley Nolor Works, ncar Portheot. Eises. Eis COVENTRYPREMIER, 1922, 8hp, dickeg. insurcd till June, splendid COVENTRY-PREMIER, 1923. 10hp. 4-cylinder. 4-sealer, 679-i411 COVENTRYPREMIER, 1922. 2 seater ( 4 wlicels), open to A.A. in
 CROUCH, 95 gulacas, 1923. 11.9 Anzani, 2-door 4-scater, Inst and 986.

CROUCH. II. F. Fdwards offer 192511.9 4-cylinder. 2-seater. all-
 DEEMSTER, 9.5, taxed, starter, electric lighte, good tres, side cur
 DEEMSTER, 9.S. Good cordition, evenings, 227, Relph, 22 Colehern ERIC-CAMPBELL, $5 \overline{5}$ guinevs, $1921,9.5 \mathrm{hp}$, pports 2 -seater, aluminium
 ERIC.CAMPBELL 1924 chummy, dynamio and starter 679-572


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

ERIC.CAMPBELL, 1924, $10 h p$. 4 -cylinder 1.496 c.c. Corentry-Simplex
 pomerful apring gafiers and combined booz and hood corer, in excallene

ERIC-CABPBELL (aborcl. Room for 2 adults and child in front scat, Elao has a womy dickey for two, maria enasily and gets away in second ERIC.CAMPBELL (above), latels been repainted and re-upholstered. Fell
 ERIC-GAMPBELL IT. F. Fdwarda offer immediaio delivers of brand wew 19268 8-20, chummy, complote'g equapped, starter, clock specdo gain erer ollined, 139 guiners. Bejow. 1925 model, 8-20, chumms, compietely equipped,
ERIC.CAMPBEL, 1925 EnMerb Condinon, 98 quimas. Below. completely equippen, starke elock, apedoneter, double windscreen, and 95 guineas: cxabathe's or delerfed. 175 GL Porthad St .W 79.748 FRAZER.NASH, 1925. 3 ceater, Anat lourcr, ex demonatrallon model. in Cloveland St. Wi. Muscum 4232 . 679.731
 FRAZER-NASM, eports, 1925, 2-sener, aluminium body, Anzani en

 GALLOWAY, 1923, 2eenter and diakey, dynamo and ctarter, f95, fully equiphed and gurrantood. Exchanges or deferred ternw. The Light
Cir Oo., 404-414 Euston Rd, London Phone, Muscim 3081, $679-684$ G.N. Before deciding to purchaso an ordinary necond-hand O.N. write Inr particulars of rebuile G.N.s In Euarantced condilion. Godireg
Vlotors, Manor Rd., Richmond. Phone 3024.
zzz-325 G.N.s. Good second-hand cars alwaye in alock. Overhauk. Conver-
sions. Robuilding. Spocial tuning. All aparen otocked. Expert gunranteed work only. lifing your car to the wouthern agenta and ser-
vice, 'Jhe Eatgate Garage, Lewics.
$690-d 886$ C.N.a. Buy a guarantced car and bo ale. Vadum Co., G.N. specialists
 blark hood, new dynamo, dato property of baronet and beautiluly mainG.N. Iate 1922 dark blue. red wings, splendid tgrea, guarantoch, s42.
> C.N., 4 othor 1902 modols from $£ 35$ npwards. 17 gnineas.
 G. N., uper bargain, 1920, 8.7hp, 2-acater, blue, with black wings and



 C.N., flo down and 10 s . weckly, 12 months secures 1921 G.N., elcotric lighting. aparo wheel, good condition. 3 Marlborough Rd.a Gunnora-
biry, Chiswick. C.N., beautiful 2-aenter, dynamo lighting, hood, ncreen, 6 lampa, apecdo-
 G.N., 1922, all-weather. dickey, perfect oondilion, taxed, tools, apares,
musi gell, 440 . Seen Garage, 94 l3rixton Mill.
 C.N. 1923. 4 cylinder, 2 eseater. dickey, dynamo lighting, just compinckly overba
G.N. two. 1921,2 seaters, dynamo lighting, completely overhaulco 18.L, East Putney. 25 kuincas, or exchango molorcycle. 51 Upper Riichmond C.N., 1921, good condition taxed, $£ 22$ 10s.i exchangea deferred. Faling Cur Agency, Boilcau ld. Ealing 3265 . Opposite North Falina
Uuderground. C.N., 1923, 23 -scater, orerbauled and in rorg good order, alominonm $\begin{array}{ll}\text { Qumen's Rd., corner Ohdbam Rd., Manchester. } & 679-766\end{array}$ C.N., 1922-23, 2-seaier and dickey, front handle atarter, dynamo and lal., Baltham. 'Phone, Streatbain 3440 .
 G.N., 1922, eporte aluminlum Iegere model, London-Edinburgh gold medalliat, all wenmesoriox, oxtra lubrication, excellent condition. bargaln,
32 guineag. Whitehall Garage, llampton Curt.
$679-425$ G.N., 1923, laft-drive, epecdometer, taxed, diekey, tno condilion,
f39. $786 a$ ligh Rd., Toltenbam. G.N., 229; exchaggen, deferred payments. 1920-21 G.N. 2-sea!er, dy.
 C.N., 1922, 2seater, in nico condition, $\mathbf{x 4 6}$ only. Phonc. Groydnn 679 e455

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

C. N.s, 1921, 2 sam lers, dynamo, sparo whocl, elc.e good runnèrs, $\mathbf{\rho} 30$ and
 C.N. 1920 dynamo ligheunge, enpeclomoter, otc. 5 delachable wheols, Rood oondition, $x 20$, otiter or oxchnngo motorcyclo. 92 South Side, 679 -0486 GRAHAMEWHITE cyclecar, 1924, perirct, lamph, Klason, footboardes,




 Eattoston Rd. Leston.

 CWYNNE 8, second-hand ara, all modela, overhauled and guarantecd,


 CWYNNE \&, chamma,
Rd., Totenhan





 Nowinglon Grem, N.16. CiMnold 6628.


 Horstman 1923, 2-seater, Anzan! onnine, e.l. and starting, excen-



 oury.



 HUMBERETYE, 8hp, very nice 2-senter, repainted, 3 specds, 679 everinc,

 ${ }_{1355}$ cellent condition. ES5. Paulion Garage, Woiverbamplion. Phiono JOWETT Light Four, 1926, balloon tyma, elf-starter, comploto equip-
 Jow ETT Service glation (London), main agents and specia Hots ${ }^{679-677}$

 Jow ETT LIght Four, new ned once for demonatration, balloong, starter, \&148. Jowcti Agenta, Widcombe Garagc, Bath. Phono 1763. 880 -0296 JOWETT, 1925.7 hp . 2. ssater, dickes, onnecometor side sereens, extran






"THE PETIZOL ENGINE." All about pelrol engincs and high efficiency luning.

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

Jowett. R. G. Gamble, the speciuli:t for the beat accond-hand 19254 ater, mileago 2,700. hardls soiled. halloon 1yrch, extrais, $\varepsilon 135$. 1922 taie n-siater, dickey. ihoroughly overhauled. sood yren £69.
 dowetts. Cash ullors and Morgan exchaggea enterfained. Helow.
 5.OOU, shock absorber: 700 by 80 's, apring gaiter, fully ingured and
tak paid, kept with prido by carclul owner, and practically as new. 75 guin Lato 19232 seater, double dickey greane-gun lubrication,
 55 guineis only, 19222 , veaker, with large dickes, colour maroon,
 JowETT. Kinseys, of Croydon, have sevcral grarantecd used 2 and
 JowETT, 1925 , 4 erater, balloon is res, Just decarbonized, excellent con-


 LAGONDA, $\mathcal{L} 50,1920,11 \mathrm{hp}, 4$-scater, with O.A.V. lighting and startLAGONOA, 2275,1925 , $12-24 \mathrm{hp}$, Al-weather saloou, fully enuipped, many extras, in cxerlint condition. enn bo seen ly anpointment. LAGONDA coupo do luxe, registerod 1921, C.A.V. dsnama and starler,
 LAGONDA, 1925, model S Ealoon, 12.24hp, brand new, makers guaran-
 LAGONDA coupe, 1922 dicket, starler, peedometer, otc., completely
 LAGONDA 1926 4-loor saloon, front-uhecl brakes, pneumatio uphol-
 LAGONDA II. F, Edwards offre 1924 12hp, A.dcor A.seater coupo,

 LACONDA, 270, lato 1922-2J. coupc, doublo dickey, Starter, lax rc-LEA-FRANCIS, y24, amall 4-seater, all-weather equlpment, dyluamo
 LITTLE MIDLAND 2 -scator, dickey, detachable whecla, any trial, 219 10a. Olympai Motor Show of 250 motorcyclos, Morgans and cara. $679 . \mathrm{c} 375$
Wakefield. MARSEAL, $£ 65$ cash, or $£ 30$ down and $£ 1$ per week, including 12


 MARSEAL, 72 guincas, $1923,-$ erery special super-sports, $10 \mathrm{hp}, 2$-soater

 MATCHLESS. II. F. Edwards ofler 1924 model 10, 4 -soater, dynamo,
 MORGANS James and Co (Shefleldi, Lid. $201-1$ Ecciesan Rdd.
 MORGAN Jorrice inepot. Omesal appointed repalrors by the Morgan
 MORGANS, now and wecond-hand; cash exchange delorred. Wa buy MORGAN, 1924 ( lato), Acro Antani, dsama lighting, electrio and bulb hornot disco, spring ganters, mansiator, mats, ${ }^{13 x e d}$, painted red, yery Morgan, 1923 , Grand Prix, M.A.G. ongine, dyamo lighting. apeetio-
 MORGAN, 1925, Fanily model, air-oooled J.A.P , dynamo lighting spoedomotcr, arraightullo Dunlops, milcage only 300 , absolutely like
now. Laxed, 895 . Bowley. Wostwood Md., Dorentry. MORGAN. F.O.C.H.. Led., have severali bargains. E Heath St... HampMORGAN, $1924 \%$ Orand Prix, water-cooled J.A.P., drnamo lighting, bonnet lourcoe, disc, wheola, nickel fitting srand order 2 hroughout, $x 75$.
Willotis, Lannoesold, Wolvcihampton. Phono, Sedgley 61 . $679-501$ MORCAN, Grand Pilx, 1923, M.A.G., 60 nl.p.h., dynamo 11 bbting, elec-



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

MORGAN rumbinuta Filce, Lidd. sifter tho following cocond-hand mod-le: Aoro model 1925 Anzani enginc, a.s. lyrea, colour red. condition an Do luxe, 1923.

Grand Prix, 1923, M.A.G. engine, discs, apcedometcr, dynamo lighting De luxe, 1921, w.e. M.A.G. engine, nice order, 552.
 11.15 Bishopspate Arc., Camomilo St., EC.3. Phone, Arenue 5548. MORGAN. Super bargain. 1924, de luxe, 8hp, walereoolod J.A.P.:
 (1 excellent, 2 practicalls an newl, black hood, windscreen. Ste wart trip
apociumeter, pald, 69 gulneas; another, 1924 Aero, dynamo, 85 glunesis; nother. 1924 Acro, dymaoo 79 guineas, anther, 1923 Grand Prix, dynmmo, 6 Sj guinoas;another, 1922 Grand Prix, repainted, 58 guineas; another 1921
 MORGANS, 55 guineas, 1923. w.-c.. do lure, spare, wheel, good tyres,

 MORGANS. IKomac's havo for diaposal the foltowing guirantecd MORGANS.
1925 Acro, o.b.r. Blackburnc, a.-A. tgrei, straight-through exbaust, hood, pocdometor, finished bluo, low mileage, $£ 120$.
1924 do luxe, w.o. J.A.P., dynamo, apcodometer, unsorled, $\operatorname{sl00}$
1924 Grand Prix finshed bluo, magnificent order, $£ 95$.

1918 Grand Prix, 8hp w.e. J.A.P., fully equipped, overtataled, $\boldsymbol{\rho} 4710$.

MO日GAN 1925, de luxe, 8hp JA.l., very small mileage, insured, C85.

 Mnsured. low mileage, ndistingulshabla irom new, 885 . K.J. Motors Bromloy
MORGAAN, Ramily, M.A.G., w.e., speedometer, sercons, recent completa
orerhaul, any trial. i. Triangle, Goldsworth, Woking. MORGAN, 1923, Acro, Anzani, 200 mile raco model, many extra fittings, condition, pertect throughout, R $^{75}$; exchange or deterred. 218 Kingaton
Idedington. MORGAN, 1925! , G.P., as new, apeedometer, clock, over. $15 \mathrm{res}, 68714 \mathrm{Em}$. MORGAN, G.P., 1918, J.A.P., \&45. Gras. 26 Deronshire Yows Place. MORGAN, G.P., 1921, M.A.G., repainled, dspamo, electric horn, apeedo meter, clock, gattera, mirror, new oversizo back, splendid condition, 52 MORGAN, 1924, tamils raodel, mileage 5,000 , excelient condition. 970 , or oxchange Austin 7 and cash. Jack Grecn. Wcston-super-Mare. zzz-513
 Caulfeld Rd., East Mam. Phone, Grangewood 554. MORGANS, exchangea, deferred paymeata, 1922 G.P. water-cooled. 6
 MorgAN, 1921, Grand l'rix, 10 hp M.A.G., dsnamo lighting, largo head.
 MORGAN, 1924, speedometer, many extrss, new throughout, 65
 MORCAN do luse, 1923, In first-class condition, e60, or exchango motorcyclo part. 51 Upicr Richmond Rd., East Putacy. 679 -x 903 MORGAN, 1924 da luxe JA.P., water-cooled, speedometer, dynamo MoRGAN, $192 j$ do luxi watcr-woled M.A.G. engluc. electric Hgheling. MORGAN, 1921 de puxe, iatcr-cooled M.A.G. engine, electric Hgbling. MURGAN 1923 family, 10bp M.A.G., apeedometer, tax paid, 895.

 Mag set, spedometer, som minazge, 125 . Below. ist continually chang

 mORGGAN, 1922, J.A.r., painted cream, s50, deferred navments ex


 Moncten mion,

 $H O W$
HO DRIVE A CAR." Ninth Edition. The nicetics of sontrol.
2s 6d. r.et. 2s. 9d. post free.

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 N"Mine, 1axed. 1355 : NEW CARDEN. Specinl otter. 1924 family modol. fully equínped and in wonderful condition throughout, sto. This car will accommodato 2
ndults antl 2 or children under marnc tood: others up to 660 . Many ndula ankes or Andrew's. Buclow.
 PRINCESS 19234 -ceater, 8 bp, 3 zpecds, reverse, dynamo, ppare whecl,
 RENAULT 1924 8 Jibp cloverlea!. 4-wheel brakes, excellent coudition,
f135: delerred or part exclangc. Goorgo Newman and Co., 369 Euneon eli35: deferred or part exchange. . Goorgo Nowman and Co., 369 Eunton
Rd, fondon RENAULT, 1925 model, 8. 3 hp , long chassis 2 -scater coupe, excellent
 RENAULT, Sproson, Lid., for Remnulls.
1924 2-acnter, sunken dickey, billoons, taxcd, sma!l mileage, many

 RHODE, 1922, hale, ocrasional lour, electric lighting, oversizo tyrak,
 RHODE, 11 hp . 1924 light 4 -scater. maroon, black wing, dyonmo
 RMODE, 1924 modoh 11 hp, taxed, with dilferentiat, fult 4 -seater, ligh 1 . ing and starting, mechanicul condition, magnigcent, hood, side screcns,
 Whiceleyal. Park 924 . 27 Quecn s Nows, Bayswaicr 679 -777
RHODE, 1922, chummy, selfatartcr, a.w. curtains, Tonniksen, many
 RHODE, 1924, LJght Four. all-wcather, many extraz, milleage 15,000

 RICHARDSON, $1920-21$. 8.9 J.A.T. engino, 2 -scater dickey overfood ordor. dyamo lighting, bargain $\mathbf{5} 20$; exchanges. Rlind and Co. Guecn'a Rd., corner of Oidham Rd., Mancheater. RICHARDSON, 1921, 8hp. 2eenter and dickry, is apeeds and revcrec,
 RILEY. Lexes Motor Workn, Sussex. All Rilags completely overhauled
belore ottered. RILEY. Great bargain. Lato 1921 Riles. 11 hp , 4 -scator, de luxo able front oenta, aelf-btarier, dynamo lightinc, clock, apeedometer, auto

 ROVER ${ }^{\text {B }}$ 1924. 2-seater and dickey, mechanical condition guarantecd,
 Ken. 8558-9.
ROVER, 1925. 9hp, do luxc, 4-nozter model, suigntly yated condition,
 ROVER 8, 1923, ehummy model, aplendid running order, mechanical


 ROVER 8. 48 Ens.: 1922, de luxe, dynamo, apare whecl, good tyice
 ROVER 8, 69 gns. ; 1924, 4-scatcr (late), dynamo, sparo wheel, all-


 ROVER, Bhp 1923 , late. 2-scater, larac dickey. taxed, all-weather, perloct condition, 560 or near. Agera. Stables, Kennington palace. $679-6413$ ROVER, 1922. 8 hn , de luxe 2-scater. specdometer, clock, Klaxan and bult horn, good tyres, repainted, taycd, insured, R55. Bucklor, 42
Nova Rd., Croydon.
$679-809$ ROVER ${ }^{\prime}, 1923$, 2 scatar, double dickey. excellent rondition through Wimbledon. new Michelin lyres, 反57. Owacr, 103 Boulupark encio
ROVER 9, 1925, taxed, insured, all acceasorica,
Purley.



## SECONDHAND

LIGHT CARS AND CYCLECARS FOR SALE (continued).
ROVER, 1924 8hy, 2 scaler nnd double sunken dickey, dynamo, gcod
 ROVER, 1922 Bhip, 2 seter, dynamo, mechanfcally sound, good lyres,
 ROVER, 1923. Bhn, 2 seater do tuxo couno, At, and s., leather uplo!
 ROVER, 1924, 8hp, 4 -scalor, excellent randition, 8 E80, exrhanges and






 tio 85. grincan
 ROVER 8 , 45 gns.: 1922 , 2 -scatcr, djnamo 1 zabting, ilock, sncedo-
 ROVEA 8 brand-ncw 2 -scater de luxe, 1925 , sell-starter clocke, sprecho
 Coventry. ROVER 8, do luxe, 1922 overhauled renainted, condifion to new, 65
 ROVER 日, 1923 , chummy modei, dsnamo lighting and siatori tixed




 ROVER 19212 .eater, dynamo lighting. 5 delachables, riry nice oriler

 ROVER, 1924, 2-ceater and dickes. 2R5, futidy equipped and guaran Leed; excliange or delempe torme. Tho Light Oar Co., 404 -414 1Dustor
Rd. Iondon. Phone Musoum 3081.
$679-687$
 ROVEA 4 -seater, 1924. 8hp; terms, $£ 9$ and 10 payments ol $\& 9$, or Cisuld 6628. ROVER 2-spator, Bhp f5 and 10 payments of e5, or cash ${ }^{2501}$ 6628 .
ROVER 81, several. C45 to R65: exchange motorcycles, balanco de

 ROVER 2 seater, ${ }^{1922}$ 8hp, $£ 6$ 10s, and 10 parments of $5610 \mathrm{~s} .$. of


 ROVER 8a, 1921 to $1923, \varepsilon 36$ to $£ 52$ : smart and ready lor the road Marold Simons, 201 Marc St., Lackncy, E.9. Clianold 5018. ROVER 8, 1921, dynamo, apare, speedometer, laxed, E33: 1923 good condition, Loxed 854 . Derrinclon, Gralton Rd. Nex

 ROVER 8. Finchley Motors offer 1924 2scater and double: aunken dickey, dynamo and starter, laxed, only one onver, aunorb condi-
tion, Uargain, $\mathbf{8 8 0} \mathbf{1 3 2} \mathbf{H i g h}$ Rd. E. Finchley. Phonc, 2338 . ROVER, 1921, 8hp, 2-seater, dymamo llahing, very gocd order. bar gain e 42 10s.: exchanges arranged. Rhind and Co., Quen's. Rd. $679-763$
corner Oldham Rd., Manchester.
 Kayawater. ROVER 8, 1923 , chummy, fully equipned, excellene condstion. 65 suineas: axchanges or deferred. Clark. 223 Hammeramith Rd. W.6.
" THE MOTOR ELECTRICAL MANUAL." Re-writlen and containing over 100 ncul
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illustrations. 2s. 6d. net.
2s. 9d. dost free.

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ROVER 8 , Novomber, 1923, do Inxe model, $f 5310$., leather upholthry. olock, specdomicicr and dickuy seat, all tyrcs aro new and the whole in capilial condition, any trial. Apply. 368 Hornsey 679 e 46 ROVER, 1924, 8hp coupe, repainted, excellent order, 290 : 19248 hp age. e80. Norrnham Molor Co., $24 \frac{3}{3}-5$ Hammonsmith Rd., w. $6 .{ }_{69}$ ROVER 8, 1923 , 2-scaler, roally fino condition, $£ 60$. Relow. ROVER 8, 1923 coupro, blarler, amall mileagc, £80. Below.
 ROVER, $1924-5$ model, $9-20,4$-scatcr, lighting, starter and complete.
 ROVER, lat $1921,8 \mathrm{hg}$, 2 -soater, dynamo Ughting, opeedomeder, gaiters

SALMSON. Apuly to the London distributora, Gordon Watney and Co.
 SALMSON, 1924. fiteel with enecinl J-seater body, one-man hood, side
 SALMSON. 1924. 10-15 eports. filled with gnecial 2 -seater and dickey
 SALMSON 1923 10hp 4 seatcr de luxe, starter and lighting, clock

SALMSON, 1724 , apnrls 2-a-aler, excellent condition, fast. balloon 1 gres,
 SARMSON, $10-15 \mathrm{bp}$, absolutely tho hatest model, completo with solfatarter, dymano liphing and usual crulpment. Atted with a special semi nly wons teing and trving, $£ 155$ Exchangod and delerred term arraigeti. 5 Fuincy Bridge Rd. Wandaworth. Putney 2728
 SALMSON, 1924. Enghin 2-seacer bods. Etarter and lightinf. excellent gull Ril W'G 679-754
 SALMSON, 1924, 10hp, de luxe English bods, 2-scaicr, sunk double dickey. completely equirnea, ex. SALMSON 1924 , 10 hp sworls 2 scater. fully equipped. IIartiords, exelte: canthanges or delerred. 175 Gt . Portland St . W. 1 . Ataytair 679.749 SALMSON 1922.5 2-sealer., E65, complete; exchange motoregcie, balance leichmond j 295 . SALMSOH 2 -senter, dickey, evcellent condition: terms, $\mathbf{f 7} 10 \mathrm{~s}$. and 10
 SALMSON $1 \vdots 25$ molel 2scater, s100; 1924 dillo, f85; both fully
 SALMSON, 192J, Figlish 2-seator and double dickes. 6no order, ss80, 2983. SALMSON 1924 sports, lighting, blartar and complete. apecially tuned and vary omart, hargin, E90 exchaviges. casy ierms, cle., arranged.
Cummings, 101 Fulbam Kd., London, S.W.J. SINGER 1924 10hp 4-seater, painted blue, elcctric lights, sell-atarter,
 SINGER, 1924. 2-seater, exceplionally nice ordor, any inspection or
 SINGER, 1925, 10-26, do luxe, 4 -senter, new end of June. condition
 SINGER, 1924. JOhp. 2-scater de luve, dsnamo, starter. dickey, ns new,

SINGER 1924 do luxe 4-seater, in perfect condition throughout, rigid a.w. curtaing and tull equipment. pairted maroon, til20: cxchango or
 SINGER, 1924 , luxe 4 -seat mont, taxed find insured, numeroua oxtrns. extrencly smart and in Kound order ibroughnul. f120: cash. exchange, defrried payments. SINGER. Safcty Firstl Ernost Grimaldi. Led., authorized Singo


SINGER, vity lato 1924, 4-soater de luxe, fully equipped, painted hlue 2.volt starting and lighting set, perlect condition throughout. $£ 125$. Another as nhove, Grst recistered in 1925, f130. Exchangcs, extended payments. Mara nd Bishop, LId., 225a and 227 Ilammerimith Rd.
W.6. Niveraide 2250 .
679.566

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SINGER, 1925. aloon, as now, milcago 2.000, 2235 . Samncr Bron.
 SINGER car, 2-seater, diokey, in food running order, cheap. ${ }_{6} 11311$, SINGER 10, very smart 2ecater, dickey, new tyrea ant hood, dynamo, 679 c 400 SINGER coupe, 1921 , 10 hp , starker and lighting, good tyrea, mechanic

SINGER 1924 do luye 4 -scater
 Queen:s Rd., corner Oldham Rd., Manchester.
 ton Heath. Pliono 1121.
SINGER, 1920, 2-seater splendid 0 ndition dart
 South Norwood. SINGER, 1924. 4-acater, dynamolighting starting, taxed, just had $\boldsymbol{E} 40$
 SINGER, 1922 10hp, all-weather collapsible coupe, donhle dickey, da luxo incdet, with Sunons 201 Maro St. Hackncy, E.g. Clisald. 5018 . Alwayn ouen.
SINGER 2-acater, 1921 . 10 hp , good condition terms $f 510$. 5 .es 10 payments of th 10s.. or eash E55. Mrdiarthy's Motors, 49 Gircen SINGER, 1925. 2-scaler, dickes, condition as new, carefully nsed, 2150 , singen 679 e490 SINGER 2-icaier, good tyrcs, splendid appearance and condition, f20; exchanges, delerred. Makin and Marrison, 327 High Rd., Chiswick. $679-725$
Phone, 558 . SINGER, 1924 (Izte). 4 -seater de laxe, nll-weather screens, starter. clock, apecdomotor, Laxed, beautiful condition, Eli5; exchanges terma SINGER 19264 -seater, lohp, starter, all. weather equipmenti excbange
 SINGER 1919 2-seater. 1Ghp, itarter, lighting, f42: exchange motorcycle. balance delerred. Newnham's Showrooms, Heath Jd. Twicken-
ham. Richmond 3293 . SINGER 1923 -acater, laxed, extremely sood condition, f80; exchanges. Norringtons. 116 Hampstend Rd., NW.1. Muscum 9078 . ${ }^{\text {ex }}$ SINGER 1923 4seater be luxe, just bad $£ 40$ overtianl, as new, $\mathcal{£} 95$. SINGER 1922 coupe, taxed, f65: exchangea deterred pasments. D. Railton and Co., 6 Chapel St., Sallord, Manchester. Cent. 8539. 679 ec 467 SINGER winter bargaina at Nicwohamsl
1926 10-26hp 4 -sesict de laxe, maroon, as new, $f 210$. 1926 10-26lip limoosing saloon, soiled only. 2265 .
1925 10-26bp 4-scater de luxe, absolutely as neच., $\leq 170$.
1925 10-26b limouslne saloon, maroon, nico crucr. 1925 .
Another, slightly carli $\geq \mathrm{r}$, $£ 155$
192410 hp 4-meater de luxo. in particularly nice order, 2115.
1924 10hp 4 -acater de luxe, gobd condition, $x 90$.
Full list of orer 50 good second-hand cars sent on request.
Newnilam Motor Co., 243-5 Hammersmith IUd., W.6. 679-663
SINGER, 1925, 4,seater de iuxe, pieumatic uphoistery. Triplex screena atuall muease, as now. hared, 2175 . Below.
SINGER, 1924, 4 seater de luxe, mileage 3.000 only, exceptional condi-
 SINGER 10, 1916, 3 and reverse. sparo wheel. diciey spat. specdomerer. dynamo, etc., licensed, in excertionally good condition. 518 10n. Ted SINGER, F1924, 2-seater, painted yrey, complete with full equipment. and in exceptionally good condition. tax naid. price flis. Caithaces $679-443$
STANDARD, 1923 . 11.4 hp , 2 -scater and double eunken dickey, starter


 STANDARD, $9.8 \mathrm{hp}, 1923$ 2seater with double dickey, electric lighting and starling. 5 lamps, all-weather equipment, 287 10s. Mslam, 197
London Rd. Croydou. STANDARD, $1925,11 \mathrm{hp}$. 4 -ieater do luxe, tased small milcage, ax new
 STANDARD 192411.4 2-seater do luse, in exceptional mecbanical candieton and rory smart, rigid a-w curtaine laxed, ello ternus or (4th turn rigbt from Marble Arch). Alwaje open. Rd. Padd. 679.5 Ji .
STANDARD, 1925 , 11.4 hp , 4 scater, mileage 3,000 only, and condition throughout as new, Always open.


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 STANDARD. 1923 (October). 11.4 . 4 sesaler, do luxe, all-wert her model, mydethorpe Ru, Balham.

679-757

 Standard. Lioncl MI. Pugh offery the fotoming:-
STANDARD, 1926, 11.4, Piccadilly saloon, practicalls brand new, STANDARD, 1924, 11.4, 2seater, Dew condition, taxed. \&110. Beiow.
 STANDERD, 1925 , Kinoon moaer. 4 -scater, ialtho used. just decar.



 iw. i, Langham 1998.
 doudon. Phone, Museum 3081. Wht Car Co., 404-414 Easion $679-689$ STANDARD, 1925 model, Piccadily raloon, $11.4,3.000$ miles only, in
 STANDARD. H. F. Edmands ollor 192511.4 Plcoadlly Elloon, com.
 standard. Mooren. Preato, Croydon agenta for Slandard cart Promptat delisory ner modela with exicient eervice to follow. Large tock second-hand cara to select from. Delerred payments and ex hanges arianged. SWIFT. Moores 1'resto, Crosion agents Switt cara. Prompteat delivery new mode Deferred parmenta and exchangen arranged. North Ear Cososdon. Phone 2624 . pasmenta and exchangell arranged. North End
 SWIFT, £22; exchanges, delerred payments. Swlft, 10hp, 2 cylinders, ascater, 5 detachable whecls, hood, acreen, 5 lamps, domed wings; ex 442 . colldition. geabride, SWIFT, 1923, 10 up, chummy, aido curtains, in excellent condition,
£ 87 IO.
679.562 SWIFT. F.O.C.II., Lid, hare 1921-22 10 hp 2 -seater, dickey. Just orerWIFT, 1925, 101nn, 4 -seater de luxe, findebed maroon, absolu79-470 SWIFT, 1925 , 10 inn, 4 -seater de luxe, findehed maroon, absolutoly unahaøgate, Bolton; also 246-252 Dcansgaw, Manchester. 679-453 SWIFY 10hp 1922 2-scater, dickey, repainted, nico oondition. 679 Phone,
Croydon 2572 . SWIFT. IF. F. Eklwards oller 1924 10hp, 2-scater, annk dickes, com-
 SWIFY cara brand-new 1925 modelm at 260 under list price, 10 hp aloons, last prico s285, our price 5225 . 4 -seaters, liot $\Sigma 235$, our prico f199; and 2-seaters, list s235, our price f195. Theso cars aro fully

TALBOr, 95 gulneas, late 1923, 8-18, 2 -seater, dickey, 2 6naro wheela
 YALBOT 1923 coupe, $8.18 \mathrm{bp}, \mathrm{E}^{2} 140$ : instalmenta or exchange. Sutton,
5 Windsor Court, W.2.
TALBOT 1922 8-18bp semi-aporia, special aluminjum body rhich coat

TALBOT 1923 10-23hp (c9 tax) 2-acater and annk-in dickey, condition throughout equal to new, taxed, 2165 or exchange. A. Grecn, back of TALBOT, 10-23, 1924, 4-seater, many extras, In beantifal condition bargaln, si95. Wilson, 7 Eccleston St. Victorla 1366. 679.493

 TALBOT 8, 1924 (late), taxed, insured, in 1925 condition, e135: ox | tended terms. W. Beasley, late Rey (established 1900), 374 Euston Rd |
| :--- |
| Muacum 7600. |
| 679.458 | TALBOrs. Sen our display page No. 10. Benmotors, 30.32 Ifigh St.,

Wianderorth. S.w.18.
679.647 TALBOT-DARRACQ, $1923,8-18 \mathrm{hp}, 88$ 1ax, 2-scater and dickey, lightngt ad hartis, rigid aluer hied equp £75. bargain. 7 Sylvan 1111, Cryital Palace. Phone, Sydenham 223 .
WQLSELEY cara. Mooros Presto, Crosdon agenta. Proraplast delivery new modela with eficient кervice to lollow: large stock accond-hand cara Ln select Irom. Deferred payments and exchangea arranged. North End,
Crosdon. Phone 2624 . WOLSELEY, 7 hp, 2 -seater, 1924 model, double dickey, electric starter,


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WOLSELEY 7, 1923, dymamo, specdometer, good tsrea, milenge 8,000,
 WOLSELEY, $1923,10 \mathrm{hp}$, 2-seater de luxe and dickey, first class order.
\& 100 , delerred terms. Bartletts, 93 Gt . Portland 561
 WOLSELEY, 1921, 1Ohp, 2 scater, tax paid, excellent condition, s80: Loudon. WOLSELEY, C88 exchangez, delerred paymenta: 1922 Wolsoley, 10hp,

 WOLSELEY, 1Olip, 2-acater, 1924, shock absorbers, new tyres, renainted,
any inspection, $\mathcal{L 1 6 0 , ~ n o ~ o f t e r s . ~} 46$ Onslow Gardens, N.10. $679-c 423$ WOLSELEYS. Sco our display paco No. 10. Beamolors, $30-32$ Mich
St., Wandsworth, S.W.18. Batcerscat 1509.
679.616 WOLSELEY, s25 will sec son on the road with new $11-22$ hp $£ 235$ hand car writo or call for dotaila, "Motoring Out of Income. Kingaway
Molor Co., 69 Gt. Quecn St., Kingsway. W.C.2. Molborn 5972. 679-782 WOLSELEYS, 21923 (the great sear) ilo luxe $5-5 \ldots a l$ ar, ill perfect North Row, Marble Arch.
WOLSELEY 1924 11hp, A-ales, lighting, etarter, all-weather equip ment nad complete, wargain, £125; exchange, easy terms, ete, arpanged.
Cummings, 101 Fulham Rd, Lodon. S.W. ̈.

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DEEMSTER original jigs, pattcras and drawings,
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MORGAN. Metropolitan Area Scrvice Depot. Elec, Lid. oldcatand



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St., Salford, Manclicster. Cont. 8539 . SCOTT SOCIABLES. Scolt Sociablen. We are the only expert repairera and sparc parta elockista in the South. Satialaction Euarantech. Wel.
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