## 





THE WORD "CORD"AS APPLIED TO TYRE CONSTRUCTION WOULD HAVE NO SIGNIFI: CANCE TO-DAY BUT FOR PALMER ACHIEVEMENTS ON roAd AND TRACK DURING THE PAST TWENTY YEARS.

## here are a few specimen prices

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Telegrams-"Tyricord, Westcent, London." Telephone-1214 Gerrard ( 5 lines).

## Until we meet again

M ${ }^{\text {EANWHILE-the }}$ its wasty Jowett continues Wits way. un hill and down dale, with that unfailing reliability for which it is famed. To the country gentleman the Jowett is to-day what the cob was jesterday - good-looking, sporting, and dependable. It engenders a feeling of personal pride of possession from the ing of personal pride of possession from the so little- $£ 220$ for the 1 wo Seater and $£ 2+5$ for the Four-Seater.
May wic send you a Catalogue ? Write to Dept. "F." folfett cars limited, idle, bradFord




10 h.p. 2-3.Seater "Popular" Model, with dickey
seat and mechanical starier ... $\begin{array}{llll}12 \text { b.p. 2-3-Seater "Popular" Model, with dickey } \\ \text { seat } & \ldots & \ldots & \ldots \\ \ldots & \ldots & \ldots & \ldots \\ \text { Gns. }\end{array}$ $12 \mathrm{~h} . \mathrm{p}$. "All-weather" Model, with dickey seat and
electric stanter... ..... ... 12 h.p. 4 -Seater Touring, with "All-weather" side



## 

## Motor Comfortably

 at a Low Cost.A smart, roomy, comfortable, well. sprung body, mounted on a chassis which runs as smoothly as a moonbeam - that's the Deemster. Go for a trialrun. Note the silence, the speed, the up-hill and-down-dale equanimily of each one of this handsome car quartelle-and keep we!l in mind that the beauty of construction ensures all-round economy. from initial cost onuard.

THE OGSTON MOTOR CO. (1918), Ltd., Diemster Works, Victoria Road, Acton, W.3. (Neareat Station: Wllesder Junction.) Teleplione Nos. . . . Chiswisk 204t.2015. Ask for address of nearest agent.


## Decide on a Hands <br> 260 Gns.

 Your choice weill make you " huptpy cever after" If you know a good deal about Cars from an expert point of view, every ride you take in your Hands will be reiserated endorsement of your sound judgment. If you are a novice you will derive much satisfaction from possessing a car which makes motoring so free from trouble In either case, the elegance, the comfort, and the exceedingly low costs are matters which make Hands ownership exceedingly pleasing. Orders for 1923 Mode's are being rapidly dealt with in rotation lllustrated Booklet and address of local Agent will be sent free on request.G. W. HANDS MOTOR CO.

Lion Works,
BARN STREET, BIRMINGHAM

Sole Distributing Agcnts for London and Ni'nt: The CECIL MOTOR CO 69, Gi. Quecn Strect, Kingsway, W.C.I.

+ Scater (as slietch)


## 280 Gns.

## Coupe (11.22 h.p.)

330 Gns.


117


Friction Discs supplied for G.W.K. and other makes of friction-driven cars. CONDENSED SPECIFICATION. 4 cyl. 10 hp . Water cooled. Tyres: $700 \times 80 \mathrm{~mm}$. Friction Dirc Transmission, Spare Wheeland Tyre. f speeds a id reverse.
Dynatro Electric Lighting. Wheels : 1'ressed Steel. Full Equipment. Dickey Seat.

## Other Models and Prices : Gns. Two-Seater . 245 Four-Seater ... 250 Coupe ... ... 295

"UNIT" SERVICE CAR
With 10 h.p. 4-Cyl. Water-Cooled Engine.

Send today for full particulars of this wonderful value in Light Cars. ROTARY UNITS, LTD., Wooburn Green, Bucks.
'Orams: "Rotary, Wooburn Grect." 'Phonc: Bourne End tis.

## 

 3 SEATED UTILITY CAR 3 SEATED UTILITY CAR

Wride for Folder D.
STONELEIGH MOTORS, LIMITED,
Brameh of ARMSTRONG SIDDELEY MOTORS, LTD., Parksibe, Coventry. London: 7S, Marylebone Lane, Wiginore Street, W,I.
MOTORING AT LOWEST

「昷HEStoneleigh 3 Seated Lulity Car is the only light car carrying three people and a child in comfort -plenty of room for all.
It has ample space for luwage. Its aluminium body is light, Inoks smart, and can be cleaned in a few minutes. Tine Stoneleigh, being air-conded, can be kept in an open shad without harm. Costs $1 \frac{1}{2} d$. permile 10 run. With the back seat: semored it cais carry


COST
" 2.




The Car outside tha Casino at Monte Carlo.

Paignton,
S. Devon

Dear Sirs.
"Having seen in the papers an account of a motor tour through France by two ladies. 1 think it might interest you to know that I and another lady, three months ago, did a similar trip in a 1920 Calthorpe Sports car. well laden with luggage and spares.
" Starting from here, we crossed to Havre and thence to Monte Carlo va Grenoble and the Alps. We spent six nights on the road going down. and the same number on the return journey, which was made via the Rhone Valley. The roads going down were never better than fair. except over the Alps, but up the Rhone Valley they were unspeakably bad, with huge pot-holes two or three feet square. The heat on the trip down was intense, buteven so, the car wient like a bird. W'e arrived back here after a 2,000 miles trip. with out having had an involuntary stop-except for punclures. This I think should prove the worth of the Calthorpe. The model I have has done 17.000 miles-self driven-and sofar I have experienced no engine trouble. I feel sure you will be interested in hearing of this fine performance of such a light car. I should have written you this before, but have kept on postponing doing so.

Yours faithfully.
Signed (Mrs.) M.L.S--

THE CLASS LIGHT CAR.

## Calthorpe Motor Co. (1912), Limited,

 BORDESLEY GREEN, BIRMINGHAM.Wholesule and Retail Agents for Loudon and lome and Eastern Counties

MANN. EGERTON \& COMPANY
Shourrooms
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"Worth more than any other-" is what most CLULEY owners think of their car, and with good reason, for the CLULEY is not only good to look upon, but extremely serviceable, workmanlike and economical.

3

$\mathrm{A}^{\mathrm{N}}$N examination of the chassis reveals its sturdy and carefully planned design, which will withstand for years the strain and stresses of the road. The 4 -cylinder water cooled $10.5 \mathrm{~h} . \mathrm{p}$. engine is noticeable for its clean, workmanlike design and careful finish to every detail.

S

POWER enough for any emergency is provided. with a speed on top gear of $50 \mathrm{~m} . \mathrm{ph}$., which can be throttled down to $5 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. a flexibility which makes it a most pleasing car to handle in traffic.

## $B$

ATHOROUGH all-weather equipment, semielliptic springing, deep upholstery, ample leg room, andan adjustable rake to the steering wheel. make the CLULEY Two-Seater cne of the most comfortable of light cars of the year. The Coupe Model is further equipped with a $V$ fronted windscreen. glass windows in both doors. Bedford cord upholstery and leather hood, the whole forming an exceptionally smart little car.

## 32

10.5 h.p. Two-Seater All-weather £350 10.5 h.p. Coupe ... ... ... £450 Lucas Lighting and Starier filted to boih Models.

Illustrated particulars and address of nearest
Agent posf free on application from CLARKE, CLULEY \& CO., GLOBE WORKS. COVENTRY.
Established 1590.



## The Cycle back-light Prowlean

Absence of cycle rear-lights has caused countless nerveracking shocks to motorists at night, many serious and minor accidents, and not a little temporary ill-feeling. A far happier spirit on the King's Highway might be engendered if cyclists carried rear-lights - a practice which would make for far greater safety to themselves as well as to motorists.

Lookfor No. jof the serics and cut them out to kecp for refercucc.

## PRATTS "For the better Spirit on the Road"



ANCLO-AMERICAN OIL CO. LTD. 36. QUEEN ANNE'S CATE, LONDON, S.W.I.

We are Exhibiting at the SCOTTISH MOTOR SHOW STAND 112


A CONVINCING TESTIMONIAL:-The Easting Two-Panel Screen from Lord POWERSCOURT.

POWERSCOURT, ENNISKERRY: Decomber 23nd. 1922.

Eastings Windscrems, Ltd.
Dear Sirs.
$I$ uritc to inform yon how satis fact iy I find sons
trindscreen.
$I$ silected it from among all scue windectrens which I will the recint Motor Shote for the car and twhen removed nowe ennmat it can be wsed or not on the lugsage at the butck.
lesues no bulky filtings instrity.
(b) Its exirme 1 Lightess.
(C) No dass 10 bratk. in a very small space and its
(e) It can be foldid xp in alctind stowed under any driving apron wratped round the catc anybody.
seat whene it is no nuisanct car and experiencet no difficulty 1 fitted it myseif to my car wire very pleased with it in whatever. My passengers ting cuey respect alad it 1 consider it an cxathlont article in ceers resp tay which should sell very well for all open torn ing cans the to their lines. are notorious for sold in Yuars truly. POWERSCOURT

POIVERSCOUKT.


EASTING WINDSCREENS, LTD 132, STEELHOUSE LANE, BIKMIN HAM. And 24, FINSBURY SQUARF:. L.ONIDON
 ABSOLUTE SILENCE GUARANTEED.
Supplied to fit integral with Engine, or as a Separate Unit
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Associated
wilh
"The Motor Boat."

TEMPLE PRESS LIMITED. Molishern also of "The Mntor What: Thic CommerciaiMutor,". The
7-15. Rosetery Acline" ondon, E.C. 1



Woodworigh

Are you adding to the Dazzle Danger? ? You Need Not!
A TURN of the Graham Dimmer Switch gives you three graduations: "DIM" for driving through partly lit streets and to save current when the car is standing: "SİMI" gives you a comfortable driving light without glare : while "IVULI." enables you to utilise the full power of your lamps. The "OlF"" position allows the headlights to be switched of iudependently of the Dyumo Switchhoard.
You save current in the "SEMI" and "DIM" "positions without the risk of overlieatins.
For fitting to dashbeard or steering column (state which preferrell) alio state voltage and wattage of head lamps when ordering. or ask for illustrated pamphlet "L.C."

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## There are Light Cars and Light Cars and-the RHODE

the light car that is different, that cuis out the uncomfortabie unprorected Dickey, and brings your occasional exira passengers all uncer the hood.
This catalogue tells you all about it - gives you its full specification. illustrates it, and, in your own bes: interests. should be carefuly studied before yuu mase your purchase for nine teen twenty-three.
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and economy. for apart from the purchase price-

## $\AA 235$

the car it illustrates is particularly low in upkeep costs - TAX $£$ IO. PETROL CONSUMPTION 4050 m.pg. - SPEED 40-50 m.p.h.
It will give you good and lasting service, for It Is built to do so by men who are enthissias:ic motorists themselves - built in a British factory where only British b:ains, British capital, and gritish labour are employed
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## Scientific Construction

 combines Lightness with Strength, reduces Running CostsAFTER developing the 'A-C' Chassis to its present remarkably high efficiency we devoted our attention to reducing weight. The object of this is to reduce running costs and lighten the h.p. load, and increase strength and durability.

The 1923 'A-C' Models are the result of a long series of very exacting tests. Scientific construction and expert selection of materials have enabled us to make a very substantial reduction of weight, thereby giving less stress on tyres, springs, and mechanism as a whole, and greater mileage trom every gallon of spirit.

Motor experts know how great a saving in every direction follows reduction of weight, when strength and durability are maintained. A few minutes' consideration will convince the veriest novice of the obvious logic of "Cause and Effect" in this connection.

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181. Hercules Rd., Lambeth, London, S.E. 1 AGENTS : Ask fornearest to you. Many in London.
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THE ARM OF $\qquad$ Reports from different parts of the country show that ther= is a noticeable increase in pal ce THE LAW. activity where motorists are concerned. Here is a sigrificant snapshot takena few days ago in Fitzjohn's Avenue, Hampstead.

## Notes, Mews and Gossip of the Week.

## In the West Country.

Devonshiro and other We.t Country motorist: should make a special endeardar to he at Simms Hill on February 10th. Fin details see special articlo in this issuc.

## I. A. Awards

The Craduate's prize of five guineas offered by the lnstitution of Automobile Engineers annually for tho best paper read hefore any Centre during the seassion has been awarded to M1r. H. Briggs for his paper on "Repetition Work in tho Engincering Industry." The second prize of two guineas goes in Mr. L. F. Vatson for his paper on "Mechanical Efficiencv."

## Police Activity.

A sulden increase in the activity of tho police with regard to all things motoring is noticeable. Motorists living in the metropolis. who use Fitzjohn's Avenue as á lest hill, should be particularly carcful just now-as our frontis. piece plainly shows. During the fow minutes' stop necessary to oltain our photograph wo saly no fewor than three cars "pulled up." copious notes being taken by tho constable in charge. In other parts of the country, in main roads and in ten mile limits, the same activity prevails, and the exercise of duo caution is necessnry.

## LIGHTING-UP TIMES

for Saturday. February 3rd, 1923.


## The J.C.C. A.G M.

The Junior Car Club held its annuad general meeting on Wednesday, January $24 t h$, and beyond the addition of A. J. Crump, W. D. Hawkes, J. Gordon Offo:d and F. N. Pickett to tho council, no changes in the officers for the coming season are to be recorded. The meeting was carried through with an absence oi rheteric that was wholly pleasing, and after the various matters down for dis. cussion hat been settled a very interesting display of films was given.

The financial position of tho J.C.C. is extiemely salis!actory, and members of the club can look forward to a very interesting serips of events both of a social and compelitive mature during the plesent year.

## Another New Hill!

According to a preliminary announcement the M.C.C.'s London-Land's Fnd Trial, which takes place at Easter, will follow much the same route, but will include a new hiil on the outward jou:ney. The only awards this ycar will be gold and silver medals.

## Masked Revel.

The Wallington Mutor Club is organ izing a masked revel, which will take place at the Public Hall, Carsbalton, Surrey, on Friday, February 9th, beginning at 8 pm . and terminating at approximately 1 a.m. A well-known Iondon band has heen engaged to provide the music, and a thoroughly entertaining evening is promised.

## Not the Only One.

In a recent issue we drew attention to the fact that the Matchless light car was the only two-cylinder vehiclo to car:y four passengers through the LondonFixeter Trial: but this statement now needs correction, for we learm that Mr. Alan Gruzelier, drove his 8.9 h.p. twincylinder Belsize-Bradshaw th:ough the sime trial and with the same complement of passengers. Mr. Gruzelier oblained a gold medial, and the performance of his car reflects great credit on the manufactorets and designer of the oil-cooled ergine employed.

## Southampion＇s New Club．

The opening mecting of the Southamp toan and District M．C．and L．C．C．will be held at．Lowman＇s Cafe．Jone Bar． South：unpton，at 7.50 p．m． 10 －might （kebruary 2nd）．Nany items of import－ ance including the programme of events for the coming season．will be diacussed． All motorevele and light car enthusiasts are welcome．

## Westmorland Motor Club．

At the annual general meeting the members of the Wiestmmyand Notor Cuele Club unanimuusly decided that in future this club should lie colled the Westmorland Motor Cluh，that it should have a car section afiliated as an asso－ ciated club of the Royal Automobile Club，and a motorcycle section affiliated to the Auto Cyclo Union．

## The Best Way to the Midlands

Althongh the main Lundon to Cowell fry road via Barnet，the Stratfords，and Dasentry，may be a fairly good route， it is，in the main，very uninteresting． and is usually encumbered with a large amount of heavy commercial traffic． Twa nther routes betwen the Metm－ polis and the Midlands are via Oxford， Banbiry，and Coventry，or through Aylesbury and Bicester to Barabury and thence on to Coventry．The surface on both of the last－named rontes is very giod．

## The Carburine Pump

The Gas Lighting Improvements Co．， Ltd．，have recently introduced a new apparatus for bulk fuel installations， which is also arailable as a selfecon－ tained barrel－on－trolley plant．The ac－ companying illustration shows the last－ named lype，which is，however，now fitted with a rotary action piston pump instead of a semi－rotary action pump． The most salient feature about the machine is the lact that it combines the accuracy of the calibrated receptacle type of plant with a discharging speed greater than that possessed by the mea－ suring lift type．There are three sets asailable，the prices of which are as fol－ low：－Kerbside installation with 500 － gallon tank，delivered and fitted，$£ 100$ ； a commercial set，with 500 －gallon tark． delivered and fited，$£ 85$ ；a poriable Larel set at £4？


The new elf－contaired Carburine petrol inatallation．

## LIGHT CAR－ICATURES．



## JEAN CHASSAGNE

## （A Favourite from France

Vivo La Franco et l＇Angletere！ Ze lace I love，no matter where． （iive me ze car．Jus＇made to go， Streamline，big noise，vilcoste，this chand！

## Scottish Trial

The Edinburgh Club＇s Six－day Scol． tish trial is arranged to take place in the second week of May；that is，from the 7th to 12th．Tho courso will he stiffened up，while the premier award will consist of silver cups，to be earmed by those completing the trial without the loss of a single mark．Gold medials will be awarded to those who do not make more than one stop on a hill．

## The Ideal Tool Roll．

Commenting on a paragraph headed ＂Trisial but Irritating，＂which ap－ pez＂ed in our issl：o dated January 19th， of the average tool roll．A．C．Cars havo forwarded us the standard tool bag Which is supplied with all A．C．s．＇This is an extremely useful accessory largo ennugh to liold all the tonls nemessary for running purposes．It is equipped with tho rip－up type of fastener．

## New 10 h．p．Albatros．

A now light car of interesit is the Albatros．manufactured by Albatros Motors at Coventry．Fitted with a 10 h．p．four－cylinder water－cooled engine．the mixfure is suppliad by a Zenith carburetter．ignition and light iug being by B．I．I．C．A cono clutch conveys the drive from the engise to a centrally operated three－speed－and－ reverso gearbox．Suspension all round is by quarter－elliptics．The utility two－ senter model．complete with all equip－ ment，is priced＇at $£ 200$ ，and the special model whish is fitted with a double dickey，sells for 2225 ．Other models in－ clude the＂two four．＂$£ 240$ ，family four－scater，$£ 265$ ；and the coupe，$£ 275$. The works are situated in Covenery，and deliseres will bn made in from four to six weeks．All communications shou！d to be addressed temporarily to Albatros Mctors，11，MLontague Ruad，Richmand， Surfey

Price of the Unit Reduced．
As from dimmary 25 th the price of the standa：d four－seator \ nit wal bermmes 250 guincas instead of ？ $5 \cdot$ arams Itic car is complete with ，incubs atice

New Single－shell Body．
$A$ ： S．18 6－18 h．p．Talbot－lanarit wow market． ing nn occasiunal fras：－santor hondy on

 for one adalt are lan chatien in the veir compartmont．

Price Corricfions．
IV：are asked in primb ont tiat the Mices we the Iba fillow：－10 8

 issue，only one：＇I＇I＇，thmowhecter was exhibited at the ：cominh．Shaye this
 T．I3．is $£ 155$.

At the Scottish Show
Huriog hes w．ate ral in Glangow If．IR．If（Jie Jutio of York used itl 11.9 h．p．Stambanl，in wluch low was driven in the shat atrongh erowied streets．ITis brief athl to the punt after whach he made a rapid four

There wass a lack of …tiong accommo－


H．R．H．the Duke of York snapped whilst viewing the exhibits at the Show．
dation for visitors at Kelvin TIall．Lunch on theropening day was only available in the tea－room．
Some drwers from tho Snuth found dificulty in understanding thi gosiem of t：affic signalling in use by the Glasgov police．In this city，for instance motor traffic must stop，when a tram is pirking up or setting down passengers，whilst the parking of cars ir．the main streets is a forbidden practice．
Many demonstration cars came up by road．their ariversovieing with each other in the stories thes told of the time they had－taken on the journey and the manner in which they had climbed Shap Fell or Kirkstone Pass．

## London-Glasgow.

One of the gunickest runs down from
 Shaw ghes ti, the credit of an nir-conled
 is estinder luxury model lyy quite a big

## Influence of the Movies

An interesting paper will he delivered by Mr. L. E. T'urner, general matnager of the Cinema Publicily Service, J.td., befrico the Institution of Prexduction Fin. gincers at the Engineers' Club, Coventiy


CUTTING THE $\qquad$ A noteworthy improvement at Cobham, on the CORNER. Portsmouth road. The corner is being eased off and
the highway widened.
ancin, and its driver was in froll when 11.. timished as were those who had
tribelled on the most expensive enclosed

## A Worliy Cause.

Thee amual parly Patuized bey tho Lesex A!utur Club on behali ui crippled and memtally deficient children was held llis year at Lowood Street I.C.C. School, on January $251 h$, when a vast army of excited youngsters enjoyed themeelves to the full. Each litele visitor receised a present, such as a "dress and undrees" doll, brush and comb, etc., the funds fo: these and the expenses of the party having been collected by the enthusiastic lady members of the Essen Motor Club, under the able supervision of Mrs. E. J. Bass.

## Road Improvements

When Mickleham Cornor, between Jentherinead and Dorking, was rounded off and made safe, nearly two years ago, motorists congratulated themselves, and, theo Oliver T'wist, asked for more. It is encouraging, therefore, to note that due regard las been paid to this very reasonable desire, and that local councils aro appreciating the full significance of the slogan "Safety first." From time to simo wo have illustrated such improvements; in addition the following infor mation will prove useful and intoresting

1 nutable alleration has been effected at Honger Lane, leading from Ealing to Alperton. The road has been widened and the cornerg rounded of .

Cobham, on the Potsmouth Road, and, of equal importance, on tho road to Brooklands, is also receiving attention. Tho somewhat dangerous bend at the Indon end of tho village is being eased off and the width of the road increased whero requised.
A third rond alteration is being car ried out in Ealing Road. Brentford, to improve the "bottle-neck.
stece, IV.1, to night, Fridar, at 7.30 p.m. The paper is entitied "The Sloving l'icture Industry," and will be illustrated by cinematograph pictures.

## On Kirkstone.

Tho ascent of the Kirkstune Pass from Ambleside is very much more severe than the climb from Windermere or 1'alterdale, so that when a party of drivers whose cars had been reduced to bottom gear on the "Struggle" heard someone stating that his A. C. had taken the pass on top, they were naturally some what sceptical. For a long while the A.-C. owner stuck to his point, but oventually it turned out that he had mistaken a very much easier gradient for the famous Kirkstone.

## A Useful Hint.

It sometimes happens that for some reason or another at car cannet he started under its own power. The surface may lee soft, the clutch fierce, or the wheels held up by a ridge. If the plugs aro tiken out and the low gear engaged. it is nearly always possible to wind the car out of a tight corner by a number of upward nulls on the handle.

## Jamming Starters.

A customer was complaining at the works that his electric starter was inclined to jam, but cotid not reproduco the defect owing to the fact that the starter, when tested, functioned properly for 147 consecutive times. Feeling ri:ther a fool, he then suggested that they should try some of the new cars in the showrooms, and was immediately rewarded by jams on three difierent cars! The matler is now being ufficially investigated.

## A.C U. Stocls Trias

It has now been fimally decided that the A.-C.U. stock machitue test, which takes place on Wednesday, Mirch 14th. will start at Birminghani and finish at Cleeltenham, the lunch stop also being situated at the last-named town. The course to be covered. detaits of which have now licen disclused, includes a great variety of country, and is intended to provide a comprchensive test of the representative types of motor vehiclo which will be competing. These, be it noted, will be classed not according to h.p., but price.

## A Bohemian Concert.

On Friday, January 26th, the Birmingham Centre of the Cycle and Notor Trades' Benevolent Fund held their 14th annual Bohemian concert at the Temperance Hali, Bi:mingham. Mr. Henry A. bimplugh occupied the chair, and the secretary, Mr. A. C. Huckstepp, gave a glowing account of the assistance rendered by the fund. and appealed for further help. The hall was crowded by the large audience, amongst whom were many prominent members of the trade, and the excellent programme, which included numerous items by artistes from the local theatres, was greatly appreciated.


## CLUB ENTERTAINS CHILDREN.

A happy snap of the children who attended the Essex Motor Club's annual party at Lowood Street L.C.C. School, on January 25th.


## From Kent to Cornwall on a Light Car.

COAST roads possess a charm aud interest which belong to no other roadways. The charm lies in the variety-on one side the green inland ways leading into the country's heart, on the other the wide boundlessness of the blue occan. The interest is to be sought and found in the ways of shipping and the doings of the shore which belong to an exclusive brauch of life.
Any coast road following the contour of the margin of the land holds its choice pleasures for the traveller, and where the rocks meet the onslaught of the waters and creeks rob the sea line of monotony the going is specially delightful; but even the quieter regions of our south have no small reward to offer the pilgrim who pursues his journeys along the shore.

Travelling from the Kentish coast on the east to the slores of Coruwall in the west, the coast road preseuts a variety that is scarcely found elsewhere.

From the highway between Dover and Folkestone a clear day allows risions of the coast of France, and after the hilly journey about Folkestone the road falls to the level of the great marshland. An oldworld atmosphere lingers about the towns of Rye, Winchelsea, and Dymchurch.

## The South Coast Cliffs.

Countless suggestions are in be found of the days when the generous sea lapped walls and quays now dry and silent after centuries of desertion; but the whole region is so unlike any other portion of our country that one cares to linger and make slow headway, although the level ways offer a course for spect.

At Hastings the white eliff and the inland hills are met again, and the rond winds sluggishly across the Pevensey marshes. where narrow, awkward roads call for the exercise of caution and restraint.

Eastbourne provides a good stiff climb, and the road that hugs the cliffs and crosses the shoulder of Beachy Head should be followed. Should the hours so suggest, a meal may be delightfully enjoyed on the green cliff tons at this point, where the car can be run on to the f"nss and as near the chifi edge as prudence or daring dictates.
b1f

The main road is reached again at Pasi Deathamd thus to the Cuckmere valley, with il: rion of the Seven Sisters-chalk headlands to the wast-atad seaford. A perfect roadway links*-Scatom inth diw haven, mainly constructed during the wity dins of the war, and then the pleasant undulating ran along the eliffs to Brighton.

As far as Worthing the road fully deserves the name of coast road. Westward the anpellation may be challenged. The majority of wourists mefer to make their way by Arundel amd Chichestor. picking up the sea again at Havant; but those whon fevel in exploring for exploring's sake may pursuc a twrtuous and difficult course to Littlehatipton and lighmu' ; while those who endeavour to keep close to the Chanuel may have an interesting story to tell.

## Unrivalled Devon.

The wise course is to make a bee-line from Shoreham to Bournemouth, although there are interesting chances of touching the shore at many points between Southampton and Bournemouth
From Bournemouth west, the Dorset coast almost defies acquaintance, save for the pelestrian, for whom it is rich in interest and pictorial beaty. The motorist, haring less frecdom of choice, may, nevertheless take the Weymouth road to I'ortland Bill, and indulge in experieuces till bridport is reached.
The great hills lie west of l3ridport. Chideock and Charmouth are quite memorable, but more so the rough going west of Chamouth. Here surface and narrowness add their detervents to the stiffess of the hills. The inland road via Axminster and Honiton is preferred by those who merely wish to get there : the coast road is the one for those who are out in do thinge.

From Excter the easy rond follows the coast to Dawlish and Torquay, ind the South Devon coast is packed with glorious scenery. Nuch time is required if one would touch this coast line at frequent points. for the westward road holds an inland course to Plymouth; and this is cren more paimfully true of the Cornish coast.
A.P.

## SCENIC GEMS ON THE SOUTH COAST.


(1) The moder, seaside resort of Bexhill, in Sussex. The traveller needs to journey a short distance inland to visit the old rustic village. (2) Despoiling the quiet coastal serenity of Havant. Breaking up a submarinea relic of the war. $(3$ The level road across the open spaces of Pevensey Marshes. (4) Running clase to the Devon coast - the new llsham Road, now in the course of construction.


## A Critical Causerie of Light Car Comment

## A Clear Screen.

"AN apple a day keeps the windscreen O.K." is the modern rendering of an old suying, the truth of which I recently put to the test. The sliced face of an apple rubbed over a windscreen is an excellent method of maintaining a clear view in rain or light mist. L'robably a Scotsman would prefer a potato. which, I am told, is equally effective.

## On Belts.

QEITE a fillip hate been given on the interest displayed in air-cooled engines by the man in the street by the introduction of a car in America which is "copper-cooled." The translation of this peculiar term boils down to the fact that this engine has copper fins amalgamated with castiron cylinder barrels, which thus increases their capalility of getting rid of the heat. One of the most interesting features to me, however, is the fact that what is lanow as a sirocco blower, the duty of which is to create a forced dratught through a shroud which surrounds the cylinders, is driven by a belt.
Personally. I laathe belts as a drixe for any engine component. lut I have sufficient respect for American manufacturers to know that they do not, in this year of 1923 , place a utility car on the market which ineorporates some fitting that has not been thoroughly tested out. A particular feature about this new belt drive, it may be mentioned, lies in tho fact that the actual core of the belt itself is made practically non-flexible and non-extensible. It does not have to squash un on its underside or elongate on its outer face when it is going round a pulles. The elimination oi this destructire fendency has resulted. so I am informed, in a memlier that is blessed with the reliability and longevity.

## A Grouse.

$I^{\mathrm{T}}$T is ferver:ty 10 be hoped that B ritish manufacturers who still adhere to belts as a drive for the varinus engine components that they have added as an afterthought will eventually find some similar type. There is one model of quite a famous make that is even now turned out as standard with the following systom for conveying the necessary motion to the fan and dvamo. On the crankshaft there is a helt pulley which drives the fan, and on thic fanHis
shaft there is another pulley which hrines who dynamo.. The fanshaft is monnted on fur exantric. the dynamo is fixed. As a wault, when the fall helt stretehes, one has to indulge in premmatimas and combinations to find out how one belt can be tightened without the nther herominit loose-a process which usually ends in giving the whol. hmsiness up in sheer disgust.

On one of the cars against whish 1 :an mos directing a venomous pen the fint haring same trouble. As a result, both it, athd hbe dynamul hat to be cut out of action when the owner was faced With a 300 -miln journey home over som" guita useful ranges of hills. With the prospoct of darkness assailing him before he get to his uttimate destina tion his feclings ean hetter he imarimed than described. In favour of the helt we are told that it is silent and that it reduces the cost of mamacture. All that may be quite true, but, personally, I would rather stand the racket of a noisy chain that did its joh properly than bo sonthed blissfully into hidken onares by the silent rumning of a slipping belt

## Slower Traffic Up North

IN Southern and Midland town towing cars form the bulk of the traffic and proceed on their way at a fair pace. As one travels north, passing places like Preston. Kendal, I'enrith, and C'arlisle, flie traffic slows down, and driving which would pass in such places as London or Birmingham arouses catutions from the local police of Westmorland and Cumberland. I have noted this particularly on other occasions and have warned south-countrymen.

## Motoring Literature

TAKING out a new ear for lest the nther day I found the following selection of motoring literature in the door pocket and imagine that a similar tibrary is supplied with every rehicle.
(1) Sixty-page work on lubirication, containing many uscful hints and tips. (2) Makers' price list of spare parts- 20 pages, price $2 s$. 6rl. (3) Booklet on the management of the car. (1) Booklet on the management of the carburetter. (5) Booklet on the maraagement of the electrical equipment. (fi) Car instruction book (parlly out of datr). (7) Lubrication chart. (8) Another lubrication charl (some six years old). (9) Car folder.

## RIC'// .1/ATC゚Rli (contd.).

I cannot lielp thinking that all this matter would be fir better combined and brought up to date. The wo feathees 1 wished to discover, i.c., at what presure the oil should circulate, and the gear matios of the car, were not included

## Teaching the Young Idea.

STOlPING at is wee roarlside garabe in Scolland. my car was filled up by a latd of about 10 years of age: whose knowledse of motoring pusitively shagrered me. He knew every car that had passed me the North road on the way to the Glangow Show. and had also noted the cars which were going up, y traith. I have often moticed that the younger generation serm to know far more about cars than do older imen. Possibly they have mose time to read about them and then they develup an acute mechanical instinct. Mituy a boy at school knows full well how to thouble deelutch when chauging gear (in theory) long fo fore he has ever been allowed to sit behind a steerinh whecl. All of which is going to assist the progress of menhanieal transport during the years to come.

## A 1.500 c.c. Single-s!eeve-valve Engine.

## I

 Whas romty afforded an uportunity of triving Galve coneine made under the Burt Accallum: patent:. Although this car scaled about one ton, the cheine-a power curve of which is straight-dealt with th: heavy loal our a 1.5 to 1 top gear with 760 mm . by ful fum. whels surprisingly well, a maximum sheed of hetween 30 athl on m y h. being ohtained on thin level. There is me noticeable sumbl from the cengine, the silent ruming of which is so pronounced as to cmphasize the noise made by other parts of thechassis which would go unnoticed in the ordinary stato of affairs.

Perhaps the most remarkable feature of the jol, is the rarity with which the removal of carlon deposit is said to le necessary. P'etrol consumption, with it carluretter setting suitable for maximum power, is in the region of 35 in.p.g., which is quite good.

The enginc, an experimental "tool-room" production, was fitted with aluminium pistons, and ailowed a 5 to 1 compression ratio. No attempt was made to hot it up specially, nor was the valve timing abnormal in any way. Plans are being made to market it as a moprictary unit by its makers, Wallaco (Glasgow), Letd., C'ardonald, Glasgow

## Doggerel.

When I peruse the records of the motsring dog's sagacity, I feel the angler's yearning to exaggerate the fish
lle didu't catch. So, if you'll overlook mep pen's mendacity, I'd like to givo expression to temptation's half-formed wish, And tell the tale of Fidu. He's a marvel and a sport.
He'll chase at roadside rabbit, but he wouldn't hu:t a fowl.
He will hear a barrel-organ out of tune without a snort,
But if he hears an engine piuk, he'll sit on end and howl.
He's got an car for music, and he's also got a caudal Appendage differential that diffeentiates.
On hearing cars the same make as my own, he doesn't dawdle, But wildly wags his narrative; while, if they're not, ho waits.
Ii I'm tardy in acknowledging an A.A. man's salute, A quiet nudgo from Fido with his fore feet gives me pause. At retrieving nuls from undershields, his talent is acute. Or gudgeon pins gone West, or bits of fuff from feed-pipo gauze.
He's got a turnspit's instincts, and can thercfore judgo rotation
To a nicety in engines of eleven-point-nine twelves.
For universal joints he shows both taste and mastication
If you donbt these Fido stories, tell some taller ones yourselves!'
s.S.


## A Ventac Worth Visitina.

## IN AND AROUND . GREAT YARMOUTH.

FOR some reason, which is not alcogether obrious, the East Coast of England is not patronized to a great exteat by motorisis, chicliy, it may he supposed, because che loads from the Midlands and Southern districts are uninterestang, compared with such picturesque routes as those leading north, west and south.

It must be admitted, however, that for the motorist there are many interesting Lastern venues, and of these Great liamouth is molably one of the oldest and guaintest. It is not generally known that the Isle of Wight also boasts of a Yarmouth, but Great Yarmouth in lingland is distinguished from the first. named town by the prefix which was added to the name in pursuance of a charter granted by Henry 111.

Many of the quanter parts of Great Famouth have to be explured on foot, for the older strects are too narrow to be riegotiated by cars. The "Rows," however, as they are known-l43 in number-anhough by no means beautiful, represent ancient history, and are well worthy of a visit. As distinguished from the new Great lammonth, tho odder part of the town was walled and fortified, and relic; of these fortifications including several rambling old towers, still remain. Of historic and general interest is the Star Hotel, formerly the residence of one of the Elizabethan merclant adenturers, which has associations with Nelson. It is situated on Hall Quay, near the modern Town Hall.

The parish church of St. Nicholas is considered in certain quarters to be the largest marish charch in England, and, although of unpretentious appearance, stands in a bige extent of ground.
Characteristic of the eighteenth century is St. George's Church in red brick, whilst the thirtecntb


The Jlorth. west Tower
\% Yarmouth $\qquad$ 0 たโic. 2.
century toll-house in Gaoi Stred, lmill af flime and stone, with an old fashioned externa:1 thimase an edifice originally used in the capracity of Town Mall. Courts, of Justice, and meison-is worthy of the visitor's attention.

Within easy reach of Great Yarmouth is Caistrura little fishing village-the main point of inturest being the ruins of Catister Castle. The oririmat fortress was buile by Sir dohn Falstafi.

Great larmonth is sitmated 1 dumles from 1 ondon, $183^{3}$ from Bungay, $22_{4}^{3}$ from Norwich, aud fol from Lowestoft.

## A Hint Worth Knowina.

## A HOME-MADE LEAF SPRING LUBRICATOR.

TO maintain the suppleness of sring sirspension, it is imperative thit lubrication should be introduced between the leaves in order to facilitate the slidiug action which takes place between the various surfaces in coutact. The ideal method, of course, is to fit spring sritters, which can be packed with grease, but they have one sinall disadvantage, inasmuch as the springs cannot ise inspected, with the oijfect of making sure that they are sound.

The owner driver can make quite an effective leaf spring lubricator in the following manner: - Alsout 5 ft . of bemp or other absorbent rope is first of all wrapped round the spring two-thirds of the way ul, measured from the axle end. This can lie lonsely secured in position, as it may be necessaly to remove it later' on. The hemp may he thoroughly soaked in oil in the first instance, or oil may be added afterwards.

A suitablo covering must now be constructed. and this can be made from fairly stont American cloth, into which have been let suitable eyelets. so that it can he laced in position.

The hemp having been thoroughly B20


The home-made gaiter in position, showing the hemp wound round
thespring within


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## The

## LIMHT CAR \& CYCLECAR

Was founded in 1912 to cater for the needs of users and polential purchasers of various new types of cyclecars and light cars, and it has consistently encourascd the development of this new motoring movement lor over ten years.

The journal is published every Friday. There should be no difficulty in obraining a copy at any hooksiall or newsagent, as arrangements have been made to ensure a regular supply: Should any difficulty be experienced, we should be greatiy obliged to receive the name and address of the reader's newsagent.

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## Topics of the Day

## The Taxation Inquiry.

THE public inquiry into the question of taxation, which was opened at the Middlesex Guildhall, Westminster, a week ago, clearly shows that in the British automobile industry there are screral distinctly conflicting interests. The discussions have been marked by a liveliness that has at times

Taking the Clear View. threatencd to overstep the bounds which are usually accepted by those who sit on a committee that has as its aim and object the amelioration of conditions for the common good. From the welter of words none fact has been clearly brought to light, which is that a form of taxation that is acceptable to commercial-vehicle users is not necessarily the one that would meet with greatest popularity if it were applied to privately owned automobiles.

It has been urged that the present system of taxation has a restrictiag influence on design, the opinion being held in somo quarters that the present high-speed engine is not so good a proposition commercially as would be a larger engine which ran at a slower speed. We cannot say that we ourselves are in entire agreement with this statement, for the economy car of to day is fitted with what is admittedly a comparatively highspeed engine by reason of the fact that a small engine (and by this we mean a unit that is emall in volumetric capacity) must turn over at a high rate of revolutions if it is to give off sufficient power to make its power-weight ratio conomically successful on the road lo-day, and a glance through a list of bore-stroke ratios fawoured by modern designers of small cars does not show any great tendency towards a big reduction in the bore and a disproportionate increase in the stroke.

## Is the Fuel Tax Impracticable?

'THERE is no getting away from the fact that the present system on which private automobiles are taxed is iniquitous by reason of the fact that it is not proportionate to the amount of damage which each car does to the road. Payment of a fixed sum for an arbitrary period of ownership is not Nake Taxation fair. The modern small car is not a luxury; it is $\Omega$ Fairer. necessity, and should be taxed as such.

It yet remains to be proved that a tax on fuel is quite impracticable, and it is doubtful whether the administration of such a tax would be more expensive to the nation than is the present highly complicated system. In any event, we await the ultimate issuc of the taxation inquiry with the liveliest interest. That its effect will in the end be beneficial there is little doubt.

## Sportsmanship and the Automobile.

TIERE is perhaps no industry in which the human factor is so prominent as is the case where qutomobilism is concerned. Recently, at a dinner given in honour of a well-known racing driver who had accomplished a very remarkable feat, a manufacturer of British light cars paid a striking tributo Considering the to the human element in automobilism, and quite Human Factor. rightly pointed out that the energies of the various departments responsible for the production of a racing car all ultimately are directed towards and dependent upon the skill of the man who sat at the wheel and controlled the movement of the finished product of their brains. It is only perhaps during the east two or three years that those whose duty it is to organize factorics in this country have fully realized what an enormous bearing the sccial conditions of their employees have on the quality of the finished product. The days when men were regarded as merely machines are past. To-day the individual labourer is certainly a unit irt a huge organiza tion, but at the same time he retains his personality and is able to reap the reward of genuine effort.

## THE RALLY AT SIMMS HILL.

Great Enthusiasm - Highly Interesting Event Promised for February 10th.

Tן HE suggestion, published last wook, for holding a light C'ar and C'yclecar Kally for the purpose of attacking the gradient of Simms Hill, in Devonshire, on Saturday, February luth, has met with a whole-heartedly enthusiastic response. Already a largo number of enthusiasts have notified us of ther intention to be present on what promises to be a famous occasion, and we are able to announce that practically all the well-known makes of light cars will be represented. It is probable that a CitroenFegresse caterpillar car (similar to those which recently crossed the Sahara Desert) will give a demonstration, which, naturally, adds still greater interest to the unclertaking.

We have made arrangements with the proprictor of the Clifford Arms Hotel, at Chudleigh, which is only a few miles distant from Simms IIill, for accounmodation to be reserved for those who make up The Light Car and Cyclecar party. By mentioning the name of this journal, accommodation will be assured for participants in tho Rally, spectators, and their cars. As an alternative, similar accommodation can be obtained at the Palace Hotel, Torquay, by those who prefer it.

The routes from Chudleigh and Torquay to the hill will be arrowed by the morning of Saturday, Fehruary luth, and it is lucky that, whether the weather ruary toth, and the surface of Simms Hill will be in


A good idea of the gradient of Simms is provided by comparing the vertical jack handle with the running board of this Stoneleigh, snapped on the hill.


How to get to the hill on February 10 th. The climbing contest starts at $10.30 \mathrm{a}, \mathrm{m}$. Accomodation can be obtained in Chudleigh B22
a climbable condition for those cars which aro equipued with l'arsons chains, for the road has a gond fommitation, which is not greatly affected hy water. Among other cars which will be at the hill wo may mention the Standard, Lengnda, C N Rhold, A.-C., Bayliss Thomas. Stomelcieh, Alvis, A.B.C., and $\overline{5}$.5 h.p. Citmen.
The progranme, fuller details of which will be announcel next weck, is as follows On the erwning of Friblay, February 9 (h, the parties who are coming from the Nidlands and from London will meet at the Clifford Arms Hotel, Chudleigh, and the I'alace Hotel, Torquay. Those who are unalsle 10 leavo London before Friday crening should endeavour to be at the Briflen Houso Hotel, Strunes, at S o'clock, ib start at 8.30 , as abont half adozen participants have already expressed their intention of making this their starting point and time for the journey to the West. It will be possib!e to obtain dinner before starting, but in this case the Bridge House Hotel should be reached by about 7 o'clock.

The Simms versus light car contest is timed to commence at about $10.30 \mathrm{a} . \mathrm{m}$. on the Saturday morning. The rond leading out of Ilsington to Simms Hill is narrow, and care must be taken that there is no congestion on this road. We, therefore, venture to request all those motorists who do not intend to climb the hitl on their own cars to take particular care that they do not obstruct in this narrow roadway. The local inhatitants show a thoroughly sporting disposition towards motorists, but here, again, we venture to remind all thos who come down to the hill that it is of greatest importance for no annoyanco to be caused to those who live in the

S/MAS IIILL (contd.).
Vicinity. Tho map pablished herewith shows the locality of Simms Hill.

As regards lunch on the Satarday, this can be supplied at the Clifiord Arms Hotel, and if the day be fine we have no doultu that there will be numerous pienic parties on the slopes of the gradient.

## Supplies Available

So ereat has been the response to the suggestion of holding this Rally, that Shell-Mex. Ltel., have kindly oflered to take down a petrol-filling installation. so that there will be both fuel and oil available on the spot.
There is. ne couse. no rule against practising on the hill beforediand. and in order to add to the intrenst of the eveat. Wir are making arrangements for the gear ratios of those cars which are successful to he moasurml. so that useful data will in afforded. We would e:mphasize the fact that an insunicient head
of petrol seems to be the greatest deterrent to climh ing this gradient. which hint may enable intending participants to effect il:tail alterations to their cars that will ensure success.

## A Real Gradient.

As we announced nreviously, cars which have easily climbed both Alms Hill and Alt-y-Bady have met their match on the gradient of Simms Hill. Whether it is the steepest hill in England is, perhaps, questionable, but there is no doubt that it is one rif the hardest gradients to conquer that has ever been discovered. The sharn. right-angle turn at the foct, puts a premium on skilful divings, and the long, steen rise for the next 150 yards demands a sturdy ensine.

In order that honour may be given where it is due, the cars ascending the hill will be timed by stopwatch, and the results, if interesting, will be pul)lished. It will undoubtedly lse most instructive to sen which car achicves the honour of being fastest on tho hill and which can carry the biggest load of people.

## A NEW NON-LEAK POPPET VALVE.

## The Valve and Guide which So Considerably Contributed Towards the Success of the Record-breaking A.-C.


$I I$ is now ajpracent that one at least of the secrets 1 Dit the sucecss of the A. ( . Which put up such a i...ign of its valy guides, which converted an engine that gave persistent trouble from compression leaks 10 whe which closely approaches perfection in the Wav in which it retained its gases.

The 16 values with which tho engine was fitted, botwilastandinu every possible attention and care, invariably leaked to such an extent that the compression would not hold for move hatn a few consecutive lajs at spend. I'he difficulty wis overcome by Mr. Sidney Smith, who designed a valve guide which, alhhough simple choush in itself, nevertheless practically inaugtíates a new principle in valve control, inatsmuch as the valve is located hy its head, instead of by its stem.

Most value leakages are due, as regards their origin at least, to non-alignment of valie seat and guide, which non-alignment is usually due to inequalities of expansion in the body of the eylinder block. The condition thus set up is aggravated by the passage of burning gases through the space for leakage between the working faces of the valre and its seat. In the Sidney Smith design, as may to appreciated by brief study of the accompanving illustration, the valve guide is free to wander, and is not restrained by the hole in the cylinder catsting into which it fils. This means that a considerable degree of mal-alignment. more than is at all likely to occur, is permissible without the jisk of the value being disturbed from its proper seating.

The valre retains compression under all reasonable conditions of mal-alignment, brought about by any cause, including the prevalent one of uneven expansion. Having done so. it prevents erosion of the valve


Showing the spherical seating for the floating valve guide and the principle as applied to a push-rod, overhead-valve engine.
seat, and thus postpones inclefinitely the need for valre grinding. It appears, however, that with a little attention to detail in the design and machinirg of the valves and seats it is even possible to do with out grinding the valves in at all.

To this end the seats are finished off in tho machine with a milling cutter which has very fine teeth: this puts a smooth surface on the seat, free from "chatter" marks, whilst, in addition, the faces of the seat are cut with an included angle between them of 89 degrees, while those of the value are at 90 degrees. 'This eusures that the valve, on first making contact, seats on the outer edge only. Soon after it is working, however, the contact spreads over the whole of the seat, where, owing to the frecdom of action which is afforded the valve by the new seat type of guide, it remains.

Considerablo controversy has been raised among the sarants by the introduction of this type of valve. In the above description of the device we have treated the design on its apparent merits, and thero is no doubt that it clid definitely improve the racing A.-C. engine. Whether it is Letter for an engine to be designed so that valve srat warpage does not tend to tako place or to fit a type of valve that does not worry much whether its surrounding parts hase warped or not, of course, is open to discussion. In duy event, the Smith valve is a very elevor device, and beyond proving itself successful on the track in an engine which turned over at $t, \therefore 50 \mathrm{r} . \mathrm{p} . \mathrm{m}$. average speed for over an hour, it has functioned perfectly satisfactorily on the road.

At first thought it is difficult io understand clearly exactly why the valve should-find a proper seating on every stroke, but the fact romains that it does so and thus serves its purpr.


## Boiling and Frothing Simply Explained-A Very Informative Article

WHEN an accumulator is placed on charge, the electro-motive force, or e.m.f., rise's rapidly from 1.8 volts to a value in the neighbour hood of 2.2 , and afterwards more slowly to 2.3 volts, at which stage the charge may be said to be practically complete. If charging he continued beyond this stage. however, a farther rapid rise in the pres. sure to about 2.6 volts will take place, hydrogen being freely cualied during the process, and the clectrolyte having the appearance of boiling.

This is due to the fact that, as the charge pro gresses, the surface of the positive, plate becomes gradually converted into lead peroxide ( $\mathrm{PbO} \mathrm{O}_{2}$ ), and hence the material for the ewrent to act upon becomes less and less.

The plates to all intents and purposes decrease in size, and if the current remain the eame throughout the charging operation. its value during the later stages of the charge will be too great for the areal of the plates remaining.

The water in the electiolyte is therefore decomposed. hydrogen and oxsgen being liberated at the negative and positive plate's respectively. When this condition has been attained, the cell is said to be "gassing." and the production of the bubbles may be taken as evidence of the fact that the charge is complete.

## How to Avoid Trouble.

Gassing may be avoded by decreasing the value of the current as the charge progresses, in order that the remaining active area of the plates may never be ton small for the current to act upon. The charge may also be considerably increased by adopting this procedure, but in practice, owing to the time and trouble involved, it would never pay to vary the current in this manner
Boiling does no harm unless the paste on the plates is lonse, in which case the agitation of the liquid may serve to romove considerable quantities of the matnrial. Frequent and prolonged overcharging at much reduced rates is, in fact, the only way to effect a cure in the case of sulphated plates, the mild bubbling or gassing doung no harm in any way.
Froin what has been said, it will be obvious that $\mathrm{L}=1$
the charging current should mot bu toustrat for the area of plates involved, and it is atamed rule never to exced a charging curvent of a mator value than one-tenth of the stated capracity of the wefl in anmere hours.

A 10 -ampere hour accumulator woull thus require a charging current of 1 ampures. If tion capacity of the cell be not givels, two-thirds of the maximum current as stated by the makers should be taken, or from 4 to 8 amperes may be allownd per spuate foot of positive plate, reckoning both silles of all the positives contained in the enll.
Too large a charging current, in addition 10 causing bniling or "gassing," frectuently results in


Accumulator plates can be buckled by too large a charging current, but are more commonly damaged by over discharge.

buckling of the plates, and when this occurs, the rapid evolution of the gas tends to work the paste right out of the plates.
When a cell is first placed in commission the surface of the positive tecoones coated with small hulbbles after the current has l,een flowing for a few minutes. The bubbles collect in clusters, and are then lifted through the liquid until they reach the surface, whre they break and discharge their gas.
A kind of foam appears to he formed, and this lies in streaks above and along the tops of the plates. Then after some twelve hours a chocolate filin begins to appear on the positive plate, until after some thirty hours the film hecomes fairly dense.

If the charging current be excessive, the acid, it

C'll INC'/IC' AC'C゙MULATORS' (contd.).
will he noted, will become cloudy or milky, the cell bemg satil to boil, and the completion of the chargo attatimed

When frothing, as distinct from boiling, takes place, a kind of scum appears on the surface of the liguid, and emerges from the gas release valve on top of the accumulator box. This scum is usually of a lightish brown colour, and leads many people to makeran investigation of the acid and water used for refilling purposes.
Frothing may take place at any period of tho haris, and is not necessarily confined to the completion of the latter, as is the casc with the more usual "gassing" or "boiling." Somc makers have stiated that impurities have been present in the electrolyte, and oven if this be not the true cause, fou much care cannot be taken to avoid the presence of any foreign clement in the mixture of sulphuric acid and water in which the plates are immersed.

## Care is Needed.

The nurest acid and distilled water only should be used, and alwass stored in elean non-metallic vessels. Rain water and boiler water contain im puritios, and should never be employed for re-filling, or what is usually known as the "topping up" process.
It is prohahic, howerer, that in the main, frothing is the to the use of wooden separators between the blates. The two sets of plates-positive and negative -arn nacked as elosely together as nossible, and, to awnid their coming inln contact with each other, anparators are used. The separators are usually

Qreated by a special process in order to eliminato all traces of wood acids, which would be injurious.
The acid rliminating precosses are secret, and duriag a period the nature of the wood is changed to some cxtent, and in all probability it is due to this change, or to the treatment to which the wood has been subjected. that frothing on charge is to be ascribed
Providing then that the charging rate is not excessive, and that the electrolyte and water used are purc. frothing may be put down to the cause instanced above. The action is a harmless one, although somewhat objectionable, and care should be taken after charging to wipe up all the spilled solution with waste wet with ammonia water. When carrying cut these operations it is always


Should the acid be too strong it will in time eat away the plates, rendering them beyond repair. advisable to wear some kind of nereall. Should any acid be spilt on the, cloihes the spot should be immerliately sponged with strong uadiluted ammonia.

## THE NEW ROADS.

## Will Wider Comers Mean More Accidents? The Skid Danger.

I$T$ has been suggested that the large-radius corners that are a fiature of the new roads should be adopted generally. Excellent as they are, they are not withont some disacivantages.

Ono of the main ideas of the increased radius at the corners is to lacilitate the movement of our gros:ing trafic. We do this by minimizing congestion caised by unduly slowing down the tratlic at crossroads and turnings. The speed on the corners is faster, hut are we going to be faced with that heartstopping business-the skid on smooth, tarred surfaces immediately they are wetted? Every railway engineer knows that a large-radius curre has far less derailments than a curve of small radius, but, when it does occur, one of the former is worse than scores of the latter as regards damage-it is a guestion of speed and braking conditions. Morcover, easy curves are highly deceptive.

## Worse Braking Conditions.

Taking the braking conditions first. A cyclist approached a main road by a well-used cross-road having $a$ macadam surface, the main road being tarred. A heavy mist had wettrd the tarred surface, but tho macadam looked dry. Secing a car about to cross his track, he applied his brakes. All went well until his wheels tonched the main-road tar, then they locked and skidded forward, remaining upright until the car knocked the front wheel away.
About easy curves. most experienced motorists have at some time felt their deception. Not many miles from Blackheath (S.E.) there is a comfortable road having an easy bend which could he taken by many driver's at from $30 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. to $40 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. . but on $\AA$ damp morning a third of that sperd, would put many cars hard against the kerb. We have known a bus to hit both sides of the road and finish down a hank: a car to hit the brick wall on the opnosite sille: and another to lose both its near-sido whecls. It was a
tarred surface, and theman with the sand was missing. The above happened in rather more than twe! ee months, and they are the observations of a passer-by.

Braking is seldom more used at any one point more than on corners, and to be called unon to brake at all whilst turning on a smooth, wet surface may cause the driver to stop much longer than he had intended.

As an example of what may be expected, we have eceasion to use a road that will give a welist 20 to :0 miles ner hour on the down erade. Half-way down the hill is a by-road at right angles. and at the bottom a highly polished main road. To relieve this main road a new road has been cut through. more or less parallel, and crosses the hill at the junction with the br-road. All corners have a large radius of very useful dimensions. and any orclinary cyclist can leave the hill for the old by-road without slackening speed. The surfaces are mainly of gravel, but the new main road is going to be tarred. If it polishes like the old main road. Heaven help those who have to pull up for the main road traflic "when mists have fallen" or when we have had "just a littlo"-rain.

Higher Speeds - More Trouble.
We do not expect to see piles of wreckage at every such corner-the extra radius will save accidentsbut if you make it possible to get round a corner safely at 30 miles per hour instend of six. such accidents as do occur will be at higher speeds.
It is safe to say that there will be few of those who aro "for ever on the road" amongst the casunlties ; the more time a man is on the road the farther he sees ahearl. and he does things right hecause he has "served his time": best of all. he does them intuitively; his "chance" comes when somehody else skids into him. It is far better to face the joh now ; it requires only certain modifications in treatment, and to tre really effective the: occasional sanding is too costly and " too" casual for safety.

# Artistry in Tyre Durability is Obtained. 

T10 the umintiaded a trip round a factory whercin tites me manulactured camoot tal to be ol the givatest interest. Such was the impression we formed durng a recent visit to the works of the North Jritish Rubber Co., L.td., C'astle Mills, Edinburgh. 'The imuensity of the establishment is waly impressive. There are miles and miles of buildngs wherein cue can easily become lost. Not all of these are lernted to the manufacture of twres, for the uses to which rubber can be put are exceptionaliy numerons. Nevertheless, the extent of the buildings jo which the well-known Clincher tyres are made compares rery favourably with any found in different parts of this country, and the thoroughness of the methods employed and the care that is exereced in the making of these tyres are quickiy apparent.

The raw rubber as it arrives at the factory is a most curious material to look at. There are two kinds : one comes in hard black cores rather resem bling a tree trunk that has been cut in sections, while the other rubher is in shects. Thre seems to be a conception abroad that during the manufacturing processes rubber is in some way heatid or melted. as it were. In actual fact it is run between what are best described as gargantuan mangles, where rollers knead it and squash it as though it were household dough, and all the time it is sprayed fiercely with warm water, which washes all tho impurities from it, until it finally emerges as very flexible, rather blanc-mange-like shects

These shects again are rolled between warm rollere, and the materials which colour the rubber are added. In this connection it is interesting to observe that there is no reason why an inner tube should be red


$$
\begin{aligned}
& \text { RAW } \\
& \text { RUBBER. As it arrives at the factory. The raw material fortyres } \\
& \text { and tubes is very different from the finished product. }
\end{aligned}
$$

Aluw bil lus.er tube is made. Lx:endimir ll.. ruble.
through an annular orifice so that it forms a long rubber pipe.

 tho pressure exerres seld durius the when ine mome $\mathrm{Br}_{3}$ varying these tivo aimost any deree of thialifit:

 There is a machine rathor like a huge collec-grinder, and in it are plated lumps of ral ruhiser. Inside arch: medean pollers revoles in mesh, and after thoronghly pulverizing and kneading the rublocr, foree it out through an annulat orifice, the size of which corresponds to the size of the finished inner tube. The result is thatthe rubber is extruded from this orifice in the form of a pipa, which is allowed to grow rintil it is about 20 ft . long. This soft rubber pipe is then thenated on to a long steel bar and subjected 10 the first heat treatment, aiter which it is cut into proper lengths, the ends of which are poancel wh, a valve is 131 serted, the final process is carrid through, and there we have the complete inner tube.
Covers, of course, are made in a different way. Layers of rubber-impresnated cord are sinperimposed on a former, each layer being very eareluliy moulded into position, the direction of the cord in each suhsecpuent buer

It is merely custom that has formulated this habit on the part of manufacturers, and, in point of fact, practically the same kind oi rubber is used for an inner tube as that which is used for the tread of a cover, oxcept that the two kinds are put through entirely different forms of treatment.

H26
varying so that maximum flexibility and long life may be whtained. This forms the foundation of the tyre. The tread is mado separate, and then the wo are combined and are vulcanized together with the rubher side pieces, which form what are componly known as the walls, which completes the operation.



## A NOBLE SETTING.

 An A.V. with histori= Edinburgh Castle in the background. The cafle tas been chosen as the site for the Scottish National War Mcmorial.THE motorist who visits Scotland cannot fail th notice, sooner or litter, the comparative rareness of the cyclecar in the Land o' Cakes. He may travel ior dars in the country districts, by which is meant away from the half-dozen big towns and cities, and not see one. Then a "wee yin" will appear and its wery suddenness and strangeness will remind him that it must be the first he has secu.
This is a peculiar fact, especialiy when it is considered that there arm two or three very strong reasons why the cyclecar should be popular in Scotland. One is, of course, the housing gystem, which is all against the spread of motor cycling, especially with sid:ecar.

## A Land of Flat-dwellers.

In all the towns and in many of the smallest villages the rast majority of the dwellings are arranged in flats. The very class of people who in England stick to the two wheeler or sidecar outfit, becanse generally they can keep it in their "backyard," have in Scotland no backyard of their own.
If they go in for a passenger vehicle, they must garage or store it off their own premises. As the cyclecar costs not much more than a big sidecar to buy and run, very littl: (if any) more to garage, ind has undoubted adrantages over its "unnucchanical" rival - such as comfort and weatherproofness, particularlv marked under the appalling skies un north-it cught to be in a very strong position in Scotland.

Again, there are proporthonately more people of the class which patronize it than there are of those who can run to a more expensive vehicle. In snite of the nation's drink inill as adduced by Pussyfoot, the record of police-count cases in the hige centres af industry, and the apparent stand for Socialism made by these centres recerrtly. the savings hank reports show that a large proportion of the industrial classes have extraordinary amiants to their credit.

Here, then, are some broad reasons, which could B28
he elaborated in great detail, "hy the erelecar shomid have won its placu. The fact is that it has not: but there seems to be no serions reasmi why it should not yet do so.

What Scotiand is still looking for in the eychenur can really be summed up in two words-:apeatrauco and strength.

That, for Scottish roads, exeeptional strongth is absolute!y essential in the chassis as a whole and in every detail of it gocs without salyins. Th styange thing is that the one or two makers who have gone to the trouble and expense of proving in Sottish trials that their prodacts can stand up to the local conditions have still failed to look the orilers which they deserve from north of the Border. That is why the question of appearance is stressed.

The Scot will not invest in anything that savourj of freakishness: this is partly because of his innat? pride. He shrinks from being soen in a vehicl. of his own that is out of the ordinary. from this follows the second reason; he realizes that those around him are of similar mind, and that he will not get a sale for anything that is out of the ordinaryThat is not a characteristic to canse smiles; it is simply evidence of that quality which has gained for the Scot his world-wide reputation for level-inealedness.

## Strength and Appearance.

It is a remarkable fact that there is only one cycle.ear which can boast any serious figures of sale in Scotland-i.e., anything proportionately approaching its sale in Fngland; and its rise to povularity definitely synchronized with its adoption of light car lines, e. $⺊ .$, a really good-lonking imitation radiator and a reasonably deep and comfortable hody with tapering heetle-back.
So it will bear repetition that the cyclecir which is to sell in Scotland will have to possess both strengt $h$ and appearnnce. And the more important of these we make bold to say-is appearance.

## 

The strength will need proving. No maker need attempt to sell thrce cars amongst the most cautious people on earth until he has done that much; but he should unt go to the expense of proving the strength until ho is satisfied that he can provide the appearance also. The last-named consideration is one that seems to be frequently overlooked

As many a maker, most agents, and all Scotsmen know, a vehicle may be sound to the core, and excellent value, yet not reach that elusive height where it becomes a "selling proposition."

There is plenty of scope fo: the eycloear in Sicotland, but it will have to he a veritable Peter P'an of roadsters-one that has the charm of a selling proposition" all over it and will never lose thut charm with years.
L. II.W.

## MODERN PRACTICE IN AIR-COOLING.

## The Hotchkiss One-htre O.H.V. Straight Twin.

PROVIDING that an air-cooled horizontally opposed twin-cylinder engine can be manufactured more cheaply than a small water-cooled "four," the more simple unit wilt always fill a useful gap in the cyelecar and light car world.


Indicating diagram showing the power curve of the new o.h.v horizontally opposed Hotchkiss engine.

One of the most up-to-date designs of this type that we have seen is the o.h.v. Hotchkiss which has recenlly passed out of the experimental stage both on the bench and road. The general composition of the unit consists of in onepieco alurninium crankease and oil sump, to which are attached singlepiece cylinders fitted with inclined tulip-shaped overhead valves, operated by hollow enclosed push rods. The camshaft is located above the crankshaft, its forward end driving the magneto. As roller bearings are employed for the big-ends. and rollers and balls for the mninshaft, the oil pump serves merely to supply the pistons and cylindes with lubricant, all oilways reing contained within the crankease casting. and thus obviatiag the use and expens: of piping.
The bore and stroke of the cylinders are 85 mm . and 88 mm . giving a capacit: of 999 c.c. from which a maximum of $19 \mathrm{~h} . \mathrm{p}$. has bern outained. Jarticular attention should be paid to the even distribution of the metal in the cylinder casting and to the comparatively thich finning. Adequate air spaces are provided between the fins separating the inclined valve chambers, the ports of which are of large diameter.

The cylinder is :- very simple production job. as there are no loose parts on the pattern and a onepiece corc can be used. The stainless stecl values are designed with tulip-shaped heads aud operated
by slightly geared-up rockers, thus enabling a lower cam action to be used.

The rockers are enclosed in aluminium covers, whilst each pair of tubular push rods, the top ends of which carry the necessary adjustment, are contained in oval covers, the top and botton joints of which are made good liy lioating Dermatine rings. The tappets are disposed in line opposite to each other, heing driven loy two cams only, and each pair heing located in a one-piece tappet guide, an arrangement which enablest a plain bore to lic made straight through the crankcase, and again secured rapid production. The front end of the camshaft carries the timing gears and drives the magneto through the medium of a vernier coupling. the fitting of an impulse starter being allowed for should this be required.

The front and back of the crankease are sealed by cover plates, the former incorporating the starterhandle housing, and making it possible to assemble the crankshaft and connecting rods in one picce. A wet sump is provided. an coscillating plunger type oil pump driven from an eccentric on the front end of the camshaft supplying the engine with luhricant. The rear housing is designed either to incorporate it clutch pit and unit-type of gearbox. or for fitting

up with a separate gearbox unit. The following figures are of general interest:-

Weight complete with $10-1 \mathrm{~b}$. flywheel 210 lb . Width $2 \mathrm{ft} .8!$ ins.
Length from front cover to rear face
of flywheel ... ... ....... 1 ft 10 ins.
The makers' address is Hotchkiss et Cie.


An Air-cooled Car of Considerable Merit-Taking Single-figure Gradients al Speed.

TI HERE are stili hundreds of prospective ownerdrivers who look upon air-cooled engines as being more in the light of means tending towards cheap production than as a really practicable alternative to the heavier water-cooled unit. In fairness to the sceptical it must be said that their impressions are born through lack of experience with air-cooled cars, as the proof of the pudding. ctc., applies with some emphasis in this particular phase of automobile practice.
unknown country without the exislune of ansicty as to one's ability to "get there

Peculiarly enough one treats the A.B.C. as ono would is water-cooled car-what is (1) , the last thought in one's mind is that the engins is of the aircooled type. At speeds over 30 m . p.h. on (op tho opposing exhanst beats, which at lower mati speeds ummistrkably identify the engine ats boing of the twin-cylinder type, mingle into a pleasant purr, this torque being as good ns, and even lietler than, somo fours."
iours.
As a high arerage spewd wehicle tho A.B.C. is particularly allapted. and for this attribute the efficient braking an:l four-speed box are responsible.

## 15 m.p.h. Up 1 in 5.

In the course of a cross country rum we struck Pebble Coombe Hill, near Box Hill, Surrey-an acclivity which has a reputed grachient of 1 in 5 . Now any good car wolld climb such a hill, but the respective performances would vary considerably, 'To 80 per cent. of light cars it would be a first-gear climbassuming a three-speed box-at a speed round about $8 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. The performance of the A.B.C. would probably be identical were it not fitfed with a fourspecd box, but it is, and. in second, I'cbble Coombe was taken in fine style at a minimum speed of $15 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. It would have shown up betiter but for the fact that third speed would not remain in engatgement.

The descent of Box Hill represents a good test for the brakes. whilst the nature of the surface on the upper reaches testo the suspension in a very effective manner. In both these features we found little cause for adverse comment. but rebound dampers on the

The A.B.C. engine is a very fine example of aero engine practice suitably modificd in the form of a horizontally opposed twin with overhead valves. This unit, in conjunction with a four-speed gearbox, the ratios of which have been well chosen, is a combination which enables the car to be taken through в30

and held, and, morcover, the car sits well and is quite casy to hold.

No one could handle an A.B.C. withont appreciating the light and positive steering. Ih is feature contrihutes largely towards rapid manceuvrability, it sine quat non when congested traffic centres have to be negotiated. Onc can swing the A.B.C. from full lock left to full lock right with the same cast as one would turn a stecring wheel which was discomected from the road wheels.

Now owners of A.B.C. far's may find the gear clange a trifle awkwad during the initiation stages.
but, once mastered, one almost visualizes the gate due, no douht, to the cxtra concentration on lirst acquaintance.

During the time the car was in our possession we did not experience the slightest difficulty in starting up the engine, the electric starter being used on all necasions.- We found it necessary only to flood the carburetter before depressing the starter bution,on every occasion.

It is a quiet-running, comfortable vehicle, and this model, a two-scater without dickey seat, sells for reges without starter. The car was loanci to us by the sales organization for A.B.C. cars, the British Motor Trading Ltd., $132-135$. Long Acre, London.


A NEW GERMAN CYCLECAR. The Mayr Built Upon Motorcycle Lines.
tionally light weight, is built up of steel tubes.

The power is supplied by a B.-M.W. flat twin engine developing $6.5 \mathrm{~h} . \mathrm{p}$. at 3,000 r.p.m. Hany German mutorcycles, including the Victorja and Helios, adopt this power unit, which has the small capacity of 491 c.c., the bore and stroke being 85 mm . and 83 mmu . Special aluminium alloy pistons are used. An expanding bind type cluteh conveys the drive from the engine, final drivo being by chains, one of which is enclosed in a bath of oil, to a dilierential rear axle.

Both brakes, which actuate upon drums fitted upon the rear wheels, are

ANEW evelecar of novel design is embodied in the German four-whecled Mayr, which follows closely npon motorcycle principles. The endeavour wi the manufacturers was to design a moderately priced reliable car consistent with low running costs, at important item in Germany at the present time owing to tho depressed conditions of motoring. The body, of slurdy construction, is employed to take some of the strins and stresses that would normally fall upon the chassis. The chassis, which is of excen-
operated by a hand lever. Steel tube axles running in ball bearings are used front and rear, to which are attached the quarter-elliptio springs, steering being by cables. Staggered seating is adopted for the bodywork, which is of quite conventional appearcuce.

It will be seen from the photograph that the attention paid to weather protection is scarcely in accordance with the demands of motorists in this country, although the lines of the car are not altogether unattractive.

## POPULAR MODEL BAYLISS-THOMAS.

## 919 h.p. Overhead-valve Engine. Unit Construction. Two-seater Body with Doub'e Dickey.

$\mathrm{S}^{0}$O great hae been the popularity of the lbaylissThomns cars since their introduction to the public that the latest product of Messis. Bayliss, Thomas and Co. should be of no little interest. The newcomer, of which the following is the first description, will undoubtedly uphold the high reputation of its predecessors.

Kinown as the 9-19 h.p. Popular touring model, the new Bayliss-Thomas is equipped with $\Omega$ four-cylinder water-cooled engine of 64 mm . bore and 95 mm . stroke with overhead valves. The whole engine is neatly encased and presents a very clean appearance. whilst a special ribbed aluminium cover is provided for the overhead-valve gear, the rockers of which are oiled by forced lubrication.

The three-sneed-and-reverse gearbox is in unit cont struction with the engine, and the gear lever is centrally mounted. The rear axle is provided with a spiral bevel type differential. Both the hand and foot brakos actuate on the rear wheels, which, as well as the front, are of Michelin manufacture and are
shod with. 26 in. by 3 -in. Avon Durolith tyres. Quarter-clliptic springing is adopted both front and rear.

The two-seater body is exceptionally roomy and comfortable, and is upholstered in brown Rexiue. The dickey seat is large and is provided with a high backrest and ample leg-room. Although its seating eapacity is large, it is, of course, not advisable to overlord this compartment contimally. Lucas electrical equipment is used throughout and an electric starter is a standard fitment. as are a petrol and an nil gauge on the mahogany dashboard, which is particularly well balanced and of neat appearance.

The following are the general dimensione of the car:-Wheelbase. 8 ft. 3 ins.; track. 3 ft .10 ins.; overall length, 10 ft .3 ins.; whilst the approximate weight is 12 cwt . The general appearance of the car is pleasing, and, sclling, as it-docs, for $\mathfrak{j}^{2} 260$, should find a ready market.
The makers' address is Bayliss. Thomas and Co., ling's Road. Tyseley, Bi:mingham.

## ROAD MANNERS AND SAFETY.



THAT the proper observance of road courtesies goes hand in hand with the salety of other motorists is a condition which is not always appreciated, especially by new owner-drivers. and the following brief reminders should be read carefully and mentally digested by those who way be guilty or innosent, no matter which. of the misdemeanours which they imply.

## When Leaving the Car.

A glaring example of bad manners and carelessness, coupled with danger to passing traffic, is shown in photograph No. 1. Instead of drawing up close to the kerb and allowing passing traffic the maximum amount of room, the car has been left with the nose well away
from the kerb, the front wheels locked over to the leit and the door wide open.
Photograph No. 2 strikingly portrays another example of carelessness, selfishness, or bad mannerscall it what you will.
The tank having run dry, the driver's only consideration, apparently, is to fill it up again, and, in her haste, she has "dumped" the spare can of petrol in the middle of the road until such time as the filler cap has been unscrewed and the funnel unearthed.

That other motorists should be called upon to steer round this ob. struction is monstrous and quite apart from the danger caused lyy two cars which might, conceivably, cndeavour to pass in the restricted space at their disposal.


(1) Note the position which is emphasiz
READ, MARK, AND MENTALLY DIGEST.
motorists the petr middle of the rond of the car behind off side of the road tempted to pass on to signal

To block the road by running continually more on the wrong than tho right side of the road is a practice which requires stern repression, especially when the offender is just touring along, say, at a steady $20 \mathrm{~m} . \mathrm{p} . \mathrm{h}$.

## A Golden Rule.

Fingrossed in the heauties of Nature or in the sweet running of the car, the warning signal of an overtaking vehicle may easily bo unheard and no small amount of inconvenience caused to other traffic.
Always to keep woll over to one's proper side of the road is a golden rule. It should be engraved on

## FIVE COMMON OFFENCES VIVIDLY PORTRA'ED BY PEN AND PICTURE.

$\qquad$
e position in which the car has been left-a heinous of fence emphasized by the camera. (2) Regardless of other the petrol can has been "dumped" practically in the the road whilst the driver prepares to fill up. (3) Unaware behind her, the lady driver of the G.N. serenely hugs the the road. Obviously, the driver of the overtaking car is pass on the near side. (4) Seen only too often. Better not to signal at all than to create such confusion.
every dash in crasable lettering. The incident elepioted in the fourth suapshot represents a mixture of zeal and ignorance, the former gratilying to a degree; the Falter irritating, inexcusable and dangerous.

Approaching the cross-roads, both driver and passenger extend an arm nad, although it would be thought that commonsense would preclude the possibility of such confusing signals beiug given, the condition is frequently noticed.

## The Worst Offenders.

As a matter of interest it may be mentioned that small car drivers are not the worst offenders. The
rear passengers of large fourseaters arc often far more guilty.
It is wise to anticipate the possibility of dinger, but one s apprehension should not be carricd to an extent when, in endearouring to protect one party-say an overtaking motorist-second and third parties are involved in the risk of disaster.
Such a situation is depicted in photograph No. 5. Here the drive: is debouching from a by-road on to a. main highway up a slight incline. In her anxiety to ascertain whether another car is following, or attempting to pass, she has turned round in her seat, and so intent is she upon her object that she has quite overlooked the probability of main road traffic-nor has sho
noticed that the front wheels are pulling over to the right.
The correct procedure is shown plainly in photograph No. G. The left arm is extended unmistakably, an carly opportunity having been taken to sound a warning blast on the horn. Eyes and cars are concentrated on the main road ahead and the corner negotiated at a crawl.

## Safety First.

There are countless other inistances which might be quoted, but the above, which represent the more flagrant departures, should be sufficient to demonstrate the necessity for cultivating roarl manners with a view not only of being courteous, but of rendering the road safer as well.


THE MORE IMPORTANT ASPECT.

Signal unmistakably to overtiking traffic, sound the horn in plenty of time, wait for any fast-moving traffic to pass, then negotiate the turn into the main road slowly and cautiously.


## WIRELESS

## AND THE LIGHT CAR.

> The Scotlish ShowExperiments With a Five-valve Set-Valve Combinations for Long and Short Range.


0NE of the most outstanding features of the Scotish Show was the great interest shown in cars equipped with wircless. These were to be seen on several stands, while among the exhibitors oi accessories were several who showed wireless receiving sets of all types. There appears to be a certain amount of misconception rife as to what are the capabilities of wireless receiving sets for use on a car. In one case, which shall be nameless, we noted that there was a two-ralse set working in conjunction with a loud speaker. This would not operate over any but the very shortest of distances from a 1,500 -watt broadcasting station, and we would warn non-technical readers that it is problematical whether satisfaction would be obtained from such a derice.

The size of a car has no relation to its ability to carry wireless equipment. The actual set is smail in overall dimensions, and the length of aerial does not greatly vary. The B.S.A. and Daimler Co., Ltd., are taking great interest in this wireless reception, and on their cars are to be found an eight-valve set which consists of fre H.F. amplifying ralves, a detector, and two L.F. valves. These are used in conjunction with ordinary head 'phones, and this has been found more satisfactory.

During the course of experiments which we have been conducting recently with wireless on a light car we have found that quite good results can be obtained with a five-valve set consisting of two H.F., one detector, and two L.F. valres. this working in conjunction with a loud speaker and an aerial not more than 14 ft . long. Within a range of 25 miles of a British broadcasting station. and using separate aerial (primary) and closed secondary circuits, reception is quite loud enough for open-air use, and we illustrate herewith a method of mounting an aerial in the hood of a fourseater open light car that deserves investigation. The acrial wire need not be bare; it can, in fact, consist of three or four lengths of well-insulated wire stretched between the hood sticks and the hood fabric, the wires running parallol to each other. Admittedly, this is not an ideal arrangement, but it works, and for an earth the chassis and ordinary metal parts of the car suffice very well.
It may be noted that on a dry day we have obtained signals of fair volume simply by attaching the aerial wire to one of the sparking-plug terminals, and the earth lead of the set to an adjacent water pipe. In this case the body of the car itsclf acts as an acrial. Needless to say, the engine must not he run when this arrangement is being used. We must here emphasize the fact that in no circumstances can a eet of this type be utilized without permission B34


A four-seater body is particularly suited to the installation of a inconspicuously erected beneath seen, can be quite inconspicuously erected beneath the hood.
at any rate, where it is applied to automobilism and all those connected therewith.

Last Sunday, for instance, it
to be told in one's own home was most interesting evening of incidents that home at 9 o'clock in the 11 o'cloc:- the same morning occurred in Ircland at casting Cn. will see their way. No doubt tho Broadinteresting news bulletin. There is no bulletin.
sion exists as to the difference berable misapprehenvantages and disadventerence between and the adfrequency) and H.F. (high frequencoying L.F. (low Before explaining the (high frequency) amnlification. type of amplification circumstances in which either is neederl as to the differened, some explanation principles.

## WIIEETESS AND TIIR IIGIIT CAR (contd.).

The oscillations which are picked up by the aerial are of the high frequency order, and if one is within a few miles of a powerful hroadcasting station, strong signals ran be detected straight ofl the acrial, as it were. Assuming, however, that one is 50 mile's from the nearest hoadcasting station and only a two-valve set is cmployed, it would certainly be an advantage


The most useful combination for short-range reception. The high-frequency valve may be dispensed with if the broadcasting station be within 10 miles' range.
if the inemming signals could be hoosted up before detection: this is where high frequency amplification conmes in. The "scillations picked up by the aerial are boosted up before passing on to the detector valse.
On the nther hand, low frequency or audio frequency amplification is introduced af/er the signals have been received and detected and serves to increase audibility.

## Short and Long Range Reception.

We will take two examples, which will serve to explain the use of high frecuency and low frequency amplification. In the one casc the receiving set is 50 miles away from the nearest broadcasting station, and as specel is only very fand with a two-valre receiver, the amatcur wishes to add another valre. hut is in a guandary as to whether high or low ficquency would be better.
Now, the reason why the specch is weak is because the oscillations picked up b: the aerial are not strong, and, therefore, it the receiver consists of a detector and low frequency amplifier, it is obviously urseless to add another low frequency valve, as this only serves to boost up the signals afier detection. What is wanted in such a case is increased primary strenget ; that is to say, amplification of the oscillitions before detection.
If, howerer, the recciving set is within a few miles of a broadcasting station, there would be absolutely no object in employing a high frequency valve, as, with only a detector in use, the signals should be very powerfui. On the other hand, the addition of a low frequency yalve would increase the telephone or loud speaker signals so as to render them perfectly intelligible practically all over the housc. It must be understood that no alddition of low frequency amnlification will increaso the range of a recciver; this is the purpose of the high frequency valres.
A very uscful combination for general all-round purposes is one high frequency, one cletector, and one low frequency pancl, luti should the signals not be sufficiently strong to operate a loud speaker, another low frequency vilve should be added. Should one reside 100 miles away from a brondeasting station, the best combination to employ wonld he two high frequency valves, one detector, and one low frequency nmplifier. Such a set, if properly handled, should he capable of being tuned in to all the broadcastine stations in this country and on the Continent.
To get the best results with any multi-valve set, independent control of each filament is essential, for
whereas a detector will work efficiently with the filament just glowing, the amplifying valves will often take from 6 to 8 volts across the filament. Thea, again, there is the question of providing a variable potential across the plates of the respective valves.

## Hard and Soft Valves.

Different types of valve have peculiar chatracteristics, but, generally speaking, the types may be divided into two classes-hard and soft. A soft valve, for instance, will work perfectly as a detector. for the reason, perhaps, that the porential across the plate is lower, as is the filament voltage. whereas the same valve used as an amplifier would be practically useless. A good make of hard valve should be chosen when it is deputed to do the work of an amplifier.

Hany novices will have noticed that some valves emit a brilliant blue light-a characteristic of soft valves-and this is due to the fact that the bull is only partially exhausted and the molecules of residut: gas become ionized. If the high-tension curreat across the plate of such a vaive be reduced, the blue glow will disappear, but there is, of course, nothing about which to worry. It will probably ie noticed that when the blue glow is present the incoming signals become indistinct or quite inaudible. owing to a rushing noise in the telephones. It is for this reason that the potential across each plate should be under separate control.


High-frequency amplification is of greater importance for long-range reception. The combination shown above would be suitable for picking up Continental signals.

When tuning-in, it must not be thought that providing the inductance has been tuned to the incoming wave length the filaments, so long as they are burning brightly, do not require adjusting. is a matter of fact, the finest possible tuning can only be obtained by carefully regulating the filament lighting. It is, however, not by iny means difficult fo find the best position on each respective valve, as, if the filament is not burning sufficiently brightly, the signals will he inaudible, whilst if too much current is given the signals may also be damped out.
Owing to the fine gauge of the wire and the number of turns required on a low frequency transformer, few wireless enthusiasts would undertake to wire their own, but there is no hidden mystery in their construction. When a number of L.F. transformers are in use they should be placed apart so far as possible with their cores at right angles one to the other. Noises in the telephones will be reduced if each core be carthed.

The construction of a really efficient high frequency transformer presents no difficulties, as two coils of wire placed one above the other prove quito effective. Although not absolutely necessary, a variable condenser may be shunted across one of the coils, whilst the coupling of the coils should be adjustable. Whereas a low frequency transformer operates over all wave lengths, the high frequency variety only operate within a given range, and therefore if it be desired to receive on wave lengths between, syy, 300 metres and 10,000 metres, a transformer of t'ie variable type should be purchased.

## THE USE AND ABUSE OF MOTOR TOOLS.

Practical Advice on the Manipulation of the Tool Roll Equipm,nt.

EVEN with the best behared cars the tool roll has to be brought to light sooner or later, and it is the purpose of the writer of this article to explain the correct manipulation of such valuable and indispensable adjuncts as an adjustable spanmer, set spanner and box spanner, file, screwdriver, hacksaw, hammer and punches.

The adjustable spanner is perhaps the tool most frequently used, whilst it also comes in for the most abuse. There are usually two reasons for the latter, the first that the spanner is of inferior quality and probably more musance than it is worth and, sceondly, it is used in an incorrect manner or on a nut, which needs the attention of cither a box spanner or set spanner.
There is perhaps no clearer method of explaining the correct procedure than by illustrations, and it is felt that the photographs which accompany this article are sufficiently clear as to need but little explanatory matter.

## Adjustable and Set Spanners.

Most roorices and quite a number of experienced motorisis do not appreciate the danger of using a large adjustahle wrench for all nuts irrespective of their size. Because a $\frac{1}{d}$-in. nut happens to be

Any spanner is designed to give a certain amount of leverage, and it should be understood that a large wrench is intended to deal with really hefty nuts beyond the scope of the smaller tool. $\Lambda$ range of set spanners may be taken as an example of proportionate leverage. Whilst a $\frac{3}{4}$-in. or $\frac{7}{3}$ in. set spanner is perhaps 6 ins. Jong, one capable of tackling a $\frac{1}{8}-\mathrm{in}$. or ${ }^{3}{ }^{3}-\mathrm{in}$. nut is usually half this length. This is, of conrse, as it should be, for it can bo quite understood that a reversal of things would mean that excessive and unnecessary lererage would to obtained over smafler nuts, whilst it would not be possible effectively to tighten the large ones.

The Value of Box Spanners.
A set of box spanners is practically indispensatile, for by their use a nut which would otherwise be inaccessible can usually he got at quite conveniently. By reason of the fact that a box spanner completely encircles a nut, excellent purchase is obtained, but if one wishes to preserve the utility of the spanner, and to save one's knuckles, the full face of the mut, should be covered. Never endeavour to apply leverage with the box spanner canted over, as it will assuredly slip and damage one's fingers, the nut or the spanner.

An adjustable spanner may be applied to a nut in three ways, two of which are here illustrated. The photograph below shows the correct method, with the jaws of the spanner well covering the nut. With the spanner in the position

indicated, leverage should be applied in the direction of the arrow. The spanner should not be used as in the second illustration. Alongside is shown a method of cutting heavy guage

accessible to the use of a large wrench, do not let this be an excuse for not unearthing the small set spanner.
It is net a difficult matter to strip a thread, and if it be a cylinder holding down nut or one serving an equally important function, there is not the remotest chance of finding a similar nut amongst one's junk.
B3G

There is a right and a wrong way of using an adjustable spanner, and the photographs on this page are used to show the correct and incorrect application
of such a tool.

Taking such a simple tool as a screwdriver, it is surprising how easy it is so to deform the screw head that nothing short of drilling out the screw will serve to relcase it. This trouble is not so much

USE AFD ABUSE OF MOTOR TOOLS (contd.).
the fauld of the operator as of the screwdriver blade, lor it is a mistaken mupression that this should be finished with chisel-like end. Actually the business end should have a slight laper, but it must not finish in a knife edge.

Another very uselul tool is a file, although not one person in a hundred even knows how to handle such it tool. For rough work, when precision is of minor cunsequence, it matters little how the file is handled or applied, but if extreme accuracy is required con-
of place to show pictorially how such a tool should be handled

## Cutting Heavy-gauge Metal.

The hacksaw is unquestionably a most useful tool, but in certain circumstances its use can be dispensed with and the work carried out with greater expedi tion. A substantial vice, a cold chisel, and a mediumweight hammer are necessary, and as these tools should form a part of the motorist's epuipment, the tip is worth giving. The work is gripped between the jaws of the vice, the top edge of the jaws coming

To be able to use a file correctly requires considerable practice The photograph on the left shows how the file should be held when it is desired to produce a deadflat surface. The semi-circular motion indicated on the right

must be avoided if gaod results are to be secured. A hacksaw should be held as portrayed in the centre picture. Do not steady the frame by holding it in the centre of its lengtb.

siderable practice is necessary. If the face of a file be examined it will be seen that the teeth are set to cut one way only, and therefore more harm than good results if the tool is forced down on to the work during the backward movement. Excessivo ressure is also undesirable, and the file, if lightly taken across the work, will feed itself and take olf in immount of metal consistent with the nature of its face.
If one wishes to test one's expertness in the use of a file let him try to shape a perfectly square body. Many attempts will he necessary before even a passing good cube is produced, for it will be found that, instead of the faces being flat, they are decidedly convex.

## Using a Hacksaw.

When using a file, hacksaw, or other similar tool, always take the fullest sweep possible, making good use of the ends as of the centre.
If an exnert were to take up a hacksaw previously used by an amateur the first thing he would do would be to tighten the flynut and so increase the tension on the blade. Although an expert, the blade would probably "fly" nt the first cut he made, owing to the fnct that, whilst the centre of the blade was considerably worn, the ends would be as new, the result of this unequal wear being that the wider or new tecth would promptly bite, cause the blade to buckle, and, nine times out of ten, snap.
Although $n$ hacksaw is rarely carried as part of the tool equipment of a light car, it will not be out
in line with the work at that point where it is disired to sever the metal. With the vice-jaws as a guide to the chisel, the hammer should be applied smartly and with decision. The photograph shows elearly the modus operandi.
A piece of heavy metai can be cut in this way, and although a file will be needed to square up the edges a considerable saving in time is effected, whilst the actual operation is not nearly so laborious as with a hacksaw.
Incidentally, hroken hacksaw blades may he repaired by soldering in strip of tin over the back of the blade at the point of breakage. Although the idna does not sound practicable, the writer can assure the sceptical that it is, and that he uses several blades repaired in this manner.
In extreme cases, and after all other methods have failed, should the cold chisel and hammer he used on nuts. If such steps must be taken, it is better to use a punch, the direction of the blow being at a right angle to the face of the nut. A chisel with a cutting edge will only damage the nut.
If you have any respect for nuts, do not use pliers on them. A spanner may not be directly to hand, hut if it takes a minute to find, it will save many minutes in the long run.
The master of a tool roll is usually a capable motorist, for to a great extent the one gocs hand in hand with the other. Tu be able to handle your tools correctly not only adds to the pleasure of motoring, both at home and on the road, but it also saves many shillings during the season's running.


We welcome at all times lefters sent ws by readers for publication in these columns，and whilc taking oresponsibility for the opinions expressed thercin，give preference to those letters which deal vilh subjects of gencral interest．No anonymous communications will be accepted，but the writer may use a nom de plume if desired．Letters should be as brief as possible and，preferably，typeturitten． We rescrve the right to make any alterations or deletions which we deem neccssary．

## Conquering Simms Hill－Possibilities of the Endless－track Vehicle－Over－ development of the Simple Type Vehicle．

## Simms Hill．

It was with considerable interest that I read your account of Simms Hill，Ilsington，S．Devon．I came across this hill two years ago when pottering about the lanes on a $6 \mathrm{~h} . \mathrm{p}$ ． Enfield and sidectar．I arrived at the A Motorcyclist＇s bottom of the hili，and，wondering whence Experience．it led，decided to go up（s．c．empty）．Oi course I failed beiore I got far：I knew my bus and felt sure it could do it．I tried again，taking the risk of rushing the corner at the bottom．This time I got half－ way up，but the engino became very hot and knocked badly， and so I jumped off and ran beside it，but iailed again．
Then I＂came down＂such a slide－back wheel locked，left foot on the right slep standing on the brake，and right foot acting as a brake on the ground．Even so，we slid to tho foot and nearly into the ditch at the bottom．I do not mind climbing any hill，but I have slid down a few，and it is a hair－raising feeling．
I still felt the machine could do it，and so I waited round the corner for a considerable time to cool the engine．I engaged bottom gear and roared round the corner as fast as I dare，and wo did it．I did not use my fect at all．I stopped at the inn just below the P．O．and aslied about the monster， and was told that no motor vehicles ever go up it，conse－ quently I felt very bucked with myself．

Since then I have climbed it twice at difierent times after practice at the corner），but I always stopped to cool the engine before I tackled it．I tried it once with my brother in the sidecar，but failed，and the machine．when turned，dragged us both down the hill，wheel locked and using our feet as b：akes on the ground

Torquay．
H．A．Moman．

## The Scope of the Light Car

I was much interested in the article entitled＂Incrensing the Scope of the Light C＇ar，＂which was published in your issue of Decomber 8th．In this country（India），officia？s have A Convertible frequently to go ont on tour in the parts A Convertible of the district where there are no＂motor－
Endiess－track able＂roads．At such times all ono＇s
Vehicle．camp equipment has to be carried on bul lock carts．The camp equipment has to be carried on bul according to the importance of the official who is touring． but four carts may be taken as an average number．Each of these carts nets abont Rs． $2 \frac{1}{2}$ per diem．thus making a cost of Rs． 10 per diem for carts，for which the Government pays half． This rate for carts has to be paid whether they are wo：king or not，and on a tour just as many days are spent halting as moving．Imagine，therefore，what a saving it would be to us underpaid officials to have an endless track vehiclo which would be able to do the work of four bullock carts，i．e．，carry about 30 cwt．，not including the weight of two or three pas－ sengers，and at the same time to have the necessary speed and comifortable seating to be used，when not on tour，as an ordinary car．becnuse nearly all the senior officials have also to keep a car．

B33

The ideal type of vehicle，to my mind，would be one from which the rear seats could be removed when it was intended to go out on tour，leaving a body suitable for carrying tents， camp furniture and utensils
If such a car were pul on thesmarket，provided that it were reasonably economical to run and foolprooi，so that the ordinary Indian mechanic could understand the mechanism and put right anything that went wrong，I，for one，would buy one at once，and I am convinced the vehicle would have a very large sale out here．
India．
The Simple Car．
You claim with justification that＂this journal has always been firm in its adherence to the causo of the simple type of antomobile．＂You wond render a further service if you Tendency would givo $B$ definition of tho＂simple Towards Over－lype，＂or permaps provide a list of the development．simpler cars of to－day．You would do se development．with autho：ity，and it is exceedingly difti cult to differentiate．There is，of course，the official definition of＂cyclecar＂－under 1.100 c．c．and under $7 \frac{1}{2}$ cwt．；but that definition，useful in its way，and at present holding the field， does not adequateiy deseribe the＂simple＂ear．

I do not know what is the weight of the＂Austin Seven，＂ but I imagine that with such a tiny engine it is under． $7 \frac{1}{2} \mathrm{cwt}$ ． yet it cannot bealled a＂simplo type，＂whereas tho air－ cooled Rover，which does not come under the weight limit， should，I think，be classed in this category．The G．N．of last year was slightly above the limit，but it was a typical cyclecar一it is a great loss to＂cyclecarism＂that it is no longer with us．The prosent weight limit，thorefore，seems both too exclusive on the one hand and not sufficiently so on the other．
Personally，I have an opinion that eventually the definition will include a prico limit．The first light car trial－a six days＇ trial held in Herefordshire－was a trial of＂cars costing under £200＂；obviously a la：ger sum must be allowed to－day． Other things being equal，simplicity makes for economy，and prico miy in some respects be ：onsidered tho measuro of sim－ plicity．It is really because coonomy attends simplicity that the latter is so well worth cultivating and that your advocacy of the＂simple type of automobile＂has dono so much to promote the cause of＂much cheaper motoring．＂
It is sometimes urged against tho threo－whecler that manu－ frcturers so oflen abandon it in favour of four wheels．This is true；but usually the reason has been an atiempt to make a＂car on four wheels，＂and it has seemed obvious to add it fourth．The A．－C．is an exception．It is，however，equally true that the simple four－wheeler tends to develop into the light car proper．In ponnt of fact，thero is a tendency every－ where towards development－from my point of view，over－ development－and your advocacy of simplicity was never more needed than at the present time．H．GHorge Morgan．
Stoke Lacy．

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14 The 17,000 miles mentioned I dare done since March 2lst, ly-2?, A little ovet nine months.

Fron Mr. E. H. HARRISON 25, Collman Strcil, IIull. It appears to have been eminently satisfactory to the engine judging by the small deposit of carbonafter $\$$, $6 C 0$ undes and tise generally efficient tubrication of the essential 1 arts, particularly as the feed is 'splash.' 'There does not appear o be much 'gumrainess' of the piston or ring's when starting from cold, which cer!ainly was the case after using a well-known brand of oil which I believe is mainly vege:able.'

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## IS MODERN AUTOMOBILE PRACTICE ALL WRONG?

## The Writer of the Article Stands by His Guns.

The very informative letter from Mr. G. T. Wison, which appencei in your issue dated January 261 h , adds a great deal of interest to the controversial subject which I raised in my In Defence of article, "Is Modern Automabile I'ractice Steam Practice. Judging by his remarks, ho modern autombile may not be all
I do not quito follow what it ment certainly not all right. is more design, in accurate guantity, it the petrol motorear than there is in the majority of steam plants." To me the phatase conveys absolutely nothing.
Lour correspondent says that any man or woman can be taught to drive a car in a few hours, and asks: "Is it possible to say the same of steam power generators?" Most decidedly it is, for in the casc of the latter it is necessary merely to open a stop value and the mechanism of the engine, even to the correct r.p.m. for any load, does the rest.
I would go farther and say that it is passible for anyone with an elementary knowledge of engineering thoroughly io understand a steam cugine in a quarter the time taken tu mastor the petrol engine with its complicated cycle of operations, coupled with the intricacies of carburetter and magnelo.

The downward momentum of the piston of a petrol engine is partly absorbed by the flywheel, says. Mr. Wilson, and this containly is correct; but I stisl maintain that the reversal of alf tho stresses falls upon the crankin. and if this does not hreak down under the strain it must, materially add to the masibitity of trouble with the crankpin hearing.

A cam may he a benutifully designed article, but can it lie compared with the smooth operation and practical everlastmg life of an eccentric?
I du nut suggest that the Corliss ralue is suitable for petrol motmonal perhaps my remarks conseyed a wrong impres sa, in. I quoted this type of valse as showing what had been
done in steam engine practice with regard to instantanecills cut off, hoping to emphasize the fact that by comparison the petrol engine was far behind in design.

With regard to lubrication, my experience does not agrea with that of your correspondent, for in enclosed high-speed steam engines, such as are suitable for small generating plants, the bearings are pressure fed by submerged pump, and there is no possibility of trouble arising from a few pipes "which never remain over the oil holes.'
Mr. Wilson asks: " Why should wheels not be meshed while revolving when they run at the same peripheral speed?' Well. I admit that miracles can be performed, even with toothed wheels, but this remark hardly answers my critucisn.
I am somewhat amused by the comparisns which is apparently made between the light tar and the steam roller. so far as the differential is concerued. Surely the motorcar is on a different plane, and is capable of being fitted with some thing betler?

I am indebted to Mr. Wilson ior the figures he gives in connection with the efficiency of the fluid ciariable speed cramsmission gear, but I think that this system is worthy of closer attention, and that ii it progressed on the right lines its weight might be materially reduced and its efficiency increased.
As to the efficiency of the steam turbine: your correspnndent admits that at full power my cham is justified, and this. let it be said. is on a par with the fact that a petrol engine is also considerably handicapped unless it be ruming at a certain number of r.p.m., when it gives of its maxinum power. The Wirter of the drticle.

* The above reply from our cuntributor represards only the gist of a iairly long letter. Owing to considerations of space we have leen obliged to curtail his remarks. EDo.

Below we, publish extracts from three latters criticising the article "Is Modern Automobile Practice all Wrong ?" The lenglh of the original communications and considerations of space will not permit of the letters bcing published in full.-Ed.

## Questionable Efficiency of the Turbine.

The references to the steam turbine in the recent articlo
Is Modern Automobiic Practice all Wrony?" call fur some commont. I do not agree with the statement that "there is prubably no more efficient source of Scope for a power "than the steam turbine. Stricily Rotary Engine. speaking, it is only a prime mover and prime mover I contend that the Diesel engime is far more efticient, and, moreover, it provides a direct conversion of energy in the cylinder, whereas stenm turbines have to be operated by steam generated in boilers.
Your contributor makes some good "points " in the articie, and I think wo shall arrive eventually at somo highly efficient form of rotary engine.
H.T.B.

## Little Wrong with Mcdern Practice

I have read will some interest and more amusement the article in your issue dated January 19th, and can quite understand your contributor's desire io remain anonymous. His ideas. instead of being imnovations, are as The Differential far behind modern practice as the evevs. of a Necessity. an early pumping engine are behind thoos of the latest petrol engines.
Dealing with your contributor's first driving lesson, it can only be atssumed that his friend was a poor tuţor. I havo taught scores of novices to drive, including a number of ladies. and it is quite an exception to have a noisy change, even during the first tew lessons. I quite agree that it would be barbarous to mesh rotating gears while ruming at different speeds, but skill is required in gear changing to ensure that specds, bat seripheries of the two gears are running at approximately the peripheries of the twey will slide in withont the slightest The same speed,
fenr of damage.
Toucling on Corliss ralves, one can imagine the wear on these when warking ai petrol-engine speeds with hot exhaust these when The actiou of the poppet valive certainls seems rather gases. The action of the poppet rate but is remarkably efficient. nond will last for many years with an occasional grind in. It is also much cheaper to replace than any other type of valve.

With regard to the writer's remarks that he could see no real reason why a differential should be fitted. I can only reier him to the discussion which has been running in the motoring P'ress ever since he left England. The paragraph asking ". . . Why the few should have discovered the benefits of eradicating such a mass of useless machinery, while the majority still cling resolutely to it. etc., " is exceedingly rich; perhaps he thinks that the function of the differential is to stir up the oil.
The easiest way of answering our friends guestiou is to ahk him to compare the size of the latest $1,000 \mathrm{~b} . \mathrm{p}$. aero engine with the $1: 200 \mathrm{~h} . \mathrm{p}$. win-eylinder ermpound-tandem con densing rolling mill plant that he mentions

Herdert Caipenter, M.I.Mech.E.
In Partial Agreement.
I heartily agree with the main part of your contributors article. entitled "Is Modern Automotile Practice all Wrong?" in 'The T.ight Car and C'yelterar of Jammary 19th

## The Car of <br> the Future.

 but, whilu diadgreeng with him in a few his me to bun by opposing some of his statements. He siarts by attacking the petrol engine for the harsh and uneven action of its pistuns. Sow, all defenders of this type of engime mnst admit that the steam engine has the adiantage here: but if the petrol engine had not got great enough advantages ojer the stearn encine to cancel this. I am sure that the latter would have been universally adupted fur the propulsion of automobiles.I agree with him that poppet ralves are crule in tho extreme.
Your contributor next attacks the differential. As this item is absulutely eflicient, is not clumsy, and gives no trouble, 1 do mot think there is any cause for complaint in that direction
Bofore very long all cills will be driven and steered on all fone wheels. Every wheel will he sorung independently of the others-that is to say, there will be no front or back axles as we know them to-day.
D. J. Hamilton-Lister.

## OUR READERS OPLYIONS (contd.).

## 100 Miles in $3 ?$ Hours.

I was much interested in the letter published in your issue dated January 18th, headed " 102 Niles in Four liours " iut an A.B.C., is I have one of theso cars, and you publisheJ an account in March last year of a run I

## A Good <br> Average.

 did from Martborough to Reading. They certainly are big-hearted little cars, and are a joy to drive.I have now a $60 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. A.-C. sports model, and with a passenger, houd up and luggage I accomplished the best run 1 have ever done-from Bridport to Camberley, on Saturday, January $20 \mathrm{~h}-110$ miles in $3_{3}^{3}$ hours, with a half-hour stop at Blandford, for luncls and petrol. Top gear was used the Whole way except for one change two miles enst of Beidport. The time of derarture was $12.15 \mathrm{p} . \mathrm{m}$., and of arrival $3.58 \mathrm{p} . \mathrm{m}$. The route taken was via Dorchester, Blandford, Salisbury, Audover, Basingstoke. Petrol consumption 32 m.p.g. S.

## Averaging 26.7 m.p.h.

After reading the comparative average speeds of the Lagonda and the A.B.C. in two recent issues of The Light Cur and Cyclecar, I would like to stato mine on a Rhode.

Norwich to
Birmingham in
Under 6 Hours. Last week-end I stayed with a friend in Nozwich, and delayed starting on my return journey until 3.50 p.m. All whe wey from Nowich to Eaton Socon (82 miles) one gels a real good road. Here wo made a stop iu fill up with peteol, two gallons filling up the tank. Starting again, we made for Bedford and Norihampton.

We arrived in Northampton at twenty minutes to eight, and left as the clock was striking eight. Dight miles from Northampton one strikes the main London-Birmingham road, where good time can be made.
Our journey was so good that when we nurived in Birmingl:an I thought I must wire my friend in Norwich to the effect that I had arrived safely. filhe wire was timed 9.44.
The actual time taken for the journey was six minutes under six hours, this including the stop to fill up with petrol and refreshment at Norlfampton. The distance according to the Dunlop map is 159 miles. Including stops, our average wo:ked out at $26.7 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. , or excluding stops approximately $29 \mathrm{~m} . \mathrm{p} . \mathrm{h}$.

Birmingham.
C. Grey.

## Smaller Tyres Give Increased Comfort.

I have from time to time noticed letters in your correspondence columns with reference to Rapson tyres, and although I

Smaller TyresLess Pressure
Longer Life. have never yet taken any part in correspondence of this niture, I feel that it is only fai!. to other women motorists, and also to the Rapson TyreCo., to let them know my experiences with these tyres.

I drive an A.C. coupe, and when the original tyres fitted to this car, which were 710 by 90 , wore out, I approached Messrs. Rapson with a view to replacing them with tyres of their make. The first thing they did was definitely to refuse to supply me with 730 by 90 tyres; as they stated that the size of the rims was 650 by 65 , and that, if $I$ wanted satisfaction, I musi therefore fit 700 by 80 .

As. even with my slight knowledge of motoring matiers, it seemed to me that in doing this I should lose a great deal of comfort. I decided to try out two tyres only to see how they fared, and, to my surprise, I found that, appanently because low pressu:es were used, the com[ort of the car, far from being decreased, was actually greater than with the 710 by 90 covers which I had been using.

I have now filted my car wilh 700 by 80 Rapson tyres all round, and, after 3,000 miles running, can honestly say that they have given me every satisfaction. I have had no trouble at all, with the exception of a leaky valve plunger, which Messrs. Rapson replaced free of charge at their London show. B42
rooms. The car not only rides better, but does not slid, rooms. The car not only rides most greasy roads-a point which I am sure appeak very much to the average woman driver.

In closing, I would like to say that I have no interest in the Rapson Co. othe: than that of a very satisfied user.

Regent's Park, N. IV. 1.
E. S. Celeman (Miss).

## The Price of Petrol.

Motorists in India have been watching the reductions which have recently been made in the price of petrol at home, and wo (the South Indian Motor Union) recently approached the concerns which distribute motor spirit,

## An Appeal

from India. as no reductions have been mado here sympathy wilh thoso at home, but without success.
As you are aware, the petrol used in India comes principally from Burma, and it only takes from three to four days for the steamer to bring it across. It seems most unreasonalice that motorists in India should bo paying exactly the same price for petrol as you are paying at home, considoring the cost of transport, efc. In addition to tho actual cost of petiol, we have to pay an import duty of 6 amas a gallon, whin brings the price of petrol to the motorist in India to tho equivalent of 2 s . 6 d d. per gallon at seaport towns; for infand towns additional rates are charged.
This association feels that the support of all motorist: is necessary to enable these high prices to be reduced, ind it seems hardly creditable that we in India have to fay $6 \frac{1}{2} d$. per gallon for petrol more than you do. We are well awaro that the price of petrol in England has been brought down by American competition, but we feel that at the present time the petrol companies are not weating us equitalily.

We minht also add that efforts have been made hy tho motor unions and motor trades associations by appealing tu the Government for a considerable timo to reduce the 30 pees cent. import duty which has to be paid on all motorears comy. ing into India, but so firs there appears to be no hopre of success, as motorcars in this country are still looked upon as


Uriconium, the ancient Romancity, lies half a mile south of the main road between Wellington and Shrewsbury. Excavation work is still being carried out and many of the relics found have been transferred to the Shrewsbury Museum. A Bayliss-Thomas figures in the foreground.
luxuries instead of necessities, which they really are. Considoring that racehorses may be imported free of duty, we epally thinte the duty on motorears should be reduced to at least half that levied at present.
We trust you will be able to give our letter publicity in your paper so that motorists in England will be aware of tho varying conditions in other parts of the Empire, and anyassistance they can offer will be welcomed by the South Indinn Molnr Union, Ltd.
S.I.M.U., Ltd., Madras.
G. V. Scovell.


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## AROUND

## :: THE TRADE.

The Standard Motor Co., Ltd., have issued an attractive calendar depicting a Standard car on tour. The calendar, which is finished in sepia, will be forwarded to any reader upon application.

Ramsdens (Halifax), Jutd., Station Works, Halifax, manufacturers of the Jeavons lubricating spring gaiter, have been appointed solo concessionmaires for the motor trade, homo and export, for Brammer belting.

Calthorpe owners will be intercsted to hear that tho Calthorpo Motor Co. have now published an instruction booklet in connection with their 12-20 h.p. model. This bork will be supplied free of charge to any Calthorpe owner uprom application.

A strongly made, neatly finished attache case, covered in waterproof art leather cloth, which at a moment's notice can bo transferred into a convenient seat o: stand, is markeled by the Patent Stool Attache Caso Co., 93, Aldersgate Sirect, London, E.C.1, at prices ranging from 14s. 6d. to 28s. 9d.

The TO.M Co., 61.52, Newman Street, London, IV 1. a:e marketing a new device called the P'etrograph. Priced at 70s., this instrument shows on a dial on tho dashboard tho exact quantity of peltol in the tank. A thief proonf lock for 6s., and a preparation for relaxing all the clooking deposit from the engine are two other specialities of this concern, who are also agents for Heath plugs.

We are indebted to Messrs. W. D. Foster and Co, 26. Hampstead Road, London, N.W.1, for permittirg us to photograph their comp:ehensive accumulator charging plant, an illust:ation of which appears at the heading of the articlo entitled "Chatging Accumulators." A feature in connection with the service of this concern is that motnrists' accumulators will be filled with distilled water free of charge, and Messrs. Foster would bo pleased to examme starter batieries gratis.
The Car Mart, Ltd., of 297, Euston Road. London, N. W. 1, have now acquired the lease of premises at 46.50, Park Lane, W. 1, and 136, Piccadilly adjoining, at present occupied by Carlish, Lid., and are transferring their head offico to those premisas, under the personal supervision of their present managing director, Major R.S. Grigg, and general manager, M.. A. H. Pass. The Euston Road depot will bo under tho management of Mr. C. J. Joyce, and the premises at 173, Piccadilly will bo in the charge of Capt. C. E. Bowman.

Tre learn that Mr. Wr. F. Milward, whose severail successes in compelition on Charron-Laycock tars was such a fanture of last season, is now seeking an opportunity to turn his energies in a different dircetion, and would be interested to get into touch with any manufactureer who has a vacancy on either his works or service staff. Mr. Milward designed tho Charron- Laycock light car and was responsiblo for its pro-
duction from its incetion. duction from its inception. His present address is 96 ,
Lorraine Mansioas, Holloway, N. 7.

Wo are informed that Mr. H. S. Tilley, who established and brought the Industrial Guarantce Corporation, Ltd.., to its present influential position in the hire-purchase business, has now. transfe:red his activities to the Continent, where ho
will act as Continental managing will aet as Continental managing director for this corporation. He will be plensed to kerp in touch with, his many friends in the trade, and will be ve:y glad to be able to servo them in any way if they will communicate 9 with him at the Industrial Guaranter Corporation, Lld., 17, Rins Joubert, Pa:is. Mr. Tilley's soosition in London will be taken over' by Mr. G. E.
Coíwaik.

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or money orier save time. C'beques must be mado payable Temple Fress Or money orier savo time. Cheques must be mado payable Temile press
Ltul, and are acknosledged to seller when cleared." If a sale is concluded, we fursard to the seller tha amount agreed unon. If no ssle ${ }^{\text {as }}$
 nisalon of 1 posited un to $£ 501$ per cert. on amounts from $£ 50$ to $£ 100$ and it per conted on amouats exceeding $£ 100$. to cover our expenses of booking, jost ages, elc. Carriage is to be piad by tho hiyer. It the article is raturnet. each maty pays one way. The risk of damage in transit is the seliex e. Articles on ang:oral are not to be relainca more than bhrce dajs, umioss
by arangement between the parties All disputes to be setled by the arbitration of the Editor of TFIF HIGHT CAR AND C
whoso decision shall be final and binding on both parties.
IVARNTNG.-Acknowledgments of teposits or instructions to forward coods advertisad are only, written on onr special headed paper, which tiser should ACKNOWLEDGE JMMEDIATELY any such letter apparently comiug from us, and delas Inewarding the zoods for a day or so. Should we, on receiving such an acknowledgment, to part with the gooda been senl

## CLOSING TIME.

Cony for, and all matter relating to, advertisements must reach the Head ollices first post Tuesday, and should be addressed tis Rosebery avenue, London, E.O. 1. If prools of displasicd advertisenents are reqaired, cony should be lo:w
Head Offices:-7-15 Rosebery Arenue, toudon, EC. I. Telophome,
 iAdrlesges of Branch onices nad other liusines
will be found on the last nage of this section.।

## NOTICE.

Owing to postal delays and irragularitles, it is adolsable to post advertisements EARLY ON MONDAY, so as to ensirre, as Tuesday. possibla, that they reach iss by the FIRSI POST on Tuesday. Lately several advertisements have been recelchay.

## SECOND-HAND <br> LIGHT CARS AND CYCLECARS FOR SALE

 second-hand cara are solá férma to sellers most reasonable. zzz-744 A.B.C. Gordon Watney and Co., Ltd., 31, Broois St., W. 1 (Phone, Maylair 2965 and 29601, West End wh.llocale and retail cuticessioniairea, trom $£ 150$. Can be purchaterl on the deferred payment. Curt taken in part exchange.
zert in
zLz-55
A.B.C., 1932, Regent and Sporks medels; choice of Ji. Triacs Irom
 A.B.C., 1921 sports 2 -scater, fu!l equipment, plendid condition, , L120:
 A.B.C., practically now, 1922, sportw, avers pussible accesony, 2160 . A.B.C., I921, 6ports 2 -scater, ruhy equipped, smart ard sound tax

A.B.C., 1922, sporis, 2-seater, fully equipped, taz paid, e143 garaze, 12 Cornwall Terrace Mews, N.W. 1. Rear Laker st. Station. Phunte, $532-a 45 \%$
Latngham 2933 . A.-C. Let us quote you for sour present A.C in part exenarge jor a
 LaHohami 2172. A.-C., 1915, dynamo. detachable whiels, oversize trris 3 new, in grod 5ड゙2-600 A.C.s wanted in part exchange for new 8 hp Talbets. Liberal terms. Hinsy pasments bysten. Warwick Wright, Lui. Sole Landon Distributora of Talbot cars, 150 New Bond St., Lundon. W.1. Telephone, Maydair
6504 . A.-C., $1921,11.8 h p$, all-weather 2 -sealer, dickey, enli-starter, cjanam, lugiage grid, Klayon, etc. sf60 extras, perlect condiusn rhroughout,
\&275. Virian, 30 Spenser St., Fictoria St., S.W. I. Vict. 8677 ع270. Virian, 33 Spenser St., Fictoria St., S.W. 1. Vict. $3677.532-499$
A.C. 1922 de luxe model, 2-seater, starter, lightin5, speecometer, dickey, etc.: superb condition throughout, milea, $1,5 C 0$, pained blue

 A.-C. 19212 -seater. all accessories, recently overbaulia anc repanter, Londiton. periect. E240. Smith Motors, Lid. Hizh RA.. Goodmayes;
ALBERT bargains. As we are rebuildingeand cnlarging onr promises, we are compelied to dispose of some oi our stock anc-can ourer, al very
lom prices. soreral Alberis, inciuding i923 demonstration cars and 1922
 smich Rd., Kensington Phone, Western 4140 . 532-w972 ALLDAYS, 10hp, 4-cslinder, 1915 model, genuine all-weather 2-3seater, windows open with doors, $\boldsymbol{2} 70$ just spent complete repaintivig, roupholstering, and orerhitul, crerything perfect, inst, silent, fiacza clech rric lights, new tyres, reason sale given. tax paid, 2110 . Fiat 1,169
Fulham Rd. Telephone, Kensington 6293. A.V. monosar, 1919. electric lights, disc whecls. Zenith earburetter, Triplex screen, repainied. smart appearance, $£ 30$. 13 AbbeviUe Rd. A.V. monowar, with dickey, 812p J.A.P., 1920 , 2-specid, elcetrie lizht,
 A.V., Junc, $1921,8 \mathrm{hp}, 2$ seater, small mileage, iully equirimed, 5 months. Aicence, perfect condion, $£ 58$ or neasost. Cleã Tetney, Bath IRd. A.V. The I.ight Car Co. ofter a rery nice A. V. 2 -seater, in exectlent condition throughout, f50; exchange or, hire purchase. $\overline{3} 1 \mathrm{Euston} \mathrm{R}: 1$.
Losdon. A.V., sports, 1923 model, side-by-side alamindum:body and madguarda, wiro detachables. 700 by 80 tyreg, Harfort shock abiborbers, elect:ic Hinting and D.A. acetyere, spectometer, fitted wid either 300 c.c. m.p.h., not done 300 miles, rery sporty appeararce, c110; exchallig A.V., Latcst 1922 2-scaler, ntted dyammo, hood, detachable winets, many extras, aboolutely as now, $\mathbf{x} 85$ or exchange. 3 siamiord bronk
EEBE PEUGEOT, 3 specds, exceptionally nice condlion. ETO 10 s.; cx.
 BEBE PEUGEOT, 1914, 4 rvinders. expensively equipped, oweramuled

BEAE PEUGEOT, 60 gilness, de luxe 3 -specd, rit-weathel discs, osmart. lhenuinn Motor Aztucy, 4 Venman Pl., Piccadilly Circus. Regelit 986.
 BABY PEUGEU1, 65 guineas; exchanges; do lure $\boldsymbol{f}$-seatar, $7 \mathrm{hp}, 4$ cyineतova sate change, spary rim, mimart, any examinalion, trial. Seab-idxe,
35 inanaler lid. Fist Dnlwich Sydonham 2452 . BELSIZE-BRADSHAW 3-sevter, new 1923 modal. ready for delfocry
 EELSIZE-BRADSHAW Mum on lip delivereal February, brand new 192 merifle
Cyclecar.

Readers are referred also to "THE MOTOR" (Tuesdays, 4d.), which contans eatch weck many hundrads of advertiscments of neis and second-hand cars of all kinds.

## SECOND-HAND <br> LIGHT CARS AND CYCLECARS FOR SALE (continued).

 W. 1 ('Phone, Mayfair 2965 and 2966 ), the West End wholesale cun-
cessionnaires, have several second-hand 1922 models, carrying our cessionnaies irom ex175. Can bo purchased on the delerred payments. -
BELSIZE.BRADSHAW, Shp. 4 -scnter, hood and screen, colour grey,
upholsters blue, nickel fitings, wheces and tyres standard, dynamo light, upholstery blue. nickel filtings, wheels and tyree standard, dynamo light gain price, $\pm 210$ in in London. Write, Box No. 411, care of "The Light
BELSIZE-BRADSHAW, Re ner, $10 x$ paid, posh little car, fall equipment, perfect condition So-mile trial run to pennino buyer, $\mathcal{L 1 7 5}$ or Learester.
BELSIZE-BRADSHAW, 2-J.seater, with dickey, speedometer, starter brand new, £220; also 2-5-enter, with speerlometer, £200. Putney BLERIOT-WHIPPET. F.O.C.II. hare 1921 Bleriol-Whippet, bargain BLERIOT-WHIPPET, 1920, dynamo tighting, spare whecl, excellent condition throughout, so guineas; exchanges and delerred. Edwards. BLERIOT. WHIPPET 19202 2-seater, 5 detachable interchangeable whecls, new ighack hood. aluminium dash nad improradinterior foish, electrio Owner, Conision, Anchorage Rd., Sutton Coldfield.
BROOK, $\boldsymbol{E 7 5}$. 1921. 8hp 2 -seater, dsnamo lighting, 5 detachnble whecls, specdometer, clock, exchnnge. Denman Motor Agencs, 4 Denman. Pl.
Piccadills Circus. Resent 986.626
BUCKINGHAM, 1923, 10 hp , 2 -seater and double dickes, latest model pastel blue, Lucns lighting, horn, spare whecl. Sandum side screcns, mascot. etc. tax paid deirered December Joth cost $£ 195$, mileage

BUGATTI, 1922, 16 -ralre, English cloverleal 2 -seater bods, in excep tionally nice condition, fitted with every possible accessory, tax paid
$\varepsilon 385$. J. Smich and Co.. Motor Agents, Ltd., $52-54$ ITamplead Mid BUGATTI, 1921, 16-valre, sporting 2 -seater, dsnamo, detachable wheels, elock, specdometer, splendid condition, 2365 . Below
BUGATII, 1914, speclal 2 -seater body dynamo delachable wheels. specdometer. dash lamp, excentional condition, si65. Pickworth and
Hull, 107 Gt. Porland st., W. 1. Langham 1998.
$552-511$
CALcorr spares and repairs. All Caleott spare matts in stock for immediate deliva. Trads supplied. All kinds of Calcott renjirs. snall or large Domplete orcrhauls. Authorized direct azents for Calcott cars Trade Iondon. Phone, Hammersmith 258 .

 CALCOTT, ${ }^{10} \mathbf{h p ,} 1919$ fully equipped, newly painted, orerhauled Toticnham Court Rd. Phone, Langham 224 CALTHORPE, spccial, fast, recently orerhnuled by makers, aluminium

 CALTHORPE, 1922 . 4 -scater, all-weather, lighting, starter shop-soiled Only. Portland St., $\mathbf{W}$. 'P'ione, Langham 2363 . Smith and Hunter. 540
 CALTHORPE, 1920 molel, 4seater, electric starting nnd horn, new hoor, overhauled and painted
CALTHORPE, 11 hp . 1920,4 seater saloon, excoplionally smart bods, new condition, trial London, 2275. Owner, Warsash House, Hants. 534 a
CALTHORPE, 129 guineas, exchanges, delerred mayments: 1914-15, 4 seater double ecren, 5 detachables, one-Tnan hood, celectric lamps, smart,
Seabridge, 35 Hanaler Rd., East Dulwich. Telephone, Sydenham 2452 . CALTHORPE, 1918 , 2-seater. with dickos. lighting set, sell-starter. deLached wheels; £130. Hales, 16 Bourdon St., Berkeleg Square, 5 IF-a 430


## SECOND-HAND <br> LIGHT CARS AND CYCLECARS FOR SALE (conlinued).

castle three fooc. $\quad$. have 1922 Castlo Thrco, bargain. 5 Healh ChARRON, 1915. 8bp, 2-senter, detachable mheels, epare whecl, all good tyres. acetylene headlamps, oil sido and tail, in per ect micelantica condition, carefully used by clergyman, usual tools and epares, tax path
to March, 30 m.p.g., any trinl or oxaumination, E75. Diy, Okehnmplon. CHARRONETTE. Cass's Botor Mart, Ltd. 1921 8.9hp 2 -scater, dynamo ightins and starsing, 5 lamps, specconieter, 5 wheels and isres. excollent condition, bargain.
ren St., W. 1. Museum 62 j.
CITROEN, 10hp, 1921 , speedometer, rear screen, lenther paiters, in
splendid conditlon throughout, $£ 165$. il Gloucester St., Oxiord. ITROEN zzz. 27

 citroen, new, $5-7 \mathrm{bp}, 2$-seater, 1923, $\overline{5}$ specds, reverse, felf-ciartir, dynamo lighting, wonderful lithle car, \&175, Lax paicl to March. Vat
de Maele, $21-22$ Upper Rathbone Place Garage, Lonilon, W, 1. 532 -a 545 CIYROEN 4 seater, in good condition, self-starter, dynamo lighating. 5
 Putney 2728.
COVENTRY-PREMIER, $\bar{j}$ in stock, 1922 morlels, © $145, \& 137, ~ \& 175$;
 COVENTRY-PREMIER, 1922, mileace 350, as now, fully equinned,
C190, olier.
244 Old Christchurch Fid Bournemouth.
$532-418$ EOVENTRY-PREMIER, 8 hp, 1922, new in June, double dickey, dynamo

 dargain. 5 lleath Sl., Hampstead (near Tube).
EOVENTRY-PREMIER, 8hp, 4 -wheler. nesw June, 1922 doullo dickes,
 COVENTRY-PREMIER, practically new, late 1922, dynamo lighting,

 COVENTRY-PREMIER, 1922, 4-wheler, dynamo lighting, clock, specdometer, de luxe model, double dickpy indistinguishale from new
145 guineas; exchanges and delerred. Edwards and Co., Ge. Porlland
St., W. 1.


 DE MARCAY 8hp 2-senter, little known here, but one of the nost im. cient, fast and comforiable cris on the market. It is in wxellent cancli-
tion. but owner is ordered to Gotir coast nnd must sell nt once acient
$£ 75$ cash: nhot.
 Can Me secay."

532-491
DE MARCAY 1921 10hp 2 -seater, dynamo lighting, detachable wheels;

 ERIC-GAMPBELL, 2 -reater, 1920, luxuriously equipped, $\& 150,244$
Old Ohristehureh Rd. Bournemouth.
$552-413$ ERIC CAMPBELL, late 1921. 2-eater, dynamo, spare wheel, speed $\mathcal{z}$ changes. Hiller (sido belll, 127 St . Mark's Rd., North Kensingtan.
ERIC CAMPBELL, 1921, all-aluminium bods, speedometer, revolutinn
 ERIC LONGDEN, April, 1922, 8.9 twin Blackburno water-cooled, 3 speed, reverse, dynamo, speedometer, spare wheel, 55 m.p.h. pertect
throughout, it 40 . Eationd, 38 Porthnd Piace, London. 532 w4 37 , G.N., 1922 . A fow slighty shop-soiled demonstration, touring, sparting and racing mohels arailatle, extremely attractive prices. G.N. Motro
222 Gt . Portand St., W. 1. Phone, Muscum 2271. C.N.s wanted in exchango for 8 hp . Talbots, Balance by instalmonts
Warwick Wright, Ltd., 150 New Bond St., W. 1 . Phone, Maytair 6504.5 , C.N., ${ }^{1921}$ dickey, exceptional condition in every way, low milenge. LrinL G.N., 1920 dynamo, 290,532 -y 156 cash, or 21816 s . deposit and 11 Legare model, whenhout ds namo. $£ 90$ G.N., Supt 1920 mall millase in monditon, dyname ${ }^{222}$ - 568
 G.N. ${ }_{\text {l }}^{1921}$ as now L 115 ; delerred payment with oplion of diccount
 C.N., all aluminfum sports model, dynamo, opecdometer, exceptionally rast, 2135 ; oxtonded terins lrom 20 per cent. down. Below.
G. N., 1920 , specially long chassis, 3 -seater, dynamo, clock, apectometer
2 srare whoels, exceptinnally bood condition, 100 suingis. 2 srare whoels, exceptinnally bood condition, 100 suinens; extended


## SECOND-HAND <br> LIGHT CARS AND CYCLECARS FOR SALE (continued).

C.N., 1921 , alynamo lightings shock absorbers, done under 4.000 milces



 C. N.: 1921 , seater. French, arey, dynamo lghting, exceptional engine
 G.N., March, 1922 , tax paid, dynamo lighting. dickey feat. S detachable

 nalmut uciuntusize tyres, very tost, 50 in.ph. 55.60 per gallon, only
 G. N.s Wintital in part exchange lor now 8ilp Tallouls, Liberal terms.
 C.N.a the 1921 de huxe models, filted dy namo lighining epare whecol, - Netmet an wilh uickey seat, f85 ench; or exchange cumbinatuon.



 G N Cumb Mator Mart, Lid. 1921, 8 lip, 5 lamps, borb, specdomeler, huod civis just orerhaled and repiinted, mirgain, 80,
 Lait nummunt sydenhata 2452 .
 C.N., 1921, mochanical oiling, adius able tappots, D.A. lighting, spedo-
 G. W. K. 2 .

 c. W. J. Jat molel 4 -spazcr, in extremely, good order, boilywork nod



 ton 3200. All spare parts in slock. ©oll-cquipped wing, $£ 72$ 10s.
 HORSTMAN, 1920-21, smart 2 -seater, dickey, 6 whecis, Jynzmo starter. bargain, $\mathcal{L 1} 135$. or chieaper car and casb. Ben-ma-chice, Patchan 532498 HUMBERETTE Spare Parls Dept Repairs. Teplacements, orerbauls. HUMBERETEE Spare Parts Dent. Repais.
HUMBERETTE. HInmber Service Denot CAnterbury Rd, Khlurn,
 HUMBERETTE, 1914, water-cooled engine, recenlly put in sound nrder
 HUMBERETTE, 1915, water-cooled, dynamo lighting, speedometer.
 anitinsurauco mid, and You can't get hisem! Write und ask us why.
 KEVAH, $1921, V$ twin, water-ccoled ghp, sare nawe dickey, very smart and inst, cose $£ 279$, £85, a bargam.
Mri., liournemoutl. KINGS日URY JUNIOR 2 -seater, 1921 noolel, dynmo lighting, dise wheels, in firstelass order, $£ 90$. J. II. Sutherand and Co, $\overline{0} \overline{5} 2-411$ Jenshitw St., Liverpool.
KINGSBURY JUNIOR, 1921 , 9 hp, 2 -seater, dickey, thernughly overhanled, dynamo, 5 lamps, 5 whects, coupe 11 ment, $x 100$, we what ollere $532-4458$ Whipples Garabe, Grantham.
LAGONDA. Several good second-hand cars for sale. Full particuinrs pres MATHIS 8.9hp 1922 jheseatef demong
MATHIS, 7.5hp, 1922, used for a lew wial runs only, f200. Below. 1922 only rud 1,000 miles and in perfect condition.
MATHIS. Herough Mills Garaga Co., Manchester Rd., Bradkord. Phone, 533 -w 995 6177 Bradfurd.

## SECOND-HAND <br> LIGHT CARS AND CYCLECARS FOR SALE (conlinued).

 MATHIS. The lishth Car foo wher a 1922 Mathis 2 water, dyamo
 MERCURY, 159 guineas, exceptiotal barguu, Exchanges, veterred pay-



METEORITE, 169 guineas, exchangea, excedtionaliy sinart 1519-20 2 seater, dickey, dynami, 11 by, 4 rylioders, 6 detwhables, filent. Hexibie, last. Senbridge, J゙5 Hansler Rd, East, Dulwich. Syderliam 2452. 5 .
MORGAN Sersice Depot. Officially appointed reparers by the Norgan Motor Co. for landon Full range of spares carried, ieve and second hand marhines always in stock. Pradc supplied. Uffcial agenty,
Dotnac' 243 Lower Clapton Ru., E. 5. Jaiston 2408 .
zzz-580 MORGAN specialists. James ant Co. (Shequeld). I:d., 253 Ecclesall Rd.' Shi.field. 'Telephone Central 2460. Guod stork of spares carricil.

MORGAf, Grand Prix, late model excellmat condition throughout, in
clear Sfo. Midand Garage, Brond St., Braninghater
MORGANS, £55 to £120, exchanges or defertid pagmonta Cluve-
MORGANS, choice of 3. 1922 Popular, 1922 Grard Prix, M....., is
 MORGAN. Dari Guy Wejmonth, maid Dorsel agent. 'Trade suppifel. MORGAN, F.O.C.II have 1921 G.P. Moräan, baraini. Ј U(ath ií MORGAN, 1922 , Popular, stored simey Septeniber, estans on, bust offee 5320517
 MORGAN, 1915 Grand Prix, 8bpw-c. J.AP. hnod, ©crecn, j lamps. etc, in splendid condition, guarantecd perfect. s80. Eelow.
MORGAN, 1922, Grand Prix, 10 bp w.c. Blackburae, aluniainm piarons nd 5 pecinl cans. Lucas dynano lighting speedometer, dash damp, iyres ion wachines, and has many firstelass awiads to its credic, fi50.
 Dalston 2408.
 MOAGAN, April, 1922 , de luxe, w.c., smedometer, mirrur, hond cover mpuncturud taxed, scarcely used, periect, retsocabe ofer. Muath. 4 Sid.
 MORGAN. 1922, 8bp. Poruar model, just repail.dd and in firsi-chas Hammersmith 1325 . MORGAN, 1921, Grand Prix, MAG. engive, liahting sel, EII2 Lelow. MORGAN, G.P. 1920, J.P. engine, lanpis, etc e95 Eice, Lid., 136 Bishopshate Avenue. Camber MORGAN, Grand Prix. J.A.F, water-conled, lamps, recently orerbauled MORGAN, 1919, Grand Prix, J.n.P. Walercoulcd, hocd, windsereen,
 MORGAN. Cass's Motor Mart, Lus. 1920 G.P.. Water-cuoled M.A.G. engine disc wheels, ${ }^{5}$ lamps, speedometer, overhaulew, pante, red, barMORGAN, 1920, G. P., water-cooled M. I.G.: lased, escelient corditiont. MORGAN, Spmrts model, a-c. J.A.P., absolutely perfece cendition, new chains, citc $x 75$ : rial with pleasure. lob The Promenade. Paimera
MORGAN de Juxe, late 1922, watercoolcd, J.AP., Lucai dignamo lightinble electric horn, etc., mileage unly 400, guaranteed, $£ 130$; excbanges.
Millier (side bell), 127 St. Mark's Rd., North heosingtot.
$532-2535$ MORGAN.ANZANI, 1922, G $\mu$., July. Yellow, very fist, abuut 3,000 , werlect coudition, unpuectured, E1J0. Rouse, Vet., Soham. Cambs. 501 MORRISOXFORD, 2-eater, E140, or guod wher, late 1916, recently g good tyres, trial by apponinteal. Reace. Newihurch Rd., Welligigon, Salop.
MORRIS-OXFORD, No Luxe model, just overhauled and painted lusyal bluo, new tyres specdumper and double diskey, in perfect condition,
il20. Arlen. 12 gh St., Thrapoton. MORRIS-OXFORD, NO Luxc, 1915 , dynamo, clock. specdomeler, phlenagenti. S78 384 Euston Rd. Phone, Museun 7736 .
 PERRY, 1914, 8hp, 2-seater, dikky, all-wcather curtains, snare wheel,
 PERRY, 7hp, 1916. 2-seator, dickey, dynamo lighting, detarhable
 PERnY, 1914 8bp, coupe body, excuilent condition, $\mathcal{L 1 2 0}$. M. 89
CTOmwell IRd. South Kensingtan, Lokalon. PREMIER, 1922 , choice of $2:$ a-wheeler, dickey, dynamo, excellent con-


## SECOND-fAND <br> LIGHT CARS AND CYCLECARS FOR SALE (continued).

RHODE. Messrs. Mubes and Mebes (Est. 1895), TMe Original Sight Car Specialists, sole distributors London, South and West of Engcondition for $£ 185$ each. Buy joir flhode from tho 123odo Specialists, RICHARDSON B OROM tsres, bed screen, ole, good order, £60. Westminster Bridge G. and E. Co., 202 Weslmingler Bridge Rd. Шop 6187
RICHARDSON, bought Dow 1922, 9 J.A.P.s overhauled, repainted Royal blue, perlecl, smart, economical car, elcetric, 100 guincas; easy RILEY. 1922 model, 4 -scater, complete with selt-starter, dsnamo lightng, 5 imps, spare whed and tyre, useal tola, hood and side curtajns, excellent condition, nico stecring, very flexible and easy in traffic, in tip"op condition throughout price $\mathbf{1 5 2 5}$ spot carh. Hox No. 9282, c.o.
RILEY scrsice depot. Guaranted 1922 second hand models Irom 9525
ROVER, Shp, 1921, licensed, Easting sidc screens and curtains, dynamo lighting, specdometer, clock, etc., $£ 120$. Darke, Mapeshury Works, 140
Winceden Iane, N.W.
ROVER de lure 8, October, 1922, nary blue, mileage 500 only, speedo-


ROVER $8_{1} 1921$, in perlect onder, rocently repainted and orerhauled ROVER 8, 1923, milengo ander 500, slde screens and other extras, ansoiled, £ 150 cash. no ollers Meachnm, 31 Thursby Rd., Northampton.
ROVEA, 1921, 8 hp , dynamo olighting, spoedometer, mirror, etc. noto ax paid for whole of 1923, excellent condition and vary smart in appearance, inspection iuvited, senuine bargain, £IO5. Wikios, Simpson,
opposito Olrmpia, Loudon.
ROVER de luxe, 1923 model, clock. specdometer, uphoistered leather gres colour, tax and insurance paid for year, bardyy eolled, what olicrs? Enterthin recent Morgan with dynamo as part. Box No. 986, c.o."'1ho
ROVER 8, 1922, mileage ander 1,000 , as new in every respect, c142 10 s .: deferred payments over is months Alen-mennett Motor Croydon $2450-2451$ Rosal Parade, London Rd., Oroydon Phonc,
ROVER 8's, choico of $5: 1921$ and 1922, prices from 5105 extended

 HOVER, 8hD. 1922 de luxe model, clock, speedometer, all-wcather cur-
 Pickorth and Hall, 107 Gt. Portland St., W.1. Langbam 1998. ROVER 8, 1921, 100 guineas: Emart nppenrance, good condition, $6-1$
guinea spedometer, 2 lorns, tools: seen any time. 317 City Rd, E.o. sina spicajer, $5 \dot{3} 2-24 \dot{3} 2$ ROVER, 8hD. 1921, dynmo, not done 500 miles since thoroughly
 ROVER, Ehp, largeat second-hand stock in London; Irom 90 to 100

ROVER 8, 1922, speadometer, original tyres, late property of a prominent navil commander, absolutely 25 new, 120 fulncas; also lato 1920 model, Garage, Thornsett Rd., Earlsfeld, London. Phone, Latchmere 4388 ROVER 8, 1922 , fully equipped, excellent condition, 128 guineas: ex-
ohanges and deferred. Edwards, 101 Gt . Portland St.
$532-569$ ROVER, 1921, dynamolighling, electric horn, speedometer spare whecl etc., good lyres, ans irial or examination, £88. 15 Sandall Rd. Camden
Town (29 'buses). ROVER, 1921. 8bp, dsnamo lighting, specdometcr, electric and bulh horns, all tools, etc, vcry nice condition, 895 . Kenllworth, Penshursi
Md., Thornton TIeath, S.E.
$532-2462$ ROVER 8, 1922, late, esery possible fitting, as bradd new. £135. or exchange combination and cash. James, c.o. Bradmores, 482 Harrow
Rd., Paddington.
 ROVER, 1922 , luew, complete, £155, bargain. D. and S. Autocar Co., ROVER 8, late 1921, engine No. 83,977, fitted side curtains, dynamo, Gide mirror, etc., beautiful condilion, Ang trial, £100: exchanges. ROVER 8 , 2-seater, dynamo, fully equipped, in excellent order, lax pald, Station 'Phone, Lancham 293 S. ROVER 8, 1921, just repalnled, full equipment, excellent condition s107 10b. Storor and Tait, 20 Bourdon St., Bond St., W. 1. Masfair ROVER, 1922 , as new, used three times, $£ 160$. Peel, Charlton Ave,
Weston-super-Miore. Royer, 8hD. June, 1921,2 -seater perfect condition, many extras, $£ 110$. M., 89 Cromwell Rd., South Kensington, London. $532-2505$ ROVER. Tho Light Car Co, offer excellent 1922 ghp Roser, dynamo lighting, many extras, price $£ 120: 1921$ model, excellent oondition,
elu5; exchanges or hire purchase. 331 Euston Rd., London. $632-597$ ROVERS wanted in part exchange for new Bhp lalbots. Liberal terma. Lasy payments $\operatorname{systara}$. Warwick Wright, Ltd., Solo London Distribu tors of Talbot cars, 160 New Bond St., London. W.1. Telonhone. May-
jair 6504 .
SALMSON, alnminfum sports, 1922. $\nabla$ windscrcen, 60 m.p.h., 6 whecls


## SECOND-HAND <br> LIGHT CARS AND CYCLECARS FOR SALE (continued).

 SALMSON, 1922 (December), standard 2-sealer, dynamo lighting, sparo
 SALMSON, 1922 , mith dickey, unused, slion-soilel only, full punrantce, SALMSON 1922 do luse, excellent condition, 8152. 7 Exhilition Rd. SALMSON, 1922 (August), de luxe, double dickes, dynamo, spectoncter




SINGER, 875 purchases epecial 1915 Singor 2-scater, recently hanced, tuned and holted un by well-known Brooklands compelition drivu elook absorbers, ele. the wholo absolutely ó, $\tilde{K}_{\text {ood }}$ tived and hood, saticon, liver 100 wiles. Solwaybank, llayes, Kent. "Plione, Bromley $5 \sqrt{32}$. SINGER, 1922, $10 \mathrm{hp}, 2$-seater, dynamo lightinf, scli-staxter, dickey, epeodemetcr, etc, insuranco inclusive, new in June, synt aze, conditio
pia, London.
pli 1915, 2-seater, dynamo lighting, specdometer, eto genuine bargain, E115, tax paid. Wilkins, Simцson, opmosite Olymy London.
SINGER, 1920, 2seater, starter. lighting, \{ull equipment, exvelle.

 SINGEA, IOhp, wilh dickey, 5 whecls, beautilul orcicr throughout, $5(10$
Gas. 43 Turnliam Green Terrace, S.W (near Station). SINGER. Cass's Motor Mart, Lid. 1917 compe, 10lın, clynamo lifhtinh 5 wheels and tyres, in eplendid condition, barguin 105 gns.: ricferi
terms; exchanges. 5 Warren St., W.1. Museum 623. SINGER, 1920 , dynamo and starter, dickey, new tyres, repainted, excel
 SINGER 1Ohp 1917 2-senter car and dickey, dynamo ligliting, all sparts
 2812.
 Willesden Green, Landon. dickey trial in London by anpolalment, x120. Dox No. 1003 , c.o.
The Light Car and Cyclecar. SINGER, 1913, 2seator, electric light, good condilion, f94; or exchange G.P. Morgan, A.V. 2-scater, G.N., lato model. Barllell, Preshate,
Marlborough. SINGER. The Light Car Co, oiler several bargains in Singer enrs; ex-
change or hire purchasc. The Lighe Car Co., $3 \hat{J} 1$ Euston Ru., Lonclon. SINGERS. Wanted in part exchange for new 8lıp Talbots. Liberal tributors of Talbot cars, 150 New Bond St., London, W. Wh Teleplione Maylair 6504.
SINGER, exceptional late 1920, 10 hp, Rotax lighting and etarter,
f155; exchanges, 24 Balliol Rd, North Kendinglon. Sls5: exchanges, 24 -scaler, dynamo, very smarl, nud overbauled last
 STANDARD 1914 2-6cater, 9.5 hp , with dickey seat, excellent condition
throughout, $\mathcal{L} 135$. Foster, 204 Capstono Pd., Bourneınouth, zzz-815 STANDARD, 2-seater and dickey, $1914,9.5 \mathrm{hp}$, lighting and stariing, lamps, many extras, everydhing, including tyres, in good order, E140. 6187
TANDARD, 1920, 2-6eater, all-weather dickey, seli-starter, dyname 2 spare whsols, etc., appearance and condition a9 new, 5210 , Vivian,
33 Sponser St., Vistoria St., S.W.1. Vict. 8677
$532-500$ TANDARD $1920-21,9.5$, 2-seater, double dickey, in new condition, tarter and lighling, closes as coupe, electric born, speedometer, many extras, tax paid December, 2190; exchanges. Jamen, c.o. Bradimores.
482 Harrow Rd., Paddington.
standard. The Light Car Co have a very nice 19209.5 hp 3-scaled


STELLITE 10hp 2-seater, in perfect condition, £120. Smith Motors,

Lid., High Rd, Goodmayes, London. STELLITE, 1920, dickey. dynamo, exceptionally nice condition, $£ 165$; | extended terms from 10 per cent. down. liey, $378-584$ Eusion Rd. |
| :--- |
| 'Phone, Museum 7736 . |
| $32-468$ |

STELLITE. Cassis Motor Mart, Ltd, 1914 , 10hp 2 -seater and dickey binmps. speedomever, 5 viaeris and tyres, just overhauled and repainter Grey, splendid condition, bargain, 1115 ; dolorred terms; exchances. 55
Warren St., W.1. Muscum 623. GTONELEIGH, ghp, 3-seater, utillty car, new last May, 2145 Renwick,
58 Leam Ter., Leamington Spa.
$532-y 76$ SWIFT, 1921, 2-senter, double dickeg, starter-lighting, oxcellent condi-- Bra, Bzz-456


SECOND-HAND

## I.IGHT CARS AND CYCLECARS FOR SALE

 (continued).SIVIFT, 62 guiams; exclianges; 2 aetent, 9 hp, 2 cylinders, 5 detach-
 SWIFT. TO, 1915 , 2.evlinder, guaranted perleot mecthanical condillon.


 Co, TALBOT-DARRACD, 1922 , 2 -senter, doulte funk dickey, sell-atarter,
 TALBUT-DARFACO. The li.ight Car Co offer a (shop-soiled) 2 -senter

 TAMPLIN rehata. Serrice Co., 273.4 Itigh Holborn, W.C. 1. zzz-289
 TAMPLIN 1920 Rin ${ }^{2 z 7}$-260 1.14. (:whithond. 'Thone 557 . TAMPLIN. 100 Fuincas, shop-siiled, 1922 side-by-side agent's modiel: Th pumms. Tanplin Motors, Ladi, Slaines.
 cublur. 196 Feradale Rd, Swindon.
 TEMPERINO, 8-10hp $1921-1922$ model, little used nnd in new condivert curnumi, 5 , accept 885 or near olfer: this leantiful lithe car is
 89 Selburst Rd., Sonth Norwood, $552-4.472$ UNIT, April, 1922 A very netractive 9.8 Corentry Climax-engined sportsaler hody, red wings, whecls nnd upholsters, nichel-plated fotinga,

 WARREN LAMBERT, 1923 , IOhp, sports model, 2 -seater and dicker. 5
 WARREN-LAMBERT, £140: 1921, 2 -sealer car rers smart and fast. clisca, dynamo lighthly delerred torms. Denman Molor Nager. 4 Den-
nan PI. Picendilis Circus. Regent 986. WOLSELEY, 7 hn, unued, hut slightly shop-soiled, sell-starter cte. bar-
 WOLSELEY, Thn. 1923 model starter, all-w ather curtains double
 WOLSELEY, IOhn. Inte 1922 , sell-starier, dynama double sunken dickey uascratehcil. \&275. 69 St. Maul's Ave., Willesden Green, I.ondon. $558 . a 56$ WOLSELEY, 7 hn plectric self-starter and lighting, 2 -seater bods, only
 WOLSELEY, exceplinnal, JOhn, praclicaily new, C.A.L. Ilghts and tarter, every, nonsthle fitment inxed, handsome car, unsolica, $532-a 538$ LE ZEBRE, 1921, olectric light, self-starter, dickey seat, sido curtains, new Michelin eables all roind, iepainted, \&i50. Feater, 204 Capsione LE ZERRE, a snip, excellent 2-seater (E.palish body) and dicker, dynamo, starter, specdometer and numerous acessorice, Wasments. Write, call or
 phone 160 .
Sidcup 160 .

## SPARE PARTS FOR LIGHT CARS.

CALTHONPE $1920-21$ parts for sale at 50 per cent. below mahors' Hist: radiators, front inles, Hardy couplings, phackle springs. timing chaing.
 202 Kingaton.
HUMBERETTE spares. Crown whecls, pinlons, balance boxes. Wands-
S40-90 HUMBERETTE spares, Fverything stocked, from cotter to back ayle, 532.505 Wandsworth Mctor Exchange, Eoner in stock. The Kennedy Motor K.J. (KINQSBURY-JUNIOR) spares in stock; The Kennedy Notor Co Itd., Shettlestoniostan.
MERRALL.BROWN spares aad repairs, Merrall-Drown, 28 Chorley Old 5 MER., Bolton.
Moncan spare parls from stock for all models. Send rour inquiry to Notor Co 563-658 MORCAN spares. The Stepenago Notor Co. Itd., Stevenage, Herts can


## SPARE PARTS (conlinued)


 hover apares. We rarry a L.3.000 took of Rover jurts. Correspondence inciled oti als matters pertainiln to Rover cnre. John Pollitt and 8hn ROVER grares. Practirally evely part in stork: immeriate ria.
livery. Kays $8-10$ Boni

## NEW LIGHT CARS AND CYCLECARS

A.B.C. Gio:don Walney and Co, l.th. 31 Hrak SL, W. 1 TPhone, May eira imnediato dolivery of the 192 and Retail concestionitalres at limether reluced
 luyments arranged and cars takēn ju 1art exchange. \& 200 , zzz-378
 stncks of apares, ald are experts in Luning sports model. EZZS: Regent model, C240: special leatherweight 4-seater: saner sparis model, aluminnum body, to specilication. Write for gadget liet. Jjelerred pasmenta A.B.C., sports, c225; glandard, £?40, Part exchariges: deferreil pay ments: many second-hand cars. fice deLaik and trial write British 4626. Trading Corporation, liri., 132.. 35 long ic.e. Landon. 534.84 .3

 A.C. Caithness and Co., Ltd. (late Alfred Wastnage) for quick deliveries of A.Cs and the best service aiter purchase.
befered payments.
Partexchangef.
Caithness and Co., Lid., 65 Gt. Porlland St. W. 1. Tel., Langham 2172 . A.C. Casse Motor Mart, Leủ. Royal (£475) and Eminire (.e3s5) in stock, immediate delivery your present ear taken if: nari excharde" baiance cash or deferred. 243 Bromplan RU., S.W. J. Kcesfurion 2194.
A.-C. $192 \overline{\mathrm{~J}}$ modela in stock for immediate delivery: pricea from $£ 395$ to
$\boldsymbol{\Sigma 1 , 0 0 0 ; ~ h i m h o s t ~ p r i c o s ~ a l l o w e d ~ o n ~ s e c o n d ~ h a n d ~ c a r s ~ o f ~ a n o ~ m a k e ~ i n ~ p a r t ~}$ El,000; himhest prices allowed on second hand cars of ano make an part


A.-C. Immediate delifers of all models can lie alitaines at Autoresora, Lid, leading London agentw and concessionnaires for Surrey. Demonstra
tions eny time: easy terms arranged. 84 Vichria St., S.W.1. $502-615$ ALVIS cars. North London agents. 2 nnd A-seaters, Deliveries from
 Alvis. Official Agents Mebes and Mebed (Est, 1895). The Original Light Car Specialists, eole distributers South Bucks and Londen Ezents,
can ofler imnediate delivers of all models, inclading tho 10-JOhp, which can ofler imnediate delivers of all medels, inctinding tho 10 -wohp, which are on riew in their showrooms. prino from £ 397 . Your present light
car in exchange. Defercel puyments orer 12 or 18 menths to suit cnr in exchange. Deferrerl puyments orer 12 or 18 montha to кuit
elent's pocket. 144 Git. Portland St., W.1. Phone, Langam 52.30 . AMILCAR specialist nnd disirihator, North and East Riding Yorkshire
S. Glover, North St., Ripon. Phene 172. ARIEL " Ninc," the 235 all-weather car with the thousand-guinca nnrsolandity. Nater-cooled, right-band change, long wheelbase, 3-4-seater, out obligation: cash, exchange or delerred pasments. Phone, Ilarusey
 ARIEL, 9 hn, water-cooled, $5-4$-scater $E 235$; easy maymont terms ar manged monern cars inken in Camberwell New Rd.. Iondon, S.E. 5. ARIEL, the new ghp water-cooled $5-4$-seater, price EOS5, is the nicest Particulars from Fred Speakman, Ariel Garite Ilarpurhes. Manchester.
A.V. coupe 1923. brand ness. 1 Ohp Blackhurso engine, 3 specds anil rorerso gearbox, carrics 2 atnits and 2 children, oversize vera, m bar-

 AUSTIN. Youcan now see aud try the new Ansing Eeren at cur Show. rooms. The price is 1165 . and thare is a great demand. Bnck your Motors ita., IIGh Rd., Coodmayes. Phone, lllord 1082 . $2 \times 2-452$


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 BAYLISS.THOMAS. The Westminster Driage Co.. I.d., hare opened
now shuwronms nt 202 and 204 Wistmingler Brilie Ril., near the New County Jhall. We are distribulimg nsents far hayliss-Thomas in all Lon. don soulh of tho 'Thatues and 25 miles' radius. We hare always icveral with pleasure. Service olalion and works opposite.
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## NEW LIGHT CARS AND CYCLECARS (continued).

EAYLISS-THOMAS Junier. Elarter model, purchaser having maid 10 par cent. deposil finds himself wablo to take delivery. is willing to Brockwell, Chesierfield. BELSIZE-BRADSHAW, 9hp dynamu lighting. e210, specdometer 5 extra. Immediate delivery from the authorized agenta; llarris Garage.
Slongb. FFane 88 . BELSIZE-BRADSHAW, SLp, f210: also supplicd on our payment out of income system. Send lor particulars, Rateliffe Bros., 200 Gt . Portland
zzz-7
St. BELSIZEBRADSHAW, Gordon Watner and Co, Lid., 31 Brook St., W. 1 (Phone, Maytair 2965 and 2966 , the wholesale aud rotail concessionnaires, can give immediate delivery of the 1925 uphes at reduced prices. SLandard. 2 -seater, complete, ©210; and Staniard A-seater; comments arranged add cars taken in part exchange.

 ments 1 . 216 . less rehate. Sersice Company. $273-4$ Migh Horborn.
 con, Llrerrool. Phone, IJ29 North. BELSIZE-BRADSHAW, 9 hp , oil-cooled, $2-3$-seater: immediale delivers
 BELSIZE-BRADSHAW, with 9 hp oil-cooled engine 2 -亏 eaters, $£ 210$;

 at all B.S.A. Ieamington Automohile Co., Led., appointed special agents for
B.SA. cars. Display of latest models on riew at our showrooms. DeBirary anywhere. Comphete repair depots and stocks of spare paris. $542-810$
Parade. Leamington Sple. Tel. 113 B.S.A. Aro sou leoking for a bargain? It E0, does this appeal to you?
I 922 model de luxe, rosal blue. dynamo lithting and sell-starter, all-


aUCKINGHAM, 10hn. The ralue for mones light caf. Call and see the latest model 2 -seater, with dubble dickes, price $£ 185$. Book sour order now 1or early delirery with the Lancaster Molor Co., 158 Norwood
R2z-721
Rest Norwood. S.E. 27 . 'Phone, Streatham 2541 .
RUCKINGHAM, $£ 185$ cash, nT $£ 3888$. deposit and 11 payments of $£ 14$. less rebate. Service Co., 273-4 High Holborn, W.c. $1 .{ }_{2 z z-529}$ BUCKINGHAM. Mebes and Mcbes, (Est. 1893), The Original Light Car Specialists, sole district agents, can oficer immediate delisery of this
lamons all-British light car from stock, at list price $£ 185$ : your present
 Gar in exchange: deferred payments 4 per cent. 144 Gt . Portland $532-48 \mathrm{~J}$ CALCOTT, 10hp, all-weather, 1925 models. $\int 325$ immediate delivery: motorcyeles in part exchange. Rateliffe Bros., 200 Gt . Portland St. $z z z .704$
CALCOTTS. 192510.5 bp models, brand new, just arrived; cash or casy nayments. Your old Calcatt, or any motorcycle or car, taken in part payment for a new Calcotl wo enerilkins, Simpson, opposite Olympia London. $532-a 250$
CALCOTT. 1925, 10.5 bp , juat arrived, $£ 325$ : inspection invited of this ferv emart mortel: cash, easy pasments, or exrhanges; exchanges arranged Londor. CALCOTT. Smith and IIunter, authorized agents, can give earlinst de-
 CALTHORPE. All mode's, including new all-wrather, in stock. De-
 and the Hume Counties. Caliborpe Sersice Depot, 1a High Rd., Kilburn. CALTHORPE. Croydon agents for Calthorpe cars. Immpdiate delivery rom stock of all models, with efficient serrice to follow. Moore's. Presto
Motor Works, Lid., Norih End, Croydon. Phone 2624 . $565-117$
GALTHORPE, 1922, 10 Dp 2 -seater and 4 -seater, all-wentho, at special nully suaranieed, part exchanges and deferrej pasments Surrey Agents, Inakeeter Engineering Co., 39 Eden Sl., Kingsior. $\quad$ zzz-294 CALTHORPE, 1923 models; cash, exchange or delerred. Halilax Motor
CALTHORPE SERVICE DEPOTS. 200 Deansgate, Manchester
CALTHORPE $10-15$ sta adard 2 -seater, 285 guineas. In stock at Colmoro
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CHARRRON, 8.3 Khp , clover-len! bods, electrle starting and ligbline. 8275.
$532-297$
Prattock's Garage, Guldford.

## NEW LIGHT CARS AND CYCLECARS

 (continued).Citroen. $7.5 \mathrm{hp}, 10 \mathrm{hm}, 11.4 \mathrm{hp}$.
CITROEN. The Leighton Garage.
CITROEN Earliest delivery of all 1923 models.
CITROEN. Personal sorvice at any timo a leature. Delerged payment: rrangel a speciatity
 CITROENS. 1925 , with Englislu bodywork. All models from Jiacksonj
 diate delivery from the anthorized agent, Harris, Garage, $\begin{gathered}\text { Slouch. } \\ \text { zzz-6 } \\ \text { Phone } 88 .\end{gathered}$ citroen.
citroen. Sce w. If. Jones,
CITROEN specialist.
GITROEN. For nll new models, Any secomithatal wre takou in pard payment; delerred terms arranged; also trade inquiries, mailed. ${ }^{2}$ alid 2 CLULEY, 192J. lmmedinte delivery from the authorized agente. Tark-
son's Garage, Guildford. 'Phove 3a5.

 CLYNo. Tho Litht Car Supreme." Jling 4 -rylinder, water-cooled,
 coventry-premier. Immediate delivery.
coventry-premier. West Brog
 COVENTRY-PREMIER, 1923 models: cash, exchange or deferrod, COVENTRY-PREMIER, 1925 models in stock, 250 guinens; motor cycles taken. in part excbange. Ratclille Bros.a, 200 Gt . Portland St. COVENTRY-PREMIER, $10 \mathrm{hp}, 1923$ model, 4 -cylinucr, overhead valves ust delivered, 230 guineas; delerred lerms and exchanges arrangel.
Eagles and Co., 275 IIigh St., Acton, London.
$2: 22-229$ COVENTRY-PREMIER. Godirey's are authorized agonts. $192 \mathrm{~S}_{1} 101 \mathrm{n}$,
 COVENTRY-PREMIEN, 1923 , 4 -cylin ler, 2 ancl 4 -senters 230 puiners,
 columns.
COVENTRY-PREMIER. H. B. Cook, Litl., largest contractors fondon
 Porlland St.., W. 1 . Langham 1726 . COVENTRY-PREMIER, 230 gns. cash or f. fin 8 s depanit and 11 pay-COVENTRY-PREMIER, 1923. In stock, 2 or 4 -seater, just nrived, 230 exhange, best price allowed exchanges arranced or car taken in part exchange, best price allowed, exchanges arranged anywbere, distance no
object. Wilkins, Simpson, opposite Oiympia, London.
532 na 236
 COVENTRY.PREMIER. F.O.CII. for immedinto deliverv: cash. ex. changes, deferred terms. 5 Heath St., Mnmpstcad (near Tube). 'Phone,
IIampstcad 3752 .
$532-456$ COVENTRY-PREMIER. Nan Guy, Waymouth, main Dorscl ngent. Trade supplied. New
COVENTRY-PREMIER, 1923, 2 or 4 -yeaters, immediato deliverr, cash,
 COVENTRY-PREMIER, 1923 models. 2 and 4 -seaters, 230 guincas: detcreed pasments il d
Aldwych.
Rugent 691.
CROUCHES, 1922, new, excentional opportunity, 200 guincas, originally
CROUCH, 8-18hp. 1923, all-weather coupe, roral blue, as standard peciucations, only done miles, carrying maker guarantee, list
 144 Gt. Portland St., W.1. Phone, Langhara 22.30. Car Specialists, DEEMSTERS, early delivery. Debnam Motors. Stherstona Mews. Crom-
well Rd., S.W.
Kencingion 2917 . DEEMSTER, 1923 models: eash, exchatige or defecrecl. Halifax Motor DERBY eare 8.54 -cylinder water-cooled engirie, 2 -smater and $2 z z$ - 526

 ERIC CAMPBELL. F. G. Smith Motors. IdJ. The Fssex Cunty Agents, Inigh Rd, Goodmnes, an give immodiate delivery of theso apeedr, smart

 G.N. Hight cars. Sussex agents and servico agente. The Eastgate Onrage
and Works, lewes. ERIC LONGDEN., Mnnn nnd Handover, sole concessinnaires for foning, 9.8 4-cylinder Alpha engine, null-nluminium budy scater sports enurhood, screen, spare wheel. tyre and tule, consumplion 50 miles per bal-


## NEW LIGHT CARS AND CYCLECARS (conlinued).







 G. GAAHAME-WHITE, $s$ 100; nevi 2 -senter, simple and strons: delecrred


 Girtas, Cateriam Vailey Phone, 91

 Thone, Wistern 4140 . GWYNNE Eight Agents Bromley Autocar Co., Bromles Hilil. Kent.
 Rरіс'Hi 986. HANDS. Man and Mandocer, the only aulhorizil agents for Mands



 Oa Grove Ilouse Lane, Claypit Lane, Tecas.' Phone 22578 E554-188 HANDS Official afents. Tmmediale delivers of all 1923 models Mand
 hanos. Sales and servico.


horstman, linest 11.9 Anzaniengined models
horstman, the car which looks and runs like a $£ 600$ car, but coits-
horstman coupe, \&399.
horstman 4-sealer, $£ 357$.

horstman special super sports model. S $^{50 C}$
Horstmans do orect 50 milies per huur and 40 milles per gallon


 HUMBER. Cass' Motor Mart Lhd are now booking orders for theco

 Jowerr. Fo. .II. main agents. Deninentrations dirily of these wan.
 also sapplied. 5 Heah St. . Nrampstad
stead 752 .
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JOWETT. 2 and 4 scaters.
JOWETT. Trial rtus with pleasure from tho original London agents
Jowert. The W. C. Caunt Co., 198 Ficeadilly, W. 1. 'Phone, Gerrard
JOWETT. We are authorized agents. Immediate delivery; exchangea; deferred payments; all-weather 2-seater, f2g5; 4-seater, 2245 . Tel.
Mnseum 6696 . A.S.C., 166 Gt . Portland St . $\mathrm{W}, 1$. JowETT. The Westnindtor Bridge Co, Ltd, have opened new shomYoons at 202 nnd 204 Westminster Bridge Rd, near the New County
Ifall. Wo are distributing agents for Jowetis in all Tondon south of the
Ind Thames, Kent, surrey and Sussex. We hare alwa, several of each model
in stock. Defried terms and exchanges. Demonstrations with pleasure,
rzz-100 in stock Deferred terms and exite.
JOWETT. Jones Garage for this famous car. All models, dermonstrations




Jowerr 1923 modals for immediato deliviers; fcond hand cars or


## NEW LIGHT CARS AND CYCLECARS

## (conlinued).

 Jowetr. John R. Kinicy and Co., R.d., are the original South Lendon Jowitt agents and atill the otly ante whose inlersists afic deroted
 Catlord, Dromleg, Beckenham, Purley, ctc. It pays to deal with en thusiastia Jowect specialistb. Their treatment will inspirc enthusiant in you. Special Jowect exibition throlshont next week. Freak hill
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LAGONDA cars, 1lhp. Below.
LAGONDA. Latest models. Immediale delivery. We'ons
LAGONDA. All prices reduced. Below.
LAGONDA counc, sड40. Below.
LAGONDA 4 -seater, $\mathbf{5 3} 25$. Below.
LAGONDA $K$ model 2 -seater, s275. Below.
LAGONDA. The above cars conplite with dynamo, starter, clock, specdr-
LAGONDA. Sole authorized agents for Long Acre and district and ,ouats of lertiondshire. Demonstration runs at immediate notice. T. It Wribht Lagonda, 1923 models; cash, exchange or defuried. Halifas Motor Exchange, Horton St., llilifax.
zzz-527 LAGONDA, 2275 cash, or deposit of 557 15s. and 11 payments of $£ 20$ 15... less rebate; cxchauger tutertaineil. Service Co., $27 \overline{3}$ High Holbirn. LAGONDAS. Cash or deferred pasmeats. Weite. F. G. Smith Molurs LAGONDA cars. West-end, Lundon. Messrs. Mebes and Melke tEit 18931, 'The Original Limht Car Specialits, have a lull ranas of models
 apocialists and exicrts, aud we shall be pleased io demonctrato the various claims put forward for lhis all- British light car's outatanding merits at any rime to suit your convenience. Priees trom $x 275$. Fally
 LAGONDA. FOC.II., main agents. Trial runs dails. Immediato do
 MARSEAL, $192 \overline{3}$ modelá; cash or delerred. Cballenge Motors, Itcd, MARSEAL Immediale delircry of 1923 roodels, frices from 2215 . MARSEAL, 2 -icater, $£ 215$; $9.8 \mathrm{hs}, 4$-cylinder. water-coo?ed, 1 toopers, Slater St., Liverpool. $543-\mathrm{m} 429$ MARSEAL light cars. District agents. The Easigate Garane and Works. MARSEAL. Immediate delivery of 1923 models ut this aronjertul car,
 MARSEAL 1923 models. "Thu car everlasting." Demonstrations and deforred nayments. Sole agents for Croydua and 6 wiles radios, including Streatham, Brixton, Clapham. Wimbledon ctc. Quick Service Mrotor
Co., 123 Ohurch St., Crosdon. Croydon 2000 . MARSEAL, 1923 models, 9.8 hp , 4 cylinder, C.A. $\begin{gathered}\text {. starting } \\ \text { and } \\ \text { Hight- }\end{gathered}$
 MARSEAL coupe, now ready for immediate delivers, e275. KuLloways.
zzz-976 Shereham-by-Sea, near Brighton. ${ }^{2 z z-976}$ MARSEAL, 4-cylinder, ${ }^{3 \text {-sped, }}$ C.A.V. starting and hightin" polished期
MARSEAL. All
Woodbridge Bd., Ipswich.
MARSEAL Car, brand new, $7-11 \mathrm{bp}$, coupe, with dickey seal, painted Rosal blue, elcetric lighting. ple., nover beeir run, list price f 385 . will
 Rd., Oldhan
MATHIS. Smith and Iunter, authorized agents New monicls for
 MORGAN specialist, Hall. Distributor lor Suath Ferts, Luton, Duntable and Bucks Early delivery all modela. Trade inquiries insited. Several graranteed secoul-hand Jlorgans lo select from. 91 St Peter'
$563-657$ t., St. Albana.

MORGANS. Allen-Bennett Motor Co., Ltd., sole Eurrey agents. Earliest
delirery of all models: second-hand Norgana siway in ftock Wo delizery of all models: second-hand Norgans slwaya in stock Wo specializa in these wonderful machiucs: repairs excested by horgan ex-
perts: all spares in stack: cash or extended payments. $9-11$. Rojal
 MORGANS, 1925 models for early delivery, your accond-hand motorcycle taken as part payruent: chould extended parment be required, your parments. Siandard air-conled 8hp J.A.P, or 10hp Blackburna enging

 orerhes valre Thore, Cezsral 5168
St. Lendon.
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