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Bi-jot Warber. Perfect fer car washing. 6/-, Pontoge 6d.


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Ash Tray, Eleetro.plated on nickel Rilver. sixe $3 \frac{1}{x}$ It $\times 1 \frac{1}{2}, 7 / 6$. Pos:ace 6 d .


Stadioncopo Mirror. filled with genuise optical lena. Niekel-plated, black and aiclel or polished bracs, 21/-. Pontage 6d.

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Nomotorist shouldbe without a copy of Dunhills Catalogue. It contains hundreds of accessories of all the latest patferns and every type of cleaning accessory.


Duntill: Car Polish, cle ns as it polishes. Pint 3/9, half pint $2 \%$.
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Rorco Cylinder Black. The ideal black paint for culindere 1/-and $1 / 6$ tin. Poatage 6 d .

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"Cber-Lui" Enamel, quick drying, highclace finish, $2 / 3$. Poutage 6d.

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There are no essential conditions except using the "Solex." The scheme is juat one dasigned to focus the attention of all motorists on the pleaure of the open road and the joys of a No-Trouble Equipment.
Every motorist should write for a copy of our Folder givingfull details without delay. as the closing date of the competition is Sept. 20th.
"Summer Tourtng" Dept.: S. WOLF \& CO., LTD. IIS, Southwark St., LONDON, S.E.I.

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Ceotral 5172 san Hop 2734.

## AROUND THE TRADE

The announcement that the S.W.K. pricos have been rectuced from guincay to pounds means, in effect, that the purchasers get a year's tax free.

A new Exide service depot was opened at 22, Victoris Street, Bristol, on Augast 11th. Largo stocks of all types of Exide balteries for car starting and lightiag and ignition will be kept, while the needs of wireless enthusinsts will dol bo overlooked.

Thuso who bave never uwned a car fitted with a dash. board petrol gauge do not realizo how usciul these acreatories are. An excellent example is now being marketed b; Benton and Stone, Iad., Birmingham, tie price being only 10s. $6 d$. with zie neceskary fitlings.


A FITTED PICNIC BASKET
Considerable intereat was aroused by our picnic article published lat week. This photograph dopict: the Smith picnic basket offered by S. Smith and Sone (M.A.) Lid.

The Autoclut device, which is in the form of a dashpot, giving automatic easy engagement of the clutch, is a fitting which should appeal to every, owner of a car the clutch of which is fierce, while for aiding the beginner in his carly - Toris to maxter the controls such a fitting is invalunble. Full particulars may be had from Autocluts, Lid., 109, Piccadiily, London, W:.1.

The Gerald Engineeriny Co., IAd.. of 7, New Square, Lincoln's Inn, Iondon, W.C.2. is anxious to get into touch with manufacturers of proprectary engines who produce a four-cyliodered water-cooled fourstroke model with a cubic cepacity approximating 1,000 c.c. It is intended to incorporato such a power unit in the specification of a eyclecar shortly to be produced.

## MOTOR TERMS TRAVESTIED.



The Contact Breaker.

## Solution to No. 25.

Our readers were deeply moved (a) was tho gentletnan in tho pieture) by the touching secul depicted in last week's travesty. We trant that their rusceptibilities were not aroused by personal experionces of eimilar paiuful episodes! A record was undoubtedly attained both in quantity and guality of solutions, the winner being gle. F. Whitehouse, 75, Risca Road, Newport, Mon., with the excelleni effort. "Tho Contact Breaker." "Can't he leavo her! (Cantilicver)" and "Gabriel's Enubber" are both deverving of mention, whikt "In Answer to your Quers:" although not a motoring term, is an ingenious attempt. We nuite fail to grasp, however, the motoring significance of "A Kick Of," "to grasp, however, "he motoring significh

## The Sign of <br> Good Service.

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For sowticeninta in this mations 12 wordi $2 /$. (minimum) 2 d per pirctions 10 par tor 13 consecaitr with order, and oflerwiser 20. 10 por cedi. 10852

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Chogues, Poutal Orders, ta, should be crosied and made payable to

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


 A.s.c. carr. Repairs of erery dencilplon sad peelal tonirg by expert

 A.B.c. Sports, Junc. 1922, Speckilold piticins, numerous oxirat. now
 A.E.C. F.O.C.JI., Jad., offer 1923 , 2-deater and dicke5. apeclal body



 A.E.C., 1024 , Regent modet, 2 doort, dickcy, drazano and asertor, 2135. race Mews, X.W. 1 |ram Bskur Sl. Tube Statlon\}. Phooc, Langabm 2933.
A.B.c., Sarbition model, dickes, a doorn, complele oquipmatit
 axchange trotorcyelo and calh. 51 Upper Richmond Rd., Fant Putget
A.B.C. 1522 rezont 2 -seatcr, dichey. dynamp, apoedometer, iant


 A.B.C. 1924. eporti, 2-reater, arcelleat pondifiton, fults licensed, 5125 ;
 A.E.O., 1922. 2. seater and dickey, Megent model, tex paid, ropalated
 A.B.C, 2105 , late 1921 , delivered In 1922, Sarbiton model, 2 doors,
 8em, 325 lyigh Rd., Chiswiek thooe 303 . Vachenget and delerred

 A.B.O., 1922.23 , aporta 2 -weater, rogal bluo and slumalalum, upecibl oif




 and 10 equat wismenti of con $\mathbf{c} 95$. Beamolors, $30-32$ Hifh $8 t$,




 A.


 A.C. Winiled, second-hand A.C.s for cash of la part eychange for now moclell. Iligheot markel ratue allowicd, halanceo hy deforred termill
 A.C., $1921,2-v e s t o r$ and dickes, painted grey oomplete with sell.ztarter.
 langham 2172.
 A.C., 2922 aports, Lax prid for Jear, eluminum body nnmarked and in




 A.C. 1923 , pectal sporte zodel 2 menter aluminlam body, dyampo asd
 Goddea Mquare, W. Gerfart 6843.' 613.424

 A.c. Black and Flnch, 222 Gt. Porliand 5t. W. 1 , bave 1921 aport hoox, vic., ste, 205 golnrais Phooc, सuroum 2271 .

Readers are referred also to "THE MOTOR" (Tuesday's, 4d.), which contans each reek many hundreds of adivertisements of newo and second-hand cars of all kinds.

## SECOND.HAND LUGHT CARS A.VD CYCLECARS FOR SALE (conlinued).

 Cishare equifment. 1924 eondition throazbout. Lax peid to Dectmber.
Alespr isel 1 Ohpor


 ALVI8. New or econe bisd. Tr Itenlyt The Sole Lotida Dletribu-
 Mayiars 420s.
Alvis, 1921. 11hp, 2-apiter, dirker. urater, ©125. Hartlettio. 93 git.



 ARIEL 10, 2024 , 4-Ieater model, band now, de luxe tepe, ill-weather
 Mlack sod Finch. 222 Gh . Porliand th, W.i. Phoar, Nuseom 2271 AgiEL gi DLock and Finch Lid., 22 Gt. Poriland 5t. W. 1
 -Phoos. Suseum 227.
Austike. Try Lenigit. Yod candor bant their tarme 92 OL Pordiad Et. F Fi, Matais 4201 .




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 Morth and Jtall. 107 Gi. Portarnd ER., W. 1. Langbem 1998.613 .18
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 lane. R1miea. 615945
 Phone 1572 , 613 c 322
 IELBIERERADSHAW. Marson Walosy and Ca, Led. 31 Brook 8 ce .





 EELSIEE.8RADSHAW, 1922, Qheater, dy Damo ligheiag, delachable sery, paini tprl hood perract, in exceptionally good mechysical condition ebroughcor. rery amari and relis ble, open to aby examination. 9 j 10 .
 Belstye-ppapshaw, 1923, 2 Fratri, year" licence, fuly equippow, 95
 ELERIOT-WHIPPET. FOC.IT, ILd., ojer Bletion. Whippt, Fally


## SECOND.HAND LIGHT CARS AND CYCLECARS FOR SALE (conlinued).

ALERIOT.WHIPPET, 1921, 2veater, R.105p, Blarkbarne englag,

 IEAIOT.WHPPEF, 1921. Bhp, Lacal dynamo lighling, apare there






 EUCKINOHAM, 2-meakt, Dr: Marrh, double dicky, dymamo, Deavtliul


 UCKINGHAM, 1922, 2-3-ectier, 8.9bp. dyramn Itshelng. abselutely en
 BUOATI, gS Euineas only: 2 aeater, 213 tax poid, priko 20 low jas.
 CALCOTT, $1924,10.3$ bp. \&-Meater, chumby roodel, nee bat alighily




 CALcort 2 menter, 1914 . 10 hg , dickey, oleetics 11 gbtlog , alh 613 -389
 CALCOTT, 2 -sealcr, 1928 model, dichey, sistler, lorely candition, Lazed,



 dellvary new modele tich emelant serica to hilow. Large olock ucod. hand carr wo tolect trom. Dofetred paymedts and exchanata armseod. CALTNORPE, 1923 , sfocial aporlo, maroon 2-craker, opecin Brooklasda
 50 m.ph. on meond gexp, 2150 ; exchage sitertinetion Wallerf Whad don, Lache Laps, Cbemter.
$613-236$


 CALTHORPF. $10.4 \mathrm{hp}, 2$ epalef, manoon finkh, leather upholiters. hax

 CALTHORPEF, 1917. 10 hp . 2-mater and dekey real rood condition,



 CALTHORPF, V.Irontod 4-miter coupe. lisblaf, itarter, taxed gyred at
 CALTMORPE, 2125, 2921. SomeltiaE aperiel Ia Callhorpes polubel



 303 OLYHOAE, 1924, 4-acaser, shop zoiled oult, 2290 . shelow
 2185. Smith axd Hunter. 50 GL Porliadd 82. 'Phone, Moteuma $813{ }^{8136}$.
 CALTHOAPK, 1917 10hp, foll drophead mupe, dynamo lifbtiog.


 CALTHORPF. 102p, 1922. 2*ater and dickey. renalnted French grey,
 pnricely ormen. 2135: keen at any thet ai 99 Cropdon Rd. Aberleg:



## SECOND-HAND LUGHT CARS AND CYCLECARS FOR SALE (continued).

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All aparce for Curden cars alocked; oomplede overbede nodertareo. seted tor litl ai mproveneaz
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 GARDEN, 1921, hiebsshde 2 onaler, completo تhth nood, seroon, tice the lampa, In fritciabs condition and ranning order, taxed anif Inocer ber 31sh, 222 10a; anothar, 1921, $2 t e 0$ ler, 220 . Areole and JlarriCARDEN 1921 (tate) 2-sceice, 7bo Joctsla and gap lamps. apoklight,

 CARDEN, lato 1923 , chetrio Ifly, chnomy model, boumbt for chent
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 CITROENA Ty fipaly Yon camoot beat thatr cerme Ol and 155 CITROEN, 2921. JOhp, 4-seater, dyamo Jrbilizg. elf-tiarler, apesio-

 Xerchapts, Bradibev, Bolton. 6 CITROEN, 7.5, 2-scater, 1923, electulo lightag and atarting, papdeos 1larrow 172.3615 -148 CITROEN 1923 7hp 2-mater, tazed for yer, slectrio If htiog abd start-
 CITROEN, 1923 , 11.4hp, 2-sether Englinh body, tonble diekeg, e.F.
 CITROEA, 1923, 2-veater, 21.4bp. Englith body, ozeolicat order, 2178.

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 terteat 1009.
CITROEN, 1924 . 11.4 bp . 4 -hater, correat modet, flted balloon ${ }^{\text {treat }}$





CITROEN, 1924 3.6. Beoter, only dose 200 mile, 5 Comfort tyres,

Grthoen, 1922, 2-mater. 7hp, Lix pild for thy year, Belf.alarter, dootrin lishling, excolknt coadition throushout, 90 gar Fxchangi, pxIfnded paymetaino.

613-37
 Whoodrale, Tooor onk. 8.E. 23. $613-366$

GLULEY, 11 hp 2923. 2water, Fith dlekoy. Axceptionally gloo cond

MLULEY, 2924, 2-*esier, 10-20\%p, shop safted, fallet cantpment, C230. Smith and Iunter, 90 GL Porland $8 t$. Thowe, Musensn 9136 :
 W. 1 . CLYNO, 1924. JC.8hp de Iure 4 нeater. uned oals tor to demonitra: lot ront, cuarantoed an not, 2193 slminter, Jordangito, Maceleakeld.
CUVENTRY,PREMIER, 8hp, 1921, 2-seafer, 2cylloder, traber-cooled,
 kent order and coadition, prica 275 or C17 17 L cath denoult and 12

 fitiod with many necosorles, Tery Hico condition throughoal, L6B,
 GUVENTAY-PREMTER. E68; exchanget, deferred permente: 1921.22
 2452 .
 Arasmo lichtige, CG8. Andrew's Motor Mart, 251 Whiso Hart I-ge,

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


 EMSCDTE, 1921, 2-wnter and dickey, 9hp, miterrooled J.A.P. cagine,


 ERIC-CAMPICtL, 1921. 10bp, alaminium 2-Aciter, folly eqnippod, yent' Hecace. "peodomerer, axcellent condithon, 95 ruinces; exchange 3399 ©alloway, 1925, 10hp, 2boater, with doubs dikey, Hartes amd


 C.Hy 1923. comeh.bullt almpiniam bedy. C.A.V. dynmmo, large head
 sip-lop condition, coat 2340 . accepl p90. or exchnore for kcad 3 614-b586 Bpringdar, Mpraon Rd.. Clertdon, צomernet. 613 -656 O.N., now Mar 1924, aporting, fas1, ipecial, 2100 body threequartes-
 Q. N. 2923, tOhp, 4-rylimer, 2-teater, dickey, dynamo, verg aperdy,


 Q.M. 1921, dyazmo lithting, excalkat ranalog order, 38 gny. Jopg A.N. Late $1922,7.9 \%$, dickey, exoptiosul coodition, oonchmork an naw,
 and carriter, gimanaleed piechanleally porfect, any test willingls or mould

 C.H., 1920-21, fully equipped, wlth electrio IIghting abil hora. specilo meler, o dan chinicaly Fil C. Hingley, Hosircti, Wooabilde, Sulyolk. 613243
 meeler, etc. fay frak 1924, atl in sond runalne order. 33 . Fpipess; man

 O.N. 1922 Iefere model alumiaitam body, exceptlonsily roed engioe,
 O.N., 1922, dickey iesl, dynamo, spare whocl, many extrat. elocirlo and

Q.M., 1921 , dynamo jightiog, alchey, prem Junlop, hood, paint. uphol-

 O.N., 8.9 hp .1921 sporta madel, pollshed aluminlum body, djasmo light
 O.N., $1920-21.15 .000$ milde fuily equipped. 6 thoole, new tyren. excel-

 Q. No, Auguat 1922, slominlum body, bloe wings, efectic lighlieg, dickey, Green. Q.N. 19212 -peater. dymama Urbeing. aprofinmelep. door. 5 decachabled.



 Q,N. 1921 elorsr-ion! 3-sealer, fainhed chrome red Eínga, dynamo

 O.N. 1922 Populer, djg.ano Iightiog, ipecdometer, elotivic and merhabicel O.N., 19'22, Jy 10. Delow


C.N., 265, 1928,2 menter and dickey, dynamo, paro Fhet, iazed, pry iyret, lorey chamion: aborber, 1921 medr, dgyimo, iparo wheel, alv-

 2e54.

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

C.N., 1022 (Sugat). 2-najer and dickes, dynaro jebbling. eiectric mail
 O.M 259 erince defores plymente 1921 on $613-32$


 O.N., 1923 23. raceptional condilion, tront Kandle olert. dicker ceat, 59


 Bide cortion, mingy extrac, 95 suineas. Belom.


 GRAMAMEWHITE, Laie 1924, weckil built body. With dickog, asociel

 Undy. Masi aod difer painled hack, Himpod in leather. only, want


 O.W.K. F.O.C.H.. Lid., otive $102 n-21$ G.W.X., 2 water and dickey, dy-





 O.W.K. Surral good wornd.hand cars lo slock trom 565 ygwarde ex.









C.W.K.t 1921, 2-nster, dieleg, all-eenther, texand, palat an pew, 70






 CWYANE, 1925, Shp, Cbnmmy Enydil dynamo lighting, Eelf-stariop


 mere Slotcr Ca. Lid.; Ita Nemero. Burrey. $613-843$

 Hammertmble 220
MILLMAN CBFB OMclas repaircer. ToBdo diotrice, J. C. Brodie, LLd
 HILLMAN raciag car, zon conisitently at Brooklands, mresmifined.

HORETMAN 1924, 12 -30bp ADzant ongine 4-mater, courto $613-870$


 HUMAERETTE, alreoolet, lant an.l perfeet rapolpe order, tared. trth




 JOWETT, 1922, 2,seater, Fith doable dickoy, baeotifal condtion, axprri
 Jow


## SECOND-HAND LIGHT CARS AND CYCLECARE FOR SALE (continued).




 LACONDA, 1923 , 2-athe, ilf. Weatber K.K. model, palated dark olur.

 LACONDA 1914.15 coupp, doetrle ligbling, geod tyres, soand condi.
 Kuhmond hd.. Ent rutaer
 appearnine, el10. No.nh LaGONDA corpo. 1923 model. reganded and orerhaded, 160 . Fret.


 LEA-FRANCIS, $1923,10 \mathrm{bp}$, 2 matar and dickey. dyatmo IIghling. born,
 rah Lan. zirrad. B.W. 18. Pbone, Wmbicion 2041. 615306 LEA-FRAMEIS, 1923 , 9pp, 4-aghinder. chammy modol, coll-wartor, and
 Bo,

 L.LD., 1924 , Popoler tedel, 8ap J.A.P. clocthle lifht. spare wbel.
 MAMLEDROUOH. Cals Moldr Mart, Ted. 1914, 4-yllader, 2 wanler,
 633. Courleb.







 MeKENZIE, 1924 (10e pace 368, Iture August 15 Sb ), \&amosatration
 MERRELLEROWN, 1921 4-cylinder OOFDRtry Climax. deLachable
 MOROAN apociallita. Jamee add Co rshemeidi. Led., 263 Ecelenall if dimedty alre be NeE and mond-bend mechione cearis altern rock. MORCAN Serylee Depoh Omelal appolated repalrere by the Morgan

MOROAN, $192 A$ Family. 10bp M.A.O. elecerio HEhe and boin. Equnh.
 MOROAN, 1920. G.P. moder, dyazmo Hehtiag jak oomplohaly oven hadod throughout. ne: hood, remphomerad nad palated, opes to ayy itam Garage, siatiord.

 mongan do tuxo. 1928 , M.A.O. engioo, mator-cooled, arelilene WghtWajkor, 29 Chorch Jane, Hornsey N. 8 .
moroan rausbort, 1916. Griod Prix model laspi, horn, aposio-
 Phone wimbledon 2041 .
MOROAN, 1924, APTO modet Nery specients sued ort ir



 (130.895


 rhtleg. falky equipped. exceliont condition. 110 rulpges Below
 GORQAN, 192: G.P. dynamn lisbitine ehetrio born
 8t., W. Majlair 4087 .

## SECOND-HAND LIGHT CARS AND CYCLECARS FOR SALE (confinued).

 coroan hoan chigrell 27.


 Morgan, Pamily, Lio 1922, driven 1,000 milhes onigh 10 hp .e. miy. Poutspool Rid., Mou
 Filibives, Quecait Dripo, Pecerborouzb.
Morcan 1920 do Inte, M.A. O. englae lyrhung get, apeedometer, dome


## Be:ow.


 MOROAN 1924 de loxe shp J.A.P., W.e. Nectrlo ligbsing, dwee. coss in Jinn Km .
MOROAN 1923 do Jare. 8 hp J.A.P., F-C. apares, Iararapee aplendid



 1 220 Grad Prix m.e. J. A. P trily equipped with axirs dices ieat for chuld, olse order. Lax pald, e75

 morgan, e45, exelengen. deferred permenta, aboat 1916. J.A.P., bood

 MOMCAH. Glitl $1921-22$ Acro 10bp m.o. MA.C. IAchi djasmo

 MoROAN, 1823, refl hate Grand Pitx, 1924 hmprovements dinnmo








 NEW HUDSOH, 1922. 10hp. F.e. M.A G. folly ogulpped aparo whel. Horospy. स.t. condluos, new Gres, bergain. 290 . E, \& T20 Arango




 PEVCEOT, hate 1923. $8-30 \mathrm{bp}$. de Jase. 2 -meler Fith dickey ent, ofs-


 Phenix, 2920 , 2.keter, biarting and lichine new igroe all reand.

 DD, Coogleto

 exed. fuat brec reserated at worke achl mein es met.





 RICHIAROgON 29212 -waster. dicker. Bbo a aperd and reretic. eleetrio



## SECOND-HAND LIGHT CARS AND CYCLECARS FOR SALE (conllnued).


 RILEY 12 hy 1921 , wodel, fraker, In Arst-clats ronniar condition.






 ROVER B, Erptomber, 1921 2-seurf, exep!lent condilion, mechankally partoct dyanmo now lyren cos. Vall, 35 Adiay. Md. Richmond. Bur
 ROVFR 8, 1931.2 , coond condiuon, now hood and Mplohtery, many



 ROVEA 8 hp 2 2-reler Fith starler, 1323 , rasg 8004 condliton chrough
 ROVFR 1923 coupe, g-9bp, perlect coodillon in crefy paricalar, ciec-









 ROVER, 8 hp, April. 1922, 2-center to lore, leathap upholetery, ipmeilo




 Roven. The Misupten Ero. Oo. efler than Erek on exceplanal bargis.

 to mpichaxical condition ; siy trial or examioation. *lith no obilge-

hover EiOhts. ut you mat to boya
ROVER A. If gou चant we well a
gover :-Write, catl or 'phose The Bamptor Edg. Co.

ROVER, Bhp, 1922, do luxe gharter, all equipmint, Hitle ukat $613-289$ HOVER A, 1923, chamray, tax peld, oxcuilent condition, appeazanco



 ROVER O, 1923, speedometer, fort caseb pelnin maroon, an now 2100 .


 ROVER, 83 , 1923 chumay model de lure elock, ppeodomeler, many
 ROVEP g, October, 1922, excelleat condition, recently doas up apedio-
 ROVER 8, 1921. palnted blue, spredoenter, oke coodilion, sood tyes.

 ROVER 1924 Bbp 2 -eceler, dickpy, Dulshed Mru, masy extrash taice for




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

Qeven 8bp 1922 2-setter, dynamo lishling, pare oligel, Lax paid.


 miryor. Tert cood 114Le car. C68. Ravo


 ROVER 1924 2-zeator, talest model de luzo, palated grey, self-ilamer ROVFA 19222 teater, brown excollent condislon acd sppanradee, all
 MOVER 1922 Wgact 2 weaier, dyamsoo licbring, electric born, sabb-
 AOVER 8, 1921-2. Iow mileagr, propplinanlly gooll comlithn through


 W. 1, 'Phoue. Nayfair 29ed. sALBson. Mana nril Habdorer, Led., authorked Eseats for galmos
 sacmaon, inte 1922, de luxe, all-meather. diehergodymmo, upendoBromiley. proralte tyres, kaxed, periect condilon, 2100 . KJ. gotord SALMSON, 698; 1922, z-seater and dicker. dynamo ilahthe. apere


 2ho. *.D., B9. Necroos Fark Rat N.w..
siNOER 1934 do Jura. 4-menter, ecoollent condition, Juggage carrier and
 BNOER, alf-Teatber. 1919-20, dsoamo, siarter, ropaiated manoon, ex-



 liceand. necupt e48.

 crobng moloryt.
 T165. Nr*mban
INQER 1919. 2-aticy djczer, dralmo anere चheel. taxed 665. Woolpeck. Biddeaden. EtNaER coupe 1918 , 2eteater and JIckes. alortitc lamp. Bediord ard
 zrhen
2562.
 efmerar 1924 de luxo 4 senter, all anoessodich, extres, petrolean cerrier,



 BiNGER, 10 hp , 2-meater. dicky. 5 detechabla needs, tools ess, bap gin: alier 6 p.w. J. H. M., 65 orerraL Rd. Pnctiam, Landon, 8.F. 15.

 simaER. Tery late 1923 , 10 hp . do lure. 4-senter, all-Teather equip math, litio wed, Laz pabd, also in
SINQER. CRS: Axchanget, deforrent paymeat, Fer niee 1919.20 8igeter


 HaO. or cychapp, G.N. and cath. Earla. The Athemoum, The Vah,
STANDARD, Moomet Presto. Crojdon agenla Gandasd rara. Proonpleat dellrery ney models with officient worthes to foltow. Laras wack tecond

 ATANDARO, 1923 2-seater, all-renthar, tith doulde dickey, Jehtine


 Iollowing exiran: electric horb, in rpoctios hatip, rereen fiper, mizror and
 STAMDARD 9.8 z-eeter. 1915, 5 whetl and rood tyms, Brolt litbtipe


## SECOND-HAND LUGHT CARS AND CYCLECARS FOR SALE

 (conttrved).SANDARD, 11hp, 1904 model, porcheifd Me7. Oanley sll-meather 2
 ab tyres unponctured sparo pot yet removed, englicion magege, prit. velaly owned, ormer-driven by experlemacespeyton, trial by apposmenat.

 lax pald. Eigo. Polow.


 STONELEIOH O, J-acater, new Mareb, 1924, 7nD 2,000 milow, perleok.

 SWIPT. Moores Presto, Croydon azeats swifi cars. Promptest dolirery
 to select dron. Delerthd payments and exchange arraged. North Find.
Trovion Phon 2624 .

 3WipJ, 1921. 9.5bp, 2-seatar and dickey, equal to mev atarifor and 8taton Garace Oneen' ïd. cornce of Odosm Re. Menchenter Co. (allon BWifT, 7-3hp, shagrered 2-seater. rery mmart, fant mat gelloble tuarat.



 TaLBot. Camis Motor Mart, Itd. Lato 1923, 8hp, 2-meter, diczoy,



 pare thels, antoiled condition, 288 zofaras taxed, 1923 modet,
 dipton. Willesden 1744.
TACEOT, 1503, 10-2\%hp. 4-meatep, ligbing, dartep. orphavied, 225
 TALEOT, 1923, B-18, 2-antar, al wather dicker, perfect coodition





 WOLEELEYB, 1924, 250 apd yon sio on the road Flth any 10 hp model, tax end insurinoo gald for ode joer, belacco In 12 or 24 monthly

 WOLsElEY, 1922 modet, 2theter Fith diekey, dyname and atarter


 WOLEELEY, rery lalo 1921 model, IOhp, 4.unter de laxa mell-atarter,

 pald, sev condition throughout mileage negilgible; extended paymenic


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







 WOLEELEY-8TELEIYE, 1914, 2 -meshir, dainehable whole, ipare, ${ }^{13 T o}$ olatory palat and hood rery rood. in axoeplionally sood mechasice cos

 1809.
 2150. Ymith iod Hu4ter, 90 Gi. Portiocd 8t. 'Phope, Nutent 8136








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 palre shd oraphenis carzed ous by ezoezle. Wrie tire af phoos go







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A-c. rar.

 teylioger models trota 2275.

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 mod mes amet ed at toll ferion arraged in atv rest of the rouptry. Newiham Moror Da. 245 Hammersmiti Rd., W.6. Phone. Henmeramilh \$0 and 1325. ©13-2
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 AUETIN.
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Earileat dellresy of all modols.
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 AusTin 7. lmandiate deliserven. We are the athorisod agente tor thit or and

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 permene son axcharter akrat North Evd, Croydon. Phione 2624 Paymer in CITROEN Top ralinbilis.
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9mith and Munter ageath jeltvery now. Write for aseeplional lerma
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## CLULEY.


 GLYNO 1984 , Ci88. The Norlt Wethishos Exchange. Wraxhara. Phowe 283
 CLYNo. Antocar. Lid., aqiborized areats Follent parteolaze on re-


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Ot the clyao car.

Fuil marke vilue alio ed tor sour present cor in part exchinfe.
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Wisner of Dally Chronicle 250 -pulsen eap and the cold medal In R.A C. 1,00(1-mile Trial

Calt ard see the cetual cat and tapect latest modela Curt taken in
 Oljaple Noter Ca. 1 Hammeramith Rd. Keasiation. Prose. Westerp
 Mayt exchapert aed delariel terme 15 Woochtock 8t. Loodon. W.

 awYNN: 8, 1924 molele in etork. de luxe touriag cer, shop-wiled.
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HDRATMAF. 1924 models bov atallebit
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Wio are the eots Loadon sad dietrict agente Call and iaspech Exchangen
 HUMEER, 250 , Bing. 2 seater, and chamosy model, tomadelo dellowt. HUMDEA 8. 2-3-weter, ifetrio lightlog aod starter, spare wheel and
 Piccadilf, W. 'Phonet, Grosrenor' 1620. Navoum 2000. Rnceot 2612 downTt cars Main esants. 1924 models In stock nt now pricen, Tro
 JOWETT.
Cordno Wataey end Ca Led. (Wem Eod Azents),
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HOw ETT:. Jometta Jowetts Bay youn from the lergert dralers.



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 SOWETT. Imponlate dellver not powible Iram Kinger's of Crordon SOWETT. Impallale dellver not posiblo Irom Kinser'A, of Croystong

 JOWETT. F.O.C.IL., Led. Jomme. F.O.C.H., Ldd
F.O C.It. Lidi. the Joweth ceatre, can aupply dimet from atock awi tive real servioe alter melo
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F.O.C.II. Lid. is eass of accesk, beipg quite note Ratopstead Tobe StaF.O.CH Led s JowtTT, lateat model 2-tcaler, dicker, starter 613 -951
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 in Jowoti, d-seeter in slock, impodiate drlisery. If It in aparen or ro

LACONDA latest moikls. Hest allowances foz motorcycice Moygans,
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 Prompt delivarles of any model. Bpare pirt avoctiat: Writu for calalofog
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 rawer claploa ra., ciepion, F-G
 moroan. Onicially appointed London aparo part and ragair depoe Man.


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Fall market ralue allowth for your piment car in part exrhange.
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 do doxo modrup 2 tealer 2225; Popalar, 2200; 4enter Popular, e210;
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this section.)


THE PRICE Petrol is being offered in many parts of the country at 1 s . 6 d . a gallon and sometimes at oven OF PETROL. lower prices. There tat been a fall in the cost of petrol in America and alco of freight rates. Is not a reduction in the price of the well-known branda of petrol now long overdue?


## Lorna Doone

We learn that offorts are bring made to prohibit cars on the road nt Daxe which leads to the Lorna Doono Valley.

## Petrol Pump Accuracy.

The Middlesex County Council is making further representations for early legistation to bring petrol pumps under the provisions of the Weights aud Measures Ach

## A Highgate Warning.

A correspondent informs "us that drivera' licences are irequently examined by the Uighgato polico, and advises our readers to bo specially careful when driving in the district.

Nesw Trap. £5 Fines.
Fines of $£ 5$ and licences endorsed were imposed at Bromley Police Court on the first victims of the new trap on the Westerham-Bromley road at Hayos. The police inspector giving ovidence ssid this trap was started at the request of residents in Haycs Road. He also statod that tho street lamps between Hayes and Bromley wero not lighted in the summer months. They are nol used at Chislehurst and, other places. but what has this to do with dangerous speeds? No. 613 . Yol. XXIV.

## LIGHTING-UP TIMES

for Saturday, August 23rd, 1924.

| London | . .8 | 8.35 | E.dinburgh | 9.0 |
| :--- | :--- | :--- | :--- | :--- |
| Nowcaske | 8.50 | Liverpoot | ... | 8.54 |
| Birmingham | 8.45 | Bristol | ... | 8.45 |
|  | Dublin | $\ldots$ | 9.6 |  |

Lighting-up time(rearlights)in Fingiand, Wialos, Scolland and dreland is halt an hour aftor sumset.
Asoon-Last Quarter, August 22nd.

## Coil Ignition.

Although small car owners seem to viow coll ignition with disfavour, there is evidence of its wider adoption. It should be borne in mind that a coil gives easier starting and greater frecdom from completo ignition failure than a magnoto.

## London Street Accidents.

During the quartor ending last. June thero were 22.822 accidenls to persons and property in the streets of Iondon. Of 'nat number 6,300 wero caused by privato cars, 4,133 by trado and commercial motors. 2,10y by busos and 1,283 by trams.

## Nicely Put.

"The traflic regulations in Clasgow," remarks a writer in a daily paper, "might have been framed by Noah for the navigation of tho Ark."

## Chars-a-bancs Barred.

A Ministry of Transporl Order, which closes 60 Devon by-roads to chars-d. banes and other heavy nutor traflic, takes effect next moneh. Altermative routes aro available in most cases.

## Kingston By-pass.

A considerable part of the new King. ston by-pass road is now under construction. The road is to slart opposite Robin Hood Gato in Kingston Vale and join the Porismouth Road opposite the "Marquis of Granby" at Littleworth Common.

## Small Motor Vans.

At the Commercial Motor Show held last year a number of light car manufacturers oxhibited atiractive motor vans intended for delivery work. Nany of theso aro now to bo seen on the shreots, and wo understand that., especially so far as the Citroen vans are concermed a brisk demand is being enjoyed.

Wonderful Light Cars.
A feature of this issue is the rerord of n 2,000 mile tur of the Swiss Alps underiaken by an owner of one of the most pmpular light cars.
Harvey Gets Coveted Number. Major C. M. Harvey has been nilotted the registration number RW 1 for his latest Alvis racer; RW are the lutem letters for Coventry.
U.S.A. Show Experiments.

Tlie Now York and Cbicage Motor Shows sill be opened to the public this year at $70^{\circ}$ clocix on a Saturday evening, the oxhibits being available for examination by thome connected with the indus. try on the day before and also, of course, oft the Saturdey.

## Busy 5 pot at Olympia.

We understand that as a result of the billot for positions of stands nt the Olympia Show, which opens on Octover 17th, the Standard and Singer cara will be show'n on adjoining stands. These two makes being particularly popolar, it is probable that the vicinity of their stands may be almost unapproachable.

## Car Slashers Active.

Reports have been received that innatics of some description are amus. ing themselves by seratching the paintwork and rutting the uphotstery of cars left umattended in london. The hoad of one car, which was left for a short time standing oulside a house at Wemb. iey, was cut to ribbons, and there ir news of similar activities in Golders Areen.

## New Southend Road.

The new London-Southend road, already open on some uections, has geit so far as lloodiord, where considerable activity is in evidenco. The nerr road will cross the Higl Road. Woodford, just beyond the Georgo Hotel. A large Ford service depot is on the corner formed by the two roads, and we understand that a motorbus garage is to be buill next to tho Ford depot. When all is in order. very great caution will be nemided at this crossing, as the Wood. ford Road carries a large amount of henvy traffic, and the police of the dis. $t$ rict aro not very tolerant towards motorists.


MOTOR TERMS TRAVESTIED.
No. 26.- Query : What is the Term?
We offer a prize of ONE GUINEA for the most apt motor term received. No solution will be judred before 11 a.m. on Tuesday next. TThe solution to last week's picture is in "Around theTrade."

North Road Improvemenis.
It seems that the Grrat North Road will soon be even more accessible to Jondon motorists than it is at preeent. a barnet by-prass mow being manted.


Mise C. P. R. Turner, who won great favour by her skilful handliog of a Bugalti at Ringinglowe.
J.C.C. Annual Dinner.

Tho Junior Car Club Jave mado srrangements to hold their anmual Jinner at the Comaught Rooms un Tuexday, Decrinber 16 hh .
A.C. at Wembley.

The new Soyereign model with polistied alumisium trody and red wheels and wiugs now foras the lour. cylinder A.C. exhibit it the Motor Hall oi Wembley.

## Kendal to Shap.

Repairs to Bannisdale Iaw Bridge. which crosses tho road between Kendal and Sthap, some 64 miles north or Kendal have uecersitated the main road being closed. Light car owners, however, need not pursue an alternative route as there ure by-lanes which may bo followed to avuid the closed portion of tho main road.

## Brentford By-passed

Ionduners going west, and thoye who visit Jondon frons the west, will be pleased to leasn that the Ibrentford bottle-neck by-pass is at last open for truffic. Two sections of the great Wext Hond have. of course, been open for some time. and the cumpletion of a connecting zection has now made it possible to avoid Brent ford entirely.

## Motoring in Canada.

Reuter's Trade Service annolatiez that the motor trade in Canada is very active. In Canadn there are, of course, tho light cars, and it acems that if a big demand is experiensed for the uneconomical types produred in that country a welcone must surely await the introduction of $n$ stritable. small car.

## Seaside on Sunday.

Judging by the attitude of the authorities at many seaside resorts, the conclusion may lie drawn that motorisis are having ayything but a welcone at week. ends. The police seem to have instructions not to allow a motorist to leave his car anywhero near the sea front. The annoyance of having to leave the car in a park at some distance from the sea at many resorts must deler hundreds of putential motoriste from visiting them while tho advantage of the plan scems questionable.

at ringinglowe $\qquad$ Despite very wat and miserable weather the clarsee were rum off suecess-HILL-CLIMB. fully. F. W. Jame: (Morgan) is soen at the start. The event is fully reported

## R.A.C. Fermis

The following permits for closed meetings hare heen issued by the R.A.C. :August 3ist.-Team relipbility trial, Otlev to Grasmero (Ilkloy and District M.C.).

September 13 th- -Hill-climb at Angel Bank (Sutton Coldfold and N. Birming. liam A.C.).

Bridges in Lincolnshure. Negoliations aro in hand with regard $t 0$ reonstructing the present inadeguale Laidzes at Crowle and Keadby in Lin. colnshire, while the approval of tho M.O.T. has bren given for a now bridgo over the South Canal as Forth Thoresby.

## Electrical Troubles.

Ambng the inquiries wo seceive from readers a considersble numbur relato to difficulties experienced with the electric jigbting and slerting aquipmont. It would seem that tho provision of more intelligible information with regard to she efocrizal gear might well bo in. cluded in makers' instruction books.

## Morgan Club Run.

Tho Morgan Club did not hold their run on Sunday last owing to henvy rain causing a small moct, and also to an accidont oremaking the hion. sectolery's mashine en route to the starting point. The run will, however, lako placo over the same route as that which wo doscribed last week on Sunday Dest.

## Baylies-Thomas.

Nie are a.ked to point out that thero is no truth whatever in a rumour which is said to be prevalent in South Wales to the effect that Messra. Bayliss Thomas and Co. have discontinued the manufacture of their light chr. In point of fact, the Bayliss. Thomas light cars hare never been more popular than they are in-day.
Neceasity the Morher
The garage difficulty in suburbia has beer overcomo in at lenst two instances by determined light sar owners who hinve converted the front ground-floor rouns of their honses imto garages. No information is available as to whether tho front gardens now form $\&$ wesh nor with regard to tho method by which the reipeclive onthasiasts have squared things with their insurance companies.

## ANOTHER SALE BY ONE INSERTION.

## 27-7-24.

" 1 feel that I must write and express my appreciation of your paper as a medium for advertising.

I Bavertised my car in the lest jssue (25-7-25) and have already sold the car and have had numerous other onquiries." J. Boothman.

There is no speedier means of selling YOUR second-hand car than through ." The Light Car and Cyclecar."
-See partleulars of Special Sebeme in Sman Adverthement Section.)


Seaside Run for Londoners.
Londun motorists who have not hitherto trica the eastern roads out of London might well decide for a fino Week end to visit Clacton, Erinton, Walton, or Harwich. Once Romford has been laft behind, the run thruugh Brentford and Chelmsiard to tho const is over splendid roads which are much lass crowded than most of the roules to the coast at weelsends.

## A Disappointment 1

A correspondent, on his way tram Kendal to Doncaster, writes to shy that by way of a changa from the IIkley arad Otloy routs he followed tho strmighter road through Keighley, Shipley and Bradford, It was an experiment, he remarics, which ho has no desire to repeat, the roads being cobble-stoned for move of tho run and the scenery very oninteresting. The district is intereating neverthelose.

## 200-Mile Race.

The thre Salmson cars which aro taking part in tho 1,100 c.e. class in the $200-3$ Iilo Race on Seplember $20 t 11$ will bo driven by Count Zuprowski, Douglas Hawkes and O. Wilson Joncs. The threo Darracqs, which are expected to set a cracking paco in thio 1,500 c.c. clans. and which aro boing driven by $K$. Leo Guinness, M. O. D. Segravo and $\mathbf{D}$. Resta, are anid to lie doveloping 108 b.h.p

## The All-imporlant Chazsis Number.

Car manufacturers recoive dozelas of letters from owners of their vehicles who ask for advice, spare parts or litefature, and who onit to mention the chassis number of, tho car in question. Cinloss the chassis number is quoted. the manufacturer is generally unable to bo of any assistance, and readors are advised always to quote it in correspondence it delay is to be mivided.

1



AI BOLTON HALS.

A Jowett in the grounds of the Duke of Devonshiro's echale, whare the King weat for the firat few daye of tho erouse shootine.

## Cheap Petrol.

No. 1 petrol, at 1s, 6d. gallon, is sow on sale $x i$ a grent many karages, and, from reports wo havo received. it would seem that salisfactory resulta may bo oxpected from its use.

## Hill-climb in Mornvia.

Tho lourth international Sternberg bill-climb takes place on Sunday, Sep-, tember 2list, on the road "Ecco Homo," pear Stornberg, Moravia. The bill is 49.11 miles is leagth, and thare will bo classes for all types of cars and molorcycles. Further particulars from Mr. Fritz Ifuckel, Neutitschein, CzochoBlovakia. Entrie close at the ordinary res on Scetember 7th and at doabio feos of the 141 h .

## A Danger to Motorists.

At a meeting of the committes of the Narth Yorkshre Automebite Clut the hon. socretary was requosted to write to the Roval Automobile Club asking that something ahould bo done with regard to the dangor to motorisis caused by ompty bitumen drums which are left on the sides of the mad all over tho country. The N.Y.A.C. is not an active urgamser of spoed events and so forth; but the miautes of this particalar meet ing, which haye been forwarded to us, athow chat it is an extrerpely betirs organisation, and that oxcellent work is done by it for Yorkshire motoriste.

## Lisht Aeroplane Clubs.

Tho Air Council havo decided to encourage tho formation of light aeroplano clubs throughout the country, and thoy are now prepared to assist financially tho ortablishment of ten such clubs. Noder the zeheme the Air Ministry proposme to make to each club an initial grant for the provision of approved ypes of machines, and an annual grant for two yeare toviards tho expensos of maintenance. Tho clubs will be ro. guired to put up financial or other confribations to an amount equivalent to the grant. The Roval Aero Club has undertaken to submic propasals so far as the London area is concerned.
$B 10$

## Why Not Colchester?

An excellent ran to the cosst rasy be mede by motorisis tiving in Oxiordsnize Bedfordshiro and Kertfordshirs by following the Aylesbury, Tring, St- Albans, Hertford, Bishop's Stortford, Braintreo and Colchester road. This is now in very good condition, whilo the soasido resorts within a short distance from Colchester are aumerous.

## Sir Charles Wakefield's Win.

The amasi meropiane race for tim Kiox's Cup was a personal zriumph for Sir Charles C. Wakebield, Bt, who won tho event with his own D.H. 50 machino. Sir Charles has Lakon great interest in the devalonment of aircraft genorally for many years, and has roceived the bearticst congratulations on securing this mach-covoled trophy.

AN UP-TO-DATE SERVICE DEPOT.

## Wembley Traffic.

It has been decided by the Ministry of Transpert $t .0$ make a contribution to. wards the extral cost of road repairs to the Willesaden Council on account of the increased volume of trafic in connoction with the British Empire Exhibition.

## Austin Success After 10000

## Miles.

Mrs. Mabel Drummond, an enthusiastic owner of an Austin Soven, worl a silver medal and a special prize for the beat performance by a lady driver in the York and District Motor Cluli's Reliability Trial to Ediuburgh, driving her Austin Seven which had prevoully covered 10,000 miles.

## Fox and Hounds Run.

An interesting ran for the bepefit of its members has boen organized by tho Midolesex Consuty Autanobito Cluh tar Saturday, Augast 23 rd. A eecret course will be follored from Hadtey High Stone, whero the reet has beet arranged for 2 o'clock.

## One-day Trial.

Spocial classes for car members witl bo incladed in the Worcester and Dintrict Motor Cycle Club's Oneday IReliability Trinl which wilt be held on Saturday, Soplember 13th. Enlry forms and full particulars will shorliy be available from the hon. secretary (for this irial only), Mr. H. A. Bleckley, 63, Fort Royal Uill, Worcester.

## Coventry-Birmingham Road.

A selewe for widening the Birming. Lam-Ceventry road has been sulmatied to the Viarwiekshire Countr Council. It is suggrosed that tho ruad should bo widoned to at least 60 ft .-double its existing width. A by-pass, it is proposod, should be mado to avoid Allesey. a further suifgeation baing that this bypass should be contivand to herm ronto from Birmingham to the Irondon road south-cast of Coventry and avoiding the lator city


The roomy and convenient receiving compound of the new A.C. Service. Depot as North Road, London, N.

## ANGLO-FRENCH MOTOR MEETING Next Week at Boulogne.

Q
UITE a number of British entries have been received for the Boulogne-sur-Mer Motor Meeting, and it is to be hoped that the British colours will be as valiantly upheld this year as they were in last year's successful meeting.
On Thursday, August 28th, there will be a series of speed trials over an undulating course of three kiloms. on the main St. Omer road. This commences at $8.30 \mathrm{a} . \mathrm{m}$. At $10.30 \mathrm{a} . \mathrm{m}$. trials over a distance of one kilom. of level road from a standing start will be held, while at 3 p.m. there will be a halfkilom. hill-climb up the St. Martin Hill. On Friday, August 29th, at 4 p.m.s on the sea-front, there will be a coachwork competition, open to all classes of velicles. One of the most interesting events to light car owners will be the


FACSIMILE OF KIM II. This very smart little racer, the properly of a
weigh at least 505 kilos. with driver and passenger, but without tools, spares or fuel, and will start 4 mins. 36 sees. after zero hour, which is 9 n.m.


A LUXURIOUS With its streamined nose and dozens of special MORGAN. refinements this is probably the smartest Morgan on the road.

Grand Prix de Boulogne for the Pickett Cup, offered by the well-known English eportsman Mr. F. N. Pickett. This race is open to light cars up to 1,500 c.c. and cyclecars up to 1,100 c.c.
The course consists of 12 laps of a 22 -mile circuit of the Foret de Boulogne.

Finally, at 9 a.m. on Sunday, August 31st, will be held the race for the Georges Boillot Cup. This race is for touring cars and will be held over 14 laps of the same circuit, making a total distance of 325 miles.

In order to make the race more easily understood by the general public, a handicap has been established based on last year's performances. The cubic capacity of the cylinders has been used as a basis, and the cars, with driver and mechanic, but without spares or fuel, must weigh a predetermined amount according to their category.
The organizers have got out a simple graph, which shows at a glance what cars of different cylinder capacities should weigh and how much start they will be given. For instance, in the list of the handicaps already published, and to which a few names may yet be added, the three Aries, of 1,085 c.c., must

Eaton's Aston Martin, of 1,487 c.c., must weigh 790 kilos., and start 17 mins. 30 secs. after zero, whilst C. M. Harvey's Alvis, of 1,496 c.c., must weigh

800 kilos. and will start 18 mins. after schedule time. Thus, the first man to have completed the total distance will be the winner, and there will be none of the confusion which arose last year owing to the man having made fastest time being confused with the actual winner on handicap. It will bo remembered that the start last year was simul. taneous.

Kent and Sussex Club Trial.
The reliability trial of the above club (open also to the members of the Kent Automobile Club, Eastbourne Motor Club, Essex Club and the Brighton and Hove M.C. and L.C. Club) was held in fine weather at Tunbridge Wells on Saturday, 16 th inst. In addition to the usual reliability run, entrants had to pass through a series of interesting tests, which :ncluded:-Easy starting, 5 secs. allowed; changing sparking plug, 60 secs. allowed; reversing in and out of a given space; hill-climbing; secret timed mile ; changing of wheels, 2 mins. allowed.

The following awards were made:-
The Baker Challenge Cup for the best performance, won by S. E. Watson (10 h.p. Surrey). Gold medal for second best performance, C. Warren (11.9 h.p. Morris-Cowley). Silver medal for third best, R. Laurence ( 20 h.p. Vauxhall). Bronze medal for fourth best, J. Hall (11 h.p. Riley).


[^2]
## THE TREND OF ENGINE DESIGN.

## MANY IMPROVEMENTS IN DRTAll. WHICH HAVE TAKEN PLACE DURING THE PAST THREB YEARS. THE INFILURNCE OF RACING PRACTICE. ADDED ECONOMY IN SICHT.

IVHILE: one herra, from time to time, of extraordinary new engines built on entire)y novel lines, there 18 no doutt that, to the ordinary motorist, the bleady progreas which is being made in inprovint tue detail design of existing typ's of englue is of vastly greater importance. Although the external appearance of the power unit of Lo day may not differ very materially from one built, bay, three years ago, neverthelest, the performance of the modern cllgine is much better in every wny, thanks to bumerous detail improvements.
Undoubledly, some of these improvements we owe to the experienco which manufactuters have obtnined in building racing cars, while others are the result of panstaking taboratory research Individually, they would not make very much difference to the performance of the engine but collectively, the improvement is most marked.
For some time the main endearour has been to oltain greater and greater power from an engine of given capreity, or, which is much the same thing. to build smaller and smaller engines which will givo the amount of power required. This has mannt increasing the avernge spleed at which the engine 2s run, nltering the gear ratios of cars to suit the higher epecd, and at the same tinse increasing the compression pressure in order to obtain more power from every cubic inch of mixture drawn into the cylinders.
Taking first increased sreced, it uoos not secter to the generally realized why higher rates of revolution cuablo grenter nower to be obtained from an engine of kiven size. The reason is clear, however, if we realize that by power is meant the rate nt which work is chone. On every firing stroke, a certain amount of work is delivered to the crank shaft, so that tie greater the number of firing atrokes which wo call crowd into a certan interval of time, the greater will bo the nower available at the flywheel.
In the petrol engine this reasoning holds good


By increasisg the comprevion relio of an engine added power may be obtained, while petsol consumption will be reduced.


MODERN IMPROVEMENTS

Belter materials and a wider knowledge of the problems concerned are cor.trit uting to the wer-incresaing officiency of small cer engines.
only so long as we can maintain the amount of work done on each fring stroke: if for any reason this decreases, then the advantage qained by increating tho speed will be nullified. The chict cause of a reduction in the work dove in the eylinder is the inability of new mixture to fill the asailable volume when the speed is very great.
For this reason, before :'tempting to incrense the average running speed, it is usualle necessary to re design the valve gear, endeavouring to allow mors time for induction, and to nrrange the cams so that the valses will not have a tendencs to bounce at high speeds.

## Reducing Bearing Loads.

In arranging to run an engine at a higher speed, there aro seversi other maters requiring urgent attention. If the result is to be satisfactory, the reciprocating parts, namely, tho pistons and part of the connecting rods-must be made as light as possible, because otherrise they will exert very heavy pressures on the bearinga and will also be liable to produce vibration.
The use of aluminium alloys for pistons is, of course, becoming quite commonplace, but it is still egarded as somewhat of novelty to make tho connecting-rod of any material other than steel. Nevertheless. Jight uluminium alloys of special com position, such as duralumin. present very great advantages lor connectingrodis and by their use a weight reduction of ns much as 40 rer cent.. in enmparison with stecl, can be oltained. This means that the sverage running speed can be increased by nhout $1 s$ per cent. without involving higher loads on the tearings or a greater tendency to vibration. It may be explained that a given weight reduction does not mean an oquivalent increase of specd, because the effects produced by a moving part incyease in accordance with the speed squared. Consequently, the forco exerted by, say, a moring piston at the end of its stroke will be inereased four times if the r.p.m. is put up from 2.000 to 4,000 .

In such a case. it would therefore be necessary to reduce the weight to one-guarter of its former value is order to retain the same hearing load. On the other hand, such an increase of sneed would, given a suitable ralve gear, double the power outpul, so

## TREND OF ENGINE DESIGY (condd.).

that for tho same power the engine could be mado smaller and thereforo lixhter.
Roturning to the question of compression ratio, this is largely limited by two factors-the characteristios of the fuel and the shape of the comburtion chamber. It is well-known that if the ratio used is too high, harsh running and an ominous knocking sound will bo produced at full throttle. Tho samo compression ratio, however, and tho same fuel, might le quite satisfactory were the combustion chamber of a moro officient shape. The improvements which haye taken place in this drection may be gauged by the fact that compression ratios for ordinary touring car engines have lisen from a figure of about 4 to 1 to tho ratios of nearly 5 to 1 , which are common practice to-day.
A twofold advantago is obtained by jncreasing tho compression ratio. Other conditions remaining tho mame, if tho ratio can be increased from $4 \frac{1}{2}$ to $6 \frac{1}{2}$ the power obtained will go up by about 20 per cent. It the same time. the fuel will be used much more efficiently, so that the consumption will decreare in almost the same proportion. Alternatively, if this incrense in ratio wern used to reduce tho size of engine required to give the same power, the weight of the power unit would decrense from about $1 \frac{1}{4} \mathrm{ewt}$. to it cwt.
Higher specds and hisher compression ratios naturally both tend to throw beavier loads on the


A amall engine ranaing at a high epeed will give as much power as a large ongine running at a low speed.
engine parts. so that it is not surprising to find a distinct tendency towards stiffenine the crankshaft and euploying larger bearings. At the same time, there are more and more makers employing three crankshaft bearings in place of two.

## Distributing the Mixture.

Clearly: it is useless to design a earburetter which will give the very best mixture under all conditions. and to design the cylinders to burn this mixture with the utinost elficiency, unless, at the same time, we ensure that each elinder shall get an equal share of fuel and air. This is the very point where so many four-cylinder engines fail, and in consequence a great deal of reseurch work has been carried out recently on the subiect of mixture distribution.
It is not a very difficult matter to ensure that each cylinder. shall receivo exactly the same quantity of mixture. but to make the quality the same in each case is a complex problem. In many cases, two eylinders out of the four will invariably receive $n$ weaker mixture than the other pair, consequently if the carburetter setting is economical, these cylinders will be apt to fire intermittently:

A good test of the distribution can be carried out if a mixture control, operated from the dash, is incorporated in the car. When running under steady conditions at full throttle, the driver should try gradually weakening the mixture by means of the control. If the distribution is all that it should he. then all four cylinders should suddenly cease firing simultancounly. It will usually be found. however, that first one of them will drop out and
then another, showing that the quality of the mixture obtnined is different in each case.
Recont researches regurding the shapo of inlet manifolds have shown that abrupt turns are actually better than smooth curvea. It appears that in passing a bend with an ample curve tho fuel particles aro thrown outwards, so that, when the curvo has been negotiated, there is a very weak mixture on the insido of the bend, with a rich layer on the outside. If the pipe now branches off to feed two cylindors, one of them will get a much richer mixture than the other. On the other hand, a right-angle bend


Modera research has disproved a long-sherisbedidea and bas ahown that right angles are belter than gradual curves in indaction pipes.
will produco violent swirls and eddies which will pick up any fuel deposited on tho walls, causing a turbuleat, but fairly even, mixturo to be delivered to the engine.

The section of the manifold also has important effects on the distribution, and many makers in America aro now adopting a square section in preference to the circular variety. The former section is found to reduce the quantity of petrol collecting in the piping for reanona which will be apparent from the comparative illustrations.
From the owner's point of view. developments in the direction of reduced labour of maintenence and increased durability are of yery great interest, and this dual problem is receiving particular attention in the United States. By analysis, it has been found that a considerable proportion of the carbon deposit which accumulates in the engine is really


An induction pipe of aquare rection does not allow pools of pelrol to form like one that is circular.
composed of road dust which has been drawn in through the carburetter. The lozical conclusion is to fit an air cleaner to the caburetter, and the most popular of these works on centrifugual principles, throwing the heary dust particies to the outside.


## AN INEXPENSIVE LIGFT CAR WITH A PARTICULARLY SMART APPEARANCE. SEVERAL NEW AND INTERESTING FEATURES HAVE BEEN EMBODIEU IN THIS NEW MODEL FOR 1925.

$\mathrm{I}^{\mathrm{z}}$T must be said at the cutset that since our last test of one of the Surrey cars yery considerablo improveLueats have been made, both in the mechanical fenE:ares and the exterior anpentance. Dealing with the Jatter first, the model we tried was ond of the latest do luxe two-seater models, finished entirely in polibhed aluminium this material being used not only for tho bonnet and body panels but also for the snud. gharde and valances.
The lamps, radiator, and screen frane aro nickelplated, sus the whele presente as extrembly smart upperinnce. The redinior, as will be seen from tho accompanying iflustrations, has been made taller, and ita shape completely altered. The old type, it will be remembered, had a cooling surface which was fifproxinnately square, but now it is taller and slightly $\stackrel{\rightharpoonup}{\mathrm{V}}$ ronted.
Appeurance, howecer, has not been the only gain, for the new radiator has increased the water capacity ot the cooling system to four gallons, and cool runnitig under all conditions is now assured.
The borly lines are in keepisk with the latest practiec, and, as one of the photographs shows, a deep borly is used without sacrificing the general lines of tho mar. The dickey geat will hold two in comparative comfort, bat it would be hardly suitable for two indulte for a loug ruu. As with the front prate the dickey is upholstered with an antinue leather finish of a dark red shade, which forns a pleasing contrast to the bright almminium pancls. Only one door is pro-vided-an the nerreside-the spare wheel and battery box being earried on the off-site running board.
ロ20

The windscreen is of the single-pane type arranged conveniently close to the driver, provision for bad weather being completed by an easily erected hool covered with khnkj watcrproof material and side cuitains which may be left in place it required when tho hood is lowered.
Recent improvements to the chassis include slight modifications to the suspension which now make the: springs more supple and the use of a Meadows oyerhead-valve engine-gearbox unit. The transmission refrsins unchanged except lor the use of it tubular in place of a solid propeller ghnft. This alteration has effected a sasisis in weight of If ib., an important matter whon it is remembered that the shaft is supported at each extremity by flexiblo fabric dise joints.
With the new propeller shaft the Iransmiesion perjods which were noticeable with some of the oldtype Surreys aro no longer present, and the universal joints are naturally salijected to such less strais. No torque tuhe is used, the torque reaction beins taken by a triangular member bolted above and below the differential housing and located at its forward end hy a suitablo spring-londed pivot. This meminer is of stout angle-steel and posiesses an ample margin of strength.
The cer which was lent to us for tege by the massufacturers, Surrey Service, Litd., of Premier Place, High Street, Putney, had done about con miles befors H'e took it over, and in the course of our test it covered a further $\$ 50$ miles.
First impresaions at the wheel included the con-

## THE LATEST SURREY ON THE ROAD (contd.).

venicnce of the various controls and a geveral feeling of comfort furnished by tho generously proportioned and well-padded upholstery. The somowhat awkward accelerator peda! at one time used on Surrey cars has been modified, and the latest pattern cay be operated without discomfort.
A right-hand gear chango is provided for the three-speed gearbox, the lever boing burmounted by a ball of adequato proportions. The hand brake fever would be improved if it was cranked slightiy inwards to bring it a little farther away from the side of the body. The action of the clutch and brakes proved to be beyond reproach, the latter being particularly sweet.
Gear changing we found to be easy provided that a sufficiently long dwell in neutral was allowed when changing up. The ratios are 5, 0 , and 16 to 1 , and, although these would no doubt be ideal for gencral requircments, there are probably some who, secking n higher maximum speed than the 43 miles per hour attainable from this model, would prefer a higher top. The advantage of the comparatively low top gear is felt. however, when in traffic and on crowded main soads. for it permits the engine to take up its load smoothly and to givo good acceleration in top gear even from a crawl.

Tho Mendons engines, with their silent orerheadvalve gear, accessible units and generally clean outline. run swectly and afford a very reasonable degrece of economy. When pulling this latest Surrey-the weight of which ready for the road is 14 ewt.,-tho petrol consumed by the engine proved to be at the rate of 36 miles per gallon with the Solex carburetter which was fitted.

The acceleration of the car was good without being snappy, and there was a marked nbsence of liat spots throughout the throttle range. The fastest speed on first gear was 17 miles per hour, and 27 was attainablo in second. Thirteen nod 94 miles per hour mny be regarded, howevor, as a practical maximum for the car in first and second gear as above those speeds vibration begins to become unpleasant.
In ton gear 30 miles per hour is a very comfortable

touring speed; at 40 no sounds of distress assert themeelves, but at 45 miles per hour caution dictates a reduction of speed on account of the very ligh rate at which the engine is revolving.
In conjunction with the low-pressure tyres that are fitted ns standard we found that the suspension gavo a very reasonable degrec of comfort without any buggestion of side roll on corners, while the rear wheuls obtsined a good grip of the road; the car was steady and easy to hold at all specds.
Tho steering, which is of the direct lype but with a planetary reduction gear interposed, proved at first to be very stiff, but the cause was soon located to lack of oil between the steering column and its casing, and a few drops of lubricant soon put the matter right.

## Reliable Equipment.

The C.A.V. electric lighting and starting equipmont which is provided proved to the nbsolutely reliable, charging at a steady rato and starling the engino frecly and reasonably quietly from dead cold. Threo lamps are fitted. $\pi$ tail and combination wing lamps. These are controlled by a switeh with a dim and bripht position, and they afford quite good illumination for driving on a dark night. No electric horn is provided, ite place being taken by a bulb horn mounted on $R$ bracket conveniently placed alongsido tho driver's right hand.
The eguipment also includes a mirror dashboard watch. Smith speedometer. and the usun equipment of tools. These are stored in a large locker beneath the driving seat. A very complete oulfit is provided. but the quality is certainly not all it might be ; it must be borne in mind, howover, that the car cells at £235, which must be considered a very reasonable figure in view of the completeness of the equipment and

Our experience has been that polished nluminium bodica retain their original amart appearance for a much longer period than those which are coachfirished in the usual manner, while it is only necessary to compare the appearance of this latest de luxe model Surrey with its forcrunners to noto the added smartness afforded by the alumininm finish.
As a car for an owner-driver who ingigts upon a smart appearance, $\Omega$ sound-if not sensational-performance and freedom from the need for incessant tinkering, the Surrey should continue to be in brisk demand during 1925.


## IHE VARIED INIERESTS OF CONTINENTAL TOURING.

(1) Sbipping the car for ita 2,000 -mile tour.
(2) A acene along the Axeastrase where the road is apanned by archee of solid rock.
(3) One of the French Routes Nationales whare high apeed is possible.

## THROUGH THE SWISS ALPS

AN ADVENTUROLS THOUGH TROUBIER FREE hOLIDAY AT THE WHELL OF A I.IGHC CAK.

SINCE joining the ranks of motorists. my ambition has always been to tour through the Swiss Alps by car. This ambition eame to fruition manly owing to the fact that, after nine months of varied trial, I hatl come to place implicit contidence in my 1021 Bisinger 'fen.
My preparations were as conapotete as furesigh could make them, and is was with rather mixed feeiings that I set out early one morning on the first slage of $m y$ journev. After at uneventful run to Dover the A.A. olficial took charge of tho ear and it was in the role of a spectator that I saw it londed and agnin unlonied at Calais. which latter port was reached about $2 \mathrm{~b} . \mathrm{m}$.
Early the following jorning we set out for a long ran, passing through Amiens, the famous forest of Comniegne to Cinateau Thierry, where a fored stop had to be mode-a puncture. Oz again through stretches of country grimly reminiseint of the war. By esening we renshed Troyes after having covered some 200 miles that das: Th: following day found us at Dijon by noon. and at Vallorbe, the French. Swiss frontier, at ti.30 p.m.
lt this point it is interesting to record some reflections as to the state of the roads of Northern France. I had expected very bad conditions in this respect, but I was pleasantly disiljusioned. The routes nationnles proved almost equal to our Emglish main roads. It was porsible to keep up an average speed of $30 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. . Whilst for considerable stretehes a speed of $10 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. was maintained in perfeet safety and romfort.

Arrived at the Frend-Swiss frontier, the usual customs formalties lad to be sone through. After $\pi$ few minutes we were free to enter Switzerland, and arrived at Vever on the Lake of (ieneva, about 8.30 p.m. Here we stayed two days before proceeding to the climbing bart of our tour.

## A Gradient of 1 in 3.

Making a short run into Iatusanne one evening, which is situated on a steep ineline, n good opportunity was afforded to tesi the car for elimbing, and, soeing a fairly deserted road leading from the station to the top of the town with a aradient which appeared to bo 1 in 5 , $I$ started of in gecond gear. Soon, however, a drop into bottom gear was made, and sceing that the hill became stecper and steeper (my gradicnt meter now registering 1 in 3) I opened the throttle to its fullest extent and reached tho top in strle. A little crowd had already gathered at the top, out of which sterned a nolicemnn, informing me that the street I had just come up was prohibited for wheeled traffic. Scecing that I was a strauger to the town. I was let off with a caution. Content at having come throush the escapade so easily, we set off the following niternonn along the north bank of the Lake of Genevn vin Montrenx (risiting on the way the famous Chatenu de Chillon) Villeneuve, the Rhone Valley to Brigue, whero nur first real test of elimbing commenced with the Simplon Pass.
Previons to leaving London n sprag had been fitted to the car, and it was fonnd to be of real service, particularly in starting away from reat.

Immediately on learing Brigue, the gradient meter registered 1 in 8 , and with few exceptions kept it up for nearly 10 miles. The road surface being on the loose side. I was compelled to do the whole journey on bottom gear with, however, plenty of

## IN A 1924 SINGER TEN

two beginners at continental touring FIND IT ENJOYABI.E AND QUITB INRXPENSIVE.
power in reservo. Tho Boyce meter proved most uscful, and on two occasions advised mo to stop for refilling the radiator. No difficulty wos found in this direction as numorous mountsin stroamlets are met on these mountain passes. With the setting sun we reached the top of the pass ( 6,576 feet), the car pulling as well as ovor.

The descent to the fronticr was made with sevoral stops in order fully to appreciato the splendour of the scencry. Entering Italy at Isclle, wo wors accompanied by Italian soldjers, who stond on the footboards of tho car while we drove past tho fortifications.
Our journey now led us round over a hundred harr-pin bends vis the valleys of Viggezzo and Melezza (Centivalli), past the much frequented pilgrimage liadonna di Ro into Locarno. Thence wo proceeded via the Monto Ceneri Pass, which was climbed on sccond gear throughout at a speed of $90 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. on a gradient of 1 in 9 to 11, into Lugano, the most southerly point of our tour.

After a fow days stop at Lugano, visiting the Borromec Islands, San Salradore, and surrounding beauty spots, we procceded north to tackle the Gothard Pass. Tho climb through the Val Tremola with the 0 superimposed hair-pin bends fully justifies the remark in quide books that verv careful driving must be exercised. Tha 10 -mile climb on an avorage gradient of 1 in 8 had to be done on bottom gear, owing to the loose surface and the curves. Only three stops for reflling tho radiator wero made.

## Over the Devil's Bridge.

We now reached the end of the cultivated zone, and entered that of baro rocks still partly covered with snow and ice. At noon we reached the top of tho pass ( 6,026 foet) and lunched at tho Gothard Hospiz. Pessing over the famous Devil's Bridge we passed through Altdorf to Pluelen, on the Lake of Four Cantons. Procceding along the Axenstrasse, well known to English travellers for its picturesque galleries in solid rock, we arrived in Brunnen, where we again stayod a few dnys in order fully to appreciate the splendour of the surrounding scenery. On reaching Brunnen we had just passed the $1,000-\mathrm{mile}$ mark.
Our journey now led us through Zurich to Schaffhouse to visit the imposing lihine Falls (the largest waterfalls in Europe) and thence to Bale. The road from Bale to Vosoul proved extremely bad. Sezanne was reached about 7 p.m., having covered noarly 250 miles that day. Lenvine Sczanne the following morning, we wero able to keep uD an oxceptionnlly good average speed by reason of some long stretches of good roads. and thorofore decided to try to reach Boulogne by 6 p.m. to catch the Folsestone boat.
On leaving Compiesne we encountered a very bad strotch of paved road, but not to miss the boat we travelled rather faster than was sood for the car in the circumstances.
From Amiens to Boulogne the road was again in good condition, and we were ablo to keep up 37! m.p.h. Boulogne was reachod at 6.15 p.m. in time for the boat for Folkestone,
Looking back on our trip lasting about 18 days, we consider it to be tho most enjoyablo and interesting holiday wo have cier apent. The total distance covercd was just under 2.000 miles, with a consumption of 2 gallons of oil and 54 gallons of petrol, about 40 miles per gallon. which must bo considered a very good average.
J.O.N.


## ALL THINGS COME TO HIM WHO ...

 CLIMBS.(4) and 6) Magnificent viewe aro to bo found ae the roward of climbing the tortuous mountain tracke depicted in the illuatration (5) which shows the famous Golbard Pash, which is a continuous 10 -mile boltom-gear pult.


## THE FEMININE TOUCH.

WHEN WOMAN TAKES THE INITYATIVE -REPAIRING THE HOOD-PAINT. ING NUMBER PLATES, BUT NOT GREASING !

WHEN Ralph came in and announced thant we were going for a ten-days' tour of the Soatir Coast- a business and pleasure combined sart of holiday-I slipped round to the garago and made a brief inspection of our little vus. Anyone who happens to be the joint owner of a Rover Eight and possesses a partner of Ralph's lazy nature will know that it pays to take a look round occasionally.

Just as I anticipated, the hood was cracking slighty at the folds, the little celluloid window in the back was cracked in scveral places, and the number-plates wero badly in need of some paint; in fact, our Kover looked as though it really required an overhaul. I might mention that it has already completed some 18,000 miles and has cost Ralph 34s. 80 far in actual repairs 1

## Renovating the Hood.

The next day, before Ralph returned home, I called on the local olectrical dealer and bought a sheet of clear celluloid 11 ins. wide and 91 ins. deep, which cost the large sum of 18. 6d. 1 The best kind to buy in the thin sheet celluloid that is used for repairing accumulators. To snip the old celluloid out of the

"To snip the old celluloid out of the window was
the work of a misule or two ...
sindow was the work of a minute or two, and when the new window was cut to size-some windowe vary a little, and the celluloid has to be trimmed-an assistant was requisitioned to help sew it in position.
This is quite an easy matter if n good, strong ncedle and brown cobblers' wax aro used. One of the B24

Painting the number-plates did not exactiy appeal to me, but Ralph-the lazy boy-disappeared after dinner, muttering somothing about going down to the village to get some tobacco, so I knew thero was no hope of assistance in his direction. Now, I do not know whether Brunswick black is the correct stufI to use for painting number-plates, but it was the only thing I could find, and the effect was ever so good. Painting in between the letters without getting any black on them was rather tricky, but I managed it fairly well. Ang littlo spots that did find their way on to the letters and figures I managed to wipe off quickly with a picce of rag moistened with petrol.

"By very car of ul and labonoas work I managed to pick out the lotiora and figures writh white enmel. . .

By very careful and laborious work I managed to pick out the letters and figures themselves with white enamel afterwards.
On the next day I persuaded Ralph to bring bome a tin of hood paint-I forget the name, but most motur places seem to stock it-and together we scrubljed the hood with hot water and soda. When it was quite dry we applied the hood paint. It did not smell very inviting for the next two days, but it mado the hood absolutely as rainproof and as nice-looking as when it was new.
There is one job that I always leave for Ralph, and that is greasing up aud oiling the messy little places where oil is supposed to go.

Our preparations, or, to be moro correct, my preparations, did not take very long, and when eventunlly we set off on our tour it was with the plensant reflec: tion that the car was in good trim for the ten days' journey.

## A HAND-CONTROLLED AUSTIN SEVEN,

## altrrations carribd

 OUT ON A STANDARD AUSTIN SBVEN WHICH CAN NOW BE DRIVBN BY A LEGLESS DRIVER.SOME considerable credit is tuo to Georgo England 1928), Led., of Walton-onl'tames, for tho manner in which they have converted a standard sustin Seven to hand control for the use of an invalid lady. Wo examined she car during is recent visit to the works, and were much impressed by the ingenious way in which the various difficulties inseparable from such conversions had been overcome.
Before procecding with tho description it may be of interest to state that, if required, the standard foot controls can be replaced in a very short time, ns no structural alteraiions have been necessary, everything being elamped int place. The whole consersion torms the subject of various patents.

From the photographs it might appear, at first glance, that the left hand operates the cluteh, so making gear changing difficult. Actually, this is not ко, as the levers on the clutch and brake shafts eross each other over the stecring box, and are connected to bell-crank levers fulcrummed on each end of $n$ pin which replaces the clamp bolt at the top of the steering box. The hand levers aro clamped to the stecring column directly under the whee, which, to suit the owner, is flat and not dished, as is usunl on the Austin Seven.
At the end of the clutch lever is a trigger which operates the throttle through the medium of a Bowden wire, and so replaces the foot necelerator. This trigger is worked with the right forefinger, and


With the brackets for aumpending an invalid cbair in ure, the apare wheel is carried, in a case, in the bock of the body.
allows of great nicety of control, double clutching being quite as ensy ns with a foot accelerntor.
Tho "foot" brake lover is operated with the leit hand, and controls the rear oft-wheel brakes. The side brake lever, which has been extended for more easy reach, applies all four brakes.


All the ususl pedals are replaced by bard levers
and everylhing is arranged within easy reach of the diver.

## ABOLISHING FOOT CONTROLS.

The electric starter-button has been fitted to tho lower edge of the facia-board for hand operation. All the switches are grouped fairly closely together; this has been dono lor a defuite and rather unusual purpose, which is that a aheet-metal shield can we fitted over them all and padlocked in position Whilst this idea may not obviate the possibility of theft of the car, it will, at lensl, prevent tampering when the car is left unattended.
Above the engine switel is a similar switel which is in circuit with the electric horn button on the steeriug wheel, so that when this switch is "off" the horn will not "blow," much to the disappointment of small boys. Wo were not able to drive the enr ourselves, as the body varnish was still "tacky" at the time of our visit, but the ease of control is demonstrated by the fact that one of Messrs. England's drivers, handling the car for the first titme, took jt tirrough London and back with no dificulty whatover.

## An Ingenious Carrier.

A great denl of interest attnches also to the rear of tho car, in that provision has been made for carrying an invalid's propelling chair. The back of the body has been suitably strengthened by means of a cross girder and bracing under the upholstery, and projecting through the panel aro four drilled lugs, which carry two detachable $\Lambda$ brackets having hooks formed at their apexes which engage with a tubo forming part of the invalid chair "chassin."
On each lower side of the rear panel are two grooved blocks of wood. into which fit the wheels of the chair. The sketch will make this clear, and it will be obvious that the lugs and strengthened rear panel form the nucleus of a very strong luggago carrier should it ever be required.
Wo feel that this description would not bo complete without some reference to tho sporting instincts of the lady to whose order the car mas supplied, as, besides being a cripple, she has never driven a car before, and, living in the West End of London, she will alwnys have heavy traffic to negotiate.


## Still Lighter Racers.

AFEATURE of the 800 -Mile Race this year will be, I believe, the extraordinarily light weight of the competing cars. From what I can gather at the present time, very few of the cars, even in the 1,600 c.c. clask, will weigh tuuch more ethas hals a ton, while several will weigh considerably less. It is probaitic the actual weights of the racers will he "wropt in mystery " until the race is over, and then I think we can expect some starthing difclosures with regard to the weight-pmring abilities of some of our up to date desiguers.

## Petrol Filters.

SINCE writing, three weeks ago, alout the need for iumproved petrol filters, my attention has iseen drawn to a number of proprimitary examples, masy of whirlh comply, to a more or less degree, with the ideal specrifications which I outlised. An wecessory narketed by Bowden Wire, Ltd., fuifis my requirements exactiy. It is very strongly made, easily dismantled and provided with an elficient drain tap. Petrol enters at the lower part of the chanber, and must pass first through a coarse gauze and then through a very fine one before it can reach the carburmter. Massize unions are provided for the pipe ends, and the body of the filter is so constructed that it can be casily attached to a brnckict fixed to the dashlumard or in any other convenient position. The drawback to this fitting, of course, is that it is rather expensive-too dear, I shomld say, for most emall car inanufacturers even to consider as a stanunrd fitting. At the same time, 1 feel sure that it would appeal to many light ear owners who deem it wise to pay a small premiun to insure against rondside hold-ups for clenning jeta,

## Cheap and Serviceable

AFTER going into the matter fairly fully, 1 am inclined to think that the best type of netrol filter which can be empodied in the specification of $\pi$ cheay small car takes the form of a tube or cons of close gauze, forming an upward extension of the petrol pipe at the point where it enters the base of the tank. It is an adrantage, in addition, if the pipe itself protrudes half an inch or so into the tank, ns foreinn matter of the kind which is usually found in stopped-up jets is invarinbly heavier than petrol, and therefore remains at the bottonn of the lank below the level of the filter. In the ense of cars fitted with filters inside the petrol tank, it is, of D2g
course, advisable-say, once a yeir-to remove the union from the base of the tank and nllow the sediment to drain away.

It maty be thought that it is a disadvantage to allow the pipe to protrude into the tank, as the last drop of petrol would thus uot be availatite for use, but 1 anl convineed that this is netually ant advautake, my convietion having been born from a recent experience when driving a car fitted with a petrol tank which provided an emergency reserve gallon of petrol. On turning the tap to reserve, and thire drawang the supply from the extreme botom of the tank, 1 was soon in trouble with choied jelt, the fitter in this ense heing of a hopelessly iteadenuate type.

## Turning in a Narrow Road.

IN some parts of Scotland the ronds are so :harow that it is quite impossible to turn round in them in the ordinary manner. Noreover, they are so lonesome that one moyg go for miles without finding a widening in the shape of an entrance to $n$ house or the junction to another rond. In extreme eases one may be forced to uso the peaty side of the trach, where the wisc snotorist will steer his front wheols. His rear wheels are on the hard mond where there is no chance of them spinning or being dug in, whis: the front wheels can be manipulated fairly snfely on the most treacherons turf.

## A Cheap Car.

" MTOTOR CYCLING " rulates the slory of a rider being presented on the road with a brand-new sidecar outft by all owner who was "fedup" with it. Such occurrences, nlthough rare now, wero not uncommon in the early days, when a motor vehicle of any kind was more of a liability than an asset. 1 remember several instances round abont the year 1904.

In oue care a werthy cabinet maker, linving cono into a legacy, invested in a secondithand ear of German make. With great pride in his possession, he set off from a Midand tawn for a holidaty ut $\boldsymbol{n}$ Welsh senside resort. Six miles out the engitne stopprd, and defied all his efiorts to restart it. Tho ngent from whom lie purchased the enr eyeled ont, and after prolonged labours got it going again, but nt such a worful timp that the next five miles ocecr. pied an hour. Thrn a tyre punctured. Disgusted, the owner and his wife abandoned the vehicle and went on by train. That was on a thureday.

On the following Sunday evering the cabinel maker

RICH MIXTURE (contd.).
and his spouso were coming out of chapol when, to their surprise and dismay, whom should they find wailing for them with triumph written all over his oily face but the self-same arent in the self-same carl Scandalized, the owner gave him one look and turned on his heel. "But what shall I do with the cari" cricd the agent. "Keop it!" was the replyand he did.

## Light Cars and the King's Cup.

IRAN down to Lee-on-Solent the other day to seo the finish of tho King's Cup air race. There were many ligit cars drawn up by the pier, and the owner of one of them told mo that he had seen the start of the race from Martlesham Heath aerodromo, which is north-east of Ipswich, at 5.30 in the morning, and that he: had then come down by road, passing through Colchester, Chelmsford, London and Guildford. He arrived at Lee in plenty of time to see the first ueroplane cross the finishing line.
'This information interested me, as 1 had a suspicion that the journey by rail could not be accomplished quickly enough to allow a person to witness both start and finish. I found, however, that by frequent changing, by going without breakiast, and by the copious (and ruinous) use of taxis, a person could just manage to travel from Martlesham to Leo quickly enough to te in time for the finish. The officiale for the race were taking no risks; they did the journey by car.

## By-road Dangers.

'THE nervous novice who, to avoid traffic on main roads at holiday times, takes a cross-country route would be well advised to remember the philosophy in Hamlet's soliloquy anent flying to dangers
he knows not oi. For if his route crosses main roads be may easily expose himself to far greater risks than if he kept to the aimost solid traffo strean found along the main roads at week-ends.
A caso in point came to my notico last week. $\Lambda$ car owner who had driven fewer than 1,000 miles planned out a quiet route home from the sea, but at one place he was obliged to come into the main road. The corner at the junction was absolutely "blind," and, aluhough be took all precautions short of actually stopping, he was hit by a fast car and hurled into the hedge. Had he kept to the main road all the way, bo would probably have arrived home without mishap.

## An Unmentionable Word.

TTHERE is one word in tho language which, it mentioned in places where lightearists gatber, never fails to produce an overwhelming wave of indignation. I nm not referring to words of excessive thermo-dynamic efliciency such as _or or or even -, but to a word of unimpeachable moral character. I refer, in short, to the word TRAM.
While passing through a town in Suffolk the other day I was impressed by the improvement made in traffic conditions on a strotch of road formerly very congested. This improvement has resulted from the introduction of rail-less trams. These trams tako their power from overhead wires in tho usual manner; but, as the trams are not restricted to a ceriain track, they are able to conform to the rules and conventions governing decent self-respecting traffic. The same standards which were used for the wires of the old trams are being used for the railless trams. The financial loss occasioned by the change has not been great. Let this experiment be commended to the notice of the benerolent gentlemen of the L.C.C. And let those who atill refuse to seo the light be condemned to cternal tramnation.
S.S.


## SIMPLE FACTS ABOUT BATTERIES.

## THE BATTERY OF A CAR, DESPITE THE VERY LOMPLICA7ED APPEARANCE OF ITS "INTERNALS." IS VERY SIMPLE IN CONSTRUCTION AND PRINCIPLE.

IT is a strange fact that the battery of the electrical equijmment is nbout the most misunderstood fenturo of a modern sight car. Wuite extraordivaryalmost funtastio-ideas are prevalent as to how it operates and how it should be treated. Every owner of a light cur can easily learn all that he should know about the battery from this article if he will first try to forget any of the prevalent yopular misconceptions ahout it which he may at the moment cherish. For instance, ho must not believe that a battery actually slores electricity, nor that it is something that can be strained bs ordinary usnge.
-'To begin with, the principle of a battery must be understood. If two strips or plates of dean sheet lead are placed a little distance apart in a tumbler three-quarters filled with dilute sulphurio acid, the apparatus forms an elementary battery-notbing


Even so simple a buttery at that depieted is capable of lighting a 2 volt lamp for a briof period.
could be simpler. Connect the plates, one each to the terminals of a dynamo, so that the current from the dynamo flows through the lead strips and the aeid ind it will be obscryed in a couple of minutes or so that one of the strips becomes a brown colour and the other a dull grey or slate colour.
After a few more minutes, disconnect the wires from the dynamo. 'This elementary battery is now in a "churged" condition, and if the bulb of a twovolt pocket torch bo connected to the wires it will light up, perhaps for 30 seconds and then go out, the battery is then in a discharged state. Connect the dynamo to it again and it can be recharged and will light the lamp again, and these operations can be reperted any number of times.

What takes place is, briehy, that the current Irom the dynamo causes a purely chemical action to oceur letwicen the lead plates and the acid. If the surfiace of tlie plates be closels watched during charging, streans of gas bubbles will be noticed coming off. From one plate hydrogen comes of and from the other oxygen arises, due to the chemical action.
The plate that becomes trown is known ns the pasitive and has a coating formed on it of what is chemically termed peroxide of lead, and the other plate, the negative, has a coating of chemically active pure lead, and it is this chemical condition of the plates that represeats the "chargc." Connect the small lamp acroas the plates and instantly the netive chemical encrgy on the plates changes into current, and when the chemical energy becomes used up there is no more current available until the plates aro once again charged, or, technically speaking, put into a chomically active condition.

## Elaboration Brings Efficiency.

The modern car battery is really only an elaboration of this very simple principle. The lead atrip experimental battery is, of course, very fecble and ineficient, but by using larke lead grids filled in with oxide of lead and by packing several of then very close together with some porous separating materisl in between-such as very thin prepared mood, or spocial rubber sheet-in cbonite cells or compartments, and sealing the whole job up in $n$ practical way so as to hold the acill and withatsud severe jolting and vibration, a highly efficient battery is obtained, that is to say, it will give back aloul 90 per cent.of the curzent put into it.

From the elementary theory it should be easily understood that the battery is a very convenient means for the equivalent of storing up electricity from tho dynamo and using it, at will to obtain mechanical power for starting the engine or light when tho engine is not running, and it serves also as an clectrical steadying device for the dynamo no that the luups give a steady light, however the simed of tho car may vary.
It has been explained that the modern battery is designed so as to withstand hard service, and this means chiefly that it must always be in a condition to give plenty of electrical power to start the engine. The lighting and steadying work is very easy for the battery. Suppose a battery were not spicially made

## SMAMIG FACTS ABOUT BATTERIES (contd.).

for starting an engine; assume, ns an exnmple, an attempt wero mado to start with a "wireless" battery, the result would be very damaging to it.
The term "straining it" might in this case well bo applied, the plates would verg soon buckle and tho lead oxide pasto would drop out becnuse of the light construction of the battery and the very excessive ratc at which it was diseharged. The work which a starter battery has to do can le followed frond a hydraulic analogy. The battery is like a largo tank full of water from which a large pipe (the cables) is connected to a turbine or water wheel which reprosents the starler. By suddenly opening a tap on the water pipe, the turbine will instantly revolvo and deliver power, but if the iap bo kept open too long the water in the tank will be used up and no more pewer will be available.

## An Interesting. Analogy.

The starter switch is equivalent to the tap, and if the switch is kept closed too long the battery will soon be exhnusted of current, and, obviously, it is important to avoid this. The tank can bekept fult by a small flow of water going in and, similarly, tho battery can be kept full by a flow of current from the dynamo, but if a lot of current be taken out it will require a considerable time to fill it up to enpacity again. If the battery has been completely exhausted the better plan is to remove it from the car and have it charged from the local power mains, as, ubuaily, the car dynamo is not large enough to do the work unless it is kept running for a long period. As a fully discharged battery requires at least cight hours for recharging and as the current shoud, preferably, flow through it continuously for this period at a constant rato it will be seen that a fairly large source of power 18 required.
The finest wry of charging a batterg off the car is by means of tho "constant potential" system, which consists of a dynamo so designed that it automatically reduces the charging current as the bnttery becomes "filled un."
A norinal starting discharge, however, is quickly restored by the dynnmo. It should he clear that ordinary use of the starter cannot injure the battery or buckle the plates. On the con. trary, plenty of charging nnd discharging tends to maintain tho battery in good condition. What has to be nvoided is keep. ing the starter in action much bejond n normal period, the engine obviously being in a very
Continual miohardJing or ahort circuit may lead to buckled plates.

Owing to the gassing and evaporation that lake place when the brttery is in use the level slowly falls and the specific gravity increnses. 1f, however, just enough distilled water is added to restore the lesei to $n$ quarter of an inch above the plates, as before, the correct specific gravity will be maintained. It is a good plan to test the specific gravity about every six weeks with a battery hydrometer. These useful instruments cost n few shillings only and can be had


Tho hydraulic analogy. The bettery acts an a revervoir in which power is dowly accumulated to ba given out at required.
from any large accessory concern. Should nny of the acid be splashed out or spilled from the celle, this loss must be made good by adding dilute acid of the standard specific gravity and not distilled water.

## Battery Repsys Attention.

The modern battery will never give trouble if it has work to do, and if it is kept charged and has the acid strength attended to at regular intervals. Anything from five to ten years' service should bo obtainable from it. The great aim must be to prevent a battery getting into a sulphated condition through wart of use, neglect of regular charging or allowing the acid to become too weak.
Sulphating is a sort of chemical "rusting-up" of the plates, and it soon makes a battery useless, just as a piece of machinery can must up and be ruined oy neglect. As a malter of fact, sulphating can often be eured by discharging the battery though a suitalsle type of resistance and then recharging it "backwards," by connecting the charging leads to opposite terminals-that is, positive main to negative battery -and giving the celle a slow charge at about half the rormal rate, afterwards washing out the bnttery: refilling with fresh acid and charging the correct way round. It may be necessary to repent the treatment to remove all the sulphate. But the better plan with badly sulphated plates is to send the battery to a battery service agent who will be in a position to effect a proper cure or to fit new phates should they be required. The terminals of a battery sometimes show a greenish crust, which is caused by the neid attacking the brass terminals, This may be provented by applying vaseline to the affected parts.
Alwnss keep the battery terminals well tightened up aud mop up any acid that may colliect on top of the hattery. Kcep an eve on the nmmeter, so ns in be sure that there is no falling off from the normal charging rate.

Every Motorist Should Know That EXHAUST GAS IS POISONOUS.

A FALLACY DISPROVED AND A WARNING UTTERED.

TWO recent events have served to call attention to the deadliness of exhaust gases and the danger of running an engine in a clused garage.
The first is one of thode regrettable tragedies which constantly recur through insuflicient regard being paid to the scrious nature of this subject. A motorist at Guidford was found dead in his garnge at the rear of his car, where he had been doing some repairs whilst his engine was runuing.

The: xecond event referred to is the publication by the ('nited States Jepartment of the Interior of a report of some experiments carried ont at tho Bureau of Mines Experimental Station at littsburg. An ordinary touring car of a well-known make was placed in $\pi$ brick buiduing of about 3,000 cubic ft. capacity. A dog was tied to the driver's seat. and the engine was started and left running at its lowest possible speed. The doors wern then closed and the experiment was watched. In twenty minutes the dog rolled over on to the fioor unconscious. it sample of air was withdrawn from the building at this time nal analysed. It contained 1.3 per cent. of carbon monoxide. The experiment was continued, until at the end of two hours the engine atopped through lack of nir. Analysis of the atmosphere now showed the presence of 9.1 per cent. of carbon monoxide.

The first point to note from these facts is that the popular belief that while the engine runs the nir is safo to brenthe is an absolute fallacy. One per cent. of carbon monoxido in the atınosphere is sufficient to cause death in a minute or two, and 2 per cent. is instantansously fatal. This amount was excecded long before the engine stopped running.

Although it fas twenty minutes before the dog lost consciousness, it is not safe to assume that an engine can be run without danger for anything like this timn in an ordinary garage. The engine in the Amerien experiments was not run at the epeed motoriste commonly use for "warming up" or testing purposes, and, furthermore, the building in which the experi-
ments were conducted was much larger than the ordinary garnge, which may often have no more that 500 cubic ft. capracity. In the usual circumstances dangerous concentrations of carbon monoxide would most likely be present after a couple of minutes when an engine is run in a closed garage.
Tive insidious manner by which carbon-monoxide poisoning is brought about is a ferther factor contrihuting towards the deadliness of the gas. Carbon monoxide is colourless, tasteless and almost odourless, so that its presence cannot bo detected by ordinary means. When inhaled it combines with tho hemoglobin of the blood to form a bright red com. pound known ns carboxyheminglobin. When tho blood carrics only a very sinall proportion of this substance it is unable to circulate effectively, and will not absorb and distribute oxygen throughout tho system. The first effect to be felt is a headache. which is quickly followed by giddiness. The inhalation of further small doses of the gas produces unconsciousness and eventually death. The antidote for earbonmonoxide poisoning is the inhalation of oxygen gas. Where quantities of carbon monoxide are linble to bo present. such as in producer-gas plants, the Home Office requires the provision of suitable oxygen inhaling apparatus.
Motoristo who have any regard for their safety should never start their enginea in a closed building. and ghould rever enter a closed zarago where an ongine is already running. Carbon-monoxide is heavier than air, and somewhat sluggish, so that it tends always to flow to the lowest level. Therefore, great care should be taken to see that the pit is clear before entering it for any purpose. It is a good plan after removing the cover boards to create a draught in the nit by fanning, to disturb any gas which may be lurking there. When doing nny work which requires the engine to be running, throw the garage doors wide open, and see that a dranght passes through the building. Wetter still, tnke the car outside.
H.C.D.

## This Week's Hint.

## TENDING DYNAMO BRUSHES.

IN spite of the undoubted simplicity of the dynamo, there is a gencral feeling amongst car owners that it is an apparatus with which they should on no account interfere. This is largely a mistake, and unquestionally occasional attention, which does not of strict necessity require any great electrical knowledge, will result in increased efficiency in the lighting and atarting system and add somewhat to the life of the battery.

One of the greatest enemics of the dynamo is carbon dust, which comes off tho brishes and is deposited around the cage holding the brush gear, This dust, which is, of course, a conductor of electricity. is finble to bet up a short circhit between adjacent brush holders, possibly to the great harm of the dynamo. A nother trouble which can arise from dust is the brushes stick. ing in thrir,holders, $B n$ that they do not make proper contace with the commutator, which will result in R30


The commutator and bruah gear of a conventional car dypano is generally quite accestisle when the caver is removed.
sparking and burning away of the brishes and pitting of the commutntor.
To clean the brush gear, first remove the metal cover, so as to expose the brashes, and then take out each lrush from its holder by very carefully lifting the apring-londed trigger clear of the brush end vur ccuren repp. and gently pulling on the wire lead. Care should be tnken, on removing the brushes, to identify them sio that they will be replaced in their proper holders. The brushes may be wiped with a petrol rag anil their running faces examined for aigns of hurning or chipping. Each face should be shing and curred to fit the radius of the commutator. Dust inside the cage should 1.0 cleaned out with a rag and ly blowing with a tyre pump. Fxamine the commutntor. which should bo smooth and clean. See that all terminal nuta are tight and that there are no loose atrands of wire to cause short-circuiting.


## Conducted by Ednund Dangerfield.

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## f.etfers.

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## LIGHT CAR \& CYCLECAR

was founded in 1912 to cater for the needs of users and polenfial purchasers of varjous new types of cyclecars and light cars, and it has congisfently encoaraged the development of this new motoring movement for nearly fwelve years.
Only cars the engine capacity of which does not exceed 1,500 c.c. ( $1 \frac{1}{2}$ litres) come within the scope of" The Light Car and Cyclecar," that capacity being generally recogniesd and ac. cented as the limil for a light car engine.

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## Topics of the Day

## An Important Case Decided.

WE are pleased to learn that the Pullheli case, in which a competitor was summoned for taking part in a competition organized on a Sunday, has been dismissed. Ile was accused under au Act passed in the reign of Charles 1 of congregnting outside his own parish on a Sunday for the purpose
Sunday Motoring. of the Liverpool Motor Club's Hill-climb at Screw Hill. It is gratifying to lenrn that the case of the competitor was taken up in a very active manner by tho A.C.U., which, feeling that a principle was involved, nrranged for tho defenco through the legal department of the R.A.C.

Opinjons naturally differ with regard to the desirability of holding competitions on Sundays, and it is probable that, so far as those immediately interested are concerned. there aro more in favour of Sunday competitions than agninst them, but it canoot bo denied that, generally speaking, it is a better plan to organize hilf-climbs, epeed trials and the like for week-days rather then for Sundays. It must not be overlooked that. whereas no reasonable exception can be taken to the holding of motoring competitions on week-dnys, there are many who aro ready loudly to protest even at the suggestion of holding them on Sunday, and, bearing this in mind, and also the fact thas the fewer anti-motorists there are the better it will be for everyone, it is clear that Sunday competitions should be discouraged.

It is fortunnte, nevertheless, that tho caso referred to above was dismissed, for it should be noted that the competitor in question was sumbioned for taking part in a "sport and pastime." If a conviction had been secured in this case, it seems that a precedent would have been eatablished for entirely prohibiting Sunday motoring, for, after all, what is a week-end run to tho senside or to a popular venue but "congregating outside one's own parish on Sunday for the purpose of sport and pastime" $?$

## Small Car Reliability.

WE have had occasion frequently to comment on the remarkable capabilities of modern small cars, and it is a fact that ns ench ycar-aimost each month-passes, their field of activity becomes wider and their capabilities more remarkable. The performances of amall cars in the various important Further Strik- reliability trinls which have been held this year ing Testmony. have been little short of astounding, culminating in the remarhable results revealed in the Scottish Six Days' Triais, when not ono of the competing cars failed to complete the course on account of mechanicak troubles. It must not bo thought, however, that small cars give such wonderful results only when they are handled by experts,

In this issuc a contributor who is a comparative neweomer to motoring describes how he started from England with one of the most popular makes of light car, and completed a 2,000 -mile tour of the Swiss Alps and suffered no mechanical trouble whatever, his only involuntary stop, in lact, being to mend a puacture, while among the tasks which the car was called upon to complete was a continuous bottom-gear climb of ten miles. Another enthusinstic light car owner recounts in nur corrospondence columns this week his experiences with one of the cheapest light caro which he purchased accond hand, tiught himeelf to arive, and took for a lengthy tour without any special preparations boing made. Tho littlo car took him, with his family, wherever they wished to go, and, on his return, he was able to tell tho usual story of an absolutely trouble-frec run.


## RES IN BRITAIN.

tito be Found Scenery Offering a indiAny Other Part of the World.

(Lert) One of the hati-nmberwh heuses in Itratsercon-Aren, and (sbovt) the reate which riptl the Atmatis at Land

## FROM THE NORTH TO THE THAMES.

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A RECORD OF A TOUR
THROUGH SOME OF
ENGLAND'S PRETTIEST
SCENERY RICH IN HIS.
TORICAL ASSOCIATIONS.
```

FOR those motorists who wish to take a short, icisurely and interest mf tour from the North, a trip to the Thames Valley may be thoroughly recounruended.

Taking the Manchester district as a convenient starting point, a great many places of beauty and interest are passed through on the way to Reading and lindsor, which are the most southerly points of our proposed tour.

Leaving behind the noiso and buslle of Cottonopolis, we nee soon on the well-known high road from Cheadle to Congleton, and immediately after passing Handforth and Wijmslow we aro charmed with the beauties of Alderley Edge, Capesthorne and Siddington. whilat on our left rise majestically the heights of Derbyshire. Continuing past the picturesque "black and white" church at Marton, we shortiy descend in steep bill into Congleton, where, on reaching the old half-timbered inn, "The Lion and Swan," a sharp turn to the right is taken for Astuury.

## Reminders from the Past.

Here the beautiful old church, the main portion ef which dates back to 1618 , is well worth a few minutes' inspection, and another halt should be made a few miles farther on to admire the picturesque old halftimbered hall of Moreton, which stands in the fields on our left.
This is one of the finest examples of "black-andwhite" architecture in tho country, the courtyard being particularly beautiful.
Twenty miles farther along is Rugeley, a quaint old market town, formerly named Ridgeley, which has an interesting old church dedicated to St. Augustine. Continuing our journey for cight miles. we enter tho old-world eity of Lichfield, with its famous threespired cathedral standing on our left. Although not one of the largest, it is certainly ono of the mant beautiful of our cathedrals, both the interior and exterior being extremely rich in carvinge. Other jtems of interest in Lichfield are the house where Dr. Samuel Johnson was born in 1509 and a statue raised to his memory by the late Chancellor Law.
To avoid the towns of Birmingham and Cosentry, the tourist is advised to take the road throush Bas. getts Pole, Coleshill, nnd Stonebridge to Kenilworth, the latter being well known for the picturesque ruins of its once famous and historio castic.
The journey from Lichfield to Krnilworth by this route is 28 miles, and, after a charming run of another five miles we arrive at Leamington. This fashionable town, with its tastefully laid out pleasure grounds and winding river, is certainly an ideal place in which to rest for the night. The distance covered is now about 100 miles, and if the various places of interest mentioned have been visited on the way, the motorist will probably find that enough has been necomplished for one day. "The Angel," an old-fnshioned country hotel. with all modern comforts, can be thoroughly recommended.
Should time permit whilst at Leamington, a trip 83
may very casily bo taken to Warwick and Stratford. on-Ayon, as both these historical towas are within very ensy distance, Warwick being only two milea away and Strafford ten miles.
Our direct route is, of course, through Banbury to Oxford, along a fine 29 -mile stretch of rond through beautiful undulating country. A halt should be mado at Banbury to inspect the famous old Cross and the interior of the church of St. Mary, which, with ats magnificent paintings, impresses the stranger ly tis revelation of unexpected grandeur.
Oxford is certainly the most intercsting town on our tour, and a day or two should, if possible, be spent here to visit the many unique and picturesque old college buildings and churches, such as the Bodleian Library, the Sncldonian Thentre, and the Radelifio Camera.
After proceeding for six miles, we pass through tho delightful village of Nuneham Courtney, the wellknown seat of the Harcourt family, and the grat park bordering on the river adds a finishing touch to a most charming picture.
On reaching tho village of Shillingford-about five miles distant from Nuneham-the motorist has the option of two routes. By curning to the left over Nettlebed Hill wo have a direct run of only $18 \$$ wites to Henley, and a further of milea brings ut 10 Maidenhead.

## Riverside Beauty Spots.

By turning to the right, however, at Shillingford, we keep nearer to the courso of the river, avoid Nettlebed Hill, and pass through the picturesque village of Pangbourne, where the Thames is extremely pretty.
After keeping the river on our left for another 87 miles, we arrive at the busy town of Reading. Contiluuing for four miles, we reach the charming little riverside villinge of Sonning, which well degerves its widespread popularity with artists The road turns sharply round several awkward corners, and care should be taken in passing through here on our way to Henley, which is reached after a further run of seven miles Henley is a sleepy Jittle town. prettily situnted on the river. Should the visitor wish to stay here for the night, the accommodrtion at the Catherine Wheel Hotel will be found to $\mathrm{k}_{3}$ all that is desired.
After following the winding of the river for , ight

## FROM THE NORTH TO THE THAMES (contd.).

miles and passing througb picturesque Medmenham, with its abocy near the riverside, we arrive at Grent Marlow, a pretty and fashionable riverside resort, which each year is gaining in popularity with boaling enthusiasts. A charming view of the river, with the tall spired church by the waterside, is obtained from the pleasant gardens of the Compleat Angler Holel.
A run of only five miles brings us to the town of Naidenhead. and a fine view of the broad expanase of the Thames is seen hy looking to our left as we cross the bridge on our way to Eton. Continuing torards Slough for a mile or so, and then curning to the right across the connmon, we hnve a short run into Eton, nad ly this route miss Slough. which we keep on our left. Shortly after turning down this by-road we sec Windsor Castle standing out mnjestically on the hill. and in a few moments we find ourselves in the quaint old town of Eton. The Coliege is a grand old building and the interior of the nclioining chapel is inderd magnificent. By crossing the river briage wo enter Windsor, famous, of course, for its historical castle, which to day is frequently visited by members of our Royal family. On the payment of a small fee the tourist may sce a great part of the castle, and at least an hour shonld be set aside for the inspection of the extremely interesting interior.
To nvoid returning ly the same route, the road through Slough. Watford snd St. Albnus may be tnken, and here a halt should certininly be made to inspect the beautiful cathedral. From here a run of 83 miles through Luton. Bedford, Kettering, and Market Har-
horough brings us to the busy but pleasant town of Leicester, nnd, should the tourist wish to reman here for the night, the "Royal", a first-clings commercial hotel, will afford every comfort. The old Town Hall will certainly appenl to those interested in ancient buildings, and the magnificent church of St. Mary should also be visited. The next 28 miles of our journey, through Mount Sorrel, Loughborough and Kegworth, is ratner flat and uninteresting until we reach Jerby, but after leaving this busy railway centre we pass through the nust benutiful peak and dale country imaginalile. The run along the lovely valley of the Derwent. Throngh Belper. Amhergate and Cromford to Matlork is idenl, and this beautiful hiill scenery continues right along thmugh Rowsley, Haddon, and Bakewell to Buxton. Haddon Hall, :he home of the notable Ihorothy Vernon, stands picturesquely in the meadows by the winding River Wye, and the tourist will be delighted by a visit to this historical old manor house.
Continuing for a mile or so past the quaint oldfashioned country town of Bakrwell, we turn to the left through the pretty little village of Ashford, and soon commence a long pull up Taddington to Buxton. After climbing out of Buxton, we have a winding descent of five miles to Whaley Bridge down a finlly made road, but thereafler the surface is rather poor for the remaining IT $^{7}$ miles to Manchester. As, however, we have covered a distnnce of aloout 400 miles during our tour, we cannot complain, for the surfaco of the road over the greater pirt of the journey has been excellent and no diaromfort whatever need be felt-although tic tourizis' car may be merely a $10 \mathrm{~h} . \mathrm{p}$. $\mathbf{1 w o}$-seater.
R.B.

## THE EVER-USEFUL EMERY WHEEL.

## an invaluable adjunct to the bench of every owner-driver's garage.

APPARENTLY many owners of light cars are unaware of the existence or of the utility of small high-sped hand-operated grinders. They are usually of American manufacture and have prosid to be very popular in the country of their production. The price is reasonable, from 10s. upwards, a figure which cannot be ealled high when the variety of uses to which the article can be put is realized. and they are obtainable from most large general stoyes or shops which sell machine tools and engineers' requisites.
A grinder is very simply constructed and there is nothing to get out of order. It ecmprises a small emery or carborundum wheel about 1 ins. in diameter, which is mounted on a spincile geared up through the mediuns of a gearbox. and the whole is clamped to a table or bench in much the same manner as that in which a small portalje vice is attached.
The power is provided by hand, and it reauires no great ffort to turn the wheel at 2,000 to 3.000 revofutions per minute. Apart from the fact that it is useful as a grinder. therely obviating much hard work with a file, an emery whel has a variety of other uses. Such operations as sharpening drills and cutters, rounding of the corners of various fitments made of hard steel, refacing damaged nuts and sparking. plug hexagons, touching up piston rings, and so forth, will immediately suggest themselves, and, furthermore, this wheel will operate on steels so hard that an ordinary file would make no impression whatever.


The American type of bandoperated emery wheel which can be adapted to a variety of uses.

Necdless to say, some of the joiss outlined above require a certain anount of skill on the part of the operator and great care must be taken, otherwise hardened steel may be softened by the heat generated by friction. Such operations as trueing drills and lathe tools are usually performed only by experienced mechanics, as considerable skill is necessary to oltain a good result.
For the sum of a few shillings it is possible to purchase a drill chuck which may be screved on to the spindle of the grinder, thus extending the sphere of usefulness of this "gadget" into the field of handy, high-speed drilling machines. Such an arrangement should prove just as efficient as, it not more so than, the more fashionable Yankeo hrace or breast drill, and with the addition of a selection of the smaller-sized drills, between $\frac{3}{T}$ in. and $\frac{1}{2}$ in., many little odd jobs could loe achieved which ordinarily either would hnse to tro neglected or placed on the "account" at the local garage.
A small circular saw for minor wood jobs could just as easily bo attached to the same spindle, and a simplo saw-tablo is very easily rigged up from a piece of heavy-gauge shectmetal.
Another usefui implement in the form of a spirnl spring winder could also be ensily arranged, and doubtless any mechanically minded onthusiast would have little difficulty in further exploiting this very versatile little machine. Treadle-operated emery wheols aro, of course, nvailable, and many prefer them to the type illus. trated herewith.

## AN INTERESTING AMATEUR DESIGN. <br> NOVEL FEATURES CONTAINED IN ATWO. SEATER CONSTRUCTED AT HOME.

AN interesting light car has heen conglructed by Mr. C. B. Wilson, M.I.C.E., of Birkenhead, which combines many interesting fentures of design with remarkably good work. manship. The designing of this car occupied a period of nbout two years of its constructor's. spare time. whilo cnrrying out civil enginecring work in Indin. and the vehicle is named nfler Salem, the place where Mr. Wilson was stationed at this time.
The actual construction occupied a period of nino months during leavo in

England, and considering the multiplicity of small parts which had to be manufactured and the fact that the only machine tools available were a 3 y -jn. l)rummond lathe and a Drummond bench drill, the work reffects the highest credit on its builder.

## The Engine and Frame.

A 1,070 c.c. Anzani waterecooled $V$-twin is mounted fore and aft, in an ash frame, the side members being 43 in, by $1 \frac{1}{2} \mathrm{in}$. gection, a size which has proved amply strong without, any metal strengthening pieces. Cross-bracing has been carried out by light rods and turnbuckles following aircraft practice, while the axles are carried on quarter-elliptic springs front and rear, the fromt suspension being particularly interesting in that the springs are mounted on exlensions of the main frnmes and have a trailing instead of a leading action.
Sankey steel disc wheels, 28 ins. by 3 ins. in size, slod with Dunlop cord tyres, are fitted front and rear, a Wrigley front axle and special solid rear axlo being used, while hand and foot brakes operate on
both rear wheels, the brake anchor plates being so designed that they are interchangeable. The chassis dimensions include an 8 -ft. 5 -in. wheelbase, $3-\mathrm{ft}$. $10-\mathrm{in}$. front and 3 -ft. 6 -in. rear tracks, whilo grease-gun lubrication is fitted throughout.
The engine is mounted on channel-steel bearers, whila lwin pipes to an Argus silencer carry the exhnust gases to the rear of the car. The stecring is interesting in that a chain reduction is used from the steering column proper on the off side of the car to n short subsidiary column on the near side, from tho lower end of which an arm operates the stcering mechanism direct.
Transmigsion is by a long $1 \frac{1}{6}$-in. motoreyele belt wo a specinl Sturmey-Archer gearbox, giving three speeds and reverse, the latter operated by a control lever mounted on the right-hand side of the body. An interlocking device prevents the engagement of twn gears at once. The final drive to the rear axlo is by $\frac{1}{2}$ in. chain.
Lubrication is by means of a Showell mechanical pump with $n$ gight feed on the dash, petrol and oil tanks being located under tho front of the mahogany dash, which is fitted with a cupbonrd for gloves or maps. Two adjustable Auster sporting pattern windscreens aro provided, whise all the pedal controls are adjustable, and the gear lever is conveniently silunted on the outside of the bods: An ingenious arrangement of ievers designed be the constructor's brother - Mr. K. Wilson-interconsects the rod-operated necclerator control with the Bowden mechanism used for the hand control on the wheel and the actual throttla control on the carburetter. A Sorck radiator is usel. while light domed rings prolect the body, which is built up from sheet aluminium sccured lyy conper scrows and rivets. A most interesting featura of this little cnr, and one that is seldom found in the case of home-built machincs, is
THE It will be aeen that the apprarance of this bome-built COMPLE
CAR. CAR. H3i

AN IVTERESTIVG AMATEUR DESTGA (con.).
that the bodywory has been verv neatly carried out. and the polished copper rivets foral a pleasing con.

Showing the meat way in which the hand and foot controls to the throtile aro interconnected.
trast to the aluminjum. The seat and squab are sprung with "Float on Air" cushions covered with Peganoid upholstery. A small dickey provides ac-
commodation for one ndilitional ןnssenger, while tools can be carried in a locker at the back of tho front squab.

## The Engine Starter.

The engine is started by means of a kick-starter on the off side of the car: this was strengthened after the preliminary road test. The rear axle radius rods which run on self-aligning ball races bolted to the frame were also strengthened to take the braking stresses. All the smaller parts, such ns spring shackles and braciug plates, were made by hand, the only work which sas beyond the scope of the con. structor being a number of castings and an cxtra heavy flywheel incorporating a belt pulley, which will be fitted as a later modification.

The Salcm has now successfully emerged from its preliminary road tescing, and is one of the most creditable pieces of amntear work of the many examples which we have had sulsmitted to us ul various times for examination and criticism.

## YORKSHIRE CENTRE HILL.CLIMB.

## RAINY DAY AT RINGINGLOWE ROAD.

TRADTTEON has it that Sheflieid is afllicted with moro ramy days than anly other town or eity in the White IRose county. Molorists who make n practice of altending the Centre hill. climb na Ringinglowe Road will readily subscrise to this view, for latt Saturday's ovent completed a trio of successivo annual meetings all altended by deplorablo weather conditions.

Shortly before the event opened at 2 p.m. Jupiter Pluvius flusg the flondgates wide open, and during the whole afternoon, except for some all-too-brirf intervals, llinginglowe lRoad was subject to a deluge calculated to damp the apitils of the most ardent enthusiant.

The entrance to the spectalors' onclosure became a morass, and it spoke volumes for the interest aroused by the avent when one noted the large assembly of light cars in this enclosure, despito the depressing conditions.
The classes for cars had attracted nearly 60 entriss, of which 23 were confined to the up to 1,600 c.c. class, this class being divided into amateura and experts.

Among several interesting entries one noticod the stripped and businessliko 11.9 h.p. A.C. driven by J. A. Joyce, nonitince of Mr. S. F. Edre.
Miss C. P. R. Turner and Miss D. lleath drove an 11.9 h.p. Bugatsi and a 12 h.p. Darracq respertively, while F. W. James and J. R. Sylvester were perliaps the most pronising of several Morgan entrants. Each of the foregoing competitors were also entered in the unlimited car clasa.
Tho running off of the $1,600 \mathrm{c}, \mathrm{c}$ amateur clask was begun at 4.30 , and althongh the sun mado a flceling appearanco at this time, the clouds quickly closed up again, and most of the competitors wero called upon to go up the half-milo courso in tho teeth of a driving rainstorm.
The tar macsdam surface was naturally treacherous under the prevalent conditions, but the course-which has an average gradient of 1 in 20 -is fortu. nately dead straight. All classes were
from a flying start not long enough to provent gear changing becoming an important factor.
In the rlass under reviour W. Wild (11.4 h.p. Bugatti) and R. Blatherwick (11.8 h.p. Rugalti) were sloady if not very fast, and gear-changing in both raees was elean and well timed. Miss D. Heath. in tho 12 h.p. Darraeg, showed splendid acceleration, and her quick getaway ieft the marting officials enveloped in a showor of spray.

It was however, left to R. A. Blake on put up the star performanco in his vers lively $10 \mathrm{~h} . \mathrm{p}$. Morgan, which held the rond splendidly:

The 1.600 c.c. class for experts wat next under reviow, and the two women drivers, Miss Turner and Miss Hesth, sere again consistently good, although the flying-start section was now greasy and irencherous in the extreme. H. Barnes's 10 h.p. Morgan made rather a poor getaxay, while V. G. Wallsgrove experienced a nasty skid at the start, and although this was corrected in ex. cellent atylo it was reportod that ho had not finished the course.
E. A. Hatfipld's 10.4 h.p. Darraç was good, although at this stago rain was falling in torrouts, and it was imposaible to see down the length of the course.
Tho outstanding performanen in this ciass was undoubtedly that of J. A. Joyce in the A.C.

A splendid getaway and porfect changing look him up tho hill in 20$\}$ secs., a really noteworliy run. The performances of J. R. Sylvester and F. W. James were also deserving of commendation and calculated to uplsold the Morgan roputation.
Despite the weather conditions, eventa were boing run off with conaiderablo despatch, and the class for amateurs unlimited was quiekly begun.
Although Niss Mitchell's 23 h.p. Straker-Squire put up a winning pace, the light car entrants inade a rood siow, and Miss C. P. R. Turner was carticularly impressive with the $11.9 \mathrm{~h} . \mathrm{p}$. Bugaitt.

The unlimited class for experts saw
J. A. Jonce again in the field with his A.C. pitled against such opponents as the 23 h.p. Straker.Squire and thm 15.9 h.p. Hentleys of Douglas I.eng and G. Porier. There were 18 entries in this clase, and some close times were re corded.

It was announced thal J. A. Joyce or the A.C. had achieved a light car trjumph, covering the course in 20 secs.

I'his terminated the elasses for cars, and fer of the compelitors wero sorry to leave linginglowe Rosed ofl this occasion.

One must express admiration for ilio efficient manner in which the clubis ofticials carried out their dution, despite the uppleasant conditions.
Timing was alectrical, and the ans. nouncements of results at both ends of the course was promptly and efficiently carried oul One can only add a piou* wish that next season's moeting may be altonded by better wealher, and that the 1,500 c.c. lighe car limit will lna observed. As the following placisgx show, oaly light cars figure in the tist of results, this "just outsiders" being cortspicuously absent.

## PROVISIONAL RESULTS.

Cars up to 1,600 c.c. (Ameteurs).
Time.

1. R. A. Blake ( 10 h.p. Morgan)... 30

2 . Miss C. P. H. Turner (11.9 h.p.
3. Buratti)

36\}

Cars up to 1,600 c.e. (Experts).

1. S. F, Edgo (Driver, J. A. Joyce) (11.9 \% p. A.C.)
2. J. R. Sylventer (10 h.p. Morgan) 30
3. $\mathfrak{r}$. W. Jamen $\{10 \mathrm{~h} . \mathrm{p}$. Morgan 32 g

Cars Unlimited (Amatears).

1. Miss M. Mitchell (23 h.p. Straker-squire)
$20\}$
$\dagger$ Mise 「. P. R. Ilurner (11.9 h.p. Bugatti)
t II. G. Sissons ( 13.2 h.p. Austro- 30 ,
2. S. F. Edyo (Driver J. A. Joyce) (ii.B h.p. A.C.)
3. Miss M. Mitchell $2 \mathbf{2} 3$ h.p. Straker-Squire)
4. 11. G. Sisons ( 13.2 b.p. Austro. 30


The services of the staff of "The Light Car and Cyclecar" are always af the diaposal of readers. Qaeries of deneral interest will offen be answered ander this heading, bal a alampod addressed anvelope should almays be enclosed. Correspondents are regaested to write upon one side of the paper only.

Taxation Rebale on Old Cars.
P.W. (Rugby).-A rebate of 25 per cent. is allowed by tho Inland Reveruo authorities on the faxation of all motor vehicles of which the engines wero made prior to January Ist, 1013 . The full amoant of the Ireasury lax should be paid, the refond of the rebate boing claimed on a special form afterwards. Your robato will therefore bo 53 per annam.

## Reverse Gears for Morgans.

S.T. (Roading).-There ero several anxiliary reverse goars for Morgan cyclecary on the market, and most of them will be found quite ensy to fit. We liclieve wo are right in soying that, except whon in operation, all the reverso mechanism is ontirely disengaged; in o!lier words, "running free," consoguently thero is no frictional loss of jower.

## Speedometer Adjustments.

G.R.P. (London, W.11).-Wo do not advise you to tamper with the adjustment of your specdomater. If you return it to the maters advising them of the sizo of tyres you are using, the offective dismoter of the two belt pullegs and tho gear ratio botween the crown wheel and bepel pionon in tho raar axle, thoy will check the selting, make any neceskary convortions and return it to gon in a fow days.

## Touring Abroad.

S.C. (Coventry)-Apart from the fact that you propose to andertako a motor tour through the South of France, wo should strongly adviso you to join either the Aulomobile Associstion or the Roval Automobilo Clab. Membership of either of thase institutions confers numerous benefits on the motorist, prominent among which is an excellent organization for facilitating touring abroad.

Inland Revenue Tax.
R.N. (Colchoster).-The Inland Rovenue Tax is based on the R.A.C. horsepower rating, which is arrived at in tho following way : $\frac{D^{1} \times n}{2.5}$, where $D=$ the diameler of the cylinders in inches, o:herwise known al the bore, and $\mathrm{n}=$ tho number of cylinders. In answer to your last query, so long as a threewheeler cyciocar weight no more than 8 cwt . unladen, the ${ }^{\circ}$ tax is only 84.

в40

## Poriable Garage.

J.F.F. (Laindon).-In your search for a suitable garage to accommodato your light car, we nhould adviso you to communicate with tho manulacturers of some of the excellent examples particu lars of which aro published in our ad. vertising pages. fou will find that in nearly evory case the advertisors havo ether models than thoss which they illusirato.

## Well-known Gradients.

W.II. (Richmond).-Tho gradient of tho final strolch of Kirksione Pass, known as the Strugglo, is just under 1 in 5, which is of course, steeper than the average gradient of the wholo Hill. Brggar's Roost and Countisbury each have an averago gradient of 1 in 5 , and Porlock is three miles in lengit, the steepcst portion boing 1 in 4 .

## Action of Buzzers.

P.M.J. (Morelon-in-the-Marah).-An electric hom of the buzzer type does not jncorporate an electric motor. The diaphragm is caused to vibrate in the tame manner as tho striker of an electric bell, in which an eloctro-magnet operating against the action of a apring tets up vory rapid vibrations. You are correct in belioving that a buzzer bears a similarity to a trembler coil.

## Home-built Transmission.

T.IT. (Ely).-We should advise you, in designing your home-constracted cyclocar, to dispense with a differential in the back axlo. A bolid axle, driving both rear whools will bo oqually satisfactory and considerably more simple. This principlo has been adopted by many manufactarers of cyclecars, such is tho G.N., with wuccess. It is, howover, necessary that a particularly stout exleshaft be used, expecislly if the sprocket is approximately in the middle.

## Radiator Repairs.

E.C.W. (Keighley).-We are compolled to agres with you that radiators so very costly, but lhis is unavoidablo becauso they are difficult to build, and much of tho work must bo done by bighly akillod raechanies. Mave you aaked the proprietor of your usual garage whether it would be possible to repair your radiator? Numbers of concorns apecializo in this work, and they are able to restore an apparently ruined radiator approximately to its now condition and at a reasonable price.

## Lubrication Charts.

F.H. (Hartiepool)-You can follow the Vacuam Oil Co.'s chart of recommendations with perfect confidence. The information given in the chart is depended upon by thousands of motorists in all parts of tho world.

## Cyclecar v. Sidecar.

L.G.F. (Barnos, 8.W.).-You would find a Scott-Sociable mueh more com. fortable than pour sidecar machine. Four can be carried without undue over. loading, and a Scott-Sociable would certeinly bo no more expenaive to run than an 8 h.p. combination. Yon would get at least $60 \mathrm{~m} . \mathrm{p} . \mathrm{g}$.

## Noisy Electric Starter.

H.C.N. (Whitstablo).-You complain of noisy operation of your electric starter, but thas is an annoyance caised by nearly overy car fitted with tho conyentional typo of starting molor. It is quito impossiblo to curo the noisiness of tho gesrs, and wo can only adrise you to accustom yourself to it. The scrapping of your existing starter and the purchase sind fitting of one of the silent-operating type would involve you in considerabla expense.

## Compression Gauges.

L.II. (Manchester).-Tlere is suci an accessory as you mention; it is called tho Okill compression indica. lor, and is mado by a firm in Birming. ham, the Ioadon agents bring Brow is Bros., Ltd., Brown's Buildinge, Great Eastern Strret, Iondon, E.C.2. You could probably obtain resalta of a kind by wiring a piece of rabber tubing over a compression tap-if you have one, that is-and connecting it to an ordibary tyre-prossure gauge.

## Electrolyte.

D.B.R. (Ifarrogato).-Tho liquid contained in the battery of your car is termed the electrolyte, and consista of a solution of sulphuric acid and distilled water. The level ahould be slightly above the plates, which can be clearly seen through the filler orifices. On no account add salphuric acid; all that is needed to keep the lovel correctassuming, of coures, that the batters casing doos not leak-is an occasional gill or so of pure water. Distilled water may be obtained from a chemist, but rain water mav bo used if distillod water is znobtainable.

## Tube Bending.

H.D. (Woodford).-Thin-gauge steel or copper tube, such as that used for water-pipes and similar purposes, mast always bo well annealed and then "loaded" before bending, otherwise it will kink and flatten out. Plug one end of the pipe and fill it with molten load. When quito cold it may be beat by polling it round a avitably shapod former a litlle at a time. Any swelling noticed during the process should bo kently lummered out with a ball-peen hammer. When the correct shapo has been attained melt out tho lead.

Alaminium pipes should be londed with pitch or resin. Tho practice of loading pipes with sand for bending is not at all good. as it is almost impossible to pock the sand tight onough to provent kinks forming. In any caso, pipe-bending is not caty and wo saggest that you entrust the work to a skilled copperamith.

W'e telcome at all fimet letfen sent ms by raadera for pmblication in these colmmm, and, tohlte faking mo
responsibitify for the opinions expregatd thervix, dicu preference to stowe leffers which deal with awbjecta
phismet is deaired. Leftars showld be as briel ag possible. but not abbrociafed. We reserve the minht fo
make any allcyations or delefions whleh we demm mecessary.

## Home-made Happiness.-A Baffling Magneto Trouble.

## The French Cyclecar.

Your description of she new F'rench threc. wheeler D'Yirsan, in a recent isoue, is very interesting in more ways than one, but what strikes me mast forcibly is the price. If a Eirench manulacturer can produce a eyclecar such as you describe, i.e., n four-cylinder o.h.v. eñine, three speeds and reverse, dolachable and interchangeablo whecls, front-wheel brakes, elc., and a $60 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. performance-to sell in this country at about $\mathbf{E 1 2 0 - s u r e l y}$ the prices of some English small cars ane fat ton high.

Couveita.

## Ars Repairers Dishonest?

Many of us will agres with Mr. J. A. Spencor that there would be moro lappy daye for all concerned if repairers would build up a repotiation for prosest denling. It is not only in

## A Reader: <br> Compleint.

 selling second-hand cars (hat this may be scrugulous repairer is responsibie for cendaimply by dishonest reparr work. No sooner has a car been on tho market for a fev years than ho begins to collect unsatisfactory spares.The truth is that the average agent has no nee for second. land cars, or for a car after its gravanted has expired. Thore ts more money in melling now cars, and the sooner a car is un the scrap-dusp the letter secms to be a slogan. The only " bappy" motorists are those who can do their own repairs, or seo them done uader thoir supervision in their oun garage. A Mappy Motoalet.

## Unasual Magneto Complaint.

I ahould be extremely pleased to learo the cause, and eure, of tho following elusive trouble. My car is a 1920 musdel Swift $10 \mathrm{~h} . \mathrm{p}$. two-seater, which has donc only a litule over

## Solutions <br> Invited.

 6,000 miles eince is was purchased new.black patch trin. long quickly developa on the leading end of each of the four brasa or bronzo segments in tho distriluntor block. By the leading pnd I mean the end that is firat touched by tho carbon brual of the rotor arm in ite circuit.
Some titne agn 1 wrote to the makers of the magneto regarding this, and they wero good enough to send me a new magneto. After fitting this I noticed a diatinct improrement in the running of the car, but alter about 200 mile I found the same tonuble had developed again, and also a track of carton between each segment. I havo to clean it about every 30 miles. The black patches on the tegments corresponding to Nos 2 and 3 cylinders aro wurse than those on the other two.

Messrs. Swift of Coventry inform me that the timing of the magneto should bo about 6 degrees in advance of T.U.C., with tha cama in the full advanced posation. I have checked it, and find it is actually fivo degroes in advance of T.D.C. I have checked and tried everything that I could think of, but ovorything stems to lee in order.

Any sugkestions or advice you can offer will be gratefully accepted. The firing order of the particular engine in question is $1,3,4,2$.
A.O.C.
200.Mile Race.

Next month will again witness one of the most interesting races in the automobile world, especiatly os it is for cars ul under the 1,500 c.c. limit. It is interesting, if only because

## Foreinn

 Competition. it shows what the small car can do. For this reason I wonder if the council of the Junior Car Club havo invited manufac- lurers from other countries, especially America, Franco, Italy and Germany, to compete.I venture to think that it will not be many years before similar racos will bo run io many coontries and by many clube. It is, therefore, up to tho council of tho J.C.C. to seo that theg lead tho world in such a universal race. I wish them every guccess with the event and almo wish that I wis competiug.

Victor A. Brece.

## High Average Specds.

I read with oxtreme disgust a letter relating to a fast run from Edinburgh to Malvern made by a Morgan threrwhecler. I bavo mado many attempts ai racing these beastly One Who Does three-wliaclers when out on my $40.50 \mathrm{~h} . \mathrm{p}$. Not Achieve herceds, hut have never yel been sble to Them. can do. The roads in England do not seem to bo strsight enough. Whon a corner is taken the three-wheelor scoms to bo ablo to get too much start after the bend, and beforo I can get really going another corner is in sight with tho neceasary slowing up, and the Morgan is array again before I got a fair chanso of drawing level with it.
I heard a Morgan driver the other day bonsting that he could do 90 ra.p.h. on a strasht road, but I cannot see bow this is possible, considering that the price of the machine is so low; and, if it is mo, it seems that the big sporting car which is not as fatt, or, certainly no faster, is an unneccesary and expensive fuxury.

Sometimes I feel myself almost templed to buy a Aforgan to see what truth there is in the various statements that are mada.
far Play.

OUR READERS' OPINIONS (conid.).

## Safety First - The Overseas Car-Turbulence.

## Revive the A.C. Sociable.

I should tike to eadom the plea for the relurn of the 6 I.p. A.C. sociable. I am consinced that if it were again produced at approximately its prewar price of $£ 78$ it would oust the sidecar outfit, at any rato on An Old the preeminent scores of comfort, Reader. economy and roliability, "Now then Mr. Edge!"
I may say I have been a reader of yoor journal since No. 1, when it was The Cyelcear, and havo soveral pre-war issues, isteluding the 1913 Show Number, Vol. 3, No. 53, atill in my possession.

NK3673.

## Thoughtlessness Often Spells Danger.

In a rocont issue of The Light Car and Cyclecar you have no article ander tha above heading. I am entirely in agreement with these remarks, and would quote en experience of mine on the subiect. On recemt Sun-

## Safety First <br> Hints.

 Buxton was travelling from Bakewell to me that wanted to pass, but, bejng on a Lend, I did not signal to him to do so. However, he passed me, and when about two yards in front catre ince to face with a car traveling in the opposite direction. Both tho driver of this car and myself had to pull up dead whise the offender cut in between. The oflender at once stopped to spologizo to both of as. His registration number proved that he was a new driver. nnd therefore probably ignorant of the road rules. I do not blamo this offender, but I do blame tho law in this rospect.When one becomes a member of a club of any doscription one roceives a copy of the club rules. When one applies for a bicence to drivo why should the rules of the road te onilted? My contention is that they should be printed on the back of the licence. Cannot pressure be brought on the Govern. ment to havo this aimple but valuable addition made to the new issue of driving licences? The short rules as given in the A.A. hatidbook will do a lot of good, but I am afraid very fow members of this association ever read this book of valuablo information.
Cannol anything be done to compel or persuad the various councils to adopt the white safety line? Its chespuess, simplicity and great value ought to havo mado it compulsory long since. Then, agtin, would not the Saiety First 'lifangle, which is usually to be found on the roadside, be much more casily olserved if it were made of ulite concrete let into the mad surface; a driver's eyes should be always on the road, tot looking to the sides.
C.F.M.

## The Ideal Overseas Vehicle.

May I venture to join the makes nf those wild visionaries who sketch out the ideal oversess light car? It is surely tume that British manufactarers assailed the present supromacy of the cheap American car, as

## Some Novel <br> Suggestions.

 something that will go one better than its rivals is really required. I would suggest a singlo-track vehicie, which will thas bo better mble to traverse narrow tracks and rough country. This is specially necessnry in wild country, if only for the reabon that not is enabled to "cut off comers." thus saving long distances, which would have to bo covered if the roads wero followed.The vohicle should be fitted with some form of calerpillar track surh as that of the Citroen-Kegresse. Where one has to traverse sandy and exceedingly rough tracks, tho reasons for this form of dive will be obvicus, and. combined with the single track of the vehicte, it wuald surely be a truly "door-to-does" mode of locomotion. The power unit should be an airccoled two-stroke angine, preferably a flat twith. Thie principal advantage of this type of engine is that of simplicity.
Air cooling is usually accepled as being more satisfactory in tropical countries than is water cooling. Some method of forced induction shonld be adopted in order to overcome the differences of altituds in diatricts such as the north-west frontier of India, where climbs of $6,000 \mathrm{ft}$. or $7,000 \mathrm{ft}$. or more are of everyday occurrence. Farthermore, foreed indoction would help to overcome some of the disadvantages of the two-stroke engine, and would perhags also assist towards conling.
Furilier advantage of the caterpillar drive would be that B4.4
pneumatic tyres would be obvialed, together with all their attendant troubles which are particularly provalent in hot climates. Should our designers not feel equal to tackling the question of a single-lrack catorpillar-driven vehiele such as I have outlined, the most satisfactory alternative would appear to be a more normal type of car, but with iour-wheel drive and double balloon tyres to each wheel.
In conclusion, I take of my hat to the designers who have aiready experimented in these directions. Stor Loz.
Junior Naval and Military Club.

## The Effects of Turbulence.

lour correspondent. Mr. S. F. Edge appenrs to have taken my articlo on "Turhulence: Its Eiffect on Performance" rather too literally. Tho subject is not easy to ireat in a

> A Reply to
> Mr. Edge. non-technical manner, and Mr. Edge must types of cylineler head as examples and exaggerating them somewhat tho nverage reader would more easily grasp the goneral principles underlying the subject of turbulence. Heads of all the types rhown aro in existence and bsrious other kinds nro constantly boing clesigned in order that experiments may be conducted in combustion efficiency and allied problems.

I quite agree with Mr. Edge as to the efficiency of the flattopped piston, but I think tint he, in turn, will agreo with mo that my examples expiaining the meaning of turbuleace were reasonably accurale. The engines which performed so well in the tanks during the late war lad cylinder heads of type not unliko tho venturi shaped head shown in my article, and were designed by Mr. H. Ricardo, than whom thero is no greater authority on the subject.
Mr. Edge condemns the efficiency of the spherical-hended encine with concave piston top, and whilst there are certainly several niechanical and thermal considerations to support his riows, it cannot be denied that, ins practice, this type, at exemplified by the Knight engine, does show a very nigb degree of efficiency.

The Wiatea of the Article.

## Curing Belt-slip.

Most owners of cars with belt-driven dynamos have, at some time or other, wished for a more positive drive. The wri:er had a 1920 Calthorpe 10 h.p. No fan wan fitted in that vear, and the dynamo belt was not An Ingenious adjusiable. When new the charging was Method. satisfactory, but aiter a few noondhs tho writer got tired of bell-slip and continual adjustment and thouglit that a jockry pulley might meet the case. This was tried, and it did provide a means of takina up the slack in the belt; but it was noisy, inconvenient, and absorbed power. The next step was to fit a 1921 Calthorpe adjustable dynamo bracket. At tho same time a fan was fitted and the juckey pulley watacrapped.

If trouble had been oxperienced before, it was nothing to what ras to como with the threc-pont drive. Adjusiment was effected by moving the dynamo and its bracket. Another stempt to keep tho belt tight was made by putting a spring under the dynamo in place of the bolt and bork nut. This scas $n$ decided improvement, but it had its drambacks; it increased the wear on the belt and on the bearings concerned. The brackel adjosiment had no proper bearing and was unsuited to continaal movement.

A simple chain-drise for the dynamo was then devised, learing the fan only to be driven by the belt. This arrange. ment proved eminenily satisfactory, und tho details are as follow :-Two sprorkeis were bought, corresponding in ratio to the original belt pralleys. The driven sprocket liad n l-in. hoss on the centre. which was turned up taper to git the dynamo shaft, and replaced tho dynumo belt pulley. The driving sprocket was alrilled ont and bolted to tho original belt pulley on the crankshaft. Bolh sprockets mere handened, the whole put in place, and $n$ bicycle chnin fitted. Chain adjustment was provided by the adjustable dyanmn bracket presionsly mentioned. There was no adjustment for the fan belt except by half-links, but tho efint required in tum the fan was so small that tho belt hardlv stretched at all. A very kmall piece had to be cut out of a web on the timing cover to clear the new driving sprocket. The abose cost about 14 s ., and there has been no slip and no tmable sinceThere is no donht this improsement conld be effected to many cars boides Calihurpes.
F. E. G. Bagshawe.

## OUR READERS' OPINIONS (contd.).

## Experiences of a Novice !

Correspondeneo from skilled owner-drivers is so plentiful in rour colomps that a letter from a geauine novico may perhaps be allowad admission ort the scoro of contrast. What

1 am anxious to know is whether 1 am

## A Trouble- <br> iree Tour.

right in thinking the following a rather striking example of small car reliability, or must it be called just a streak of beginaer's luck? On June Ist I burst gloriously into motordom with the purchase of a hattered ihree-ycar old liover Eight-knowing at that time as much about tho internal combustron engine as I do of bi-melaltism. Six weeks later, being the able to distinguisl, almost without hesitation, betreen a sparking plug and an inlet pipe, and having progressed so far in mechantical georraply as to know that my eggine was boonded on the north oy a jampot-thing called a carbaretter, on the mouth by a silent and shining mystery termed a magneto, and on cast and west by a couple of shori, fat lengiths of corrugated gas-pipe, I judged tho moment ripe to begin the serious business of touring.
My wife was accordingly warned for duly, and. having damped two buiky suit-cases and a miscellany of othor odd ments into the home-made dickey, we set of to bumb our way out of the pot-holes and tramlines of Swansea. Thore nfter, through tho incessant rain of the next couple of days,
wo pricked off in succession on our bog Caidiff, Neuport, Monmouth. Gloucaster. Stralford, Corentry, Warwiek, Lecester, Derby, Sheffield and York. Notwithsianding the addtion at lork of a 16 -yeaz-old schoolgit to the car's hurdan, we triumphantly accomplished the jnurney tis Whitby, over the Goathlaud Moors. For the next ten days we remained in the neightourlood, making frequent trips up and down J.ethe Bank, Ellerby and other fearsome contours. Finally, we set off again over Blubberhouses Moor to Skipton and Mancheater, returaing thence by Shrewsbury ard liudlow to Brecon, and so home over the fog-tiouthi passes of tho lirecon Beacons to Swansea.
The hitte car, inishamilied throughont by a mechanica! ignoramus, covered altogether about 900 miles in the very worst of weather and over some peruliarly villainous rurai roads. From start to finish not one inslant's trouble was experienced; not so much as a single puncture.

Incidentally, wishing to test the m.p.g., I filled the tank (fise gallony) beforo storling, and ran the car over hill and dale until it stopped-at the 204th milestone.
I repeat : is this juat novice's lurk, or do the majority of cheap three-year.olds to day provo such a real "tyro's delignt " as my little Susan? 'The usual disclaimer, of course.
J.II.U.S.

- Such experiences as that nooted by our correspondent are - not unusual, provided that caro is taken to chooso secondhend bargain that is in good condition.-ED.


## The Disabled Driver.

It is with great interest and oppreciation that we noto your attitude cowards the gliestion of amending the lav so is to delsar those sufferiug physical disability from obtaining a drivily licence. In fairness to those An Emphatic who would be affected, the reasons for the Protest. amendment should bo clearly stated. One would like to know what data these are to hand to necessitato such a musement.
'The writer has had considerathlo experience with disabled drivers, and, although not disabled himself, can definitely stato that every disabled driver that ho knows is quite as capsblo with a car in any circumstances as any so-called fit man, and, oo verify this, is prepared to furnibh a list of disabled drivers from which may be selected a team to compete in any form of comperition or test with an equal number of fit men.

Recrestion, pleasure, business, in many of these cases the $^{2}$ only means of transport depend unon tho licence. A test, by all means, if desirable, but debar-no; such action is uasportsinanlike, and doee not savour of British Ireedom.

Коити Esbex Motor Co.,
C. P. Sendrook.

I was not aware until 1 read it in a recent istan of your journal that the atrocious proposal to refuse driving licences to disabled drivers is again being brought forward.

It would be interesting to know who

## A Demand <br> for : Test.

 engincers these campaigno ngainst tho disabled driver, and what evidence, if any, is advanced in fasour of such a proposal, which, on tho face of it, is the essence of injustice and issgratitude to those who sacsificed their limlos and health in their country's service.If it becomes law, upon what basis would compensation be paid to the thousands who witl be. directly or indirectly, deprived of thair means of livelihood?
The ability to drive a car is a most valuable assel to a disabled man, since it places him, in most cases, upon an equal footing with the able-bodied in his atruggle for a living. 'Those disabled drivers who use their care primarily as a substitute for all the other open air activitian for ever denied tlaptn, and ine the maintenance of their health, wonld suffer almost equally, since the forcible and unjust deprivation would at once react upon thoir healtb.

The abie-hodied motorist lian little idea of the keen pleas.
ure the disabled driver oltains from tho possession of a car. As "B," suggests, let os have the evidence, if any. As for a test ; disabled drivers welcome the chance of demonstraling their abllities. To condemn a man before trial is a travesty of justico. Porsonally, I havo been an owner driver sinco 1912, and a disabled driver since the war, with a number of competition successes, and now 1 am to be cold I canuci drive.
It is to bo hoped that this campaign will bo countered by the R.A.C., A.A., J.C.C. and A.C.C.

Walthanslow.
R. J. Lockykr.

A Practical Wind Wagon,
It has occurred to ne that there may be sonve readers who aro interested in wind wagons, and that a short account of some expeimenty which 1 earried out in this direction a few years ago mighl be worlh relating.
Propellero
driven Cars.
At that time I had the use of a fairly extensive light railway track, and I fitted up a truck with a 3 th.p. fiat twin A.B.C. engine, having a woodon two bladed propeller of about 3 ft . diameter, coupled direct to the crankshaft.
The first trans of this vehicle were most satisfactory, and a tinsed speed of $33 \mathrm{~m} . \mathrm{p}, \mathrm{h}$. could be attained. Once on the move quito a fair load could the carried, and with mine people aboard the wagon could just get away from a standstilt and accelerate alowly.
Tho accidental smashing of the propeller largely put an end to tho experiments, as no spare was availahle.
I nim quite convinced that a propeller-driven enr is an entirely practical proposition so far as speed and reasonable hill.elimbing powers are concerned, and for cheapness and simplicity there is molling to comparo with it.
It muit be admitted that there are several objections to the wind wagon. In tho first place, the slip-siream of the propeller in accelerating would annoy other road users caught in it. The propeller, even when cased in, would still bo yery valnerable, and thero is little hope of patehing a broken "prop." Lastly, it is not practicallo to fit a reverse.
However, the wind wagon has its attractions, and when I recall to memory tho very gratifring results obtnised with my crude contraption, I feel a distinct Jonging to try oul some such vehicle on the road. Must I go to France to do it?
B.M.J.

Leyloastone, E. 11

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## OUl READERS' OPINIONS (contd.).

## A Woman Driver's Gratitude.

I should like to express my appreciation of the kindness of a Rover Eight driver wbo, seeing that I was hung up in Fenchurch Street, stopped to see if he could help. I had

## A Knight of the Road.

 got over my difficulty, but he asked whichway I was going, and said if I would lead on he would follow, and this he actually did for four or five miles. Luckily, I had no further trouble, so I stopped and thanked him, and he then forged ahead.

This was a rather different experience from that which I had a few Sundays ago when I had to "get out and get under," and, while I was on my back for at least half an hour dealing with a refractory nut, at least a dozen cars and motorbicycles passed without even asking me if I wanted assistance. However, at last a car did stop, just as I had finished, and one of the occupants got under to see if everything was all right.

A Grateful Woman Driver.

## A Reader's Appreciation.

Will you kindly allow me to thank Messrs. Nicholson and Thompson, together with the Bradford reader, for the very kind suggestions given with a view to overcoming a defect in my Talbot Eight? It may interest
Bank Holiday at them to know that I am already experi-
Brooklarids. menting in the directions stated. It is curious that mention is made of a break in the joint below the screen, for, since writing, this trouble has asserted itself, and is to receve immediate attention. with a view to effecting a cure
Your article reporting the racing at Brooklands last Bank Holiday serves to renew ihe pleasant thrills one feels when witnessing this delightful sport. A lady friend is very envious of the snaps showing the cars at speed, and perhaps it is not remarkable that she finds little consolation in being assured that your photographer would not, in all probability, be using a Brownie No. 2. I was rather sorry to see so much activity by gangs of three-card tricksters, especially at the top of the hill, near the banking, and can ouly assume that even in our enlightened ranks there are a few pigeons who consent to be plucked. A round-up of these pests by the Surrey police would be all to the good. What do the directors of Brooklands say?
E.G.B.

Fratton, Portsmouth.

## Built in 1914.

It may interest your readers to hear, in these days of "price first-finish and performance next," of the satisfaction being given by a car made in the days when cars were made, by a firm whose first aim-then, as
Still Going now-was to satisfy their customers. I Strong. have a 7.9 h.p. twin-cylindered 1914 Swift cyclecar, which is still putting up a per-
formance equal to that of any small car of similar capacity -and in some cases of higher power-made to-day. Since I purchased it in January it has climbed Porlock and Countisbury hills with no trouble or doubt. Weight seems only to make it pull better, for it has pulled four up an incline of 1 in 7 without a murmur.
I have done some hundreds of miles in it; I believe the figure up to present is just over 4,000 , and it has taken me wherever I have wished to go. On a recent Sunday I journeyed from Bristol to Chawleigh, N. Devon-a distance of 87 miles-in $3 \frac{1}{2}$ hours' running time, the final seven miles being over typical Devon lanes which, due to their narrowness, automatically limit one's speed.

A week or two ago I had occasion to send to the Swift Co. for sorne spares, and was delighted with their civility and promptitude, a wire in one case bringing the part required the next day. I may mention that these parts were only required on account of wear, and as the car has had te 1 year's' hard usage, this cannot be grumbled at with any degree of justification.

Why a motorist should consider a $£ 100$ car-built to price under present-day conditions, and, therefore, bound to be cut down to absolute essentials-puzzles me when a secondhand car of a reputable make such as mine will give much more satisfaction, with a feeling that you have something really well made and reliable.

I obtait 40 to 45 m.p.g., and as the Treasury rating is 6.9 h.p., the tax is only 87 per annum. Oil consumption is negligible. I have no connection with the Swift Co., and no interest except that of a satisfied user of one of their exceptionally good cars.

B48

## INFORMATION WANTED.

Owing to pressure on our space it is impossible to include readers' replies to queries in "Our Readers' Opinions,' and correspondents anxious to help fellow car owners are courteously requested to communicate direct with the address which is given in most cases.

Mathis.
Will any reader please sell me an instruction hook for a 7 h.p. 1922 Mathis two-seater?
G. L. Parsons.

The Bungalow,
Chilcompton, Bath.
Standard.
I should be glad of any reader's experiences with a 1923 11.4 h.p. Standard two-seater, especially with regard to maximum speed, petrol and oil consumption. E. HoLDEN.
Pen-y-Bryn, Hill Top,
Wilmslow, Cheshire.
G.N.

I should be grateful for any opinions of, and experiences with, a 1922 model G.N. cyclecar, particularly with reference to reliability, easy starting and springing.
40, Vereker Road, I. H. N. Loraine.
Kensington, W. 14.

## Austin Seven.

Will any reader please oblige me with details of the running costs and general reliability of the Austm Seven? Is it likely to stand up to $400-500$ miles per week?

Woodfield Lodge,
Mount Ephraim Lane Streatham, S.W.16.

## Little Midland.

Can any reader oblige with information as to an address at which spare parts for the Little Midland cyclecar are either stocked or can be made up to order?
Robert Street
Morgans and Hanney.
Manselton, Swansea.

## Dickey.seat Hood.

Will any reader please let me have an address at which hoods for dickey seats ane obtainable, or information as to how one conld be made? The car is a Jowett.

29, Fort Street, Barnstaple.
F. Braddon.

Gwynne Eight.
Information sought regarding a cure for excessive oil consumption with a Gwynne Eight. Present figure equals 250 m.p.g. Would the fitment of an oil baffle in the top of the crank case be any use?
H.V.

7, St. Mark's Mansions, London, N.4.

## Jowett.

I should be grateful for the experience of any Jowett car owner, who has fitted a Whalley air valve, with reference to the effects on petrol consumption and hill-climbing, also the setting of the Zenith carburetter. Does the Whalley air valve require a larger jet?
A. H. Bing.

5, lerkeley Street, Douglas, Isle of Man.

## CONDENSED CORRESPONDENCE.

J.R.K. (Sedgley) is enthnsiastic concerning the Rover Light. In over 12,000 miles he has experienced splendid reliability and all-round performance. He also speaks well of the service afforded him by the manufacturers.
F.F. (Harlow) strongly agrees with our recent review of the Bayliss-Thomas light car, and, further, considers it to be an excellent example of its class He obtains the utmost reijability and-apart from rather heavy oil consumptioneconomy, averaging practically $40 \mathrm{~m} . \mathrm{p} . \mathrm{g}$. of petrol.
J.M. (Hamilton) writes in appreciation of the very courteous treatment which he recently received at the hands of the manager of Unwin and Barker's Garage, Malton. J.M. was unfortunately stranded whilst touring in this district, and Unwin and Barker's representative put himself to some trouble in order to get the party fixed up with hotel accommodation and the car un the road again so soon as possible.



[^0]:    ANGLO-AMERICAN OIL COMPANV, LTD 36 QUEEN ANNES CATE, LONOON, S.W.T.

[^1]:    

[^2]:    A SANDFORD AT SPEED.

    A trick of the camera has made this French Sandford three-waecler appear to be straining at an invisible leash.

