

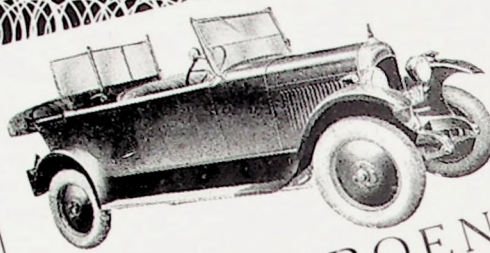


Pay £20 down and
drive this car away
taxed and fully
insured

Balance payable over 12 Months

40 CARS IN STOCK
FOR IMMEDIATE
DELIVERY.

10 Cars under £250.



11.4 CITROËN
All-Steel 4-Seater with Four-
Wheel Brakes.

This model has two roomy seats in front, two comfortable rear seats, four doors with door pockets and invisible hinges, detachable upholstery, pressed steel sheet wings and valances, and double panel front wind-screen with adjustable top half. Colour of bodywork grey or fawn. Wheelbase 9 ft. 5 in. Track 3 ft. 11 1/2 in.

Price
£165

FREE SERVICE for 6 MONTHS in PART
This is the Best Page in the Book!

This Book Shows How

you can acquire a car through the Normand Agency on the most advantageous terms. A practical and concise book that tells you all you want to know about acquiring a car. Beautifully bound and printed, it contains articles concerning the policy of Normand and the service maintained, examples of purchase as well as notes on insurance. If you want to get all the best out of the joys of motoring you cannot do without this FREE book.



Write
for your
copy
to-day.

Authorised Agents for
AUSTIN, CITROËN, CLYNO,
RHODE and TROJAN

Low Deferred
Payment Terms **3 3/4 %**

Our "Service Guarantee" is unique. Write for particulars.

NORMAND
GARAGE LTD.

NEAR
MARBLE
ARCH.



489,
OXFORD
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TELEPHONE: GROSVENOR 3256-7

OPEN UNTIL 6 P.M. ON SATURDAYS

Also at 92, Gloucester Road, S.W.7
and 7 & 8, Fairmeadow, Maidstone.

CITROËN

11.4 h.p.
ALL STEEL SALOON

£190

WITH FRONT WHEEL BRAKES
(as illustrated)

4 Door Fully-Appointed Saloons



Also 11.4 H.P. All-Steel
4 - Seater with F.W.B.
£165

*Supreme
Closed Car
Value!*

THE bodies of these Saloon models have generous proportions, deep roomy seats, ample leg room for four full-sized persons, and luxurious upholstery. Fitted throughout in excellent taste and with exceptionally complete equipment they have all the appointments and refinements which the owner-driver requires.

Immediate Delivery
from
BRITISH WORKS,
SLOUGH.

Send for Citroën Book 18.

CITROËN CARS, LTD.

CITROËN BUILDING, BROOK GREEN,
HAMMERSMITH, LONDON W.6.
West End Showrooms:
Devonshire House, Piccadilly, W.1

MENTION of "The Light Car and Cyclecar" when corresponding with advertisers assists
the cause of economical motoring.

D.A.275.

AI

LEADING THE WAY TO VALUE GAMAGES

49th
ANNIVERSARY

SALE

Commences Monday Next, Feb. 21

All Motor Clothing is drastically reduced in price this sale and now's the opportunity to get those "necessary" requirements for your forthcoming tours and spins, at money-saving prices.

If unable to call, post or 'phone your order (ring Holborn



LEATHER MOTOR COATS

for the All-weather Car.
Light in weight, warm and windproof, made from selected semi-Chrome skins and lined throughout with a woollen fleece.

The latest DOUBLE-BREADED Style, with belt all round and elastic windcuffs on sleeve. 44 in. long.

79/-

Sale Price 72/6

Ready to wear, in all usual stock

Tan Leather WAISTCOATS.

Strong and practical garments for all-weather driving, warm and comfortable. Absolutely windproof, made from soft and pliable skins. These are guaranteed all-leather, including back and sleeves. No motorist should be without one.

25/9

Sale Price Post Free.
When ordering by post, kindly send size round chest over waistcoat.

SLIP-ON TRENCH COATS

This is the Ideal Coat for the car, possessing those qualities of Comfort and Warmth. A popular Coat for wear all the year round. Double-breasted 4-in-1 Trench Coats, made in Drab Grandrill, lined proofed check, interlined fine quality oiled Cambric, fitted with warm fleecy detachable lining.

39/9

The "GARAGE" Cleaning Coats.

Made in extra strong GOVERNMENT KHAKI DRILL, easy fitting, full length, button cuff, three large pockets, detachable buttons. Especially made for hard wear and frequent washing.

All sizes 36 to 46 in. chest.

Sale Price

each
Post Free.

Better Quality, 11/3 each.

When ordering by post send size round chest and waist.

The "Hendon"

A very warm and cosy Helmet suitable for ladies or gentlemen.

Made from soft pliable Tan Leathers with Fur Peak and Neck. Each

Sale Price 10/11

Send your order per return of post.

The "GARAGE" Cleaning Overall

British made, fully guaranteed. Blue Dungaree Cloth, very strong and durable, made to stand hard wear and frequent washing. All seams double stitched, two front pockets, hip pocket. All sizes 32 to 42 in. waist.

Sale Price

11/- the Suit.
Post 6d.
Two suits for 11/6 (Sale Price.)

Post Free. When ordering by post send size round chest and waist.

Superior ALL-WOOL IRISH MOTORING RUGS

All-Wool Irish Rugs, with fringed ends in bold checks, of medium and dark colours. Exceptionally warm and soft, equally useful when travelling on train or steamer, and makes a welcome addition when motoring.

Usual Price 21/- Special Sale Price, Post Free

These are the correct Rugs for Touring, etc.

16/11



Tan Leather

Motoring Helmets for Ladies or Men. Ear guards to open or roll, buckle and strap under chin. Below manufacturer's price. Post 6d. Each The Leather alone is worth the money.

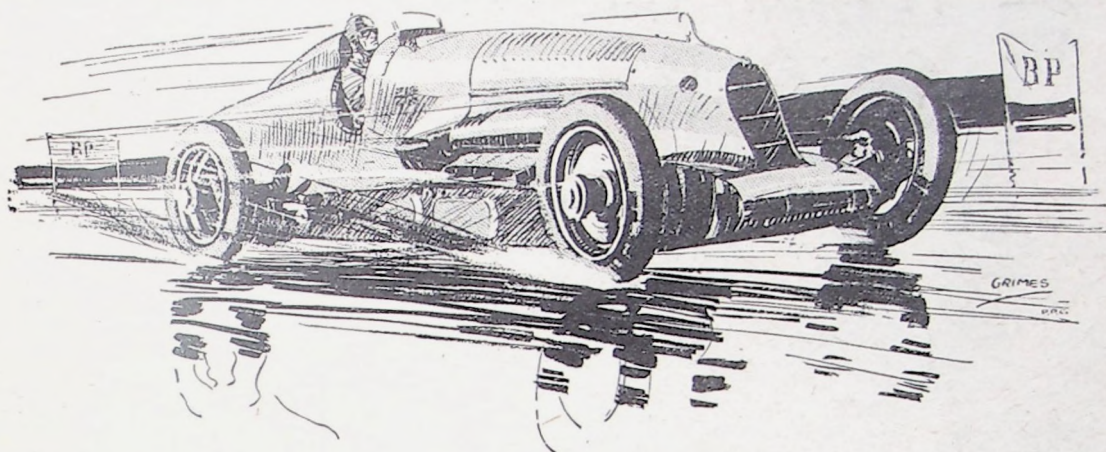
Sale Price

4/-

J. W. GAMAGE, LTD., HOLBORN, LONDON, E.C. 1

THESE BARGAINS ARE ALSO OBTAINABLE AT OUR WELL-KNOWN CITY HOUSE SALE, 107, CHEAPSIDE, E.C. 2

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



3 Miles a Minute

on

"BP"

The British Petrol

Captain Malcolm Campbell, driving his Napier - Campbell car "Bluebird" at Pendine Sands, Carmarthenshire, on Friday, February 4th, set up new world's speed records on "BP" as follows:

Flying Kilometre - 174.883 m.p.h.
 Flying Mile - 174.224 m.p.h.

These are the mean speeds of two runs in opposite directions. The fastest speed in one direction over a mile was 179.158 m.p.h. Between the kilometre and the mile Captain Campbell's speed was timed to average 183.2 m.p.h.

(Subject to R.A.C. confirmation.)

**For acceleration, speed and power,
 use "BP" the British Petrol**

British Petroleum Co. Ltd. Britannic House, Moorgate, E.C.2

Distributing Organization of the
ANGLO-PERSIAN OIL CO. LTD.

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



A Challenge!

—dare you accept it?

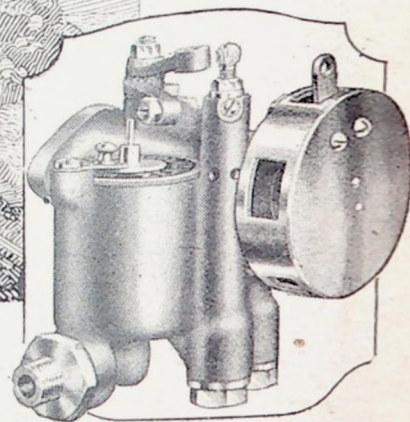
FOR years the Zenith has occupied pride of place as the world's most popular Carburetter—no less than 7,000,000 of them having been made in this country, France, U.S.A. and Italy. Indeed, we might almost go as far as to say that to many motorists the word Zenith means carburetter—so inseparably are the two words bound together.

It is not just good fortune which has enabled Zenith to climb to the top of the tree—in the face of severe competition. It is obviously the exceptional merit of the carburetter itself. Exactly why is the Zenith so much more efficient than other Carburetters? Simply because it utilizes the great fundamental principle of the Compensated Jet. Under this system the fuel stream is divided and automatically corrected at all engine speeds *without the aid of moving parts*. That is the charm of the Zenith. Once set, it can be forgotten. Nothing can go

wrong and nothing can wear out.

Now, here's our challenge to you. If your car is *not* Zenith-equipped, we are willing to prove to you that your petrol consumption is higher than it need be. That your engine can be made to give smoother and more flexible running with greater power on hills. Bold statements, you'll admit. Give us a chance to prove them.

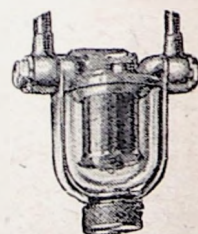
We understand the science of carburation and make many different types of Carburetters. If after a reasonable trial you find that our claims for the Zenith have not been proved up to the hilt, your money will be refunded in full on the return of the carburetter any time within one month. Dare you accept this challenge? The risk and the expense is entirely with us. Why not write for our catalogue and let us advise you which type is best suited for your engine (state year and make).



Special Zenith for
Clyno 11-h.p.

Designed to give greater efficiency and ensure smoother running. Will fit any standard Clyno without alteration. Price £6

Q We have a wide range of Special Zenith Carburetters to fit all popular makes of Cars.



The new Zenith
Petrol Filter.

Don't run the risk of being held up by a choked jet. The new Zenith Filter will remove all water and other impurities. No chamois leather to clog—no gauze to choke-up. Fits 24/- all cars and carburetters.

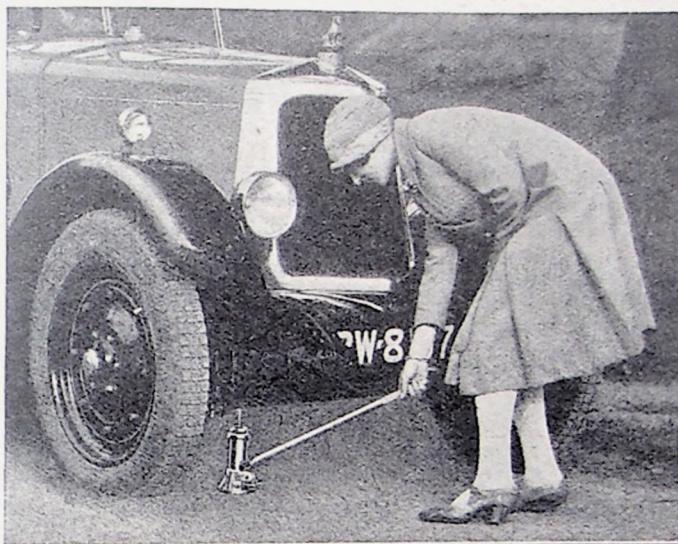
Postage 6d. extra.

ZENITH

WHEN REPLYING to advertisements, mention "The Light Car and Cyclecar." It helps the advertiser and you, and assists the small car movement generally.

Zenith Carburetter Co., Ltd.,
42, Newman Street, W. 1, also
120, Wellington Street, Glasgow
Gilbert Ad. 7973

EASE.



Ease in Jacking up a heavy car is perhaps the most appealing feature that could be wished for in any Jack. Especially is this so when my lady is abroad alone and a wheel has to be changed. When extreme ease is combined with simplicity, safety, and guaranteed efficiency, no more could be asked of any Jack. The ENOTS Hydraulic Jack embraces all these qualities, is sufficiently light and compact to be easily carried on the smallest car and in addition is remarkably cheap.

Standard Model.

Height - - 7¼"

Actual Lift - 4½"

Extension - 4"

Two Piece Handle.

Price

50/-
complete

Empire Model.

Height - - 9¼"

Actual Lift - 6¼"

Extension - 4"

Two Piece Handle.

BENTON & STONE, L^D. Birmingham.

READERS, NOTE.—It assists the small car movement and the advertiser, and ensures you prompt attention, to mention "The Light Car and Cyclecar" in your enquiries.

Variety, we are told, is the "spice"—or should we now say "mustard"—of life. Maybe. However, the only sound way of buying a car nowadays, is to have a variety of leading makes before you—to compare—to choose the one most suitable for your needs.

SEE OUR SHOW
of 1927 Models.
Agencies include
the following:

AUSTIN
CITROEN
CLYNO
JOWETT
PEUGEOT
ROVER
SINGER
SWIFT

Demonstration runs
arranged.

We have a number of over-
hauled used and demon-
stration cars in stock
that we can thoroughly
recommend. Any-
one can be pur-
chased for cash
or deferred
pay-
ments.

Don't buy one make of car and afterwards fancy another. We have actually in stock all the leading makes of Light Cars and every one is backed by our jealously guarded reputation. Our showrooms are carefully prepared so that comparison is made easy. We invite you to call and view our selection.

Our expert salesmen demonstrators, practical motorists with actual road experience on any make of car, will help you choose, give you unbiased advice, explain any motoring problem and, if you wish, take you out for a trial run. Service second to none is yours.

Should you decide, you can buy for cash or take advantage of our well-known easy payment scheme. We would like to emphasise that this scheme is entirely financed by us and not, as is usually the case, handed over to outside financiers.

"Service—Our Name and Aim."

**The Service
Company Ltd.**
(LONDON)

273-274,
HIGH HOLBORN,
LONDON,
W.C.1.

RB

SWEET AND LOW.

We imagine that out of the millions who have sung or listened to this pretty little part-song of Sir Joseph Barnby's, there are few who appreciate how neatly the above words apply to the running of the Jowett. For the running of the Jowett is certainly sweet and the cost of running is indubitably low. We feel sure that the writer of the song had the Jowett in his mind when he penned the words, and yet, bearing in mind that the song was written before the Jowett was thought of, we must admit there is room for doubt. Be this as it may, there is no doubt that the Jowett is the cheapest car to buy, and the cheapest to run. Its reliability, economy and general excellence are world-renowned. And look at its second-hand value. Much above that of any other car. No wonder we are behind with orders, but we have made arrangements to remedy this.

The little engine with the big Pull." Tax £7

PRICES from £139. GENEROUS EQUIPMENT.

Dunlop Balloons and Stewart Speedometer standard.

JOWETT CARS LTD., IDLE, BRADFORD

MENTION of "The Light Car and Cyclecar" when corresponding with advertisers assists the cause of economical motoring.

If you own a *really good* car, you possess a gleaming masterpiece of engineering skill, a motor as precise as a chronometer, finely wrought and finely balanced.

The cool, shining liquid that you pour into the oil tank has to stand up to *terrific* punishment; blinding, scorching heat. **If that lubricant cannot resist this cruel, mighty force, if it breaks down, even for a few seconds, it passes this relentless punishment on to your car, and before you know it you will be faced with a scored cylinder, a seized piston, or a burnt-out bearing.**

Never accept a substitute for Sternal Oil, on which 50 world's speed records were recently broken within 5 months. If you knew of the wonderful refining equipment through which it passes, the unique VOLTOLISING PROCESS to which it is submitted and which gives to the engine a liveliness unprocurable from any other oil, you would NEVER be persuaded to accept a substitute.

"FIRST AID FOR THE CAR."

This is an invaluable little pocket book for every motorist. It is well worth writing for and we shall be delighted to send you a complimentary copy.

Sternal WW

MOTOR OIL

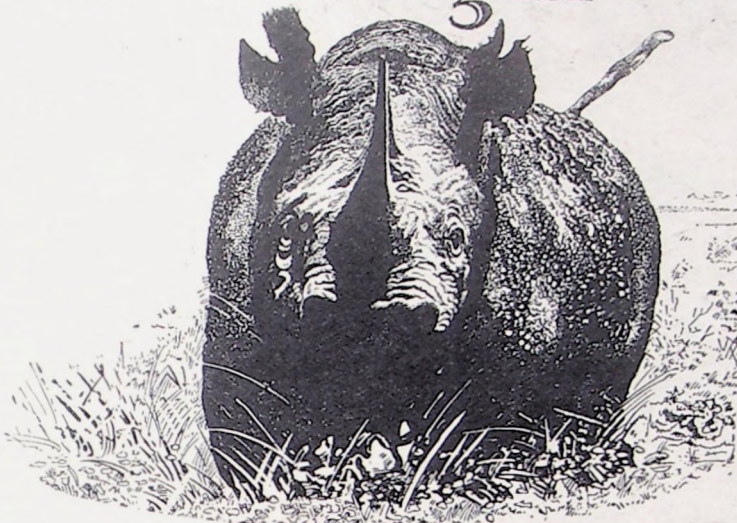
IN FOUR GRADES: LIGHT-MEDIUM-HEAVY-EXTRA HEAVY

Makes Engines Purr Like Pussies

STERNS, LTD., 46, ROYAL LONDON HOUSE, FINSBURY SQUARE, E.C.2.

The small advertisement columns of "The Light Car and Cyclecar" form a unique mart for the disposal of all goods of interest to small car users.

When Strength —




Motor Car Service and
Equipment Manufacturers
by Appointment to
H.M. THE KING.

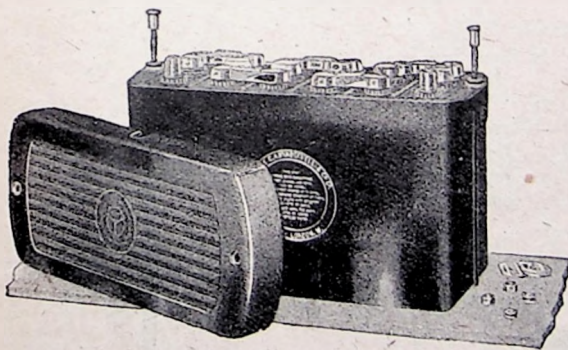
is Pointed Argument—

C.A.V.

BATTERIES



The powerful service organisation at the back of every C. A. V. Battery user is known by this sign



Even the most picturesque description is unnecessary to emphasize the fact that strength is pointed argument in the case of the South African Rhinoceros depicted above.

Electrical experts could give many scientific reasons why "strength" in a Battery is vital.

It will be obvious, however, to the most non-technical motorist that for a battery to stand up to constant discharges of current of a most severe and prolonged character for starting and lighting in all weathers, violent jolting and vibration, apart from resisting the effects of neglect, dirt and other minor accidents during its life of service on the road, durability and strength is a *sine qua non*.

For 36 years we have made "strength" the main underlying principle in the whole design and structure of C.A.V. Batteries, and we have produced in the 1927 C.A.V. multiplate battery, with its "threaded rubber separation" in our special all-moulded case, something that we can say is honestly far better in every respect than has ever been offered to the motoring public.

As Battery experts, believe us—Strength IS pointed argument. Specify C.A.V. for your new replacement and test it for yourself.

Write, phone or call for Publication No. 485 which describes, with illustrations, the complete range of C.A.V. Batteries.

SALES & SERVICE DEPOTS:

Birmingham (Sales only).....	Great King Street	London.....	155, Merion Road, Wandsworth, S.W.18
Birmingham.....	Great Hampton Street	London (Sales only).....	30, High Street, Camden Town, N.W.1
Bristol.....	7 and 25, Temple Street	London (Service only).....	739, High Rd., Leyton, E.10
Coventry.....	Prinny Street	Manchester (Sales only).....	291-3, Deansgate
Glasgow.....	227-229, St. George's Road	Manchester.....	Talbot Road, Streethouse
Leeds.....	117, Park Lane	Newcastle-on-Tyne.....	68, St. Mary's Place
London.....	Dordrecht Road, Acton Vale, W.3	Dublin.....	Taylor Bros., 41, Middle Abbey Street
London (Sales only).....	224, Shaftesbury Ave., W.O.2	Belfast.....	3-5, Calcutt Street

C.A.V. andervell & Co., Ltd.
ACTON, LONDON, W.3

Phone—Chiswick 3801, Private Branch Exchange.
"Grams"—Vaneria, Act, London."

WIRELESS EQUIPMENT!

Are you interested? Our Radio Dept. will be pleased to send you a copy of the new C.A.V. Illustrated List on application.

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

Now on Sale!

**A Special
SECOND-HAND CAR
NUMBER**

of

The Motor
Tuesday, Feb. 15

Upwards of 2,000 Second-hand Cars offered.
Special List of Average Prices for all Models
of Used Cars, 1923-1926. Hints on Buying
and Selling Used Cars.

ABOLISH THE GEAR CHANGE.

Meeting the Call for Automatic Control.

DECLUTCHING WITHOUT A PEDAL.

Very Novel Clutch which Acts Automatically Providing a
Slipping Drive at Slow Speeds.

HOW TO EXAMINE A CHASSIS.

Method of Making a Detailed Inspection before Purchase.

MOTOR WRECKING.

A New Industry for Breaking Down Old Cars.

FIRE EXTINGUISHERS FOR THE CAR.

Some Points to be Considered in their Choice and Use.

A NEW SIX-CYLINDER FRENCH CAR.

First Illustrated Description of the Alma Chassis.

THE 1,000 H.P. SUNBEAM RACER ON TEST.

First Published Photographs of the Complete Chassis.

200 M.P.H.—SOME STRIKING FIGURES.

What Wind Resistance means at High Speed.



PRICE 4d. AS USUAL

OFFICES:
7-15, ROSEBERY AVENUE, LONDON, E.C.1

IN ITS CLASS FOR:—

SPEED COMFORT QUALITY AND PRICE

The initial payment for the 60 m.p.h.
10 h.p. Sports Skiff below is only

£44

followed by Monthly Payments of £8:3:0

For the Sporting Community
of Car Owners we can
supply three models—

The 75 m.p.h.
Grand Prix at
£265; The 85
m.p.h. Grand
Prix Special
at £330; and the
San Sebastian —AKOW—
at £380, guaran-
teed for 95 m.p.h.

A fully illustrated
catalogue showing a
full range of
models, includ-
ing Two Seaters,
Four Seaters,
Weymann
Saloons, Coupes,
etc., will be sent
on request and
a trial run
arranged.

10/20 h.p. SPORTS SKIFF - £175

London Distributors and Showrooms:
GORDON WATNEY & Co., Ltd.
31, Brook Street, Bond St., W.1
Telephone - - MAYFAIR 0267.



Sole Concessionaires for U.K. and
British Dominions:
S.M.S. Ltd.,
Church Wharf, Chiswick Mall,
London - - - W.4
Telephone - CHISWICK 3531/2
Telegrams - "ROADWAY, CH/SH,"
LONDON.

WHEN REPLYING to advertisements, mention "The Light Car and Cyclecar." It helps the
advertiser and you, and assists the small car movement generally.

A11

"A Classic Production"

"The
Threewheeler
that
runs like a four."

IN MANY WAYS,

By its distinctive appearance, streamlined body, handsome finish, low driving position, roominess, comfortable springing and perfect stability at all speeds, the Omega Sports will be instantly recognised as embodying all that could be desired in a really racy design.

THE

SPORTS

Fitted with 8 h.p. J.A.P. watercooled engine, 27" x 4" Dunlop tyres, butterfly windscreen, float-on-air cushions, electric dynamo lighting by 5 lamps, and

PRICES:

Popular Model ..	£95
De Luxe ..	£110
Family ..	£115
Sports ..	£125

As illustrated.

Write to-day for particulars:

W. J. GREEN LTD.,
Omega Wks., COVENTRY.

Chekko

Brake and Clutch Linings

N.B.—No false or exaggerated claim is made for CHEKKO

AS a motor owner you are fully aware of the importance of Braking, but perhaps are bewildered somewhat at the claims of the various brake linings. Why not send for the CHEKKO free booklet? It will give you a great deal of information, and will settle the Brake Lining problem for you for ever. The undoubted superiority of CHEKKO lies in the fact that alone of all brake linings it contains NO COTTON or other inflammable adulterant that can scorch or burn out. Consequently it is incomparably safer and lasts longer than any other brake lining.

Relieve your mind—use CHEKKO.

Specify and insist on CHEKKO through your garage or any of our stockists.

CRESSWELL'S ASBESTOS CO., LTD.,

WELLINGTON MILLS, BRADFORD.

'Phone: 950 Bradford.

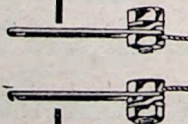
'Grams: CHEKKO, Bradford.

London Stores: 27, Percy Street, Tottenham Court Road, W.1.
Birmingham Address: Empire House, Great Charles Street.
Manchester Stockists: Manchester Machinists Co., Ltd., 30, Queen Street, Deansgate. 'Phone: 3820 Central.
Liverpool Stockists: Leo Swain & Co., Ltd., 10, Colquhitt Street.
Stockist for Scotland: Andrew E. Findlay, 17, Robertson Street, Glasgow.
Stockists for Ireland: E. W. Gwynne & Co., 18, Cromac Street, Belfast.

SIMPLIFIES DRIVING AN AUSTIN 7

The BODELO BRAKE ATTACHMENT fitted to an Austin 7 car will make driving, particularly in traffic, much easier and more comfortable. By means of the BODELO ATTACHMENT all four brakes can be operated simultaneously with the foot pedal only, leaving the hand free for signalling and steering.

Although the BODELO ATTACHMENT enables the four brakes to be worked by the foot pedal, it does not interfere with the hand lever mechanism for the front brakes only.



PRICE 30/-

A post card will bring our illustrated leaflet giving full particulars by return of post.

LLOYD & DEELEY,
177, BROAD STREET, BIRMINGHAM.

Wholesale Stockists:

BROWN BROTHERS, LTD., London and Branches.

READERS, NOTE.—It assists the small car movement and the advertiser, and ensures you prompt attention, to mention "The Light Car and Cyclecar" in your enquiries.



Fully Compensating Four-wheel brakes which can be automatically adjusted from the Driver's seat—while travelling, if necessary—are a feature of the new 10.30 Rhode

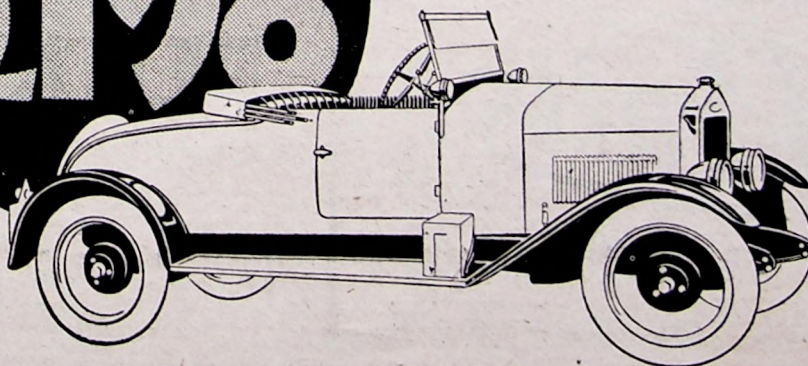
It is a 4-cylinder ALL-GEAR engine, water cooled by thermo-syphon. Treasury rating 10.8 h.p. B.H.P. 30. Bore 66 mm. Stroke 90 mm. Engine Capacity 1,232 c.c. Tax £11. 5 to 55 m.p.h. on top gear. 40 m.p.g. Two-Seater with large double dickey and Four-Five seater models in standard blue or maroon with a beautiful CELLULOSE finish.

We shall be very pleased to forward you along full particulars, or your local Agent will arrange a demonstration—no obligation of course!

£198

Rhode

The Rhode Motor Co., Tyseley, Birmingham.



DO NOT HESITATE to send your enquiries to "The Light Car and Cyclecar."

chats to
Driver.

"An ideal car for traffic work, this Imperia. Gives an instant response when the policeman's hand drops, or when there's an opening just ahead. And controllable—just a light dab at the Servo-operated F.W.B. and she immediately."

Smoothness, silence, and endurance are outstanding features of the 11/25 h.p. Imperia. Smoothness—because the slide valves work in a bath of oil.

Silence—because of the absence of strong valve springs or noisy tappets.

Endurance—because there are no hammer blows or destructive shocks, every part in the engine *glides*.

And the Imperia is made like this throughout:

IMPERIA MOTORS LTD.

Cordwalles Works - - - Maidenhead.

Imperia Distributors:
Connault Motor & Carriage Co., Ltd., 34-36, Davies St., Berkeley Sq., London. P. J. Evans, Ltd., 81-91, John Bright St., Birmingham (Warwickshire, Worcester and Stafford.) Allen Simpson & Bros., 374, Deansgate, Manchester (Lancashire, North Wales and Cheshire.) Cooden Beach Auto & Eng. Co. Ltd., Cooden Beach, Bexhill (South Sussex.)

TH

£285

SLIDE VALVE" CAR

Pratts Saves Your Batteries

BATTERIES bewail wintry weather, because with ordinary petrols the difficulty of starting up on cold mornings is added to the strain of keeping the lights going for many extra hours in the long winter evenings.

The choice of petrol that will give quick starting is therefore of the utmost importance at this time of the year—and no other petrol can compare with

Pratts

FOR
EASY STARTING



DA 505

THAT BREAKDOWN
MIGHT HAPPEN
TO-MORROW
YOU'LL NEED
THIS OUTFIT
THEN

BUY ONE
TO-DAY

FLUXITE
—simplifies soldering

FLUXITE
SOLDERING
SET—complete **7/6**

All Hardware and Ironmongery Stores sell
FLUXITE in tins, price 8d., 1/4 and 2/8.
Another use for Fluxite—Hardening
Tools and Case Hardening. Ask for
leaflet on improved methods.

FLUXITE Ltd. (Dept. 420), Rotherhithe, S.E.10



SECURITY
FIRST.



TOTAL FUNDS
£33,924,094.

SPECIALISES IN MOTOR INSURANCE

Private Car and Cycle Policy-holders in
The "Royal" have the benefit of

Unrivalled personal service

Liberal policy conditions

Own choice of repairer

General authority to order immediate
repairs.

**CHOOSE YOUR POLICY AS CAREFULLY
AS YOU CHOOSE YOUR CAR.**

LIVERPOOL: NORTH JOHN STREET.		APPLICATION FORM				LONDON: LOMBARD STREET.	
Please advise your Terms for Insurance under a "Comprehensive" Policy. Third Party Only							
Car, Cycle, Com. Vehicle	Make	H.P.	Year of Make	Value	Purpose for which used.		
Name							
Address							
Agent							

L.C.

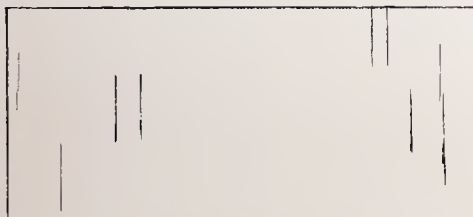
MENTION of "The Light Car and Cyclecar" when corresponding with advertisers assists
the cause of economical motoring.

Don't Grumble

The CARDINE Spring Suspension MODERATOR reduces the number of oscillations of the rear leaf springs from about 120 per minute to about 70 per minute, and it does this irrespective of the number of passengers or the condition of the road or the speed. The enclosed helical springs of the Cardine Moderator so control the operation of the car springs that a uniform rhythm of movement is obtained—no sudden jolt or jar—just a gentle smoothness of riding with a complete "flattening out" of road unevenness. It greatly improves the road-holding properties of the car, the cornering stability, and annihilates all tendency for the back wheels to "dither." With Cardine Moderators fitted you can ride with luxurious comfort alone.

What a boon to be able to ride as comfortably alone as when a full complement of passengers is up!

The CARDINE SPRING SUSPENSION MODERATOR



PRICE complete with fittings for LIGHT Cars £4 0
PRICE complete with fittings for MEDIUM Cars £5 0

**WHATEVER THE LOAD, WHATEVER THE ROAD,
WHATEVER THE SPEED, SMOOTH RIDING.**

Gentlemen.—Permit me to express my appreciation of your Suspension Moderators which you recently fitted to my Morris-Cowley Car. Since having same fixed I have not to slacken speed over potholes or ridges, the motor keeping the road beautifully. The ladies praise the comfort it gives them in the back seats and join with me in thanking you for this additional boon to motoring.

Believe me,
Yours respectfully, (signed) J. LEWIS.

Free
Advice
Literature
on req

er they're
fitted they
Save!

Fill in, cut out attach P.O. or Cheque
POST YOUR ORDER OR ENQUIRY TO-DAY

To Delco-Remy & Hyatt Ltd., Dept. L.C.7, 111, Grosvenor Road, S.W.1.
Attached please find P.O. or cheque for..... Or enquiry regarding.....
(Cross out words not required.)

- ☐ Delco-Remy Coil Ignition Magneto Replacement Unit suitable for many light cars.—"Better Spark—Instant Start." From £3-15-0 to £5-10. Postage 1/6. Wiring and Switch, 12/6. Full particulars on request.
- ☐ Cardine Spring Suspension Moderator. Whatever the road, whatever the load, whatever the speed, SMOOTH RIDING. For Light Car, £4. Medium, £5.
- ☐ Siphon Thermostat gives warm engine in 60 seconds, suitable any pump-cooled engine, 22/6. Postage 9d. Send pipe diameter.
- ☐ Remy Horna. Electric: Model 25, 75/-, postage 1/-; Model 18, 65/-, postage 1/-; Model 15, 30/-; Model 8C, 18/-, postage 9d. Model 3V (hand-operated) 10/8, postage 9d. Special Prices Irish Free State.

DEALERS.
Delco-Remy & Hyatt Accessories and Delco-Remy Coil Ignition meeting with world approval.

All Sales Credited
to dealers mentioned in Direct Sales Correspondence. Write for Stock Lists and Terms.

NAME.....
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CLUB"

Enamel

Dries in twenty minutes, and is petrol, grease and oil proof.

Small Size - **7 1/2 d.**

Large Size - **1/3**

Of all Iron-mongers, Stores, Garages and Cycle Dealers.

Sent post free if unobtainable from your local dealer.

Sole Manufacturers:

SILICO ENAMEL CO.,
WARTON ROAD, STRATFORD, LONDON, E.

The Light Car Way

OUR USED CARS ARE GUARANTEED

1926 AUSTIN, 7 h.p., Special "Brooklands" Sports	£195
1926 FIAT, 9 h.p., 4-seater	£165
1926 CITROEN, 7 h.p., Coupé	£85
1926 AMILCAR, Grand Sports, 3-seater	£165
1925 STANDARD, 11.4 h.p., 4-seater	£115
1925 CITROEN, 7 h.p., 2 & 3 seaters, from	£65
1925 SINGER, 10/26 h.p., 2 & 4 seaters, from	£95
1925 FIAT, 10/15 h.p., English body, 4-str.	£165
1924 SINGER, 10/26 h.p., 2 & 4-seaters, from	£75
1924 AUSTIN, 7 h.p., Sports Model	£95
1924 A-C, "Royal" Model, 2-seater	£120
1924 STANDARD, 11.4 h.p., 4-seater	£85
100 OTHER BARGAINS from	£25 to £250

Easiest Exchanges

404, 410-414, EUSTON ROAD,
LONDON, N.W.1.

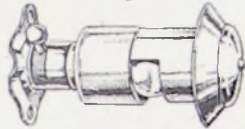
'Phones - Museum 3081, 3143 and 0140.

READERS, NOTE.—It assists the small car movement and the advertiser, and ensures you prompt attention, to mention "The Light Car and Cyclecar" in your enquiries.

£100 SALES RACE Benefits YOU at GAMAGES 49th ANNIVERSARY SALE

CALL, POST OR PHONE YOUR ORDER.

THOUSANDS OF BARGAINS



THE "MALL" RADIATOR LAMP.

Keeps the Engine and Radiator warm, thus ensuring protection from frost, and giving easy starting in the morning. Will burn for about 36 hours at one filling. Burns paraffin.
Sale Price, **10/3**
Post free.

CAR DASH LAMPS

Well made. Light can be reflected in any direction. Complete with bulb. Post 3d. Sale Price **4/7** when ordering.



METAL TOOL BOXES

for running board. Made from heavy gauge steel. Domed lid, greatly adding to appearance. As illustrated, but fitted with 2 hinged catches and lock and key. Beautifully finished in best quality black enamel, with lock and catches nickel-plated.
Size 18 x 8 x 6 1/2 in. high. Carriage 1/-.
SALE PRICE **15/6**

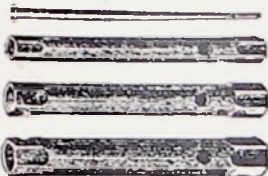
TOOLS FOR AUSTIN CARS

Very well made and finished and giving a very wide range of vision of the road behind. Splendid quality throughout and really good value at. Sale Price **5/9**
Post free. Each. Order per return.

OIL DRUM PUMPS

Do away with the chance of getting smothered in oil. Well made and strong, at a price within reach of all. To fit 5 gallon drums. Sale Price **7/6**

Write now for our
SALE LIST
Sent Post Free on Application



TUBULAR BOX SPANNERS.
Wonderful Sale offer of best steel tubular Box Spanners in sets of 3, with Tommy Bar to fit nuts. Size 1, 3/32, 3/8, 7/16, 1, 5/8 ins.
Sale Price **2/7**
per Set.

"SPOT-LIGHT"

Spot-Light with self-contained switch, gives a very penetrating beam of light. Complete with 6 or 12 volt Bulb. Sale Price **12/6**
Post 6d.

SCOPE MIRRORS

Images "scope" views for the car. One of the most popular models of the season. Give very large range of vision owing to shape of the reflector.
Post 6d. Sale Price **2/3**



CAR DUST COVERS

AMAZING PRICE REDUCTIONS!
Dust Covers in Cotton Tick.
10 x 6 ft. Usual Price 11/6. Sale Price **9/9**
15 x 12 ft. Usual Price 29/0. Sale Price **21/6**
18 x 15 ft. Usual Price 34/-. Sale Price **31/6**
21 x 15 ft. Usual Price 35/0. Sale Price **30/6**
24 x 15 ft. Usual Price 43/-. Sale Price **35/-**
Carriage extra.



RUBBER STEP MATS.

Step Mat in Aluminium frame, with straight bars or Rubber Mat. Size 12 x 8 in. Every car should be fitted with one now before prices return to normal. Post 6d. Sale Price **4/6**



BRASS PETROL POURERS

Solid Brass, complete with petrol gauze strainer. Fits any can. Sale Price **1/3**
Post 3d.

FLEXIBLE PETROL POURERS

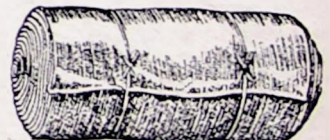
Get one and do away with all mess and inconvenience.
Great improvement! 2 gallon can is emptied and filtered in 45 seconds. Post 6d. Sale Price **3/3**

SPARK PLUG TESTERS

Combined Pencil and Spark Plug Tester. This handy little instrument at once denotes any faulty firing of your plugs, or leak in your electrical circuit. No motorist should be without one. Post 3d. Sale Price **2/3**

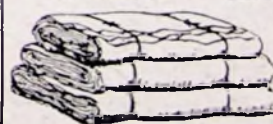
CLEANING KIT.

A Cleaning Kit for the Car greatly reduced in price.



CLEANING CLOTH.

Splendid quality Cleaning Cloth. Nice and soft, and made up into 50-yard rolls. For superior to waste or cotton cloth. Sale price per roll **4/6**
Half Roll, 2/6. Post extra.



CHAMOIS LEATHERS.

Fine quality, soft, yet long-wearing. Size about 21" x 22". Sale Price **4/-**
Each. Post extra.

SPONGES.

Fine quality Honeycomb Sponges, 4/3
3/1&2/1
Extra large size, 7/-
Special **1/3**
line of strong sponges for car washing.
3 for 3/8
Post extra.

Extra large Honeycomb Sponges. Usual Price 8/6. SALE PRICE **6/3**

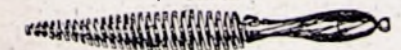
CLEANING BRUSHES.



TRIANGLE MOTOR SPOKE BRUSHES.
Best quality bristle. A fine serviceable brush. SALE PRICE **4/3**
Post 3d.



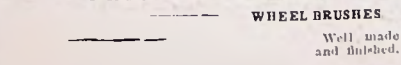
ORDINARY SPOKE BRUSHES. Good quality fibre mixture. Well made, in a handy size and very useful. Usual Price 4/6. Post 4d. SALE PRICE **1/10**



CLEANING BRUSH. Specially suitable for cleaning wire wheels. SALE PRICE **1/10**
Post 3d.



BENT SPOKE BRUSH. Specially shaped for getting at awkward places. Best quality bristle. Car size. SALE PRICE **3/10**
Post 3d.



WHEEL BRUSHES

Well made and finished.
3d. PRICE **2/4**

A. W. GAMAGE LTD., HOLBORN, LONDON, E.C.1.

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

Car licences are due for renewal on March 25th. If you are one of the thousands who contemplate purchasing a small car before this date, don't miss the Buyers' Number of "The Light Car and Cyclecar." It may save you money, and it certainly will provide you with all manner of advice and information on light-car buying.

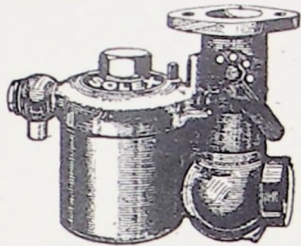
*Which Car
Shall I
Choose?*

THE Special Buyers' Number of "The Light Car and Cyclecar," to be published on Friday, 4th March, will be of considerable interest to the intending buyer. Clear details of all the light cars on the British market will be given, with helpful advice on choice. The subject of buying a second-hand car and of making part exchange deals will be considered, as well as the important question of easy payment arrangements. The latest and most popular accessories will be described. Many special articles will complete an issue which no small-car purchaser should miss.

A Special
BUYERS' NUMBER
The
Light Car & Cyclecar

Friday, 4th March.

Offices: 7-15, Rosebery Avenue, E.C.1.



Free Trial Offer

Ask your Local Garage or write to Dept. L.C. to-day sending particulars of your engine, no matter what type it is, and we will send you details of our 30 days' FREE Trial Scheme. There is no obligation to purchase and no charge for renovation.

Month in & Month out
a 'SOLEX' Carburettor

saves money on every mile run
gives added power and speed
better acceleration & slow running
& adds to the joys of motoring

SOLEX

THE NO-TROUBLE CARBURETTOR

SOLEX LTD.

Director: GORDON BOWEN

SOLEX WORKS:

223-231, MARYLEBONE ROAD, LONDON, N.W.1

Phones—Paddington 8621, 8622, 8623, 8624, 8625, and 8626. Grams—"Solexcarb, London."

'fit Solex—and note the difference'

Goodall Ad.

SPECIALLY
ATTRACTIVE
ALLOWANCES

WILL BE
MADE FOR
YOUR
PRESENT
CAR
DURING
THE
DISPLAY.

HAYWARD

Automobiles
Ltd.

invite you to a special display of a
full range of



1927 MODELS

at their Showrooms

KINGSBURY HOUSE,
KING STREET, ST. JAMES'S, S.W.1

from 18th to 25th February.

DEFERRED
TERMS
OF
PAYMENT
TO SUIT
INDIVIDUAL
REQUIRE-
MENTS.

READERS, NOTE.—It assists the small car movement and the advertiser, and ensures you prompt attention, to mention "The Light Car and Cyclecar" in your enquiries.

Austin Seven's great performance during recent Northern gales !

An owner writing from Dundee tells us he was driving from Kerriemuir via Forfar to Dundee during the worst of the January gale when conditions were so bad that more than once he narrowly escaped being hit by falling trees. He says:—

"I should like to pay tribute to the wonderful way the Austin Seven behaved. I was travelling alone with hood and curtains up, and unless I had experienced it personally, I could hardly have believed that such a small and light car would have held the road as she did under such conditions. Even when driving full against the wind, the engine was remarkable.

"The car arrived home none the worse for the buffeting she had endured, though a friend of mine following in a larger car, had his hood completely blown away.

"I have driven many different cars in my fifteen years of motoring, but for all-round performance and economy, the Austin Seven takes some beating."

Owners everywhere agree that the 'Seven' is easily the best small car in the world. Write for Booklet. The



£145

AT WORKS

Saloon £165

THE AUSTIN MOTOR CO., LTD., LONGBRIDGE, BIRMINGHAM.
 London Showrooms, Service Depot and Hire Dept.: **479-483, OXFORD STREET, W.1** (near Marble Arch).

The Light Car and Cyclecar



PACK ICE! — The car in this picture is not being tested for use by a Polar explorer; it is merely negotiating an ice field on part of the route in the £200 trial promoted by the Leeds M.C.! Such wintry conditions are not often experienced by trials competitors.

NOTES, NEWS & GOSSIP *of the* WEEK

Crawling Taxis.

With a view to speeding up traffic in the Metropolis certain thoroughfares may be barred to taxi-drivers loitering with the object of picking up fares.

New Severn Bridge.

Shropshire County Council has now placed a £59,000 contract for the construction of the new Atcham Bridge, which will span the Severn close to the fine old existing bridge, and work on this important improvement will commence shortly. Ferro-concrete will be used. The new bridge will be 500 ft. long, with approaches 40 ft. wide, and will be carried on five arches.

This Week.

Are racing drivers fearless? This is the very human question asked and answered in our centre pages this week. The article is accompanied by a series of striking photographs. "Motoring for the Beginner" deals with driving a cyclecar. Side issues, such as wheel changing, cleaning jets and plugs are also given attention, and the section of the series devoted to cyclecars is brought to a fitting conclusion by a brief survey of electric lighting and starting equipment.

No. 741. VOL. XXIX.

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LIGHTING-UP TIMES (Rear Lamps) for Saturday, February 19th.

London ..	5.48	Edinburgh ..	5.51
Newcastle ..	5.47	Liverpool ..	5.56
Birmingham ..	5.53	Bristol ..	5.58

Moon—Last quarter, February 24th.

Unbreakable Glass.

As a result of many experiments at Sheffield University a glass, which is claimed to be unbreakable, has been produced. The claim is upheld in so far as it is possible to hit the glass with a hammer without fracturing it.

New Roads—Higher Averages.

Reconstructed roads and by-passes are beginning to play an important part in average speeds. Savings of 10 per cent. on the time taken between given points over reconstructed routes compared with the old roads are claimed by drivers who make frequent journeys along such highways.

Next Week.

Continuing our series, "Motoring for the Beginner," we shall deal next week with light-car construction; a large, specially drawn, and partly sectioned illustration of an imaginary chassis following conventional practice will be a striking feature of the article. The latest production of Swift, of Coventry, Ltd., will form the subject of a test-run report, the model which we have tried being the 10 h.p., four-door, four-seater, which sells for £210.

The "200."

Should the 750 c.c. and 1,100 c.c. classes of the 200-Mile race be run separately, say, in the morning, the afternoon being devoted to the 1,500 c.c. class? Readers' views on this question would be interesting and might be of service to the J.C.C., the promoting club.

Abolishing Tramways?

It is rumoured that tramways, except on the outskirts of the city, are to be abolished in Paris, the Chief of Police having given it as his opinion that they are the "great enemies" of a solution to the traffic problem.

NOTICE TO MOTORISTS

OWING TO DANGER TO PASSING
TRAFFIC MOTOR VEHICLES ARE
NOT ALLOWED TO PARK ON THE
ROADWAY OF THIS HILL.

*Penalties will be taken against offenders
by order
July 1925. West Sussex County Council.*

SAFETY

FIRST

This notice, which appears on Bury Hill, Sussex, can be regarded only as reasonable by all those who know the locality.

The Institute of Metals.

Efforts are being made to increase the membership of the Institute of Metals to over 2,000 by the end of the present year. The annual general meeting of the Institute will be held on Wednesday and Thursday, March 9th and 10th, in the hall of the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1.

I.M.T. Medal Winners.

The gold medal of the Institute of the Motor Trade, awarded annually to the candidate showing the greatest proficiency in the Institute's examination, has been won by Mr. E. P. Oscroft, Nottingham, who gained top marks in 1926. The silver medal was won by Mr. A. S. Edwards, Egham, and the bronze medal by Mr. A. F. J. Nicholson, Chilwell, Notts.

French I.A.E.

M. Henri Perrot is said to be taking an active part in the formation of an organization in France which will be similar to the Institution of Automobile Engineers in this country.

Our Front Cover.

Three 1927 light cars figure in our front cover picture. On the right is a 10 h.p. Mathis saloon, the remaining cars both being 9-20 h.p. Peugeots. The latter reveal the very useful framed-glass siderscreens used on the Peugeot.

Quick Work.

An R.A.C. guide, noticing some loose straps dangling from the back of a passing car, stopped the driver, when it was discovered that three leather cases were missing. The guide telephoned from his box to the police at various towns through which the motorist had passed and was able to restore the cases to him intact within two and a half hours.

Amusing Queries.

In addition to supplying 25,419 routes to motorists, motorcyclists and cyclists during 1926, the Dunlop touring service bureau answered over 6,000 special inquiries, some of which were of an amusing nature. A member of the fair sex wished to know if midges bite in September on the West Coast of Scotland; another inquirer, intending to tour Cornwall, asked for a weather forecast two months in advance; whilst there were several applications for routes to seaside resorts where there were no people, no rocks, perfect sands and hotels providing bedrooms on the ground floor.

West Riding Licence Increase.

According to a report of the West Riding County Council, £546,399 was received in respect of road fund licences last year, an increase of £44,699 over the previous year.

Sunbeam Racer Tested.

Bench tests of the special car which Major H. O. D. Segrave will drive when he attacks the world's speed records at Daytona have been conducted recently with very satisfactory results. Over 1,000 h.p. was actually delivered at the road wheels by the two 12-cylinder engines.

Brooklands Year Book.

Of interest to Brooklands habitués is the Brooklands Year Book. The 1927 edition is brimful of facts and figures. The book is published at 1s. at the London offices of the B.A.R.C., 83, Pall Mall, S.W.1. It may surprise both drivers and public alike to learn that during this winter no fewer than 1,000 tons of new concrete are said to have been used in reconditioning the track.

Costly Road Maintenance.

For many local authorities the financial aspect of the tremendous increase in the use of roads is very serious. For instance, the Leicestershire Highways Committee estimates an expenditure during the coming year of £243,539, and the expense of maintaining and improving the roads is expected to increase in the future. In ten years Leicestershire's expenditure on roads has increased ten times.

Mr. Morris and Wolseley.

Mr. W. R. Morris, who is now the Wolseley chief, has announced that it is his intention for the current season to continue the manufacture of the 11-22 h.p. Wolseley, and that the prices of the various models are to remain unaltered. He points out, further, that a full spare parts service will be maintained.

Accessories de Luxe.

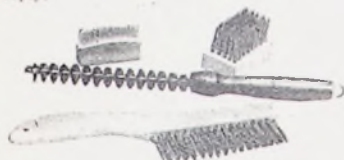
A page devoted to accessories in an American motor journal provides very interesting reading. It describes a two-speed windshield wiper (no mention is made of a clutch) and a sparking plug which automatically adjusts its gap to suit engine speeds, providing a small gap at low speeds, which increases proportionately with the revolutions.

TROPICAL CONDITIONS.

The Singer depicted above is believed to have been the first car to get through from Ipoh to Kuala Lumpur, Malay Peninsula, after the recent floods. It will be seen, in the lower picture, that even in main roads the water was quite deep.

Why They Were Scarce.

"Why can't I have a horse-shoe roll?" growled the regular patron, glaring at his regular waitress. "I suppose it is because the motor is so rapidly supplanting the horse," was the demure reply.



A set of wire brushes which will prove very useful in the garage. Messrs. Gordon and Co., 25, Bloemfontein Avenue, Shepherd's Bush, London, are the makers.

Aircraft Apprentices.

Boys aged between 15 and 17 years are wanted as apprentices in the Royal Air Force. At the moment there are 500 vacancies, and full training in various branches of aeronautical engineering is given. Full particulars will be found in this issue in our "Situations Vacant" column.

Striking Figures.

Statistics issued by the Lancashire County Council regarding road traffic reveal many interesting facts, the most remarkable, perhaps, being that during the last 13 years the traffic (reckoned by tonnage) at a point on the Great North Road, near Framwellgate Moor, has increased by over 700 per cent.

New Jowett Plant.

On February 10th the Lady Mayoress of Bradford, accompanied by the Lord Mayor and other civic dignitaries, visited the Jowett works for the purpose of christening and starting up a new 120 h.p. Crossley oil engine which has been installed to drive additional plant necessary to cope with the increased demand for Jowett cars.

An Oily Indianapolis!

According to an announcement just made by Mr. Carl G. Fisher, the American millionaire sportsman and promoter of the classic Indianapolis "500," a race will be held next September for cars fitted with engines running on crude oil. The event, which is to take place at Indianapolis, will be the first of its kind in history.

Hardly (n)ice.

The £200-trial, promoted by the Leeds M.C., proved to be an ultra-severe test. Many of the hills were ice-bound, whilst ice "floods" had to be negotiated at one point. A report appears elsewhere in this issue.

The Scottish "Six Days'."

Application is being made for an open permit for cars for the Scottish Six-Days' Trial, which will probably take place in the week beginning July 25th, although this is not yet definitely fixed. If the permit is obtained the trial will present one of the best opportunities of the year for a really strenuous test of modern light cars. More than one well-known make owes much of its popularity to successes in this classic trial.

A French two-stroke three-wheeler designed primarily for use with a small van body. It is known as the Hanissard.

New High-speed Engine.

On Tuesday last a new engine was demonstrated to the Press by a Mr. W. C. Werry, the inventor and patentee. It is of the opposed-piston type and the model shown is provided with a single-cylinder giving a capacity of 255 c.c.; it could, however, quite readily be made in larger sizes and with a number of cylinders. There are two crankshafts, one at each end of the engine, and these are coupled up by chains so as to run at the same speed.

The two pistons operate the crankshafts through ordinary connecting-rod

mechanism and the explosion takes place between them. Towards the end of the stroke the pistons uncover ports cut in the cylinder walls, through which the exhaust escapes, and a fresh charge enters, the engine working on the two-stroke cycle. No revolution counter was fitted during the demonstration run, but we estimated the speed attained to be 5,000 r.p.m. The inventor claims that the engine has exceeded 14,000 r.p.m. on the bench, and its balance is, of course, excellent.

Rather sweeping claims are made concerning the power output and petrol consumption of this engine, but apparently these points have yet to be checked by accurate tests. When the engine is running at a high speed the sparking plug can be shorted without affecting the regularity of the explosions; it appears that the compression pressure and temperature attained at full throttle suffice to cause spontaneous ignition of the charge.

Goodyears in Australia.

In order to cope with increasing business in Australia, the Goodyear Tyre and Rubber Co., says Reuter, is establishing a new plant at Sydney.

An Automatic Clutch.

Clutch engagement and disengagement may be effected independently of the clutch pedal in a patented design called the Centrifugia, which is undergoing tests in France. The clutch is normally held out against its own springs by three spring-loaded and weighted levers. When the engine is speeded up centrifugal force acting on the weights gradually overcomes the action of the spring and the clutch plates are engaged.

A 1,600 H.P.
CONVOY.

This photograph shows part of the fleet of 40 Renault cars of all types which is touring England, Wales and Scotland. The total developed horse-power of the fleet is 1,600, and it is estimated that 6,000 gallons of petrol will be used on the tour.

How Springs Are Made

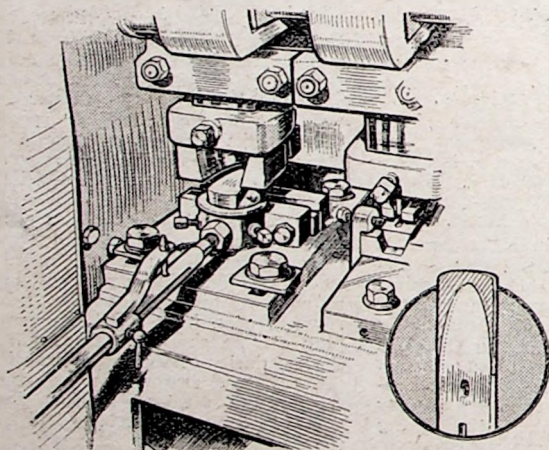
A FIRST-HAND DESCRIPTION OF A HIGHLY
SPECIALIZED BRANCH OF THE MOTOR
INDUSTRY.

TO many motorists the road springs are extremely simple and straightforward components in the make-up of a car, yet to the designer of the car itself few problems are greater than those presented by the springing. When it is realized how many thousands of times during the life of a car the springs deflect to varying amounts without fracture or failure, the significance of the care taken by the spring makers both in manufacture and testing becomes apparent.

Spring making is, of course, a highly developed craft. Special machinery is required and the operatives must all be specially trained in order to understand the requirements of accuracy in manufacture from the raw material and the care necessary in the heat treatment of the finished article.

One of the foremost road-spring manufacturers are Messrs. Richard Berry and Son, Smethwick, near Birmingham, whose business was founded in 1857, when carriage-type springs were the order of the day; in fact, one of their first jobs was to make Cee springs for the state coaches of Indian rajahs! During a recent visit to the works we were shown a number of most interesting operations, some of which are illustrated on these pages.

At the present time 5,000 springs per week are being



How the ends of the leaves are tapered. The shaping jaws on the left can clearly be seen. This machine, only part of which is shown, performs several operations.

turned out, the types varying from small quarter-elliptic springs suitable for 7 h.p. cars to long semi-elliptics designed for 6-ton vehicles with four-wheel drive (incidentally, the weights of individual assemblies vary from about 12 lb. to 2½ cwt.). Seventy-five tons of steel are used per week, which is equivalent to approximately 20 miles of strip section of the average spring leaf.

The history of the concern during the past few years shows at a glance how rapidly the motorcar industry has developed. In October, 1921, the company's old factory at Aston, near Birmingham, was turned into a service depot for repairs and spares and the manufacture of bumpers. A new factory was taken over and it was considered as being far too large; but it has since been doubled in size and is still working at full

B12

LOADING

How the actual measurement of deflection is ascertained. The machine used for this critical test is an Avery of special design.

pressure. One hundred and seventy men and boys are employed regularly, and so efficient is the system throughout the factory that the time spent making each spring amounts to only about 15 minutes.

One type of steel—silico manganese—is used for all the various springs manufactured. It has a sufficient carbon content to enable it to be oil-hardened.

The raw material comes into the factory in strip form, which is rolled to very fine limits of width and thickness in order to avoid differences in the strength of any two springs made from separate batches of steel. Every consignment of steel is analysed to see that it is up to standard, whilst a certain percentage is subjected to actual tests to ascertain tensile strength, shear strength and so on.

Certain finished springs are Brinell tested to ensure a uniformity of hardness. This takes the form of an impact test, measurements being made of the dent formed by the impact of a hardened steel ball with the surface of the steel.

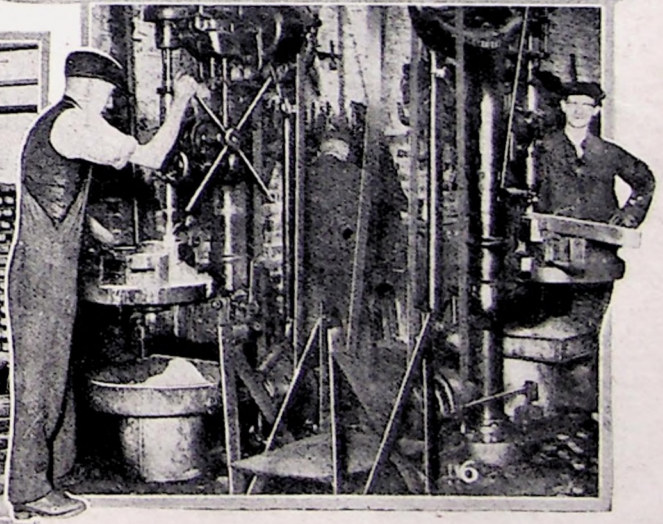
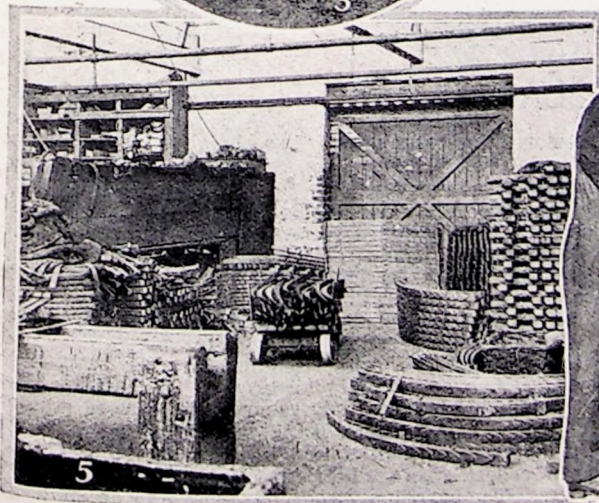
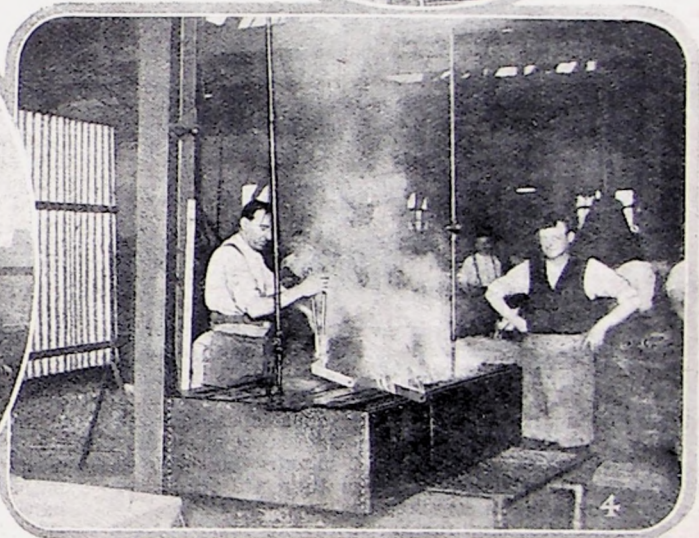
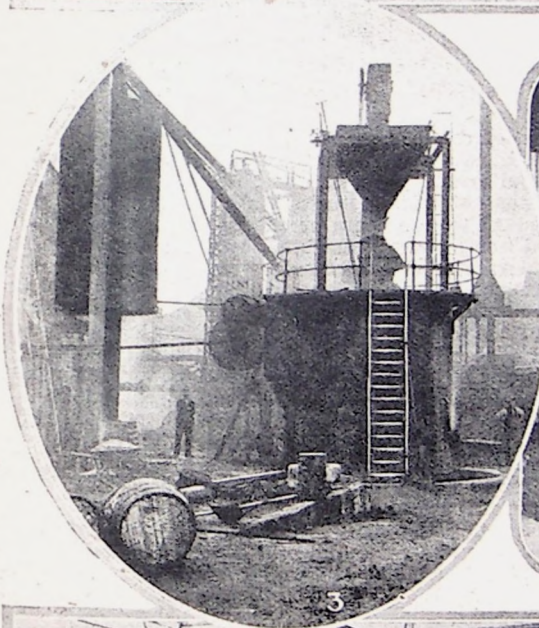
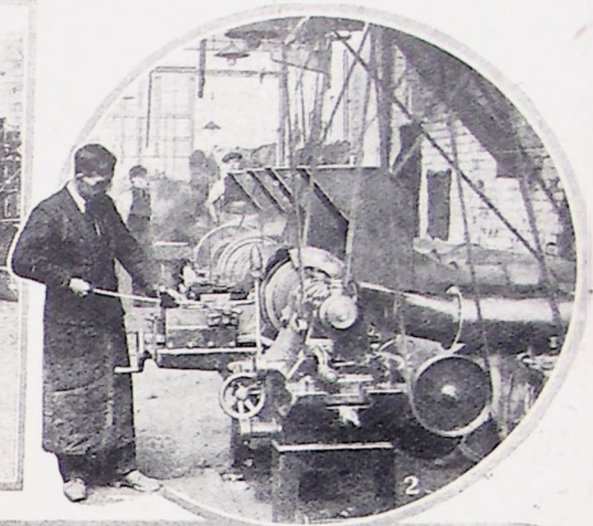
Beginning Its Life.

A spring starts its life when the long strips of steel forming the raw materials are cut off to suitable lengths to make the plates or leaves. This is done by a machine with an adjustable stop for length and a pair of shears which are constantly in motion. Usually one man is able to cut up about three-quarters of the whole quantity of steel—about 12 tons—used by the works per day. Adjacent to this machine is another, operated by unskilled labour, where the holes for the centre bolts are punched. According to the size and thickness of the plate, this operation is performed either hot or cold, the thick plates, of course, being punched when red-hot.

The next operation is one of the most interesting in the whole course of the manufacture of a spring. The ends of the leaves—other than the master leaf—have to be tapered and given a slightly feathered edge at the tip, the locating holes being pierced and the dimples raised for engagement in each successive leaf. One machine is employed for the whole series of operations, which is performed at one heating of the steel and by one man.

The first of the series consists of placing the heated end of a leaf between two revolving rollers, one of which has a cam face. This tapers the leaf in thickness, the operation usually being completed in two "bumps" of the cam. The tapering operation often pulls the leaf somewhat out of line, and a special machine is used to straighten it before the end is cut to a point.

The piercing of the locating hole and the raising of the dimples are both performed on the same machine, the operating arms carrying the necessary mechanism for each job being worked off a common crankshaft. The master leaves, of course, do not require tapering, but



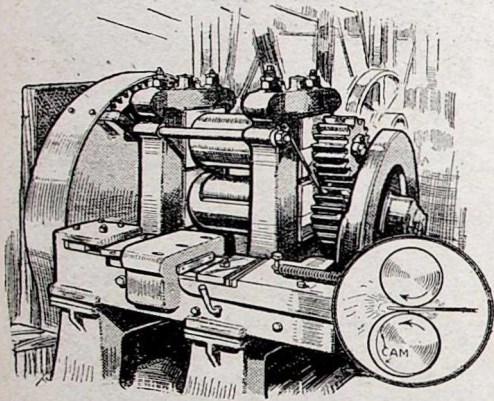
SIDELIGHTS ON
SPRING MAKING.

(1) Cleaning up, greasing and assembling. (2) Grinding the sides of the eyes of master leaves. (3) The works of R. Berry and Son, Smethwick, boasts of its own gas plant. (4) Hardening red-hot leaves by immersion in oil. The oil is in constant circulation and the tank is water-cooled externally. (5) Ready for delivery. (6) Reaming the eyes in the master leaves.

the eyes for the shackle bolts have to be formed in the ends. This, again, is a one-machine job and is accomplished in two stages.

In the first the leaves are heated, then scarfed (i.e., the ends cut off slantwise) and half-turned over. Next they are fully turned and then trimmed up lightly with a hammer in the ordinary blacksmith's fashion. So quickly can these two operations be accomplished that 1,300 pairs of plates, i.e., 5,200 eyes, can be turned in one week by one man. The main plates then have the eyes reamed, when they, along with the auxiliary plates, are again heated and set by hand to the correct camber.

This heating also suffices for the hardening process, the leaves being immersed in a bath of flowing oil surrounded by a jacket of cooling water which is kept in continuous circulation. The furnace in which the leaves are heated for the hardening process has a sub-



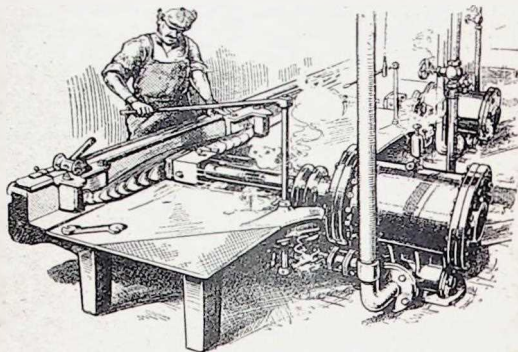
A feather edge at the tip is given to all but the master leaves by this ingenious rolling mill. The sketch (inset) shows the principle at a glance.

siary oven arranged above it, which is used as the heating chamber for tempering the leaves when they have been hardened. After 10 minutes in the oven they are allowed to cool, when they are ready for assembling into the complete spring.

Before proceeding farther with the make-up, the

spring is roughly assembled and "shock-tested" by means of a steam ram which bends the spring considerably beyond its normal maximum flexure. The shock is applied by a steam ram with an available load of anything up to three tons.

On the initial test the springs may take a permanent set of not more than $\frac{1}{8}$ in., but upon subsequent appli-



Shock testing is carried out by steam rams capable of exerting an enormous load on the springs.

cations of the load they must return exactly to their original curvature. Any slight defect in design, material or hardening can be detected immediately at this stage of manufacture. Each spring, after being passed A1 by the operator of this machine, is "load-tested" on an Avery machine, by means of which the actual rate of deflection under varying loads can be determined quickly and accurately. A spring, of the semi-elliptic type, is mounted in an inverted position with its ends resting upon platforms rather similar to roller skates. The load is then applied to the centre of the spring by power, a hand attachment for fine adjustment being provided; above the ram a scale marked in inches denotes the amount of deflection. On the right-hand side there is the usual Avery balance arm, with sliding weight for measuring and adjusting the load.

After this test the remaining few operations, which consist of finishing off the ends of the leaves by grinding, riveting the guide clips on to their plates and lubricating and assembling the whole spring are quite straightforward and do not call for comment.

A TEST OF RECLAIMED OIL

CONSIDERABLE attention has of late been drawn to the possibilities of reclaiming used crankcase oil, and a number of letters on the subject appeared in our correspondence columns some few weeks ago. It was with considerable interest, therefore, that we recently accepted an offer from Waste Oil Refiners, Ltd., 65-66, York Terrace, London, N.W.1, to place at our disposal for test purposes a quantity of used oil which had been reclaimed by their process, and one of our staff cars—a normal four-cylinder model of well-known make—was selected for the test.

Before filling up with the reclaimed oil, which, incidentally, has nothing to distinguish it, so far as appearance is concerned, from ordinary lubricant, the sump was completely drained. The car has now covered just over 1,000 miles on this oil and its running is in every way normal.

On cold mornings the engine does not show any signs of being gummed up and no trouble has been experienced with sticky valves, whilst the consumption has been found to be almost identical with that obtained with the brand of oil recommended by the makers of the car. The cylinder head has not been

removed for examination, but, judging by an inspection of the sparking plugs, carbon formation does not seem to have been rapid.

The process by which this reclaimed oil is obtained from used oil drained from motorcar crankcases may be outlined as follows:—The first stage is the chemical precipitation of foreign matter by a special process, after which decoloration and washing processes follow; the product is then distilled to remove any light constituents and the oil is finally filter pressed. It is claimed that lubricant reclaimed in this manner is better than an ordinary oil because, the lighter fractions having been entirely removed, it is more stable.

Waste Oil Refiners, Ltd., have already provided many garage proprietors with barrels, so that they can collect waste oil drained from their customers' cars. The barrels are collected from time to time and the system has proved popular with garage owners, who otherwise find it difficult to dispose of waste oil.

At the present time, we are informed, a number of fleets of commercial vehicles are being run on this oil and it is probable that it will soon be generally available to private car owners.

Motoring for the Beginner.

THE CYCLECAR (Contd.).—HOW TO DRIVE IT.

FOLLOWING A DETAILED DESCRIPTION OF THE CONSTRUCTION AND PRINCIPLES OF MODERN CYCLECARS AND HOW TO LOOK AFTER THEM, WE NOW DEAL WITH THE BEST WAY OF DRIVING THEM AND WITH POSSIBLE CAUSES OF BREAKDOWN. THIS IS THE THIRD ARTICLE OF THE SERIES.

ARMED with the information he has obtained from the previous two articles, a novice should be able to contemplate his first run with the comforting knowledge that he understands the general construction of his cyclecar and that it has been oiled and greased in the approved manner.

A comparatively short article would be quite sufficient to explain just how to drive a cyclecar, but there are several side issues which must be taken into account, and we propose to deal with these also.

Before starting on a run, the driver should make quite sure that his petrol tank contains enough fuel for the journey, that his oil tank is full, and that (if the engine is of the water-cooled type) the water in the header tank is within one inch of the top of the tank. It is unwise to fill the radiator completely, first because water expands as it is heated, and, secondly, because the loss of water via the vent pipe occasioned by this will be increased during the first five minutes' running owing to the surging backwards and forwards of the fluid.

Starting from cold is a knack that may take a novice a short time to acquire, but once he masters it he will have no difficulty. It is usual to depress the needle of the float chamber for, say, four full seconds—there is no need to waste petrol by allowing it to spurt out—then to open the throttle lever—one of the two



carburettor controls mounted on the steering wheel—about one-eighth of its travel. The air lever should be kept fully closed. The starting handle can now be inserted and the engine turned slowly two or three times with the valve-lifting mechanism in operation; this will free the pistons and cause a certain amount

An Aero Morgan, showing the hand controls. Both brake and gear lever are shown outside the body, but on the latest models the gear lever is inside. The sketch was taken from a machine owned by a member of our staff.

**BUILT FOR
SPEEDWORK.**

of mixture to be drawn into the cylinders. This done, the starting handle can be swung in earnest and the valve lifter released smartly, when the engine should start up and run evenly.

In the old days motorcycle-type carburetters as used on cyclecars were not fitted with special slow-running jets, but nowadays the three carburetters most commonly used, namely, the B. and B., Amac and Binks, have this refinement, and undoubtedly it adds a great deal of comfort and pleasure to the task of driving. It also makes starting-up much easier.

Precautions When Starting.

It is extremely unwise to rev. up instantly, for, especially during winter-time, lubricating oil gets thick when it is cold, and when in this condition it is not splashed so liberally as it should be over cylinder walls and so forth.

On a cyclecar with two speeds only it should be a very simple matter to make no mistake concerning which is the first gear notch. In the case of the Morgan, for instance, the lever is pushed forward.

It must be understood that, although it is not necessary to mesh toothed wheels as in the case of a car, care must be exercised. It is wrong, for instance, to race the engine, declutch, and "bang in" the lever. The correct procedure is to allow the engine to run slowly, declutch, and push the lever gently but firmly forward so that the dogs will mesh almost automatically as the propeller shaft slows down.

To avoid unnecessary strain on the clutch withdrawal mechanism, first gear should not be engaged until the driver is ready to move away. When traffic stops are encountered it is far better, for the same reason, to slip the lever into neutral; moreover, it will not then be necessary to keep the clutch pedal fully depressed—a tiring business.

Reverting to the original situation, the driver will now open the throttle slightly, at the same time gradually letting in the clutch. The car should glide smoothly away from rest, and, owing to the comparatively high ratio of the low gear, a speed of 10-15 m.p.h. will rapidly be attained.

Few drivers worry about the throttle when changing from first speed to top, the usual practice being merely to declutch, move the gear lever smartly so that the high-speed dogs are engaged, and take the foot off the clutch pedal. If, however, a car-type accelerator pedal is fitted—as in the case of the Omega—the driver should instinctively close the throttle whilst the change of gear is being made.

Cyclecar steering is usually direct; that is to say, there is no reduction mechanism whereby the driver exerts leverage over the movement of the steering arm and the driver must learn to move the steering wheel only a little in either direction, except when cornering, and so on.

The general instructions for managing individual makes of carburetter naturally vary, but it may be taken as a fairly safe rule that when the engine has been started from dead cold and run two or three minutes on a comparatively rich mixture, the air lever may gradually be opened about three-quarters of its travel, and the control then carried out with the throttle lever alone. If, however, the car has been slowed down for any cause and a quick get-away is desired, the air lever should be nearly shut, the throttle opened smartly and the air lever gradually opened until it is in the three-parts-open position.

When ascending long and fairly stiff hills, better results can be obtained if the air lever is closed down slightly, and, in any case, it should be partially closed if the engine reveals a tendency to knock. For really strenuous top-gear work on hills, as, for instance, when the road speed drops to about 20 m.p.h., the air lever may be brought well back, and here we are introduced to another control, namely, that which advances or retards the spark.

Magneto Control.

When an engine begins to labour on a hill it is essential that the spark should be retarded, but only to a point where pinking stops. It is entirely wrong to retard the spark fully at the bottom of a hill in the belief that the car will climb better. The opposite is usually the case, and the rule to observe is: keep the spark as far advanced as the tendency to knock will permit.

The question of engine lubrication deserves very careful consideration, and for the moment we must return to the initial operation of starting up. As we have pointed out, the driver can regulate the supply which the engine receives, but it is not possible for a new owner to ascertain how much oil there is already in the crankcase unless he dismantles his engine.

For this reason considerable care should be exercised when starting up for the first time, the drip feed being set to give about 30 drops to the minute. The driver should look behind him occasionally with the object of ascertaining when the exhaust begins to smoke—a sure sign that the supply of oil is ample. The supply may then be cut down to 20 drops per minute, and thereafter the driver must use his common sense as to the regulation of the drip feed. The rule should be:

never less than 20, and more as required; for high-speed work 35 to 40 drops per minute are often not too much.

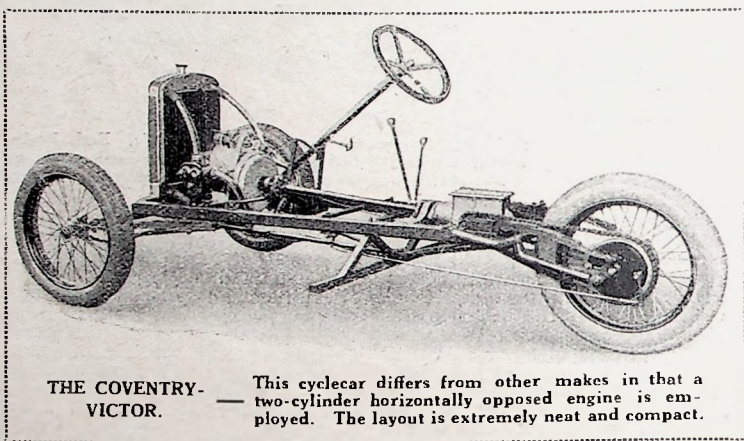
The action of the plunger type of oil pump is automatic up to a point only, for when the barrel is empty the supply is cut off. For this reason a watchful eye should be kept on the plunger and the barrel refilled in plenty of time. This is effected by pushing the plunger home as far as it will go.

Preventing Oil Waste.

At the end of a run it is a good plan to push the plunger in and lock it with the little plunger catch. This serves a double purpose; it refills the pump ready for the next run, and it prevents the possibility of any discharge from the pump through the sight feed while the car is standing. It is, of course, possible to stop

the supply by screwing down the drip regulator, but as frequently this is set correctly for ordinary running, it is just as well not to disturb it, the supply being shut off in the manner we have indicated.

Providing that the lubrication system is working correctly and that there is plenty of oil, water and fuel on board, there is no reason why the car should



THE COVENTRY-VICTOR.

— This cyclecar differs from other makes in that a two-cylinder horizontally opposed engine is employed. The layout is extremely neat and compact.

call for any attention, other than than required to drive it, in the true sense of the word. Involuntary stops, however, may take place, possible causes being a choked jet, an oiled plug or a puncture. The first-named so seldom occurs nowadays that it can practically be ruled out. Even if it occurs it is a comparatively simple matter either to remove the jet or, in the case of a carburetter with a jet needle, to open the throttle lever wide and flood generously by depressing the tickler.

Carburetters vary considerably in their general design, and for this reason we commend the reader to study the instruction book applicable to the make which he is using. The three more popular makes—that is, B. and B., Amac and Binks—are dealt with very thoroughly in brochures issued by their manufacturers.

A sudden "cutting out"—that is, misfiring on one cylinder—can nearly always be attributed to an oiled-up plug, and as a rule the offending plug will be that in the off-side cylinder, because more oil is splashed up into this cylinder than its neighbour. The remedy is, of course, obvious: remove the plug and clean it. Very often the points will clean themselves if the engine be revved up sharply two or three times with the clutch pedal depressed or the gear lever in neutral, so that the engine runs free.

Another idea which sometimes eliminates the necessity for taking out the plug is to detach the high-tension terminal and hold it about one-eighth of an inch from the central electrode or terminal of the plug, revving up the engine at the same time on the one working cylinder.

When all is said and done, however, it is better to remove a misfiring plug and make sure that it is cleaned properly rather than attempt to make it clean

itself under running conditions, for the cure will probably be of a temporary nature only.

Detachable and interchangeable wheels add considerably to the cost of cyclecars, a point which, so far, has ruled out their general adoption. The front wheels are fixed and any tyre repair work in connection with these must be attended to by jacking up the offending wheel and dealing with it on the spot.

Owing to the difficulty of getting at the back wheel and to the obvious impossibility of putting on a new cover or tube it is essential to make the back wheel removable, and this has been done quite simply by following the principle adopted in connection with cycles.

In the first article of the series we gave a sketch showing the method adopted for rear-wheel mounting by cyclecar manufacturers, and the subject was dealt with thoroughly last week.

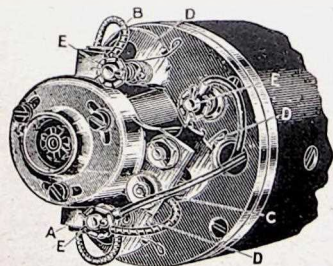
At the end of a run always turn off the petrol, and, as we have already mentioned, always depress the oil pump plunger and lock it in position by means of its catch.

CYCLECAR ELECTRICAL EQUIPMENT.

A BRIEF description of the electrical equipment, together with a few notes on the care of the various units will bring the cyclecar section of "Motoring for the Beginner" to a fitting conclusion. We propose to deal with the Lucas lighting and starting set as supplied on the latest Morgans, and we are indebted to Joseph Lucas, Ltd., for much of the information which we give herewith.

A three-lamp set is supplied as standard. The driving lamps are fitted with double filament bulbs, which provide a full driving light for the open road and reduced light for town use. If a starting motor is included in the set, a larger dynamo (type E35) is fitted, otherwise type E3 is used.

Both are simple, self-regulating, third-brush machines. The only parts calling for any attention are the commutator and brushes, which are readily accessible when the cover is removed. The commutator surface must be kept clean and free from any oil or brush dust. It may be cleaned with ordinary soft



DYNAMO, TYPE E35.

A view of the commutator end. (A and B) Main brushes. (C) Control or "third" brush. (D) Spring levers holding brushes in position. (E) Spring terminals.

rag, but if it has been neglected use fine carborundum paper or very fine glass paper. Blow away any carbon dust and see that the carbon brushes are wearing evenly and move freely in their holders.

To fit a new brush it is necessary only to release the brush tag, hold back the brush lever and then withdraw the worn brush from its holder. The new brush can be fitted by reversing the above procedure.

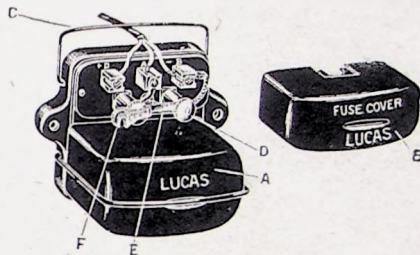
The bearings are packed with grease before leaving the works. A few drops of ordinary engine oil may be added through the lubricators, say, every 1,000 miles, but the owner is cautioned that far more trouble is caused by excessive oiling than by too little.

The armature spindle of the starter-motor is fitted with a pinion which runs into engagement with the geared ring on the flywheel. Immediately the engine begins to fire the pinion is automatically thrown out of mesh. If, for any reason, the pinion does not engage with the flywheel teeth, examine the screwed sleeve on the armature spindle to see that it is free from dirt; if necessary, wash over with paraffin. As

in the case of the dynamo, the surface of the commutator must be kept clean and free from oil, brush dust and so on.

It is of the utmost importance that the battery should receive regular attention, as upon its good condition depends the satisfactory running of the starting motor and the illumination of the lamps.

At least once a month the vent plugs in the top of the battery should be removed and the level of the acid solution examined. If necessary, distilled water, which can be obtained at all chemists and most garages, should be added to bring the level well above the plates. If, however, acid solution has been spilled, it should be replaced by a diluted sulphuric acid solution of 1.275 specific gravity. See that the tops of the cells are clean and dry and that the terminals are tight and smeared with vaseline.



Fuse and cut-out, type CF, with fuse cover removed. (A) Cut-out cover. (B) Fuse cover. (C) Cover spring. (D) Fuse-securing nut. (E) Fuse strip. (F) Spare fuse strips.

The latest switchboard is of circular formation and houses the two switches controlling the lighting and charging circuits; there is also a centre-zero ammeter. The charging switch is arranged so that in the "off" position it earths the magneto, thus obviating the necessity for a separate magneto switch; "M" signifies magneto switched on; "D," dynamo on charge with magneto still switched on.

To enable the cables to be correctly connected up, the terminals on the moulded base at the back of the switchbox are identified by means of letters which correspond to the letters on the wiring diagram supplied with the book of instructions.

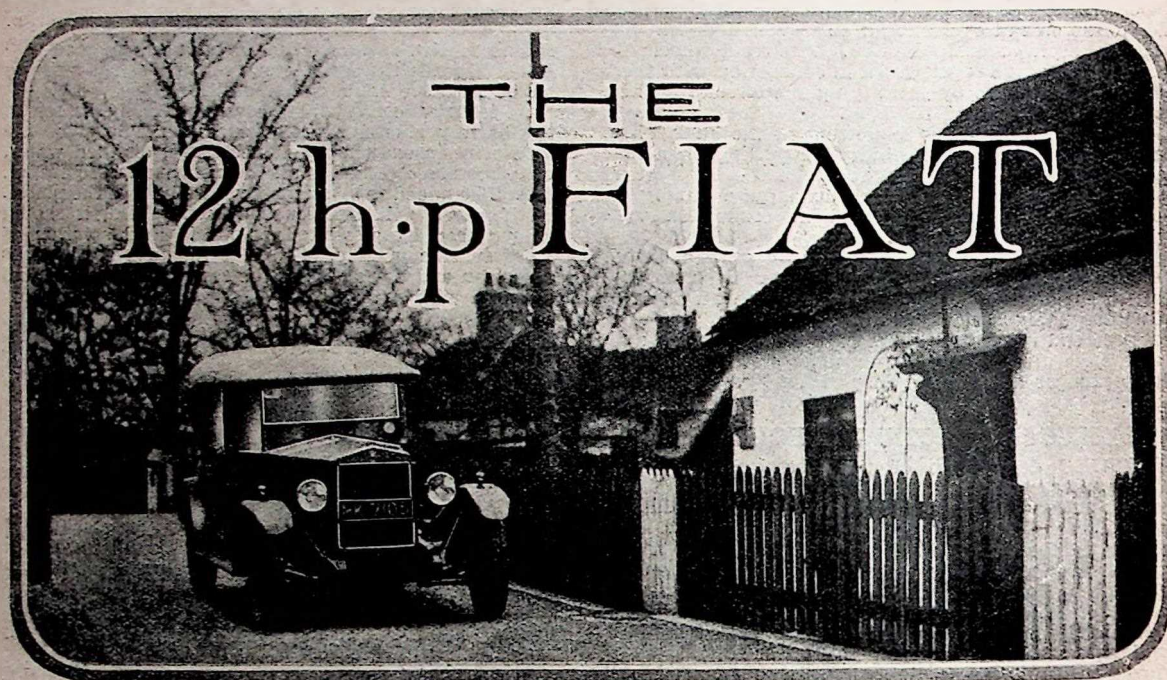
The cut-out and fuse (type CF) are mounted on a common base and the unit is fixed under the bonnet. The larger cover protects the cut-out and the smaller the terminals and fuse. The cut-out is accurately set before leaving the works, does not need any adjustment, and is, therefore, sealed. The cover protecting the fuse holder and terminals is removed by springing the retaining wire to one side. To fit a new fuse it is necessary only to remove the knurled nut, place one of the spare fuse strips over the post, and then replace and tighten up the nut.

The driving lamps (type R510) are universally adjustable by slackening the hexagonal locking nut at the bottom of the lamp mounting, turning the lamp to the desired position and then locking it by tightening up the one nut. In replacing bulbs insert them in the holder so that, on turning the switch to "H," the full light is obtained in both lamps.

The fronts and reflectors of the lamps are retained in the bayonet slots by a patented arrangement of locking springs. To remove the front of a lamp, press the front rim evenly and then rotate to the left (looking at the front of the lamp) so far as possible, when the front may easily be withdrawn.

The efficiency of a lamp depends not only on the shape of the reflector but on its surface. In the ordinary course of events it is not advisable to polish the reflector; should it become tarnished, however, polish it with a good chamois leather and finely divided rouge, moistened with petrol, but on no account use metal polish.

Road Tests of 1927 Models.



KNOWN AS MODEL 503, THIS CAR REPLACES THE POPULAR 10-15 H.P. MODEL OF THE FIAT RANGE. IT IS, IN FACT, A MODIFIED AND IMPROVED EXAMPLE OF THE EARLIER MODEL.

MOTORISTS familiar with the Fiat range of cars will recall the 10-15 h.p. models, which always enjoyed an enviable reputation. Until recently each year has seen this model reintroduced with such modifications as were deemed necessary to keep abreast of the times, but now, to all intents and purposes, there is no longer a 10-15 h.p. Fiat, as the latest 1927 503 model is known as the 12 h.p. Actually it is a refined and improved edition of last year's 10-15 h.p. model 501.

The engine is of the four-cylinder type with a bore of 65 mm. and a stroke of 110 mm., giving a capacity of 1,460 c.c., the Treasury rating being 10.4 h.p. and the tax £11 per annum. The crankshaft is supported in three bearings, whilst the pistons, having extra-long skirts, are made of a special alloy. The connecting rods are machined all over. The Fiat patent carburetter is bolted directly to the cylinder block, and incorporates an economizer, controlled from the driving seat, which regulates the strength of the mixture.

A commendable point in connection with the Fiat carburetter is the arrangement of the air intake. Instead of air being drawn straight through the carburetter in the ordinary way, it is taken through a passage cored in the cylinder block from the rear end. Thus the ingoing air is warmed on its way to the carburetter, provision for lowering the temperature in hot weather being made by the fitting of two shutters on the body of the instrument, which, on being opened, cause cold air to mingle with the hot air, a mixture of reasonable temperature resulting.

Four-speed Gearbox.

The clutch is of the multiple steel-disc type enclosed in the forward compartment of the gearbox unit and driving to the four-speed gearbox by means of a splined shaft. The gear ratios provided as standard are 22.63, 12.83, 8.94 and 5.1 to 1. The gear lever is mounted to the right of the driver.

From the gearbox the drive is taken through a totally enclosed propeller shaft to a spiral-bevel-driven rear axle in a banjo-type casing so arranged that the entire differential assembly can be withdrawn from the rear of the casing after removal of the cover plate.

Four-wheel braking is, of course, standard on this car, the rear-wheel drums carrying two sets of shoes. One pair is controlled by the right-hand-operated brake lever, the other being interconnected with the front-

A handsome inlaid fascia board is fitted in the 12 h.p. Fiat. The right-hand controlled gear and brake levers are very conveniently placed.

One of the chief improvements in the latest model is the altered shape of the cylinder head, which has now been designed to give a wedge-shaped combustion space, the thin edge of the wedge being over the side valves. This has resulted in increased power.

wheel brakes and operated by the Fiat patent mechanical servo mechanism.

Points of interest in connection with the electrical installation of the Fiat are the provision of a lock and key in the switchboard so that the lighting switch and the starter button can be locked, the lock being so arranged that it can be operated in any position of the lighting switch. Mounted on the switchboard are two small lamps, fitted with red and blue glasses respectively. The red lamp is in the dynamo circuit and lights up when, for any reason, the dynamo is not charging. The blue lamp is controlled by oil pressure in the lubrication system; it lights when the pressure falls below 7 lb. per sq. in.

The wheels are shod with 28-in. by 4.95-in. Dunlop tyres and the suspension is by semi-elliptic springs, those at the rear being underslung. A spare wheel is carried in a well formed at the rear of the off-side front mudguard, whilst on the near side provision is made for carrying an extra spare wheel in a similar manner.

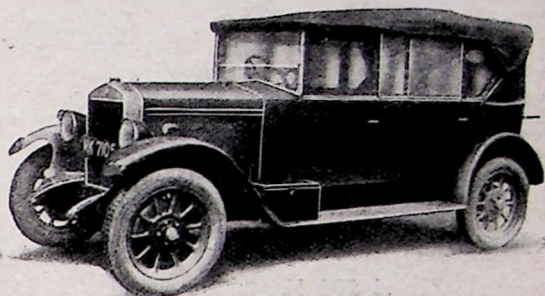
On the Road.

We recently had an opportunity to test one of these cars on the road, and we found that it performed in every way in a manner in keeping with the Fiat reputation. The car was of the standard four-seater touring type, which is priced at £310. The body was of very solid construction and provided ample and comfortable seating accommodation, the front seat being 45 ins. wide, whilst that at the back had a width of 47 ins.

Efficient rigid-type celluloid side curtains are provided, whilst the hood is of the one-man type. The two-panel adjustable windscreen is arranged so that the overlap between the top and bottom panels is well below the driver's normal line of vision.

Upon taking over the car from the showrooms of Fiat (England), Ltd., 43-44, Albemarle Street, London, W.1, a point which struck us almost immediately was the extraordinary mechanical silence of the engine and the manner in which it could be throttled down to a clock-like tick-over whilst idling. Gear-changing was commendably easy, but, owing to the absence of a clutch stop, a rather lengthy pause was necessary when changing. In top gear the engine pulled strongly and steadily at low speeds, whilst its acceleration was in every way satisfactory, this being noticeable even when starting from cold in the morning.

A long, fast run with hood and side curtains erected, and three up, showed the car to be capable of very good average speeds, its maximum in top gear being about 55 m.p.h., with a slightly adverse wind blowing. The "flat-out" speed on third gear was 40 m.p.h., whilst 30 m.p.h. and 20 m.p.h. were obtained on second and

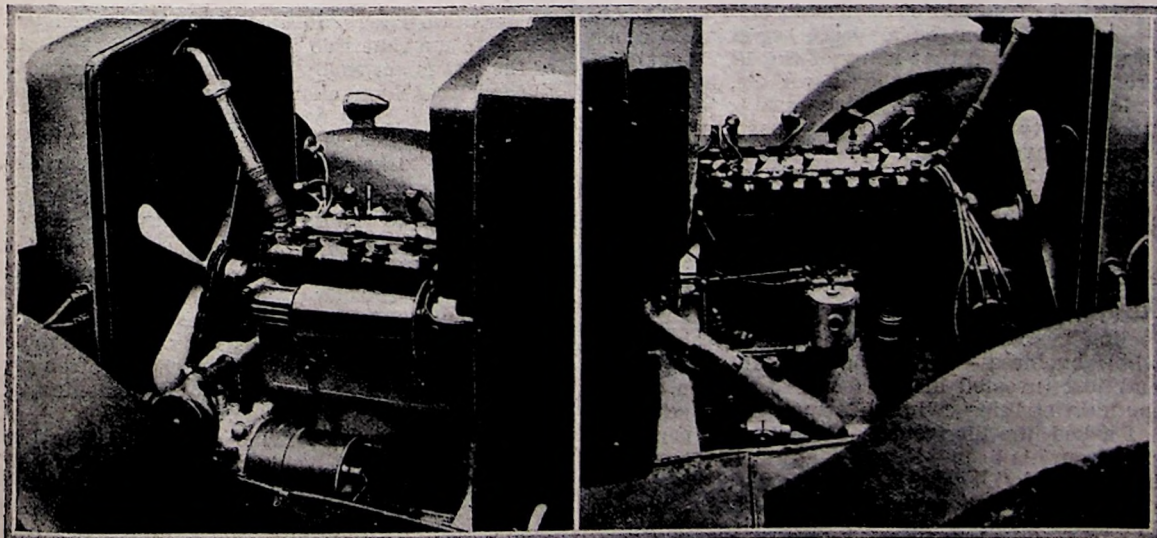


Ample weather protection is provided on the touring model. The side screens are rigid, with overlapping joints to exclude draughts.

first speeds respectively. Petrol consumption worked out at about 30 m.p.g.

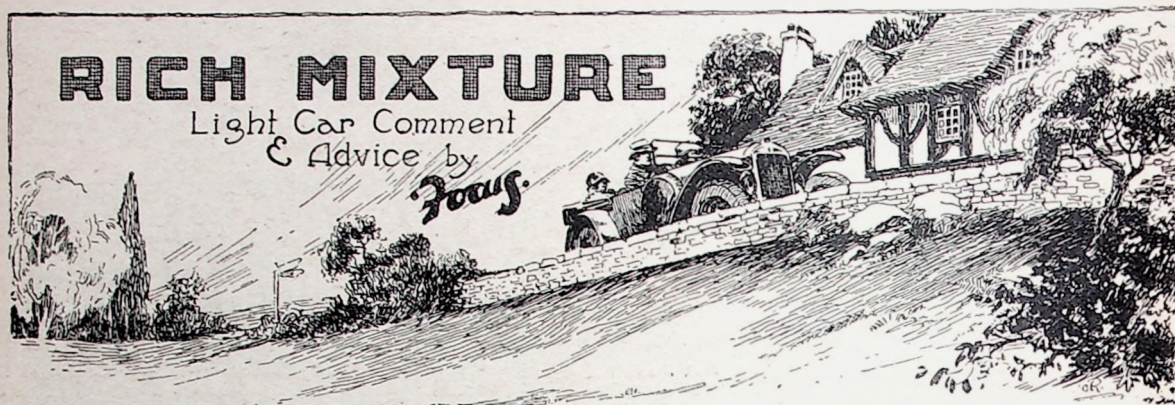
As the engine is pump-cooled, and fitted, in addition, with a large fan, overheating troubles are by no means to be anticipated, but, on the other hand, the engine did not appear to be unduly overcooled. As forced lubrication is used for all the engine bearings, it is most unlikely that any harm could be done by high revs. on intermediate gears.

The four-wheel-braking system showed itself to be particularly efficient, pulling up the car in an easy and certain manner with only a light pressure on the pedal. The efficiency of the hand brake was just a little disappointing. This may, however, have been due to want of adjustment, as the car which we tested was a demonstration model with several thousand miles to its credit. Although a detachable starting handle is provided in the tool kit we had no occasion to use it, as the electric starter proved sufficiently powerful, even when the car had been standing all night in an unheated garage. Altogether, this Fiat impressed us very favourably, and we should imagine that it will enjoy wide popularity.



ENGINE
DETAILS.

Externally the 12 h.p. Fiat engine is similar in appearance to the 10-15 h.p. type which it replaces, but an improved cylinder head is used on the new model. The fitting of compression taps is an unusual but convenient feature. The carburettor fuel level can be seen through a window let into the float chamber.



A 200 Yards' Reverse.

I READ the other day of a driver who reversed for 120 yards right past a policeman on point duty, and then informed the bench that he had been motoring for three years and was unaware that there was any limit to the distance a driver might reverse! The amount of latitude permitted in the matter seems to vary in different districts, but it can be taken for granted that to cover anything like 100 yards in reverse in traffic is almost bound to lead to a prosecution.

Anomalous.

WHEN the instruction book tells you that cylinder-head gaskets can be used over and over again if care is exercised when removing and replacing the cylinder head, and the makers charge you up for a new gasket after carrying out the first decarbonizing themselves, what are you to think? This is a grievance of one of my colleagues. He has my sympathy: it is all wrong, and points either to negligence on the part of the mechanics or, shall we say, a slip of the pen in the accounts department.

Ancient Warriors.

THOSE of us who recognize an old stager when we meet it on the road are beginning to come to the conclusion that many of the 1912 light cars are like old soldiers—they never die, but merely fade away. Incidentally, they seem to take a long time even to fade, for during the past two or three weeks I have come across some old staggers really going strong. One was a two-cylinder air-cooled Humberette, another a belt-driven G.N., a third an A.C. Sociable and a fourth a 1912 Singer.

Wasps and Cellulose.

I HAVE come across only one owner who did not revel in the "brand spanking new smart car feeling." He was positively dejected about the whole business—why, I could not fathom, for he had just invested his hard-earned cash in one of the most striking cellulose-lacquer colour schemes.

I asked him his trouble. Mopping the perspiration from his brow—it was a hot day in August—he muttered, "Wasps!"

When he led me to the car I saw what he meant. The sweet smell of the fresh lacquer was as honey to these idle loiterers of the air, who hovered about the car or crawled over it in numbers. A few days later my friend was his old self again. The attractive odour had faded.

B20

The Greatest Invention.

UPON what simple invention does the motorcar most depend? I heard the question put at the club the other evening, and the propounder of it stood by with a smile whilst the others carried on the controversy. At the end he gave his answer: the screw thread.

Undoubtedly he was right, for it is impossible to conceive how a motor vehicle could be produced without bolts and nuts. An article on the origin and history of the screw thread would make very interesting reading, for it seems to me that without it modern engineering would not have been possible. [A good idea, one shall be prepared.—ED.]

A Licence Offence.

AT a divisional police court in the provinces the other day a cyclecar driver was summoned for carrying a passenger in a "vehicle, to wit a tricycle," with a limited trade licence. The owners also were summoned. The facts as related by the driver were that he discovered a wayfarer exhausted at the roadside and took him to the nearest place for assistance. Despite this evidence the bench fined both the driver and his employers.

Now, although regulations must be respected, it seems to me that this is a case where the letter of the law might easily have been subordinated to the spirit of humanity. I am sure those who framed the Act did not mean it to imply that a limited trade licence should deprive a driver of the instinct to help a fellow creature in physical distress.

Gruesome Apparitions.

MOST drivers who have undertaken all-night runs have, at some time or other, seen ghostly forms at the roadside which, upon approach, have turned out to be nothing more alarming than twisted tree-trunks or equally commonplace objects. Nevertheless, these apparitions often give one an eerie thrill, which, although momentary, is apt to set the nerves on edge.

I have had several minor scares of this kind myself. The most amusing occurred recently when returning home in the dusk. I was driving with only my side lamps alight, and, on coming to a point in the road where overhanging trees completely shut out what daylight there was, I suddenly beheld a solitary green spot, which shone queerly in the gloom, glide out from the hedge, float silently across the road and vanish. On

switching on my headlamps, both my passenger and myself laughed heartily, for crouching at the roadside was—a large black cat. Had we seen two green orbs we should have known immediately that it was an animal ahead. Doubtless, the missing eye was accounted for by the fact that, when crossing the road, the cat was broadside on to us.

A Flaming Dragon.

I WAS telling this story to some friends the other evening and several had similar tales to tell. The best was related by a man who has to drive some five miles along winding lanes to and from a railway station every day. As he has no alternative means of getting there other than walking, he naturally uses his car in every kind of weather.

Some weeks ago he was making his way home as best he could in a thick fog, when, on turning a blind corner, he was suddenly confronted by what looked more like some enormous flaming dragon out of a fairy story than anything else. Two large baleful eyes glared menacingly at him, whilst beneath gaped blood-red jaws from which coils of fire dropped on to the road below. Above the purr of his engine my friend heard a sullen, hissing roar.

He made a violent swerve to avoid the creature, and swept past a heavy steam wagon lumbering on its way, its two powerful oil lamps and glowing fire-box showing vividly in the fog. My friend is not easily scared, but he confessed that he had to stop and smoke a cigarette to calm his nerves.

An Unusual Emergency.

THE man who thinks he has learnt all there is to learn after three months' driving might ponder over an experience that occurred to me last week. It was an emergency that had never presented itself to me before. I was driving between Watford and St. Albans and was going round one of the numerous bends when I found the road ahead occupied by two cars. One was apparently stationary at the side of the road on the left; the other was advancing towards me. The only thing to do was to pull in to allow this car to pass, but, suddenly, I noticed that the car on the left was reversing! If ever my mind worked quickly it did then. Happily I was at the wheel of a car with plenty of acceleration, and just managed to squeeze through, whilst the approaching driver braked for all he was worth. The whole incident occupied only a second or two, and I merely mention it to illustrate how emergencies can be precipitated when someone acts in a manner contrary to the custom of the road.

One Effect of the Floods.

READERS who find themselves forced to drive through floods should be on their guard against temporarily losing their braking power. A friend tells me he had a very unpleasant experience through this cause a short time ago.

During a business journey he came to a place where for a considerable distance floods were pouring across the road. At its deepest part the water



DICK WHITTINGTON'S BIRTHPLACE — The old castle in the Shropshire village of Whittington from which the famous "Dick," pantomime hero and three times Lord Mayor of London, took his name.

was well over the hubs, but he passed through confidently enough, and at the other end accelerated to surmount a bridge. A herd of cows was coming along just over the crest, and he had to apply the brakes. To his surprise and dismay he found the car going forward unchecked. A smash seemed certain, but, fortunately, the lad with the cows managed to drive them to one side, and the car just scraped past. The brakes had become saturated, and for some distance thereafter my friend occupied himself accelerating and braking in order to dry them.

That Skidding "Tip."

MOST of us who write about motoring matters must have trotted out some dozens of times the time-honoured hint of "steering into a skid." I was wondering the other day when I saw a contemporary driving the idea home with the aid of bird's-eye drawings whether the "tip" is of the slightest use. It says, if your back wheels skid to the left, steer to the left. Who but an idiot would do otherwise? Neglect to steer left so soon as the skid occurred could only lead to the car crossing to the off-side of the road immediately rear-wheel adhesion was restored, and anyone with only ten minutes' experience of car driving would surely have the front wheels locked over in readiness.

I wonder whether readers agree or whether there really is a tendency for a man experiencing his first skid to make matters worse by turning the wheel in what a second's reflection would tell him was the wrong direction. [We should be pleased to publish letters on this subject.—ED.]

Cautious Ex-cyclists.

A MAN who bought his first car towards the end of last month took me for a 40-mile run in it about a week ago. "How do you think I manage the driving?" he asked whilst we were lunching together after the run. "Very well, indeed," I

said, actually understating the case. "Who taught you?"

He had learned driving from a manual, he said, and from watching the methods of others. He had had no lessons, and declared that he felt he had the car well under control even on the first trip. Then he explained the reason to me. "I used, some years ago, to be a very keen cyclist," he said.

There is something in cycling, I cannot explain what it is, that imparts to those who have sampled its joys and sorrows a degree of road sense that years of car driving do not seem to bring out in others. Perhaps it is the fragile nature of the bicycle which compels the rider to be cautious, and caution, after all, is the beginning and end of that rather meaningless expression "road sense."

A Risk Worth Noting.

HAVE you ever noticed the haphazard manner in which brewers' lorrymen pile up empty barrels on their vehicles? Only a week ago while travelling along Watling Street I saw a barrel, which was poised like a rocking stone on top of others, slip a little and then fall off. Although there were no vehicles passing the lorry at the time, it is easy to imagine the consequences had it toppled on to a car driver or, worse still, a motorcyclist.

For their own sakes brewery concerns should see that more care in the matter is exercised, for they would be liable to heavy damages if anyone were injured. I remember a few years ago a London motorcyclist passing through Northamptonshire being felled by a tar barrel that crashed from a county council vehicle. His skull was fractured and the council paid him £1,500 compensation in addition to special damages, and, I believe, counted themselves fortunate in escaping at that.

BOUGHT
AT
"PIT-HEAD"
PRICE



These enterprising folk used their light car to collect gravel for the garden paths, and thus saved the cost of cartage. The price of gravel at the pits is very low indeed, and three sackful go quite a long way.

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"THE LIGHT CAR AND CYCLECAR" WAS
FOUNDED IN 1912 TO CATER FOR THE
NEEDS OF USERS AND POTENTIAL
PURCHASERS OF LIGHT CARS AND
CYCLECARS, AND IT HAS CONSIST-
ENTLY ENCOURAGED THE
DEVELOPMENT OF THE ECONOMICAL
MOTORING MOVEMENT FOR OVER
FOURTEEN YEARS.

NO CAR WITH AN ENGINE CAPACITY
EXCEEDING 1,500 C.C. (14 LITRES) COMES
WITHIN THE SCOPE OF THIS JOURNAL,
THAT CAPACITY BEING GENERALLY
RECOGNIZED AND ACCEPTED AS THE
LIMIT FOR A LIGHT CAR ENGINE.

Keep to the Left.

ALTHOUGH they are not
steeply cambered and are
just as smooth at the sides as
they are in the centre, many
of our new broad main
roads appear to tempt
drivers to keep to the centre
instead of to the left-hand
side. This has produced
a tendency for fast traffic to
overtake slow traffic on the
near side, which is a prac-
tice fraught with consider-
able risk, whilst it causes a
great deal of delay and
annoyance to drivers who
are in a hurry.

The problem of persuading show-moving traffic
to keep off the crown of the road is apparently
world-wide, and even in Bombay has assumed so
much importance that the Western India Auto-
mobile Association recently approached the Commis-
sioner of Police with a view to finding a solution.
The Commissioner told the association that if
motorists who found other drivers holding the
middle of the road when travelling at a lower speed
than 20 m.p.h., and refusing to make way for over-
taking traffic, would forward the number of the
offending car to the head police office, a warning
would be sent to the driver concerned, and that if
further reports concerning the same driver were
received a prosecution for obstruction would be
instigated.

It is not suggested that the time has come for
motorists to police one another in this country, but
the Commissioner of Police in Bombay certainly
appears to have instituted a scheme which attempts
to solve a modern problem in a particularly practi-
cal and satisfactory manner.

Standardized Repair Charges.

THE present position with regard to professional
light car repairing and overhauling is far from
satisfactory. On the one hand we have the works
or service depots anxious to make ends meet and
sometimes charging rather heavily for work done,
and, on the other hand, the car owner who has de-
termined to extract the maximum benefit from his
guarantee whilst it lasts and afterwards to pay as
little for repairs as he possibly can. There may
be service stations which surprise their customers
by the lowness of their charges, and, again, there
may be private owners who amaze the repair folk
by paying their accounts without even a grumble—
but we have yet to find either!

The solution to this state of affairs is simple

Topics of the Day

and has been adopted by
two well-known car manu-
facturing concerns, one of
which is responsible for a
popular 750 c.c. model.
They have standardized
"major" repair charges,
and we strongly recommend
other manufacturers to
follow the excellent exam-
ple which has been set. If a
customer knows that remov-
ing the cylinder head, de-
carbonizing, grinding in
valves, adjusting tappets
and tuning up the engine on
the road will cost him, say,
£1 12s. 6d., no more and no less, he knows ex-
actly where he stands—and so does the repair
depot. The concern to which we have alluded has
prepared a scale of charges for different jobs
which from their experience require doing from
time to time. Fortunate are they and the custom-
ers with whom they deal. Surely so excellent
a plan will not be deliberately overlooked by the
rest of the motor trade. It would, we feel sure,
prove to be a welcome innovation if adopted
generally.

A Good Move.

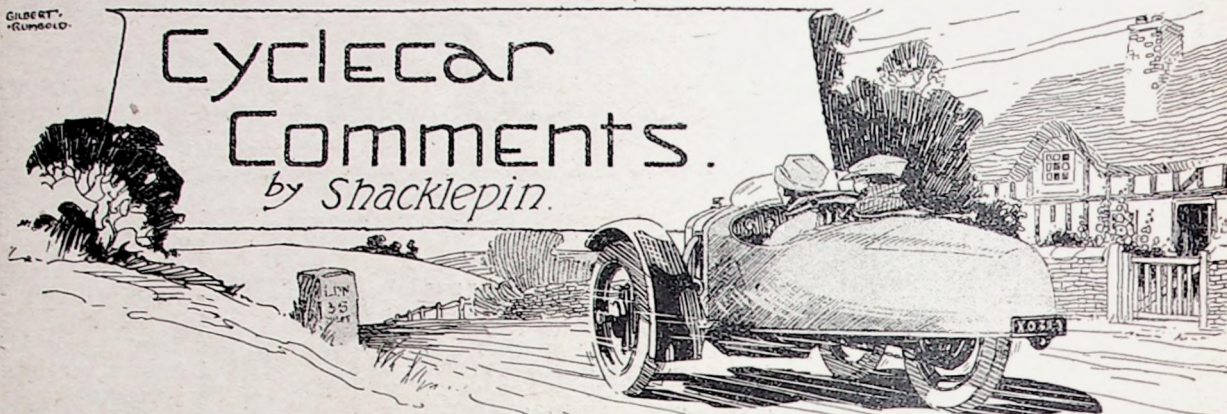
THE owner of a car in the smallest class has
always scored over owners of larger cars, not
only in first cost, but in running costs, and now
he gets an advantage of a guinea in his subscrip-
tion to the Royal Automobile Club. This will be
all for the good of the 1,100 c.c. car and would
certainly play a most important part in its develop-
ment if only a larger number of light car owners
were aware of the advantages to be gained from
supporting the parent body. These advantages are
not necessarily confined to the sporting side of
motoring; far from it. The R.A.C. already has a
finger in a number of very big pies in which the
interests of all owner-drivers are concerned. With
a larger membership it would have more fingers
in still bigger pies.

A fact which is not widely known is that the
Automobile Association also has a specially low
subscription for owners of small cars, but in this
case the engine capacity limit is 1,000 c.c. With
the new concession from the R.A.C. owners of cars
in this class will thus be able to belong to both
organizations at the same subscription rate as
owners of larger cars must pay to each. The con-
sequence is likely to be beneficial on the score of
more motorists being "organized," whilst the popu-
larity of the smaller types of engine will be given
a marked fillip.

GILBERT
"RUMSOLD"

Cyclecar Comments.

by Shacklepin.



THE 8-45 h.p. SPORTS-TYPE J.A.P. ENGINE—A RELIABLE AND VERY EFFICIENT UNIT—
BOAT MOTORS FOR CYCLECARS—NEWS OF MR. E. B. WARE.

I HAVE received so many inquiries recently concerning the performance of the latest-type overhead-valve water-cooled J.A.P. engine, known as the 8-45 h.p., that I think some details of my experiences with one of these units will be of considerable interest to most enthusiastic cyclecarists. The engine is, of course, designed for use in Morgan and other cyclecar chassis. I had mine fitted into a 1925 Aero-Morgan chassis last August, since when I have driven it hard and have covered some thousands of miles. I have nothing but praise for its performance, which has been entirely satisfactory in every respect.

One of the main features of the engine is its extreme flexibility, for, despite the fact that it is an o.h.v. engine, one can throttle down to quite low speeds in top gear and then quite easily get away again with great rapidity. When I say that I have driven in top gear through towns where the police strictly enforce the 10-mile limit, I think that this should be sufficiently convincing proof of its flexibility. The engine will, in fact, pull steadily at a lower speed than 10 m.p.h. if proper use is made of the ignition control.

On the open road high average speeds are easily maintained, the engine being easily capable, in fact, of speeds up to 70 m.p.h., and with a little extra tuning I have no doubt that this could be exceeded. At all engine revolutions the unit is particularly sweet. On bottom gear the maximum speed for the Morgan with this engine is round about 40 m.p.h. Thus it is obvious that, whilst having unusual flexibility in top gear, it has additionally a really good sports performance.

It is extremely economical to run, for, with the B. and B. carburetter set for economy, I am obtaining over

50 miles per gallon consistently when on a long run, whilst for town work I invariably get just over 45 miles or so from every gallon of fuel. So far as oil consumption is concerned, this, too, is very small, so that the engine makes altogether a most economical unit for any type of cyclecar from which really high efficiency is required.

Mechanically, it is unusually quiet, and even at high revolutions there is only a comparatively small "click" from the valve gear. This noise, however, is accentuated a little when the aluminium shields, which are fitted as standard, in front of the valve gear, are in place. With the shields removed, the click is hardly audible.

A particularly good feature of the valve gear is that adjustment is rarely needed. The rockers, when adjusted to their correct clearance, maintain this for a considerable period, and, in fact, I can cover considerable mileages without ever thinking of giving any attention to the power unit in this respect.

Hill-climbing, of course, causes no qualms whatever with an engine of this type, for all main-road hills are simply taken in its stride, whilst freak hills, unless wheel-spin occurs, are easily surmounted on bottom gear.

With regard to the specification of the engine, it has a bore and stroke of 85.7 mm. and 95 mm. respectively, giving a total cylinder capacity of 1.096 c.c. The valves are push-rod-operated and each is provided with duplex springs. Hardened steel caps are fitted to the ends of the valve stems, so that wear does not occur, which is, of course, one reason why adjustment is maintained so well.

Under all conditions the engine runs very cool, and even after really

hard driving there is not the slightest sign of overheating. The engine is fitted with aluminium pistons and inside flywheels, whilst the main bearings are of the roller type.

To sum up, it is an engine that I can confidently recommend to any cyclecarist who requires an economical power unit which will, however, provide him, at the same time, with a sports performance.

That cyclecar enthusiasts are determined to investigate every possible outlet for their ingenuity is proved, I think, by an inquiry which has reached me from an amateur builder who wants to know whether I think an outboard motor, like the Evinrude, would be suitable as a power unit for a very light four-wheeled cyclecar.

Frankly, I do not. Without going very deeply into the matter I can foresee complications. One of the more obvious, of course, is the difficulty which would be experienced in connecting the drive to a suitable clutch, whilst the mounting of the unit might prove very awkward.

To Morgan owners Mr. E. B. Ware needs no introduction. His unfortunate crash at 90 m.p.h. during the 1924 200-Mile Race and his miraculous escape from death are matters of history, but few know what Ware has passed through since he was pronounced "out of danger."

I met him recently, and was glad to learn that he has so far regained the use of his hands as to be able to drive a car with specially lightened controls; yet it was only in December that he had to brave the ordeal of another operation. He hopes it will be the last—and so do all of us who know just how much pluck is necessary in a case like Ware's.

People do say



All USED CARS sold
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GUARANTEE

that they find it a real pleasure to do business with us, and we certainly always do our best to ensure this being so. They say that the selection of new and second-hand cars we have in stock is the nicest and most comprehensive they have seen, and that our large showrooms enable a more comfortable inspection than is possible elsewhere. The generous offers we make for second-hand cars in part payment for new or other second-hand models are frequently the cause for expressions of appreciation, whilst our attractive deferred payment terms, which we finance ourselves to ensure privacy and immediate acceptance, appeal very strongly to the business man. The written Guarantee we give with our "Used" cars is further evidence of our desire and intention to give a square deal to everyone, whether the purchase be for a new or second-hand car.

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Why not write for our brochure, "Cars of Beauty," which will give you further information, or, if possible, favour us with a personal visit? Our full lists of "Used" cars will gladly be forwarded on request, and it should be remembered that we arrange business in any part of Great Britain.

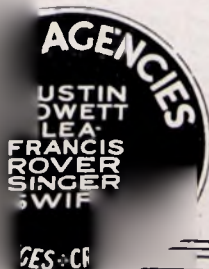
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The Trojan

"One very foggy night, a week or two ago, I watched a procession of cars creeping towards a Midland town, at speeds varying between four and eight miles an hour, the leading car being a Trojan. The driver of this car sometimes sat in the driving seat, sometimes stood on the running board, and sometimes walked alongside the car, steering with his left hand.

"Those who were driving more conventional cars could not understand how he managed to keep control of the car, especially when walking beside it. To anyone who knows the Trojan, however, the matter is quite clear The car can be started by pushing the gear lever into first, the driver being outside the car, and when visibility permits it is simple to hop on to the running board and move the gear lever into top and travel along at about six miles an hour on the level For stopping it is necessary merely to move the gear lever from top back into reverse, which acts as a brake and then forward into control"

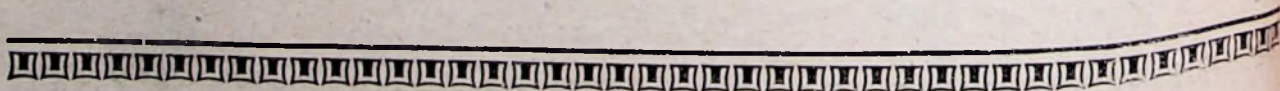
The above is extracted from an article which appeared in the recent issue of "Light Car and Cyclecar" and is yet another tribute to the extreme adaptability of the Trojan to all conditions in this and any other country.

Have YOU tried it?

If not, may we extend to you the advice we offer to all:—

PRICES from
£125
COMPLETE

Try a Trojan—The

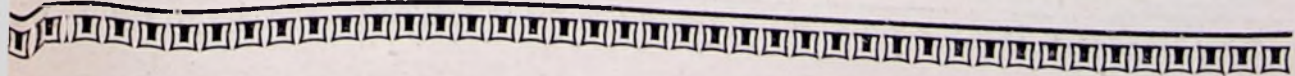


MENTION of "The Light Car and Cyclecar" when corresponding with advertisers assists the cause of economical motoring.



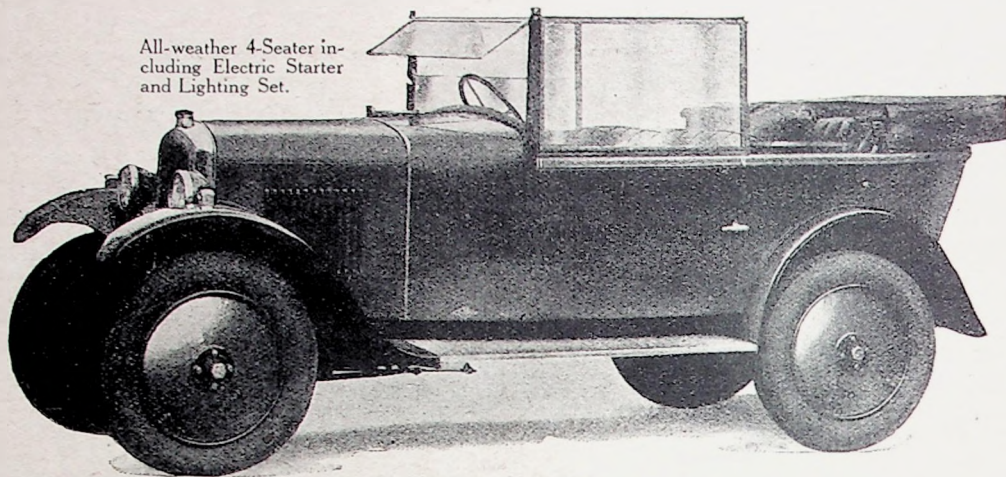
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(PRONOUNCE IT PUR-JO)

*'Dauntiness & Simplicity
combined with Reliability
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Cabriolet with Dickey Seat,
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High-Speed Engine Carburation.

PART II.

By L. MANTELL.

IN THIS CONCLUDING INSTALLMENT THE AUTHOR EXPLAINS HOW TRANSFER AND LOAD CURVE FLAT SPOTS ARE DEALT WITH BY SOME OF THE LEADING CARBURETTOR MAKERS. THE SUBJECT IS ONE OF GREAT INTEREST.

IN the previous instalment of this article the general nature of the carburation difficulties attending the development of small high-speed engines was discussed, and it was explained how the growing necessity for greater choke areas tended to give rise to two kinds of flat spot—the transfer flat spot which is apt to occur when coming from the pilot on to the main jet, and the load curve flat spot, which is the result of too sudden an acceleration from a low speed on top gear with a big choke area. We will now see how these difficulties are overcome in representative English carburettors.

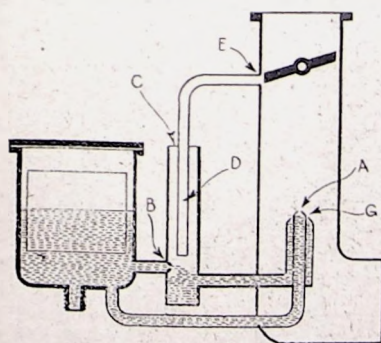
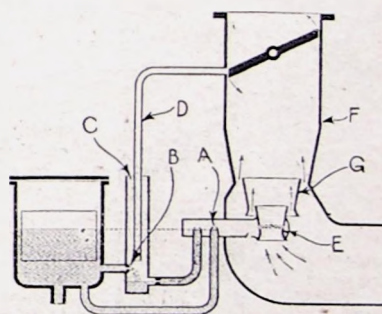
It is probable that the Zenith is one of the best known and most popular carburettors in Europe. The transfer system used and methods of obtaining automatic correction are simple, ingenious, and—what is of paramount importance—involve no moving parts.

One of the accompanying sketches shows diagrammatically the principles upon which this carburettor operates. The main jet is a compound member, comprising a central jet (A) fed directly from the float chamber and therefore delivering petrol by virtue of engine suction. This simple fuel feed would, however, be useless by itself, for, unless modified in some way, it would deliver insufficient petrol at low speeds and too much at high speeds. The greater the range and the larger, therefore, the choke, the more inaccurate become the petrol-air proportions at the low and high-speed extremes. This is a physical property, be it

at C, and being, therefore, insulated from engine suction, delivers a constant volume of fuel at all speeds above the "idling" rate.

When the engine is at rest or idling slowly, there is, of course, no choke tube velocity to draw upon the main supply, and the whole system is filled up to the float chamber level, in which circumstances the end of the dip tube (D) becomes submerged and the function of idling is automatically taken over by a small jet (E), at the edge of the throttle, which draws its supply from this dip tube. Directly the throttle is opened sufficiently to bring the main system into opera-

A Zenith triple diffuser carburettor in diagrammatic form. Its working is fully explained on the next page.



This diagram shows clearly the functional principles of a standard Zenith carburettor. The key letters are referred to in the text.

noted, of all simple jets, and the process of modifying the flow to suit the air volume is technically termed "correction."

As the method employed in the Zenith is typical, simple and comprehensive, it is well, at the commencement, to grasp it properly. Observe, therefore, the principle upon which the compensator system works and it will be seen that while the main jet is acted upon and delivers fuel by engine suction, the compensator jet (B), on the contrary, feeds by virtue of float chamber "head" into a system open to the atmosphere

tion, however, the level falls below the end of the dip tube, which puts the slow-running jet out of action, and the main system thenceforward takes over the supply.

Observe now how jet balance is effected by this method and how adjustments are carried out to suit varying engine "characteristics" and speeds. The slow-running mixture is adjusted by regulating the amount of petrol passing up the duct from the dip tube to the idling jet at the throttle. The method of doing this is simple, but does not call for detailed explanation, as we are dealing here with functional principles only.

The throttle opens in an anti-clockwise direction and the spraying orifice is always in a high suction area: the jet consequently is in full operation until starved by the entry of the main system, overlap being automatically impossible. As the main supply comprises a suction-controlled jet and a constant volume jet which delivers fuel regardless of suction, it will be obvious that the larger the choke area to cater for high engine speeds the lower will be the initial choke tube air velocities and the greater must be the volume of fuel delivered at low speeds: consequently, a relative increase in the compensator jet size is called for to avoid flatness on opening out and vice versa.

Sudden accelerations demanding a heavy but momentary main supply are made possible by the reserve petrol in the compensator system, including the dip-tube well, the ducts and the space between the main

jet and the main-jet cover, the upper extremity of which terminates in an annular opening (G) around the main orifice from which the compensator output sprays. Up to a point the capacity for "snap" acceleration depends upon the volume of this reserve content and to handle exceptional cases main-jet covers of different diameters, and therefore fuel capacities, can be supplied.

In the case of engines having an exceptional range of speed, the makers of the Zenith recommend their Triple Diffuser model which is specially designed for this purpose. Instead of having a plain main and compensator jet discharging directly into the choke tube

main comes into action the pilot or auxiliary system of the present Solex operates in tandem with the main throughout the whole range of throttle movement and engine speeds. In order to balance correctly the transfer mixture the auxiliary jet output is subjected to a period of super-suction by means of a special throttle. This device, in three stages of operation, is clearly depicted in one of the sketches.

At A the boss is exactly opposite the auxiliary duct spraying orifice and just sufficiently separated therefrom by a by-pass adjustment screw to permit the idling mixture to pass. At B the boss is shown in a slightly higher position, when it will be noted that, while its lower end cuts off the spraying orifice from the atmospheric or non-suction area below the throttle, the upper edge has receded in an anti-clockwise arc from the spray orifice, thus exposing it to the high suction area above the throttle.

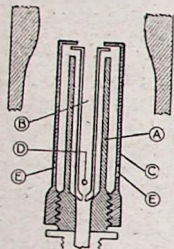
Shaping the Boss.

Upon opening a little further (C) it will be observed that the lower rim of the boss has now passed the spraying orifice and by thus exposing it to the atmospheric area has relieved it of the super-suction under which it was operating at B and thenceforward in the progress of opening it sprays in tandem with the main jet and under the same conditions of suction. A little consideration will show that by means of this specialized throttle it is possible to arrange for almost any kind of transfer mixture required. Thus, if the engine speed is medium, the choke small and the main jet therefore comes early into action, the lower part of the boss can be flattened so that the super-suction period is of short duration, as in D.

This can be carried even farther by having a small hole drilled through the boss, the action of which is to increase greatly the suction when in the idling position, as at A, thus enabling a very small auxiliary to be used. Directly the throttle opens a few degrees this hole comes away from the duct orifice and ceases to be operative, so that the auxiliary transfer mixture strength is reduced to a minimum.

On the other hand, where very big choke areas are being employed a full and deep boss is used with a larger auxiliary jet and a low hole is drilled, as in E, which comes into operation late in the opening arc and intensifies the carry-over mixture. Given the approximate maximum engine speed, therefore, the makers of the Solex supply carburettors with a suitable throttle to handle a very wide range of transfer requirements.

Let us turn now to the main jet and note how automatic correction is effected there. Instead of having a compound member composed of one constant-delivery



The Solex jet assembly in section. The letters identify the parts as follows: (A) jet carrier, (B) tubular jet with submerged orifice, (C) jet cap, (D) correction holes, one on each side of the jet. Air holes are drilled in the jet cap at E.

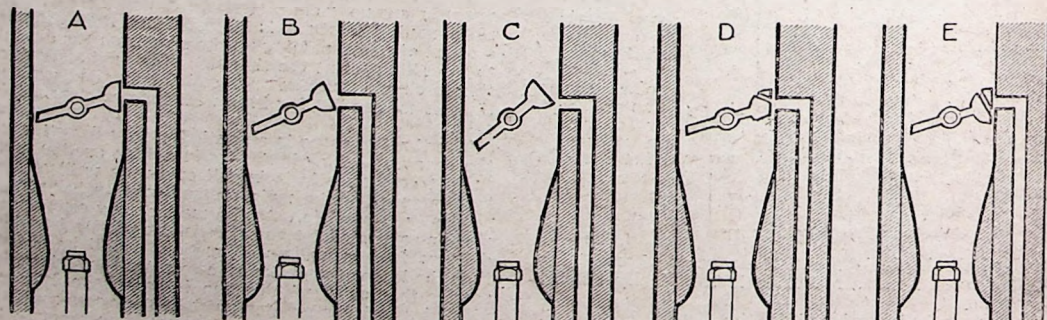
as on the standard type, the combined supply of the main and compensating jets is fed to a small choke tube (E) situated in the centre of the main choke (F), with a third tube (G) mounted intermediately and just above the former. This is made clear in one of the sketches on the previous page.

The well-known physical fact that the highest velocity of a moving air column is at its centre is, in this way, taken advantage of and the air speed spraying value increased, thus permitting the use of the larger choke areas necessary for engines having a wide speed range.

Solex Methods.

The Solex carburettor is another make of great popularity and international reputation. Of extremely simple construction and great accessibility, it shares with the Zenith the quality of obtaining automatic correction without the use of moving parts. The methods employed are, however, quite different here, as is also the means of handling the transfer area between the pilot and main providing for rapid acceleration.

Like the Zenith there is also a slow running jet delivering its fuel at the edge of the throttle, but instead of arranging a means of cutting it out as the



THE SOLEX THROTTLE BOSS.

By forming a small boss on the edge of the Solex butterfly throttle, the output of the transfer mixture from the auxiliary jet can be correctly balanced. Three positions of the throttle are shown above at A, B and C, and their bearing upon mixture regulation is explained on this page. By drilling a hole in the boss as at D and E special regulation is provided.

and one suction jet the Solex combines the two actions in a single member which is illustrated sectionally on the previous page.

A is a permanent upstanding tube called the jet carrier, coned at the base to receive the tubular jet (B) which seats thereon and is held in position by the jet cap (C). The calibrated fuel orifice is at the base of the jet and on each side of it are two correction holes (D).

There is a calculated clearance between the jet and carrier which acts as a fuel reservoir and another clearance space between the carrier and the cap. At the base of the latter, and therefore in the atmospheric area below the choke tube, are drilled two large holes, denoted by the letter E in the diagram.

A study of the assembly will make it clear that any air drawn through the holes (E) will pass upwards between the cap and the carrier, over the upper edge of the latter, down between the carrier and into the jet tube via the correction holes (D, D). To describe the automatic action of the jet in terms of pressure balances would not be very illuminating to non-technical readers, but its operation will be clear if viewed as follows:—Assume, first, that there are no correction holes at all and it will instantly be obvious that we have a plain jet, delivering too little petrol at low speeds, and too much at high speeds.

On the other hand, if the correction jets are infinitely large it will be equally obvious that we have in effect an atmospheric "compensator" having a rich output at low speeds and an impossibly lean one at high speeds. Clearly, therefore, the in-between stages can be attained by the use of correction holes of various calculated sizes in the side of the jet tube. This, in a word, is the Solex corrective principle, and the makers supply jets drilled accordingly to deal with various ranges of engine speeds.

These degrees of correction are described by alphabetical letters, and A, B, C, or D correction jets can be obtained according to the speed range of the engine, A being suitable for all ordinary engines, and the higher corrections substituted as the speed ranges become unusual and exceptionally wide choke areas are necessary. Sudden or "snap" acceleration in such cases is achieved by the use of wider jet carriers giving a corresponding increase in the fuel reserve area.

No Moving Parts.

In the Claudel-Hobson we have yet another carburettor of well-earned reputation. It is distinguished, like its contemporaries, by the achievement of automatism without the use of moving or derangeable parts. The methods of effecting this, however, and of dealing with jet balance are quite different from either of the preceding types.

The Claudel-Hobson has a barrel throttle of special construction, the lower part being slotted so that a thin tubular pilot jet can pass up into the centre of the barrel space. This jet is an extension of the main, but whilst the outlet of the latter is in the waist of the choke tube below the barrel the pilot extension sprays into a space having a suction value intermediate between the high vacuum above the almost closed throttle and the ordinary atmospheric conditions below it.

Were the upper and lower entrances to the barrel space of identical area the intermediate suction value would be an exact mean between these two extremes. A predominance, therefore, of either the upper or lower area will respectively increase or diminish the intensity of the suction in the centre of the barrel where the pilot jet sprays and thus intensify or reduce its idling output; similarly any additional slots cut on the lower half of the barrel at its opening edge can be made, by their shape and depth, to regulate the progressive suction upon the jet as the throttle gradually opens, thus regulating the strength of the transfer mixture.

This simple physical fact is very cleverly taken advantage of in the Claudel-Hobson by the provision of two adjusting screws, one of which, upon manipulation, increases or blocks up the area exposed by the slot cut

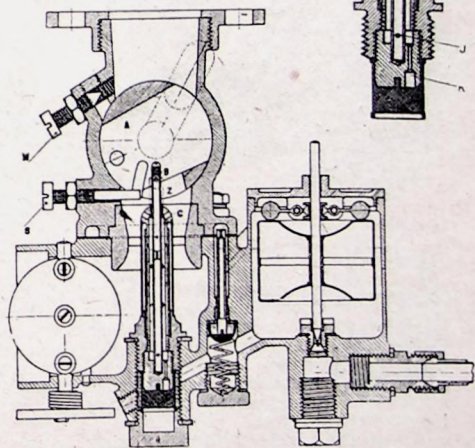
for the pilot extension tube, whilst the other forms a fine adjustment by-pass which, by regulating the air leakage, permits the tuning of the slow-running mixture.

The main jet assembly of a Claudel-Hobson is illustrated here, and reference to it will make clear the methods of attaining automatism. There are three concentric tubes (B, M and N) fed by the main jet (K) and communicating with each other by suitably placed holes, the whole being enclosed in the air tube (P) which is open to the atmosphere at the large base holes (H).

Mixture Correction.

Observe now the complete action from idling to full throttle. In the first position all the main assembly inside the tube (M) is filled with petrol to within a few millimetres of the top, but, as its delivery orifices (G, G) are below the almost closed throttle and out of the suction area, they do not function at this stage and the engine obtains its fuel from the extended portion (C) which projects into the barrel centre where there is a suction regulated to a definite value as explained above.

Below is shown a sectional view of a Claudel-Hobson power jet carburettor. Mixture regulation is obtained by means of the special jet assembly, shown enlarged on the right, and by slots formed in the barrel throttle. The power jet, which comes into operation on full throttle, can be seen to the left of the float chamber.



As the throttle opening proceeds the rising choke suction gradually draws upon the main supply and the petrol column in the assembly progressively falls with the rising speed. As it does so the holes (F, F) distributed down the second or diffuser tube are successively uncovered, thus admitting more and more air via the atmospheric air holes (H, H) and the connecting inter-tubular spaces between P, M and N. The main output is in this way "corrected" in a ratio predetermined by the size and disposition of the holes (F, F).

Just before the fully-opened position is reached the rotating barrel uncovers a port which brings into action a third supply from what is termed the "power" jet. This makes possible "snap" acceleration and enables a generous full throttle mixture to be obtained and, at the same time, a light main jet adjustment to be used for ordinary cruising speeds where economy is the principal desideratum.

RE RACING DO

WHAT ARE THE FEELINGS OF A R
RACE, AND WHEN, BY CONSUMMATION
MATTER IS DISCUSSED HERE WITH
MANY OF WHICH WILL BE RECOG

Major H. O. D.
Segrave after and
(in oval) before a
big race. The
strain of driving
at 100 m.p.h. tells
its tale.

mark on that occasion—I was about 300 yards down the course—and it will be impossible ever to forget his expression as he flashed past me. Determination was the keynote; not a trace of fear was evident, but what agonies of mind he may have been suffering. Death is a hard penalty for a young man to pay.

About half an hour later Segrave and I stood together at the bend on Mont Lambert hill, watching the body of Howey being reverently covered over after his fatal attempt to beat the record for the hill. What were Segrave's feelings at that moment? His face was like that of a marble statue.

What were his feelings at the start of his next race?

I have another Boulogne memory which is as sharp to-day as it was a moment after it occurred two years ago. J. G. P. Thomas was after the fastest run down that same 6-kilom. straight and I was standing about midway along it down a little side turning almost opposite an estaminet, which lay a dozen paces or so back from the road.

Thomas hove in sight at about 120 m.p.h. and looking far from steady. The big Leyland was pursuing a

EW people, I feel sure, know how much sheer courage is needed for record-breaking attempts like those which Malcolm Campbell has been making on the sands at Pendine during the past few weeks. They imagine that it is a job calling for a fearless driver and that, therefore, he can know no fear. I cannot believe it. I am convinced, in fact, that it is very far

indeed from the truth.

The opinion which I hold is that when a man settles himself behind the wheel of a car, determined to approach, if not to exceed, a speed of three miles a minute, he cannot—from the very fact that he must be a man of imagination—banish from his mind the almost certain sequel to a mishap. How can he help recalling the fate of Zborowski, Resta, Norris, Howey and others? He cannot.

And that is why it is always with feelings of intense admiration that I watch the lions of the racing world getting off the mark and of almost physical sickness when I realize the superhuman courage that they need to keep the right foot hard down as they hurtle along the course.

Segrave's performance at Boulogne last year, when his average speed along a narrow, steeply cambered, 6-kilom. stretch of undulating roadway was more than 140 m.p.h., left an impression on my mind which time will never dim. I watched him get away from the

Captain M.
looks happy
than when
"civvie."
well known
each

snaky course and clearly took a great deal of hold-
ing. Suddenly it took to the grass on the off side of
the road, swerved out on to the crown again and then
got into a really bad skid, from which recovery in that
narrow road seemed impossible. Disaster was saved
by the little "pull-in" in front of the estaminet, which
just gave Thomas room enough to straighten the Ley-
land out and recover the crown of the road.

Whilst practising on the same stretch of road the
following year, Thomas crashed at 90 m.p.h., fortu-
nately without suffering any personal injury.

In spite of these two experiences, he averaged about
120 m.p.h. on the same course last year—a performance
which must surely rank with the most courageous feats
on record.

At Brooklands, too, there have been many cases of
drivers gamely carrying on after experiencing most
terribly narrow squeaks. J. D. Barclay, for example,
was apparently quite undeterred by his car turning
completely round at 100 m.p.h. in a race last summer.

Turning to still more recent exploits, picture Malcolm
Campbell's feelings when he skidded practically broad-

It takes a lot to
disturb the tran-
quillity of J. G. P.
Thomas, who is
shown here be-
fore and after
big races.

side on the sands at Pendine when travelling at 170
m.p.h. or so about three weeks ago. I read of it in a
London evening newspaper and I thought that if I had
been the editor I should have given the front-page head-
line to recording how, even after this terrible experi-
ence, Campbell's determination to make further
attempts on the record was unshaken.

I can picture him returning to his hotel that night,
and noting the bright fire and the cheerful faces;
appreciating the sheer joy of life. The appeal of crea-
ture comforts is realized only by those who have
narrowly avoided saying good-bye to them.

Experiences like that are not easily forgotten. They
leave an indelible mark on the "nerves." We used to
call it "wind up" during the war when a man was
suffering from the cumulative effects of a number of
such experiences. I had it badly myself. I have sat
in the cockpit of a machine and felt the physical
ignominy of my knees knocking violently together and
of a sick, choking sensation born of pure fear.

How much harder those feelings must be to master
when there is no glamour, no excitement, nothing save
miles of sand, a bitterly cold wind and a handful of
apparently bored onlookers who probably cherish a
secret longing for a "thrill."

Those who have provided such thrills themselves
would like—I verily believe—to see the motor racing
game become as tame for onlookers as watching a
billiards match. They feel, as the "thrill" reaches its
climax, an icy hand obtaining its hold on a human life.
They wonder if the game's worth while. So do I.



MOTORING MATTERS IN PARLIAMENT.

THE Government have so far given no indication that the Roads Vehicles Bill, which has lain so long in the archives of the Ministry of Transport, is to be introduced during the present session. It is generally expected, however, that this measure will find a place in the legislative programme. So great is the determination of the Government to finish all the business of the present session by the end of July, in order that the new system by which the session begins in autumn may be inaugurated in November, that they have been extremely reluctant to give promises of any kind.

One measure dealing with motor vehicles will certainly be introduced this

session. This is the Bill which a private member, Mr. Lougher, is to present to the House on April 7th for second reading, "to regulate further the lighting of vehicles." The Bill will be supported by Sir L. Forestier-Walker, Sir Park Goff, Sir C. Kinloch-Cooke and Sir Douglas Newton.

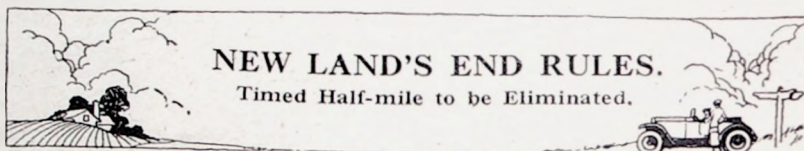
The Budget, of course, is a long way off, but it is no secret in the House—a member referred to its specifically in debate last week—that the Treasury is now considering the desirability of imposing a petrol tax instead of a licence duty upon motor vehicles. This matter is of great importance to motorists and developments will be watched with interest.

The Chancellor of the Exchequer has not yet heard the last of his raid upon the Road Fund, and he was severely dealt with by Mr. Lloyd George during the debate on local rating. Certain apologists for the Chancellor had pointed out that he gave £1,400,000 last year for rural roads, "but," commented Mr. Lloyd George, "he carried away with felonious intent £7,000,000 which belonged to the Road Fund . . . revenue created and allocated and earmarked for the purpose of roads." More will be heard on this subject.

Mr. Lloyd George, in the same speech, advocated the adoption in this country of the French system of classing the great arterial roads as national roads, so that the cost of maintenance where motor traffic is heavy would not fall on local ratepayers. The House will have an opportunity at an early date of considering this and cognate subjects upon a resolution which Sir Frank Nelson is to propose, urging the "need for a comprehensive scheme of roads and bridges."

PRELIMINARY details which have been announced by the Motor Cycling Club concerning the London to Land's End trial which starts from Slough on Good Friday, April 15th and finishes at Land's End on Saturday, April 16th, indicate that there are to be several important changes for this year.

The timed half-mile on Porlock is to be eliminated, and in place of this test competitors will simply have to restart on the hill and cover the first ten yards from the line in ten seconds. As in previous years, Lynmouth Hill, Beggars' Roost and Bluehills Mine comprise the other test hills and clean ascents of all of them will have to be made to attain a gold medal. For a silver medal performance it will be necessary to make



NEW LAND'S END RULES.

Timed Half-mile to be Eliminated.

non-stop runs on at least three of the observed hills.

Cars up to three litres may take part, but entrants are warned that a turning circle of no more than 40 ft. diameter is necessary in order to fulfil the non-stop conditions on Bluehills Mine.

Arrangements have been made to eliminate the consequences of delays which have occurred in the past on

Beggars' Roost, whilst another important innovation is to make the start an hour earlier, so that everyone will be able to check in at Land's End before nightfall.

The run is confined to members of the Motor Cycling Club, particulars of membership being obtainable from the general secretary, Mr. J. A. Masters, 22, Norland Square, London, W.11.



A NEW LUBRICANT TESTED.

Speedolene Gives Good Results.



FOR some months we have been testing a new oil under every-day conditions in a well-known make of car; it has given consistently good results and has some special features of more than ordinary interest. It goes by the name of Speedolene and is the production of Silvertown Lubricants, Ltd., Minoco Wharf, West Silvertown, London, E.16, a concern possessing a very large refinery and bulk storage plant on the Thameside which supplies lubricating oils in large quantities to the leading railways, commercial vehicle undertakings and shipping companies. Speedolene is already being used to a considerable extent on the Continent and is being sold in ever-increasing quantities in this country.

The oil which we tried was the medium "T" grade recommended for general use. When poured from the drum it is remarkably thin and clear in appearance—almost as thin, in fact, as a racing oil. It might be wondered whether, in view of this fact, the oil would retain sufficient viscosity at high temperatures, but in the course of many

prolonged all-out runs on main roads we fully proved that its lubricating value was not impaired. This fact has also been demonstrated by the way in which the pressure-gauge readings are maintained when the engine is really hot.

The way in which this new lubricant retains its viscosity against the thinning effects of high temperatures is due to the special blend of oils employed in its manufacture, so that, although when cold Speedolene is 23½ per cent. thinner than an ordinary oil, it is actually 10 per cent. thicker than are most engine oils when the temperature is raised to 200 degrees F.

The principal advantage gained owing to this property is that the engine is remarkably free when starting from cold, and that so soon as the induction manifold is warm enough to give good carburation the engine pulls practically as well as when it is really warm. The advantage which Speedolene gives when a car is used a good deal for short runs in the winter will readily be understood, and this we proved by several tests on various gradients.

One top-gear climb, for instance, can be tackled with the car in question at a speed of 32 m.p.h. when the engine is thoroughly warm, but with an inferior oil in the sump and a cold engine the speed is reduced to 23 m.p.h. Using Speedolene we found that when the engine was cold this hill could readily be climbed at 30 m.p.h. Another gradient, which is normally a third-gear climb with a cold engine, proved to be a top-gear ascent when Speedolene was employed.

So far, we have covered a distance of 6,000 miles on Speedolene oil, and the sump has been drained and refilled twice; a small quantity of make-up oil has, of course, been necessary to maintain the level during this period. The oil consumption is almost exactly the same as it was on the thicker lubricant previously employed, despite the fact that, as the car has covered a good mileage, the pistons and rings are now none too close a fit.

Several grades of Speedolene are available in addition to the "T" grade which we have been testing, but thanks to the special properties of the oil the makers do not find it necessary to specify different grades for summer and winter.

It is also claimed that the rate at which carbon deposit is formed is considerably less than is the case when some other oils are used.

INTERESTING

Anti-dazzle Headlamp Bulb.

An anti-dazzle headlamp bulb, designed to produce an effect similar to a dipping lamp, has been added to the Mazda range. Two filaments of equal power are employed, one being arranged at the true focal point of the reflector for normal driving and the other so that it produces a beam deflected downwards. On meeting another car, a driver has merely to switch over from one filament to the other to "dip" his lamps. To reduce glare and produce a well-defined beam the glass of the bulb is corrugated. These bulbs, which cannot, of course, be fitted to headlamps not wired for double-filament bulbs, are supplied only for 6.7-volt systems; they consume 18 watts.

Adjustable Bumpers.

A new front bumper, known as the Easyfit-adjustable, has recently been placed on the market by Frank Ashby and Sons, Ltd., Charlotte Road, Stirlingley, Birmingham. Its main features are that it will fit most cars having semi-elliptic front springs, and, except in a few cases where the dumb-irons are enclosed in a metal shield, no drilling is necessary. The bumper can be adjusted to suit the distance between the dumb-irons and the distance between the latter and the wings, whilst the angle can also be altered to suit the slope of the dumb-irons. Two lightweight models suitable for light cars are produced, the price in each case being 50s. Both models are of the double-bar type and are constructed of spring steel, the front bars being nickel plated and the fittings enamelled black.

For Picnicking.

An accompanying illustration shows a very neat and sturdy picnic case, which is being handled wholesale by Messrs. R. Cadisch and Sons, 5 and 6, Red Lion Square, London, W.C.1. It is claimed to be dust and rain proof, and it can therefore be carried on a running board or luggage grid without fear of the contents being spoiled. The case, which is known as the Dekkerd, is divided into three sections. The top portion is reserved entirely for food, and the lid forms a useful tray for serving. In the centre section, saucers, plates, cutlery and milk or cream are carried, whilst the contents of the bottom section includes a water-tight combined kettle and teapot (which is fitted with a folding handle, detachable spout and tea infuser), a spirit stove, cruet, boxes for tea and sugar, and four cups. The stove is guaranteed to boil the contents of the kettle in twelve minutes.

The four-person outfit is priced at £2 2s., whilst a two-person model, which, incidentally, can be secured to the car by a petrol can carrier, costs £1 10s. Both models are made of tinned steel plate and finished in black enamel, whilst strong steel handles and leather straps are fitted.

A Dual-purpose Gadget.

A very useful little gadget, known as the Two-in-One combined plug tester and pencil, has just been placed on the market by Messrs. "Two-in-One" Pencils, 21, Dean Road, Erdington, Birmingham. It is about the same size as an ordinary fountain pen and is provided with a gold-plated clip to prevent it from falling out of the pocket. The pencil is of the propelling type, provision being made for carrying spare leads. The spark-testing portion consists of a small sealed glass tube, which is filled with neon gas and is contained in one end of the pencil. This tube is in contact with the metal end cap and a part of it is visible through a small window. To test a plug it is necessary only to place the metal cap in contact with the plug terminal and observe the intensity of the flashes in the neon tube.

The pencil is made of ebonite, the black barrel being relieved by a narrow band of red. The general finish is excellent, and a small but good feature is the fact that the end of the metal cap is slightly concave to prevent its slipping off the plug terminal. The price, which includes five spare leads, is 6s. 6d.

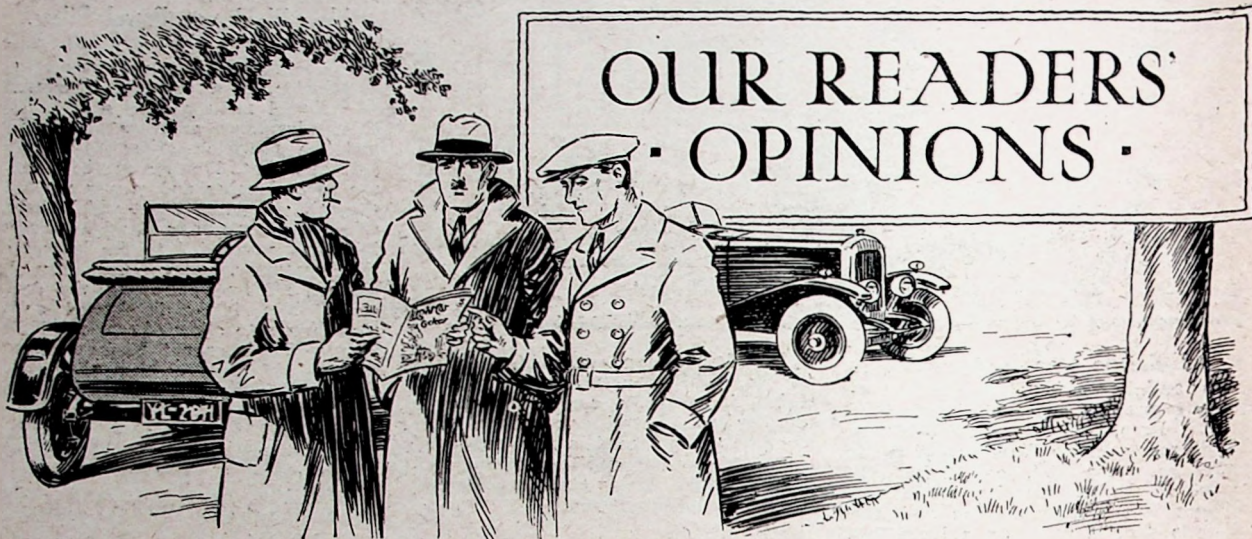
New Blackman Petrol Filter.

The latest Blackman petrol filter, which is shown in the accompanying illustration, is a practical instrument and should make a wide appeal. Its chief advantages are ease of cleaning and the provision of ample filtering surfaces. Petrol enters at the side of the base chamber and passes upwards through two gauze discs, which should effectively trap any foreign matter. Dirt and water fall to the bottom of the container, where they can be drained off by unscrewing the drain cock. The latter is formed as a thumbscrew to allow of easy manipulation, whilst it cannot be dropped and lost, as it is secured by a chain. To prevent accumulated dirt in the base of the instrument from being stirred up by the incoming petrol a conical trap is provided.

For cleaning purposes the double filtering gauzes can be lifted out after unscrewing the cap, and the gauze carriers telescope into one another, so that they can easily be taken apart. These filters are supplied with solderless unions, and a punch for flanging the petrol pipes is provided with each instrument. The Blackman filter is being handled by Brown Brothers, Ltd., Great Eastern Street, London, E.C.2, and sells for 20s.



(Top) The latest type of Blackman petrol filter. (Left) A two-person Dekkerd picnic case, and (bottom, right) the Two-in-One combined pencil and sparking plug tester.



We welcome at all times letters sent to us by readers for publication in these columns, but take no responsibility for the opinions expressed therein. No anonymous communications will be accepted, but writers may use a nom de plume if desired. To ensure publication in the next issue letters must reach this office not later than Monday morning. They should be addressed to the Editor, "The Light Car and Cyclecar," 7-15, Rosebery Avenue, London, E.C.1. We reserve the right to make any alterations or deletions which we deem necessary. Please write only on one side of the paper and leave a wide margin.

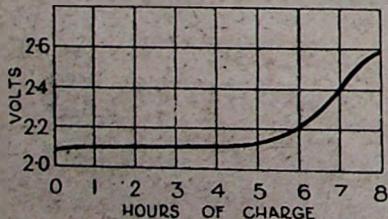
ILL-USED CAR BATTERIES. The Charging Rate—Testing Methods.

Effects of Overcharging.

Will you allow me to add a note to the letter published in your issue of February 11th? I should like to make it clear that I do not advocate overcharging batteries as a beneficial practice, but am only advancing the hypothesis that it is harmless compared with the results of undercharging. If our accumulators could

howl like a mangey dog, which "W.P." appears to think would be a desirable accomplishment, my own impression is that the vast majority would complain of starvation and very few indeed would emit the groans due to an overfed condition.

The result of overcharging mentioned by "W.P." (the disintegration of the grids) would follow, not on overcharging alone, but on repeated overcharges and discharges, as Mr. McKinnon stated the previous week. Now, if anyone has tried to "form" the plates of an accumulator by Plante's original methods (as I did over 25 years ago), he will agree with me that long periods of overcharging followed by suitable discharging would have to be repeated a great many times before anything beyond the mere surface of the grids would be attacked.



A graph showing the rise in E.M.F. of a 2-volt cell during an eight-hour charge.

After my last letter was written I found the following passage in the electrical instruction book supplied with one of the best-known light cars and carrying the name of a firm of very high electrical repute.

"Overcharging to any reasonable degree will do no harm to the battery. Therefore it is, in every case, advisable when any doubt exists to give the battery the benefit of it and continue charging."

This advice is repeated a few pages farther on, the latter

part of it being isolated and printed in heavy type. I am not alone, therefore, in my contention that overcharging is comparatively harmless.

Referring to the suggestion that a voltmeter may be used as an index of a battery's state of charge, the graph shown gives the E.M.F. of a cell during eight hours of a continuous regular charge, at the end of this time the cell being fully charged. It should be noted that this E.M.F. is measured during a momentary switching off of the charging current and before any discharge is made. The latter would at once reduce the E.M.F.

Now, it appears to me that under such conditions of test a reading of slightly over 2 volts per cell would show a battery to be charged to an extent somewhere in the first three-quarters of its maximum capacity, whereas a voltage in excess of 2.2 per cell would mean that the battery was practically fully charged and it would therefore be a waste of energy, at least, to continue charging.

A.H.S.

Confusion of Instructions.

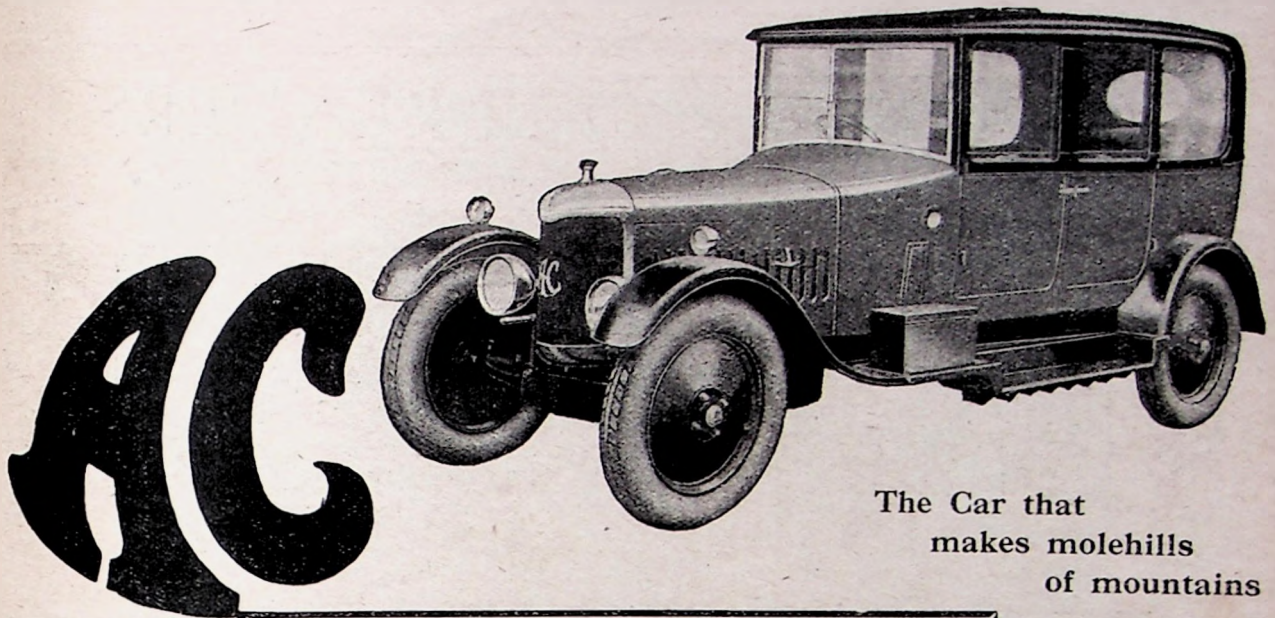
Having gleaned as much information—a good deal of it, I am afraid, from unreliable sources—as I can on the subject of the care of batteries, I am left with the impression

Hoping for the Best.

that our car batteries are inadequate appliances, which require both charges and discharges at low rates over long periods, but which receive heavy charges at short intervals, and have to put up with it for about two years: after this period we are told that a new battery is necessary. I should have thought it possible to produce a battery which would last for at least five years, but, not being an electrical engineer, my opinion on this point carries little weight.

Instruction books tell us what to do if the dynamo is not charging, and if the battery is being overcharged we are generally told to switch off the current, but we have no idea how to tell when it is overcharged. I understand that our batteries are charged at too high a rate to enable them to carry us over the stops, but if we do not use our lamps and starters enough our batteries get overcharged. I have been told that a voltmeter test is useless and that a hydrometer test is not much better, so I "top up" with distilled water regularly, hope for the best, and save up for a biennial battery.

SEPIA.



The Car that
makes molehills
of mountains

"A car to be proud of"

6, Princes Park Mansions, Liverpool.
December 12th, 1926.

Dear Sirs,

I would like to take the opportunity of letting you know how very pleased and satisfied I am with my A-C Car, with which I have now covered over 17,000 miles. I think that I can truthfully state that during the time I have had the A-C I have never wished to have any other make of car. Its excellent all-round performance, comfort, and appearance, combined with its first-class workmanship and reliability, make it a car to be proud of.

I have used the car fairly hard over all manner of roads and country, often with heavy loads, and up to the present time it has never let me down.

Yours truly,
(Signed) C. A. BEAN.

In addition to the merits mentioned in the above letter, the A-C also proves its superiority in point of sheer economy. It costs less to run per mile than any other car of equal road-performance and carrying-capacity.

GUARANTEED 3 YEARS

The A-C with its ease of control, comfort and reliability, makes an ideal ladies' car.

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A-C LONDON CONCESSIONAIRES, 55-56, Pall Mall, London, S.W.1.
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WHEN REPLYING to advertisements, mention "The Light Car and Cyclecar." It helps the advertiser and you, and assists the small car movement generally.

B37



When it rains—

when it's cold and wet and streets are thick with mud, when March winds blow and we shall have snow—'tis then you will most appreciate the cosy comfort of a Singer Saloon. All through the year in this English climate of ours, when seven months out of the twelve we are mostly shivering, you will find a Singer Saloon the most suitable car for every occasion, and there is no need to do without such motoring comfort when you can buy one for so small a sum as £260. Dunlop tyres are fitted. May we send you full particulars? Singer & Co., Ltd., Coventry. London Showrooms: 202, Gt. Portland Street, London, W.1

you will wish you had a

SINGER

SALOON



WHATEVER · THE · WEATHER — A · CAR · FOR · COMFORT.

B38

READERS, NOTE.—It assists the small car movement and the advertiser, and ensures you prompt attention, to mention "The Light Car and Cyclecar" in your enquiries.

H.P.

OUR READERS' OPINIONS (contd.).

The Skill of Disabled Drivers.

A Challenge that was Not Accepted.

In view of the correspondence regarding the question of whether disabled men should be granted licences and the comments which are occasionally made by magistrates when such a driver is involved in an accident, the following may carry some weight. I am a disabled driver, having suffered the loss of my right arm. Following the statement of a London magistrate that no man suffering the loss of an arm was fit to drive a car, I offered to disprove his remark before any three experts, subject to the sum of £10 (ten pounds) being paid to a hospital by the side losing. As the challenge was not accepted I decided to put the matter to the test by entering for the Vesey Trial, in which event I should be competing against the most fit and skilled drivers. Although driving a standard 1923 touring car, and having never before entered for the competition or driven over the 160-mile course, I was successful in winning the 1,500 c.c. class and was last month presented with the Carless Vesey Cup. Facts speak louder than words.

FREDK. MONK.

The Disabled Drivers' Trial.

Referring to the letters of Mr. Rivers Oldmeadow and Mr. N. Fielden, with regard to the trial for disabled drivers which my club proposes to organize, it would, perhaps, be more appropriate for me to reply to these gentlemen individually, but I am afraid that space at my disposal does not permit of my giving Mr. Oldmeadow a satisfactory explanation. I will, therefore, generalize, and address my remarks to both gentlemen, and to others interested.

Mr. Poulter Replies.

The sole reason for the organization of this trial is to show that the disabled driver can compete on level terms with the driver not so handicapped. In my previous letter the words "automatically debarred" were perhaps misplaced, and for this I apologise, but at the same time the fact remains that little is heard of the disabled driver's performances in trials, hence one is only left to presume that, with certain exceptions, of which Mr. Oldmeadow's case is typical, the disabled driver does not compete in such competitions.

My club does not look upon the disabled driver as other than an ordinary individual, and our sole object in the organization of such a trial is to further the sport in the interests of such drivers. From the letters which I have received from many disabled drivers it is evident that our action is appreciated, and quite personally I should advise Mr. Oldmeadow to hurry in signifying his intention to compete in what is apparently for him a certainty for the "premier pot."

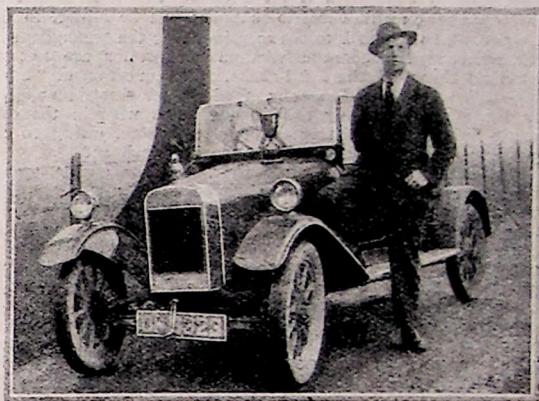
We hope, subject to the approval of the "powers that be," to open this event to all disabled drivers, whether car

or motorcycle owners, and whether members of a club or not. I assure all interested that my committee have no intention of organizing the trial on a sentimental basis, as the event will prove.

In conclusion, I should like to thank Mr. Fielden for his offer of assistance, and I would ask that he communicate with me direct on the matter, and I trust that all interested will do likewise.

F. C. POULTER.

Hon. Secretary, N.E. London M.C.C.
63, Well Street, Hackney, E.9.



Mr. Fredk. Monk, whose letter appears in the opposite column, photographed with the car in which he won the Carless Vesey Cup; the latter can be seen standing on the scuttle.

Special Consideration Not Wanted.

May I thank Messrs. Oldmeadow and Fielden for their replies to Mr. Poulter? Their letters make perfectly clear what we wish to emphasize, particularly, as I stated in my previous letter, with a view to future legislation. When our case comes up for consideration in Parliament, as we feel sure it must, we want it known that we are not abnormal, and therefore lay no claim to special consideration or concessions. When we describe ourselves as drivers we mean it in the fullest sense of the word, and most of us, I venture to state, have attained a standard somewhat above the present-day "average."

The attitude most likely to prejudice our future is that of uncertainty toward our claims of proficiency, which it is our object to eliminate well beforehand.

F. C. ASHLEY.

English versus French Three-wheelers.

I was surprised to see that none of Britain's enthusiastic three-wheeler owners thought fit to reply to M. Raymond Siran's letter about the D'Yrsan. As M. Siran pointed out, there is no difference in the prices of the Aero Morgan fitted with "the famous Blackburne engine" and the touring D'Yrsan—both cost £140—but

Price Comparisons.

there is a difference in the equipment. The Morgan specification includes a lighting set, but £16 10s. is charged for this item in the case of the D'Yrsan, and Morgans have S.S. tyres fitted as standard, while a charge of £2 per wheel is made for this refinement on the D'Yrsan. The D'Yrsan, however, scores with a hood. The flat-out speed of the touring D'Yrsan is said to be 53 m.p.h., while the Aero Morgan has a guaranteed speed of 70 m.p.h., which can be increased to 75 m.p.h. by the use of special cams.

As for M. Siran's remarks about the twin-cylinder voiturettes not being sufficiently robust and not standing up well enough to hard wear, does he know that for 15 years perfectly standard Morgans—many of them driven by amateur owners—have been winning themselves valuable

awards in Britain's classic reliability trials? Surely this provides ample proof of their sturdiness.

The Morgan is claimed to be the car which has gained more awards for speed and reliability than any other, and M. Siran must remember that a Morgan has attained a speed of over 104 m.p.h.

I appreciate M. Siran's invitation to British three-wheeler owners to meet French cyclecar drivers, and I am sorry to see no one has accepted the challenge. I am, however, not very surprised, for the average English three-wheeler owner could not afford the expense of conveying himself and his bus to France, let alone meeting the entry fee and running expenses, which would amount to no small figure.

Perhaps, however, we impecunious enthusiasts will have an opportunity of meeting French cyclecars, and particularly D'Yrsans, when the Brighton track is opened. Until then our annual official "blind" is confined to the M.C.C. high-speed trial. This, by the way, is, I believe, also open to D'Yrsans. Shall we have an opportunity of seeing them take part in the event this year?

V. A. CATION.

OUR READERS' OPINIONS (contd.).

Constant-vacuum Carburetters.

I have been very interested in the article by Mr. L. Mantell, in your issue of February 4th, on high-speed-engine carburation, but there is just one paragraph regarding constant-vacuum carburetters which

**Flat-spots
Eliminated.**

I do not think is quite fair to this type of instrument. Mr. Mantell deals all the way through his article with the difficulties which beset the manufacturers of fixed-choke carburetters when attempting to produce satisfactory running at all speeds. He admits that, in order to get power at high revs., it is necessary to have a large choke; he also admits that with a large choke the vaporization at low speeds on full throttle is poor; but he states, in the paragraph to which I take exception, that the "hanging-on" qualities of the constant-vacuum carburetter are not so good as those of the fixed-choke. The question of "hanging-on," to my mind, means a wide-open throttle and low engine speeds. Surely this is one point wherein the constant-vacuum carburetter is bound to score, owing to the gas speed being kept up by a moving dashpot?

He then goes on to state that, "as the engine speeds mount up and up, and the choke sizes are, willy-nilly, obliged to follow, we are gradually approaching a limit where revision of basic principles may be necessary if the combined qualities of low speed, flexibility, high revs., acceleration and economy are to be retained in one carburetter." Surely each of these five headings are amply answered by the constant-vacuum carburetter.

Mr. Mantell further goes on to say that it is difficult to expect a "sports" car with a high guaranteed maximum speed to perform at low speeds on top gear, and also to make it possible to accelerate by opening the throttle

quickly, as, due to the choke size it is necessary to use on a fixed-choke carburetter, the gas speed is low and the vaporization very poor at low engine revs.

In the company with which I am associated at the present moment (Messrs. Bentley Motors, Ltd.) we claim that our sports model has a high maximum speed, together with excellent flexibility, and it is possible to go from 8 m.p.h. to 85 m.p.h. in top gear—I am speaking now of genuine speeds, and not speedometer—without any suspicion whatsoever of a flat-spot. It is also possible for the driver to give his engine full throttle in top gear from 8 m.p.h.

In order to do this we have standardized two S.U. carburetters, mounted on a common induction pipe; this arrangement gives excellent results, and very little trouble, from an owner's point of view. On our long chassis, which is built for saloon bodies, we fit the 5-jet Smith carburetter, which also has the same characteristic, as regards driving, as the S.U.

I have driven many of our cars which have been fitted up with fixed-choke carburetters, and in each and every case have had the trouble which Mr. Mantell brings up in his article—either a bad flat-spot or inability to open the throttle quickly at low revs. on top gear.

I do not like entering into an argument with a man with the reputation of Mr. Mantell, but I think he has been a little unfair to a type of carburetter which, if it had not been for price-cutting, would have been fitted to far more cars than at present. I believe, however, that one day soon we shall see the constant-vacuum carburetter fitted again on the cheap cars, as the "moving parts" to which Mr. Mantell refers, in my own experience, do not give the trouble which he would lead us to believe.

H. KENSINGTON MOIR.

Writ Sarcastic.

Mr. F. Lionel Rapson hardly does credit to the "incomparable little Austin Seven" which passed him. He should have added that as the "Seven" passed him the driver leaned out and asked for the loan of a plug as he was only "firing on three."

THE PUP.

"Franco-British Developments."

I read with considerable interest your leading article on the above subject. I am quite sure it is far better from this country's point of view to have foreign concerns bringing their factories here and employing mainly British workmen to make their goods than to have the goods made entirely in the country of origin and merely brought in here after paying duty for bringing them in.

**Competing on
Equal Terms.**

Foreign firms manufacturing here compete fairly with British firms. They compete with the same disadvantages of rates and taxes, cost of labour and everything else. They will find their manufacturing difficulties are quite different from those in their own country.

S. F. EDGE.

More "Whys" for Motorists.

The article entitled "Why," in your issue of February 4th, has many points therein which might be taken to heart by a large number of present-day, ordinary motorists. No one can understand why motorists should cut-in, insist on overtaking

**Toleration
Necessary.**

sporty looking cars, and suddenly rush past with "a whizz and a honk." The latter is more often than not a heartrending scream of a fancy siren.

We all know that motorists are heavily taxed in order to keep the road in good condition for their use, but I am sorry to see that your contributor should belittle that "noble animal" the horse. Oh, yes; I am grown up, and still think that the horse is a noble animal. I am a motorist myself, but can anyone say a car is nearly such a fine tonic to the senses as the sight of a thoroughbred hunter with its own will and its power of calling forth the best in man? Our town horses are quite used to noisy motor vehicles of all kinds, so if they do occasionally bar the way to the almighty motorist by sudden side steps, may it not be excused as a sudden turn by a taxi driver is excused—and expected?

B40

A sports model is just as out of place in the centre of a busy town as a horse.

Now for another "Why" for motorists to answer! Why is it that motorists have grown to think that the roads belong to them? The roads throughout the kingdom were founded by the public in general, whether they pushed barrows or drove horses. The driving of motorists is as much a thorn in the sides of other road users as the driving of other vehicles is to motorists. Therefore, let us tolerate others as they tolerate us.

FIFTY-FIFTY.

CONDENSED CORRESPONDENCE.

The Hooley steering camper for Morgans is highly spoken of by Mr. C. A. Stratham, who recently fitted one to his Aero model. His car had previously been subject to wheel wobble, but this has been completely cured and, to use his own words, "cornering is a sheer joy."

Mr. David C. Marsland writes in praise of the Jowett, and gives an account of a recent trip from Catford to Abergavenny and back, which he undertook with three passengers (in addition to himself) and a certain amount of luggage. The total distance was 344 miles, and the running time was little more than thirteen hours.

Following Mr. F. Lionel Rapson's letter regarding the speed of Austin Sevens, "HU 7689" writes giving an account of a run which he made from Bristol to Humberstone, near Grimsby. Two suitcases, a gun and a small table were carried in his Austin Seven, in addition to himself and his passenger, and the journey, which was 210 miles in length, was accomplished at an average speed of slightly over 32 m.p.h.

INFORMATION WANTED.

JOWETT.—Owners' experiences of the two or four-seater models would oblige.—G. H. Arnall, 11, Hampton Road, West Bridgford, Notts.

SINGER JUNIOR.—Readers' experiences of this car would be very much appreciated.—"Prospective Buyer," care of O. J. Barnett, Church Street, Ilangefni.

CLYNO.—Experiences of the 1924 11 h.p. model would be welcomed; the opportunity to buy or borrow an instruction book dealing with this car would also be appreciated.—J.H.B., 57, Tynley Road, Bickley, Kent.



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From these sealed cabinets you can buy exactly the same oils which held the world's greatest speed records in 1926 for car and motor-cycle.



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FEBRUARY 18, 1927.

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CLUB ITEMS

Reports and Announcements of Sporting and Social Events.

CATFORD AND D. M.C.

The Catford and District Motor Club's annual dinner and dance is being held to-morrow, Saturday, February 19th, at Maison Lyons (opposite the Trocadero), Shaftesbury Avenue, London, W.1.

J.C.C. YORKS CENTRE.

A hatted and masked revel will be held on Saturday, February 19th, at the Mansion, Roundhay, Leeds. Guests may wear any type of hat and mask, and prizes will be awarded to the lady and gentleman (members or social members) remaining unidentified until the time for unmasking. Tickets (5s. 6d. each, including supper) may be obtained from Mr. R. J. Smith, Torridon Lodge, Headingley, Leeds.

"HARVEST MOON" TRIAL.

In reply to numerous inquiries the Woolwich, Plumstead and District Motor Club has received regarding the "Harvest Moon" Reliability Trial, the committee announce that this year the event will be held on September 10th and 11th, and it will be open to all clubs in the S.E. Centre. Competitors in the last "Harvest Moon" Trial who have not yet received their awards are asked to send their full names and addresses to Mr. W. F. Mills, 19, Kirkstall Road, Blackheath, who will post the awards immediately upon the receipt of the necessary particulars.

MORGAN MOTOR CLUB.

A very successful annual general meeting was held on February 5th and a "live" committee was elected. Mr. H. F. S. Morgan was again unanimously elected president and the following officers were appointed:—Hon. secretary, Mr. W. E. A. Norman; hon. treasurer, Mr. J. Yule; captain, Mr. E. E. Sanders; vice-captain, Mr. H. O'Brien; joint trials secretaries, Mr. H. Beart and Mr. J. C. Harris. The club congratulated itself upon securing the services of the two last-named as trials secretaries, and their appointment will meet with general satisfaction. A number of valuable prizes are to be competed for in the coming season, and the committee are busy organizing sporting and social events which should prove attractive to all Morgan owners. Inquiries will be welcomed, and should be addressed to Mr. W. E. A. Norman, 422, Upper Richmond Road, Putney, London, S.W.15.

THE ESSEX COUNTY AND SOUTHEND-ON-SEA AUTOMOBILE CLUB.

The annual general meeting took place on Friday, February 11th, at the hon. secretary's offices, 140, Broadway, Southend. Sir John Francis, the chairman of the club, presided. In the legal section, said Sir Francis, the club's hon. solicitor had given his services when called upon to act on the club's legal advice scheme. He concluded by mentioning the crippled children's outing, and said that this was an annual event organized to give all the poor and crippled children from the recognized Homes in the borough, as well as the necessitous adult blind, an enjoyable outing in the country. Thanks to the response of members, over 300 were taken to the Hyde, Ingatestone, Viscount Elvedon was unanimously re-elected president, and Mr. A. C. Nash was again elected hon. auditor. Mr. H. B. Snow, hon. solicitor, and Mr. Maitland Keddie, hon. secretary.

BRIGHTON AND HOVE M.C.

A very well-attended annual general meeting was held at the club's headquarters at the Royal Albion Hotel, Brighton, recently, and the following officers were elected:—President, Viscount Curzon, M.P.; vice-presidents for 1927, Mr. W. Chater Lea (ex-president), Mr. H. E. Close, J.P. (Mayor of Hove), Mr. J. Lord Thompson (ex-Mayor of Brighton), Mr. J. Major (Mayor of Brighton), Captain, Mr. J. G. S. Lee, representing the motorcycle section of the club. Mr. R. Tamkin was elected vice-captain, representing the motorcycle section of the club. The hon. secretary, Mr. C. L. Clayton, was re-elected, and a presentation was made to him in appreciation of his past services. Mr. K. E. Black was elected hon. treasurer, and the majority of the old committee were reinstated in office. In all, 16 events were arranged for 1927, including the Brighton to Beer trial, a 24-hour event, the dates being June 11th and 12th. The secretary mentioned in his report that £75 was handed over to local charities as the result of gymkhanas held for their benefit during the past season.

ULSTER A.C.

At a special general meeting held in Belfast on Thursday, February 10th, the new Free State regulations for private cars used for commercial purposes, and entering the south from Ulster, were discussed, and a deputation was appointed to confer with the Northern Minister of Commerce on the subject. The present police campaign concerning rear lights was also discussed, and with regard to the condition of certain roads around the city it was decided to make representations to the Antrim County Council. Mr. J. S. Garrett has been elected chairman for the ensuing year and Mr. Harry Ferguson vice-chairman.

FORTHCOMING EVENTS

February 19.

Colmore Cup Trial.
Catford and D. M.C. Annual Dinner and Dance.
J.C.C. Yorks Centre Social Event.
Cambridge University A.C. Eliminating Trial.

February 20.

Leeds M.C. Paper-chase.
Oozelum M.C. Run to Frant.

February 24.

Southern Jowett L.C.C. Social Evening.

February 26.

City of London M.A. Dance.
Bristol M.C. and L.C.C. Team Trial.
Oozelum M.C. Southern Trial.

February 27.

Leeds M.C. Winter Trial.
Wood Green and D. M.C. Sweepstakes Trial.
Woodford and D. M.C.C. Social Run.

March 5.

Inter-Varsity Hill-climb.

March 6.

Leeds M.C. Competition.
Liverpool M.C. Opening Run.
Woodford and D. M.C.C. Social Run.
Surbiton M.C. and Brighton and Hove M.C. "Spoon" Trial.

March 10.

Morgan M.C. Dance, Hotel Cecil.

March 12.

Southport M.C. Race Meeting.
J.C.C. Yorks Centre, Closing Dance.
Bristol M.C. and L.C.C. 1922 Secretary's Cup. Half-day Trial.
City of London M.A. Petrol Consumption Trial.

March 13.

Leeds M.C. Viking Cup Event.
Woodford and D. M.C.C. Semi-sporting Run.

March 19.

B.A.R.C. Brooklands Meeting.
Essex M.C. Winter Trial.

FROTH BLOWERS' TRIAL.

The North London Motor Club is arranging a half-day reliability trial on April 30th, which will be open only to members and prospective members of the Ancient Order of Froth Blowers. The A.O.F.B. has granted an open permit for the event, whilst car entries will be received from members of South Midland Centre clubs. Several tests of an unusual nature are to be included, and, as a large entry is anticipated, prospective entrants are advised to make early application for particulars from Mr. Alan W. Day, Ballard's Lane, Finchley, London, N.3. The whole of the profit on the event will be handed over to the deserving charity responsible for the existence of the A.O.F.B., i.e., "The Wee Walls."

THE COLMORE CUP.

Entries for the Colmore Cup Trial, which will be held to-morrow, February 19th, include eight three-wheelers and 13 light cars.

SOUTHAMPTON TO EXETER TRIAL.

The J.C.C. (South-western Centre) advises us that the date for the annual Southampton to Exeter trial has been fixed for Saturday, September 3rd.

MALVERN TRIAL.

Members of the Malvern and District M.C. and L.C. Club took part on February 15th in the first of a series of reliability runs organized by the club.

HUDDERSFIELD AND D. M.S.C.

Subject to arrangements being satisfactorily completed, it is the intention of the Huddersfield and District Motor Sports Club to hold the first hill-climb on the new site at Dalton Bank on Easter Saturday, April 16th. The membership fee is 7s. 6d.; this includes free admission to all hill-climbs and free parking of vehicles.

SOUTHERN JOWETT L.C.C.

The next social evening will be held on Thursday, February 24th, at Slater's Restaurant (adjoining Chancery Lane Tube Station), at 7 p.m. for 7.15 p.m. Whist will commence at 7.30 p.m., followed by music and dancing. Tickets may be obtained from the hon. secretary. Jowett owners in the London district who are not yet members of the club will be made welcome, and details of membership will be gladly given. The hon. secretary is Mr. E. A. Dudley Ward, 186, Tamworth Lane, Mitcham, Surrey.

PETROL CONSUMPTION TRIAL.

There is a very definite interest and value attaching to the results obtained from properly conducted petrol consumption tests, and it is unfortunate that practical difficulties have prevented the organization of such events except on a comparatively small scale. The City of London Motoring Association is, therefore, to be congratulated upon its enterprise in organizing a petrol consumption trial open to the South Midland Centre and to car members of the South Eastern Centre (A.C.U.). Prof. Lox, the club's new president, will act as steward. It is hoped that the experiment will receive the support to which it is entitled. Entry forms may be obtained on application to Mr. N. E. Hollis, 14, Bienenheim Gardens, Cricklewood, N.W.2. For members of the City of London M.A. the entry fee is 2s. 6d., for members of other clubs eligible to compete 5s. Silver cups and silver and bronze medals form the prize fund. The venue will be Stanmore on March 12th.

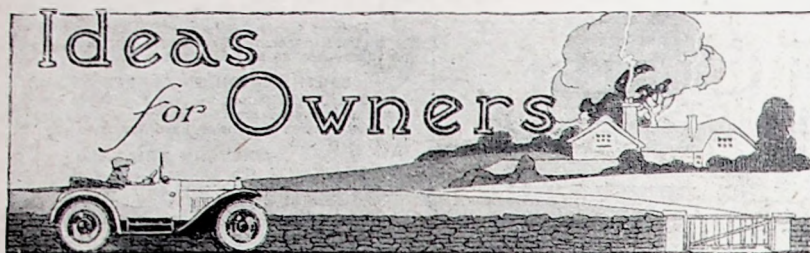
THE OOZELUM MOTOR CLUB.

The annual general meeting which was recently held proved to be a well-attended function. The following officers were elected:—President, Mr. J. Poynton Stewart; captain, Mr. C. D. Couradi; hon. gen. secretary, Mr. O. B. Moore; hon. trials secretary, Mr. I. J. Higgs; hon. treasurer, Mr. J. Board. In future applicants for membership will be required by the selection committee to pass a test of driving ability, which will consist of making a clean climb of a moderately severe hill about half a mile long in the Sevenoaks district. Any number of climbs may be attempted, but not more than twice on each occasion, when the tests are held. It has been decided to present the club colours in the shape of scarves to members who gain premier awards in any trials from March 1st onwards. The club run for February is to Frant, Sussex, to be held on the 20th. It is hoped that a number of members will support the southern trial on February 26th. The address of the hon. gen. secretary is 95, Warwick Avenue, Maidua Vale, London, W.9.

SURBITON M.C.

On Sunday, March 6th, the Surbiton Motor Club and the Brighton and Hove Motor Club will hold their first annual "Spoon" trial for cars and motorcycles. The event is to be run under the open-to-centre permits granted by the R.A.C. and the A.C.U. The trial is to be over a fairly easy course in Surrey and Sussex, and any competitor should be capable of competing without experiencing trouble. As the event is being organized by two clubs, two starting points have been arranged: entrants wishing to start from Brighton should apply to Mr. C. L. Clayton, 10, Prince Albert Street, Brighton; those in London to Mr. A. H. Davies, 197, Heath Road, Twickenham. The start will take place at 10.30 a.m., one section from Dyke Road, Brighton, and the other from Portsmouth Road, Esher. The London section will lunch at the Chequers Hotel, Esher, whilst the Brighton section will make their midday break at the Black Swan Hotel, Pease Pottage, near Horsham, at about 12.30 p.m. The afternoon circuit will be covered by the whole entry. The event will terminate at the White Horse Hotel, Henfield (10 miles from Brighton), about 4 p.m., when tea will be taken and a social evening held.

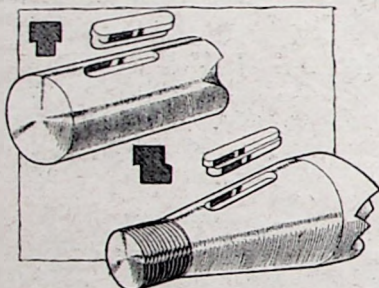
The organizers point out that the trial takes place over easy secondary roads, the course being about 65 miles in length. Entry forms can be obtained from, and fees (cars 4s. 6d.) and entries forwarded to, the respective organizing secretaries as mentioned. Entries must be submitted not later than February 26th, with fees.



We invite readers to send us hints gained from their own experience for inclusion in this feature. Five shillings will be paid to the sender of any hint published, but we cannot undertake to return contributions not used.

Saving the "Diff."

Motorists should remember that, if their rear tyres are not equally inflated, one wheel will go round faster than the other and the difference will have to be compensated in some way. An absorption of power, very noticeable, of course, in cars having no differential, results, whilst on cars with differentials needless wear of working parts is taking place.



Showing (above) a stepped and (below) an offset key, their sections and the keyways in the shafts into which they fit

Stepped and Offset Keys.

Sometimes, owing to neglect or other causes, a wheel which is keyed to a shaft will work loose, with the result that the keyway is enlarged. As a rule, the key remains tight in the shaft slot, but it is useless, because when the keyway in the wheel boss has been trued up by filing it will be too wide for the existing key. It is seldom convenient to increase the width of the shaft keyway, but by using a stepped key as shown in the accompanying sketch, the wheel may easily be refitted. Part of the key is filed to fit the existing shaft slot, whilst that which projects is fitted to the new enlarged slot in the wheel boss.

An offset key is very useful sometimes when it is desired slightly to alter the position of a gear wheel on a shaft. A key of this type is illustrated on this page, and it will be clear that a wheel fitted to the shaft would be moved forwards and backwards from its normal position by an amount equal to the offset of the key. When resetting the timing of an engine which it is desired to alter from standard it may be that one tooth difference in the meshing of the timing wheels is too much; by using an offset key any definite variation can easily be made.

B44

More About Side-screens.

A reader has found that the fitting of new celluloid into old side-curtain frames is greatly simplified if the celluloid is smeared with oil on the margins left for securing. Both sides of the margin should be covered with just a thin coating of engine oil. The sheet should be placed in position in the frame and the margins of celluloid and material sewn together by means of an ordinary domestic sewing machine, working slowly and using as long a stitch as possible. The secret lies in the light smear of oil, which allows the machine needle to pierce the celluloid without cracking it.

Improving Lighting.

An owner of an old car who used it only once a week and employed the battery to light his wireless valves in the meantime found that his weekly trip was not sufficient to boost up his accumulator. According to the maker's specification his six-volt dynamo was meant to charge at seven amps., but it did not do so. He overcame the trouble by having the dynamo pulley turned down, so that a higher gear ratio was obtained. This was found to keep an 80-amp. battery in good condition with wireless all the week and one driving evening in seven with five lamps lit.



Queries of general interest will be answered under this heading whenever possible, but a stamped addressed envelope must be enclosed for reply by post. Telephonic inquiries cannot be answered.

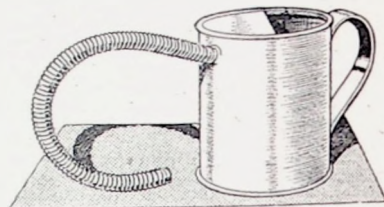
* W.O. (Leeds).—Yes, if you can prove to the satisfaction of the authorities that the engine of your car was built prior to January 1st, 1913, you will be entitled to a refund of one-quarter of the usual tax.

P.G. (Richmond).—The easiest way of converting kilometres per hour into miles per hour is to multiply by five and divide by eight. This is not strictly an accurate formula, but it is near enough for rough mental calculations.

S.N.G. (Manchester).—Adding alcohol to your petrol will have much the same effect as the addition of benzole. To use alcohol effectively a specially tuned carburettor is necessary and the compression ratio of the engine must be raised.

A Useful Filler.

An extremely useful can for flushing out gearboxes and back axles may be made from a large preserved-fruit or treacle tin with half the lid cut away. A hole should be punched in the side of the can near the half lid, and one end of a short length of ordinary flexible gas tubing soldered into it. A strip of metal, such as a Meccano strip, should be bent to shape and soldered on opposite the piping to form a handle.



A handy container for oil or paraffin which can be made up from odds and ends.

To Stop Flooding.

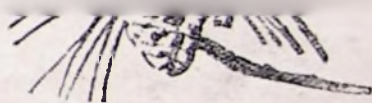
Users of Solex carburettors who find that, when the car is standing, petrol is inclined to drip, owing to the carburettor needle valve seating being not quite perfect, can make it absolutely leak-proof by first unscrewing the needle valve and its seating and fixing the steel stem of the valve in a vice. The point of the needle and the seating should then be given a liberal dose of metal polish, when the chuck of a hand brace pressed down on the convex top of the seating will allow it to be vigorously rotated. Give it a dozen or so turns, then apply some more metal polish. Repeat the process three or four times and a perfect seating will have been obtained.

E.D.P. (Fulham).—Continued and excessive pitting of the exhaust valves is due probably to insufficient tappet clearance when hot, too weak a mixture, retarded ignition or a choked exhaust pipe.

G.W.J.L. (Slough).—Slight leaks in your radiator may be stopped by using one of the compounds sold for this purpose. We do not advise you to use outmeal, as an excess of this in the cooling water would tend to block the tubes or passages which in many cases are very small in modern light cars. A repair by a concern specializing in this work should not be expensive.

E.A.D. (Newmarket).—The capacity of an accumulator is rated in ampere-hours and has nothing to do with the voltage. There are two forms of rating in use; these are known as the ignition capacity and the actual capacity, the former having a value twice that of the latter. You should concern yourself only with the actual capacity. A 60 amp.-hour (actual) battery should be charged at not more than 6 amps, that is, one-tenth of its capacity.

Winter Wisdom for Motorists!



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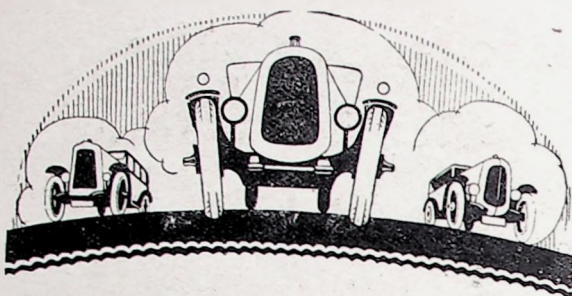
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AROUND THE TRADE.

W. G. Nicholl, Ltd., of 50-54, Whitecomb Street, Leicester Square, W.C.2, inform us that owing to the increased accommodation which they have arranged they have been able to reduce their charges for garaging.

Ettore Bugatti Automobiles, 1-3, Brixton Road, London, S.W.9, claim for Bugatti cars 418 wins, including the championship of the world for 1926 and 45 records, all gained in eight months. Certainly a record of which to be proud.

The latest Calthorpe catalogue is an extremely interesting production. It contains, in addition to very full particulars concerning various types of car marketed by this concern, clear illustrations of both chassis and fully equipped Calthorpe cars.

A long-felt want has been supplied by Mr. E. Moore, 419, Stoney Stanton Road, Coventry, who has produced the "Kushi" kick-starter for Morgans. The fitting of this device, which incorporates an automatic exhaust valve lifter, makes starting up far more simple.

Excellent value for money is offered by Goddard's, Ltd., Vicarage Lane, Hford, Essex, in connection with ready-to-erect garages. Well-seasoned timber is used and the quality of the work is very good. A structure 12 ft. long by 8 ft. wide can now be obtained for £10 5s.

Mr. R. G. Ash, export director of the Austin Motor Co., Ltd., who left England on Wednesday, February 16th., on a visit to the principal cities of Brazil, the Argentine Republic and Uruguay.



It is interesting to note that the lighting of the Somerset Caves at Wookey Hole, which will be shortly opened to the public, has been carried out by the General Electric Co., Ltd., of London. A system of G.E.C. flood lights has been adopted which will enable visitors to tour the caves and inspect the many items of interest which for centuries have remained hidden from view.

Henlys, Ltd., of 91, 155 and 156, Great Portland Street, W.1, by arrangement with the Dunlop Rubber Co., Ltd., recently conducted a party of their customers over the up-to-date works at Fort Dunlop. Actually, it would take several days to make a comprehensive inspection, but the party was shown many exceptionally interesting processes of manufacture.

Fort Dunlop advises us that Capt. Malcolm Campbell has written to Sir George Beharrell, managing director of the Dunlop Rubber Co., Ltd., explaining the nature of the misadventure which befell his car during the record-breaking attempts on Pendine Sands. His cover did not, as was stated in certain quarters, burst on that occasion: it was punctured by one of the many sharp sea-shells thrown up by the heavy seas.

One of the most interesting and unusual reconstructions which they have undertaken was recently carried out by Barimar, Ltd., the scientific welding engineers, for Messrs. Mears and Stainbank, the well-known bell founders. The repair related to an ancient bell, which was extensively damaged and consequently useless. The bell, which is one of the oldest in the country, was successfully repaired without sacrificing its clarity, an 8-in. crack being satisfactorily welded.

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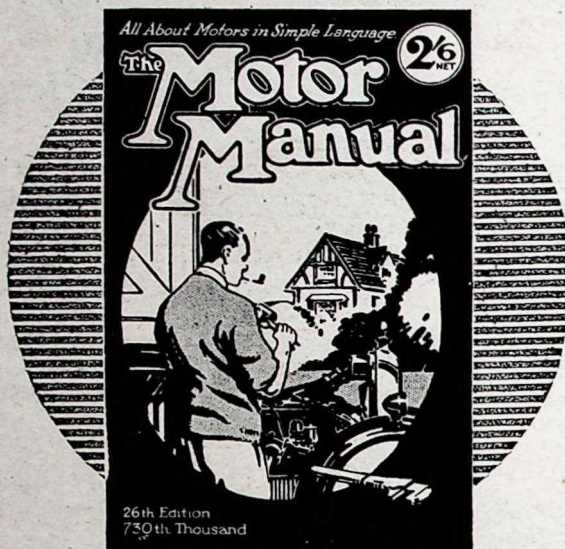
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Motoring in a Nutshell



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"The Motor Manual" is written in a concise and easily comprehensible way, and omits no item of information likely to be of interest or service to the motor vehicle user. Any former text and illustrations, where retained, have been revised, brought up to date and re-arranged. A detailed diagram illustrating a typical modern chassis is included as frontispiece. The volume deals fully and clearly with engine types, construction

and operation, valves, etc.—carburation, cooling and silencing—transmission system, from clutch to final drive—braking systems—ignition, starting, lighting—bodywork and equipment, wheels, tyres, accessories—choosing, housing and maintaining a car—repairs and renewals—touring—legal matters, etc., etc. It also gives at length much practical motoring data and information, including an extensive glossary of motoring technical terms.

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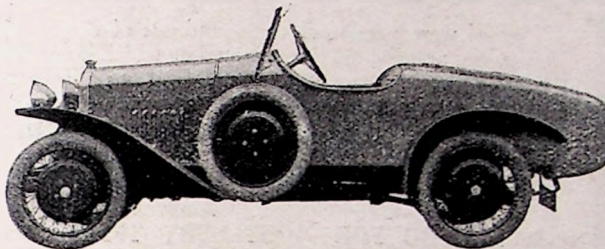
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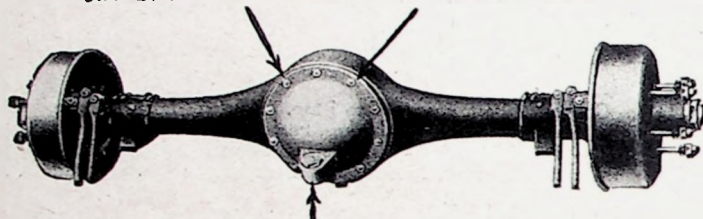
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THE MOTOR ELECTRICAL MANUAL

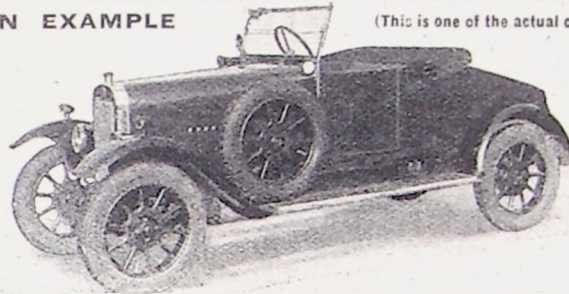
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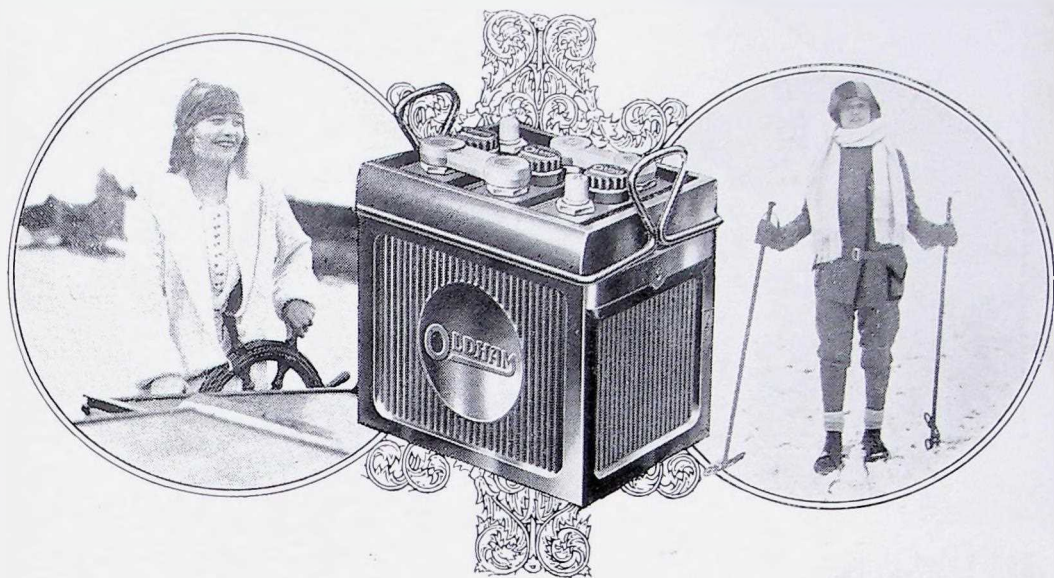
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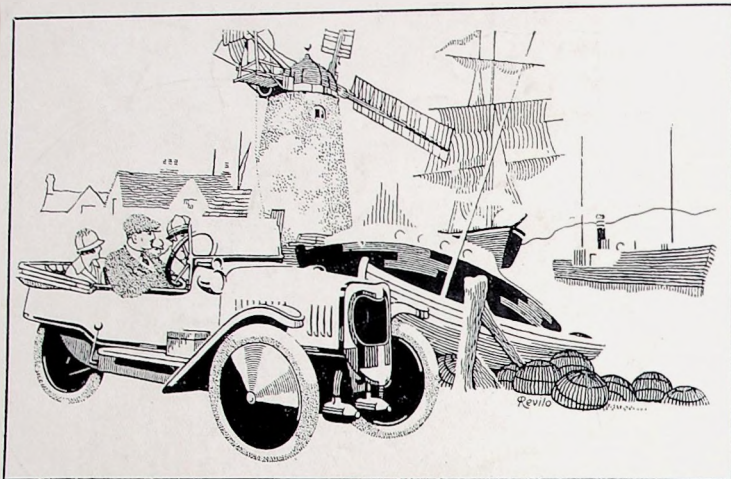
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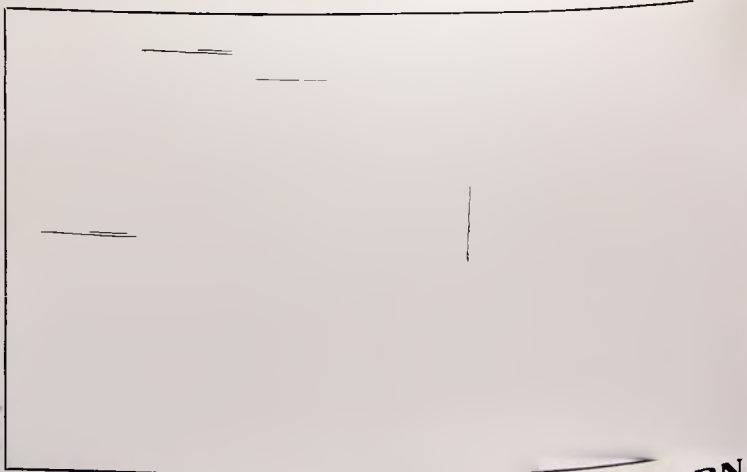
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