

1^d

The Light Car and Cyclecar

Vol. VIII, No. 187
19th June, 1916
*Registered at the G.P.O.
as a Newspaper.*



*"In the valley
of the Mole."*

Small and apparently insignificant

as they are, *sparking plugs* have such a direct bearing on the actual efficiency and economical running of your engine, that it is never worth while running risks with them.

If you have the very *best* plugs obtainable you cannot go far wrong.

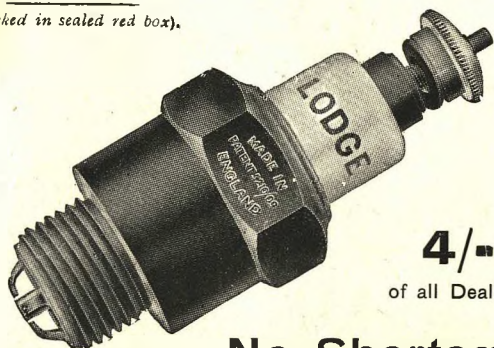
Therefore, your wisest course is to fit only

LODGE PLUGS.

Designed for Maximum Power.
Recognised as the best throughout the world.

The Lodge Sparking Plug Co., Ltd.,
Birmingham and Rugby.

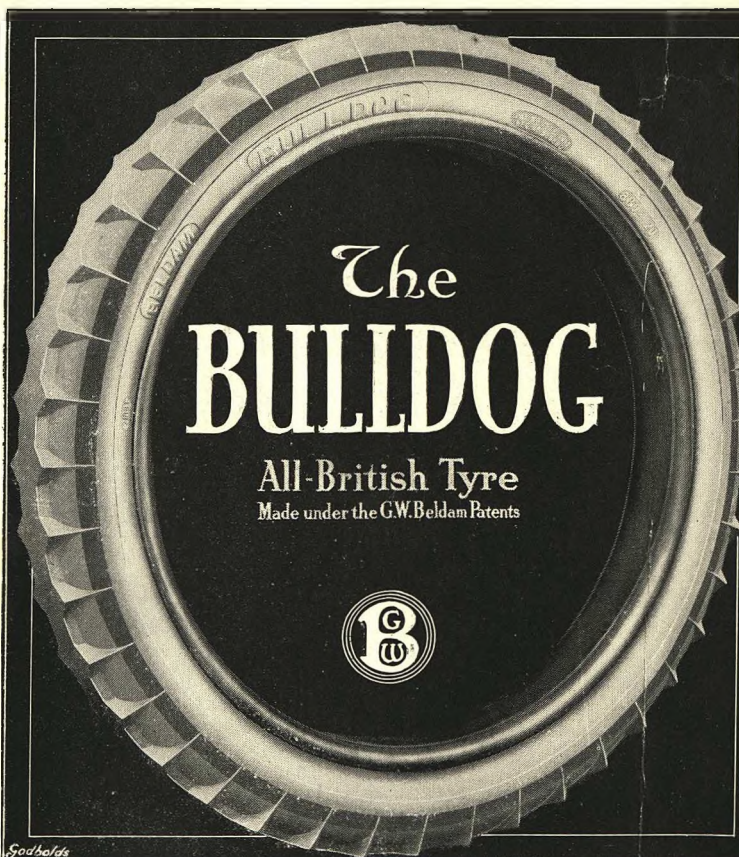
Standard Model
(packed in sealed red box).



4/-

of all Dealers.

No Shortage



THE "BULLDOG" Tyre is made with the scientific Beldam design of rubber tread—which affords an unparalleled road-grip. It is built to a very high standard at a moderate price—there is no other tyre which gives so much quality value for money.

Note the prices quoted and send your order to-day. All standard sizes stocked; write for complete list.

Size.	Price.	Code Word.
650 x 65	£1 10 9	Busser
700 x 80	1 14 0	Buvus
700 x 85	1 15 0	Buvox
710 x 90	2 9 9	Butis
760 x 90	2 14 3	Burgus

THE BELDAM TYRE CO., LTD.,
Brentford, Middlesex.

Agent for New Zealand: J. F. Fitzgerald,
139, Lambton Quay, Wellington.

“Several miles per hour faster,” after fitting “Duco” Spring Gaiters

SPARTON

The Aggressive
WARNING SIGNAL

The best motor alarm you can buy. Makes a noise that clears the way half a mile ahead.

The Sparton warns! It doesn't make pretty music, but—it warns!

Its clear dominant note crystallizes the hesitant pedestrian's thought—it makes him move.

And since it warns in good time, he has no grudge against the Motorist.

The hand-operated Sparton gives a deep sonorous warning equal in tone to the best electric signal. Supplied in black and brass, black and nickel, or all black at the same price 21/-

Sparton Electric Warning Signals operate on the lowest possible current consumption, and give a greater volume of sound than any other similar alarm.

Write for Sparton Catalogue.

Genuine Platinum-tipped Coil Blades for “K.W.” Coils. More durable and give better results than tungsten-tipped blades.

9/- each.

Autoclipse

BULBS

(Drawn Wire Filament). The drawn filament used is tough, durable and absolutely vibration-proof. All voltages and c.p.'s for various makes of cars.

AUTOCLIPSE HALF-WATT BULBS.

Give twice the light for the same energy as ordinary metal filament lamps. The great gain in efficiency and brilliancy is not obtained by a sacrifice of life or durability. Supplied for 6, 8 and 12 volts.

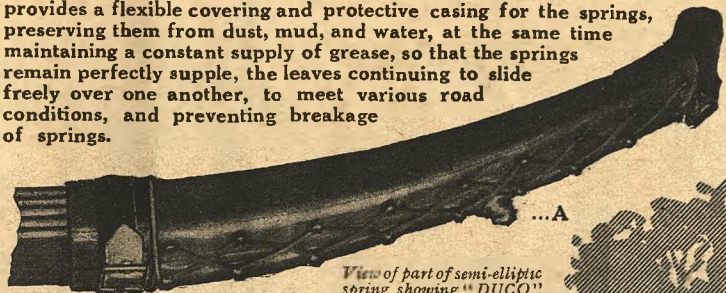
The Accessories Illustrated are obtainable from Motor Garages everywhere. In case of difficulty communicate with our Showrooms 15, NEWMAN STREET, W.

Mr. A. J. Wilson writes to “The Autocar” of May 27th: “I had a set fitted to a four-year-old car some two months ago, and now that the grease has thoroughly worked its way between the rusty leaves of the springs, I find not only a distinct improvement in comfort, but the car is several miles per hour faster, the easy springs, of course, neutralising inequalities of road surface.”

The “DUCO” SPRING GAITER

(Joseph's Prov. Patent)

provides a flexible covering and protective casing for the springs, preserving them from dust, mud, and water, at the same time maintaining a constant supply of grease, so that the springs remain perfectly supple, the leaves continuing to slide freely over one another, to meet various road conditions, and preventing breakage of springs.



View of part of semi-elliptic spring showing “DUCO” Spring Gaiter attached. “A” is the lubricator where grease is injected.

“DUCO” Spring Gaiters rehabilitate the springs, causing them to function properly, making the car extremely comfortable to ride in and to drive. Shock Absorbers and supplementary springs are quite superfluous.

“DUCO” Spring Gaiters improve the appearance of the car, and are equally suitable for all types of springs. When once fitted they need not be removed, but simply replenished with grease from time to time.

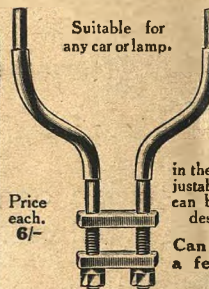
Prices from 10/6

Descriptive Pamphlet and Measurement Form sent on request

Autoclipse

REGD TRADE MARK

Adjustable LAMP BRACKETS. I FOR LIGHT CARS.



Suitable for any car or lamp.

For bolting to dumb iron. Suitable for lamps with round brackets. No holes to be drilled in the chassis. Adjustable in width; can be set at any desired angle.

Can be fitted in a few minutes.

Price each. 6/-

RAYBESTOS

The Brake WEARS Lining that Taxis and Companies choose Raybestos for WEAR. They've tested. They know. Frequently, Raybestos serves for 50,000 miles before requiring replacement. No-Brake Lining is nearly so good as Raybestos—the Raybestos booklet will tell you why.



Look for the Silver Edges

Brown Brothers

Head Offices and Wholesale Warehouses:

GREAT EASTERN STREET,
LONDON, E.C.

TRADE MARK



(Regd.)

267-273, Deansgate, Manchester. Showrooms: 15, Newman St., W. And at Paris.

Australasian Showrooms: 328, Flinders Street, Melbourne. South African Representative: E. G. Higginson, P.O. Box 1269, Johannesburg.

TO THE READER

By mentioning “The Light Car and Cyclecar” when corresponding with advertisers, you will be working for the cause of the new motoring.

A1

AN ECONOMICAL BASIS

"Henley" Tyres can be relied on

for the maximum mileage possible from any Pneumatic Tyres, although they cost no more than others, therefore reducing your running cost to the minimum.

Manufacturers :-

W. T. HENLEY'S TELEGRAPH WORKS CO., LTD.

Tyre Department :-

18, NEW UNION STREET, MOORFIELDS, E.C.

Telephone No. : 3886 London Wall.

Telegrams : "Hetewocol, Ave, London."



ORDER FORM.

.....1916.

To.....(Newsagent).

Please reserve for me each week a copy of "THE LIGHT CAR AND CYCLECAR," for which I will call.

(Alternatively)

Please deliver a copy of "THE LIGHT CAR AND CYCLECAR" to me each week, until further notice.

Name.....

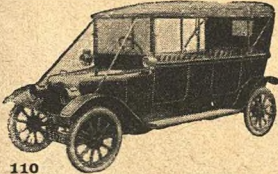
Address.....

R. E. JONES

GARAGES LTD

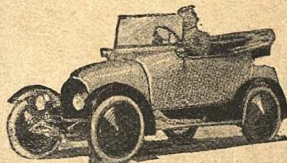
THE LIGHT CAR SPECIALISTS

6 GUINEA TAX.



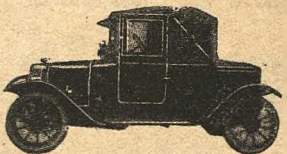
110
Late model 4-seater **LAGONDA**, done very little mileage, condition as new £170

6 GUINEA TAX.



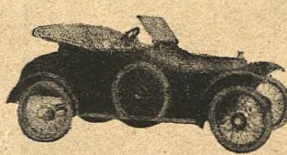
111
BABY PEUGEOT, with our special design body, racing model, disc wheels, hood, screen, speedometer, many extras, scarcely used. Property of an officer £180

6 GUINEA TAX.



115
1915 **LAGONDA**, coupe, in new condition, guaranteed perfect .. £145

6 GUINEA TAX.



116
1914, 4-cyl., 10 h.p. **ENFIELD** Autolet, wire detachable wheels, four new tyres, splendid condition .. £150

— WE ARE —

CASH BUYERS for Modern Light Cars.

NEW CARS.

SINGER, standard model, just delivered, dynamo lighting £275

McKENZIE, just delivered, C.A.V. dynamo lighting .. £220

G.W.K., standard model .. 185 Gns.

SAXON, self-starter and electric light £175

WHITING-GRANT, electric light, self-starter £160

BABY PEUGEOT, sporting model, fitted with hood, screen, and boot £165

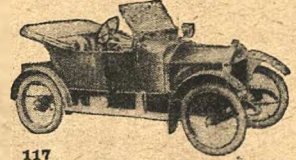
A.C., 10 h.p., latest model .. £225

Delivery Charges Extra.

TO IRISH BUYERS:

We have, in Belfast, a **BABY PEUGEOT**, fitted with our design body, complete with 5 lamps, etc., in new condition £180

6 GUINEA TAX.



117
7.9 h.p., 2 cyl., **SWIFT** cyclecar, 1913 model, 3 speeds and reverse, staggered seats, luggage box at rear, Stewart speedometer, horn, acetylene sidelamps with generator, large ditto headlamps with generator, clock, repainted Norfolk Grey, splendid condition .. £95

6 GUINEA TAX.



118
1914, 10 h.p. **SINGER**, complete with 12-volt Rotax dynamo lighting set, repainted, and in splendid condition £185

6 GUINEA TAX.



119
1915, 10 h.p. **CALTHORPE**, Grand Duke Michael model, 12-volt dynamo lighting set, splendid condition throughout £200

6 GUINEA TAX.



120
1915, 10 h.p. **CALTHORPE MINOR**, 4-seater, dynamo lighting set, run only 500 miles, nominally second-hand £235

LONDON: 143-5, Gt. Portland St., W.
CARDIFF: City Road.
SWANSEA: (Head Office) Dillwyn St.

Telephone: Mayfair 2826.
Telegrams: "Erjonegara, Wesdo"
Telephone: 4686.
Telegrams: "Petrol, Cardiff."
Telephone: 1301 Central.
Telegrams: "Petrol, Swansea."

In Confidence

'Sphinx' plugs are really very good.



SOLD BY ALL DEALERS OF REPUTE.

THE LIGHT CAR LIGHTING SET

"THE TREDELECT."

£9 9s. 0d. £13 13s. 0d.

Lighting Set only. Complete with 5 Lamps
(as illustrated).

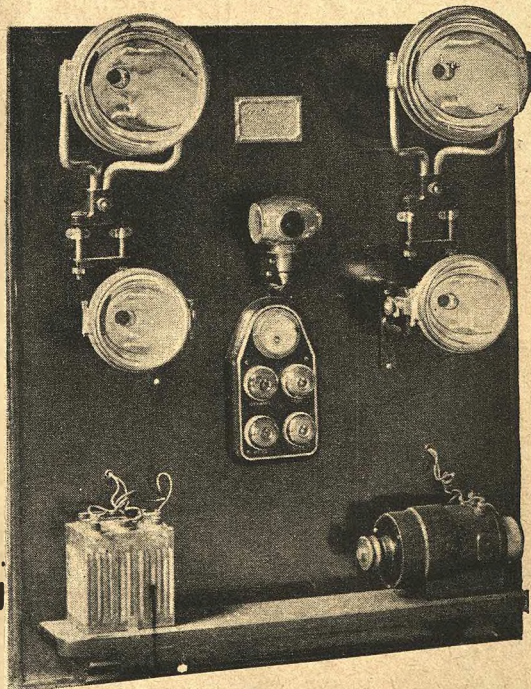
Simple in Construction, therefore
Reliable and Fool-proof. No Cut-
in Troubles. New Construction.

THE Thing for Light Cars

Existing lamps easily converted.

Illustrated Booklet sent post free on application to:

TREDEGAR'S, Lighting Specialists,
7, BROOK STREET, LONDON, W.



GOOD YEAR

ALL-WEATHER TREAD TYRES.



Road Shocks Can't Tear These Treads Loose.

Isn't it a fact that you never hear of loose treads on a Goodyear Tyre ?

That is due to the unique Goodyear method of joining the tread to the body of the tyre.

Every turn of the tyre in action subjects the tread to the attack of mighty forces which seek to tear it away and destroy it.

It is pulled this way and that by the driving effort.

It is rubbed and scraped when you put the brakes on, suddenly and hard, as you often have to do.

It would cry out in protest if it could, every time you drive round a corner.

The tread cannot absorb these

tremendous strains. It passes them on to the fabric.

And unless the tread is a perfect unit with the body of the tyre, tread separation soon comes, and the tyre is done for.

The Goodyear Breaker Strip is made from a specially woven porous fabric.

During the vulcanizing process, the rubber, forced through the holes in the fabric under the tremendous air pressure of the exclusive Goodyear On Air Cure, forms into tough rivets, and these rivets literally clinch or weld the tread to the body of the tyre.

And what is the nett result of these seemingly insignificant Goodyear features ?

Why, simply this—that loose treads on Goodyear Tyres are unknown.

In almost every instance the tread on Goodyear tyres will wear down to the breaker strip and through it, without splitting open.

This is one of many reasons why Goodyear owners ride with an easy mind.

Goodyear Tyres, Tubes, and Tyre-Savers are easy to get from Goodyear Service Stations Everywhere.

The Goodyear Tyre & Rubber Co.
(Great Britain), Ltd.,

Central House, Kingsway, - London, W.C.

Branches at Birmingham, Glasgow,

Dublin, Belfast, and Manchester.

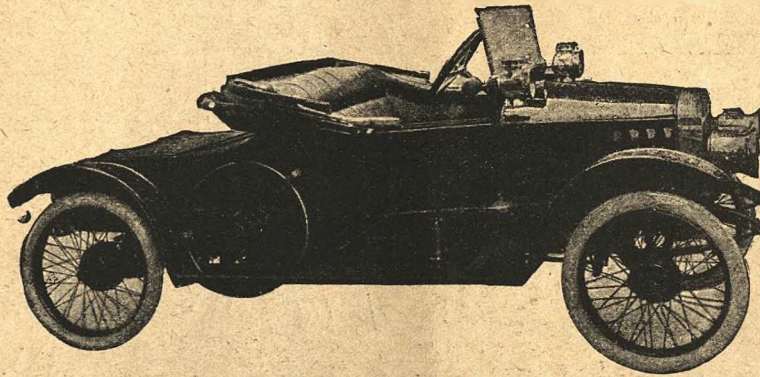
Canadian Factory, Bowmanville, Ontario.



TO THE READER

By mentioning "The Light Car and Cyclecar" when corresponding with advertisers, you will be working for the cause of the new motoring.

E1



G.
W.
K.

How many tests

prove the quality and efficiency of a light car? Take steps to discover the answer to this question before purchasing *any* car. Remember this also. Every G.W.K. light car has behind it not only numerous factory tests, but also the test of service of all its forerunners. In other words you can rely upon G.W.K. reputation. When you purchase, you have G.W.K. owners' opinions to rely upon. By them you know that "first day" efficiency lasts, that during manufacture every point to ensure *continuous* good service is considered.

COMFORT, flexibility, easy gear changing, and a "gear for every gradient" are features you must investigate before you can fully appreciate G.W.K. superiority. Write to-day and arrange a trial run.

STANDARD MODEL.—2-cyl. engine, water-cooled, friction drive, automatic lubrication (5 guineas extra), variable speeds and reverse, hood, screen, five detachable wheels (four with tyres), lamps and all tools, etc.

PRICE, 185 gns.

G. W. K. Limited,
Cordwalles Works, Maidenhead.

TELEGRAMS: - - CARS, MAIDENHEAD.
TELEPHONE: - - 562, MAIDENHEAD.

HOW TO USE PETROL SUBSTITUTES. (SEE CENTRE PAGES.)



The Light Car & Cyclecar

On leave. How a Carden motor is made to carry a passenger.

NOTES, NEWS AND GOSSIP OF THE NEW MOTORING.

Have you filled in your form?

If not, go to a post office and ask for Form 1 (for private owners).

If a doctor, ask for Form 2. The forms must be posted on or before Tuesday (to-morrow).

Details of the Petrol Census order appear on page 90, giving the questions to be answered.

A further rise in the price of petrol is anticipated according to one of our sources of information, which is usually correct.

Missing the bank holiday—and it was a veritable wet Monday—was like dodging the tax collector, but much more satisfactory.

Prices of oil have advanced considerably, so that, instead of paying 3d. less than the price marked on the tin, the customer usually has to pay 3d. more.

It is understood that there is no shortage of lubricating oil, which is strange in view of the presumed shortage of petrol, and might repay investigation.

Motorists in Ireland have to obtain their petrol through the local police authority, except in Dublin, where restrictions have now been removed. This is an echo of the recent "rebellion."

The American trade motor journals are full of cartoons on the high price of petrol (gasolene). This will probably lead to the manufacturers redesigning their engines, as they have never before had to study the price of fuel, as English purchasers know to their cost.

We have now reached the latest hour for lighting up.

It continues at 9.49 p.m. (Greenwich) for the rest of the month.

On Wednesday and Thursday next the sun rises at 4.44 a.m. and sets at 9.19 p.m. (Greenwich, summer time). The 21st June is fractionally the longest day.

Who is the motorist who has written to the Press, as alleged by the "Glasgow Herald," that he intends to discard two of his four cylinders if the new taxes are passed? Some leg-pulling?

Canon Davies, vicar of Wrexham, was recently a defendant in a motor case. A police witness stated that it was a low car, "like a racer." We all know what the police consider to be a racing car, a cyclecar to the bucolic constable being invariably such, and it is not surprising, therefore, to find that the canon was duly fined.

"The whole engine was only a little larger than a soup plate, about 8 h.p.," writes a correspondent to a contemporary. Such a comparison of sizes is fascinating. Thus the con rods were no longer than dessert forks, and the valves are the size of teaspoons, while, of course, the consumption is four tablespoonfuls every quarter of an hour.

Interesting features in our pages this week include a report of the Barcelona-Madrid race; official details of the Petrol Census; a report of the way the classified users of petrol scheme is working; an important article by an expert on the use of heavy fuels in light car engines; an interesting analysis of American motorcar practice; etc.

NOTES, NEWS AND GOSSIP (contd.).

Another Appeal.

The Economy Committee has issued yet another appeal to civilians not to use petrol and motorcars. This time we are told that people who use goods unnecessarily prolong the war. Well, those who issue appeals not to use petrol when it is practically unobtainable are not exactly shortening the war.

A Nest Egg.

(8 h.p. Humberette, 1913, air-cooled, £650.—Advertisement, Harrod's, Ltd., THE LIGHT CAR AND CYCLECAR, 5th June.)

Are the days of my toil,
To earn money for oil
And petrol, mere things of the past?
Am I nursing an egg
Which is golden? I beg
You'll tell me my ship's in at last.
Can this really be true?
I don't know what to do,
For I'm half off my head with delight;
But, trembling with terror
For fear it's an error,
I'm asking help out of my plight.
So tell me, I pray, can I honestly get
Six hundred and fifty for my Humberette?

BARCELONA-MADRID

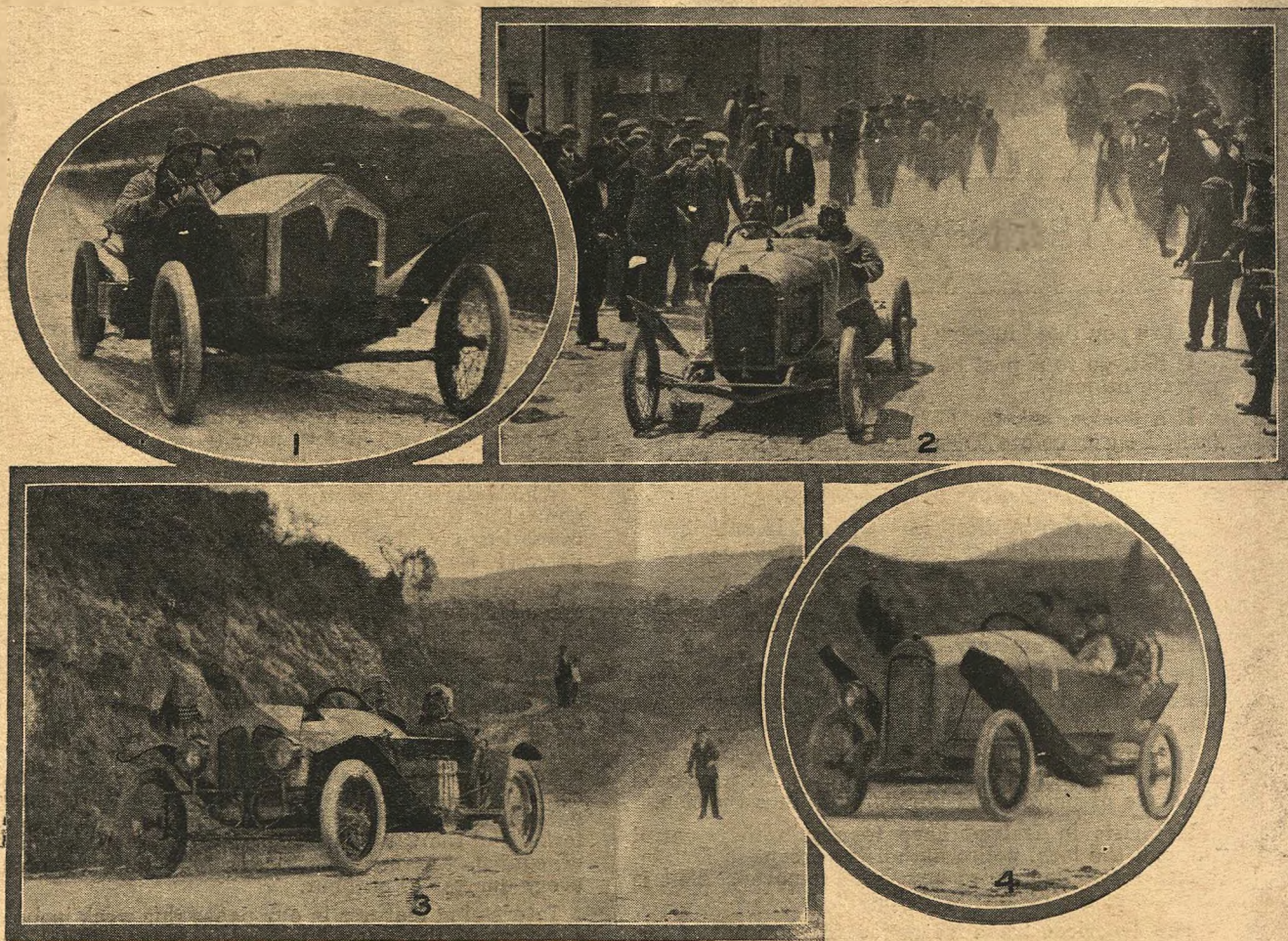
Six Cyclecars and Four Light Cars Finish.

THERE were no fewer than 22 entries for the great race to Barcelona to Madrid and back, which took place on the 1st, 2nd, 3rd and 4th June. The race was in four stages: Barcelona to Zaragoza, 306 kilom.; Zaragoza to Madrid, 320.2 kiloms.; Madrid to Zaragoza, and Zaragoza to Barcelona, a total distance of 1235 kiloms.

No fewer than 10 David cyclecars competed. The David is a belt-driven machine, which proved the winner in the last Barcelona race. There were five Ideal light cars, one being driven by the Marquis de la Laguna de Cameros, two D. and G. light cars, and several other makes.

The race was over bare and hilly roads, on which the cyclecars showed up exceedingly well. Our Spanish correspondent writes:—"The cyclecars again beat the light cars all along the line, clearly showing that the former are far more practicable for speed on bad roads. The number of cars that finished the race proved the quality of Spanish construction. The road was quite appalling, even for Spain, and for this reason the speeds obtained have surprised motorists in this country."

No fewer than 15 cars finished the first stage, the time of the winner being 6 hrs. 31 mins., this being



A GREAT CYCLECAR AND LIGHT CAR RACE FROM BARCELONA TO

(1) J. M. More, who made fastest time between Barcelona and Zaragoza, on a David cyclecar. (2) Claraso, on a D. and G. light car, who was placed second in the final classification. (3) Another David, driven by Ricart, who finished seventh. Note the mountainous character of the country. (4) The Marquess de la Laguna de Cameros, who finished fourth on an Ideal light car.

CYCLECAR RACE.

A Four-day Road Race of 1235 Kilometres.

J. M. Moré on a David cyclecar. Allán on another David was second (7 hrs. 27 mins.), and Ll. Gué was third (7 hrs. 29 mins.) on a David, while another David was fourth, followed by a D. and G. light car. The Marquis de la Laguna finished 10th in this stage. The average speed of the winner was 46.9 kiloms. per hour.

In the second stage, from Zaragoza to Madrid, Ll. Gué on a David came to the front, his time being 6 hrs. 31 mins. The winner of the previous stage had dropped out, while the second man, Allán, had fallen back to 10th place. Twelve competitors finished this stage, the average speed of the winner being 49.4 kiloms. per hour.

The third stage, from Madrid to Zaragoza, was again won by Ll. Gué, Allán second, and Claraso third on a D. and G. The Marquis de la Laguna on the Ideal had worked up into fifth position. Ten competitors finished this stage, the winner's time being 7 hrs. 0 mins. 44 secs., average speed 45.9 kiloms. per hour.

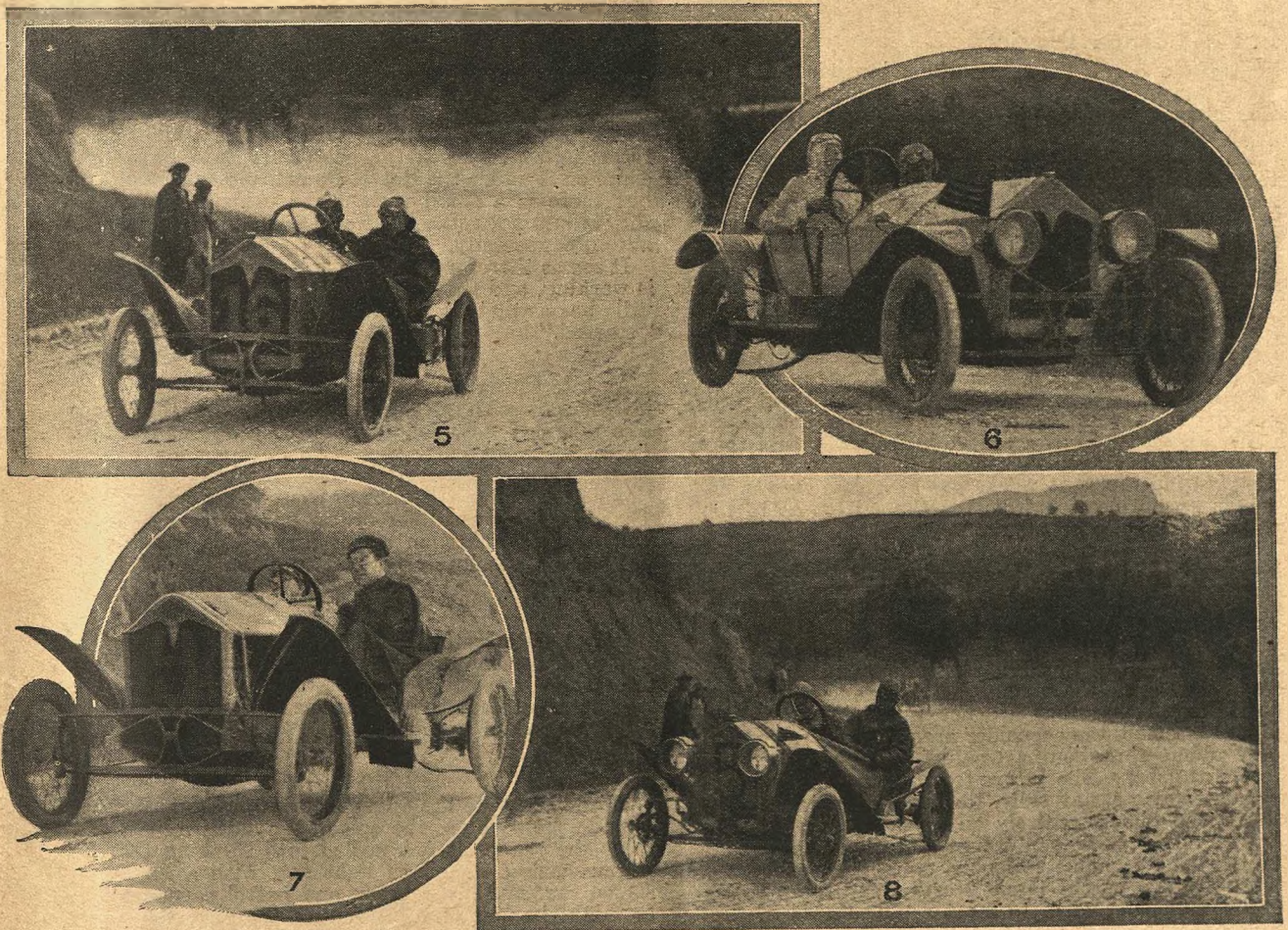
The fourth and last stage was Zaragoza to Barcelona, and was a surprise, for the winner proved to be R. Moré on a David, who actually finished last in the second stage. The Marquis de la Laguna was second.

Arruga on a David third, and Ll. Gué on a David fourth. The winner's time was 7 hrs. 4 mins. 40 secs., with an average speed of 43.2 kiloms. per hour.

The final placing was a win for Ll. Gué on a David, whose total time was 28 hrs. 28 mins. 24 secs., giving an average speed of 44.12 kiloms. per hour. Claraso (D. and G.) was second, his time being 32 hrs. 3 mins. 29 secs.; Tapias (David), time 34 hrs. 5 mins. 30 secs., was third; while the Marquis de la Laguna on the Ideal finished fourth, 34 hrs. 37 mins. 25 secs. Ten competitors finished—six David cyclecars, two Ideals, and two D. and G. light cars. The David cyclecar of one competitor caught fire in the third stage and was completely destroyed. The David cyclecar of M. Tapias, who finished third, was fitted with an air-cooled M.A.G. engine, the other Davids being water-cooled.

Our Front Cover.

There is not a more beautiful stream in the county of Surrey than the Mole, especially where it winds under the white escarpment of the North Downs. The photograph on our front cover this week is taken from the road between Reigate and Dorking, just after it crosses the river, sweeps round to and doubles back on its course. The half-wooded slopes of Box Hill rise in the background. The light car is a 10 h.p. Swift.



MADRID AND BACK (1235 KILOMS.) RUN OFF ON 1st TO 4th JUNE.

- (5) Ll. Gué, the winner, driving a David belt-driven cyclecar. He made fastest time in the second and third stages. (6) R. More, driving a touring David, who made fastest time in the fourth stage. (7) Tapias, with an air-cooled M.A.G. David, who finished third. (8) Alfredo Arruga, who also drove a David and finished fifth.

PETROL SUPPLIES.

How the Scheme of Classified Users is Working.

IN view of the importance of the matter to readers who are private owners of cars used mainly for business or professional purposes, we have made diligent inquiries as to how the new scheme of the Petrol Control Committee is working.

As stated in our last issue, letters have been sent to the retailers of motor spirit instructing them as to the order of priority in which their customers are to be supplied, so that preferential users shall be guaranteed their necessary requirements of petrol. The doctor and the commercial traveller come into these preferential classes, but many business users of motor-cars do not, while petrol is not reserved for even necessary recreative motoring, or for such a charitable purpose as taking out wounded soldiers. Our inquiries serve to show that at present, owing to the fact that there is practically little or no motoring for pleasure taking place, there is not a serious difficulty in obtaining petrol for legitimate purposes. On the other hand, our information is to the effect that supplies are being cut down, and the user of a car who runs short on the road may have great difficulty in picking up a fresh supply. The proper course, as we pointed out last week, is for each user to inquire of his local supplier what proportion of petrol he is likely to be able to obtain after the dealer has allowed for the requirements of the preferential users.

In the London District.

The following is the result of our inquiries:—

Dealers in the W.C. district of London inform us that they are having great difficulty in obtaining supplies.

Inquiry at a typical North London garage elicited the information that about 60 per cent. of their customers fall into Classes A and B. At the present time they are getting plenty of Pratt's II and Taxibus, but expect to have to cut down supplies to private users in the future.

A garage attached to a well-known block of flats point out that their customers are almost entirely local residents and not more than 5 per cent. probably will come under the classification of preferential users. Now and again there is a shortage of petrol, but the requirements of their customers have been greatly reduced since the calling up of the married groups.

We are informed by a garage in Holloway that they have found it extremely difficult to get petrol of any kind during the past week, but they had as yet received no notification from the Committee as to the class of people to be supplied.

Pleasure Motoring Reduced 80 Per Cent.

A typical country garage which depends for its business entirely upon passing motorists is the Regent's Garage, Potter's Bar, on the Great North Road. Formerly they used to reckon on supplying 50 cans a week-end during the summer, but the demand now has so fallen off that they are not supplying even 10. Most customers they consider are private owners, and only about three-tenths would be classified as preferential users. The future for this type of garage is very gloomy, as, naturally, the roadside garages have to depend almost entirely on casual week-end trade and the falling off in pleasure motoring has already affected these people seriously.

At Hatfield on the Great North Road there seems to be sufficient petrol to meet requirements of preferential users and leave a margin for private motorists. One garage had only just received the notice, and the proportion of their customers coming under the classified list of users had not been worked out. They expected there would be a serious falling off

in the quantity of petrol supplied to the public. At another garage, we were informed that about 75 per cent. of their users came in the preferential classes, and for the present supplies were sufficient for them, with a margin for others.

The two principal garages at Harrow have had their supplies cut down a good deal in the past, but not lately, and with care and perhaps a certain amount of shortage for mere pleasure users they would be able to manage.

Members of our staff on business journeys on the main roads who inquired for petrol, had to go to a good many garages before obtaining limited quantities.

Petrol in the Midlands.

We also made inquiries in the Midlands of the largest garages in Birmingham and Wolverhampton and on the main roads for a distance of 60 to 70 miles around, including the main London road, where there is always a heavy traffic with cars and motorcycles, mostly of course of a business character. We found that most of the garages had received the instructions with regard to preferential users, although there are a few who have not yet had them. Private owners are still being supplied, but with reduced quantities. Most of the spirit available was Pratt's, there being only one-third of the usual quantities of Shell available. As might be expected in such a large manufacturing area, 80 per cent. of the customers of the retailers of petrol fall into Classes A and B, preferential users. Many of the garages have for some time past been using their discretion in the distribution of spirit, owing to a shortage of the supply. They are reserving their stock for customers who have first claim on it under the Petrol Committee's instructions, but there is a small residue for private users, and they would not refuse a small quantity in the case of absolute necessity.

It seems therefore that the sub-committee's scheme is working, and that only moderate supplies of petrol will be available for those users who are not "starved."

Petrol for Wounded Outings.

An interesting point in the Petrol Sub-Committee's instructions as to the supply of petrol is whether those who take out wounded soldiers for joy rides fall into Class A. Apparently this is so only if they belong to a society "approved by the Admiralty or Army Council for the conveyance of wounded or sick" men. That is how we read the order, but whether a motor volunteer organization comes under this heading or not is not absolutely certain, but we should think it did.

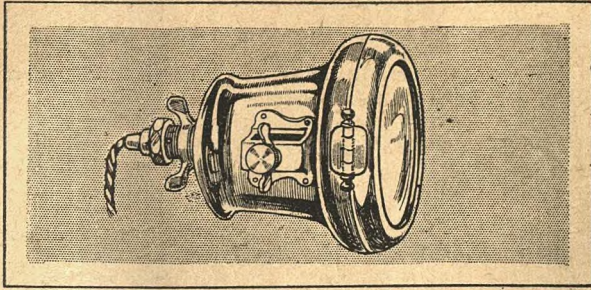
Petrol substitutes, benzole, paraffin and similar fuel used for motor engines escape any tax. They are liable to the tax, but the difficulty of collecting it is so great that the provisions of the Finance Act (1910) are never applied.

In the Interests of Readers.

We do not take the advertisements of cars that are outside the scope of the cult of the modern light car. Thus the reader is not misled into thinking that he is purchasing a modern light car, with a £2 2s. or £3 3s. tax, and low upkeep and petrol consumption, as might happen if we accepted the advertisements of bigger cars, often coming into the £4 4s. tax (£8 8s. if the Finance, No. 2, Bill is passed) with a corresponding high upkeep. We have refused thousands of pounds worth of advertisements of unsuitable vehicles, solely in the interests of our readers.

MINIATURE HEADLIGHTS FOR SIDE BRACKETS.

THE lighting regulations are responsible for the introduction of novel miniature headlamps to be carried on the side brackets, by F.R.S. Lamps, Ltd., 7 and 9, Pershore Street, Birmingham. A hand-

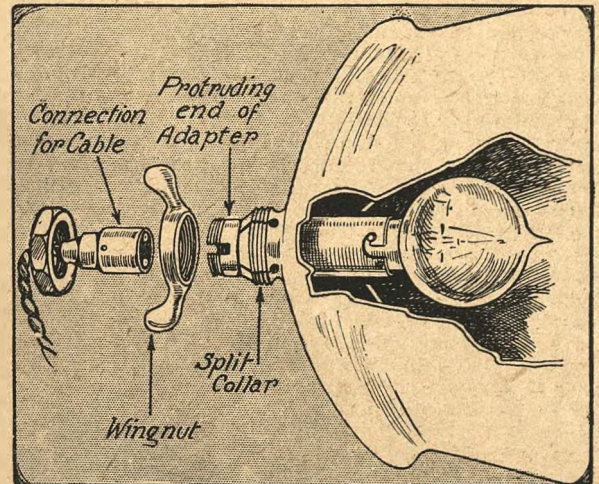


The new F.R.S. small headlamp.

made parabolic reflector is fitted, this being heavily silver-plated on copper, and 8 c.p. bulbs are fitted. The finish of the lamp externally can be had in either black, nickel or brass.

In this lamp the F.R.S. have adopted a different method of holding the bulb fittings in place, which they say is far superior to the method previously employed. At the back of the lamp in the centre a split collar is formed which is part of the lamp body. Through this collar passes the adapter, which can be slid in or out for correct focus of the bulb, which is held in the usual bayonet fixing in the forward end of it. The rear is threaded to receive the final locking wing nut. The split collar is also threaded to receive a wing nut. The end of the adapter has a bevelled edge, and the wing nut has a taper formed inside it, which, when the nut is screwed up, tends to compress the split collar as the two tapers engage.

The cable is attached in the usual way to a connection, which makes contact with the adapter when pushed into it. This connection fits in a guide or slot in the adapter, and, after being inserted, the end hexagon nut is screwed on to the threaded portion. This holds the cable connector tightly up to its work, and this method of fixing seems a much superior one to the usual bayonet type, which is apt to work loose



Details of the new adapter.

After the correct focus has been obtained, the wing nut is screwed up tightly, which, by compressing the split collar on to the adapter, holds this in the desired position. The price of each lamp is 25s.

A NEW HANDBOOK ON TUNING.

A Thorough Exposition of Motor Mechanics.

MANY handbooks have been written on the petrol engine and motoring generally, but we think a new line has been taken in the most recent addition, "A Manual of Motor Mechanics and High Efficiency Tuning," by L. Mantell, which has just made its appearance.

Mr. Mantell is a regular contributor to our columns, and an expert on carburetter design and tuning. His thoughtful articles now find scope for fuller expansion in a work which goes into the question of motor tuning more thoroughly than any previous handbook. It seeks to make clear, firstly, the basic principles that govern all engine tuning problems, so that the beginner shall understand precisely why certain adjustments produce certain effects. All parts of the engine and their functions are dealt with in turn, but not on the usual lines. We may instance a chapter on the chemical and physical nature of the explosion; another on inlet and exhaust design; a very thorough exposition of valve timing and carburation; and the diagnosis of faults.

One important chapter is devoted to a working explanation of all the leading carburetters and the methods to be followed for each when adjusting for greater efficiency. This is a new and very helpful feature of motoring handbooks. Another is on "High Efficiency Tuning," outlining the methods to be adopted in obtaining the highest possible degree of engine power for racing purposes, regardless of economy, flexibility, or other considerations. The author

points out that the three great requirements in a racing engine are:—

1. The utmost reduction of internal friction and secondary motions.
2. The faculty of getting the greatest possible volume of correct firing mixture into the engine in the shortest possible time and with a minimum of effort on the part of the engine.
3. An exhaust system which provides not only the greatest freedom of egress for the burnt charge, but a self-induced scavenging action to clear the combustion head of the residue.

The worst of a work of this description is that it makes one realize how very little we know really of what is an immense subject, but the author has certainly set out in a clear and very easily-assimilated form, the essential facts. If they make the ordinary motorist feel how puny are his efforts of "tuning" when confined to altering the jet of the carburetter and retiming the magneto, they at least provide him with ideas that will make him think; and until one starts to think upon such a subject, real improvement is impossible. The book is very helpful in its practical suggestions on a great variety of matters—notably the method of checking valve timing—in the many diagrams and formulæ provided, and the large number of clear illustrations, the majority of which have the merit of being new.

This manual is published at 1s. 6d. by Temple Press Ltd., and can be obtained from our offices.

THE PETROL CENSUS.

Penalties for Failure to Obtain, Fill In, and Post a Census Form by 20th June (To-morrow).

THE Board of Trade is making a census of petrol. A new principle is established, for not only must all users of petrol fill in the census form correctly and post it by a certain date, but they must obtain the form themselves. It is probably because of our official lack of system that this is necessary, as, obviously, Government departments possess names and addresses of all motorists. The official notice was issued on Wednesday, 14th June, and the forms must be posted on or before Tuesday (to-morrow), 20th June. Such notice is far too short, but no intimation was given to the motor Press (only a matter of circularizing 15 journals, or six publishers), in time for the announcement to be made in advance of the Order. Under the Defence of the Realm Act, heavy penalties are attached for failure to make a return.

There are five forms. No. 1 is for private owners. No. 2 is for doctors. The others apply to owners of motorcabs, etc. (3), commercial motor vehicle users (4) and users of petrol otherwise than in a motor vehicle (whether this applies to a motor boat or not is not clear). The forms when filled in must be sent to the Census of Production Office, 68, Victoria Street, London, S.W., in an addressed envelope (provided with the form) post free.

The particulars required by the form are as follows:—

1. Registration number(s).
2. State in each case whether motorcar(s) or motor-cycle(s).
3. Average consumption of motor spirit per month during the three months ending 30th April, 1916.
4. Present stock of motor spirit.
5. Estimated requirements of motor spirit per month until the end of 1916.
6. Purposes for which each vehicle is used.

Doctors are required to state the purposes other than professional for which their cars are used.

The fact that a census of the purposes for which motor spirit is used is being obtained, as well as a census of quantities, is a good sign, and should produce useful information for the comic poster committee. The Order states:—

“In case it is found necessary to restrict the sale of petrol or other motor spirit, any person liable to make a return under the above-mentioned Order who does not duly make such return will be unable to obtain further supplies.”

A Matter of Name and Address.

Readers are specially asked to give the full title of **THE LIGHT CAR AND CYCLECAR** when asking for a copy of this journal at a bookstall and to quote it in full when addressing letters to our offices. Our address is 7-15, Rosebery Avenue, London, E.C.

It Will Come One Day.

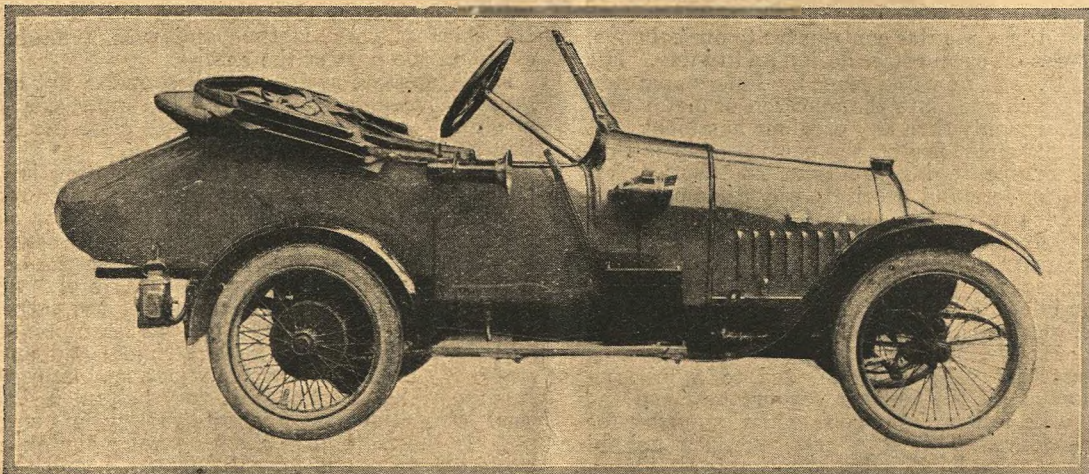
We read, in answer to a question why did the American cyclecar fail? that “taking them generally they were better mechanical propositions than those representing the movement in England.” Then follows the usual abuse of the cyclecar. Of course, taking the American cyclecars either singly or generally, they were hopelessly unmechanical, adopting the worst and discarded features of the early experimental cyclecars here. That is why America has missed a cyclecar boom.

Expiry of Driving Licences.

Probably owing to the war certain counties are not now warning motorists when their driving licences expire—and 20s. is usually the minimum fine.

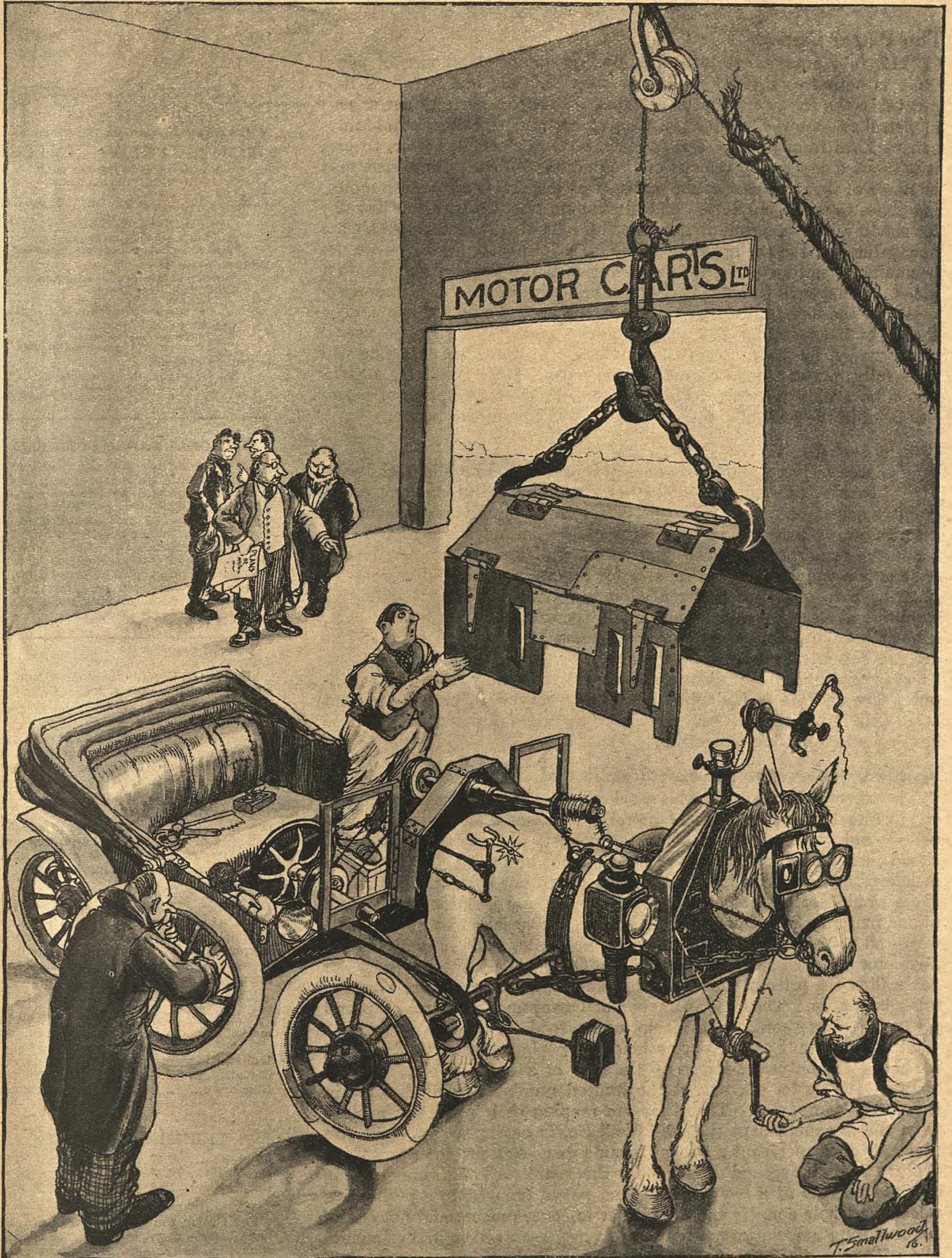
The Motoring Expert Again.

Mr. Massac Buist—“the motoring expert,” if you please—writes in the “Illustrated Sporting and Dramatic News” on 10th June: “From the 15th inst. owners of cars of more than 16 h.p. rating will be called on to pay this year’s proportion of the threefold increase in licence fees,” etc. We suppose it is too much to expect accuracy from a mere expert, but the well-informed but despised motor Press has stated over and over again that the taxes will not be due until the Finance (No. 2) Bill passes the House of Commons, and that, according to the Bill, the increase for this year is not due until 30th June; cars under 16 h.p., 15th August.



A smart Baby Peugeot, seen last week at Messrs. Carlish, Ltd., Euston Road. It has since been purchased by the Light Car Co. for resale second-hand.

THE WORLD'S WORKERS IN WAR TIME.—III.



POPULARIZING HORSE-DRIVING FOR EX-MOTORISTS

Topics of the Day

The Petrol Census.

THE first practical step towards finding out what amount of petrol is actually required in this country and the use to which it is put takes the form of a census of users. Every owner of a car or user of petrol is required, under the pain of certain penalties, to obtain a census form from a post office at once, and, having filled it in, to post it without delay to the Census of Productions Office. Complaint may be made of the shortness of the notice, which scarcely allows the motoring Press to make public the official announcement before the last day for sending in forms, but that cannot be helped. It also establishes a new principle: that of not only filling up a form compulsorily—we are becoming a nation of form-fillers—but also procuring it in the first place. What will happen if the number printed has been underestimated or the form, filled in, gets lost in the post, we do not know. The threat of penalties for not supplying the particulars required seems unnecessary, for we are sure that motorists in their own interests will cheerfully render what information they can. Unfortunately, a great many have only the vaguest idea of what their consumption of petrol has been in the past, and still less what it will be in the future.

Roadside Supplies of Petrol.

WE are receiving quite a number of inquiries from readers who wish to ascertain the probability of obtaining petrol on long cross-country journeys, in view of the Petrol Sub-Committee's scheme of discriminating between users. Most of the journeys are undertaken for business purposes. Such questions are difficult to answer until it is seen how much petrol is available for private motorists after supplies have been reserved for preferential users. We have made extensive inquiries at garages, and at present it seems that there is a margin, especially in big centres, and naturally those on business journeys, who are not actually commercial travellers, would receive preference when there is petrol to spare. Those on pleasure tours may have to go without. The scheme is undoubtedly working very well, and it does not seem as if it will be necessary to enforce a system of petrol tickets or to stop private motoring altogether.

Wanted, Government Control of Petrol Prices.

IT is expected that, either this week or very shortly, there will be a further rise in the price of petrol. We should not be at all surprised; but the limit for bleeding the pockets of business and professional men who use the necessary car cannot be far off. If any other article of consumption had been forced up to such an artificial price, there would not be that conspiracy of silence and inaction on the part of our motoring associations, the members of Parliament who might be expected to represent the interests of motorists, and the daily Press. Just now the Press is urging upon the Government the necessity for controlling the price of meat, which, like petrol, has soared to a purely artificial figure. The case in favour of Government control of petrol prices is just as strong, only it is not understood. So few people realize what an important part in our national life is played by motor fuel, and its high price naturally forces up the cost of everything else, with no one any the better off, except the limited number of shareholders in the petrol companies. That they are reaping their reward is evident from the announcement that the Shell Co. is paying a *second* interim dividend of 25 per cent., free of income tax—£31 5s. for every £100 share! And the second dividend for the year! All this money going into the pockets of a few shareholders, petrol brought to a prohibitive price, the whole country made to suffer in consequence, and not one of our motoring associations, our motoring representatives in Parliament or any lay journal raises a single protest. Truly this is a country of fools.

The Light Car and Cyclecar

Largest Circulation.
Mondays—1d.

Conducted by EDMUND DANGERFIELD.
TEMPLE PRESS LIMITED

(Proprietors of "THE MOTOR,"
"MOTOR CYCLING," &c.).

7, 9, 11, 13, 15, Rosebery Avenue,
LONDON, E.C.

Telephone—5292 Holborn (four lines).
Telegrams—"Pressimus, Holb., London."

MIDLAND OFFICES:

Birmingham:—9-10, Burlington
Chambers, New Street.

Telephone—2498 Midland.

Telegrams—"Presswork, Birmingham."

Coventry:—6, Warwick Row.

Telephone—393 Coventry.

Telegrams—"Presswork, Coventry."

NORTHERN OFFICES:

196, Deansgate, Manchester.

Telephone—Central 2467.

Telegrams—"Presswork, Manchester."

NATIONAL PAPER ECONOMY.

In order that the minimum of paper shall be wasted, readers can co-operate by always purchasing their copy of "The Light Car and Cyclecar" at the same place, or, better still, by placing a definite order for the journal to be sent to them. In this way waste of paper will be prevented, as the publishers will be in a better position to calculate the exact demand.

Letters.

EDITORIAL Communications should be addressed to The Editor, "The Light Car and Cyclecar," 7, 9, 11, 13 and 15, Rosebery Avenue, London, E.C.

Letters relating to ADVERTISEMENT and PUBLISHING Departments should be addressed to The Manager. SUBSCRIPTIONS should be forwarded to the Manager (rate, 6s. 6d. per annum, or pro rata).

ADVERTISEMENT COPY, Blocks, &c., should come to hand by Tuesday morning to ensure careful attention and allow time to submit proofs, except when an earlier time is specified.

Return of MSS., &c.

Drawings, Photographs and MSS. not suitable for publication will be returned if sufficient stamps are enclosed for this purpose, but the Publishers cannot hold themselves responsible for the safe keeping or return of contributions.

Subscriptions.

"The Light Car and Cyclecar" will be mailed regularly at the following rates:—
12 ms. 6 ms. 3 ms.
United Kingdom 6s. 6d. 3s. 3d. 1s. 8d.
Canada ... 8s. 8d. 4s. 4d. 2s. 2d.
Elsewhere... 10s. 0d. 5s. 0d. 2s. 6d.

LIGHTING-UP TIMES.

London ...	9.49	Edinburgh... 10.31
Newcastle... 10.17	Liverpool ... 10.14	
Birmingham 10.2	Bristol... 9.59	
Dublin ...	10.32	

For Dublin the local mean time (one hour after sunset) is given. If Greenwich time is required 25 minutes must be added.

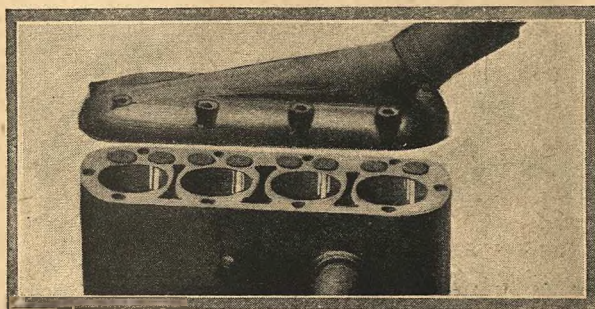
MOON.—No useful moonlight.

IS AMERICAN PRACTICE RIGHT ?

Departures from British Practice Common to American Cars—Why They are Adopted, Their Disadvantages and Advantages, and the Lessons that May be Learned from Them. :: :: :: ::

IN certain details it would appear that British manufacturers have adopted quite a number of details which are more widely followed in America, although, probably, some at least originated in this country. It is interesting to review a few instances and the reason for their adoption.

The detachable cylinder head is perhaps the best example. Its advantage is that it simplifies the removal of carbon deposit. With detachable cylinder heads a reasonably careful amateur can remove all carbon single-handed in a couple of hours work, instead of the expensive method of burning out with oxygen or spending several hours, probably with a



A detachable cylinder head, similar to that adopted on the Morris-Cowley.

mechanic's assistance, in removing a monobloc casting. In its earlier form the removable head was not always satisfactory, and the risk of water leaking into the cylinders was a serious one, as it involved the possibility of breaking a piston or gudgeon pin owing to water being practically incompressible. Nowadays a copper and asbestos washer or gasket is used to make a water and gas-tight joint round the various openings, and although this large and carefully-shaped washer has to be renewed at intervals, it will make a perfect joint, provided the holding-down bolts are tightened evenly and gradually when the head is being replaced.

Drawbacks of Detachable Heads.

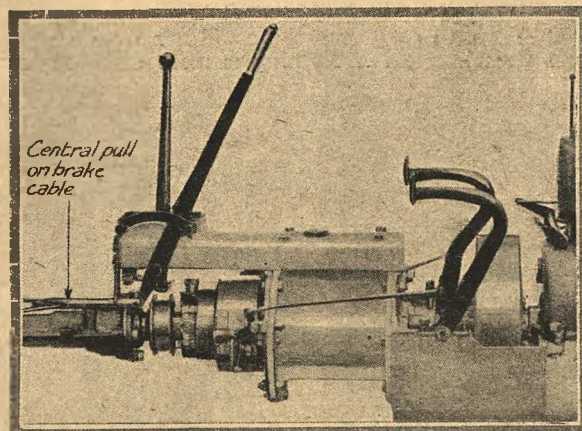
The chief drawback of this design of engine casting is the fact that piston rings cannot be inspected and cleaned nor the inside of the piston examined for carbon; nor again, in the case of a broken valve, can it be withdrawn in the usual way through a valve cap, as in this system the valve caps do not usually exist, but the whole head must be removed. In the same way, valve grinding can only be done with the head removed, but as this is best arranged to coincide with carbon removal, the objection is not serious, and, considering the durability of modern rings and valves, the facilities for carbon removal will, in all probability, be considered to outbalance those lesser drawbacks, especially for the owner-driver, while, in regard to actual manufacture, the casting and machining is easier. The removable head is not by any means a new idea, and early motorcyclists will remember how certain single-cylinders had a loose head, which was bolted down on a wedge-shaped joint, while in the modern slide-valve engine it is used in a rather different form.

The demountable rim, although sometimes used in

British large cars, can certainly be called the typical American contribution to the problem of the reserve tyre. It is produced in a variety of designs, and, at its best, there is much to be said for it. There are many lady users of the light car now upon the road, and although they find no difficulty in fitting the usual spare wheel, most would find it impossible to mend a tyre on the road if they had the misfortune to puncture a second time. The demountable rim, either by withdrawing the clinch which holds the outer edge of the tyre, or by contracting the size of the rim, makes the removal or replacing of a tyre an easier matter. On the point of weight, it again scores in comparison with a complete wheel carried as a spare, although, in quickness of changing, there is not much to choose between it and the three or four hub bolts of the usual light car. In actual solidity, it can hardly be expected to equal the steel wheel. In the case of a severe blow or dent on the edge of the wheel, it is sometimes possible for a demountable rim to become jammed in place, which would be an awkward predicament. Another drawback common to most of these rims is the necessity for frequent greasing to prevent the development of rust between the different surfaces.

Why Central Control is Adopted.

From the point of view of cheap car production, centrally-placed control levers have attracted some attention in this country, although it is seldom realized how much more natural this system is in America, where the driver sits on the left, and so has



Central control, as carried out on the Lagonda. It provides direct control to the gearbox and a central pull on the brake cables.

the levers placed naturally to his right hand. This is really the gist of the matter, for if the British public would take kindly to a left-hand gear change, cars would certainly be built on this plan for the sake of simplicity and a reduction of manufacturing costs, because the levers are in their natural position, the gear lever at the gearbox and the brake lever in a position for a central pull, doing away with a series of brackets and rods carried to the right of the car. The objection that the central position is in the way of rugs and coats, or that a nervous passenger might even make a disastrous clutch at them in an emergency can hardly be seriously considered in view of

IS AMERICAN PRACTICE RIGHT? (contd.)

the large number of cars in this country with this arrangement already on the road.

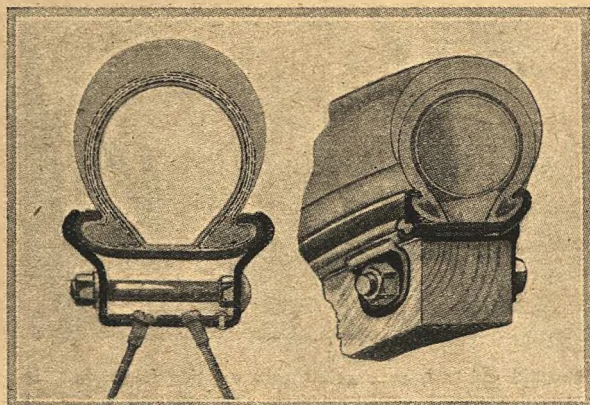
Connected with this same point of design is the question of an off-side door, which is considerably more common in America than here, chiefly, perhaps, because central control permits it. The gear and brake levers, if placed close to the seat, do not greatly interfere with an entrance on the off-side, while the increased cost of manufacture is very slight, and many practical drivers would certainly prefer money spent that way rather than in coloured "linings" on a car.

From the earliest times the position selected for the Stepney or the spare wheel on British cars has been the off-side running board, and so much are we accustomed to it that an empty running board now looks quite bare. Yet, properly considered, it is by no means an ideal place. For one thing, it prevents fitting an off-side door, for there is seldom room to set it further back; it also throws extra weight on that side of the car which has already more than its share in the more frequently occupied driver's seat, the position of the steering gear, etc. American practice usually puts the wheel at the rear, which is, perhaps, an improvement, even if the effect is often as though a wheel had been flung quoitwise and landed upon the tail of the car!

In either position it is still fully exposed, and as few owners seem to trouble about protecting the tyre with a cover or with a good coat of tyre paint, the sooner the ideal position is evolved the better for the tyre. A shallow locker below the toolbox at the rear or extending inwards under the car from the near-side running board, could be made standard on almost any car without interfering with structural parts, and would keep the wheel or spare rim clean, protected from sun, safe and accessible.

The American Screen.

In regard to wind protection, the manufacturers of light cars have often something to learn from better-class American cars. Nothing is more disagreeable

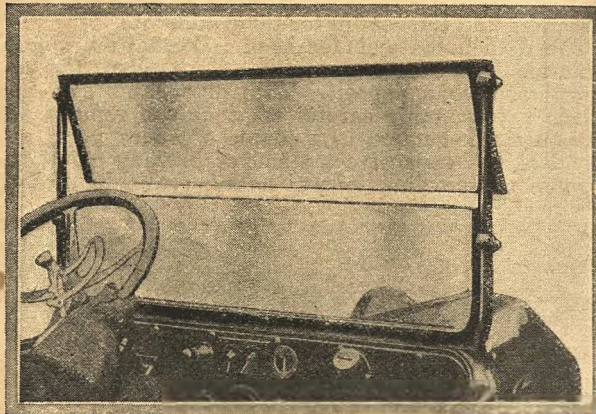


Left, a sectional view of an ordinary demountable rim. Right, an example of a detachable rim, tyre removal being facilitated by a removable clinch.

than sitting, on a cold day, with an inadequate wind-screen, which allows the wind to strike one in the eyes, and is not sufficiently wide to protect driver and passenger from side draughts. American ideals usually comprise a rigid vertical screen, with one or more movable panels. This gives greater protection, but increases wind resistance, especially compared with the usual practice of tilting back the windscreen on a light car.

B12

In the matter of accessories as fitted to American cars, it has to be remembered that, not many years ago, it was the regular principle here that the fitting of such primary necessities as horn, lamps, etc., was left to the purchaser, and a matter of £20 or so extra would always be counted upon as the cost of accessories for a large car when bought new. No doubt the buyer could thus please his individual taste in the fittings he selected. In U.S.A., where big production, fullest standardization and ideas of essential utility all tend to minimize individuality, the other extreme has been favoured, and most cars are sent



The American type of double screen.

out, in that rather misused phrase, "ready for the road." The British light car has now a more or less standard equipment of hood, screen, lamps, horn, jack, pump, tools, etc., often of distinctly better quality than a corresponding American car; but why the indispensable speedometer is always omitted is difficult to say. Some makers still display a rather petty ingenuity in adding to their list price a series of fittings which, for practical use, are almost indispensable, but charged for as "extras." Such fittings include side curtains, undershield, number plates, speedometer and anything, perhaps, except plain tyres.

The whole question of the use of electricity on the light car is very undecided. The tendency is now to fit dynamo lighting sets with an almost entire neglect for the utility of an electric self-starter, which could be added at a comparatively small cost. In American cars it is the rule, rather than the reverse, not only to light the lamps, but to sound the horn and start the car by aid of the dynamo set, and often to do other things as well.

The Completeness of Equipment.

It has been the custom to speak a little contemptuously of the American small car, and, certainly, most of the present importations hardly satisfy the expert; but, on the other hand, we have had a start of several years in light car design. If the American manufacturers have realized the great potential market in this country, and are doubtful of John Bull placing a prohibitive tariff on such articles, there is some possibility of competition on popular lines, which always takes the form of giving the user the maximum of luxury and convenience at the minimum price. Certainly the British light car will take some beating; but, even with the very best car, something more is required. The incompleteness of its equipment is striking, compared with an American car, and that is where the American manufacturers will score if they are not kept out by a tariff. S.F.B.L.

THE CALL OF THE ROAD.



THE JOTTINGS OF JOHN GILPIN, JNR.

SOME SKIDDING PROBLEMS

AFTER some uncanny experiences, I am very much inclined to distrust the tyre combination so often recommended, of plain and steel-studded tyres arranged diagonally on the four wheels of a light car. Possibly the practice is correct for big cars, but it is not ideal for light cars, where the wheelbase is comparatively short and the total weight low. Steel-studded tyres will only get a "bite" when there is considerable weight on the wheels on an asphalt or tarred surface, whether wet or dry, and not a very good grip on wet wood paving. On the other hand, a rubber-studded tread like the Dunlop, or a three-ribbed tread like the Palmer, undoubtedly does get a grip on greasy surfaces with a light vehicle, but the ordinary transverse-grooved rubber tread does not. With a heavy car, probably the converse applies. There is an added danger with a steel-studded tyre that on nearly every road surface the wheel will lock when the brakes are applied severely, thus greatly increasing the distance required in which to pull up, which might be serious in an emergency, while being the prime cause of a skid

CORRECTING FRONT AND BACK SKIDS.

One particular car that I drove recently was fitted with the diagonal arrangement of steel-studded and grooved tyres. In the journey out of town several miles of asphalted roads, with numerous corners, had to be negotiated, and there was considerable difficulty in taking the corners at all. To take a left-hand bend, the steering wheel had to be violently twisted first one way and then the other, being locked over wider on the side it was desired to turn, thus correcting a front-wheel skid, a tip, by the way, worth bearing in mind. As soon as the car swung round, the back wheels would lose their grip, and continue when the turning movement had been completed, to be corrected by locking the steering wheel over in the same direction and applying the brake. Applying the brake, by the way, is another method of correcting a front-wheel skid. It will probably

promote a back-wheel skid and need some very pretty manoeuvring with the steering wheel to maintain a straight line. The slightest acceleration sent the back wheels into the gutter, but it was noticeable that there was much less tendency to skid on top gear, and, the engine being very flexible, most of the journey was done on this gear at about 10 m.p.h.

A SKID SAVES AN ACCIDENT.

On the same car, there was occasion to apply the brakes very fiercely on an ordinary untarred country road, when the skid actually saved a collision. I was following the very gentle bend of a country lane, with a high hedge on left, when suddenly there shot out from behind the hedge diagonally across the road two or three boys and a hand-barrow. The obstruction was only two or three car's length away. Instinctively the brakes were applied, and the car steered for the hedge. The back wheels came round on the right, and the car skidded up to the hand-cart sideways, delaying the car's progress by a fraction of a second. With a touch of the accelerator pedal, and putting the wheel over on the other lock slightly, the car straightened up sufficiently to take the narrow gap between the hedge and the hand-cart, and the obstruction was cleared. The skid saved a smash. It was a very near thing, however.

Later on that day, a piece of tarred road on a slight bend, just wetted by a shower, was struck, and the figures of eight and other strange manoeuvres that were executed afforded another thrilling example of the unsuitability of the tyres in relation to the car. It is just another instance that the light car demands a special study of every problem from an original point of view, and not from what has been found the best experience in the case of big cars.

Apart from the tyres, some cars are much more prone to skid than others. It has never been determined why this should be so, but undoubtedly skidding is affected by (1) the springs, (2) the weight

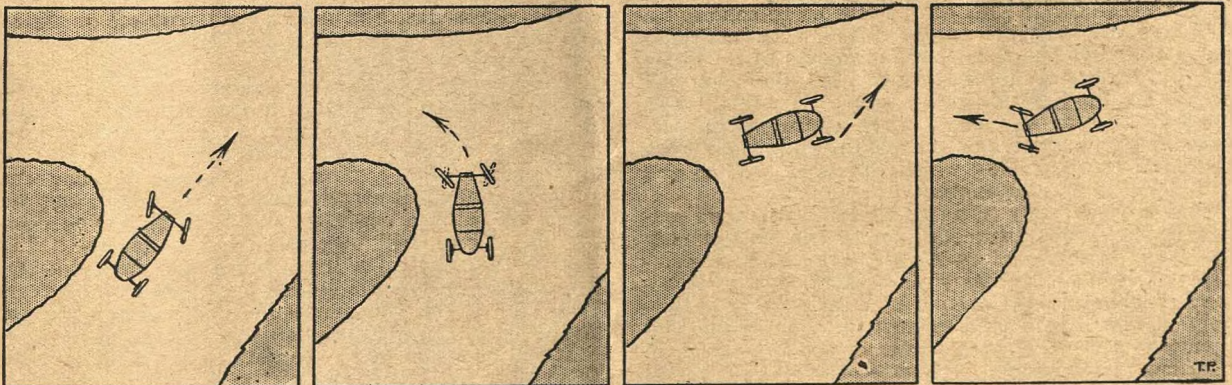


Fig. 1.—The car continues in the same direction although the front wheels are locked over.

Fig. 2.—Until corrected by locking the wheels over first one way and then another, but more to the left.

Fig. 3.—Then the back wheels begin to slide and continue in the same direction after the turn is completed.

Fig. 4.—Until corrected by locking the front wheels over in the same direction and applying the brake.

THE CALL OF THE ROAD (contd.).

distribution, (3) the height of the load, and (4) the length of the wheelbase.

From my own experiences it is possible to make some deductions, which, however, are given with all reserve. They may be tabulated thusly:—

No.	Wheel-base.	Springing.	Back Axle.	Load.	Holding Road.	Skidding.
1	long	cantilever	light	low	well	badly
2	"	"	very heavy	"	"	not at all
3	short	semi-elliptic	"	medium	badly	badly
4	medium	long "	light	high	well	"
5	short	1/2-elliptic	light, but nearly all weight on back wheels.	low	"	not at all

From this we get the following interesting facts: A long wheelbase, low weight distribution and canti-

lever springs cause the car to hold the road well, but that the weight of the back axle apparently alone prevents skidding (Examples 1 and 2). Yet the weight of the back axle as in car 3 is not sufficient to prevent skidding with the combination of semi-elliptic springs and short wheelbase. Example 5, however, rules out the short wheelbase as a cause of skidding, the weight on the back wheels probably being the deciding factor. It seems, therefore, that the car that will have the least tendency to skid is one with a long wheelbase, a low weight distribution, cantilever springs, and a heavy back axle, such as is provided by the type with the gearbox and axle combined. These are probably not the only factors to take into consideration. It would be interesting to have other opinions.

JOHN GILPIN, JNR.

KEEPING A CAR READY FOR POLICE WORK.

MANY light car owners who in normal times use their cars for week-ends and holidays only, but are now doing voluntary work for the police and hospitals may find some difficulty in keeping their cars ready for service at five minutes notice. The principal secret of having one's car so quickly available lies in preparing it for another journey directly it comes in. Everything that is usually done before setting out should be done immediately on returning. The petrol tank should be filled; it is a good plan to fill the tank right up every time. The oil level in the engine must be checked and the sump replenished if necessary, the engine wiped down and necessary oiling and greasing done. The tyres should be looked over, the pressure in the spare wheel checked, and the radiator filled up.

Pump, jack, and all tools should be kept permanently on the car, and two or three other little things also, such as a pocket electric lamp and spare battery, a flask, some chocolate, cigarettes or tobacco, and a box of matches. This sounds rather like preparing for a siege, but it is desirable to provide so that oneself and one's passenger can be comfortably independent of everybody else for six or eight hours if necessary. Probably it never will be necessary, but in police work, especially in the country, one does not

invariably get back punctually to meals. Maps might be included, but are hardly needed, in one's own district at all events. It is wise never to go out without lamps, and the lighting system, of whatever kind, should be carefully checked over pretty frequently. If night calls are expected, it is an excellent rule to have a look over the car every night before going to bed, to see that no tyres are down; and driving coat, gloves, and rugs are best kept in the car.

Even the best of good cars occasionally wants odds and ends of repairs—decarbonizing, and the like. When these things are projected, notice should be given to the authorities beforehand—at least 24 hours, if possible—that the car will not be available for so many hours or days. This saves them time in telephoning round uselessly; and the driver's first object should be to save the authorities time and trouble. Every occasion on which the car is used for official purposes should be regarded as an important occasion, and strict punctuality always observed. It is the practice of the present writer to present himself ten minutes before time, in case instructions have to be received; and it now and then happens the authorities themselves are ready a little sooner than they expect to be. Such consideration is always appreciated, I find.

M.G.

PLUG POINTS FOR VARYING CONDITIONS.

MANUFACTURERS can be trusted to send out a new car with the engine fitted with sparking plugs suited to the special requirements of its working, but it does not follow that this brand of plug will always be the best for that engine. In fact, it is almost safe to say that, after considerable use, another type may give better results, and it may even be found that the plug which will work well in one cylinder will not suit another.

This is very easily to be understood, when we realize how the working condition of the engine may fluctuate. Thus, a clean engine, even of high compression, will not necessarily overheat, but, as it becomes carbonized, the compression ratio will be noticeably increased, and excessive heating probably will then take place. Hence engines of this type, and, in fact, most fast-running, high-speed models, are served best by a sparking plug with heavy, substantial electrodes, which will also dissipate the heat rapidly. It is essential with such a plug that the electrical insulation should be above suspicion, otherwise we may find that occasionally oil will be thrown upon the tips

of the electrodes, and not being burnt off owing to the plug being of the super-cooled type, the current will be discovered shorting internally.

This brings us to another extreme state of affairs. When, owing to the pistons having worn to a sloppy fit, or the piston rings being in a condition when they should be replaced, oil is thrown up continually on to the electrodes. This will produce intermittent misfiring and most erratic running, which can only be cured by using a sparking plug with thin, fine electrodes. These will become so hot under the firing charge that the oil will be burnt off immediately. Here, again, it is possible that the effect may be overdone, for, if the plug points become so hot as to get incandescent, pre-ignition is likely to take place.

It will be seen that the conditions are always somewhat warring, but if any of the leading plug manufacturers are taken into one's confidence and the exact difficulties described, one can rely upon receiving advice which will prove very useful in the selection of a type of plug to meet the special requirements.

F.

AMATEUR MECHANICS.

For the owner-driver who likes to potter about in the garage on dull days, turning his attention to constructing little improvements for his car, and who does not want to be at a loss for a means of getting home in the event of a breakdown.

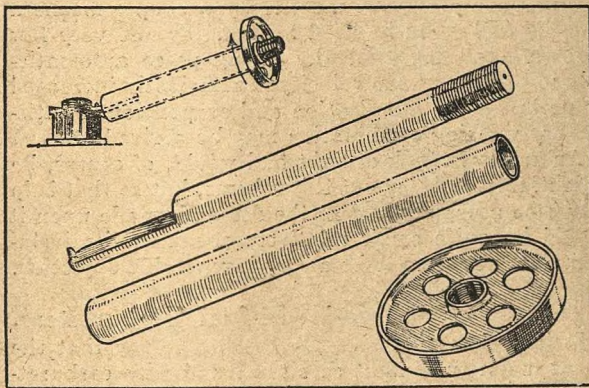
Contributions to these Columns Invited.

Simple Cures for Cracked Cylinders.

THE treatment of cracked cylinders depends almost entirely upon the situation of the crack. If it should be the inner wall of the cylinder, which has to bear the brunt of the explosion pressure, the only satisfactory method of dealing with it is to have the spot welded and then it must be machined to produce a satisfactory surface. External cracks, such as those in the water-jackets, lend themselves to much cheaper and simpler treatment. Thus the crack can be widened out, until it is a fairly deep groove, and the temperature of the casting can be raised by means of a blow-pipe until solder can be run into it. Another plan is to clamp to the damaged part of the cylinder a rough mould, which has been packed tightly with a mixture of iron filings and plaster of Paris. When water is then inserted into the cylinder it will percolate through into the mould and cause the plaster to expand, and, as expansion can only take place in the direction of the crack, this will have some of the mixture forced into it and thus be closed up. Yet a third plan is to place the cylinder with the cracked side facing down and then to fill the water jacket with a solution of copper sulphate. This will slowly percolate through the crack, and it should be caught in a tin can and replaced repeatedly. Gradually a deposit will be formed inside the crack, which will close it up.

An Ingenious Split-pin Extractor.

One of the most fiddling jobs connected with any work on the car is that of withdrawing split pins. Many tools have been invented with the object of assisting the worker, but I cannot recollect having seen one which is more suitable than an amateurish contrivance which recently I found in use in a small



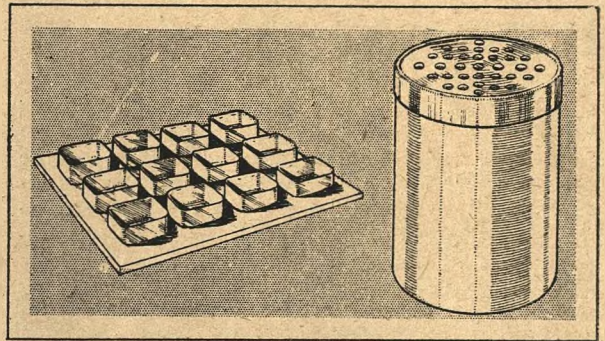
An ingenious split-pin extractor. On screwing down the wheel the split-pin is dragged out and falls into the filed flat end of the rod.

garage. It consisted of an inner piece made from a 6 in. length of steel (roughly half an inch in diameter), one end of which was screwed with a half-inch thread, the other being filed away to half its original thickness for a distance of $1\frac{1}{2}$ in., and the point then turned up. This rod was an easy sliding fit in a short length of metal tubing. The operating mechanism was performed by what looked like the metal wheel off some child's toy. It was drilled centrally and tapped with a half-inch thread. To use the tool, the head of the split pin was tapped lightly with a hammer, so as to

open it, and allow the point of the extractor to be inserted. The wheel nut was then screwed down until the tube was in contact with the head of the nut from which the pin has to be extracted. This supplies the medium for taking the thrust, and as the wheel nut is revolved still further, the split pin will be ignominiously dragged out.

A Cabinet for Nails and Screws.

A motorist is just emerging from his novitiate when he begins to realize that some method is essential in keeping a small stock of nuts, bolts, screws, and nails, if he is ever to know what stock he holds, and where his supply is to be found. Cabinets for systematically



A cabinet for nails and screws made out of old tobacco tins, and a carbide sifter made out of a discarded cocoa tin.

storing such supplies can be purchased, but they are expensive. If the motorist is a smoker, then he can make a very presentable cabinet from discarded 1 oz. tobacco tins, if they are rectangular in shape. The circular and oval tins are not suitable, as they allow small things to get lost between the tins. The tins are arranged on a good, stout, wooden board, and a nail is driven through the centre of each, in order to pin it in position. The contents of the boxes should be graded for size, and it is as well to have one board for nails, another for bolts, and so on. Although with the lids on, the contents of the tins are kept cleaner and are somewhat less likely to rust, I prefer to wrench off the lids, as the difficulty of ascertaining the exact position of one's requirements is much reduced when the stock is all displayed openly.

A Carbide Sifter.

One of the main reasons why acetylene is being superseded by electric lighting so easily is that all operations connected with the handling of calcium carbide are so odiferous and so dirty. If the carbide is to give the best results, it should never be used twice, unless it has been thoroughly sifted, in order to get rid of the waste dust and spent portion. This cannot be done with any pleasure unless some form of sifter is employed. An old discarded cocoa tin will serve the purpose admirably, if the lid be taken off and a number of small holes be punched in it. I say punched and not drilled advisedly, because the punching will leave the outer circumference of the holes with a rough, coarse, jagged edge, which is just the thing for scrubbing and cleaning the outside of the pieces of carbide when the contents of the tin are shaken.

C.W.F.

THE problem of successfully using heavy fuels is becoming increasingly serious as the price of petrol rises, and it becomes more difficult to obtain. It behoves us, therefore, to see to what extent we can substitute cheaper, or at least more obtainable fuels for our moribund first love.

Light car owners and, in fact, the possessors generally of high-speed engines, are for the most part unaware that if their motors are in good order as regards the absence of "blow-back" pure paraffin can be used, provided (1) a reasonable amount of heat is applied, (2) the carburetter is adjusted to suit the new conditions, and (3) that the initial stages of the induction velocity, or pick-up, can be overcome.

An Initial Experiment.

The first two requirements are not difficult to obtain, but the last is the stumbling block. Anyone who cares to adjust his carburetter with a main jet about one size larger than normal and reduce the choke also by one or two sizes can easily make the experiment of running on paraffin in the following way:—Leave the top off the float chamber, or if it is of a type in which access is not possible in this manner, fit an experimental two-way supply by means of rubber tubing and a brass Y piece such as is commonly used on motorcycles for supplying the rear lamp from the main gas generator. If, now, the engine is run on petrol until fully heated up, paraffin can gradually be added in place of the original fuel, which should proportionately be cut off until eventually the whole is paraffin; but the engine must meanwhile be turning quite briskly. So long as the speed is maintained there will be no apparent difference in the general running if the carburetter is either heated in the conventional way or bolted directly on to a monobloc casting, which, thermally speaking, amounts to the same thing. If, however, the speed is reduced below a certain point the engine suddenly loses power and stops, nor, in the majority of cases, can it be induced to start again until petrol has been temporarily added to bring it over the weak spot.

The reasons for this are very simple. We are in this case dealing with an ordinary petrol carburetter devoid of any special vaporizing devices, and are relying solely upon the induction velocity to atomize or disintegrate the paraffin and hold it in suspension while it passes to the combustion heads. Immediately this velocity ceases or falls below a certain point the spray fails to reach the cylinders in a combustible condition and the engine stops, for the heat supplied in the ordinary way is, of course, insufficient to vaporize paraffin to any marked extent.

Heating the Spray.

Different schemes are from time to time propounded for structurally altering the carburetter, in such a way that an exhaust-heated metallic device can be introduced close to the jet, or in the immediate path of the spray, so that in impinging upon it the latter is sufficiently vaporized to be inflammable without the disintegrating effect of high induction velocity. Again, it is occasionally suggested that paraffin troubles may be overcome by strongly heating the fuel by an exhaust jacket applied at some point between the float chamber and the jet.

These devices undoubtedly help matters a little, but in the writer's opinion they are of questionable value

HEAVY FUELS FOR How Paraffin and Petrol Substitute Engine and Carburetter Adjustment.

This is a subject of the greatest importance in view of the alternative of paraffin, upon which we may

owing to the unavoidable variability of the vaporizing temperature, and carburetters so fitted can seldom be relied upon to give any real satisfaction unless in the hands of experts.

It is scarcely within the province of the present article to analyse the existing methods and principles incorporated in the various vaporizers at present on

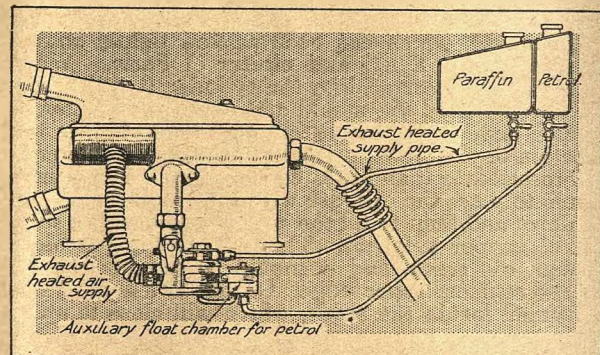


Fig. 1.—General arrangement of a bi-fuel carburetter.

the market, but rather to suggest means by which standard carburetters can be adapted for the use of heavy fuels. Having in view, therefore, the prime functional factors as above roughly exemplified, it will be reasonably evident that, if by a simple means a volatile fuel could be used for starting and very low throttle positions gradually giving place automatically to paraffin as the velocity is sufficiently increased to permit of its atomization and suspension, a satisfactory working combination may be arrived at.

An auxiliary tank of light fuel would, of course, be essential in carrying out this scheme, but as that is in any case necessary and as the demands made upon it would be quite small relatively speaking, its inclusion does not seem to be a very insuperable objection.

Two-jet Bi-fuel Carburetters.

It is perhaps not an exaggeration to say that the great majority of light cars are fitted with carburetters of the two-jet variety such as the Solex and the Zenith, and this arrangement lends itself admirably to the bi-fuel system.

The idea can be very simply applied in the case of the Solex in the following manner:—

Fig. 3 shows sectionally the internal mechanical arrangements of this carburetter. It will be seen that the auxiliary jet is supplied by the central column in the float chamber, into which the petrol enters by a hole visible near the bottom; in order now to arrange for an auxiliary petrol supply it is only necessary to stop up this hole by solder and drill through the bottom of the float chamber into the centre of the column.

Jet —
Petrol —
Plug —

Fig. 2.—A necessary on carburetter. is cut off the lower chamber a petrol paraffin goes to the

Fig. (In)

LIGHT CAR ENGINES.

Can be Used With Only Moderate
By a Carburetter Expert.

of the number of petrol substitutes now appearing, fall back, as petrol becomes more difficult to obtain.

An additional float chamber from a cycle carburetter can now be attached externally to feed petrol at a constant level into that hole. The level need not necessarily be the same as that of the fuel in the Solex float chamber; for the two systems are, of course, entirely insulated by this means, but it is preferable for general ease of adjustment to approximate it.

The main tank can now be used entirely for paraffin, and a small auxiliary tank of petrol attached to supply the additional float chamber, great care being taken that the carburetter is adequately heated by means of a hot air pipe from an exhaust muffle to the T piece on the instrument.

Some models are provided with holes in this part, and in such a case these should be stopped up, leaving only the four small holes at the bottom, which themselves might in some cases be advantageously reduced.

Velocity and Viscosity of Paraffin.

The auxiliary jet can now be adjusted for slow running in the standard manner, while the main jet and choke are altered experimentally to suit paraffin. In most cases it is necessary to increase the jet size and also to reduce the choke size, for, although, chemically speaking, paraffin requires more air for its combustion than petrol, there are two physical considerations which overbalance that fact, namely, the necessity for a greater local velocity and the greater viscosity, or reluctance of flow, of paraffin relative to petrol. If correctly adjusted it will now be found that this works quite well when heated up.

It is necessary to wait a few minutes until the carburetter is warmed up before attempting to open

the throttle, and it is also advisable to get the engine to full working heat before attempting adjustments of the main jet. This should then be reduced as much as possible to avoid sooting up the engine.

An arrangement of this sort has been tried quite successfully on the Solex older type, and should be equally successful on the later C models.

The Zenith carburetter lends itself equally to this attachment, and one of the ways in which the idea can be carried out is shown in Fig. 2. The Zenith has three ultimate sources of fuel output. The main jet, which is the central orifice in the multiple spraying arrangement, is situated in the waist of the choke tube, the compensator outlet surrounds it and takes the form of an annulus, while the third orifice, with which we are principally concerned, opens into the throttle chamber at the actual point of its contact with the vane.

How to Alter a Zenith.

The bi-fuel device must not be introduced at the compensator jet, as might at first seem feasible, for this contributes partially to the main supply, but must be applied in such a way that it takes effect only at the orifice near the throttle. To do this effectively the slow running arrangement is withdrawn, and the lower part cut away sufficiently to permit a plug to be inserted in the housing as shown in the figure. Immediately above this obstruction the casting can now be tapped, and a second float chamber applied on the same principle as is suggested for the Solex, only in this case the petrol level in the extra chamber should be set to the same height as the main level in the carburetter.

It can then be adjusted in the same manner as the Solex, a pipe being led from a good exhaust muffle to one of the air intakes, the other being stopped up. For convenience flexible metallic tubing is used, and in order fully to conserve the heat this tubing should be lagged with coarse, brown packing paper, which is an excellent non-conductor of heat.

Where it is possible to do so it is also advisable to wind the supply pipe several times round the exhaust on its way from the main tank to the carburetter, for the vaporization of the paraffin is to an extent aided by heat applied in this manner.

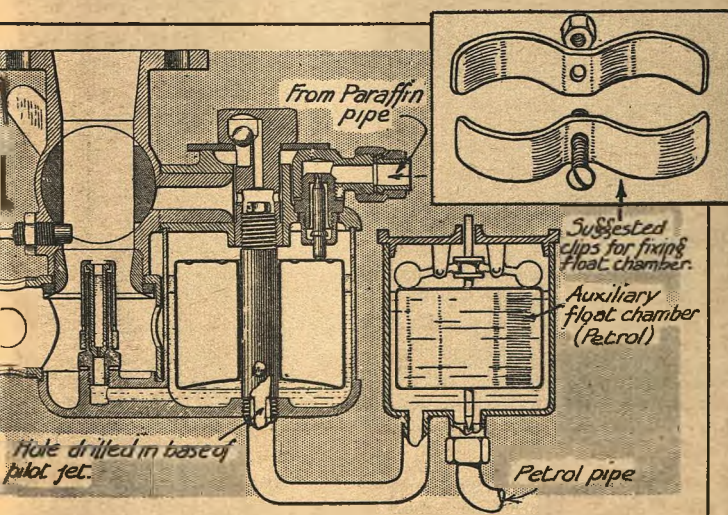
Heat and Vaporization.

In dealing with paraffin it is well to bear in mind the fact that its rate of vaporization is very greatly influenced by heat, therefore a carburetter setting which is quite correct at one temperature might be considerably too rich unless this figure is materially increased; although, therefore, it tends to complicate matters a little, it is advisable to apply, if possible, an extra air inlet to mechanically regulate from the dashboard the mixture alteration, which will otherwise take place with varying degrees of heat. If this extra fitment cannot be installed conveniently the only alternative is to set the paraffin mixture as lightly as possible when the engine is warm, and put up with the troubles which will certainly obtain for a few minutes after starting up from cold.

A word may now be in place with regard to the necessity for correct engine conditions in order to run successfully on heavy non-volatile fuels.



erations ne-
Zenith car-
the pilot jet
the bottom,
part of the
ugged, and
let in. The
upply then
ain jet only.



How a Solex carburetter can be altered into a bi-fuel instrument. A metal clip that can be used to hold the auxiliary float chamber (which could be a motorcycle type) to the main float chamber.

HEAVY FUELS (contd.).

It goes without saying that to explode efficiently a reluctant mixture of this sort, which probably exists in the combustion head in a coarsely mottled state, the ignition must be beyond reproach. The magneto, therefore, should be carefully adjusted as per the maker's directions, and in order to obtain a maximum spark plugs should be used which have a single moderately stout electrode, with the widest gap possible. Great care should also be taken that the valve timing is in perfect order, that the exhaust springs are strong, and that the silencer is perfectly clear, for it is essential that there shall be no suspicion of induction blow-backs.

These are much more prevalent than most people imagine, and usually come from either an early closing exhaust valve or an insufficiently clear exhaust way. - The effect of these periodic inlet current remises is to condense, or, more correctly speaking, deposit the spray in the induction pipe. In the case of petrol their presence is merely manifested on the petrol bill, but with less volatile fuels they would simply spell—failure.

In certain carburettors of the straight-through variety blow backs can be felt by placing the hand near the intake and suddenly opening the throttle,

but with the average vertical instrument their detection is difficult except by a practised hand, and it is safer, therefore, to anticipate their presence by checking the timing and freeing the exhaust tract.

The valve should close from 8 degrees to 12 degrees over top, and if the opening point of the inlet can be made by tappet clearance to overlap it, so much the better, for a timing of this sort is always conducive to high induction velocity.

There are certain kinds of engines upon which heavy fuels will never run successfully owing to latent depositing troubles, such as those which have an unusually large diametric inlet tract and valves in relation to their cylinder dimensions, and again there are a few in which the exhaust manifold is enclosed within the cylinder casting, and designed in such a way that the gases emerging from the ports are immediately bent sharply at right angles instead of entering the longitudinal part of the manifold by a gradual sweep.

The rebound caused by this design frequently produces an incurable blow-back, which may to an extent be remedied by an early opening valve and by dispensing with the silencer, but which, in its normal state, even with a clean and well-adjusted engine, renders the use of paraffin impossible.



A hitherto unpublished photograph of the recent successful ascent of Hard Knott Pass, in the Lake District, by two 10 h.p. A.-C.s. Mr. K. E. Don has just topped the pass, his car, practically out of sight, followed by a cloud of smoke, being indicated by the arrow. Mr. Noble, who later finished the ascent, which is about 1 in 3 in places, is seen waving his arm to the successful mountaineers. The photograph indicates the surface, but not the gradient. Ropes were used on the wheels in places, but they soon frayed out, and the party relied upon the rubber-treaded non-skid Avon Sunstone tyres, not one of which punctured during a week-end of climbing.

THE USE AND ABUSE OF THE LATHE.

New Explanatory Series of the Greatest Assistance to the Amateur Mechanic.

III.—TOOLS FOR CUTTING SCREW THREADS.

TOOLS for cutting screw threads are flat-topped—that is, they have no front or side rake—and their sides are ground at the angle of the threads required, 55 degrees for Whitworth and 60 degrees for metric and Vee threads. They cut on both the edges meeting at the point, and these edges, therefore, must have clearance angles of 5 degrees or 7 degrees, and for brass may have more. They are ground at the right angles by the help of a centre gauge, shown in the sketch (Fig. 1). Two centre gauges are needed, one with 55 degrees and the other with 60 degrees angles.

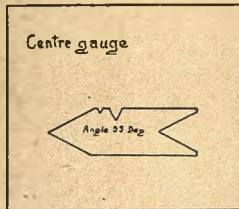
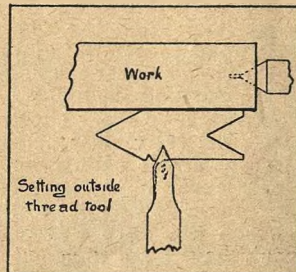


Fig. 1.—A centre gauge as a guide for grinding the edges of tools the correct angle.

Fig. 2.—Setting the tool by the centre gauge.



When cutting threads, it is essential that the tool-point should be presented squarely at the work; in other words, the centre line of the tool bisecting the angle made by the cutting edges must be at right angles to the axis of the work. The tool is set by the centre gauge as shown in the next sketch (Fig. 2). The gauge is held against the work and the tool adjusted in the tool post until its edges exactly meet the edges of one of the notches in the gauge.

Tables of the gearwheels required for producing threads of different pitches are frequently affixed to the lathe itself, or may be had from the makers, or looked up in any book on the lathe. The simpler way is to do the sum on the bench with a bit of chalk. As an instance, a lead screw has eight threads to the inch, and 20 threads to the inch are required to be cut. One writes the ratio as a fraction— $\frac{20}{8}$ —and multiplies or divides both upper and lower terms until an equal fraction is arrived at having for its terms numbers corresponding to the numbers of teeth in available gearwheels. In the present case $\frac{20}{8} = \frac{5}{2} = \frac{25}{40}$; thus 50

N is the pitch in millimetres of the screw to be cut. A translator is very handy in these days when one has to make parts that are difficult to obtain, or possibly altogether unobtainable.

Some threads require compound trains of four or six gearwheels. Their calculation and working present no difficulty, but space prevents a full descrip-

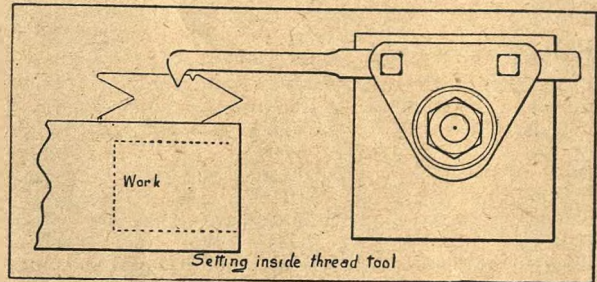


Fig. 3.—Setting the tool for thread cutting.

tion here, and they are fully discussed in the text books.

What are called tool-holders are a great boon to the amateur. They have shanks like an ordinary lathe tool, and some contrivance of pinching screws or clamping bolts for holding a short piece of tool steel that does the cutting. Their advantage is that, for small lathes, the tool-point is of $\frac{3}{16}$ in., or $\frac{1}{4}$ in. square or round, and such small stuff can easily be forged, using the top of the vice as an anvil block. To make a solid tool in this way out of $\frac{1}{2}$ in. or $\frac{3}{8}$ in. square tool steel would be a long and laborious job. With $\frac{1}{2}$ in. square steel one can forge roughly to shape and file up afterwards, without overtaxing one's strength or patience.

A tool-holder that is simple to make and works quite well, though poor theoretically, is illustrated here (Fig. 4). A slot a quarter of an inch wide and deep and about 2 ins. long is cut in the side of a bit of $\frac{1}{2}$ in. square mild steel, and a bridge to hold a pinching screw brazed on. Another holder shown in the next sketch (Fig. 5) is even simpler. It is a bit of square $\frac{3}{4}$ in. mild steel, with a $\frac{1}{2}$ hole drilled right through and one side cut through with a saw. It holds $\frac{1}{4}$ round tools, which are jammed firmly in it by the set-

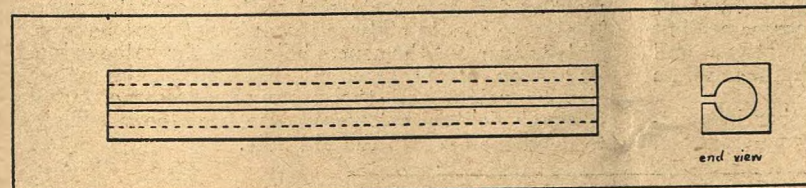


Fig. 4.—A home-made tool-holder.

and 20 are the wheels required, 20 goes on the mandrel and 50 on the lead screw.

Metric pitch threads can be cut on lathes having English pitch lead screws by the aid of a "translator"—a wheel having 63 or 127 teeth. With a lead screw of 4 to the inch the formula is $\frac{63N}{400}$, where

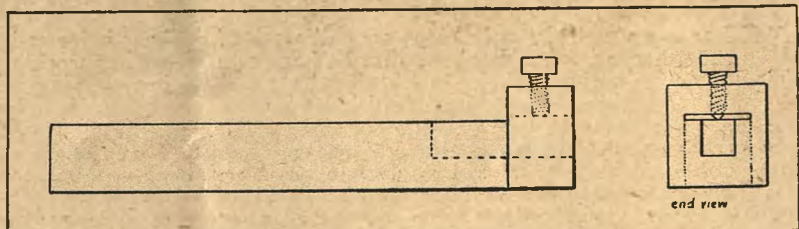


Fig. 5.—Another type of holder.

THE USE AND ABUSE OF LATHES (contd.).

motorcycle engines, or for work on magnetos or lighting sets. This light work is rather difficult to get done nowadays unless one lives in a large town and can apply to an experienced turner who specializes in it, and, in many cases, parts for replacement are long in coming.

The one drawback of the tool-holders is that it cannot take heavy cuts, because the heat is not conducted away as it is in the case of the solid tool. But, from the amateur's point of view, its chief usefulness is for light work of a varied character, owing to the number and variety of tool-points he can make; and he will always have a few solid tools for roughing down quickly, keeping the holder for its proper purpose—light work and finishing, cutting fine threads, etc.

Examples of Odd Jobs.

Sometimes the amateur can take the part of the mouse in the fable of the lion and the mouse—the lion in this case being the garage proprietor; and it has happened to the present writer on several occasions to be of use in this way, doing jobs that were either beyond the skill of the men available at the garage, or that required more time and care than those men had at command. One or two examples may be of interest as showing the kind of odd job that comes along and the way to get round them. The first was a large brass cap that threaded into the end of a motorcycle gearbox. When threaded in it was secured by four set-screws passing through the box and into the cap. It seemed an unmechanical way of doing things, but one expects that in motorcycle practice. The point was that, in taking it out, these set-screw holes and the adjacent threads had been badly damaged by a zealous garage hand, who used the holes to punch out the cap by, instead of the proper holes provided, which were hidden by the overhang of a pulley he ought to have removed first. This is a typical instance of a class of repair not infrequently met with, where a part is damaged in dismantling either by ignorance of the order of the operations or by the use of improper tools or methods. If the brass cap had threaded into steel it might have been possible, by working it gently in the threads, to have got it into order again, because the steel would be harder than the brass. Here, however, the aluminium was actually softer, so such a course was impossible, and the cap was carefully centred in an independent jaw chuck, change wheels set up for the correct pitch, and a threading tool adjusted in the tool post and entered on a good part of the threads. The lathe was then pulled round by hand, and the damaged portions of the threads eased out little by little. Had the material been at hand it would have been almost as quick to have cut a new part out of the solid; but slabs of brass an inch thick and 5 ins. across are not to be found in every workshop or garage stores, and to make a pattern and get a casting would have taken a couple of days or so.

Another case that was curious and rather interesting, as illustrating the importance of small details,

was that of a warped valve head. On discovery it was sent to a garage and trued in the lathe; but when it came back and was tried in the cylinder there was a gap at one side of nearly a fiftieth of an inch. The head of the valve had a centre hole in it, as valves often have, and this centre hole had evidently been running on the back centre of the lathe when the valve was trued, the stem being gripped in the chuck. The method seemed good enough, but it was a little puzzling to see at a first glance why the results were so poor. The valve stem was gripped in a chuck for about half an inch, and a pointed tool set in the tool post close by the chuck, and the chuck adjusted till the stem ran true at that point. The lathe was then stopped and the back centre run up slowly and carefully. It entered the centre hole of the head, and the head was seen to spring as it did so. Then the mystery was plain: the centre hole of the head was out of centre with the stem, though not so much as to prevent the back centre from entering, and when it entered it bent the stem of the valve, and thus, while truing up, the valve stem was running bent. So soon as the back centre was removed the valve would recover itself—and the seating would be true. The next point to determine was whether the untruth lay in the stem or near the head, so the stem was gripped in the chuck about half-way up, with the same result. To cut a long story short, it was found possible to chuck the valve close up to the head and true up the old centre hole with a Slocomb centring drill held in a drill chuck in the back centre. The rest was easy, and the valve was petrol-tight after light grinding.

When the warp was found to be in the head, it would have been sufficient to have trued up the seating with the valve chucked close against the head, not troubling about the old centre hole at all. This would be the usual commercial method; but the other was adopted, as it gave an opportunity of checking the valve by the first test mentioned—gripping the valve by the end and running up the back centre.

A Delicate Test.

To make the test more delicate, a tool was adjusted so that it just held a piece of paper against the seating before the back centre was run in. Any spring of the valve in a horizontal plane when the centre entered would either nip or release the paper. This test applied at two positions of the valve 90 degrees apart showed whether the new centre hole was correct. The centring and testing of this job took about an hour, and the actual skimming up of the seating about four minutes—a division of time very often experienced in lathe work.

It is now suggested that so much care needs to be taken with every lathe job: this operation has been detailed because it brings out a few points of judgment and simple tests met with in actual working. Beginners should observe it would not have been possible to true out the centre hole with the valve gripped by half an inch of stem, as it happened to be rather a slender valve, and the pressure necessary for the Slocomb drill to cut would also have been sufficient to bend the stem to the old hole.

DRILLING AND REAMERING.

THE average motorist only keeps a small stock of drills, hence it often happens that he has some difficulty in enlarging a hole to obtain the small amount of clearance to pass a standard bolt through it. He is not likely to be the possessor of reamers or broaches, and, if he looks through his tool box for passable substitutes, he will rarely find anything more suitable than the tang of a file. These will be found in all sizes, and, as they are well tapered, they have a really big range of work. When employed on thin sheet metal it will be noticed that a nasty

burr is formed, on the side opposite to that on which we are working, and, as it entails considerable work in removing it with a file, it is better to counteract such action, by working the improvised reamer, alternately, from either side of the hole. On account of the taper of the tang, the hole produced will not be parallel, but slightly smaller in the centre, so, if greater accuracy is desired, it will be necessary to stop the reaming operation before the hole is quite enlarged to size, and apply the finishing touches with a round file.



The Waiting List.

Dunlop: "Hullo! where's the car?"

The Squire: "Where's the car, indeed! Goodness alone knows! Joan has it somewhere in France, driving mechanics backwards and forwards from their billets to an aerodrome, and she tells me the car's getting badly knocked about."

Dunlop: "That's very likely, I should think. What are you doing about a car for yourself?"

The Squire: "Oh, British cars for me every time, you know, and so I'm on the waiting list of a British firm which will be making the genuine British article after the War."

Dunlop: "And you specified Dunlop tyres, I hope?"

The Squire: "Of course."

DUNLOP RUBBER COMPANY, LIMITED,
 Founders of the Pneumatic Tyre Industry,

Aston Cross, Birmingham; 14, Regent Street,
 London, S.W. Paris: 4, Rue du Colonel Moll.

On Sale Everywhere

Small pattern,
No. 202... **3/6**
Car size, No. 11,
as illustrated **4/-**
Car size, No. 14,
twin points... **4/-**



This No. 11 patent type gives easy starting and a single FAT spark at any speed.

Wholesale, 29, VAUXHALL BRIDGE ROAD, S.W.

VICTORIA 4670.

B22

HELP THE MOVEMENT by letting advertisers know that their advertisements in "The Light Car and Cyclecar" interest you.

FOR MILITARY OR CIVILIAN USE

A MACKINTOSH

Made in the very lightest summer-weight material, consistent with hard wear. Admirably adapted for Motoring or Marching.

PRICE—

£3-10-0

**GUARANTEED
ABSOLUTELY
WATERPROOF**

Detachable
Camel Fleece
Lining, three-
quarter length,
extra, **£1 : 1 : 0**

By buying from us, the actual manufacturers, you save the middleman's profit, and get far superior proofing for the money. A coat, too, that has just been turned out, fresh and full of life. It should last for years.

Write for illustrated catalogue of Proofed Garments.



Dunhills Ltd.

359-361, EUSTON ROAD, N.W.
2, CONDUIT STREET, W.

90-92, Cross Street,
Manchester.

72, St. Vincent Street,
Glasgow.

THOUGHTS & OPINIONS

The Suggestions
of To-day may be the
Realities of To-morrow

NOTICE TO CORRESPONDENTS.

Preference is given to letters intended for publication which are to appear above the writer's name and address, but where this is not desired, initials or a nom de plume will be substituted if requested. In view of the

peculiarly wide publicity afforded to letters on light car and cyclecar subjects appearing in these columns, readers are asked to make their letters as brief as possible so that a greater number may be published. Letters received up to Wednesday morning first post usually appear in the following Monday's issue.

ELECTRIC, STEAM AND COMPRESSED AIR CARS. Alternatives to the Petrol Engine Arousing Keen Interest.

Why Not the Three-wheeled Monocar ?

I have read with much interest "P.G.F.'s" article on page 55. I should like to see a petrol-electric three-wheeled monocar, driven by the single back wheel like the Morgan. Being rather an invalid, I should be content with a very moderate speed, say, 15 m.p.h. on an ordinary road, but there should be ample power to ascend steep hills—say, 1 in 6—without failure.

For such a vehicle "P.G.F.'s" second method seems ideal, if only by it the power is transmitted from stem to stern without interfering with the foot space; and I take it that the motor should develop $1\frac{1}{2}$ h.p. to 2 h.p., and that the engine should give 3 h.p. or 4 h.p.

I should be glad to know the sizes, cost and weights of the motor and dynamo, and whether these and the engine are to be had commercially.

I suppose the Lloyd motors are much too big, and, on the other hand, that the dynamo and motor made by several firms for starting engines would not be powerful enough even for the light monocar that I have described. I am sure that such a runabout would sell well among those who, from age or infirmity, are unable to use a cycle, and who do not feel, in purse or otherwise, quite equal to a small car. We are not all millionaires or active youngsters.

R.M.S.

Fleet, 16th June, 1916.

* * Germany has developed three-wheeled vehicles on these * lines, which were illustrated in the first number of this journal, 27th November, 1912.—ED.

Objections to Petrol-Electric Cars.

I have read the extremely interesting and instructive article on electrically-driven light cars in THE LIGHT CAR AND CYCLECAR of 5th June. There is no doubt, to my mind, as to the charm of an electrically-propelled vehicle, but I scarcely think you have that in the case outlined.

In the first place, you have the usual prime mover in the petrol engine. This will have to be a fairly high-speed machine to keep the weight down, and not a slow-speed engine as mentioned in your paper. If a slow-speed engine is used, it will have to be of a much larger bore and stroke to get the necessary power out of it.

Regarding the efficiency, you would lose at least 7 per cent. between the engine and the dynamo, while the efficiency of the dynamo would not exceed 85 per cent., and the same for the motors. Another 10 per cent. would have to be deducted for the drive between the motor and the back wheels. This means that if the manufacture of the motors and gears adopted were not of the best, the efficiency of this system would not exceed 60.4 per cent. That is, if we adopted a 10 b.h.p. petrol engine in the first instance, we should only have available 6.4 b.h.p. for actually driving the car.

The unsprung weight of the car would be increased, as the motors would have to be connected up to the back wheels, as you show.

With electric installations thorough insulation is one of the chief points to be observed if we do not want to have trouble. Dampness of any kind is the chief enemy to this. The motors would certainly have to be totally enclosed and weather-proof, or else water would undoubtedly creep in during rain and when washing the car, especially with the methods often used in garages. As direct-current motors would have to be employed, especially if lighting batteries were used on the car, one of the principal points to be observed would be the attention to the brushes and commutator, and in a totally-enclosed

motor of the size you would use they would be very awkward to get at to adjust, etc.

Regarding the initial cost of such a machine as outlined, I am afraid the cost of producing a satisfactory dynamo and two motors would exceed the cost of the gearbox and differential, as in the end you would have to use some form of gear drive with your motors.

If a satisfactory steam producer could be made with a fairly good water reserve, I think the most flexible drive for a light car is the steam engine. I have read with interest the recent articles on this subject, which show that it is not dead, and I am hoping something will be done in that direction when the war is over and when designers have time to go further into the matter.

"Glenville,"

Oughtlington, Lymm.

W. M. SHAW, A.Me.I.M.E.

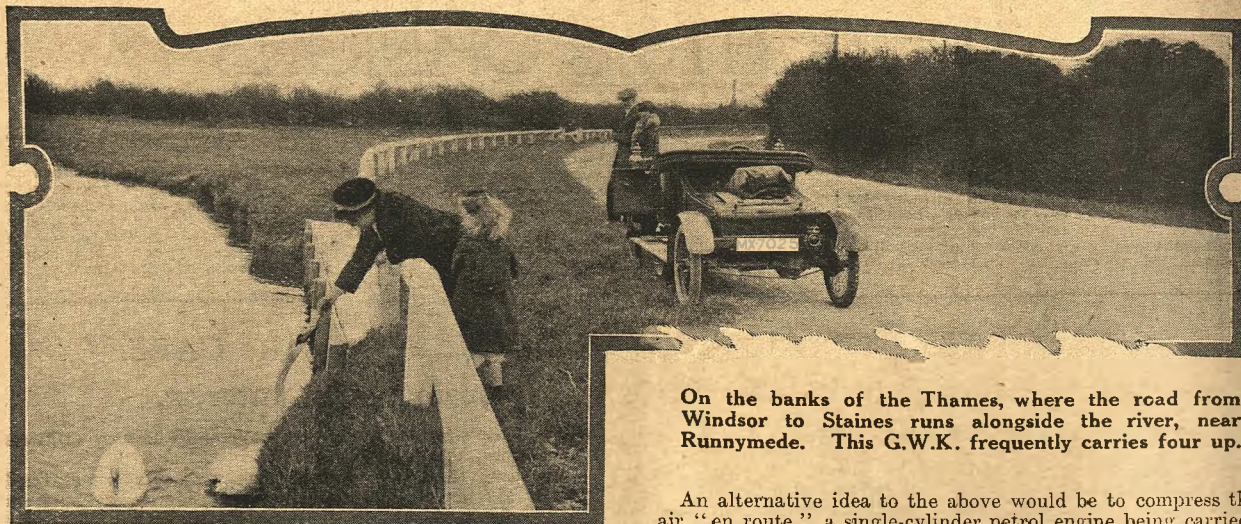
A Defence of the Steamer.

I think the rather sweeping statements re steam cars made by your correspondent, Mr. George Watkins, call for some comment. I fancy that if the steamer is only able to make good a few of its many claims of superiority over the petrol car the only people who would not want it would be those who make or sell petrol cars.

Mr. Watkins accuses some correspondents with trying to get a free puff for their own inventions; this is no doubt true to a certain extent, but I fail to see why their letters should be regarded with any more suspicion than those which come in countless numbers from firms dealing in all sorts of motor goods, from six-cylinder cars to anti-rust bands, especially as these letters always seem to recommend the writer's own particular article as the very best of its kind. [Letters which are really veiled advertisements do not appear in THE LIGHT CAR AND CYCLECAR.—ED.]

What foundation there is for the statement that there is not the same fascination in driving a steamer as in a petrol car I cannot imagine. I had always thought that the boot was quite on the other leg. The only fascinations that the steam car lacks are gear changing and engine starting troubles. (The fact that the self-starter has not entirely overcome starting troubles was, to my mind, beautifully exemplified in the advice given in your issue of the 12th of June, namely, that it would pay better to have the engine tuned for easy starting, even if this did mean fewer m.p.g. rather than fill a larger and heavier starting battery, and this in the days when petrol is more precious than refined gold. There may be some people who like gear changing, but I think if most people were asked which they would prefer to execute a neat juggle with the gears or merely to open the throttle a little wider, as in a steam car, they would not be long in making up their minds.

"With such an incurable complaint" (of having to take up water) "no one would continue to take an interest in motoring." What an awful picture! However, having to take up water every 100 miles or so is not such a calamity after all, and it is quite possible to fit a pump or injector and so save the trouble of handling the water. In this connection I think the reputation of the steamer, as a whole, has rather suffered owing to the fact that the deservedly famous Stanley can only run 40 or 50 miles to one filling of water. The reason for this is that in a fire tube boiler, such as the Stanley is fitted with, it is very difficult to arrange a satisfactory condensing system, as the boiler fouls up very quickly with the oil pumped back into it along with the condensed



On the banks of the Thames, where the road from Windsor to Staines runs alongside the river, near Runnymede. This G.W.K. frequently carries four up.

water. In their latest model the Stanley Co. have overcome this difficulty by using only graphite for cylinder lubrication, and they have fitted a condenser in their latest model.

I do not see why the steamer is not economical; of course it runs rather fewer miles per gallon compared with a petrol car of equal h.p., but then the fuel used costs so much less than petrol that the difference is more than made up in favour of the steamer.

"THERMOSTAT."

Westward Ho.

The Compressed Air Car.

Whilst the discussion on steam cyclecars is at its height, and the petrol problem becomes more difficult to solve, it seems to me to be a favourable moment to really consider the practicability of using compressed air as a power unit. Although this question has been suggested in *THE LIGHT CAR AND CYCLECAR* before, it has always been more or less in a futurist spirit. Dr. Low's idea in this direction was to "garage" cylinders of compressed air. (See sketch p. 216, No. 8, also lecture p. 193, No. 7, both Vol. I, *LIGHT CAR AND CYCLECAR*.)

What is the matter with the following:—Build a small car and drive it by a "steam" engine developing about 6 h.p. at 250 lb. per sq. in. Feed the engine from a cylinder of compressed air at a pressure of about 120 atmospheres. Charge the cylinder at home in the garage from a pump driven by a 2 h.p. gas engine, which should be very economical. The weight and size of the air cylinder will probably be objected to. If a cylinder of about 4 ft. long by 7 ins. diameter were carried underneath the car it should not be any trouble as regards size. The weight would probably be about 150 lb. fully charged with 100 cubic ft. of air at 120 atmospheres pressure. Whether a 2 h.p. gas engine would be enough power to recharge the cylinders, how far the cylinders of air would last, or how long they would take to recharge, I do not pretend to know, but I hope to see my letter criticized by practical engineers.

An alternative idea to the above would be to compress the air "en route," a single-cylinder petrol engine being carried, connected up to a pump, which in its turn charged a small boiler to feed the engine as before, etc.

The advantages of steam are all embraced by those of compressed air, whilst such things as condensers, burners, etc., are unknown. An immediate start can be made without having to wait for the pressure to rise. The compressed air could be used for inflating the tyres and blowing the horn. If the latter system were adopted the petrol engine could be started from the power proper.

Summing up the whole question, I think that if one could run 100 miles on one charge, and the charging plant were simple and economical, it would be worth while experimenting.

What is wrong with compressed coal gas as a fuel for motors? The "carburetter that will not carburett" would be a thing of the past. Coal gas is about 2½d. per cubic ft. compressed to 120 atmospheres. Absolutely no alterations would be necessary with the exception of doing away with the float chamber of the carburetter. **LOUIS S. COMMON,**

8, Strathearn Street, Hull, Yorks.

Practical Details Wanted.

I have studied with interest the article on the petrol-electric light car, and certainly think that the idea is very good indeed. I should be glad to see the matter gone into further, giving such details as the weight of the dynamo, the horsepower necessary to drive it, the weight of the motors for driving wheels applicable to a two-seated car about the size of the 10 h.p. A.-C., and details as to the voltage necessary to drive the car at an average top speed of, say, 20 to 25 m.p.g. Perhaps some public-spirited and interested electrician will work on these details and then, if practicable, a demonstration car could be built, the money for which would undoubtedly be subscribed by other readers of your interesting journal, besides myself.

S. C. BAXTER.

78, Finsbury Park Road, Finsbury Park,
8th June, 1916.

RECREATIVE MOTORING FOR WORKERS.

Who are the Sunday Motorists?

In reply to your correspondent, J. Atkinson, I am over military age, and usually spend my time, or the larger portion of it, golfing and motoring. I have recently given up both to do munition work. Now that I am working all the usual working week, I feel I should like a run in the car on Sundays, and I think I am fully entitled to this little extravagance under the circumstances.

There is one aspect of this much-discussed "pleasure motoring" that needs emphasizing a bit more, and that is, week-end motoring is done almost solely by the workers. Few would drive out on the crowded roads on Sundays if it were possible to go on other days. If it is really a case of economizing petrol, let those cars be stopped that are notoriously

extravagant on petrol, especially the cars of the idle rich. These are so often the people who preach economy to the workers and the last to practise it. I know of a case in the West of England where the mill owner, who has several big cars and carriages, and 13 servants in his house, called a meeting of the workers to lecture them on economy, stopped the mill for 30 minutes, stopped the workers' pay for that time, and had a platform built by carpenters at 1s. per hour. It is the only mill in that district that is still paying pre-war wages. These are the kind of people that so often preach economy and make not the slightest attempt to practise it. Their cars and carriages are running as usual; the number of their servants is not reduced. They are most likely doing their bit towards economy by giving their servants margarine

THOUGHTS AND OPINIONS (contd.).

instead of butter, or else giving them less food, as they are doing with their mill workers. I am able to look at the question from both sides, and I say that stopping Sunday motoring by the workers should be absolutely the last move towards economizing petrol instead of the first. G.G.
London, N.

Another Hard Case.

With reference to your correspondent's observations regarding the prohibition of using light cars, I am in perfect sympathy with him, because I shall be placed in the same position, and it will be very hard on us all if this prohibition comes

into force. I am the owner of a G.W.K., and, as you know, the petrol consumption of these cars is very light. As a matter of fact, two or three gallons a week would be sufficient for me and my purpose. I have since the war been using my car continually for Red Cross work, but I am now faced with the prospect of having an invalid wife on my hands, and the only way to get her fresh air (which she has been ordered to have plenty of) will be by using my car.

If the Government would only stop their mechanics from washing their overalls in gallons of petrol, and stop so much joy riding which still exists not only in my district, but in other districts where there are Transport and Flying Corps men posted, there would be a little more petrol for private consumers. F. J. PILE.

3 and 4, Lincoln's Inn Fields, W.C.

CRITICISING THE HOME-CONSTRUCTOR—SOME REPLIES.

A Reply from the Designer.

I notice a letter in your columns from "S.J.T.D." with regard to what he calls the craze for building cyclecars, and he seems to single me out for special venom. I shall not attempt to reply to his assertions, as I may be giving him information which at present he seems to lack. Briefly, however, I should like to say the little car is much more comfortable and much easier to drive than a sidecar combination; this is what it was constructed for. Can "S.J.T.D." give any adequate reasons why the engine should not be placed in a low central position within the chassis? The engine keeps remarkably cool after long distances and up gruelling hills; the bonnet is an air collector, or funnel, which pours air on to the cylinders and is most efficient; incidentally, the bonnet justifies its existence.

"S.J.T.D." refers to the telescopic steering rod, and says what a nice thing if one of the joints suddenly loosened! Whoever heard of a joint in a telescope, and "S.J.T.D." seems to infer that there are more than one! The body I grant is ugly; this is a detail matter which can be improved.

I could write several pages giving reasons for everything I have embodied in my little design. I am satisfied that it knocks the sidecar outfit hollow, and it can be produced at the same figure with the same h.p., give as great a speed or, more desirable still, power. I can get into the little thing, drive 50 miles without any special clothing and step out with the merest film of dust, fresh and without fatigue. Can any sidecar driver do this? Personally, I have no desire to drive a sidecar outfit again. FRANCIS C. R. JOHNSON.

Mawan, Livermead, Torquay.

New Ideas Should Be Encouraged.

Personally, I fail to see any good criticism in the letter of "S.J.T.D." regarding home-built cyclecars. While, perhaps, Mr. Johnson's car leaves much to be desired, your correspondent should not forget that the resources of a large factory were not at the disposal of the maker. If "S.J.T.D." has ever carried out work under disadvantageous conditions, as I have had to do, he would realize the difficulty that may have to be overcome. He speaks of home construction as a craze, and better-looking cars could be purchased. This is, no doubt, true also with those of us who spent much time and money in the construction of model engines some years ago. While I fully appreciate my shortcomings in the past in this particular direction, I have no regrets; in fact, look back upon the pleasure I then received.

Referring to Mr. Johnson's car, the body might be hideous, but why do we pay bodymakers and designers a good rate of pay if the same work could be carried out by an amateur? A certain amount of plant and tools is also needed to produce the simplest type of body. They are not usually found in every home workshop. As to the telescopic steering rod, this, perhaps, might be improved, and I must say I do not like that part of the design. Even if a joint did come loose, it would not be the first one to do so. With regard to engine cooling, I think that no difficulty would be experienced if a simple form of baffle were introduced to direct the air upon the back cylinder.

Being myself interested in light car design, I study very closely these home-made cars. Very often you see some little point in the design that repays your trouble. We must not forget this fact that the home designer is not bound down by any accepted form of practice and the greatest item in design

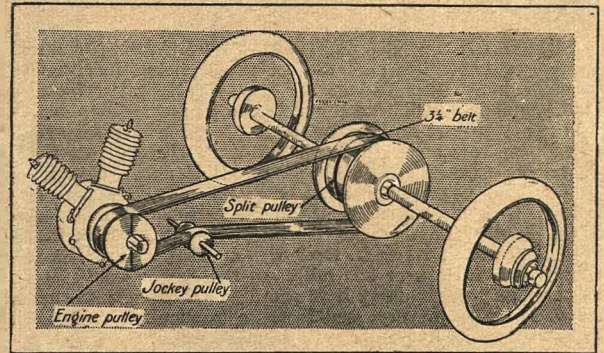
—the prospect of selling the production. That being the case, he might unintentionally produce something in a very crude way that, later on, could be put to extensive use in another form. I am told that one particular part of to-day's accepted good design was first proposed by an amateur and was at that time termed a freak design.

I hope that we shall see more of these home-made cars described in the pages of THE LIGHT CAR AND CYCLECAR.

Newcastle-on-Tyne. A.M.I.MECH.E., A.M.INST.A.E.

A Flat Belt Drive.

Knowing the reliability of the ordinary flat belt for machine-tool drive, I suggest that this form of transmission be utilized in the simpler two-seater cyclecar. Instead of V-belts, chains, gearings, etc., why not have a wide, flat pulley on the engine shaft and another on the rear axle, the latter being split centrally, each half being keyed separately on to the driving



A rough sketch of the arrangement for a flat belt drive, the pulley on the back axle being divided with the intention of providing a differential. (See letter from Mr. W. J. Stevens.)

wheels? A jockey pulley fixed near the engine, and operated by a conveniently placed lever, would provide some sort of clutch. The split back pulley would, of course, act as a differential. A canvas belt, of at least $3\frac{1}{4}$ in. width, would probably prove most satisfactory; for belts of this description are "slipping" every day on the machine-shop planer. An expanding pulley (within limits) in conjunction with the jockey would, I think, provide a very cheap, light, and durable form of variable transmission.

15, Hugh Road,

Stoke, Coventry.

W. J. STEVENS.

* * The Globe adopts a similar idea, with flat belt drive from the engine to a gearbox. We do not see how it is possible to expand a flat pulley to give a variable gear.

—Ed.

Letters should come to hand by first post Wednesday at latest to ensure insertion in the following Monday's issue. Letters cannot be forwarded. If the address does not appear in the paper it is an intimation that correspondence is not desired by the writer.



TOURING MATTERS.

CHANNEL ISLES.—"V.P.F." (Dundee) requires information on maps and illustrated guide books of the Channel Isles.—REPLY: Guide books are published by the following firms, viz., Messrs. A. and C. Black, 1s. and 2s. 6d.; Messrs. Ward, Lock and Co., 1s.; and Messrs. Methuen ("Little Guide" series) 2s. 6d. These can be obtained through any bookseller. Probably the maps in Black's 2s. 6d. edition would be found sufficient, but if not Messrs. E. Stanford, of 12, Long Acre, London, W.C., would supply special maps.

PETROL FOR TOURING.—The Rev. "L.O.C." (Dunfermline), who has just returned from the Front, writes:—"I propose going for a motor trip before returning to work, and think of motoring from Fife to Devon. Am I likely to get hung up on the road for want of petrol?"—REPLY: We are afraid that you will certainly find some difficulty in motoring from Fife to Devon. However, in the big centres you ought to be able to obtain petrol as, so far as our inquiries go at present, there is no serious shortage. You should carry a good supply as a safeguard.

BRIGHTON TO WAKEFIELD.—"E.J.C.A." (Brighton) desires to know the best way of getting from Brighton to Wakefield, avoiding London and any very large towns, also if it would be possible to complete the journey in one day.—REPLY: A good route between Brighton and Wakefield, avoiding all big towns, would be via Patcham, Henfield, Cowfold, Horsham, Dorking, Leatherhead, Cobham, Weybridge, Addlestone, Chertsey, Staines, Stanwell, W. Drayton, Uxbridge, Rickmansworth, Watford, St. Albans, Hatfield, Welwyn, Hitchin, Biggleswade, Buckden, Alconbury Hill, Stamford, Grantham, Newark, Retford, and Doncaster. The distance is a little over 250 miles, so that there would be no impossibility about doing it in one day. If thought too long, however, the journey could be conveniently broken at Grantham, some 175 miles or so from Brighton.

LIGHTING FROM A L-T. MAGNETO.—"C.S." (Wigan) asks: "Is it possible to utilize a low-tension magneto for the purpose of generating current for lighting purposes on a cyclecar. If so what alterations would be required?"—REPLY: A low-tension magneto is not designed for this purpose. The alterations required would be the rewinding of the armature, which is a difficult matter. The result would be most unsatisfactory, for the current generated would be an alternating one which would not charge accumulators. You would have to use 20-volt lamps and the light would be constantly varying according to the speed at which the magneto was running. This is a very old idea and hopelessly inefficient.

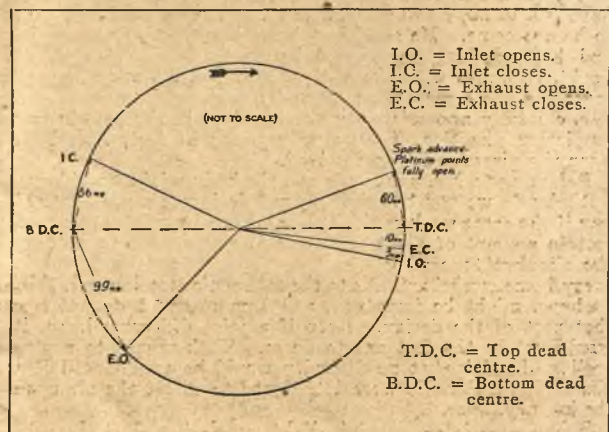
TIMING GEAR NOISE.—"H.J." (Plymouth) writes:—"I have a Blumfield twin engine which has developed an annoying tapping noise in the timing gears. I have lately had all the bearings rebushed and the pinions do not appear in the least worn. Do you think that a compound fibre and brass pinion would stand up to the work and would this cure the noise permanently?"—REPLY: We should be inclined to doubt if the cause of the tapping noise is to be attributed to wear of the teeth of the pinions. The timing gear might be noisy, but we could hardly imagine it setting up a tapping sound, and we should advise you to look for some other cause. We have no doubt that fibre pinions would stand up quite well as they are frequently used for this purpose in order to reduce noise of the timing pinions. We should very much doubt whether this would overcome your trouble, however.

PETROL SUBSTITUTE.—"D.McK.C." (Treharris) inquires whether he would be able to use a petrol substitute, particulars of which he has received, on a G.W.K.—REPLY: There are several petrol substitutes now being sold. Some of our readers complain of the results obtained, and it seems apparent that with all these substitutes it is necessary to heat the air supply and the carburettor to obtain satisfactory results, in exactly the same way as when paraffin has been used. We would advise you to experiment with a mixture of paraffin and petrol first, and if you get satisfactory results you will probably be able to use the petrol substitute.

VALVE TIMING.—"D.G.R." (Oldham) writes:—"I should like your advice as to the best timing for the valves and magneto on the Meteorite 10 h.p. light car, engine 1915 type. In timing the magneto (which is a U.H.) is the spark fully advanced or not, and in what position are the platinum points: just opening, fully opened, or closed?"—REPLY: Marking out the timing on the flywheel, the inlet valve should open 15 mm. past top dead centre and close 56 mm. after bottom dead centre. The exhaust valve should open 99 mm. before bottom dead centre and close 10 mm. after top dead centre. With regard to timing the magneto, if it is a U.H., the spark advance should be 60 mm., i.e., in advance of top dead centre with the platinum points fully open. If a Splitdorf magneto, the spark advance should be 38 mm.

DIFFERENCE BETWEEN TAX AND REGISTRATION.—"R.W.N." (London, N.) writes:—"A few months ago I purchased a Calthorpe Minor car. I have got the transfer of the numbers and should be glad to know if I have to pay the £3 3s. tax."—REPLY: The fact that you have been able to transfer the registration numbers on your light car does not entitle you to escape the Inland Revenue tax of £3 3s. This is quite a different matter, and is a tax that you pay for the privilege of keeping a car, just the same as you pay a tax for keeping a dog or liveried servant. It is not more concerned with registration than the fee you pay for holding a driving licence. The tax, by the way, will be increased to £6 6s. annually if the new taxation proposals are accepted by Parliament. In this case you will have to pay a further impost for the rest of the year 1916 of £2 7s. 3d.

CYCLECAR OR SIDECAR.—"E.D.D." (Newhaven) writes:—"I am thinking of buying a tricar or Sociable. As I notice that they are not used to anything like the extent of a sidecar combination, and as I have been advised against them once or twice, I should like your opinion. Would it be advisable and practical to buy an old machine and have a new engine put in, in preference to purchasing one three or four years old, at, say, £50 to £60?"—REPLY: We much prefer a three-wheeled cyclecar to any sidecar combination, and this opinion is evidently endorsed by motorcyclists, a large number of whom have invested in Morgan runabouts. The A.C. Sociable has a smaller engine and is a rather smaller machine than a Morgan, and a fair comparison would be a 3½ h.p. sidecar outfit with an A.C. Sociable and an 8 h.p. outfit with a Morgan. With reference to your idea of buying an old machine and putting in a new engine, we should advise against doing this. In any case you might find it impossible.



Valve and magneto timing diagram for a Meteorite engine. The circle represents flywheel, on which dimensions, given in diagram, should be marked from top and bottom dead centre.

Petrol *Plus* Palmer Tyres



Petrol plus PALMER Tyres means a saving of Sixpence per tin on fuel.

IN efficiency comparisons between a car fitted with canvas tyres and then with British-made Palmer Cord Tyres, there was a proved saving of 10% in petrol, an increase of 7% in speed (set throttle), and 100% increase in coasting distance.

"Palmers, Petrol and Power," post free, tells all about it. *Begin saving on Petrol by writing for it TO-DAY!*

PALMER

(ORIGINATORS OF THE THREE-RIB TREAD)

CORD TYRES

The following sizes are now available, and can be supplied by return:

	Per Cover.		Endless Tube.	
	£	s. d.	£	s. d.
710 x 85 mm. Ribbed tread only, for 650 x 65 mm. round base rims	2	17 6	14	6
700 x 80 Ditto	2	10 0	13	6
26 x 3 in. Heavy Section Light Car, to fit 2½ in. tubular edge or 650 x 65 mm. round base rims:				
Ribbed Covers	3	10 0		
Metal-studded Covers ...	4	17 6	12	6
Combination Covers, round base rim only	4	5 0		

THE PALMER TYRE, LTD.,

119, 121, 123, SHAFTESBURY AVENUE, W.C.

BRANCH DEPOTS—
Glasgow—6, Royal Exchange Square. Birmingham—Belmont Row. Coventry—St. Mary's Street. Nottingham—Greyfriar Gate. Leeds—54, New Briggate. Manchester—263, Deansgate.

LIGHT CARS FOR HIRE
DRIVE YOURSELF
378-380-382-384, EUSTON RD., N.W.
TELEPHONE—REGENT 4219.
Moderate Terms.
SPECIAL TERMS TO THE TRADE.

ROBERT W. COAN
 Best Quality ALUMINIUM CASTINGS
 FOR ALL TRADES AND FOR
 MOTORS FROM 2 TO 240 H.P.
 Aluminium DIE Castings a Speciality.
 Original Maker of Aluminium Number Plates and Aluminium Repairs.
 Contractor to WAR OFFICE & ADMIRALTY.
 TELEGRAMS—"BRANKASE" ISLING LONDON
 TELEPHONE NOS—CENTRAL 4879 CITY 3848
 219, Goswell Road, LONDON, E.C.

ECONOMISE!!!

**PAY YOUR MOTOR
 INSURANCE PREMIUMS
 MONTHLY AND CURTAIL
 EXPENDITURE IN VIEW OF
 INCREASED TAXATION.**

**Exceptional Terms
 for LIGHT CARS.**

Write for particulars of Lloyd's Motor
 Policies, stating your requirements:
 Secretary,
THE MOTOR INSURANCE BUREAU,
 13, Abchurch Lane, LONDON, E.C.

HOUSING of the LIGHT CAR
 Quality and Cheapness Combined. Guaranteed Weatherproof

Made in Sections to bolt together.
 Illustrated Catalogue post free.

Telephone—Putney 785, or call and inspect.
SOUTH WESTERN TIMBER CO., High St., Fulham, London.

**Goddard's
 Motor Car Houses.**

From £3 - 5 - 6

Made in sections to bolt together. Made of well-seasoned 2 in. T. & G. and V-jointed Matchboards, and complete with floor and window.

New Illustrated List post free.
GODDARD'S, Ltd., Crown Works, Vicarage Lane, Ilford, ESSEX.
 Telephone: Ilford 680

**THE MOTOR SHIP
 AND
 MOTOR BOAT**

**The Authority on Motor
 Craft for Pleasure, Commercial & Naval Purposes.**

EVERY THURSDAY - ONE PENNY.

London. Birmingham. Coventry. Manchester.

50 MILES ROUND LONDON.
 Price, on cloth dissected 2/- net; on cloth 1/6 net; paper 1/- net. - - Postage 1d.
 Temple Press Ltd., 7-15, Rosebery Avenue, London, E.C.
 Wholesale: E. J. LARBY, Ltd., 80, Paternoster Row, E.C.

**OLEO
 PLUGS**

64a, POLAND STREET, LONDON, W

The Motor

**Britain's Pre-eminent
 Motor Journal.....**

Every phase of Motoring. Practical articles well illustrated. All the news of the automobile world.

TUESDAYS - - - 1d.
 Offices: 7-15, Rosebery Ave, E.C.

DIXIE
 20th Century Magnets

American Supplies Co. Ltd.
 162 Gt. Portland St. London, W.

E23 **HELP THE MOVEMENT** by letting advertisers know that their advertisements in "The Light Car and Cyclecar" interest you.

MOTOR SUPPLY CO

LIGHT CARS for BUSINESS MEN

New 1916 'SINGER,' New 'G.P. MORGAN,'
New 'PERRY' 2-cyl. Coupe, New 10 h.p.
M.A.G. 'MORGAN,' New 'SAXON,' **In Stock**

SINGER,	1915, stone grey, dynamo, 2 new heavy Kempshalls	£235
SINGER,	1914, dynamo, just overhauled, repainted, new hood	190
HILLMAN,	1914, every necessary repair effected, painted buff	185
STANDARD,	1914, dicky seat, repainted, tyres all new, speedometer, 5 el. lamps	185
PERRY,	1914, dicky seat, speedometer, 5 tyres, all excellent	135
PERRY,	1913, dicky seat, 5 new tyres, new hood	120
G.W.K.,	1915, de luxe body, with dicky seat, just been repainted	140
G.W.K.,	1914, 3-seater body, special rear body for business use	145
G.W.K.,	1913, standard model, completely fitted up for petrol or petrol substitute	100
VICEROY,	1914, 10 h.p., 4-cyl., finished royal blue, Dunlops, 5 lamps	125
VICEROY,	1915, 10 h.p., 4-cyl., 4-seater body, dynamo, French grey	145
MORRIS-OXFORD,	1913, 1914, power unit, Special	140
CALTHORPE,	nominally 1913, but new 1915 engine, repainted buff	155
SWIFT,	1914, 7-9 h.p., completely overhauled, finished buff, good tyres	115
MORGAN,	1914, sporting, 3 new tyres, 8 h.p. J.A.P. engine, hood, screen, lamps	79
G.W.K.,	1913, with large radiator, excellent tyres, hood, screen, many extras	95
HUMBERETTE,	1914, water-cooled, rich brown, little used	105

Each Car Absolutely Sound.

29-31, OXFORD STREET,

MANCHESTER

HOSE & CO. General

GRAMS - Motor & Machinery

Why not a PERRY?

No longer is there any need for YOU to study the advantages of a Waiting List, to suspend YOUR joys of the open road. Call at EVANS and secure

Immediate Delivery

of the popular PERRY, the Dependable Car which ALWAYS justifies determined choice.

PERRY, 2-cyl. 2-seater, 140 Gns.

Also I stock the CALTHORPE Coupe, Grand Duke Michael, and CALTHORPE 4-seater.

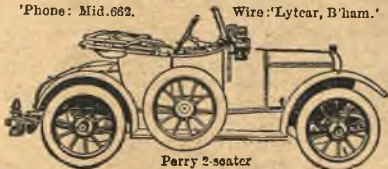
Free Trial Runs—Special Payments—Liberal Exchanges

P. J. EVANS,

87-91, John Bright St., Birmingham.

'Phone: Mid. 662.

Wire: 'Lytecar, B'ham.'



Perry 2-seater



The necessity of Gas-tight Plugs.

Even the best of engines is bound to be inefficient whilst there is leakage between the plugs and cylinders (and it is surprising how many plugs fail to make gas-tight joints). There is one, however, which never leaks, and that is

SIMMS

"NON-SOOT" PLUG

This makes a perfect joint with the cylinder casting. Yet it never seizes. You can remove it with ease. It is the finest British-made plug of to-day. It is a plug that fires at ALL engine speeds. Give it a trial.

Price each **3/6**
Metric or American threads, single or twin contacts.

ALL DEALERS, OR
SOLE MAKERS:

Simms Motor Units Ltd

191, Wardour St., Oxford St., London W

E.I.M.

TO THE READER

By mentioning "The Light Car and Cyclecar" when corresponding with advertisers, you will be working for the cause of the new motoring.

NEW
OR
SECOND-HAND
LIGHT CARS, CYCLECARS,
ACCESSORIES FOR SALE AND
Sundry Advertisements

RATE FOR ADVERTISEMENTS IN THIS SECTION
SIXTEEN WORDS, 1/- (MINIMUM).
6d. per eight words after.

The Rates for Trade Advertisements are 18 words 1/6, and 1d. per word after. These are designated "TRADE," for the guidance of the reader. Subject to a discount of 5 per cent. for 13 consecutive insertions, 10 per cent. for 26, 15 per cent. for 52. Terms: Cash with order, and otherwise net. N.B.—In the interests of our readers we shall not hesitate to take proceedings against any persons in the trade who succeed in obtaining the insertion of their advertisements as "Private" and shall insist to the utmost upon the payment of all law costs incurred.

BOX NUMBERS.—Advertisers desiring to have replies sent care of "The Light Car and Cyclecar" may do so on payment of a nominal fee of 6d. to cover booking and cost of forwarding such replies. The words Box, c/o "The Light Car and Cyclecar," count part of the advertisement.

DISPLAY ADVERTISEMENTS. ordinary issues, £14-0-0 per page. Scale of charges with reduction for series, sent on application.

Copy for, and all matter relating to, advertisements must reach the offices first post Wednesday, and should be addressed to THE MANAGER, "THE LIGHT CAR AND CYCLECAR," 7-15, ROSEBERY AVENUE, LONDON, E.C., to whom all communications concerning advertisements should be sent. If proof of displayed advertisements is required, copy should be forwarded in sufficient time to allow of it being submitted and returned.

Head Offices:—7-15, Rosebery Avenue, London, E.C. Telephone No. 5292 Holborn (four lines). Telegrams: "Pressimus, Holb., London."

Midland Offices:—9 & 10, Burlington Chambers, New St., Birmingham. Telephone No. 2498, Midland. Telegrams: "Presswork, Birmingham." 6, Warwick Row, Coventry. Telephone No. 983, Coventry. Telegrams: "Presswork, Coventry."

Northern Offices:—196, Deansgate, Manchester. Telephone: Central 2467. Telegrams: "Presswork, Manchester."

NOTICE.

Owing to postal delays and irregularities, it is advisable to post advertisements EARLY ON TUESDAYS so as to ensure, as far as possible, that they reach us by the FIRST POST on Wednesdays. Lately several advertisements have been received too late for inclusion, although despatched on Tuesdays.

LIGHT CARS AND CYCLECARS FOR SALE.

- A.-C. Sociable, 1914, hood, screen, speedometer, tools, etc., overhauled by makers, splendid condition, tyres good, £255. Hurry, Waterloo Rd., S.E. 187-b38
- A.-C. Sociable, 5-6hp, 2 speeds, hood, screen, lamps, tyres and paintwork excellent condition, £38. P. J. Evans. John Bright St., Birmingham. Trade 187-517
- A.-C. Sociable, 1912, hood, screen, all accessories, thorough sound car, £37. 28 Stratley Rd., Brondesbury, N.W. 187-b308
- A.-C. 3-wheel Sociable, newly painted, tyres in good condition, good running order, £32. Edmeads, Grayshott, Hants, near Hindhead. 189-b304
- A.-C. Sociable, 1914, just repainted and overhauled, hood, screen, speedometer, etc., splendid condition, ready to drive away, bargain, £40. Fuller, Carter Rd., Hornchurch. 187-b270
- A.-C. Sociable, hood, screen, lamps, jack, pump, 3 spare tubes, tyres like new, cost £110 last year, in perfect condition, trial run arranged, £50. Neale, Hill Crest, Worting Rd., Basingstoke. 187-b326
- A.-C. Sociable, 1912, hood, screen, side curtains, lamps, B. and B. variable, spare tyre, etc., trial, £30. 65 Marlborough Rd., Merton, S.W. 182-b437
- A.-C., 10hp, 1914, dickey seat, 5 detachable wheels, full equipment, £160. Service Company, 292 High Holborn, London. Trade zzz-215
- A.-C., 10hp, 1914, speedometer, extra air valve, detachable wheels, tyres all as new, just been thoroughly overhauled and painted, £170. G. L. Francis and Co., 22 Pantom St, Leicester Square. Trade 187-524
- A.-C., 1916, 10hp, special wide body, full equipment, £210, immediate delivery from stock. Colmore Depot, 200 Deansgate, Manchester. Trade 188-538

LIGHT CARS AND CYCLECARS FOR SALE
(continued).

- A.-C., 1914, 2-seater, painted royal blue, hood, screen, C.A.V. dynamo lighting set, speedometer, 5 Sankey detachable wheels, perfect mechanical condition, fully equipped, bargain, £190. Mebes, Light Car Specialists, 156 Gt Portland St., W. Telephone, 3426 Mayfair. Trade 187-508
- A.-C., 10hp, nickel finish, C.A.V. dynamo lighting set, 2 horns, speedometer, clock, mascot, dickey seat, 6 detachable wheels, £180. Colmore Depot, 49 John Bright St., Birmingham. Trade 1-7-522
- A.-C., 1914, oversize tyres, dickey, speedometer, spare wheel, etc., car just repainted, perfect throughout, £170. Stretton and Smith, 23 Woodstock St., Bond St., W. Trade 187-547
- A.-C., 10hp, 1915, 4-wheeler, wide 2-seater, with dickey seat, speedometer, spare wheel, horn, lamps, etc., excellent condition throughout, mechanical condition as new, £185. J.T.M., 330 Kennington Rd. Trade 187-540
- ALLDAYS, 10hp, 1915, 2-seat, dynamo lighting set, 2 horns, etc., repainted grey, £185. Colmore Depot, 49 John Bright St., Birmingham. Trade 187-533
- BABY PEUGEOT, 1915, first-class condition, all accessories, 2 spare tyres, seen by appointment, bargain, £120. Harmsworth, Christ Church, Oxford. 187-a720
- BABY PEUGEOT, latest 1916 model, fitted with a most attractive sporting body with bulbous tail (vide Press), painted Royal blue, as good as new, £165. The Light Car Co., 331 Euston Rd., London, N.W. Phone, Museum 3143. Trade 187-499
- BABY PEUGEOT de luxe, late 1915, painted grey, black wings, hood, screen, luggage carrier, electric side and tail lamps, Stepney wheel, horn, fully equipped, car had very little use, perfect condition, bargain, £145. Mebes, 156 Gt. Portland St., W. Telephone, 3426 Mayfair. Trade 187-507
- BABY PEUGEOT de luxe, late 1915, luggage grid and Stepney complete, mileage 600, the maker's price new, and when procurable, is £193, will accept 145 guineas for this car, in practically new condition, private owner and exclusively owner-driven. Apply, Wilson, 11 Garden St., Tunbridge Wells. 187-b324
- BABY PEUGEOT, late 1915 sporting model, hardly used at all, painted and upholstered blue, price £155. Ware and de Freville, Ltd., 6 Great Marlborough St. (Oxford Circus), W. Gerrard 6472. Trade 187-551
- BABY PEUGEOT, late 1915, as new, offers, or exchange for good side-car motor-bicycle and cash. Paton, Arnold College, Withington, Manchester. 187-b255
- BABY PEUGEOT, 1915, 3-speed model, complete and in good condition. Mitchell's Garage, 114 Wardour St., W. Trade 187-488
- BAYARD, 2-seater, 1915, demonstration car, disc wheels, Stepney, Watford speedometer, mileage 1200, perfect condition, £170. Higgs, Post Office, Burghfield Common, Reading, Berks. 187-b330
- BEDELIA cyclecar, 7-9hp, twin, 2-speed gear, handle starter, glass screen, lamps, bargain, £25 or nearest offer. Frogmore, Westonzoyland, Bridgewater. 187-b29
- BUCKINGHAM, 1914, twin, w.-c. This car has just been completely overhauled to the order of owner, now compelled to join; we guarantee its mechanical condition to be perfect, the bodywork is good, equipment complete, it does 50 m.p.h. and 38 m.p.g. G. N. Higgs, 31 Vauxhall Bridge Rd., Victoria, S.W. Trade 187-584
- CALCOTT cars. Watkins and Doncaster, Ltd., The Hall, 95 Great Portland St., authorized retail and sole wholesale agents for London and the Home Counties. Telephone, 6565-6 Mayfair. Trade zzz-345
- CALCOTT, 1914, 2-seater, dickey seat, dynamo lighting, complete with speedometer, petrol can, extra tool box, excellent condition, moderate price. Robinson's Garage, Green St., Cambridge. Trade 187-502
- CALCOTT, early delivery of the latest 1916 model, with dynamo lighting. The Light Car Co., 331 Euston Rd., London, N.W. Phone, Museum 3143. Trade 187-500
- CALCOTT, 1915, wide 2-seater, painted slate grey, black wings, hood, screen, speedometer, dickey seat, 5 Sankey wheels, good tyres, dynamo lighting and T.E.C. electric self-starter, mechanically perfect, indistinguishable from new. Mebes, Light Car Specialists, 156 Gt. Portland St., W. Tel., Mayfair 3426. Trade 187-514
- CALCOTT, 1915, 10hp, 2-seater, £265: a 1914, in nice condition, £190. Percy and Co., 337 Euston Rd., London. Trade 187-557
- CALCOTT, 1916, 2-seater, hood, screen, dynamo and self-starter, detachable wheels, Klaxon, etc., in first-class condition, £265. Major Jennings, Duke of York's School, Dover. 187-b311
- CALCOTT, 1915, 2-seater, dynamo lighting, dickey, usual accessories, £240. Smith and Hunter, 15 Little Portland St., Oxford Circus. Trade 187-569
- CALTHORPE, 1914, coupe, just overhauled and repainted, upholstered in Bedford cord, very nice car, £170. Rey, 378 Euston Rd., N.W. Telephone, Regent 4219. Trade 188-432
- CALTHORPE, 2-seat, Lucas dynamo lighting set, complete with hood, screen, 2 horns, all lamps, speedometer, 5 detachable wheels and tyres, £180. Colmore Depot, 49 John Bright St., Birmingham. Trade 187-521
- CALTHORPE, P. J. Evans, John Bright St., Birmingham. Immediate and prompt delivery 4-seater, coupe, Grand Duke Michael and sporting models. Trade 187-515
- CALTHORPE 1916 4-seater, electric light (dynamo), in stock for immediate delivery, price £255. Keating and Lundy, 203 Great Brunswick St., Dublin. Trade 187-b305
- CALTHORPE Minor, 1914, in thorough running order and condition, run about 5000 miles, 5 wheels, lamps, headlight, tools, etc., £140. 25 Wye Cliff Rd., Handsworth, Birmingham. 187-b295
- CALTHORPE, 10hp, 1914, dickey seat, in good order, usual accessories, £145. Leitch, 6 Beecheroff Ave., Stafford. 187-b286
- CALTHORPE, 10hp, as new, 2000 miles only, sporting de luxe model, many extras, electric side, tail and acetylene headlamps, sacrifice £145. Keddie, Leas, Westcliff. 187-b317

So many letters and wires—

..... Would you be good enough to withdraw my advertisement in your next issue, as I have had so many letters and wires for my car this last week, and it is now sold. Thanking you, and wishing your paper prosperity.

H. INGLE.

Rushden, Northants.
25th May, 1916.

LIGHT CARS AND CYCLOCARS FOR SALE (continued).

CALTHORPE Minor, 5 detachable wheels, 3 tyres, almost new, speedometer, 3 electric lamps, 2 gas headlamps, hood, screen, new spare back axle complete, valves, piston rings, etc., 2 accumulators, kit of tools, pump, jack, mechanically good, £125 for quick sale. 10 The Terrace, Hampton Court Rd., Hampton Wick, Middlesex. Trade 187-532

CALTHORPE, 1915 Calthorpe Minor, G.D.M. model, painted grey, electric lighting, detachable wheels, all accessories, a very smart 2-seater. £190. Ware and de Freville, Ltd., 6 Great Marlborough St. (Oxford Circus) W. Gerrard 6472. Trade 187-532

CALTHORPE, 1914, 10hp, 2-seat, hood, side curtains, screen, just repainted French grey and black, 5 lamps, generator, speedometer, 5 wheels and oversize tyres, 3 months guarantee, 12 months insurance free, tuition free, exchanges, deferred terms 5 per cent., £155. Cass's Motor Mart, only address 5 Warren St., Euston Rd., W. Museum 623. Trade 187-482

CARDEN, 2 1914 models, 4-5hp J.A.P. engines, 1 finished in white and black, and the other red, £65 and £82 respectively. Maudes', 100 Gt. Portland St., London, W. Trade 187-530

CHARRONETTE, 2-seater Charronette, sports 2-seater, £250 and £270 respectively, with C.A.V. lighting set. 65 Piccadilly, W. Trade 188-708

CHATER LEA cyclocar, 8-10, w.-c., 2-seater, 3 speeds and reverse, hood, screen, lamps, finished in grey, good condition, seen by appointment, £65. H.B., 238 Coldharbour Lane, Brixton, S.W. 187-5325

De P., 1915, 10hp, sporting model, hood, screen, spare wheel, all accessories, and oversize tyres, in perfect condition throughout, £105, or exchange A.-C. light car, sporting model, seen week-end. Laurence, Ivythorne, Maidstone. 187-5319

DOUGLAS light car, sporting type, 10hp, 3-speed, reverse, 2-seater, 5 detachable wheels, speedometer, dynamo lighting, not driven 3000, new condition, £160, only requires seeing. Gibb, Auchencrain, Worcester St., Gloucester. 187-5321

DUO, 1915, 8.9, cyclocar, 2-seater, Sankey detachable wheels, guaranteed like new, £90. Percy and Co., 337 Euston Rd., London. Trade 187-554

ENFIELD 1916 light cars, 10hp, 4 cylinders, spare wheel and tyre, dynamo lighting set, 2-seater £215, 3-seater £230, coupe £255; cash, exchange and extended payments; 2-seater, £43 deposit and 12 monthly payments of £14 13s. 10d.; similar terms for other models, or other figures considered; quick delivery. Sole London Agents, Service Co., 232 High Holborn, W.C. Trade zzz-570

ENFIELD, 10hp, 4-cylinder, 5 detachable wheels, nickel finish, painted biscuit and black, several extras, only used for demonstration, splendid condition, £150. Roper and Wrecks, 112 Arundel St., Sheffield. Trade zzz-922

ENFIELD, 10hp, 3-seater body, clover leaf type, dynamo lighting, 5 Sankey wheels, speedometer, etc., hardly used, guaranteed, £190 cash, deferred payments or exchange. Service Co., 232 High Holborn, London. Trade zzz-364

ENFIELD 4-cylinder 10hp light car, supplied in March, 1916, all the latest improvements, only done 100 miles, owner having no further use will accept £195. Roper and Wrecks, 112 Arundel St., Sheffield. Trade zzz-282

ENFIELD Autolette, 1914, 8hp, 3 speeds, complete, hood, screen, 5 lamps, horn, speedometer and Stepney, £75. P. J. Evans, Jok. Bright St., Birmingham. Trade 187-518

ENFIELD 1915 light car, 10hp, 4-cylinder, 2-seater, dynamo lighting, painted royal blue, perfect condition, easy starter, 30 m.p.g., £170. C. Ilderton, 25 Normanton Rd., Derby. 187-5335

GLOBE cars and vans, new and second-hand, in stock; also all components; overhauls undertaken. Tuke and Bell, Ltd., Globe Car Manufacturers, Carlton Engineering Works, High Rd., Tottenham. Trade 187-574

G.N., 1914, sporting, fast, 2-seater, overhauled and repainted, fully equipped, £75. Percy and Co., 337 Euston Rd., London. Trade 187-556

G.W.K. A Car without a gearbox. Sole agent for Manchester, Gourlay, Fallowfield. Trade 189-c334

G.W.K., 1916 models, buff or blue finish, in stock. Palmer, 202 Great Portland St., London, W. Mayfair 4942. Trade 195-81

G.W.K., 2-seater, Coventry-Simplex engine, hood, screen, lamps, headlights, etc., £92 10s., exchange quoted. Collier, Deal St., Halifax. Latest type. Trade 187-269

G.W.K., 1913, Brolt lighting set, Stepney, speedometer, clock, tyres nearly new, in exceptionally good condition, £110. Alfred Wastnage, 65 Gt. Portland St., W. Mayfair 3005. Trade 187-385

G.W.K., 1914, 9hp model, complete to usual catalogue specification, excellent order and condition, £125. Maudes', 100 Gt. Portland St., London, W. Trade 187-531

G.W.K., 1913, done small mileage, speedometer, 5 lamps, all tyres as new, Stepney (unused), just been thoroughly overhauled by makers. £95. G. L. Francis and Co., 22 Panton St., Leicester Square. Trade 187-525

G.W.K. Two 1916 G.W.K.s. fitted with hood, screen, lamps, spare wheel and tyre, etc., list price 185 guineas, no premium. Ware and de Freville, Ltd., 6 Great Marlborough St. (Oxford Circus), W. Gerrard 6472. Trade 187-553

G.W.K., 1915, de luxe, two-three-seater, speedometer, spare rim and tyre, oversize tyres, perfect throughout, done small mileage, £150. Stretton and Smith, 23 Woodstock St., Bond St., W. Trade 187-545

G.W.K., recently repainted, in tip-top form, worth seeing, motorcycles or combinations taken in exchange. Colmore Depot, 200 Deansgate, Manchester. Trade 187-539

G.W.K. G.W.K. light car, 1916 latest model, just arrived from works, immediate delivery, 5 detachable wheels, 5 lamps, horn, etc., the cheapest car to run, make sure of this now. Wilkins, Simpson and Co., 11 Hammersmith Rd., London. Trade 187-b278

G.W.K. 1916 light cars, 2 in stock, latest models, immediate delivery, trade supplied; we are G.W.K. experts and special authorized agents. Wilkins, Simpson and Co., 11 Hammersmith Rd., London. Trade 187-b279

G.W.K., 1915 model, 2-seater, hood, screen, electric side lamps, headlamps, speedometer, 5 detachable wheels, nearly new oversize tyres, full equipment, spares and accessories, absolutely new and perfect condition throughout, done little mileage, £132; after 7 p.m., or appointment. 47 Morford St., Burdett Rd., Bow, E. 187-b277

G.W.K., late 1914, two-three-seater, fully equipped, 5 detachable wheels, 6 almost new tyres, 700 by 80, new cylinders recently fitted, electric side and tail lamps, owner-driven, £120 or near offer. Kite, Woodlea, Ringwood Ave., Redhill. 187-b248

LIGHT CARS AND CYCLOCARS FOR SALE (continued).

G.W.K., 1913-1914, hood, screen, clock, speedometer, mirror, mechanical horn, Stepney, electric and acetylene lighting, Low generator, oversize tyres back wheels, other own improvements, 43 miles per gallon, recently completely overhauled, £110. Davenport, Sandown House, Esher, Surrey. 187-2581

G.W.K., 1913-14, 2-seat, hood, screen, 4 lamps, speedometer, horn, painted biscuit and black, 700 by 80 tyres, 3 months guarantee, 12 months free insurance, tuition free, exchanges and deferred terms 5 per cent., £100. Below. Trade 187-531

G.W.K., 1912, 2-seat, screen, 2 lamps, horn, gradometer, tyres nearly new, bargain, £65. Cass's Motor Mart, only address 5 Warren St., Euston Rd., W. Museum 623. Trade 187-478

HILLMAN, 1914, 9hp, wide 2-seater, painted buff, black wings, speedometer, extra air, 5 lamps, 5 Sankey detachable wheels, good tyres, perfect mechanically, fully equipped, £187 10s. Mebes, Light Car Specialists, 156 Gt. Portland St., W. Tel., Mayfair 3426. Trade 187-512

HILLMAN, 10hp, 1914, standard equipment, also dickey, speedometer, acetylene headlamps, electric side, tail, excellent condition throughout, sacrifice 155 guineas. Rudd, Ashley Drive, Leigh, Essex. 187-5316

HORSTMANN. The best light car irrespective of price, luxurious economy combined with efficiency. Edwards and Parry, the special London agents, can give delivery from stock; every car specially tuned and tested by our Brooklands racing expert, increased power and more miles per gallon for no extra cost; trial runs by appointment. Write for illustrated catalogues, or call at 69 Great Queen St., Kingsway. Regent 5086. Trade zzz-399

HORSTMANN, 1915, de luxe, with Colonial type axles, speedometer, dickey, etc., self-starter, done small mileage, indistinguishable from new, £150. Stretton and Smith, 23 Woodstock St., Bond St., W. Trade 187-548

HUMBERETTE, a.c., late 1913, complete equipment, speedometer, etc., engine and gearbox good, axle just overhauled, £47 10s. net cash. G. N. Higgs, 31 Vauxhall Bridge Rd., Victoria, S.W. Trade 187-563

HUMBERETTE, 1914, w.-c., painted buff, black wings, hood, screen, lamps, electric horn, 8-day clock, Stepney, wire wheels, good tyres, mechanically perfect, fully equipped, £105. Mebes, Light Car Specialists, 156 Gt. Portland St., W. Tel., Mayfair 3426. Trade 187-505

HUMBERETTES, 1913, '14 and '15 models in stock, all prices, £60 to £125, one brand new. Percy and Co., 337 Euston Rd., London. Trade 187-562

HUMBERETTE, 1913, complete with lamps, horn, hood, screen, Stepney wheel and tyre, engine thoroughly overhauled and body repainted and revarnished, absolutely indistinguishable from new, 60 guineas. We are prepared to take any motorcycle of good make in part payment. Julian's, Broad St., Reading. Phone, 1024. Trade zzz-543

HUMBERETTE, 1913, air-cooled, excellent condition, lamps, hood, screen, tools, etc., Stepney wheel and tyre, studded Dunlops rear, exceptional hill-climber. North Dene, Babbacombe. 187-b310

HUMBERETTE, water-cooled, late 1914, Stepney, speedometer, hood, screen, lamps and horn, splendid condition throughout, £107. Taunton Motor Co., Taunton. Trade 187-B307

HUMBERETTE, a.c., little used, under 2003, and in perfect order, Stepney, clock, speedometer, lamps, hood and screen, coachwork and seating nice condition, well worth inspection, £65. Adkins, Post Office, Upper Walmer, Kent. 187-b293

HUMBERETTE, 1914, F., hood, screen, speedometer, lamps, splendid condition, trial given, £75 or near offer. Templeman, 132 Old St., London, E.C. 187-b260

HUMBERETTE, 1913, a.c., excellent condition, engine just overhauled, full equipment, any trial, £65. 18 Alexandra Rd., East Twickenham. 187-b333

HUMBERETTE, 1913, air-cooled, complete, any trial or examination, £60, near offer. Matthewson, 305 Ladypool Rd., Birmingham. 187-b323

HUMBERETTE, 1914, air-cooled model, in very nice condition, £65. Below. Trade 187-501

HUMBERETTE, latest 1914 water-cooled model, in perfect order, £105. The Light Car Co., 331 Euston Rd., London. Phone, Museum 3143. Trade 187-501

HUMBERETTE, 1914, water-cooled, Stepney, 3 lamps and generator, painted brown, like new, £88. Freeman Oakes, Devonshire St., Sheffield. Trade zzz-521

LAGONDA, late 1914 model, 11hp, 4-cylinder, 2-seater, little used, perfect running order, just overhauled, new 700 by 80 rear tyres, front almost new, car greatly improved over standard model by fitting domed wings, longer running boards, polished mahogany windscreen and inside dash, etc., painted Napier green (5 coats, 3 varnish), upholstered Bedford cord cloth, excellent accessories and full set tools, £125, or near offer. Owner, Box No. 8355, c/o "The Light Car and Cyclocar." 187-b247

LAGONDA coupe, late 1915, spare wheel, speedometer, etc., car just repainted, very fine condition throughout, £125. Stretton and Smith, 23 Woodstock St., Bond St., W. Trade 187-549

LAGONDA coupe, 1914, with 1916 improvements, £130. M.K., Bethlem Royal Hospital, Lambeth Rd. 187-b318

MATCHLESS 3-wheel cyclocar, 8-10hp J.A.P. engine, selling on account of war economy, £50. Miss Stuart, Rancly, Crowborough, Sussex. 187-a851

MATHIS, 10hp 1914, 2-seater, dynamo lighting, detachable wheels, overhauled and repainted, £155. Percy and Co., 337 Euston Rd., London. Trade 187-559

MERLIN cyclocar, 8hp J.A.P. engine, never been used, wants finishing, £50. Roper and Wrecks, 112 Arundel St., Sheffield. Trade zzz-283

MORGANS. We are contracting agents. Book for early delivery. Repairs and overhauls guaranteed. Burelli's, 2 Albany Rd., Cardiff. Trade 187-c176

MORGAN, G.P., 10hp, disc wheels, just delivered, officer ordered abroad, for sale, price (with extras), £117 nett, no offers. Particulars, Gaston, 30 Evelyn Gardens, London. Trade 187-314

MORGANS, 1916, sporting, £114 8s.; de luxe, £127; 1914-15 Grand Prix, £98 10s.; Standard models, £59 10s. and £65; exchanges quoted. Motor Exchange, 68 Horton St., Halifax. Trade 187-267

MORGAN, 1914, sporting, £75; a 1914 G.P., £90; a 1915 G.P., £110; a 1915 G.P., overhead, £115. Percy and Co., 337 Euston Rd., London. Trade 187-555

MORGAN de luxe, late 1913, 2 acetylene head, electric back lamp, speedometer, hood, windscreen, good running order, trial given, £50 or near offer. Reply, T. Glover, Kelvedon. 187-b293

"THE LIGHT CAR AND CYCLOCAR" is the best medium and has the largest circulation.

LIGHT CARS AND CYCLECARS FOR SALE

(continued).

MORGAN, 1916, Grand Prix, only run 500 miles, as new, electric lighting, disc wheels, water-cooled, J.A.P. engine, complete with hood, screen and all spares, £125. Potter, 33 Birdhurst Rise, Croydon. 187-b314

MORGAN, 1913, grey sporting, almost new Dunlop and Rom tyres, brass head, side and tail lamps, Renolds chains, spring cushions, brass-mounted windscreen, hood, large kit tools, spare chains, tyres, etc., been carefully driven, not used in winter, wonderful hill-climber, and easy to start, in thorough good order, price £57 10s. Taylor, Northam Rd., Bideford. 187-b306

MORGANS, War economy secured by using a Morgan for business, half the price of railway travelling, 50 to 60 miles per gallon of petrol for two persons or samples, you start and finish in your own time, saving valuable time by covering ground quickly, easily driven by a lady. Write Potter for full particulars, Leicester Grove, Leeds. Trade 187-b303

MORGAN, 1914, G.P., air-cooled, sporting streamline body, 700 by 80, spares, trial evenings, £65, bargain. Dining Rooms, Redcliffe Rd., Kensington, London. 188-b302

MORGAN de luxe, 1914, recently overhauled, repainted red, disc wheels, hood (new), windscreen, speedometer, 8-day clock, Stewart warning signal, bulb horn, four lamps, Low generator (head, dash and tail lamps, electric), mat, large toolboxes, spares, including 2 chains, tools, excellent condition, £77 10s. Camebus, Ormsby, Lower Park, Loughton. 187-b294

MORGAN, late 1915, sporting, special blue, hood, screen, lamps, mats, engine just run in, tyres not worn, condition like brand new, £80 lowest. 269 County Rd., Liverpool. 187-b286

MORGAN, new, 10hp M.A.G. engine, overhead valves, painted blue and specially upholstered in first-class style, long wheelbase and roomy body, complete with hood, cover and screen, spare valve plugs, oversize tyres, and two complete spares, including also all tools, horns, and lamps, guaranteed not done 50 miles, photo., excellent reasons for selling, £140. 2 Brooke Street, Dudley. 187-b284

MORGAN, 1916, G.P., 10hp M.A.G., purchased March, run about 700 miles, complete hood, screen, lamps, etc., owner called up. Apply, A., Craigmill, Bencombe Rd., Purley. 187-b250

MORGAN, late 1913, red disc wheels, hood, side curtains, screen, lamps, Binks carburettor, electric horn, perfect running order, owner serving, £65 or nearest offer. Grove Garage, Eastbourne. Trade 187-b244

MORGAN, G.P., 1915, screen, 3 lamps, generator, horn, disc wheels, just overhauled and repainted red and black, 3 months guarantee, 12 months insurance free, tuition free, exchanges, deferred terms 5 per cent., £115. Below.

MORGAN, G.P., 1915, 5 lamps, screen, speedometer, 700 by 80 disc wheels, painted blue, £110. Cass's Motor Mart, 5 Warren St., Euston Rd., W. Museum 623. Trade 187-479

MORGANS, new and second-hand, can always be obtained from Elce and Co. Below.

MORGAN 1916 models. Let us book your order for one of these splendid cyclecars. We are contracting agents and can give best deliveries; spare parts in stock. Elce and Co., 15-16 Bishopsgate Avenue, Camomile St., E.C. Phone, Avenue 5548. Trade 187-486

MORGAN, 1914, Grand Prix, screen, hood, Lucas lamps, speedometer, semi-automatic lubrication, spare tubes and tools, covered 7000 miles, mechanically perfect, £110. Box No. 8399, c/o "The Light Car and Cyclecar." 187-b337

MORGAN, 1914, water-cooled, engine fitted 1916 rods, and overhauled, repainted, electric lamps, hood and screen, spare tyre, chain, etc., £90, splendid condition, trial by appointment. Taylor, Newth's Hotel, Gloucester. 187-b332

MORGAN, G.P., water-cooled, screen, 3 lamps, large generator, horn, tyres very good, machine in excellent condition, ready to drive away, £100. J. A. Everingham, Pocklington. 187-b315

MORGAN, 1915, G.P. No. 1 model, with J.A.P. engine, side valves, Binks carburettor, Watford speedometer, £125. Maude's, 100 Great Portland St., London, W. Trade 187-532

MORGAN, 1914, sporting, complete, perfect order, grey, £85. Colmore Depot, 49 John Bright St., Birmingham. Trade 187-520

MORGAN, water-cooled, Grand Prix, No. 2, overhead valve, J.A.P., complete accessories, screen, etc., grand condition, £88. P. J. Evans, John Bright St., Birmingham. Trade 187-516

MORGAN Grand Prix-J.A.P., 1915, water-cooled o.v., horn, screen, painted red, very fast, £115. Rey, 378 Euston Rd., N.W. Tel, Regent 4219. Trade 188-566

MORRIS-COWLEY coupe, 1916 type, only run 2000 miles, painted dark blue and fitted with many extras, cost £318, would accept £285, owner bought larger car. Apply, Box No. 8349, c/o "The Light Car and Cyclecar." 187-b285

MORRIS-OXFORD, quick deliveries, free tuition, etc., wholesale and retail agents for Surrey and parts of Sussex and Hants., The Haslemere Motor Co., Ltd., Haslemere. Phone, 43. Trade 187-261

MORRIS-OXFORD, overhauled, repainted, new standard body fitted, also van body to fit, 5 wheels, 5 lamps, bargain, £150. Roper and Wreaks, 112 Arundel St., Sheffield. Trade zzz-927

MORRIS-OXFORD, in absolutely new condition, new tyres, overhauled and repainted throughout, 5 lamps, spare wheel and tyre, full complement of tools, £160, a real bargain. Colmore Depot, 200 Deansgate, Manchester. Trade 187-537

MORRIS-OXFORD de luxe, 10hp, 1914, painted green, black wings, 5 lamps, 5 Sankey detachable wheels, speedometer, petrol can carrier, dickey seat, good tyres, mechanically perfect, fully equipped, bargain, £185. Mebes, Light Car Specialists, 156 Gt. Portland St., W. Telephone, 3426 Mayfair. Trade 187-509

MORRIS-OXFORD de Luxe, late (November) 1914, painted stone grey, with 5 lamps, 5 detachable Sankey wheels, 2 horns, including a Stewart mechanical horn, speedometer, clock, perfect in every way and fully equipped, 170 guineas. Julian's, Broad St., Reading. Phone, 1024. Trade zzz-289

MORRIS-OXFORD, late 1913, hood, screen, 5 lamps, 5 detachable wheels, speedometer, just overhauled and repainted, £125. Mason, 38 Glazbury Rd., West Kensington, London, W. 187-b309

MORRIS-OXFORD 10hp de luxe, 1915 model, 2-seater, detachable wheels, 5 lamps. Mitchell's Garage, 114 Wardour St., W. Trade 187-480

MORRIS-OXFORD, 3 de luxe models, topping order, from £180, immediate delivery. Stewart and Arden, 18 Woodstock St., W. Trade 188-575

LIGHT CARS AND CYCLECARS FOR SALE

(continued).

MORRIS-OXFORD, standard model, lamps, horn, speedometer, etc., excellent condition, only run limited mileage, £140. The Albert Motor Co., Ltd., Southgate St., Gloucester. Trade 187-b273

MORRIS-OXFORD, 1914, de luxe, 2-seater, dickey, 5 lamps, clock, speedometer, only run 4000 miles, £180. Smith and Hunter, 15 Little Portland St., Oxford Circus. Trade 187-570

PERRY cars. Sole London and District Agents, Cars and Motor Sundries, Ltd., 175-177 Shaftesbury Ave., London, W.C. Phone, 1432 Regent. Trade zzz-745

PERRYS, 1916, 8hp models, 2-4-seaters and coupes, earliest deliveries, exchanges entertained. R. Bamber and Co., Ltd., 33 Liverpool Rd., Southampton. Trade 188-116

PERRY, 8hp, 1914, 2-seater, hood and screen, 5 detachable wheels and tyres, 5 lamps, new gears, horn and tools, Watford speedometer, insurance policy, £110. H.L.M., 72 Belle Vue Rd., Salisbury. 187-b16

PERRYS, latest models, in stock, 8hp twin, hood, screen, lamps, horn, 3 speeds, 5 detachable wheels with tyres, Inland Revenue tax £2 2s., price £147. P. J. Evans, John Bright St., Birmingham. Trade 187-519

PERRY, 1915, 2 cylinders, special dickey, 5 Sankeys, Rushmore lamps, dissolved acetylene outfit, speedometer, Stewart mechanical horn, perfect little car, bargain of the week, £115, offers useless. Motorist, near Station, Somerleyton, Suffolk. 187-b297

PERRY 1914½ coupe, just overhauled, excellent condition, belongs to doctor on military service, £145. Box No. 8384, c/o "The Light Car and Cyclecar." 187-b252

PREMIER, 7-9, 2-seater light car, hood, screen, lamps, etc., excellent climber, £58 10s., or exchange. Motories, 68 Horton St., Halifax. Trade 187-263

RITZ, 10hp, 4-cylinder, 2-seater, new, £145, keen exchanges quoted. Motories, 68 Horton St., Halifax. Trade 187-270

SAXON, prompt delivery, 1916 models. Obtainable from the Pioneer Agents, Western Motor Works, Chislehurst, Kent. Phone, Sidcup 160. Trade 192-e89

SAXON, 11.9, brand new 1916 model, slightly shop-soiled, overstocked, accept £140. Roper and Wreaks, 112 Arundel Street, Sheffield. Trade zzz-925

SAXON cars. Although the tax is doubled, the Saxon tax is now only £6 6s. Petrol 40 m.p.g. Plenty of latest 1916 models for instant delivery. All spare parts stocked. We usually have demonstration Saxons of latest type at bargain prices. Lowe and Wood, Ltd., 280 Broad St., Birmingham. Trade 191-197

SAXON, 1916, only done few miles, disc wheels, electric lamps, £135. Rey, 378 Euston Rd., N.W. Telephone, Regent 4219. Trade 188-431

SAXON, 1915, September, not used this year, just as new, magneto, any trial, accept £90. Laurence, 2 King St., Leicester. 187-b336

SAXON new 1916 model in stock, painted cream and black, complete with magneto, £150. Tuke and Bell, Ltd., Motor Department, Carlton Engineering Works, High Rd., Tottenham, N. Trade 187-573

SAXON, genuine bargain, property of an officer, latest model, 1916, 11.9, purchased brand new in February, 1916, fitted with handsome English torpedo 2-seater body, complete with English hood, screen, Bosch magneto, Stepney, cover and tube, speedometer, clock, 2 horns, luggage carrier, one of the prettiest-looking cars on the road, guaranteed as new, cost over £220, accept £150 cash. Edwards, 69 Great Queen St., Kingsway. Regent 5036. Trade 187-576

SAXON, 11.9hp, 1916 model, magneto, all complete, slightly soiled, accept £130. Brown's Garage, Kirbymoorside. Trade 188-494

SAXON, 1914, magneto, upholstered in leather, khaki hood, painted grey, £75. Reece Garage, Reece Mews, Sussex Place, S.W. Trade 187-534

SINGER, phaeton or coupe, 1916 models, dynamo lighting, prompt delivery. London Depot, 17 Holborn Viaduct, London, E.C. Trade zzz-39

SINGER, 1916, 10hp, 2-seater, dynamo lighting, in stock. Palmer, 202 Gt. Portland St., W. Phone, Mayfair 4942. Trade 195-82

SINGERS, 1913, '14, '15 and '16 models in stock, all prices, £155 to £250. Percy and Co., 337 Euston Rd., London. Trade 187-560

SINGER, 1915, dynamo lighting, speedometer, dickey, spare wheel, etc., perfect, unspratched, indistinguishable from new, £230. Stretton and Smith, 23 Woodstock St., Bond St., W. Trade 187-546

SINGER, 1916, 10hp, dynamo electric lighting set, dickey seat, hood, screen, detachable wheels and spare, speedometer, actually in stock, £275. Julian's, Singer Specialists, Broad St., Reading. Phone 1024. Trade zzz-544

SINGER 1915, 10hp coupe, dynamo lighting, detachable wheels, in excellent condition, £300. G. L. Francis and Co., 22 Pantou St., Leicester Square. Trade 187-526

SINGER, 1914, 2-seater, dynamo lighting, Colonial radiator, speedometer, tyres in splendid condition, exceptionally good engine, £185. Robinson's Garage, Green St., Cambridge. Trade 187-503

SINGER, 1916 model, dynamo lighting, brand new, for immediate delivery. Below.

SINGER, 10hp, 1915-16 model, lighting set, complete, and in perfect condition, £230. Below.

SINGER, 1915-16 model, 10hp, lighting set, absolutely as new and has done 500 miles only, £280. The Light Car Co., 331 Euston Rd., London, N.W. Phone, Museum 3143. Trade 187-498

SINGER, 10, for sale, for cash, a thoroughly good and guaranteed car, little used and now repainted and as good as new, 1913-14 (carrying 1 original tyre), £145; no dealers. Apply, Box No. 8397, c/o "The Light Car and Cyclecar." 187-b334

SINGER, 10hp, November, 1914, run about 8000 miles, dickey, dynamo lighting, including 2 headlamps, electric horn, 2 spare wheels, 6 good tyres, extra air, 45 m.p.h., light on petrol, perfect condition, say 190 guineas. Smart, West Knoll, Derby. 187-b331

SINGER, 1914, 10hp, dynamo lighting, speedometer, clock, lavish equipment, excellent condition, just overhauled, dickey seat, £185. Norman Snow, Sleate, Lincolnshire. 187-b300

SINGER, 10hp, late 1914, dynamo lighting, very little used, indistinguishable from new. Berg, 2 James St., Cardiff. 187-b296

SINGER, 1915 model, 10hp, 2-seater, lighting set, detachable wheels, all accessories. Mitchell's Garage, 114 Wardour St., W. Trade 187-491

**THE BEST
BARGAINS**

in second-hand light cars and cyclecars are offered in these pages.

LIGHT CARS AND CYCLECARS FOR SALE (continued).

SINGER, 1914, dynamo lighting, hood, screen, detachable wheels and spare wheel, Stewart speedometer, full equipment, just overhauled by Singer's official repairers, and repainted, not driven since, condition perfect, price £180. Bamford and Martin, Ltd., Callow St., Fulham Rd., S.W. 'Phone, Ken. 3920. Trade 187-b272

SINGER, 1915, 2-seat, hood, side curtains, screen, dickey, just repainted cream and black, dynamo outfit, 5 lamps, speedometer, 5 wheels, 3 months guarantee, 12 months insurance free, tuition free, exchanges, deferred terms 5 per cent., £245. Cass's Motor Mart, 5 Warren St., Enston Rd., W. Museum 623. Trade 187-480

SINGER, 1916, 2-seater, dynamo lighting, luggage carrier, clock, painted grey, only run 1500 miles, £240. Below.

SINGER, 1914, 2-seater, dynamo lighting, speedometer, just thoroughly overhauled; £180. Smith and Hunter, 15 Little Portland St., Oxford Circus. Trade 187-571

STANDARD, 1914 model, dickey seat, speedometer and full equipment, guaranteed £180. Service Co., 292 High Holborn, London. Trade zzz-977

STANDARD, late 1914, 9.5hp, wide 2-seater, hood, screen, Rushmore headlights, side and tail, dickey seat, 5 Sankey wheels, good tyres, speedometer, mirror, Stewart horn, painted grey, mechanically perfect, fully equipped, £185. Mebes, Light Car Specialists, 156 Gt. Portland St., W. Tel., Mayfair 3426. Trade 187-513

STANDARD, 1915, owner driven, electric lighting, spare wheel, speedometer, £225, no offers. 3 Bolton Lane, Ipswich. 187-b271

STANDARD, 9.5hp, 1914 model, 2-seater, detachable wheels and tyres. Mitchell's Garage, 114 Wardour St., W. Trade 197-492

SWIFT, 7-9, 1913, cyclecar, in first-class condition, done 3000 miles, Stepney, hood, with side curtains, screen, speedometer, lamps, etc., price £235. Carter, 72 Northgate, Gloucester. 187-b313

SWIFT 7-9hp cyclecar, complete with clock, speedometer, Stepney, in very good order, £125. Alfred Wastnage, 65 Gt. Portland St., W. Mayfair 3005. Trade 187-387

SWIFT, 10hp, 1915, Brolt dynamo lighting, slate grey, dickey seat, speedometer, 5 Sankey wheels, good tyres, mechanical and bulb horns, car done under 3000 miles, fully equipped, £235. Mebes, Light Car Specialists, 156 Gt. Portland St., W. Tel., Mayfair 3426. Trade 187-511

SWIFT, 7-9hp, 1914, painted slate grey, black wings, acetylene lamps, generator, Stewart speedometer, extra air, oversize tyres, as new, wire wheels, mirror, mechanically perfect, fully equipped, bargain, £120. Mebes, Light Car Specialists, 156 Gt. Portland St., W. Telephone, 3426 Mayfair. Trade 187-510

SWIFT, 1912, '13, '14 and '15 models in stock, all prices, £65 to £145. Percy and Co., 337 Euston Rd., London. Trade 187-561

SWIFT, late 1913, 7-9hp, 2-cylinder, complete set lamps, speedometer, hood, side screws, etc., just overhauled, splendid condition, £90. Player, 134 Earlston Avenue, Coventry. 187-b268

SWIFT 7-9 cyclecar, late 1913, 700 by 80 tyres, shock absorbers, speedometer, Stepney, decompressors, extra air, 65 miles per gallon petrol, owner-driven, in excellent condition throughout, £105. M., 15 Cannel St., Manchester. 187-b263

SWIFT, 7-9hp, 1914, grey, fully equipped, perfect order, £115, privately owned. 11 Alexandra Rd., Reading. 186-b262

SWIFT, 10hp, dynamo lighting, speedometer, electric horn, etc., tyres unpunctured, only driven by owner, done 1750 miles, what offers. Box No. 8398, c/o "The Light Car and Cyclecar." 187-b340

SWIFT, 1915, 7-9hp complete with hood, screen, lamps, Stepney, tyre and tube, speedometer, driving mirror, and Sparton horn, cost complete in June £165, only done 1982 miles, and in new condition, £135, any trial and examination. Farrow, 352 Fore St., Lower Edmondton, London. N. 187-b330

SWIFT, 10hp, 1915 model, 2-seater, with dickey seat, lighting set, detachable wheels, speedometer, all accessories. Mitchell's Garage, 114 Wardour St., W. Trade 187-490

VICTOR cyclecar, model de luxe, 8hp, w.-c., new, with hood, screen, lamps, tools, etc., complete, price £110. See below.

VICTOR cyclecar, 10-12hp, 4-cylinder Nero engine, w.-c., 3 speeds and reverse, gate change, specially-finished and smart body, lamps, horn, tools, etc., price £150. See below.

VICTOR cyclecar, 8hp twin Precision engine, w.-c., 2 speeds and reverse, very smart body, blue, handsomely upholstered, complete with all lamps, speedometer, hood, screen, etc., specially finished and fitted for officer, new, price £120; full particulars on application. Tyler Apparatus Co., Ltd., 11 Charing Cross Rd., W.C. Trade 189-473

WARNE, 9hp, late 1913 model, a new car, only used for demonstration purposes, hood and screen, 3 speeds and reverse, Stepney, 5 lamps, dashboard clock, speedometer, £85, a bargain. Maudes', 100 Great Portland St., London, W. Trade 187-529

WHITING-GRANTS in stock, cash or easy terms. R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. Trade zzz-919

WILLIAMSON, the Rolls-Royce of 3-wheelers, new model, in stock, £126, no premium. Motories, 68 Horton St., Halifax. Trade 187-271

PARCELCARS.

VICTOR parcelcar, 1915, new condition, bargain, £75. 18 South Bruton Mews, Bond St., W. Trade 187-b246

MISCELLANEOUS LIGHT CARS AND CYCLECARS.

BRIGHTON. Perry, Morgan, and other small cars. Turpin's, 22 and 29 Preston Rd. Trade 204-m843

LONDON'S light car and cyclecar experts. If you are considering purchase of a light car or cyclecar, call and see us; we guarantee satisfaction; exchanges arranged. Percy and Co., 37 Euston Rd., London. Trade zzz-453

DENBY motorcycle, 6hp twin engine, wants completing, £25. Roper and Wreaks, 112 Arundel St., Sheffield. Trade zzz-284

CYCLECAR, 8hp, 4-wheeler, £26, or exchange combination, worth double, seen any time. J. R. Wood, Haigh, near Barasley. 187-b313

MISCELLANEOUS LIGHT CARS AND CYCLECARS (continued).

CASS'S MOTOR MART, at the time of going to press, have the following light cars actually in stock:—Singer, 1915, dynamo, £245; Calthorpe, 1914, £155; Morgan, G.P., 1915, £115; Morgan, G.P., 1915, £110; G.W.K., 1913-14, £100; G.W.K., 1912, £65. The following will be ready in a few days:—Morgan-Adler, 1914, 3-seat., £195; Wilton cylinder sporting model, £145; Swift, 1914, £125. All above cars overhauled, repainted, guaranteed 3 months, 12 months insurance free, tuition free, exchanges, no combinations, deferred terms 5 per cent., trials free. For full particulars of above cars see small advertisements. If you do not see what you require, call, 'phone, wire or write, same may have arrived after going to press, as you observe our stock is always changing. If you are in want of a light car, it will pay you to inspect our stock of guaranteed light cars before going elsewhere. You will not regret doing so. Remember, we are always willing to purchase or exchange first-class light cars as per our "Wanted" advertisement, for cash. We will personally call and inspect your car within 150 miles. Above cars can be seen and tried at our only address, 5 Warren St., Euston Rd., W. Museum 623. Trade 187-483

F. MEBS and SONS, the original light car specialists, have one of the largest and most varied stocks of light-type cars in London. All cars fully equipped and ready for immediate use. Pay a visit to our showrooms. We are bound to fill your requirements. 156 Gt. Portland St., W. Telephone, 3426 Mayfair. Trade 187-506

I HAVE the finest stock of new and second-hand popular English light cars in the country to-day, every one in tip-top order, prices from £60 to £250. My showrooms are the most central, and give the finest show in London. Any demonstration run arranged without pressure to purchase. The door is always open, and you are invited to walk in and inspect the stock, both in the showroom and the basement. If you do not see what you want, kindly ask, as I am having fresh supplies each day. My system of business is to sell cars at a small profit, and do a large turnover. Most members of the trade work on a large profit and a small turnover. This is worth knowing. Any car is open for cash offer, or you can purchase on exchange or deferred terms. Let me know exactly what you want, and I can supply you. Marian G. Paige, the only Lady Motor Dealer (12 years practice), late Piccadilly. Note new addresses, 177 Gt. Portland St., W. Tele., "Womanish, Wesdo, London." 'Phone, Mayfair 2839. Trade 187-542

MISCELLANEOUS.

ACCUMULATORS. Over 100 sizes always in stock. The cheapest and best house in the trade for reliable accumulators for car lighting, ignition, etc.; stock of slightly shop-soiled accumulators at greatly-reduced prices. The Essex Accumulator Co., 497-499 Grove Green Rd., Leytonstone, London, N.E. Trade zzz-505

LIGHT-CAR manufacturers and dealers requiring cheap but well-made and reliable sets of torpedo electric lamps of British manufacture should communicate with the Essex Accumulator Co., 497, 499 Grove Green Rd., Leytonstone, London. Trade zzz-183

ALUMINIUM number plates, best quality, any number, raised letters, very handsome, 9s. 6d. per pair. Freeman, Oakes, Devonshire St., Sheffield. Trade zzz-805

CYCLECAR components: Channel steel reinforced wood frames, with quarter-elliptic springs, £4 5s. 3d.; countershafts, friction sets, axles, wheels. Denby and Co., Ltd., Ilkley. Trade zzz-936

IT will always pay you to consult a specialist. We specialize in light cars and cyclecars exclusively, and if we should not have in stock just what you are looking for we can obtain it for you promptly. We charge you for this, of course, but only a nominal amount of 5 per cent. on the price paid, and you are sure of getting what you require at the lowest trade price plus our commission. This is far cheaper than paying what you may be asked to pay elsewhere. Give us a trial. We please ourselves by pleasing you, and your recommendation is worth something to us. The Light Car Co., 331 Euston Rd., London. 'Phone, Museum 3143. Trade 187-495

CYCLECAR, 2-seater, 3-wheel, J.A.P. 6hp engine, J.A.P. plate clutch, chain drive, 2-speed, hood, screen, perfect running order, good appearance, £25. W., 16 Victoria St., Manchester. 187-b251

LIGHT car set 4 wheels, live axle, 3-speed gearbox, steering column, complete, £10. Walter Jones, Newport, Salop. 187-b334

AUCTIONS.

WE may not go in for sixpenny-three-farthing bargain sales, but we can place your motor in auction sale on commission basis. Messrs. Green Taxicabs, Villiers St. Garage, Charing Cross, London. Trade 190-g39

EXCHANGES.

EXCHANGE. Motor-bicycles and light cars taken in part exchange for light cars, balance in cash or extended payments as preferred. Service Co., 292 High Holborn, London. Trade zzz-689

IF you wish to effect an exchange of any description, consult the specialists. We please ourselves by pleasing you. The Light Car Co., 331 Euston Rd., London. 'Phone, Museum 3143. Trade 187-496

EXCHANGE 1915 w.-c. Williamson for light car or cyclecar, or sell £85 cash. 4 King's Rd., Mitcham. 187-b269

ADVERTISER wishes exchange 2-months-used 12-volt Brolt lighting set, for 6-volt set, reputable make. Capt. Spring-Rice, 20 Trinity St., Cambridge. 187-b321

EXCHANGE 1915 D.F.P. sporting model for A.C. light car, snorting model; see "Sales." Laurence, Irythorne, Maidstone. 187-b320

WANTED, light 3 or 4-wheeler in exchange for 1912 8hp Bat-J.A.P., 2-speed N.S.U. and free engine, handle starting, perfect order, do 50, climb anything, complete with coach-built underslung sidcar, windscreens, head-lights, and all good tyres, any trial, seen any time, sell £40, would give little cash adjustment. 194 Plaistow Rd., West Ham, E. 187-b312

EXTENDED PAYMENTS.

EXTENDED payments; all makes supplied; lowest terms. Service Co., 292 High Holborn, London. Trade zzz-688

INSURANCE. Lloyd's motor policies, payable monthly. Before insuring elsewhere, write for prospectus. Manager, General Insurance Co., 199 Piccadilly, London, W. zzz-992

ALBERT LAW (late motorcar manager for Wm. Whiteley, Ltd.). Deferred payment specialist, is now the managing director of the Purley Motor Garage, Ltd., Purley, Surrey. All makes of cars supplied by deferred payments, and he will be glad to advise on these matters free. Ring up 103 Purley (not a trunk call from London), or write, when you can be assured of his personal attention. Trade 189-433

FOR HIRE.

IF you want to hire a Standard, Calcott, Singer or any other make light car, for a day, week-end, week, or month, call at Warren's, 386 Euston Rd. 'Phone, 3051 Museum. Trade zzz-959

DRIVE yourself in a Calcott, Singer, Morris-Oxford, Standard or Hillman. Rey's can let you have one for a day, week-end, week, or month; moderate charges. Rey's are the largest light car hirers in London. Call, write, or telephone (Regent 4219), Rey's, 378 Euston Rd., N.W. Trade 235-177

GARAGES.

STORAGE. Owing to our taking over 5 additional premises as extensions to this garage, we are now able to store motors, not in use, at the following nominal charges: Motorcycles 1s. per month, motorcycles and sidecars 2s. per month, three-wheeled cyclecars 3s. per month, light cars (short wheelbase) 5s. per month, Ford cars 7s. per month, motorcars 10s. per month; for landaulets and extra long wheelbase cars there is a slightly higher charge. Messrs. Green Taxis, Villiers St. Garage, Charing Cross, London. 190-641

GARAGE. We can garage or store your light car or cyclecar for 2s. 6d. per week. Wilkins, Simpson and Co., 11 Hammersmith Rd., London. 187-b280

REECE GARAGE, Reece Mews, Sussex Place, South Kensington. Light cars 5s. per week, sidecars 2s. 6d., cycles 1s. Plenty of room. 187-535

HOODS AND SCREENS

HOODS for light cars, 55s.; hoods re-covered in black waterproof leatherette, 45s.; in khaki, 25s. Stockport Garage-Co., 37 Wellington Rd. N., Stockport. Trade zzz-189

LIGHT car hoods, 50s.; windscreens, 35s.; made from measurements. Lang and Webb, Jackson Rd., Holloway, London. Trade 187-g283

TODD and Co., Duncan St., Islington, patentees of close-fold hood, suitable for Morgan, Baby Peugeot, etc., in stock, illustrations sent, repairs and re-covering. Trade 191-b249

INSURANCE.

WHY pay your insurance premium a year in advance when you can pay monthly without extra cost? Lowest rates for light cars. Before insuring elsewhere write for prospectus of Lloyd's motor policies, payable monthly. Manager, General Insurance Co., 199 Piccadilly, London, W. zzz-970

PATENT AGENTS.

PATENTS. Inventors advised free. Write for booklet. King's Patent Agency, Ltd., 165 Queen Victoria St., London, E.C. 187-533

REPAIRERS.

THE AZ-NU Works, 21 Risinghall St., Pentonville, N., radiator, lamp and welding specialists, American radiators a speciality. Trade zzz-817

RADIATOR and lamp repairs by skilled workmen, lowest prices, quickest delivery, no cure, no pay. Lloyd Motor Radiator Co., 277 Monument Rd., Birmingham. 187-j488

SWIFT MOTOR CO., LD., undertake the repair and overhaul of any make of car at their extensive new premises, 132-134 Long Acre; specialists in light car repairs; renovating and repainting of coachwork, also body-building, panel beating, etc. 132-4 Long Acre, W.C. 187-272

REPAIRS. All kinds of repairs to light cars and cyclecars, any make; prompt attention. Wilkins, Simpson and Co., 11 Hammersmith Rd., London. Trade 187-b281

OVERHAULS to any make of light car. Morgan expert, official repairer to the Morgan Co., all parts in stock; fully-equipped workshop; experienced mechanics; best work only, moderate charges. S. Hall, Stevenage, Herts, 30 miles from London on the Great North Rd. 159-572

WE can do your repairs at once. Reece Garage, Reece Mews, South Kensington, S.W. 187-536

G. N. HIGGS.

G. N. HIGGS.

GOVERNMENT work absorbs our facilities to a large extent.

OVERHAULS to privately-owned cars can, however, be attended to promptly. Our staff is conversant with all makes, our well-equipped machine shop is able to deal with the manufacture of any replacement from a cylinder block to a screw. Gears made to pattern.

SHAFTS and valves a speciality.

PISTONS made to pattern.

ENGINES overhauled to the trade.

GEARBOXES and axles completely refitted.

G. N. HIGGS, 31 Vauxhall Bridge Rd., Victoria, S.W. Trade 187-565

TUITION.

UNLIMITED practical motor tuition until satisfied for one inclusive fee at the largest motor instruction works in the world and situated in the heart of London. Apply, The British School of Motoring, Ltd., 5 Coventry St., Piccadilly Circus, W. The leading practical training institute for the motor industry; fully-qualified staff of instructors; open day and night; special car owner's economy course, saves endless expense (individual tuition at hours convenient to yourself); training also for every position in the motor industry; written guarantee for unlimited tuition until Royal Automobile Club certificate obtained (special course). Call or send postcard for free illustrated prospectus (C.C.). Note address, British School of Motoring, Coventry House, 5 Coventry St., Piccadilly Cir., W. zzz-403

THE Motor Training Institute Ltd., appointed by the Royal Automobile Club since 1907. Write for free illustrated prospectus, or call and inspect our institute, 10 Heddon St., Regent St., W., or the works: 21a London Rd., St. John's Wood, N.W. zzz-221

BRIGHTON. Turberville Motor School for ladies and gentlemen and their servants. Driving instruction cars, new 1915 model. Technical rooms filled with complete working chassis. Lady instructor for ladies. Prospectus free. Bath St., Seven Dials. 'Phone, 371 Brighton. 220-512

BRIGHTON. Learn to drive in comfort and safety at the Turberville Motor School, Bath St., on an up-to-date new 1915 model car. Prospectus free. 'Phone, 371 Brighton. 220-513

TYRES AND TUBES.

ST. MARTIN'S. The cheapest house for all kinds of accessories, new and second-hand. Write for our giant list.

ST. MARTIN'S. Tyres and tubes for light cars, hundreds of bargains, new and second-hand; our prices are the lowest; write, mentioning requirements, or call.

ST. MARTIN'S. Stepney wheels from 25s.; also liners, gaiters, etc.

ST. MARTIN'S. Retreading and repairs of all descriptions.

ST. MARTIN'S. We supply all your requirements. We can buy or sell your car on commission. We can quote you for tyres, lamps, lighting sets, magnets, carburettors, etc. Call or write, St. Martin's Motor Works, 12 Upper St. Martin's Lane, London, W.C. (one minute from Leicester Sq. Tube). Telephone, Regent 5070. Trade zzz-136

ECONOMIC. Continental, 650 by 75 and 700 by 80, very heavy rubber-studded covers, 31s. 6d.; Palmer cord, heavy 3-ribbed cyclecar covers, 700 by 80, 50s., fully guaranteed, latest pattern.

ECONOMIC. Kempshall special oversize non-skids in stock, 700 by 85, 75s.; 26 by 3, 65s.; 700 by 80 steel studs, 65s.; up to 15s. allowance for old cover.

ECONOMIC for Ford covers and tubes, Avon, Goodyear, Kempshall and Goodrich in stock, special terms for commercial users.

ECONOMIC TYRE Co., 137 Lewisham High Rd., New Cross. 'Phone, New Cross 1393. Retreading and repairs; open until 9, except Thursdays. Trade 187-g277

WANTED.**Cars.**

WANTED, for cash, immediately, any makes, second-hand light cars. Rey, 378 Euston Rd. Tel., Regent 4219. Trade 211-c120

WANTED. Good second-hand or new light cars purchased for cash or taken in exchange for new cars or motorcycles. Service Co., 292 High Holborn, London. Trade zzz-253

HUMBERETTE, Singer, Calcott, Standard, or any good make for cash. J. Phillips, 164 Elm Park Mansions, Park Walk, S.W. zzz-758

WANTED, Singer, Calcott, Standard, or other good makes of light cars, either for spot cash or exchange. R. Bamber and Co., Ltd., 33 Liverpool Rd., Southport. Trade 188-115

THE PYTCHLEY AUTOCAR CO., LD., are open to purchase for cash any modern and good make of light car; special price for Standard, Calcott, Singer, and Swift light cars. 216 Gt. Portland St., W. Telephone No., Mayfair 4535. Trade 187-163

WANTED, light car, not earlier than 1914, must be in really good condition. Mansions Motor Co., Ltd., 78 York St., Westminster. S.W. Trade 191-175

WANTED. Rey's are buyers for cash of Calcotts, Singers, Standards, Perrys, Hillmans, and all good makes. Regent 4219. Rey's, 378 Euston Rd., N.W. Trade 196-779

WANTED. Rey's will give £225 for 1915 Calcotts, £175 for 1914, £210 for 1915 Singers, and £150 for 1914. Rey's, 378 Euston Rd., N.W. Trade 4219. Trade 196-178

WANTED for cash immediately, any good make second-hand light car, distance no object. Alfred Wastnag, 65 Gt. Portland St. Mayfair 3005. Trade 190-276

WANTED, 1915 G.W.K., full particulars, must be good condition. Clarke, 8 Upper Tooting Pk. Mansions, Balham. 188-b15

THE SWIFT MOTOR CO., LD., are prepared to take clients' cars for sale and exhibit them in their splendid and centrally-situated show-rooms, 132-134 Long Acre, and invite inquiries, when full particulars will be forwarded. Trade 188-475

GENTLEMAN requires good English 1913-15 light car for cash. Bennett, Stafford Rd., Sidcup, S.E. 187-a990

CASS'S MOTOR MART require to purchase A.C. Calcott, G.W.K., Hillman, Humberette, Morgan, Morris-Oxford, Perry, Singer, Standard and Swift light cars. Mr. Cass will personally call and inspect your car free of charge, within 150 miles. 5 Warren St., Euston Rd., W. Museum 623. Trade 187-481

WANTED, 10-15hp 2-seater or coupe, Perry, 10hp Humber, Calcott, Standard or Hillman preferred, not earlier than 1914, private owner. Box No. 8401. c/o "The Light Car and Cyclecar." Trade 187-493

WE will purchase for cash Singer, Calcott, G.W.K. and Morgan cyclecars, good prices offered. Elce and Co., 15-16 Bishopsgate Ave., Camomile St., E.C. 'Phone, Avenue 5548. Trade 187-487

CARS, motorcycles and accessories for inclusion in our weekly auction sales. Hayes, 108 Euston Rd. Museum 1088. Trade 187-484

LIGHT cars of every description bought for cash. Send particulars, together with lowest price. Hayes, 344 Euston Rd. Museum 3541. Trade 187-485

WANTED, Calcotts, Singers, Morris-Oxfords, Standards, Hillmans, Humberettes, G.W.K.s for spot cash, new or second-hand, good prices. Maudes', 100 Gt. Portland St., London, W. Trade 187-528

G. L. FRANCIS and CO require good light cars, not earlier than 1914, Singer, Calcott, Standard and Morris-Cowley preferred; best prices given. 22 Panton St., Leicester Square, W. Trade 187-527

WE are immediate cash buyers of any high-class light car; highest market price will be paid for any car in good condition, any quantity bought, distance no object. Mebes, the original Light Car Specialists, 156 Gt. Portland St., W. Tel., Mayfair 3426. Trade 187-504

WE specialize exclusively in light cars and cyclecars and are always open to buy any make. Offer us what you have for sale. We please ourselves by pleasing you. The Light Car Co., 331 Euston Rd., London. 'Phone, Museum 3143. Trade 187-497

WANTED, new 4-seated Calthorpe Minor or Morris-Cowley. Full particulars to Norman Snow, Sleaford, Lincolnshire. 187-b299

MORGAN or combination wanted. State lowest cash and fullest particulars, no dealers. Chambers, Hall St., Dudley. 187-b391

LADY traveller requires modern light car for cash at once. Alvarez, 96 Queen's Rd., Finsbury Park, N. Trade 187-b276

WANTED, 1914-15 Perry 2-seater, must be in good condition, lowest. Lewis, Mount Tetney, Grimsby. 187-b275

WANTED, Morgan Grand Prix No. 1, not later than 1915, hood, screen, etc., expert examination. Motorist, 25 Essex Terrace, Landore, Swansea. 187-b259

WANTED—Cars—(continued).

MORRIS-OXFORD or good make car, must be cheap. 18 Myatt Rd., Forest Gate, London, E. 187-b256

A deal. Up to £60 cash and 1910 Rover, 6hp, in almost new condition, given for multi-cylinder light car or good combination. E.M., Monsea, Dulverton Rd., Bishopston, Bristol. 187-b254

WANTED, light cars, cyclecars, spot cash paid, bring or send. Wandsworth Motor Exchange, Ebner St., Wandsworth (Town Station), T'de 199-5253

MODERN light car, Calcott, Singer, Calthorpe, Lagonda, or any good make; w-c. Humberette entertained; privately-owned preferred. Box No. 8490, c/o "The Light Car and Cyclecar." Trade 187-b338

LAMBORN MOTORS, LD., require at once a large number of light cars of the following makes, very best prices given—Singer, Standard, Calcott, Hillman, Morris-Oxford. 3 Elizabeth St., Victoria, S.W. Phone. 4111 Trade 187-b329

SINGER or other good light car required for cash, privately owned. 18 South Bruton Mews, Bond St. Trade 187-b245

WANTED, 1913-14 Humberette, Singer or good light car at once, will pay spot cash down. 1 Ebner St., Wandsworth. Trade 187-g273

WE have no bargain basement, but we will sell your motor for you on quite reasonable terms. Messrs. Green Taxis, Villiers St. Garage, Charing Cross, London. Trade 190-440

CAR wanted for hire, 25th June-8th July, 2 weeks, under 500 miles. Staff, 115 Stockwell Rd. 187-b341

PERRY, Hillman or Swift, late model, must be well equipped. Smith, 15 Little Portland St., London. Trade 187-568

CALCOTT, Morris-Oxford and Singer light cars wanted immediately, must be in first-class condition, distance no object. Smith and Hunter, 15 Little Portland St., Oxford Circus. Trade 187-567

To light car sellers. If you want to sell your car quickly and get the best possible price, send it to my new showrooms, where same will be advertised, garaged, and sold free of all expenses to you at the moment. I have a tremendous demand for first-class English light cars, and can guarantee to get you a good price. My showrooms are the finest in London, and every car taken in is insured against fire, burglary, demonstration risks, also hostile aircraft, etc. Money advanced pending sale. Your cheque posted immediately car is sold, without any deduction whatever. Marian G. Paige, the only Lady Motor Dealer (12 years practical experience), late of Piccadilly. Note my new address, 177 Gt. Portland St., W. Tele., "Womanish, Wesdo, London." Phone, Mayfair 2839. Trade 187-541

STRETTON and SMITH will pay top prices for Stellites, Calcotts, Singers, Morris-Oxfords, Perrys, or any other modern cars of reputed make. 23 Woodstock St., Bond St., W. Trade 187-550

WANTED, good second-hand modern light cars and cyclecars, cash paid on sight. Exceptional prices paid. Percy and Co., 337 Euston Rd., London. Trade 187-558

Wanted—Miscellaneous.

THE Editor of "The Commercial Motor" will be pleased to be advised of any stocks of old type or obsolete commercial-vehicle spare parts, as well as of spares for those touring-car models which are commonly used for conversion to delivery vans, etc. Particulars should state types and principal parts available, and these will be included in the Spare Parts Bureau list published regularly in the editorial columns of "The Commercial Motor." Letters should be marked "Spare Part," and addressed to The Editor, "Commercial Motor," 7 Rosebery Av., E.C. 222-75

WANTED, complete set auxiliary fans for A.C. Sociable, also steering column and gear, without wheel. 58 Bermondsey St., S.E. 187-b274

MORGAN chassis wanted, engine immaterial, good condition, cheap, spot cash; particulars. Merrick, George St., Worsley, Stourbridge. 187-b328

WANTED, second-hand modern light car axle, bevel or worm, good order. Townsend, Victoria Terrace, Enniskillen. 187-b267

BOOKS AND PUBLICATIONS.

"MOTORISTS' HANDBOOK," containing 900 questions and answers; a most useful and instructive book; the novice should always keep a copy on his car, price 1s., by post 1s. 3d. The Motor Training Institute, Ltd. (Dept. D), 10 Heddon St., Regent St., W. 222-587

"THE LIGHT CAR MANUAL." Written throughout with a scrupulous choice of the simplest wording. Makes every detail of the light car clear as it goes along. Economical running and upkeep specially considered, and all driving problems dealt with. Contains a most instructive section on the control systems of most light cars now on the market. Price, bound in cloth 1s. 6d. net, in paper 1s. net, postage 1s. 9d. and 1s. 3d. respectively from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C. 222-684

BOOKS AND PUBLICATIONS (continued).

"THE MOTORIST'S WORKSHOP." The ideal book for every owner of a light car or cyclecar who wishes to undertake his own repairs. Clearly and entertainingly written. Illustrated. 1s. net, post free 1s. 2d., from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"HOW AND WHERE TO TOUR BY MOTORCYCLE AND CYCLECAR." A book on touring written from an entirely new standpoint—that of the motorcyclist and cyclecarist. Forms a guide to guidebooks, tells of best methods of preparing for tours. Specially planned routes suitable for light cars and cyclecars, 1s. net, post free 1s. 2½d., from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"SECRETS OF TUNE." How to get the best results out of a motorcycle. Written by the foremost riders on track and road. Exclusive information on getting more power and speed from a machine. Price 6d. net, post free 7½d. "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"MOTOR CYCLING MANUAL," 3rd edition, 50th thousand. The work of practical motorcyclists. The third edition of "Motor Cycling Manual" is undoubtedly the best handbook on the motorcycle extant. It has been thoroughly overhauled, greatly enlarged, and 130 new illustrations added. Covers every point in connection with the working of the engine and driving the machine on the road. Special up-to-date section on sidecars; 1s. 6d. net in cloth; 1s. net in paper, postage 3d. extra, from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"MOTOR CYCLING." The brightest and most interesting motor-cycling paper. Out first with illustrations and descriptions of new motor-bicycles and accessories. A special feature consists of reports of hill-climbs and trials, illustrated with photographs, and produced under daily newspaper conditions. Written and illustrated by motorcyclists for motorcyclists. Now the only journal devoted solely to the interests of the motor-bicycle. Tuesdays, 1d. From any bookstall or newsagent.

MAP OF FIFTY MILES ROUND LONDON. A clearly-drawn map on the scale of four miles to the inch. Roads coloured brown, no detail of importance omitted. Includes such widely-separated towns as Harwich and Portsmouth and Dover and Oxford, and covers the whole of Middlesex, Surrey, Sussex and Kent, and large parts of Essex, Hants., Herts., and Bucks. On paper 1s. net, mounted on linen 1s. 6d. net, postage 1d. extra. "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"HOW TO BUILD A CYCLECAR." The very book for the amateur craftsman who is considering the possibility of building his own machine. Copiously illustrated with 94 scale drawings. 1s. net, post free 1s. 2d., from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"OBTAINING INCREASED POWER," by A. W. Judge, A.R.C.Sc., Wh.Sc. This book is designed for the assistance of the cyclecarist and light car owner. It is copiously illustrated with diagrams. It deals most thoroughly with the question of efficiency, and sets out in clear language the means by which the utmost power may be got out of the machine. 6d. net, post free 7½d., from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"THE PROFILE ROAD BOOK OF ENGLAND AND WALES." The best road book extant. All the main roads and many cross routes are dealt with. A profile plan is given of every road, by which its ups and downs and distances can be seen at a glance. Road surfaces described. Bound in cloth 1s. net, post free 1s. 1½d., from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"THE MOTOR BOAT MANUAL," 6th edition, revised. The standard guide to the motor boat for pleasure purposes. How launches and yachts are built. Various types of motor boats. The working of the marine internal-combustion engine. Useful scale plans of motor boats. Bound in waterproof cloth; 180 pages, over 150 illustrations. 1s. 6d. net, post free 1s. 9d., from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

PROFILE ROAD BOOK. The best road book extant. Covers the whole of the country, giving profile plans showing "ups and downs" of the roads. 1s. net, post free 1s. 1½d., from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"LIGHT CAR AND CYCLECAR" TWIN MODEL. Many users of V-type twin engines are doubtful as to the exact positions of the pistons in the cylinders owing to the slight overlap. The working model makes this plain, showing at the same time the positions of valves and magneto contact breaker. 6d. net, post free 7d., from "The Light Car and Cyclecar" Offices, 7-15 Rosebery Av., London, E.C.

"THE MOTOR MANUAL," 17th edition, over three hundred thousand copies sold. Its unsurpassed popularity is its best recommendation. The standard manual for the beginner, but equally interesting to the expert, as all recent changes in practice are recorded. Constantly revised. Over 300 pages; 270 illustrations; bound in cloth, 1s. 6d. net from all booksellers.

"THE COMMERCIAL MOTOR." The authority on motor transport for commercial purposes. Largest circulation. Full illustrated descriptions of all new models of commercial motor vehicles. Useful information for owners. Thursdays, 1d. Obtainable anywhere.

NOTICES.

REGULATIONS WITH REGARD TO ADVERTISEMENTS.

All advertisement orders are subject to confirmation in writing from the Head Office.

All advertisements and contracts are accepted and made upon the express condition that the Publishers have the absolute right to refuse to insert copy to which they may object for legal, public, or trade reasons, and such refusal of copy shall not be a good ground for advertisers to stop a current contract or to refuse to pay for the same or for taking action for breach of contract.

Whilst every precaution is taken to ensure accurate printing, the Publishers will not be responsible for printer's errors, nor will they be responsible for advt. blocks that are left in their possession for more than one year.

SUBSCRIPTIONS.

"THE LIGHT CAR AND CYCLECAR" will be mailed regularly at the following rates:

	12 ms.	6 ms.	3 ms.
United Kingdom	6s. 6d.	3s. 3d.	1s. 8d.
Canada	8s. 8d.	4s. 4d.	2s. 2d.
Elsewhere	10s. 0d.	5s. 0d.	2s. 6d.

REMITTANCES.—Postal Orders, Cheques, etc., should be crossed and made payable to "Temple Press Ltd." All letters regarding subscriptions must be addressed to "The Manager."

DEPOSIT SYSTEM.

For the convenience and security of our readers we have an approval-deposit system. The intending buyer forwards to our office the amount of the purchase money, which will be acknowledged to both parties. Notes or money order save time. Cheques must be made payable Temple Press Ltd., and are acknowledged to seller when "cleared." If sale is concluded, we forward to the seller the amount agreed upon. If no sale is made, we return the amount deposited. In either case we deduct a commission of 1½ per cent. (3d. in the £, 1/- minimum) on amounts deposited up to £50, 1 per cent. on amounts from £50 to £100, and ½ per cent. on amounts exceeding £100, to cover our expenses of booking, postage, etc. Carriage is to be paid by the buyer. If the article is returned, each party pays one way. The risk of damage in transit is the seller's. Articles on approval are not to be retained more than three days, unless by arrangement between the parties. All disputes to be settled by the arbitration of the Editor of "THE LIGHT CAR AND CYCLECAR."

WARNING.—Acknowledgments of deposits or instructions to forward goods advertised are only written on our special headed paper, which bears a facsimile of the title of this journal. To prevent fraud, the advertiser should ACKNOWLEDGE IMMEDIATELY any such letter apparently coming from us, and delay forwarding the goods for a day or so. Should we, on receiving such an acknowledgment, find that no letter has been sent by us, we will wire the advertiser not to part with the goods advertised.

NOW READY

A Manual of MOTOR MECHANICS and HIGH EFFICIENCY TUNING.

By L. Mantell.

THIS is the first practical handbook on high efficiency tuning.

The most recent research work on the internal combustion engine is made use of in explaining the basic principles of the functions of each part and the underlying reasons for each adjustment.

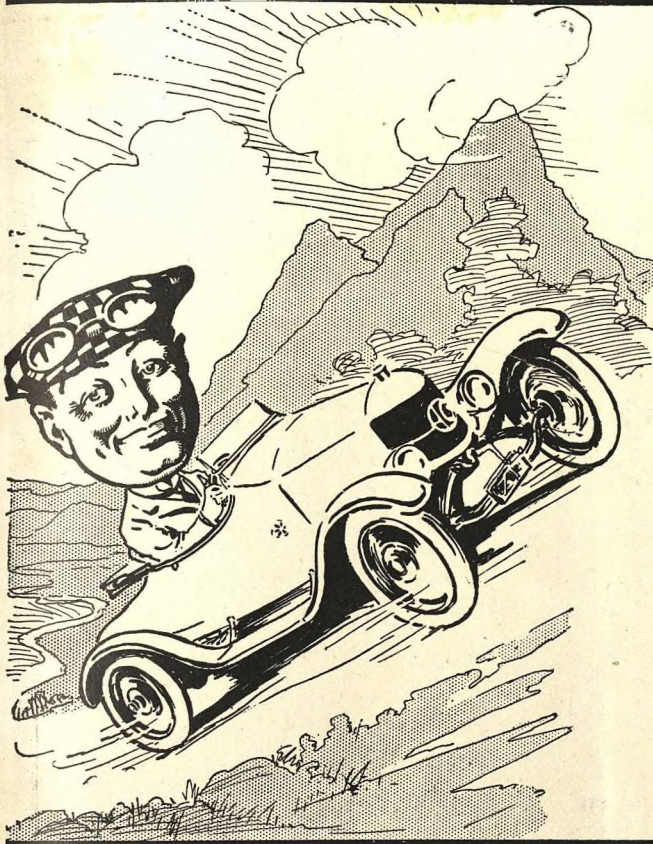
The chapter on carburation gives detailed instructions for the adjustment of all the principal carburetters.

A large number of illustrations render the work of great usefulness to practical motorists.

— NOW READY. —

PRICE—**1/6** net, bound in boards,——**1/9** post free.

Obtainable from any Booksellers, or
TEMPLE PRESS LTD.,
7-15, Rosebery Avenue, London, E.C.
Wholesale:—E. J. LARBY, Ltd., 30, Paternoster
Row,——LONDON, E.C.



"Mountainous retirements, only trod
By devious footsteps, regions consecrate
To oldest time."

That was the description applied by Wordsworth to the famous
Lake District Passes, considered insurmountable by light cars,

Hardknott Pass, 1290 feet,
Wrynose Pass, 1270 feet,
Honister Pass, 1096 feet,
Buttermere Pass, 1,000 feet,

all with gradients averaging from 1 in 3 to 1 in 6. But two
10 h.p. A.C. light cars have surmounted all four with the aid of the

ZENITH CARBURETTER

the wonderful petrol-saver, which not only keeps
down the petrol bills but increases the power of every
engine. It is believed that this is the first time these
stupendous passes have ever been climbed by a light car.
Fit a Zenith and increase power while you save money.

Send for Booklet No. 7.

ZENITH CARBURETTER Co., Ltd.,
40-42, Newman Street, London, W.

Telephone—Regent 4812-4813.

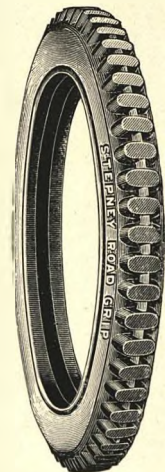
STEPNEY WHEELS & TYRES

(ENTIRELY BRITISH).



THE "STEPNEY" is undoubtedly the most
suitable spare wheel for a light car. It is fitted in
one minute, without interfering with the punctured
tyre. It is very light to carry, most simple to fit,
and never gets out of order. It is always ready
for use, and is recommended for lady motorists.

STEPNEY ROAD-GRIP TYRES have proved
their superior qualities on light cars. No other
tyre is more suitable for the work. It is a safe
non-skid. Always grips and never spins, and may
be relied upon to give exceptional wear.



PROMPT DELIVERY OF ALL SIZES OF WHEELS AND TYRES.

THE STEPNEY SPARE MOTOR WHEEL, Ltd.,
Stepney Works, LLANELLY, and 168, Great Portland Street, LONDON, W.

DO NOT FORGET TO MENTION "THE LIGHT CAR AND CYCLECAR."

"The little Car that leads the way."

The **SINGER**

undoubtedly leads the way on points of efficiency and economy; it has been put to the supreme test "at the Front," and has earned an unequalled reputation for its sturdiness and unfailing reliability. The Singer "10" is known over there as "the Car that never fails," and those who have had occasion to experience its unique qualities are enthusiastic in their praise of its performances.



SINGER & COMPANY, LTD.,
COVENTRY.

London Showrooms:—

17, Holborn Viaduct, — E.C.