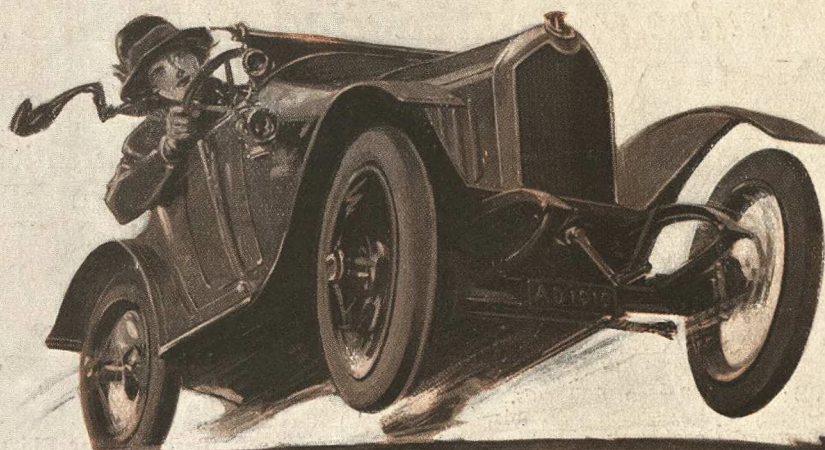


The Light Car *and* Cyclecar

1^p

Vol. V. No. 106
30th Nov. 1914
Registered at the G.P.O.
as a Newspaper

1915

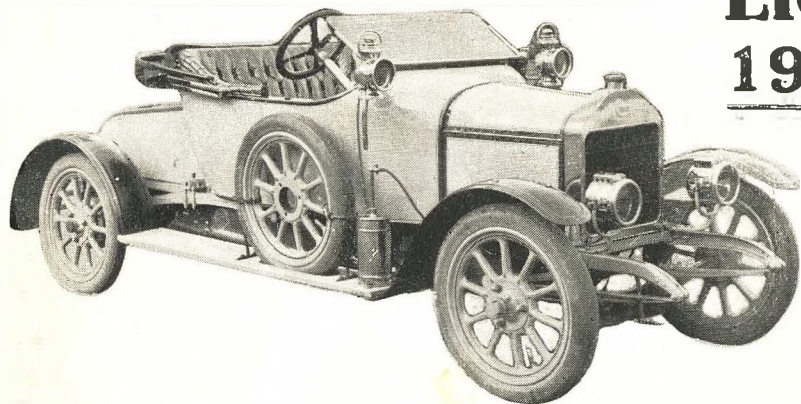


1915 MODELS REVIEWED
Combined Home & Overseas Edition

THE ALL-BRITISH

MERCURY

LIGHT CAR 1915 Model

**4-cyl., 10 h.p.****Two - Seater**

with dicky, finished to suit individual taste, upholstered in real leather, fully equipped, including hood, screen, lamps, electric horn, dash clock, speedometer and mascot

£200 - 0 - 0

Manufactured by—

Medina Eng. Co., Ltd.,

Gould Road, Twickenham, LONDON, S.W.

Telephone—Richmond 275.

Telegrams—"Medina, Twickenham.

Works—May Road, Twickenham.

Sole London Agents—

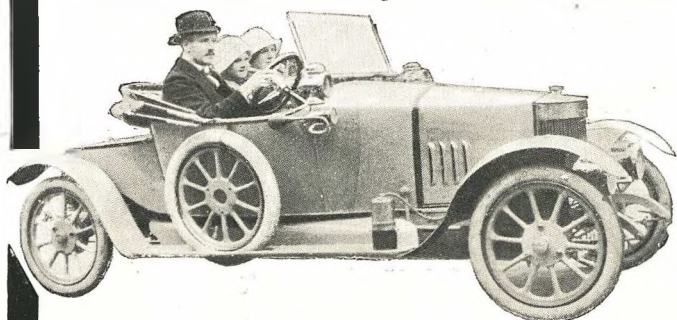
Bodilly & Heap, Ltd.,

110, High Street, Marylebone, W.

Telephone—8973 Mayfair.

Telegrams—"Obolrit, London."

WILTON THREE-SEATER

Entirely re-modelled for 1915.COMPLETE: Hood, Screen, 5 Wheels, 5 Palmer Cord Tyres, 5 Lamps, Tools, etc. Improved Coachwork - - - - **£195****WILTON CARS, LTD.,**

Clapham Junction Station,

LONDON, S.W.

Tel.: Battersea 175

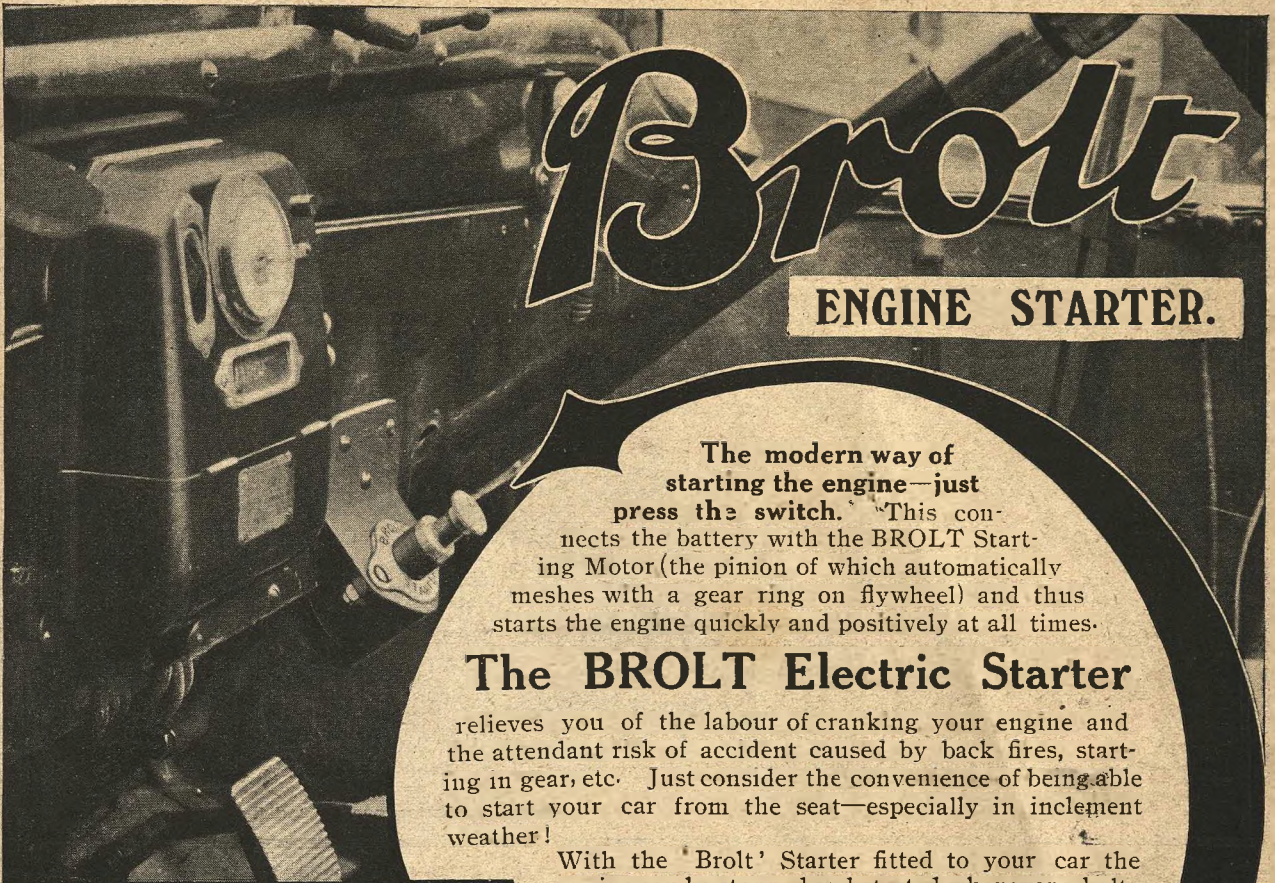
OUR CLAIM:—

Most Substantial.
Best Design (all British).
Best Value.
Three Years' Reputation.



12 h.p. 4-cyl. Engine,
9 ft. Wheel Base,
Inverted "U" Section Pressed Steel Frame,
Three-quarter Elliptical Springs,
Three Speeds and Reverse,
Shaft Transmission, etc.
40 m.p.g., 50 m.p.h.

**AGENTS—Fix up now.**



Brolt

ENGINE STARTER.

The modern way of starting the engine—just press the switch. This connects the battery with the BROLT Starting Motor (the pinion of which automatically meshes with a gear ring on flywheel) and thus starts the engine quickly and positively at all times.

The BROLT Electric Starter

relieves you of the labour of cranking your engine and the attendant risk of accident caused by back fires, starting in gear, etc. Just consider the convenience of being able to start your car from the seat—especially in inclement weather!

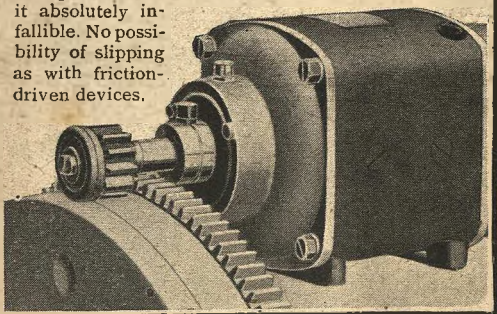
With the 'Brolt' Starter fitted to your car the engine can be stopped and started whenever a halt is made. This means a saving in petrol and minimises wear and tear of engine.

Standardised by several of the leading manufacturers on their 1915 models. Specify the BROLT Engine Starter on *your* new light car.

British-made throughout.

BROWN BROTHERS, LTD.,
Great Eastern Street, London, E.C.
Showrooms: 15, Newman St., W.
267-273, Deansgate, Manchester.

The positive gear drive of the Brolt Starter makes it absolutely infallible. No possibility of slipping as with friction-driven devices.



The Genuine Raybestos Brake Lining has Silver Edges, and the name stamped on every foot to protect you from inferior imitations. Insist upon Raybestos.



If they do not act in an emergency, you run the risk of a severe accident.

TRADE MARK
Raybestos

Brake Lining is absolutely dependable because of the special weaving and treating of the long fibre asbestos of which it is made. Raybestos grips and holds. Will not burn out, fray or ravel
BROWN BROTHERS, LTD., LONDON & MANCHESTER

Write for Sample and Particulars of Raybestos.

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.



Speedometer type 712, indicating speeds to 60 miles per hour. Total mileage counter to 10,000, and repeats. Trip mileage counter to 100 miles, with tenths and repeats. Combined with 8-day Watch 397.

Price of Combination, 712-397. **£6 14 0** Nickel, 5/- extra.

PRICES—

Type 716, 3 in. dial - £3 3 0
Indicates speeds to 60 miles per hour, with total mileage counter to 10,000 miles and repeats.
Type 712 - £4 4 0
Indicates speeds to 60 miles per hour, with total mileage counter to 10,000 miles and repeats. Quickly re-set trip counter to 100 miles.

Type 710 - £5 5 0
Indicates speeds to 60 miles per hour, with total mileage counter to 10,000 miles and repeats. Quickly re-set trip counter to 100 miles. Maximum speed hand. With type 397, watch **£2 10 0** extra.



are the outcome of the unique experience of a first-grade English watch manufacturing firm, established in London 1839.

BUY IT BECAUSE IT'S A BETTER INSTRUMENT.

Write for Catalogue to—

NICOLE, NIELSEN & CO., LTD.,

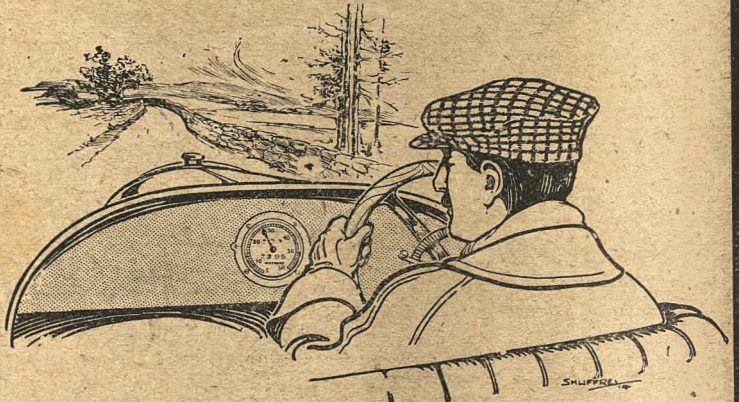
Inventors and Patentees of the Chronograph 1862, Split Seconds 1871, and Speedometer 1904.

THE WATFORD SPEEDOMETER WORKS,

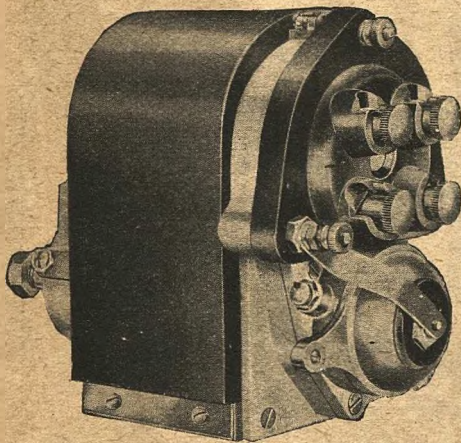
Factory—Whippendell Rd., Watford. London Showrooms—14, Soho Sq., W.

Telephone—124 Watford.
Telegrams—"Niconielco, Watford."

Telephone—2833 Central.
Telegrams—"Niconielco, London."



Watford Speedometer fitted flush.



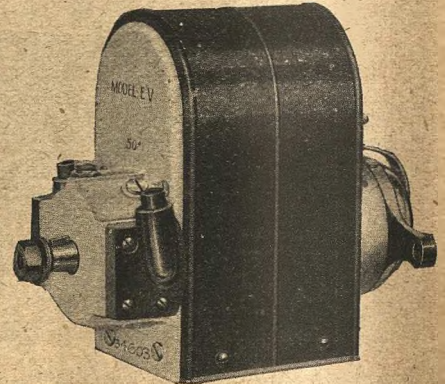
Model E.U. 4.

A HIGH Tension Magneto of the single magnets type of which the principal dimensions agree exactly with the generally adopted standards. Suitable for engines up to 85 mm. bore or even 90. The same model fitted with an extra pair of magnets is suitable for motors up to 120 mm. bore and known as E.U. 4-2. This model will do more work for its size than any magneto made. This double magnet machine is noted for its exceptional efficiency and particularly for easy starting and slow speed work.

Write for Catalogue 57.

A Fat Spark

and all its accompanying advantages ever gladden the users of Splitdorf Magnetos. Made in New Jersey, U.S.A., by men who talk your tongue and think your thoughts. British engineers now realise that the name Splitdorf on a magneto signifies supreme Quality and perfect Efficiency. The factory output is large enough to ensure a continuous and full supply under every circumstance.



Model EV.

THIS is of the enclosed waterproof type construction and adapted to 2-cylinder V-type engines set at 42, 45 or 50 degrees. It is made to the recognised standard dimensions and is absolutely interchangeable. Like all Splitdorf Magnetos it claims your patronage strictly on its merits. It typifies magneto ignition at once attractive and serviceable to the highest degree—staunch, rugged, and manufactured to bear the hardest usage with minimum attention.

Write for Catalogue 53.

SPLITDORF

Waterproof High Tension Magneto.

A full supply of spare parts always in stock in London. Any part you want by return of post.

SPARKING PLUGS.

Splitdorf Sparking Plugs are so constructed as to ensure an absolutely perfect gas-tight joint and permit the plug to be detachable for cleaning purposes if necessary.



SPLITDORF ELECTRICAL COMPANY, 6, City Rd., London, E.C.

Address after 1st December : - - - 162, Great Portland Street, London, W

A2 **HELP THE MOVEMENT** by letting advertisers know that their advertisements in "The Light Car and Cyclecar" interest you.

WAUCHOPE'S

MORGANS. MORGANS. MORGANS.
1915 Models for Immediate Delivery.



De Luxe.



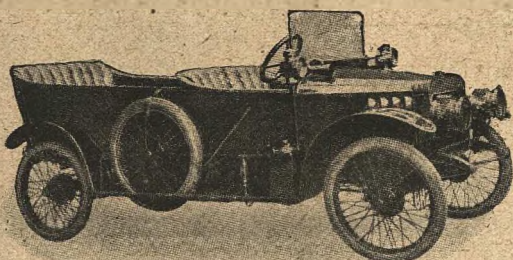
Grand Prix.

FROM STOCK.

- No. 1. **GRAND PRIX, £106**, including extra strong rear tyre.
- No. 2. **GRAND PRIX, £116**, " " " " "
- SPORTING MODEL, £92**, " " " " "

INSPECTION CORDIALLY INVITED.

We will arrange an exchange. Order now, or wire if immediate delivery is required.



G.W.K.

Four seater at **175 guineas.**
De Luxe two seater **150 "**

Immediate Delivery
1915 MODELS.



CROUCH, 8 h.p., water-cooled,
1914, shop soiled, fitted with dicky seat.
To clear at **£115.**
Usual price ... £138 15 0



CHATER LEA, 8 h.p.,
water-cooled **136 gns.**
CHATER LEA, 10 h.p.,
water-cooled, 4-cyl. ... **165 gns.**

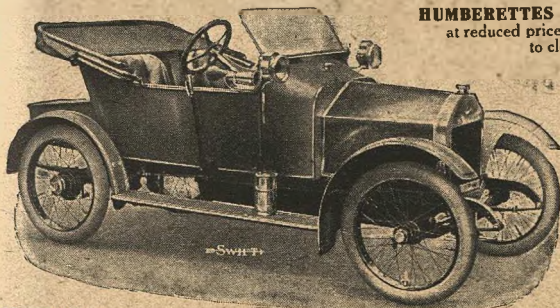


A.-C. 10 h.p. 4-cyl., fully equipped,
£175.
Cash or Exchange.



New shop-soiled 1914

HUMBERETTES
at reduced prices
to clear.



**IMMEDIATE
DELIVERY
FROM STOCK**

1914 SWIFT Cyclecar, fully equipped, **£125.**

New 4-cylinder 1915 Models can be supplied at an early date; our contract already placed.

At Wauchope's our interest in a client does not cease with the conclusion of a sale. From then on it grows even more intense. We teach him, advise him, help him, do everything in our power to make him the most contented motorist on the road.

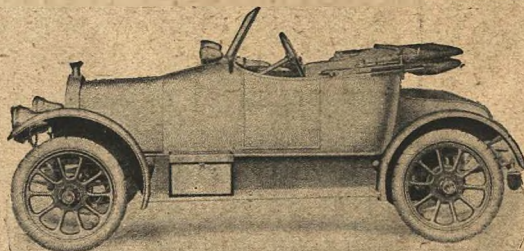
Our service starts when you place your order for any one of the hundred or so light cars and cyclecars in which we deal. We start by delivering the machine to your door, free. Then, having delivered it we will gladly, if necessary, send along one of our experts to teach you to drive and care for it. After that, we are at your service whenever you may wish to consult us on any point connected with motoring. And this service of ours is backed and completed by the personal guarantee which we deliver with every car. Once a client—always a client.

We take second-hand light cars, cyclecars or motor-cycles in part payment, and always have a splendid selection of second-hand machines in stock. Call and see our new garage, close to 9, Shoe Lane, and inspect the machines in stock there. And remember to ask for particulars of Wauchope's Easy Way.

**9, Shoe Lane, Fleet Street,
LONDON.**

(Just off Ludgate Circus.)

Telephone: 5777 Holborn. Telegrams: "Opificer, London."



SINGER Light Car, 10 h.p. **£195**
" " " " with Dynamo Lighting Set **£204 15s.**
From Stock. Latest Model. Cash or Exchange.

Second-hand.

ANY SEVERE TRIAL GIVEN.

- 8 h.p. 1914 **G.W.K.**, complete with hood, screen, lamps, horn, speedometer **£110 0**
- 8 h.p. 1913 **HUMBERETTE**, fully equipped; excellent condition and appearance **70 0**
- 8 h.p. 1913 Standard **MORGAN**, with hood, screen, lamps, horn, etc. **57 10**
- 8 h.p. 1913 **MORGAN GRAND PRIX**, J.A.P. twin engine, special body **70 0**
- 6 h.p. **ROVER**, 3 speeds and reverse, suitable for tradesman or for pleasure, mechanically sound, good running order, clearance price **25 0**
- 7-9 h.p. 1914 **SWIFT**, fully equipped as new **110 0**

1915 TINY CARS. 1915

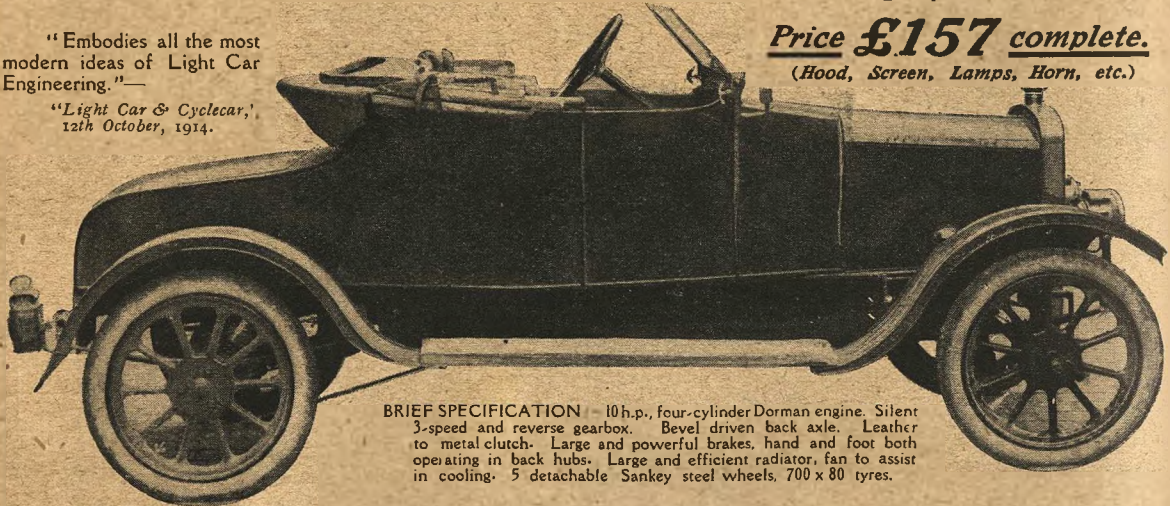
10 h.p. Four-cylinder car practice throughout. Graceful design.
Smart finish. Silent, Speedy and Powerful. The result of long experience.

"Embodies all the most modern ideas of Light Car Engineering."

"Light Car & Cyclecar,"
12th October, 1914.

Price £157 complete.

(Hood, Screen, Lamps, Horn, etc.)



BRIEF SPECIFICATION - 10 h.p., four-cylinder Dorman engine. Silent 3-speed and reverse gearbox. Bevel driven back axle. Leather to metal clutch. Large and powerful brakes, hand and foot both operating in back hubs. Large and efficient radiator, fan to assist in cooling. 5 detachable Sankey steel wheels, 700 x 80 tyres.

Van Model £157. Coupe £179. Wanted a few Reliable Agents. Write for Terms. Good Delivery.

NANSON, BARKER & Co., — Esholt, Yorkshire.

London Office: CARETTE CO., 177, Gt. Portland St., W.

Tel.—116 Idle. Telegrams—"BARKER, ESHOLT."

ALFRED WASTNAGE,

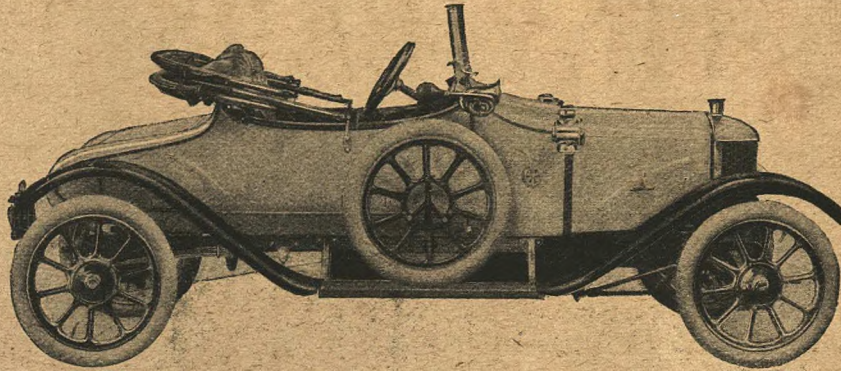
3, 4, 7 and 10, PARK CRESCENT MEWS,
GREAT PORTLAND ST.,
LONDON, W.

ARE you thinking of buying a Light Car for 1915? If so, consult us, as we can place 17 years practical experience at your disposal. We can give delivery of all makes. Further, we undertake to teach you the mechanical points and driving free of cost, and also deliver the car free to any place in England. Write for full particulars, or ring up Gerrard 2857 and have a chat with

Alfred Wastnage

CARS PACKED
AND SHIPPED ABROAD.

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



*A Sure Guide
to Satisfaction.*

POPULARITY, being the outcome of public commendation, becomes for the individual a sure guide to satisfaction. The

popularity which A.-C. Light Cars have attained—and attained in the face of keen and continually increasing competition—is indicative of, and could result only from, unusually fine value given. Unusual roominess—for a light car, unusual robustness—but without unnecessary weight—are marked features of A.-C. cars, and with these have been embodied those qualities usually found in only the highest-priced large cars—luxurious springing, silence, speed, flexibility, power on hills. Full particulars of A.-C. cars will be sent on request; also address of the nearest demonstration agent, who will arrange a trial run with any model.

A.-C. LIGHT CARS

Model 10 : £175
completely equipped.

**IMMEDIATE
DELIVERY.**

Model 12 : £200
completely equipped and
fitted with Dicky Seat.

Coupe Model : £210
completely equipped.



AUTO-CARRIERS (1911), LTD.

Ferry Works, Thames Ditton, Surrey.

Telephone Numbers: Molesey 245 and 246.

London Depot : 15, Little Portland Street, W.

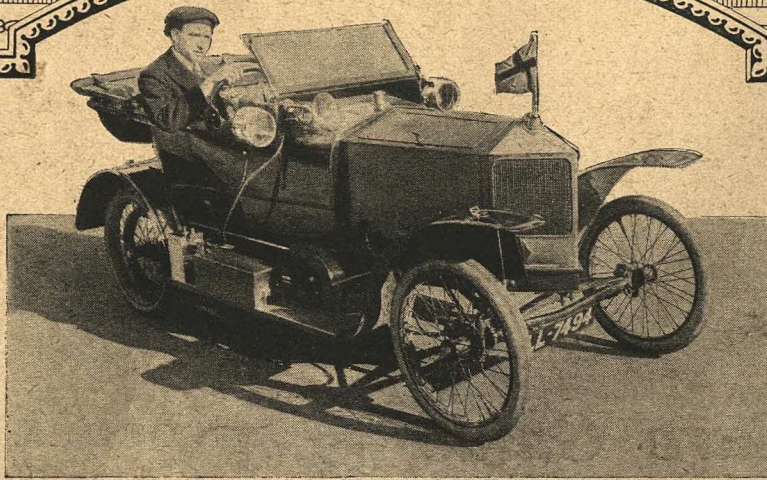
Telephone: Mayfair 4294.



**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.

A5



The £100 Cyclecar.

The Best Value obtainable at the price you can afford.

The production of a Cyclecar to sell at £100 and give the highest possible value for money has always been our ambition. The American principle of standardisation has been applied to the manufacture of the Victor with such remarkable success that it has been possible to reduce the price by fifteen pounds. We have achieved our object—The Victor Cyclecar is now sold for the round sum of £100, including full equipment, and is the most attractive proposition of real British quality.

Note carefully these points in the Specification.

Engine: 8 h.p. 2-cyl. "Precision." Speeds: two and reverse. Ignition: Magneto C.A.V. or Bosch. Carburetter: Claudel-Hobson Automatic. Tyres: Michelin. Lubrication: Semi-automatic. Wheelbase: 7 ft. Width of Track: 3 ft. 6 in. Ground Clearance: 10 in. Equipment: Two-seater Body, beautifully finished and upholstered, with electro-plated fittings; hood, screen, two head lamps, tail lamps, large square generator, horn, jack, pump, and full kit of tools.

VICTOR MOTORS, Eynsford, Kent.

Sole Concessionaires:

TYLER APPARATUS CO., Ltd., 15, Gerrard St., London, W.

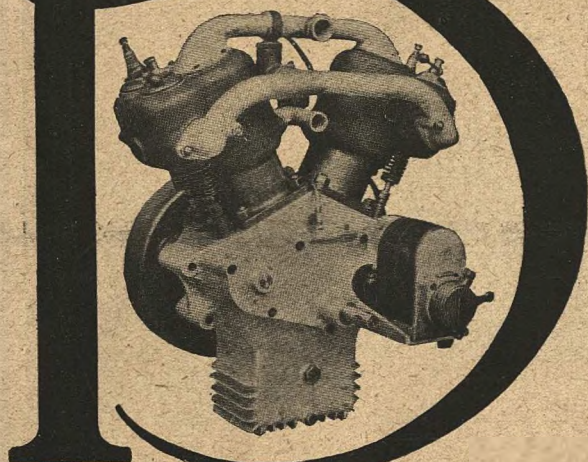
LIST OF AGENTS:—

Messrs. SERVICE CO., Holborn, E.C. Messrs. CASS'S MOTOR MART, Warren Street, Euston Road.
Messrs. WAUCHOPE'S, 9, Shoe Lane, E.C. Messrs. HARRODS, Ltd., Knightsbridge, S.W.
Messrs. WHITELEY'S, Bayswater, W. Messrs. WHITE BROS., Omagh, Co. Tyrone.

THE FAMOUS

BLUMFIELD

Air and Water - cooled
V-Twin Engines



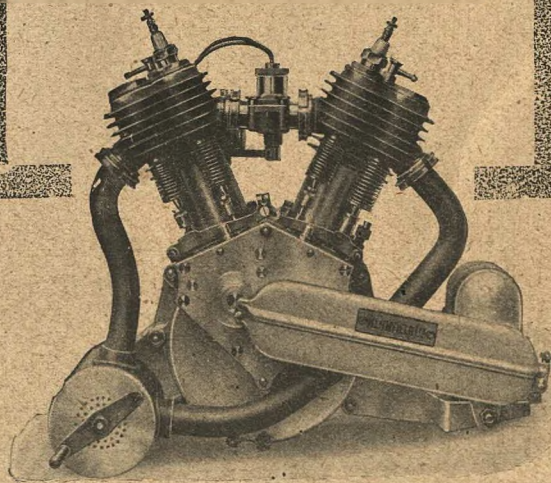
The Blumfield
8-10 h.p. Twin
Water-cooled
cyclecar engine.

THE BEST ENGINE FOR LIGHT CARS.

Our distinctive designs, together with the finest materials obtainable and high-class British workmanship, enable us to offer to the public the most reliable and most efficient engines yet produced.

Blumfield Engines do more work and do it better, on a given fuel consumption, than any others, and bring advantages that are enjoyed every time they are in use.

CHEAPEST IN THE LONG RUN.



The Blumfield 8-10 h.p. Air-cooled V-Twin cyclecar engine

Write for Particulars—
BLUMFIELD, LTD.
70, Lower Essex Street,
BIRMINGHAM.

**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.

A7

NARDINI

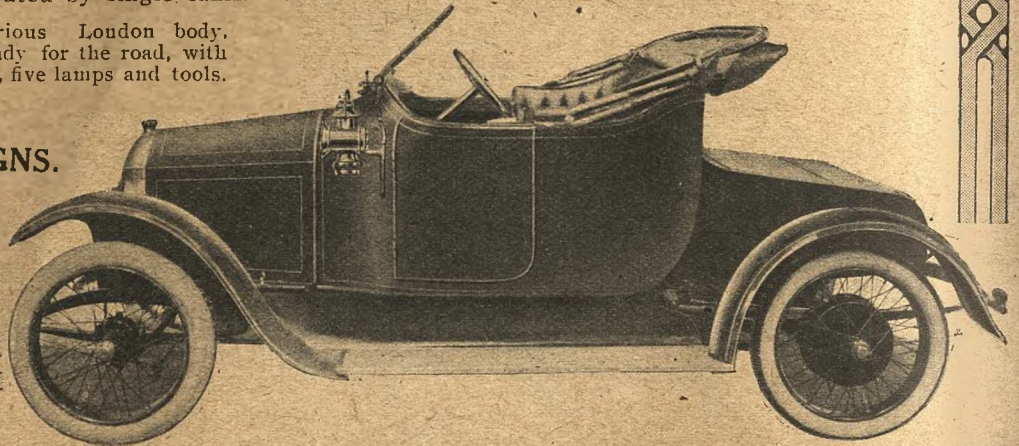
The Finest Light Car Proposition for 1915

THE Light Car following standard practice throughout. The power unit is the famous four-cylinder, water-cooled Altos engine, four cylinders cast en bloc, 60 x 100 mm., 1244 c.c. Valves fitted with special adjustable tappets, enclosed in dust-proof aluminium cover, operated by single camshaft.

With luxurious London body, complete ready for the road, with hood, screen, five lamps and tools.

PRICE
200 GNS.

Special
Four-Seater
Torpedo
232 Gns.



Special Notice:—

We can fit a larger and more powerful engine if desired—AT THE SAME PRICE, viz.:—The 10-15 h.p., four-cylinder, Altos water-cooled engine—66 x 130 mm., 1779 c.c.

Write us for full particulars of our latest 1915 models. Catalogue FREE on request.

ALTOS LIMITED,
12, Vauxhall Bridge Road,
WESTMINSTER, LONDON, S.W.

THE HORSTMANN CAR

“BRITISH-BUILT THROUGHOUT.”

The London Agents and
Sole Agents for Kent:—

You intend purchasing a Light Car—then let your choice be the Horstmann—“the car without a starting handle”—and purchase it from Walter Engall & Co., Ltd., the London Agents. There never was better value offered than is found in the 1915 “Horstmann.” At the Cyclecar Club’s Rally on 21st November the Horstmann Car was awarded FIRST PRIZE for its many novel features. We should like to demonstrate these many unique features. Will you write us and let us arrange a trial spin on the 1915 Horstmann Car? IMMEDIATE DELIVERY guaranteed.

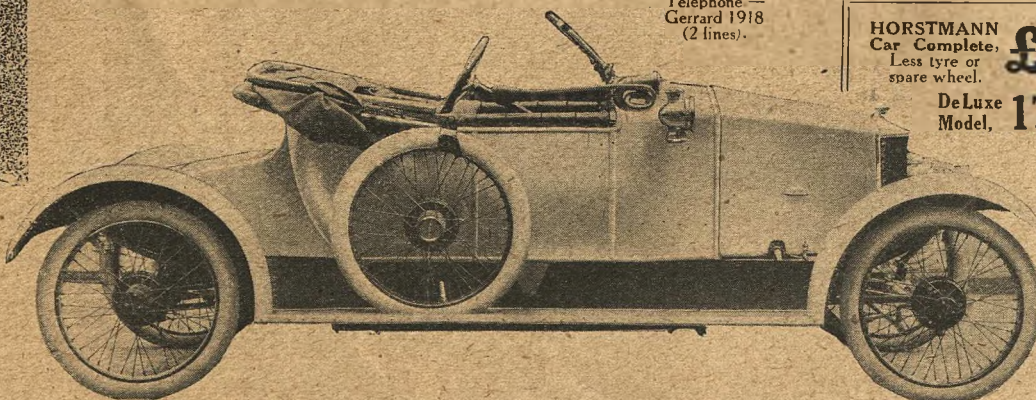
WALTER ENGALL & CO., LTD., 21, Mercer St., Long Acre.

Telephone—
Gerrard 1918
(2 lines).

HORSTMANN
Car Complete, **£155**
Less tyre or
spare wheel.

De Luxe **175 Gns.**
Model,

Light
Delivery
Van,
£145,
not in-
cluding
lamps,
etc.



C. N. HIGGS.

A RECORD.

Mr. Higgs was the first exponent of the A.-C. in 1909. Since then the energies of our firm have been concentrated on the Sale and Repairs of Light Cars and Cyclecars. This experience of long standing is valuable to you.

NEW CARS.

We are thoroughly acquainted with the good points of every make. Our repairing experience has also allowed us to discover their individual weak points. Our disinterested advice will save you pounds and disappointment.

EXCHANGES.

Having a considerable market for Second-hand Cars, we can make you a generous allowance for your present machine.

SECOND-HAND CARS.

When buying a car from an unknown advertiser you are buying "a pig in a poke." All second-hand cars coming in our stock are dismantled and thoroughly overhauled before sale. They carry our personal guarantee.

REPAIRS.

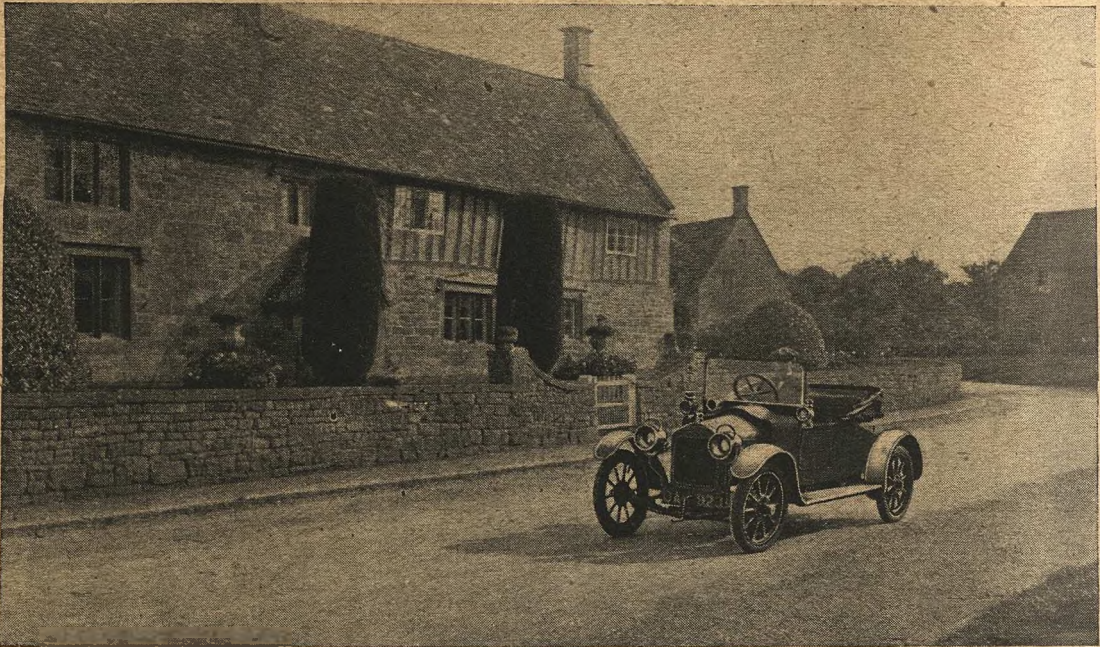
Our experience is unequalled; our charges are as low as consistent with good workmanship; our work is guaranteed.

31, VAUXHALL BRIDGE ROAD, VICTORIA, S.W.



An Absolute Necessity

where cars of superior design and construction and serviceability are demanded. The engine, four-cylinder, 9.45 h.p. R.A.C. rating, is lively and responsive, and speed is secured both smoothly and quickly.



STELLITE CARS

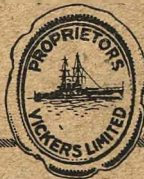
Wolseley Design.

— Remarkably flexible, quiet and vibrationless; built to last. —
Friction in all working parts is reduced to vanishing point, thus economising in running costs and upkeep costs. The excellent form of spring suspension enables the cars to hold the road well at all speeds.

Price £157 : 10 : 0, Two-seater. £170 : 0 : 0, Three-seater.
Each with hood, screen, horn, side lamps and tail lamp.

THE ELECTRIC AND ORDNANCE ACCESSORIES COMPANY, LTD.,
ASTON, BIRMINGHAM.

London Agents:
WOLSELEY MOTORS, LTD.,
York Street, Westminster, S.W.

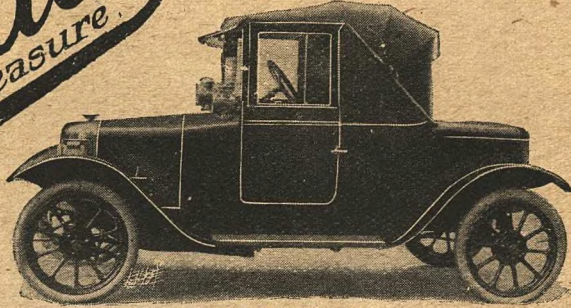


Telephone: 6220 Victoria (6 lines).
Telegrams: "Autovent, Vic, London."

*The
All-British*

*11 h.p. 4 cylinder
Lagonda
for Business or Pleasure*

An Elegant and Luxurious all-weather vehicle with ample accommodation for two passengers and luggage.

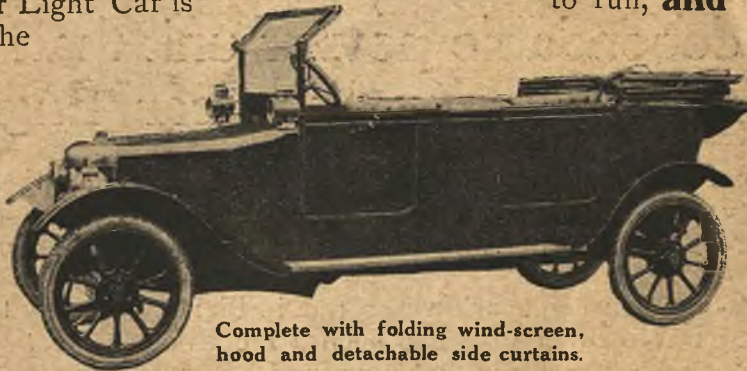


£150

A Splendid Car at a Wonderful Price.

The new Lagonda four-seater 11 h.p. four-cylinder Light Car is absolutely the **cheapest** four-seater car in the world. Not the **lowest** in price, but the very

best value for money, the **cheapest** to run, and the **lowest in price but one.**



Large and expensive touring cars provide no more leg room.

Complete with folding wind-screen, hood and detachable side curtains.

Price—150 GUINEAS—Complete

Write for Catalogue

**TOLLEMACHE &
GRIFFIN,— Ltd.,**

195, Hammersmith Road,
London, ——— W.



£150

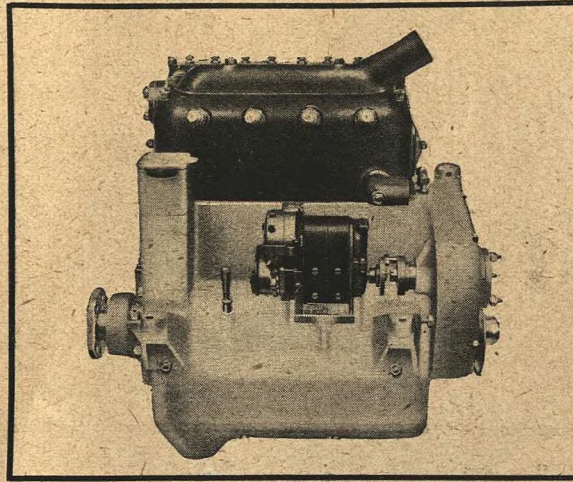
5 cwt. Light Delivery Van.

All models fully equipped with two acetylene head lights and generator, two oil side and tail lamps, spare wheel, horn and tools

**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.

ALL



You cannot rely on a more efficient and dependable power unit than the Coventry-Simplex light car Engine.

If any one point stands out more prominently than another, it is simplicity. It is this quality of simplicity which makes possible such a tremendous power output with such wonderful fuel economy.

Coventry-Simplex engines have scored brilliantly in every trial of importance. No other unit has such a record of success. Every ounce of weight has its relative value in efficiency.

Choose a light car with a Coventry-Simplex engine and satisfaction is yours without a doubt. Special department for building engines to customers' own specifications. Write for particulars.

COVENTRY - SIMPLEX ENGINES, LIMITED,
COVENTRY.

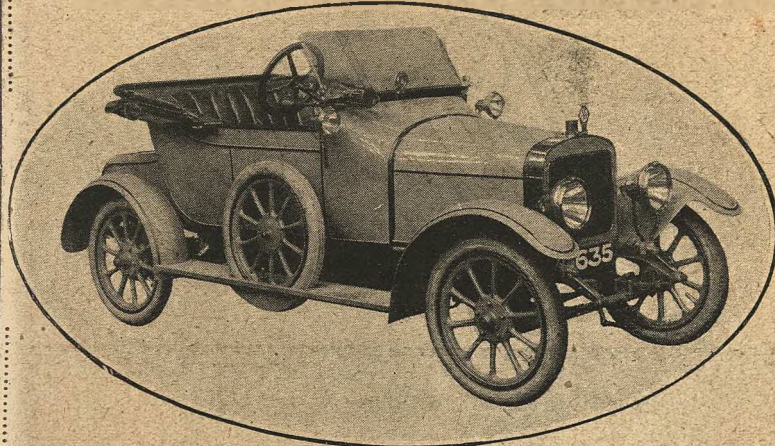
COVENTRY SIMPLEX

T.P., Ltd.

DAY-LEEDS

LIGHT CAR.

Model de Luxe.



10 h.p. 4-cylinder, 1 × 100 water-cooled engine, five Sankey Detachable Wheels and Dunlop Tyres, hood with side curtains, screen, two acetylene head lamps, two side lamps, and one tail lamp, horn, tools, and valances ... **£185**

If with 12 volt dynamo, accumulator and five electric lamps ... **190 guineas**

Standard Model **£175**

Dicky Seat, **£5** extra.

Extracts from our Users' Testimonials.

"I consider that both in design and quality of material employed the Day-Leeds Car for all round work is the most robust."

"Having now completed an extended test of 1,515 miles over the long gradients of the Welsh and rough surfaces of the Devon and Cornwall roads . . . during the whole test the car ran without mechanical trouble and showed an ample reserve of power."

"Thoroughly reliable and remarkably light on tyres, speedy and loads of power, comfortable and well finished."

"I cannot speak too highly of its performances."

"At the end of 10,000 miles was running as well as on the day I took delivery."

"The car has never given me a moment's trouble or an involuntary stop."

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"As pioneers of the light car industry in Leeds you are to be congratulated on having produced what is, in my opinion, the best light car on the market."

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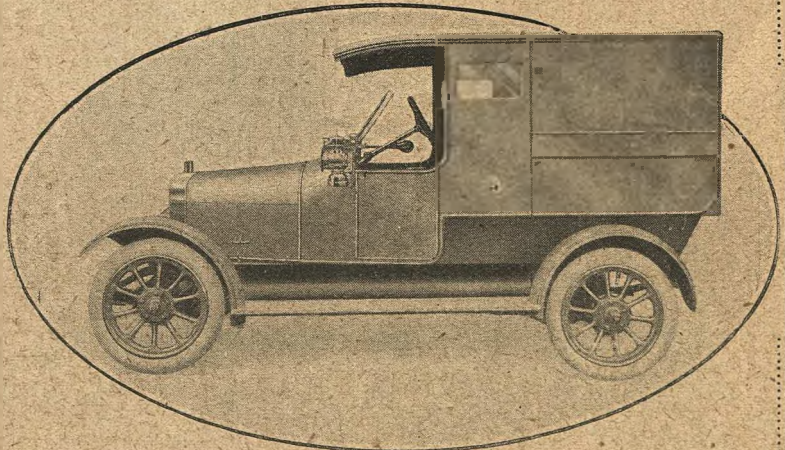
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Delivery Van.

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£170

Spare wheel and tyre **£5** extra if required.

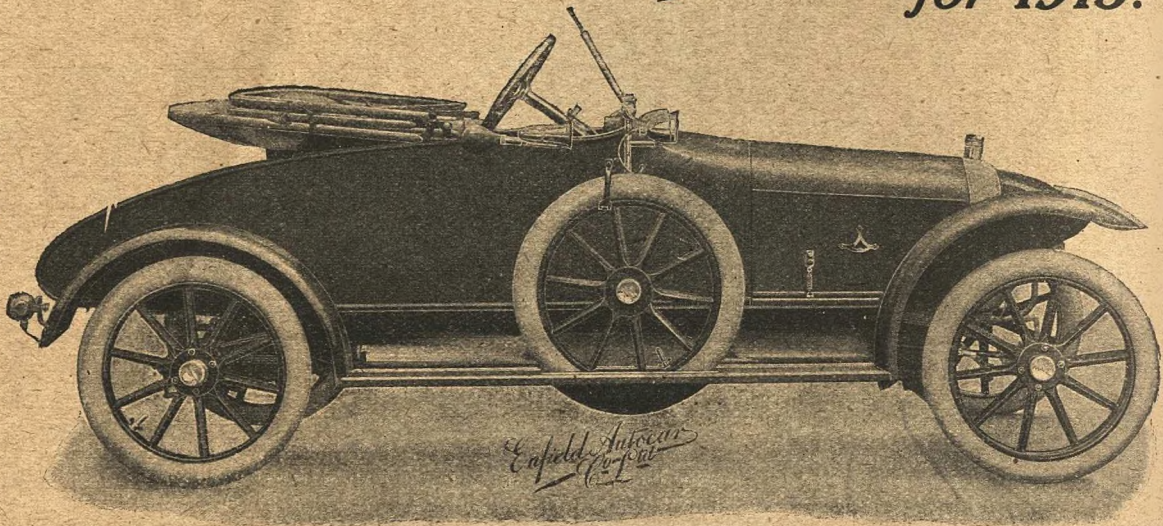


JOB DAY & SONS, Ltd., Engineers, LEEDS & LONDON.

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The Enfield 10 h.p. Light Car for 1915.



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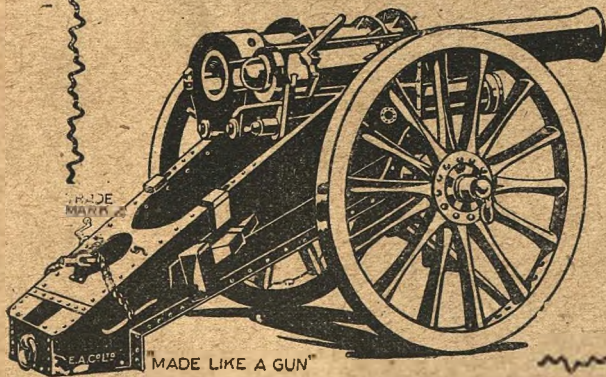
Engine 10 h.p., four cylinders (59 x 100), monobloc type; pump lubrication; Thermo cooling; gearbox, sliding type; 3 speeds and reverse with gate change; worm drive; worm and sector steering; two independent brakes; detachable wheels with spare wheel and tyre; tyres, Dunlop 700 x 80 mm.; handsome streamline, roomy two-seated body; upholstered in real leather; Cape hood; wind screen; DYNAMO LIGHTING SET and five lamps; horn and tools.

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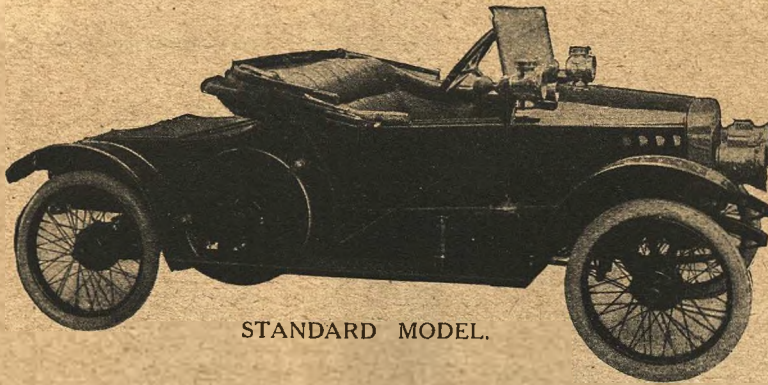
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A15



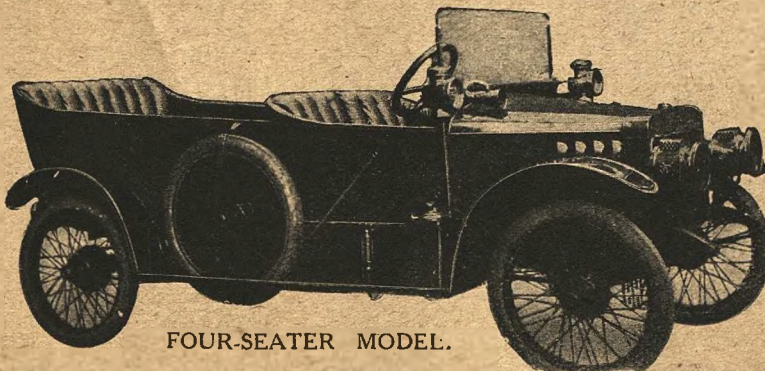
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Study this record and weigh up these facts

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The G.W.K., by reason of its unique design, offers advantages that the orthodox car cannot give. These are, primarily, the advantages of the G.W.K. friction drive — great ease of management, absence of gear box complications, the minimum of wear and “a gear for every gradient.” Gear changing is delightfully simple, and this, together with infinite variety of gear ratios, makes hill-climbing a wonderfully easy matter. Durability (absent in so many light cars) and stability are also marked features of the G.W.K.

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The Light Car and Cyclecar

Buyers
Review
Number



THE RALLY.

Great Success of The
Cyclecar Club's Event.

A Spring Show Wanted.

[The following report appeared in
our second edition last week.]

THE rallies at Hatfield (Saturday), Burford Bridge and Wisley Hut (Sunday), organized by the Cyclecar Club, were a wonderful success. They were organized so that the public might see the latest productions of the manufacturers, and not only inspect them, but have an opportunity of observing their behaviour on the road. The cars, of which considerably more than 100 appeared at one rally or the other, attracted the very greatest interest, particularly as there were some very novel machines, new and attractive in design, both in the cyclecar and light car types of vehicle. Some of the bodywork recalled the highest skill of the coachbuilder's art ever exhibited at Olympia, and fortunately a dry week-end enabled the cars to be staged unscathed by the road.

At Hatfield, the venue of the first rally, cars began to arrive before 12 o'clock, and by the official hour of commencement, 2 o'clock, there were some 70 or 80 arranged in rows in a field adjoining the Red Lion placed at the disposal of the club by the proprietor. By 4 o'clock, when the cars were beginning to draw away again, there were just about 100, while spectators' cars ranged along the road for a distance of over a mile and numbered twice as many, excluding motor-bicycles and sidecars. A number of Midland cars were driven back the same night, but the majority proceeded to town in a series of remarkable processions, interested crowds lining the roads en route, and thence a number went on to Burford Bridge.

At Burford Bridge, after dinner, a concert was arranged, and some excellent talent materialized, songs being given by Miss Hands and Messrs. G. H. R. Dean, H. P. McConnell and B. C. Adamson. The Dulcet Duo had read of the concert in THE LIGHT CAR AND CYCLECAR, and were passing at the time, and

Lining up at Burford Bridge.

THE RALLY (contd.).

very kindly volunteered a most appreciated selection of songs accompanied by 'cello and piano.

The rally was timed at 11 o'clock. We counted over 300 cars at 1 o'clock, over 100 being the exhibited new models, and, apart from the tremendous number of motoring visitors, there were hundreds of motor-cyclists, and even people who came down by train. The "rally cars" were stationed from the Burford Bridge Hotel, a $\frac{1}{4}$ mile up the London road, the visitors' cars ramified in every direction, and, closely packed as they were, extended half a mile towards Dorking and some up a by-road.

After lunch the cars proceeded to Wisley Hut, where, in front of the hotel, they were ranged for the third time. Here there was indeed a record crowd; quite a number of new cyclecars that did not come down to the other rallies now lined up. As for the spectators, we should say they numbered over 2000. Busy as this spot is in the summer, the police and the R.A.C. guide and A.A. scouts volunteered the information that they had never seen so many cars here before, or had to cope with such dense crowds of people, which they did most excellently. Indeed, the task of organizing was an exceedingly arduous one, and the fact that everything went off without a hitch speaks volumes for the way everybody worked.

The Awards.

Certificates were awarded at Hatfield for the three cars with the best appearance, and at Burford Bridge for the three cars having the most novel features of mechanical-utility. First prize in the appearance competition went to Miss Hands, daughter of Mr. George Hands, of the Calthorpe Motor Co., whose Calthorpe was universally acclaimed the handsomest. It was a standard Grand Duke Michael model, of a pleasing shade of lemon yellow with black wings; second prize was also won by a Calthorpe, a coupe in



The judges: Mr. T. E. Loughborough (A.-C.U.),
-Mr. W. Cooper and Dr. A. M. Low.]



At Burford Bridge.

blue and black with nickel fittings. Both were ordinary models as supplied to the public. Third prize went to Mr. Lionel Martin's Singer, which is the new standard model for next year, finished in stone grey and nickel, with the new rounded radiator, a very "classy" machine of much improved appearance.

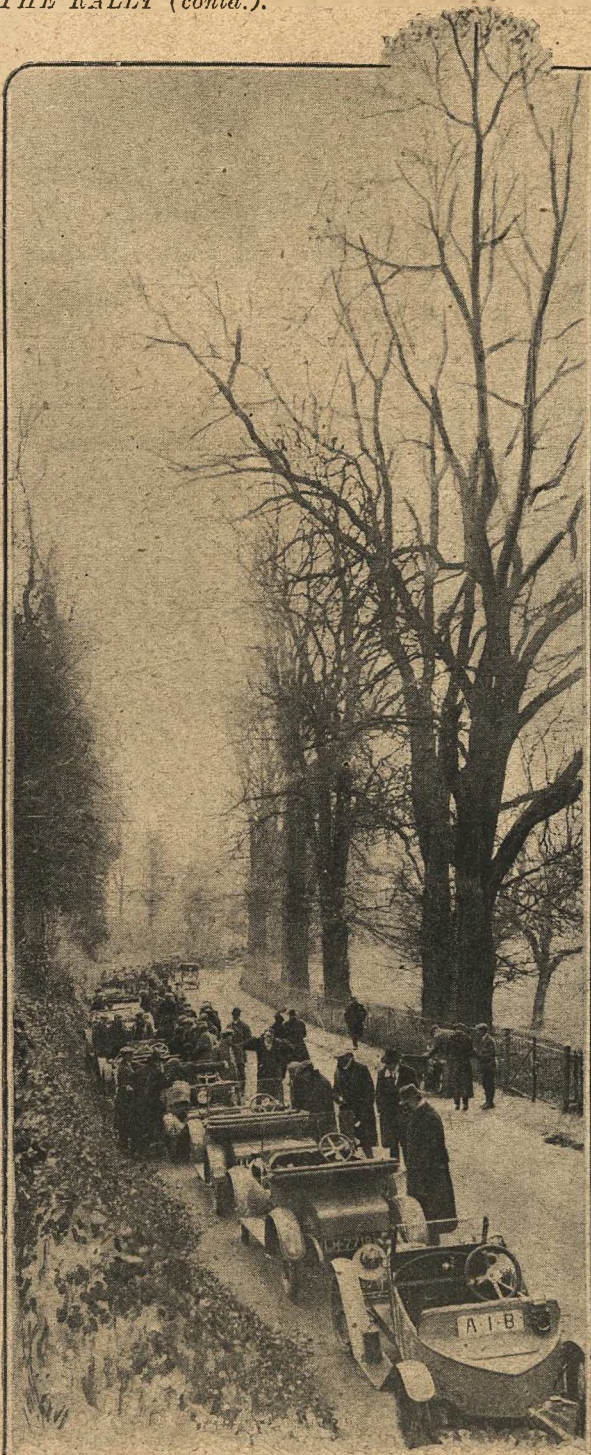
The car with the most novel features proved to be, as expected, the Horstmann, a detailed description of which appeared last week. It literally bristles with new and sound ideas, the chief features that the judges noted being the ingenious self-starter, the frame, engine, engine suspension, and steering. The second prize went to the Old Mill for its parallel motion springing, torque tube anchorage, and self-starter. The third prize went to the Kennedy, partly for novel design and method of obtaining clean appearance, and partly for the system of obtaining increased pressure for the low gears. This was a very nice-looking cyclecar, with a square-fronted radiator and aluminium bonnet, streamline body, painted white. Its transmission was by friction discs and final belts, but with rather small pulleys.

Certificates will also be awarded for the cars that had come the longest distance. The Morgans appear to have come the farthest, as they drove from Malvern to attend; the certificate, however, will not be awarded for a day or two.

The Cars Described.

Of the other cars we can but touch briefly. We noted a smart Singer, with disc wheels, finished in aluminium, brought by Mr. Jones, of Wrexham, which was at the first rally; an aluminium G.W.K.; the new four-cylinder Swift, with lighting dynamo; a nice four-seater Stellite in grey; a stone-grey and black Lagonda cabriolet; a dust-coloured Humberette, with nickel fittings; a grey Warren-Lambert, with black

THE RALLY (contd.).



A picturesque part of the Burford Bridge Rally.

wings—"the mountain climber," as we heard a visitor call it, bearing past feats in mind; a dull-green finish on a Marshall-Arter four-seater; a Jennings, with the new suspension, etc.

Special mention should be made of the A.-C.s and Morris-Oxfords, which were very close in the running for the appearance competition. The Morris-Oxford crimson coupé was a beautiful piece of work, and another interesting model was one in which two extra seats had been provided in a sort of cabriolet body.

There were probably more A.-C. light cars and cyclecars present than of any other make, including the new sporting model, which is very smart indeed, with a polished aluminium body and low aluminium screen, and a beautifully-finished pale-yellow touring model.

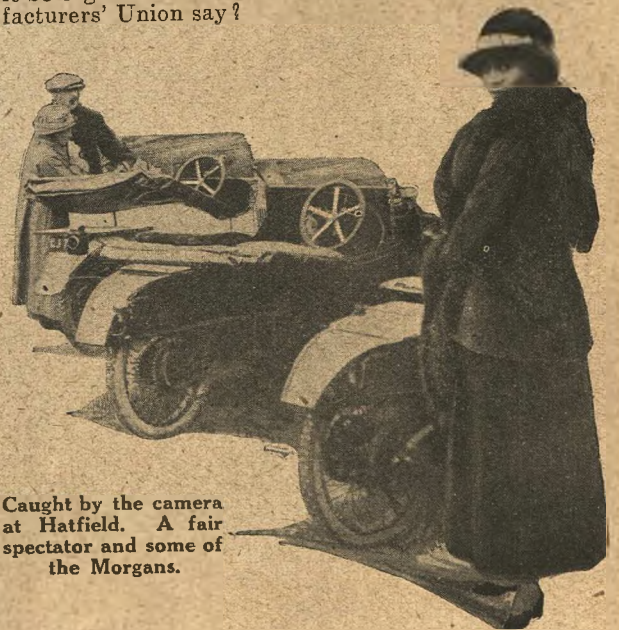
Some of the cyclecars attracted very great attention, particularly the £100 Victor, four models of which were staged. They ran quietly and well, and were nicely finished, particularly the all-black model, relieved by a nickel-plated radiator, lamps and fittings. Even an excellent hood cover was included in the equipment. The new Tourist model G.N. was completed only the night before, and appeared at the Sunday rallies; it is a simple machine, with a roomy body and many good features, priced at 88 guineas, and attracted great interest. The Crompton was a very striking monocoque, with a 4 h.p. engine that had an excellent note, with a pointed streamline body and belt drive. It ran very well indeed. The Winter was another interesting machine, with a four-cylinder F.N. engine, which was run for an hour standing still without getting overheated, although it is only air cooled. The transmission is by gearbox and belts. Another water-cooled model was shown. The Cardens attracted the liveliest interest. One was brought down on the back of a car, showing what a light, small machine it is. Miss Holzappel drove another, carrying her sister on the tail; a smart, little machine, in grey, with black domed wings. Mr. Cooper's G.P. Morgan, with disc wheels, was one of the smartest machines yet turned out at Malvern, and one of the popular standard models, painted white and black, was almost in the running for the appearance prize. Two D-Ultra machines were shown, and their low-built bodies with underslung frames and simple construction greatly admired.

Manufacturers of accessories seized the opportunity of showering literature into the visitors' cars, while the Dunlop Co. partially marked the route with streamers.

There was a number of parcelcars exhibited, including a Crouch, Calthorpe, and A.-C.

The judges, Dr. A. M. Low, Mr. T. E. Loughborough (secretary of the A.-C.U.), and Mr. W. Cooper, had a difficult task, which they undertook most systematically and thoroughly.

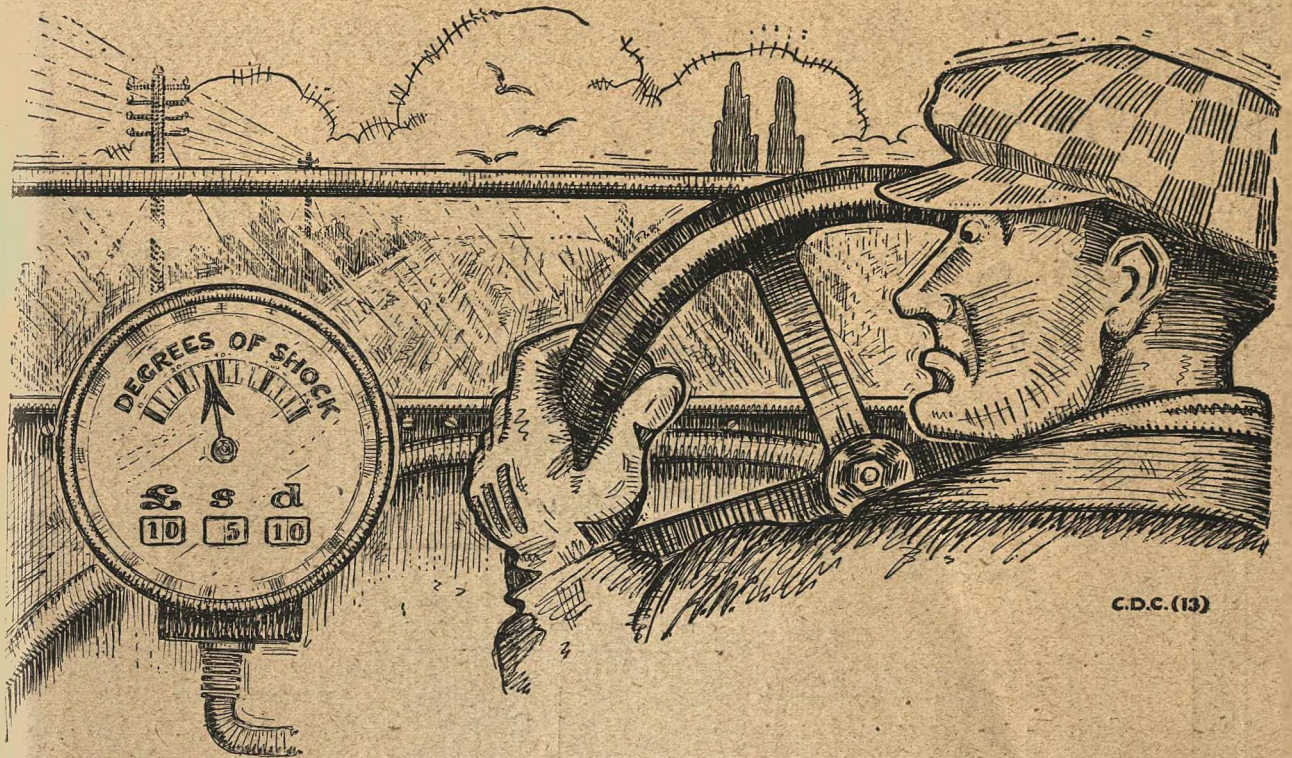
Everywhere the opinion was passed that, with such novel and interesting designs, a show in the spring would be of immense advantage to the industry. Can it be organized? What do the Society and the Manufacturers' Union say?



Caught by the camera at Hatfield. A fair spectator and some of the Morgans.



Scenes at the Rallies. 1 and 2. At Hatfield. 3. At Burford Bridge. 4. At Wisley Hut.



C.D.C. (13)

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A21

The New 1915 Models of

Warren Lambert

LIGHT CARS

"The Mountain Climber."

SPECIFICATIONS.

4-cyl. Model.

Engine - - Dorman, 64 mm. x 85 mm.
 Carburetter - Zenith.
 Ignition - - High Tension Magneto.
 Frame - - Pressed Steel. No curves.
 Tyres - - Avon, 650 mm. x 65 mm.
 Clutch - - Leather Cone.
 Transmission - 3 Speeds & Reverse & Live Axle.
 Lubrication - Mechanical Pump.
 Wheelbase - 7 ft. 7 in.
 Track - - 3 ft. 7 in.
 Length Overall 10 ft. 6 ins.
 Width Overall 4 ft. 2 ins.
 Weight - - 8½ cwt.
 PRICE (completely equipped) **£160**

2-cyl. Model.

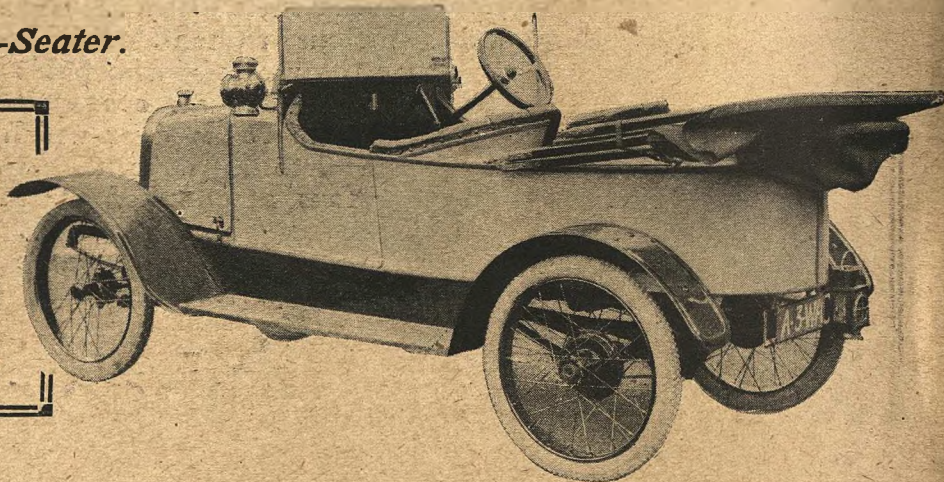
Engine - - Blumfield, 88 mm. x 90 mm.
 Carburetter - Cox Automatic.
 Ignition - - High Tension Magneto.
 Frame - - Pressed Steel. No curves.
 Tyres - - Avon, 700 mm. x 80 mm.
 Clutch - - Leather Cone.
 Transmission - 3 Speeds & Reverse & Live Axle.
 Lubrication - Mechanical Pump.
 Wheelbase - 7 ft. 2 in.
 Track - - 3 ft. 7 in.
 Length Overall 10 ft.
 Width Overall 4 ft. 2 in.
 Weight - - 8 cwt.
 PRICE (completely equipped) **£135**

The New 3-Seater.

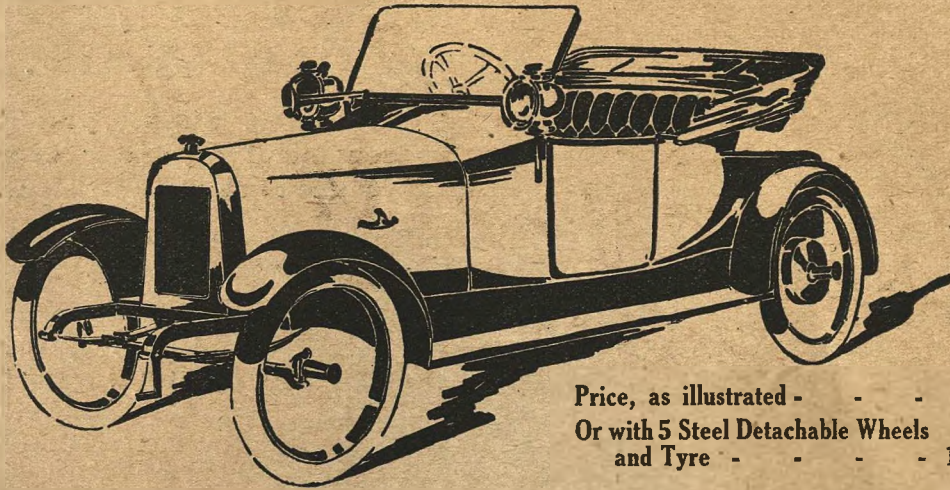
4-cylinder
£170

2-cylinder
£145

(Completely
equipped, as above).



The New 4-cyl. Model.



Price, as illustrated - - - £160
 Or with 5 Steel Detachable Wheels
 and Tyre - - - - 160 Gns.

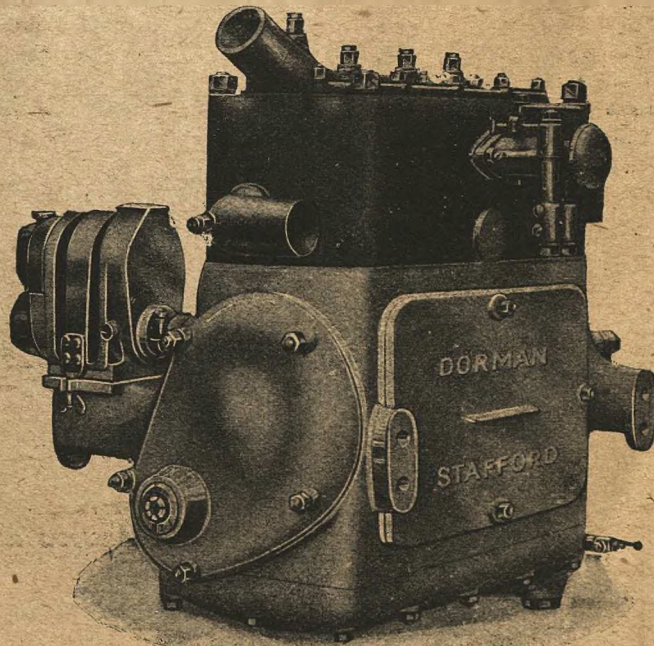
DURING the past Season we have demonstrated beyond dispute the wonderful hill-climbing capabilities of the Warren Lambert. **SIX UP ARMS HILL, FIVE UP BROOKLANDS TEST HILL,** and a **CLEAN ASCENT** of **NAILSWORTH LADDER,** are solid facts, and facts speak louder than words. It is an established fact that the Warren Lambert will climb anywhere where the wheels will grip, and for high efficiency and low cost of upkeep you cannot buy a better car.

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**The Famous DORMAN
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NOTE the extremely clean design, large inspection door and ready accessibility of magneto, carburetter, and oil filler.



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"The Light Car and Cyclecar."

"It is a dear little thing—so light, so sporting, and so simple to drive, that you cannot help falling in love with it at once. Though it only weighs 250 lb.—i.e. lighter than the average twin-cylinder variable-g geared motor-bicycle—the Carden Monocar holds the road exceptionally well."

"One of the reasons why the Carden is so swift is because the wind resistance has been cut down to the very limit, and the streamline effect of the body, combined with the low build of the machine, accounts for the fact that it probably offers less wind resistance than a motor-bicycle."

The CARDEN CYCLECAR.

The most simple, most
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Running Expenses — 1d. per mile.
70 miles per gallon.

1915 Prices.

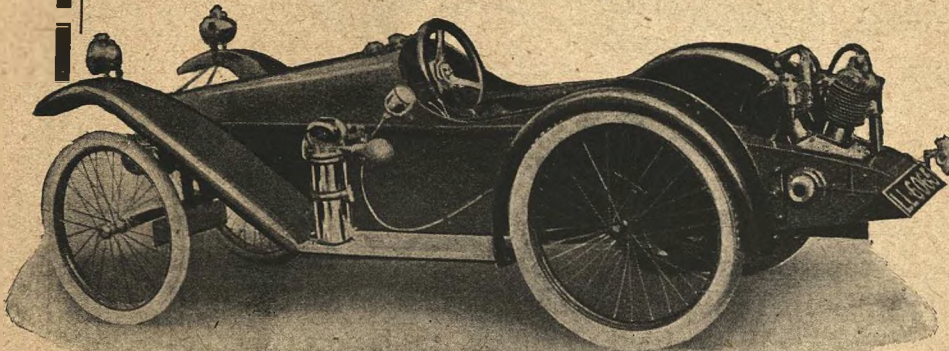
Model B. - £70

Model F. - £80

Read the interesting extract attached,
then decide on a Carden for 1915.

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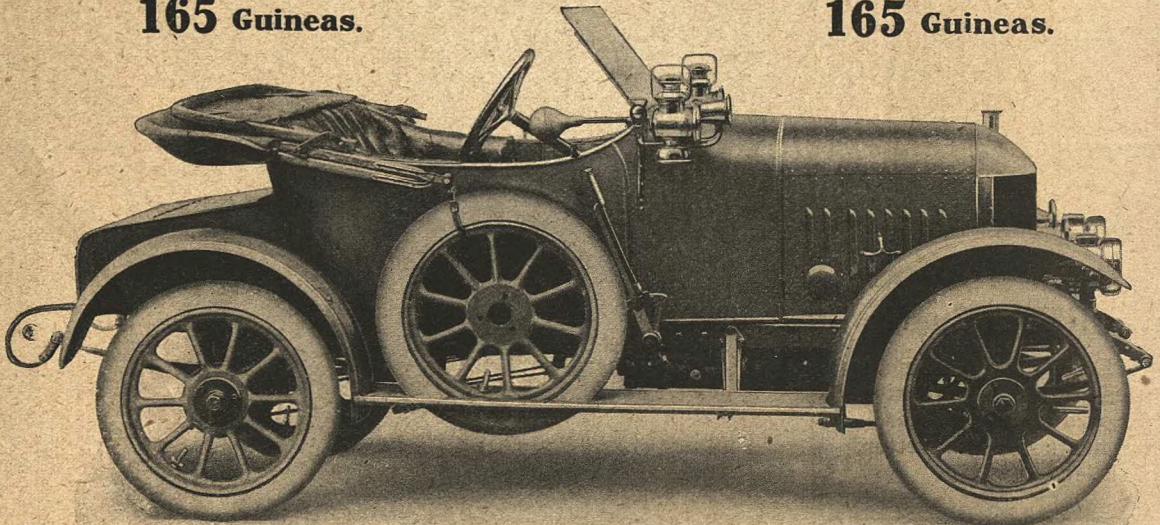
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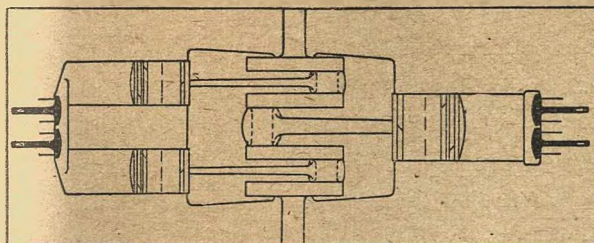
W. H. M. Burgess, 36, 38, 40, Glasshouse St., Piccadilly Circus, W.

THE LATEST FEATURE OF THE TWO-STROKE DISCUSSION.

Additional interest has been lent to the two-stroke question by the suggestion that the horizontally opposed twin type is impracticable. Why it is considered so, although in the public mind it is an ideal type, and how its disadvantages can be overcome, are covered in the following article, which discusses the mechanical side of the problem. Two designs, the two-cylinder vertical and opposed, are illustrated.

IT is strange that the two-stroke engine is invariably mentioned in the specification of the ideal machine of the future, as so little attention has been paid to it by manufacturers. That it should be so frequently mentioned shows that it has a place in the mind of the motoring public, and this is chiefly on the score of simplicity.

Anything simpler than the accepted type of two-stroke design with crankcase compression it is difficult to imagine, but if pump cylinders are used to



Mr. Stanley Alder's design, which is applicable to two-stroke engines.

compress the charge the complication destroys the chief charm of the two-stroke. For this reason the crankcase compression engine only will be considered.

The criticisms generally levelled against the two-stroke engine are inefficiency, lack of flexibility, and excessive fuel consumption, but these faults are not nearly so serious as the critics would have us believe. That the faults exist at all is due to the little attention given to these engines and the two-stroke performances in the motorcycle world show that the faults can be overcome.

For example, a two-stroke engine has twice proved itself superior to its four-stroke rivals in the famous Isle of Man T.T. races. Frequently one sees a tiny two-stroke motorcycle taking a sidecar and passenger with ease, which does not suggest inefficiency. Again, a two-stroke has before now won petrol consumption trials with a substantial margin in m.p.g. So much for petrol consumption. As regards lack of flexibility much can be said, but latest developments have shown that flexibility can be obtained, and that it is largely a matter of correct port design.

The chief points in the design of the two-stroke engine are the number and disposition of the cylinders, and the aim of the designer is to effect a compromise between good balance and even torque. The single-cylinder two-stroke is practically out of the question, as the balance is too bad to appeal to those familiar with four-cylinder engines.

The two-cylinder two-stroke is the popular engine, but here a compromise has to be struck between balance and torque. If the cylinders are placed side by side, as is usual, with the cranks at 180 degrees, then the cylinders fire in sequence, giving the torque of the ordinary four-cylinder four-cycle engine with the balance of the ordinary two-cylinder engine.

Now this type of engine has fairly good balance, but there is bound to be a period where the vibration becomes excessive. To overcome this some designers put the cylinders opposite one another. This is the horizontally-opposed two-cylinder two-stroke. Examples of this type of engine are the M.I.P., which

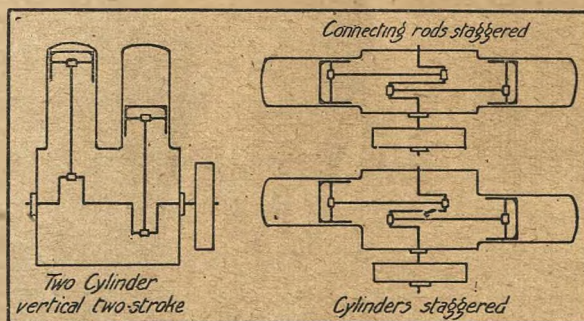
was designed by Dr. A. M. Low and exhibited at the last Olympia Show, and the Cuffin engine, which we described in our last issue.

The cranks are still at 180 degrees, and consequently the two pistons are moving in and out of their respective cylinders together, and they will therefore fire together. If we consider the torque, we find that it will be the same as that of the horizontally-opposed four-stroke engine, of which the Douglas is a well-known example, but with this difference, there will be two impulses at the same time acting in opposite directions.

So good should be the balance that it should overshadow the comparatively poor torque, which is only half as good as that of the side-by-side two-cylinder two-stroke.

In practice, however, such good balance is not easy to attain, because it is difficult to arrange the cylinders exactly opposite to one another. Either the cylinders must be considerably staggered or the connecting rods placed to one side of the centre line of the cylinder and the big-end bearings kept as small as possible.

With the small motorcycle engine the out-of-bal-



The two-cylinder vertical two-stroke and the horizontally opposed two-stroke, the cranks being at 180 degrees in each case.

ance effect given by staggering the cylinders, or the side thrust produced by the displacement of the connecting rods, is not felt so much as in the larger engines. This may possibly account for the fact that the larger horizontally-opposed engines have not been so successful as their smaller prototypes.

In large horizontally-opposed engines this out-of-balance effect has to be taken seriously into account, as also the side thrust on the cylinders and bearings due to the connecting rods not being central, as one or the other is generally present. The trouble may be overcome by using a three-throw crankshaft with two connecting rods from one piston, but the arrangement is clumsy and has disadvantages.

To overcome these defects in the large four-cycle, horizontally-opposed engines, a novel design has been patented by S. Alder and Co., of Boroughbridge, Yorks., which should be equally applicable to the two-cycle horizontally-opposed engines. Briefly, it is arranged for one large cylinder to be placed directly opposite two smaller cylinders, the cubic capacity of the small cylinders together being equal to that of the large one.

TWO-STROKE DISCUSSION (contd.).

The two small cylinders have one combustion chamber common to both, and the connecting rods work on the outside cranks of a three-throw crankshaft, the large cylinder working on the middle crank. The weight of piston, connecting rod and crank of the large cylinder is equal to the combined weights of the same parts working from the two small cylinders. In the four-cycle engine all the cylinders are arranged to fire at the same time, and thus the impulses balance, as they do on the two-cycle engine of the same pattern.

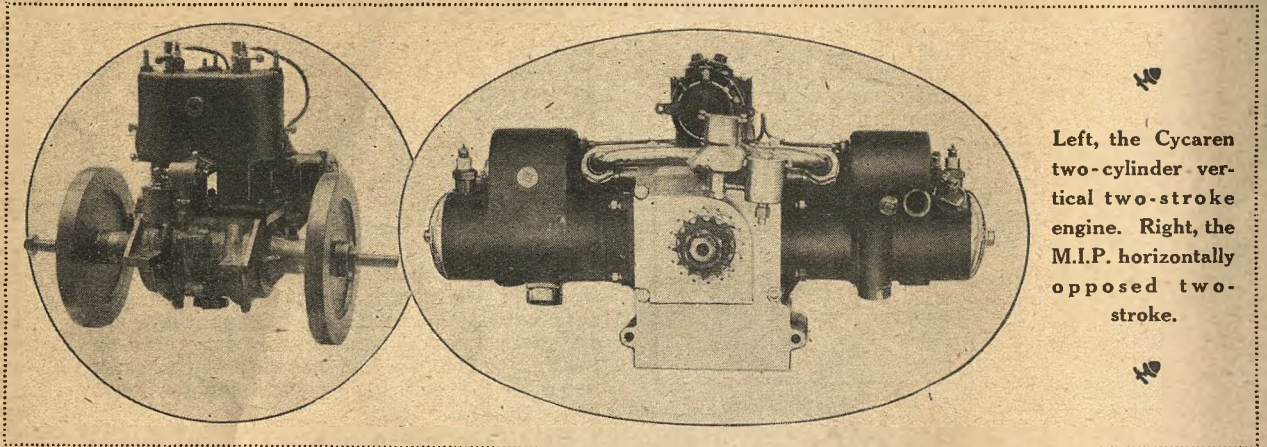
If it is desired to get the even torque of the two-cylinder vertical two-stroke or four-cylinder four-

stroke from the horizontally-opposed engine, then the cranks must be arranged together. This means that both pistons will travel the same way together, and the balance is only that of a single-cylinder engine.

Thus it will be seen that with the horizontally-opposed two-stroke either balance or torque must be sacrificed and this has led many designers to consider the three-cylinder two-stroke.

This seems to offer the best combination of balance and torque it is possible to attain, for with the cranks at 120 degrees the torque is that of a six-cylinder engine of the four-stroke type, and it is also possible to obtain very good balance. Crankcase compression can be utilized and the main qualification of simplicity retained.

A.G.D.C.



Left, the Cycaren two-cylinder vertical two-stroke engine. Right, the M.I.P. horizontally opposed two-stroke.

OVERHEARD AT THE RALLY.

"What a freak!"

* * *

"Très jolie n'est-ce pas?"

* * *

"Is that dear little covered car only £150?"

* * *

"There's the Victor. That's a hundred pounder."

* * *

"Where's the engine?" looking at a four-seater G.W.K.

* * *

"Better than a show. I wish they would have one for motorcycles."

* * *

"Say! Isn't that just too cute. Guess I'll get pop to get me one."

* * *

"Mighty good advertisement for a cigar firm," said someone about the Carden.

* * *

"This does fine as a mirror," tidying her hair from her reflection in the sporting A-C.

* * *

"What a ducky little radiator!" said a fair maiden anent the front of the air-cooled Crompton.

* * *

"What's the matter. Has the lake overflowed?" asked a big car driver approaching Wisley Hut.

* * *

"Whatever is that razor stop for that he pulls out of the dash?" said one, looking at an Old Mill.

* * *

"It is going on the lake," said one girl as she watched a little torpedo car going over the grass to take up its place at Wisley.

* * *

"Good heavens! Look at that antediluvian tricycle." "Hush. That is the Ghost of the Portsmouth Road, and I bet you can't overtake it."

* * *

The loud reports of two covers bursting as a machine tried to take a corner at 30 m.p.h.

* * *

"Wherever do they store that 'cello on the A-C.?" "In the toolbox, 'stupid,'" came the quick reply.

* * *

"That's a new make—the official," said one of the "know-alls" as the aluminium bonnet of a de P cyclecar came in sight.

* * *

"There's a bigger crowd than seen at Olympia," said one of the fair sex as she viewed the scene from the balcony of the Hut.

* * *

"I'll soon paint my cards all right," said a late-comer who had forgotten to bring his official rally cards. He hadn't seen the brush.

* * *

"Have you bought the road? You can't make me shift my machine from here," a crusty pilot was heard to explain. "Move on there," said the police—and he went.

* * *

"Singer and Company, if you please; not singer in company," said Mr. Palmer, a Singer exhibitor, when asked to contribute to the gaiety of the evening at the concert at Burford Bridge.

* * *

"Go back to Ripley, take the first on the right, second to the right again, and then straight on, and you will avoid the crush." If these directions were followed heaven help the unfortunate motorist. Where is he now?

* * *

"Quite a cyclecar touch about their name," one of the audience remarked as the Dulcet-Duo were announced at the concert. "If they keep their A-C. Sociable in half as good tune as their voices I never hope to pass it on the road," said another.

HIGH SPEED ENGINE DESIGN.

How Speed is Obtained and Some Important Considerations.

THE ability of the modern petrol engine to run at extremely high speeds without any signs of the brake-horse-power output falling off is, to a large extent, due to the increased volumetric efficiency obtained by the use of ports and valves of ample dimensions. The volumetric efficiency of the engines of some few years ago suffered considerably at anything like high speeds through the inadequate size of these parts, and the power curve showed a distinctly downward tendency at speeds which today are looked upon as extremely moderate.

We will briefly consider the elementary mechanics of horse-power after defining volumetric efficiency, which is the term given to the ratio of the volume of charge actually drawn in to that displaced by the piston. Horse-power is the rate of doing work, and work is done when a force overcomes a resistance. The amount of work done is therefore the product of

useless and, unless a fairly constant mean effective pressure is maintained throughout the entire speed range, the power output will not be proportioned to the piston speed.

Working on the assumption that, all other things being equal, the power developed in a cylinder is proportional to the amount of charge drawn in, a relation is suggested between mean effective pressure and volumetric efficiency, which in turn is a function of port area.

Following this line of thought brings one to the valve-area-horse-power rating rule, the advantages and disadvantages of which we will not consider here, beyond the expression of the opinion that making valve area a fundamental dimension for the estimation of horse-power would tend towards small and inefficient valves. It is somewhat difficult to obtain a high compression ratio in small engines fitted with valves



Is a Society for the Prevention of Cruelty to Light Cars wanted? A heavy load on a small machine.

the force applied (or the resistance overcome) and the distance through which it acts in its own direction.

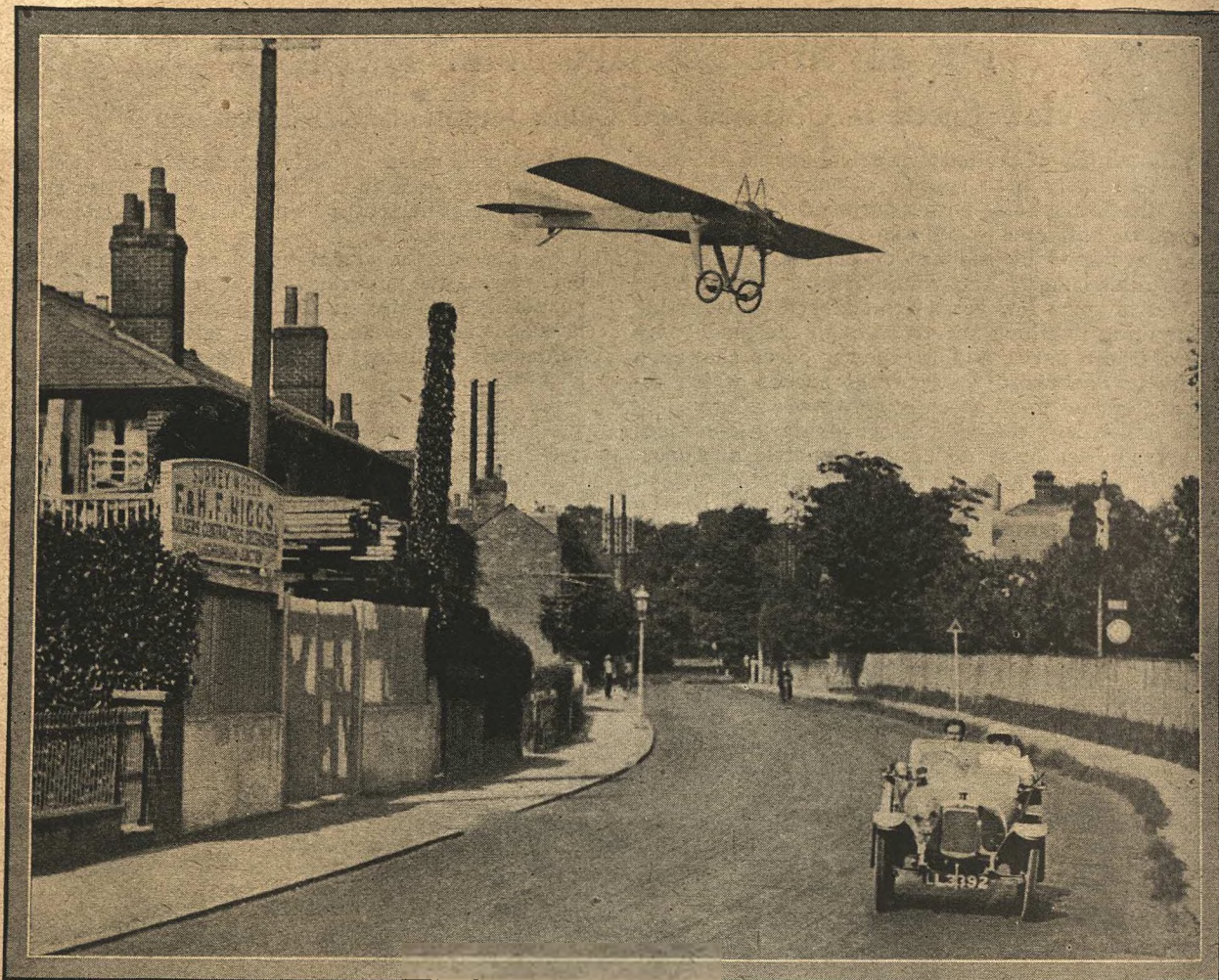
In other words, work is the product of force and distance, and as the units used in this country are the pound and foot, we can write down work as the product of pounds and feet, and as horse-power is the rate of doing work, we say that one horse-power is accomplished when thirty-three thousand foot pounds of work are performed in one minute.

So it will be easily seen that horse-power can be considered as the product of force and velocity, which for our present purpose are respectively represented by the mean effective or average pressure exerted on the piston by the explosive mixture and the distance through which the piston moves in one minute.

Therefore it will be seen that mere revolutions are

of the size necessary for power; the valves, by increasing the volume of the compression space, hardly assist towards this end. When increased valve area is required the present tendency appears to be towards keeping the lift moderately low and increasing the valve diameter. The average proportions are a diameter slightly in excess of half the cylinder bore with a lift of about one quarter the valve diameter. The practice of keeping the lift down has much to recommend it. High lifts require very strong controlling springs, and are conducive towards noise, while at high speeds valve operation becomes a most difficult matter.

The following simple calculations will emphasize this and also give some idea of the considerable acceleration attained by a valve. Possibly it may also draw



MOTORING ON LAND AND IN AIR.

A monoplane passing over a Calthorpe Minor on the London-Portsmouth road.

attention to the necessity of keeping the valve mechanism as light as possible, a point which seems to be overlooked by some designers when considering the reciprocating weight of their engines.

Assume we have an engine revolving at 2500 r.p.m., having a valve lift of 0.375 in., and the time allowed for its closing is the time taken for the crankshaft to turn through 90 degrees of its path, which at 2500 r.p.m. is equal to

$$\frac{60}{2500 \times 4} = 0.006 \text{ sec.}$$

If the valve is uniformly accelerated, the well-known formula

$$h = \frac{a \times t^2}{2}$$

gives the relation between acceleration, time, and distance, which are respectively represented by a, t, and h.

We have the lift of the valve, which is equal to h, and the time, but require the acceleration, so, transforming our formula for this purpose, we have

$$\frac{2 \times h}{t^2} = a \text{ in inches per sec. per sec.}$$

Then the acceleration in feet per sec. per sec. is given by

$$\frac{2 \times .375}{12 \times .000036} = 1736.$$

The required spring tension at the moment of closing is given by the dynamic formula—

$$F = \frac{W \times a}{g}$$

in which F is the force required in lbs., a the acceleration, W the weight, and g the gravitation constant 32. If W, the reciprocating valve weight be taken as 0.75 lb., we have

$$\frac{.75 \times 1736}{32} = 40.7 \text{ lbs.}$$

as the necessary spring tension.

To ensure the tappet rollers keeping in contact with the cams at high speed demands strong springs, which should be as long as possible. Considerable noise would, of course, result from any tendency of the cam to leave the tappet behind owing to weak springs.

R. STAFFORD.

Authoritative Work on Two-strokes.

We are shortly producing a new authoritative work on two-stroke engines for light cars (and also cyclecars and motor-bicycles), written by Dr. A. M. Low, D.Sc., A.C.G.I. The very latest designs are dealt with. Two-stroke problems are exhaustively covered. The book is well illustrated, and produced at the price of 1s., and will be published by Temple Press Ltd., 7-15, Rosebery Avenue, London, E.C.

NOTES, NEWS AND GOSSIP OF THE NEW MOTORING.

Special this Week:—Over 100 Small Cars and All About Them.

Equipment.

See our issue of 14th December.

A Special Number, covering the latest accessory features.

It has been found impossible to deal with equipment adequately this week, hence the special number next month.

December 14th—special review of 1915 accessories, equipment and those little things that make motoring easier.

Many of the Midland motor concerns are still short of men as they are working at full pressure practically continuously.

The lighting restrictions in Birmingham are becoming more stringent, but so far motor headlights have not been officially banned.

The Goodyear Tyre and Rubber Co. have issued a novel pocket catalogue containing coloured maps of the war area—a neat idea.

In hand—many pages of illustrated hints and tips, jottings about our country beauty spots, amusing incidents of the new motoring, etc.

One of the attractions of the Cyclecar Club's 1915 Rallies must have been the abundant supply of fresh air. What a contrast to the Olympian atmosphere!

Wanted—a comprehensive term that covers both the light car and cyclecar, three wheels and four, and all types of transmissions. Will readers forward suggestions?

There are 73 pages of advertisements in this issue, representing practically the entire light car and cyclecar trade. This Buyers' Review Number is a really representative issue.

The critical review of interesting features of 1915 models appearing in this issue is a feature otherwise missing in the shoal of literature in the form of "buyers' guides" which seems to be so plentiful just now.

The Horstmann self-starter could be used for "spinning" the engine. Thus, if caught in a watersplash, by working the foot starter up and down the car would be propelled on to dry land. Such an incident actually occurred.

The coroner at an inquest last week on two motorcyclists who were fatally injured near Barnsley, by colliding with a wagon which they were overtaking, suggested that all vehicles ought to carry an independent light at the rear.

"Apart from the evergreen Morgan, there is hardly a single genuine 'cyclecar' left in existence. Both the name and the thing are practically obsolete. . . . There is room on the market for a £100 four-wheeler . . . our moribund cyclecars," . . . etc., etc. From the usual supply of unofficial news on cyclecar topics.

The R.A.C. have resolved to make strong representations to the Home Office that red rear lights on all vehicles (including bicycles) should be made compulsory. The general committee, however, were very undecided whether reflex lights ought to be permitted, but where only side lights are allowed, and these often dimmed by order of the police, reflex lamps are absolutely useless, and because of their false security should be barred.

Paris is fully lighted at night, but the Zeppelins come not.

Requests made in Parliament to remove the lighting restrictions in London were refused last week.

The most popular engine size is between 1000 c.c. and 1100 c.c.

The Stellites at the Rally had the new three-speed gearbox fitted.

Next week—several more exciting skids described and illustrated.

A large number of applications for membership of the Cyclecar Club was one of the results of the Rallies.

Eighty-five light cars and cyclecars are dealt with in the detailed specifications of 1915 models.

There are 76 different makers of light cars and cyclecars whose models are listed in this issue.

Photographs of 52 of the makes are inserted in the specifications, and elsewhere will be found a page of coupé models.

The Cyclecar Club's rallies created such a favourable impression that a similar event for motorcars is being talked about in trade circles. A chance for the R.A.C.

We are surprised to find in a published list of "light cars," which includes engines of a cubic capacity of over 2000 c.c., that quite a lot of big cars are omitted. And even the Ford is left out.

The R.I.A. has been successful in its action to recover for the public a strip of the highway, 200 yds. long by 7 yds. wide, on the Machynlleth and Llanfair road which had been annexed by a frontager.

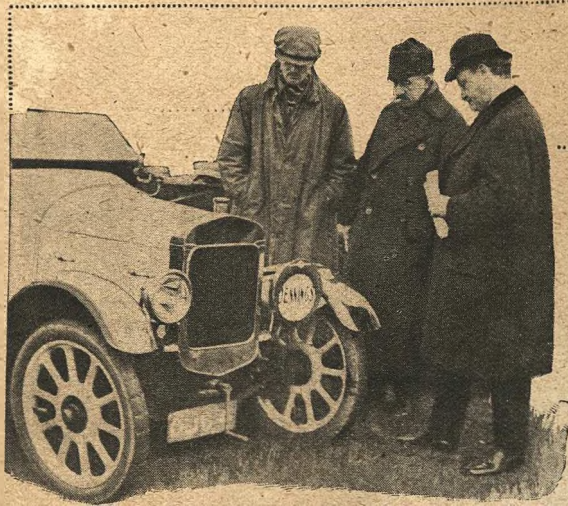
The Automobile Association have received a large number of requests under the free legal defence scheme for motorists caught in police traps, which shows that the traps are now once again in full swing.

"The Times" reported last week that the Germans are making most effective raids with machine guns mounted on sidecars. We should think firing from the sidecar was somewhat uncertain, so why not counter this move with a few Maxim-Morgans?

We give the detailed specifications, with side-view illustrations, and an analytical critique of interesting mechanical features, accompanied by numerous sketches, of practically all the light cars and cyclecars made commercially. So, this issue, would be one of great interest to a friend abroad. Why not post it to him?

Only three starters materialized for the Bristol M.C.C. trial last Friday, amongst the light car and cyclecar entries, these, according to a wire received as we went to press, being Mr. D. Hawkes (Victor cyclecar), Mr. Clayden (A.-C. light car), and Mr. Hooper (Douglas light car). The roads were very greasy. A report will appear in our next issue.

The Motor Cycling Club, following their successful cinema show last Friday, will hold a cigarette smoker on Friday, 11th December, at the Café Monico, in aid of the Belgian Refugee Fund. Tickets, 1s. each, can be obtained from Mr. W. H. Wells, 366, Euston Road, N.W. Ladies are welcome. The artistes include Will Edwards, Chas. Pond, Doris Lee, Winifred Pear, Randall Jackson, Alexander Prince (concertina), and J. Hill (marionettes)



BUYING A LIGHT CAR OR A CYCLECAR.

The shafts in the gearbox should be short and sturdy in order to obtain rigidity, and it should also be noted what precautions have been taken to prevent any leakage of grease and oil.

The gate change we should certainly recommend, but the gate should be examined to see that it has sufficient strength and that the lever moves freely in the various slots.

A sturdy back axle is a *sine qua non*. A differential is not absolutely necessary, and, indeed, a solid axle has much less tendency to skid.

Brakes.

Brakes are a part which the prospective purchaser seldom tests or even inspects. Large brake surfaces are essential. It is a great annoyance to have to adjust one's brakes after every run (a trouble which often beset pioneer drivers). External-expanding brakes are perhaps the most popular, and if these are enclosed within the back wheel hubs they work in a very satisfactory manner. When testing it should be noted whether the machine pulls up smoothly or with a sudden jerk, and also whether it evinces any desire to deviate from the set wheel tracks. If compensated brakes are fitted this latter tendency is less likely to be present. However, no matter what type is fitted, the driver should be able to adjust the brakes with the greatest of ease. In most light cars this is made possible by fitting large wing nuts at the ends of the brake rods.

No purchaser should finally settle on his machine without holding a close examination of the steering connections. The various joints should have ample strength, and some means of lubrication should be fitted. A car which in its new state has slack steering is very certain to become difficult to control after a few thousand miles.

As regards tyres, these should err if anything on the large side, for few people will dispute that large tyres, though more expensive in first cost, are in the long run cheaper; besides that, the increased comfort gained is considerable. For a 10-cwt. vehicle we should recommend 700 mm. by 80 mm. tyres. Springs should also be long and of fair width, say $1\frac{1}{2}$ in.; less for a lighter vehicle.

It is advisable for the prospective owner to test the comfort of the body by actually sitting in the driving seat. He should make certain that the various controls are within easy reach, for it is a very serious matter, for instance, to have to lean forward uncomfortably in order to grasp the brake handle, whilst a steering wheel that is so low as to prevent wrapping a rug round one's self is, to say the least, inconvenient.

Pedals should also be tried for position, but should the prospective purchaser satisfy himself as to any particular car's qualities and capabilities in other respects, he should not unnecessarily discard it if the pedals and steering pillar, etc., are not quite in the correct position, for it is really a simple matter to alter the position of these and at a very small cost.

The body should be tested for the various noises which this part of the machine is prone to emit. A very frequent source of rattle is a badly-fitting side door, while the petrol tank and under-screen, unless properly fitted and stayed, frequently give off a peculiar drumming noise. These points, of course, can be settled by a short test on the road.

In the selection of a cyclecar there are other considerations. The A.-C. and the Morgan are far and

PROVIDED with the necessary cash, it is one of the simplest things in the world to buy a motor, be it a large car, light car or cyclecar, but to obtain the best value for money, or, more important still, a car that exactly suits the individual requirements is another matter.

First of all, the prospective purchaser should be warned against placing too much reliance upon appearance. There is, of course, a certain amount of satisfaction in owning a light car the lines of which blend and the contour of which is symmetrical in every detail, but that is not everything.

One of the commonest faults of the modern high-speed engine as fitted to light cars during the last season was its tendency to overheat when propelling the machine up long gradual slopes, and at other times when the full power of the engine was called upon for long periods of time. Therefore, inspect the cooling arrangements. Obviously, a large radiator is not a disadvantage. The most successful cars last year have increased the size of their radiators for next season and water pipes as well. Abrupt bends, which tend to impede the flow of water, are a bad feature of design. If properly designed there should be no necessity for a fan.

Accessibility:

The next point regarding the engine is accessibility. There are several engines at present on the market which are the acme of compactness, but by reducing their overall dimensions they lose accessibility. For instance, one should make certain that in order to replace a broken valve cotter or spring it is not necessary to remove the magneto, the carburetter or any network of pipes. The valve tappets should be adjustable without removing many fittings.

The position of the holding-down nuts of the cylinders should also be noticed and if a special spanner is provided for these it is not a bad idea to test it for one's self. See whether it is possible to use it without any very great difficulty, for cases have been known where a hantmer and chisel have been the only means whereby a cylinder nut could be removed.

When testing the machine we should not take too much notice of the ease of starting, for this depends mainly upon the setting of the carburetter or some other similar detail. Difficult starting is very seldom due to any cardinal defect in the engine.

We next turn our attention to the gearbox. The orthodox position of this unit is generally somewhere midway between the engine and the back axle, but some machines, including one of the most successful, have the gearbox incorporated with the back axle.

Hutchinson

LIGHT CAR TYRES

The Leading Tyre for 1915

The Hutchinson Three Rib

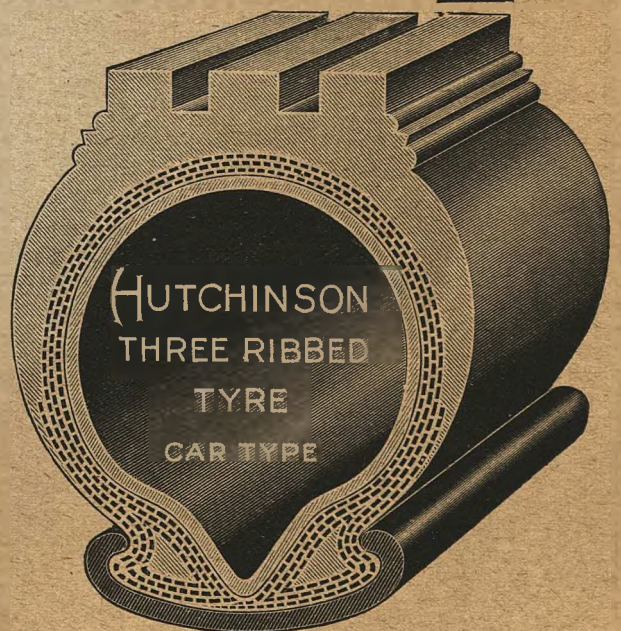
It will be marketed in three grades, Light Car, Small Car, and Car Type, varying in weight in the order given, the latter being the heaviest.

It is moderate in price, and on the cost per mile basis—the only true method of calculating tyre cost—will give results previously unapproached.

Other Models will be the Hutchinson Steel Studded—so popular for many years—the Hutchinson Rubber Studded, and the Hutchinson Heavy Plain.

We can supply as usual.

Hutchinson Tyre Co.,
70, Basinghall St.,
E.C.



**TO THE
READER**

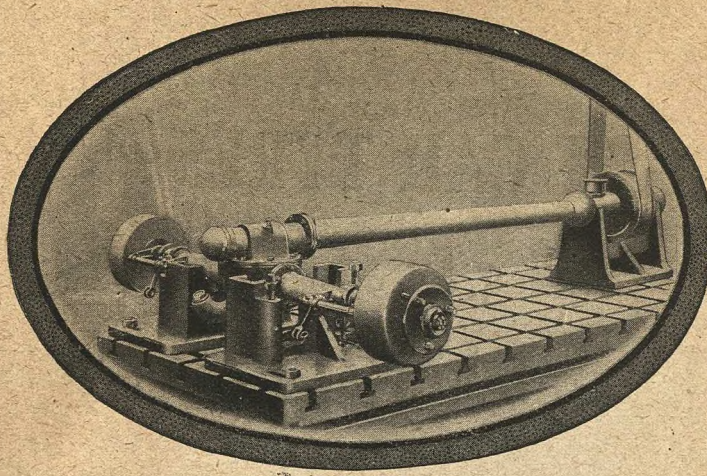
By mentioning "The Light Car and Cyclecar" when corresponding with advertisers, you will be working for the cause of the new motoring.

Wrigley's Practice

Accurate Machining is essential in Automobile work.

And careful assembling is vital to efficiency.

But the last thing in running is obtained by incommensurable accuracies



Hence all our components are thoroughly tested before despatch to our customers.

Inaccuracies discovered are rectified.

Everyone is satisfied.

AXLE RUNNING.

E. G. WRIGLEY & CO., LTD.,
 Foundry Lane Works, SOHO, BIRMINGHAM.
 Grams:—"Cutters, Birmingham." Phone:—148 Smethwick.

LONDON—28, Victoria St., Westminster, S.W.
 NEWCASTLE-ON-TYNE—60, Pilgrim St.
 GLASGOW—116, Hope Street.

EASTERN GARAGE

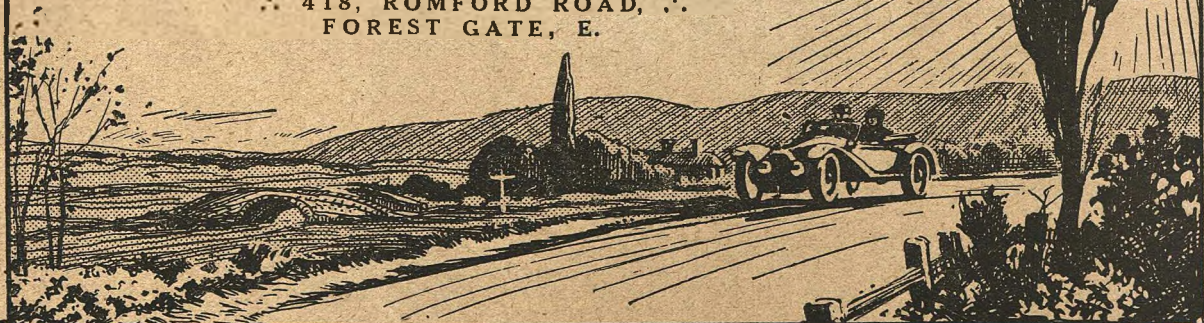


Our Contracts for 1915 Models include SINGER, A.-C., SWIFT, G.W.K., HUMBERETTE, and all other well-known Light Cars. In addition to cash business, we arrange exchange transactions and deferred payments, to suit the convenience of our customers.

Please let us know your requirements.

THE EASTERN GARAGE COMPANY,

Official Repairers to R.A.C., A.C.U., A.A. & M.U.,
 418, ROMFORD ROAD,
 FOREST GATE, E.



C.D.C.

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

HINTS ON BUYING (contd.).

away the most popular. They are both three-wheelers, and the former has a very good turn of speed in spite of a small engine (5-6 h.p.), although, of course, not so fast as the 8 h.p. Morgan, which is the fastest cyclecar on the road. With regard to belt-driven machines, it is particularly important to see that the belt pulleys are of good size—we place 8 ins. as the minimum diameter. There is no need to enclose the belts; in fact, they are more accessible when exposed. Cable steering is excellent, providing there are two or more independent cables, so that if one breaks the other holds. In other points the purchaser must be guided by inclination, but it is no use expecting a luxurious equipment (which also means weight, and detracts from speed on hills, acceleration, and economy) at a low price.

The monocar is a type of vehicle which ought to be better known. There are quite a number of people

who have not a passenger to take out and who want a more stable vehicle than the motor-bicycle. Apart from the monocars now before the public, several of the cyclecar makers are willing to construct special single-seated models at a reduced price.

Finally, we would recommend those of our readers who are looking out for a machine to be careful not to let their selection fall on one of abnormal weight. Weight means increased consumption of petrol. There is really no necessity for this piling on of avoirdupois in order to gain, as some makers say, strength, for this latter quality does not necessarily come from weight. There are several light cars that may be numbered amongst the most popular at present on the market the weight of which is not by any means excessive, and yet their strength is probably no less than that of heavier machines.

The Editor of THE LIGHT CAR AND CYCLECAR will be pleased to answer privately questions concerning any type of light car and to advise on selection.

Light Cars and Cyclecars Classified According to Price.

£100 and Under.				£200 and Under.			
Name of car and model.	No. of cylinders. Air or water-cooled.	Transmission.	Price. £ s. d.	Name of car and model.	No. of cylinders. Air or water-cooled.	Transmission.	Price. £ s. d.
Aviette (4 h.p.)*	1A	Belts	55 0 0	Unique	2W	Shaft	165 0 0
Aviette (5-6 h.p.)	2A	Belts	70 0 0	Winco	2W	Shaft	165 0 0
Carden (B)*	2A	Chains	70 0 0	Stellite (three-seater)	4W	Shaft	170 0 0
Carden (F)*	2A	Chains	80 0 0	Chater-Lea (10 h.p.)	4W	Shaft	173 5 0
Aviette (8-10 h.p.)	2W	Belts	85 0 0	Day-Leeds	4W	Shaft	175 0 0
Crompton*	2A	Belts	85 0 0	Enfield	4W	Shaft	175 0 0
Morgan (Standard)	2A	Chains	89 5 0	A.-C. (10 h.p.)	4W	Shaft	175 0 0
Buckingham (6-8 h.p.)	1A	Belts	91 7 0	Alldays	4W	Shaft	175 0 0
G.N. (Tourist)	2A	Belts	92 8 0	Medea	4W	Shaft	175 0 0
Robertson	2A	Chains	95 0 0	Cummikar	4W	Shaft	175 0 0
A.-C. (Sociable)	1A	Chain	95 16 6	McKenzie	4W	Shaft	175 0 0
D-Ultra (8 h.p.)	2A	Friction	100 0 0	J.B.S.	4W	Shaft	175 10 0
Gilyard	2A	Chains	100 0 0	Marshall-Arter	4W	Shaft	176 8 0
L.M.	2A	Chains	100 0 0	Calthorpe	4W	Shaft	178 10 0
Victor	2W	Belts	100 0 0	G.W.K. (four-seater)	2W	Friction	178 10 0
				Bayard	4W	Shaft	180 0 0
£150 and Under.				Over £200.			
Saxon	4W	Shaft	105 0 0	Gamage	4W	Shaft	204 15 0
Winter (6-10 h.p.)	4A	Belts	105 0 0	Newey	4W	Shaft	204 15 0
Bedeha	2A	Belts	108 0 0	De P.	4W	Shaft	210 0 0
D-Ultra (10 h.p.)	4W	Friction	110 0 0	Sirron	4W	Shaft	210 0 0
L.M.	2W	Chains	110 0 0	Nardini	4W	Shaft	210 0 0
G.N. (G.P.)	2A	Belts	112 0 0	A.-C. (four-seater)	4W	Shaft	215 0 0
J.A.R.	2A	Chains	115 0 0	Old Mill	4W	Shaft	220 0 0
Ranger	2W	Chain	115 0 0	Meteorite (coupe)	4W	Shaft	225 0 0
Morgan (G.P.)	2W	Chains	115 0 0	J.B.S. (de luxe)	4W	Shaft	230 0 0
Humberette	2A	Shaft	120 0 0	Hillman (coupe)	4W	Shaft	250 0 0
Buckingham (12 h.p.)	2W	Belts	126 0 0	Swift (coupe)	4W	Shaft	255 0 0
Adamson	2W	Belts	131 5 0	Singer (coupe)	4W	Shaft	260 0 0
Warren-Lambert	2W	Shaft	131 5 0				
Kennedy	4W	Belts	131 5 0				
Crouch	2W	Chains	132 15 0				
Gordon	2W	Chains	135 0 0				
Humberette	2W	Shaft	135 0 0				
Swift (7 h.p.)	2W	Shaft	140 0 0				
Chater-Lea (8 h.p.)	2W	Shaft	142 16 0				
Lagonda (Colonial)	4W	Shaft	145 0 0				
Lagonda (coupe)	4W	Shaft	150 0 0				
J.B.S.	2W	Shaft	150 0 0				
£200 and Under.							
Jowett	2W	Shaft	152 5 0				
Horstmann	4W	Shaft	155 0 0				
G.W.K.	2W	Friction	157 10 0				
Tiny	4W	Shaft	157 10 0				
Stellite	4W	Shaft	157 10 0				
Woodrow	2W	Shaft	157 10 0				
Lagonda (four-seater)	4W	Shaft	157 10 0				
Warren-Lambert	4W	Shaft	157 10 0				
Baby Peugeot	4W	Shaft	160 0 0				
Whiting Grant	4W	Shaft	160 0 0				
Averies	4W	Shaft	165 0 0				
Gordon (four-seater)	2W	Chains	165 0 0				

*Monocars. A = air-cooled, W = water cooled.

1915 DESIGN.

An Analytical Review of Interesting and Novel Features Displayed on the Industry's Latest Productions.

THERE are no very startling developments in the design of light cars and cyclecars for next year. A determined effort is, however, being made to produce that much-discussed machine—the £100 motor. The Victor, the new "Tourist" G.N., and a few other cyclecars are examples of what can be done in giving value for money when this problem is tackled in a serious and methodical manner. Both are really £100 machines, that is to say they are ready to run with full equipment, lamps, horn, hood, screen, etc., at this price.

On the other hand there is a decided tendency to increase the price of some light cars through the addition of lighting dynamos and other luxuries. A small number of makers have also decided to increase the size of their engines, but it is interesting to note that the great majority, including the most popular models, are still engined by power units that come under the 1100 c.c. limit.

On the 1915 models will be found many interesting features, and often striking alterations in appearance. These and the general tendency of design we may now proceed to discuss.

Engines.

Firstly we will deal with engine design. Although the light car engine is of the high-efficiency type it has a short stroke compared with the car engine designed for high power for a given cubic capacity. The actual piston speed in the two cases may be the same, but the light car designer prefers to obtain it with a short stroke and a high speed of revolution. Quite a number of car engines now have a stroke of twice the bore, but the only light car with such a bore-stroke ratio is the Sirron, which has cylinders of 60 mm. by 120 mm. The average dimensions are 100 mm. or 110 mm. for the stroke and 60 mm. and 65 mm. for the bore. The Morris-Oxford engine, which is capable of very high speeds, has only a stroke of 90 mm. for its 60 mm. bore, while a still shorter stroke engine in comparison is the Kennedy of 69 mm. by 90 mm. bore and stroke. The Lagonda has a 67 mm. by 77 mm. engine.

The great advantage of a short-stroke engine is its flexibility, its range of speeds being generally greater than one with a longer stroke.

As regards the construction of light-car engines, there is not a great deal of originality, and outwardly orthodox car practice is followed.

The engine with valves on one side is almost universally employed, and the four cylinders are always cast in one, and nine out of every ten with internal inlet passages, so that the carburetter may be attached directly to the casting, thus allowing the mixture to be well warmed before admission.

The exhaust is generally of the external type, and the valves, provided with adjustable tappets, are protected by an easily-removable cover, so that with the carburetter on the off side a very high degree of accessibility is secured. Engines possessing these features are the Mercury, the Warren-Lambert, and the Chapuis-Dornier as fitted to the Marshall-Arter, Medea, and Hampton. The Meteorite engine is

similar, but has the exhaust manifold contained in the casting, while the A.-C. has the carburetter on the near side. Overhead valves are favoured less than might be expected, seeing that many light-car owners place efficiency before everything. The less the pocket surface in the head the less metal in contact with the hot charge, the less the heat absorbed, and the less the cooling required. Valves on opposite sides give a maximum of pocket surface, and valves opening direct into the head, as on the Stellite, the racing J.A.P., or G.N. engines give a minimum. A compromise is to have the inlet over the exhaust, and another method is that adopted on the Horstmann, in which the valves are in the head but placed horizontally. This reduces the pocket surface to some extent, but not to the extent of the overhead valve.

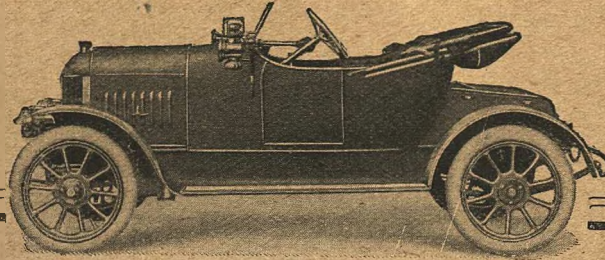
The Horstmann valve mechanism is interesting, consisting as it does of long vertical rocking levers acted upon by the cams at their lower end and engaging the valve stems at their upper end. The use of such a long lever means that the side thrust of the valve on its guide is negligible, while the valves are certainly accessible and easily removed. For the timing gears the silent chain drive is increasing in favour, although pinions are still largely employed. With a chain a triangular drive for crankshaft, camshaft, and magneto is usual, but the Horstmann engine has the cooling fan very neatly driven by the same medium, a distinctly good idea considering the trouble that a fan belt can give, particularly if no tension adjustment is provided. Light-car engines are invariably cooled by natural circulation, the Baby Peugeot being one of the few examples of pump-cooling. The latest models, however, reveal a general improvement in cooling, the water jackets on the cylinders being in many cases enlarged and the capacity of the radiator increased.

The little Bayard, for instance, has had its water spaces considerably increased, and the Wilton carries no less than 3½ gallons of water.

The use of a fan to assist the draught through the radiator is on the increase, and one notes a better appreciation of the elementary principles of thermo-siphon cooling, which require a rise from the top of the jacket and a fall from the bottom of the radiator. The latter is not easily obtained unless the engine is dropped so low as to be inaccessible, but the bottom connections should certainly be as low as possible, else the circulation is interfered with. The Atalanta and the Kennedy strike the observer as good examples of thermo-siphon-cooled engines from this point of view.

The majority of makers of light cars design and build their own engines, but a number prefer to fit engines made by firms specializing in this direction, and thus we find a White and Poppe engine unit on the Morris-Oxford, the Dorman engine on the Warren-Lambert, Jennings, Tiny and J.B.S., the Aster on the Lucar, the Coventry-Simplex on the G.W.K., the Ballot on the Marlborough and Hurlin, the Alpha on the Adamson, and the Chapuis-Dornier on the Marshall-Arter, Hampton and others.

The V type of engine is used with both air and water cooling on a number of the lighter vehicles, the popular makes being the J.A.P., Chater-Lea, Precision, and Blumfield.



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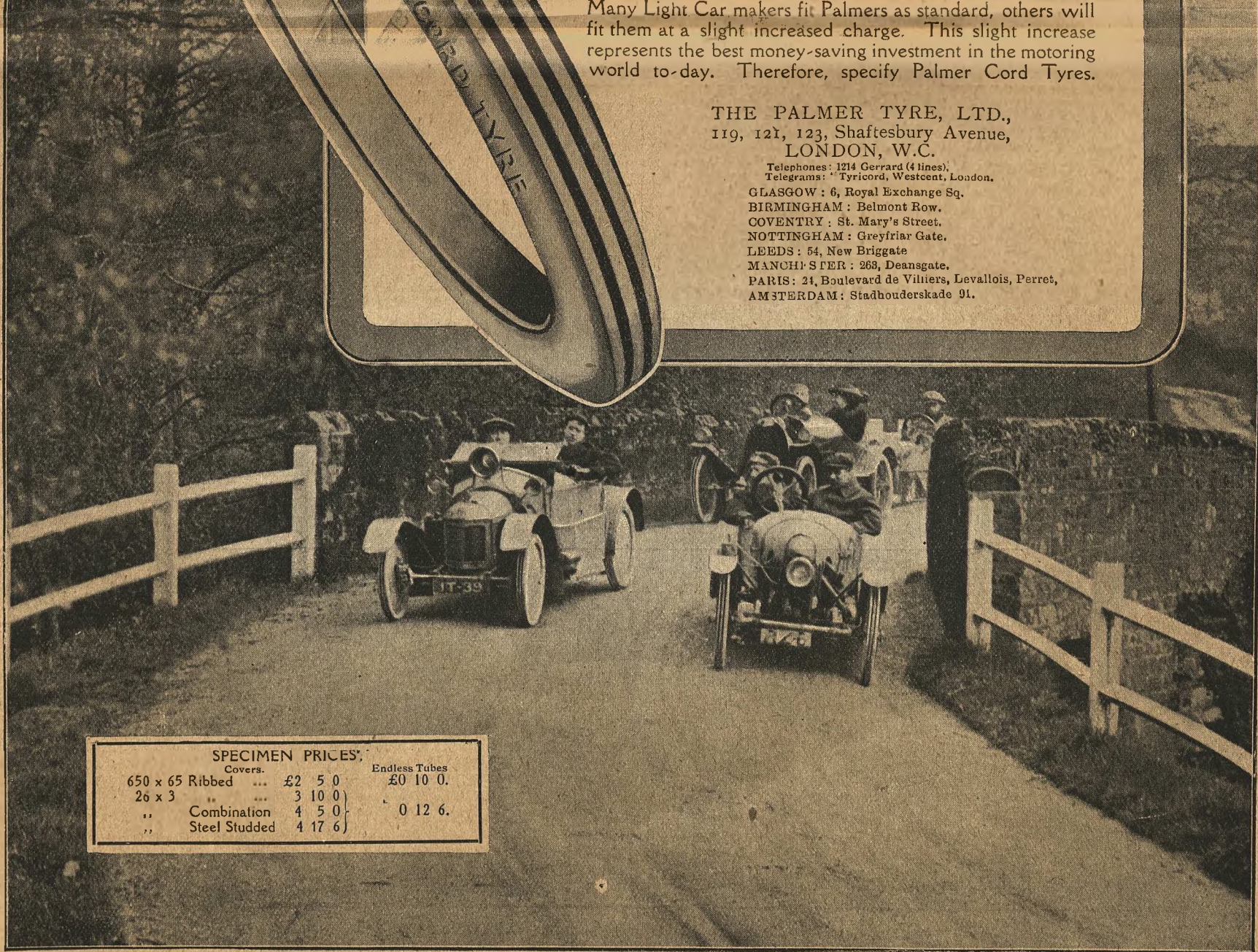
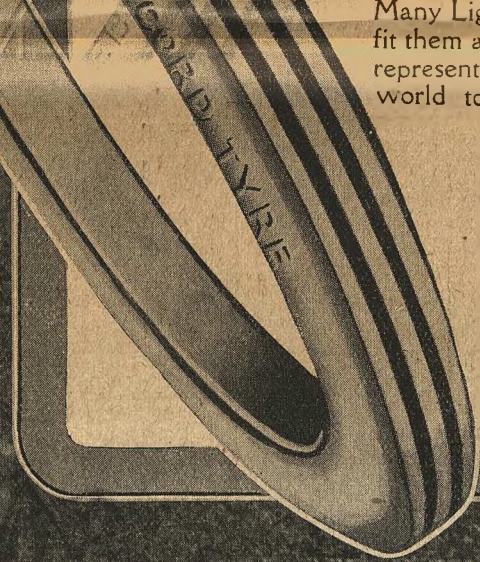
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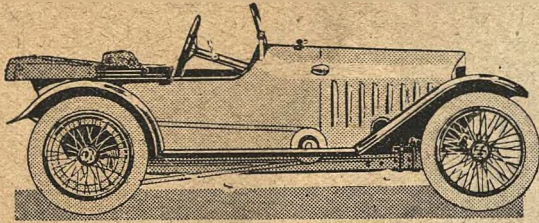
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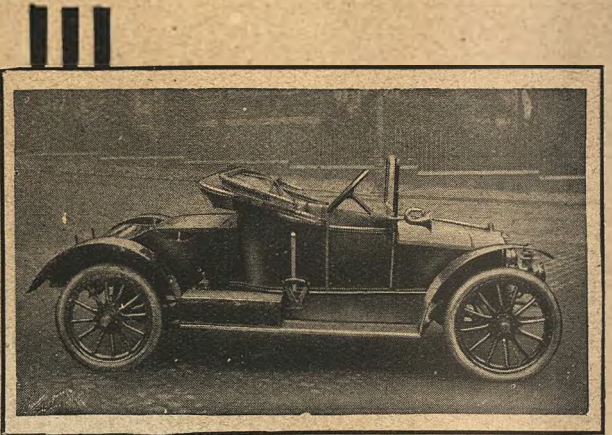
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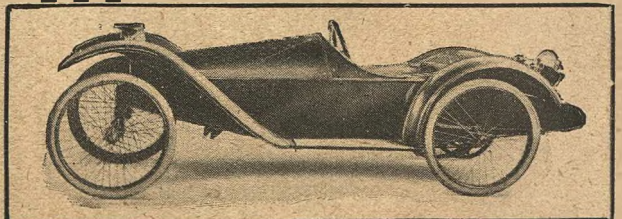
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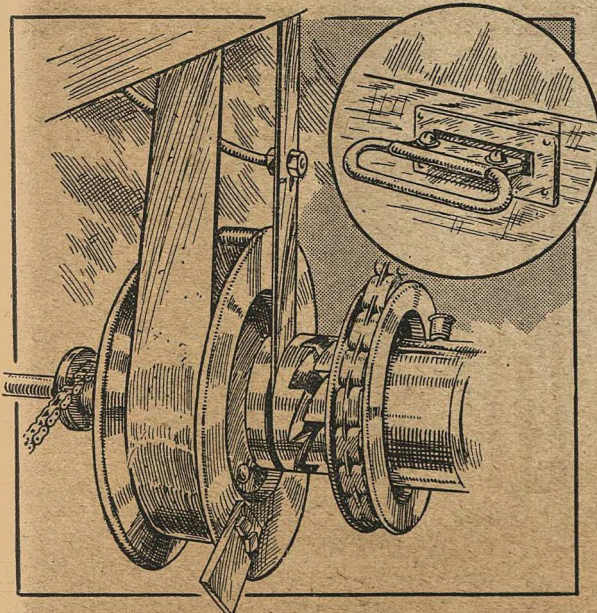


1915 DESIGN (contd.).

Lately a number of very well-designed engines specially constructed for light car work have been put on the market, of which the Nero is a good example, while the Cycaren is a two-stroke of some promise. The former is a very well designed power unit, with off-set cylinders of 63 mm. by 88 mm. bore and stroke, with a three-bearing crankshaft of $1\frac{1}{4}$ in. diameter and large valves of 35 mm. diameter. Not only is valve noise reduced by enclosing the tappets, but fibre pads are inserted in the tops of the tappets. Both main and big-end bearings can be adjusted by removing the lower portion of the crankcase, which merely forms an oil well.

Lubrication Systems.

Many of the simpler types of machines have hand pump or drip feed to the crankcase, where "splash" does the rest. This method is simple but primitive, and a more positive system is now used, in most cases the popular method being a gear type of pump driven off the camshaft by a vertical shaft, and situated in the bottom of the crankcase or the sump. This pump forces oil to the main bearings, and supplies the big-ends, either by oil-ways drilled in the crankshaft or by troughs, into which the big-ends dip, each having a little scoop fitted so that the oil may be forced to the brasses. The Jowett and Nero engines afford examples of the drilled crankshaft, and the Singer, Meteorite and Stellite are examples of the trough system. The engine of the Atalanta has the refinement of a special oil lead, that feeds oil direct on to the silent chains employed for the timing. These systems require no attention except to see that there is enough oil in the sump, and to indicate this a float or a level tap is used, the former being preferable, and a very good example of such a gauge is to be found on the latest A.-C. engine.

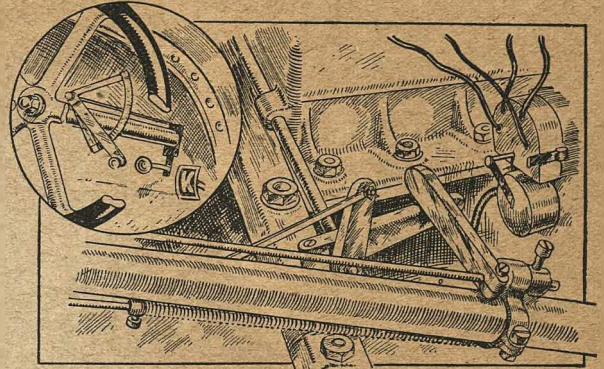


The Old Mill strap starter on the clutch shaft.

The oil filler should naturally be placed in a convenient position so that oil may be poured in direct from the tin, and good examples of accessible fillers are the D.L., Kennedy, Mercury, and A.-C. Just to assure the driver that the pump is acting, an indicator is often fitted on the dash, operated by the

oil pressure. It is, of course, necessary to have a ready means of draining the crankcase and to inspect the pump, and here again the Nero engine is to be commended. It has also another good feature in its oil-filtering arrangements.

Naturally, the oil, being used over and over again in these pump systems, is apt to become dirty, and hence a filter is always fitted so that the pump may draw in clean oil. One way is to have a gauze cylin-



The simple and effective interconnection of the foot and hand throttle controls on the Kennedy cyclecar.

der around the pump and another to fit a sheet of gauze right across the crankcase below the crankpins. In both cases the gauze requires cleaning from time to time, and this is provided for in the case of the Nero by fitting a sheet of gauze in a tray, which can be withdrawn from the front of the engine after two bolts only are removed.

Controls.

Throttle control is generally by pedal, and certainly the foot accelerator is the handiest all round control, but at times a hand lever is very convenient, as, for instance, when starting on an up-grade, when the brake has to be released as the clutch is engaged. Then, when cold, an engine requires a little more throttle opening to keep turning than when hot, while if the carburetter-control is set fine the mere act of withdrawing the clutch may stop the engine. Either the carburetter should be capable of being set from the dash or a proper hand control should be fitted above or below the steering wheel. This need not be complicated or expensive, as the arrangement on the Kennedy would indicate. It consists merely of a finger on the bottom of the hand control rod, that can open the throttle through the pedal control but not vice versa.

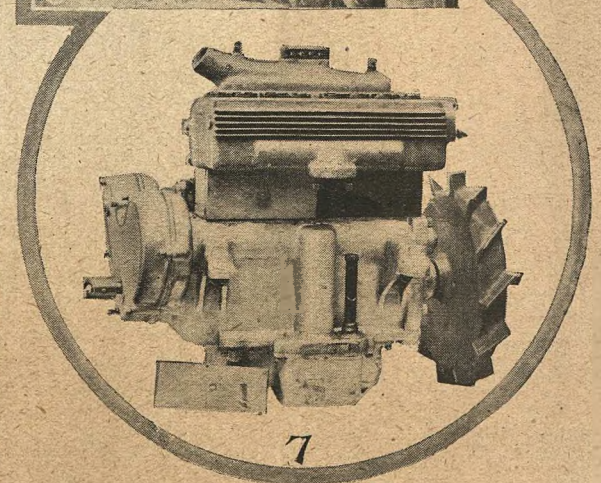
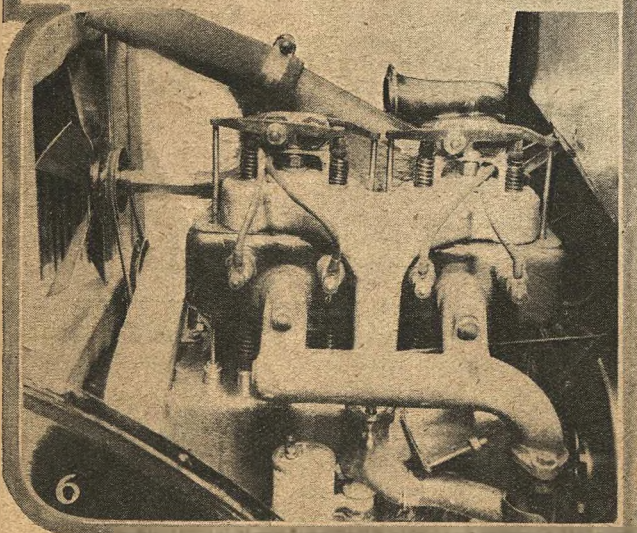
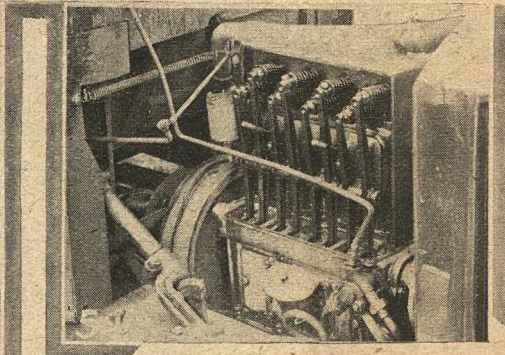
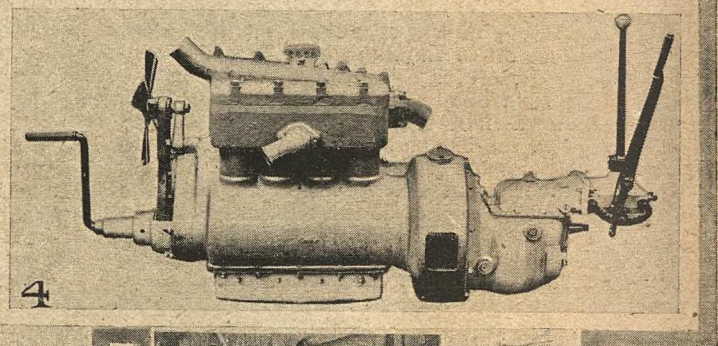
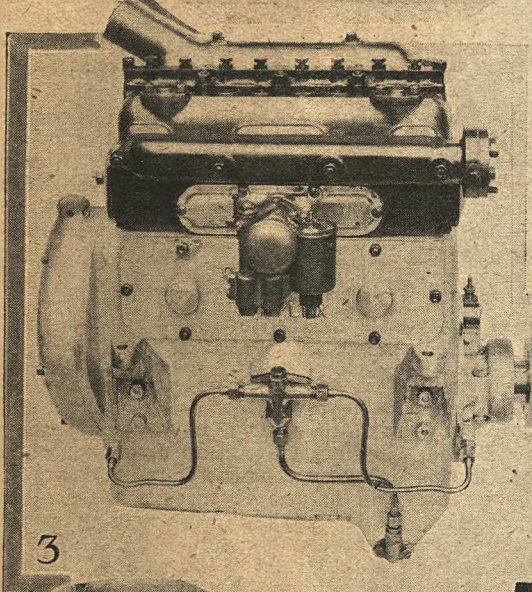
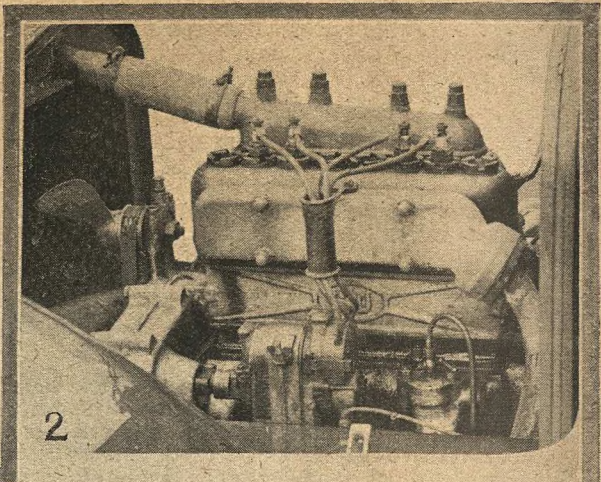
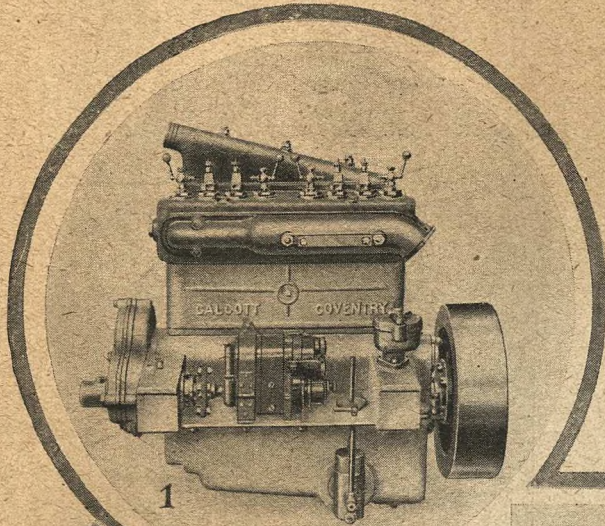
Simple types of machines, such as the L.M., Victor and Gilyard, have hand control only, but such cars as the Singer, Swift, Standard, A.-C., Bedelia and Medea have both hand and foot control.

Starting Devices and Dynamo Drives.

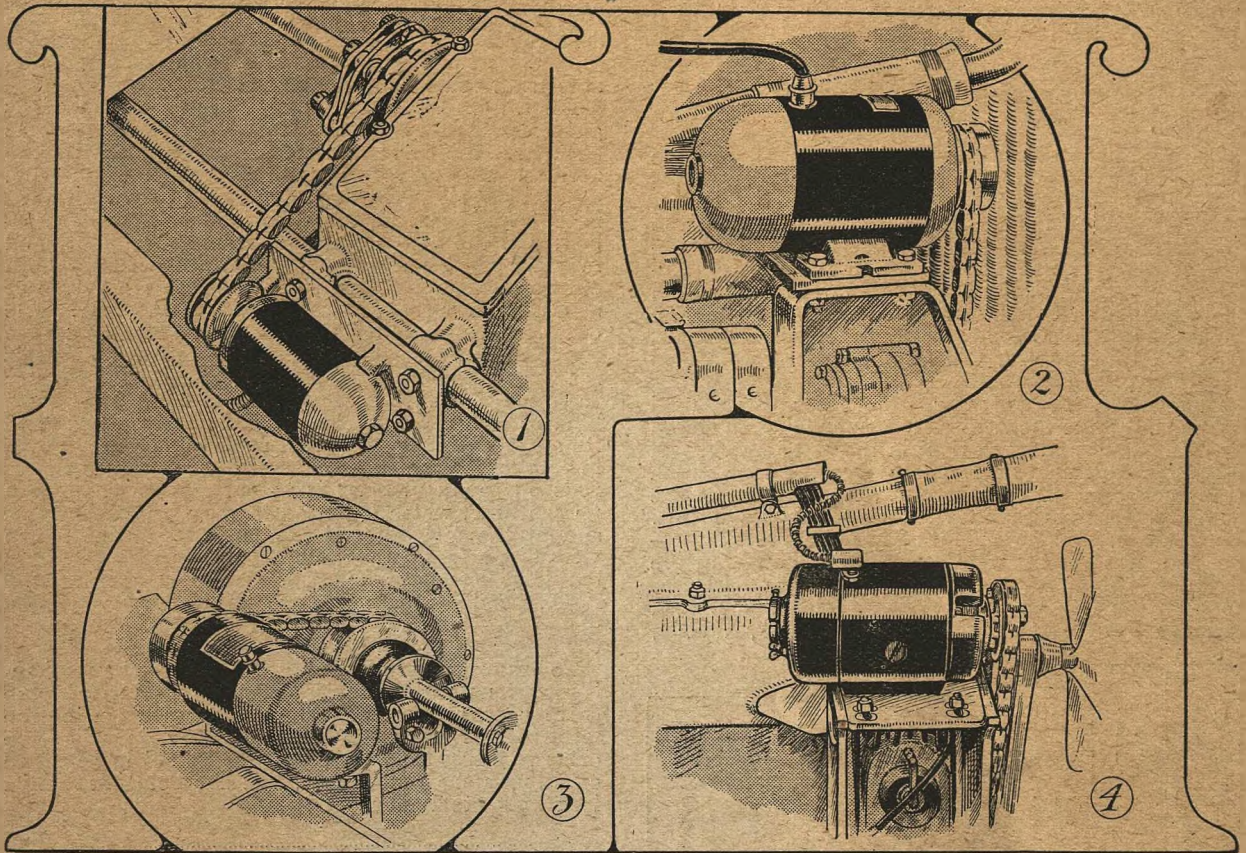
The inconvenience of the ordinary starting handle is being resented nowadays, and the light car makers have been among the first to recognize this, with the result that a number of the 1915 cars are provided with arrangements for starting the engine from the driving seat.

Quite a number of cars are being fitted with dynamo lighting, and it is then but a step to a starting motor, or else a system can be adopted in which the one device can act as dynamo or motor, as

FEATURES OF 1915 LIGHT CAR ENGINE DESIGN.



1. Calcott, showing accessibility of valves. 2. Chapuis-Dornier, showing magneto drive. 3. Coventry-Simplex, showing external oil-leads. 4. Farmer, a cheap American power-plant. 5. Horstmann, showing method of valve operation, 6. Lagonda, showing the overhead inlet valves. 7. A.-C., showing inlet and exhaust passages, oil gauge, etc.



SOME DYNAMO DRIVES.

1. The dynamo on the Enfield is driven off the clutch shaft. 2. The Horstmann dynamo is mounted above the timing gear casing. 3. The dynamo on the Calcott chassis is belt driven from the clutch. 4. The Swift dynamo is mounted on a platform above the magneto.

desired. The usual arrangement with the former is to have a toothed ring on the flywheel with which a pinion on the motor shaft can be engaged for starting. The combination device is connected up generally to the flywheel or clutch shaft, but sometimes to the camshaft by a chain.

The Whiting-Grant is fitted with an electric engine starter, and the fitting certainly makes for convenience. A starting motor absorbs a considerable amount of current, however, and the batteries are correspondingly worked harder. Among the cars fitted with some mechanical starting system are the Horstmann, the Gamage, the Deemster, the Old Mill, the Adamson, and the Wilton.

Generally hand-starting is favoured, but the Horstmann employs a pedal which rotates the clutch shaft through the medium of a quick-pitch thread cut upon it. The Deemster arrangement is a bevel pinion on the layshaft in the gearbox. This pinion has a free-wheel mounting, and is rotated by means of a bevel segment attached to a lever which projects through the footboards. Pulling this lever backwards when the gears are in neutral rotates the main shaft through the constant mesh pinions, and thus rotates the engine.

The Gamage engine is started by a separate side lever outside the body, which is connected with the engine by means of a wire carried round to the starting handle position. The wire winds on a pulley provided with a clutch, so that when the lever is pulled the crankshaft is turned. The device is simple and unobtrusive. The Old Mill starter consists of a flat belt partly wound on a drum, free to slide on the clutch shaft, and locked thereto by a

dog clutch when required through the medium of a pedal. The belt or strap is brought up to the dash and provided with a pull which projects from the top of the dashboard. Pressing the small pedal to engage the starting device the strap is smartly pulled and the engine rotated.

The Adamson and Wilton devices are now familiar, but another cyclecar fitted with a hand-starter is the Winter. In this case the engine is rotated through the belt-driven cross-shaft by means of pinions and a hand lever.

The lighting dynamo forms a feature of the equipment of a number of cars for next year, and its merits, as regards cleanliness and convenience, will render it one of the most popular innovations. Many engines are now designed so that a dynamo drive can be easily fitted, a pulley on the front end of the camshaft being a very favourite method. The problem is, of course, to find a place for the dynamo without reducing the accessibility of other details. Where a cross-shaft drive is used for the magneto the other end of the shaft can be fitted with a pulley, which is done in the case of the Jennings, the dynamo being neatly disposed forward of the engine.

The dynamo on the Swift is mounted on a platform over the magneto, leaving the contact breaker of the latter quite accessible. On the Horstmann the dynamo is parallel to the magneto, but at a higher level and further forward, so that again there is no obstruction.

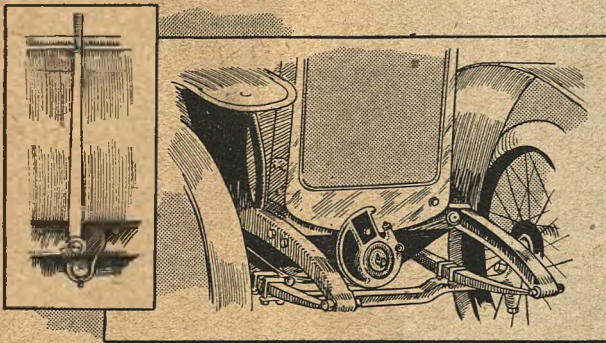
Beneath the footboard is another common position where the dynamo can be driven off the clutch, as in the case of the Calcott, or of the clutch shaft just forward of the gearbox, as in the Enfield.

1915 DESIGN (contd.).

Final Drive and Clutches.

The real light car now invariably has a shaft drive to a live axle, which is usually provided with a differential. The bevel drive remains the most popular, but the worm is inclined to find greater favour, the overhead type being that generally employed, examples being the Morris-Oxford, the A.-C., the Alldays, the Standard, the Lagonda and the Lucar. On the other hand, equally popular models, such as the Singer, Swift, Calcott, Calthorpe, Humberette, G.W.K., Charronette, Cummikar, Arden, etc., have bevel drive.

Clutches betray greater differences than final drives, and while the well-tried cone clutch is favoured by many, it has a strong rival in the plate clutch with fabric-faced gripping surfaces. Even the cone clutch is seldom faced with leather now, but with one of the wire-asbestos fabrics, such as Ferodo or Raybestos. The multiple-disc clutch is used in quite a few cases—the Autocrat has the well-known Hele-Shaw—but the struggle for supremacy is between the cone clutch, as used on the Averies, J.B.S., Jennings, Crouch, etc., and the Ferodo plate clutch of the A.-C., Wilton,



The Gamage engine starter showing the operating lever.

Standard, etc. A distinctive type of metal-to-metal clutch is employed on the Mercury, and consists of a ring expanded by a spring.

Transmission Details.

A chassis can be roughly divided into four principal parts, i.e., frame, springs and wheels, engine, gearbox and live axle. The combined engine and gearbox is known as the unit system, of which the Lagonda, the Jennings, and White and Poppe as fitted to the Morris-Oxford, are good examples. This system makes for easy assembling, and ensures that the crankshaft and gearbox are in line. Everything being enclosed there is a danger of a loss of accessibility, but on the other hand the gearbox, being brought well forward, comes right under the footboards, and is therefore well placed. With the gearbox separately mounted the connecting shaft must be jointed in some way, and while a double universal coupling is efficient it is also expensive, and a type of joint finding favour for this work is that consisting of a leather disc, as on the Meteorite, or a number of thin steel rings connected at right angles to clutch shaft and gearshaft respectively.

To combine the gearbox with the axle also simplifies assembling, and puts less work on the universal joint, which naturally revolves at engine speed whatever gear is in use. The Stellite, the Singer, and the

American-built Saxon car are all examples of this construction, the Stellite having two or three speeds, the Singer three, and the Saxon, which is a remarkable little vehicle for 100 guineas, two.

For a light car, an open type of propeller shaft is generally used with some kind of universal joint at each end, the drive and torque being taken by the springs. The universal joints used are the pin type, the leather disc, and the block. The first-mentioned is the commonest for the main joint behind the gearbox, and the last-mentioned for the rear joint, and in some cases block or pot joints are used for both ends of a doubly-jointed shaft. Where transverse or semi-elliptic springs are employed at the rear, some other means of taking the thrust of the axle to the frame must be employed, and one way of doing this is to use side radius rods. If these rods are shorter than the propeller shaft the latter must have some kind of sliding joint, else the axle will be trying to follow circles of two different radii whenever it moves in relation to the frame. Instead of separate radius rods one good practice is to enclose the shaft in a torque tube, which is bolted to the axle at the rear, and at the forward end is connected to the frame either by a fork joint spanning the universal or by a ball-joint enclosing it. The latter is used on the A.-C., Jennings, Meteorite and others, and an example of the fork joint is to be found on the Saxon. Both constructions are to be commended.

To ensure smooth starting and to save the mechanism various spring devices are introduced into the drive by a number of makers, of which one of the most interesting is the Marshall-Arter, in which the drive is taken through a tempered steel bar instead of through the usual shaft, this bar being contained in a light steel tube.

Frame Design.

The tubular frame is favoured for the cyclecar chassis, being simple and easily put together; but for the heavier vehicles the pressed-steel frame is *de rigueur*. There is no doubt that the latter type of frame is the most suitable, for it is strong and yet is not too rigid. Moreover, strength can be obtained just where and in what direction it is wanted, and it is also a simple matter to attach fittings to the channel members. The tendency is towards special types of frame designed in conjunction with engine, transmission, springing, etc. The A-shaped frame of the A.-C. affords an example of this, the point serving as an attachment for the transverse front spring and the ends for the semi-elliptic rear springs. Frames built up of lengths of channel steel have given way to frames varying in depth, from front to rear and set in forward to give a good steering lock, and swept up at the rear to give ample axle clearance, a typical example being the Deemster.

In most cases where such a frame is used the engine and gearbox are mounted on an inner frame, which, being stiffer than the main frame, preserves alignment between engine and gearbox. In the case just mentioned, however, the engine is directly supported from the main frame and the gearbox from two cross members. The gearbox is given a three-point suspension conforming to a very common practice, which is, however, rarely extended to the crankcase. In some cases where engine and gearbox are rigidly connected, the entire unit is three-point suspended, but this system is not adopted to a very great extent on light cars. The Alldays has a pressed-steel main frame and a tubular sub-frame for both engine and gearbox.

There is not much to choose between the various mountings, so long as proper flexible joints are fitted between engine and gearbox. Whip in the frame and a little permanent set prevent perfect alignment of

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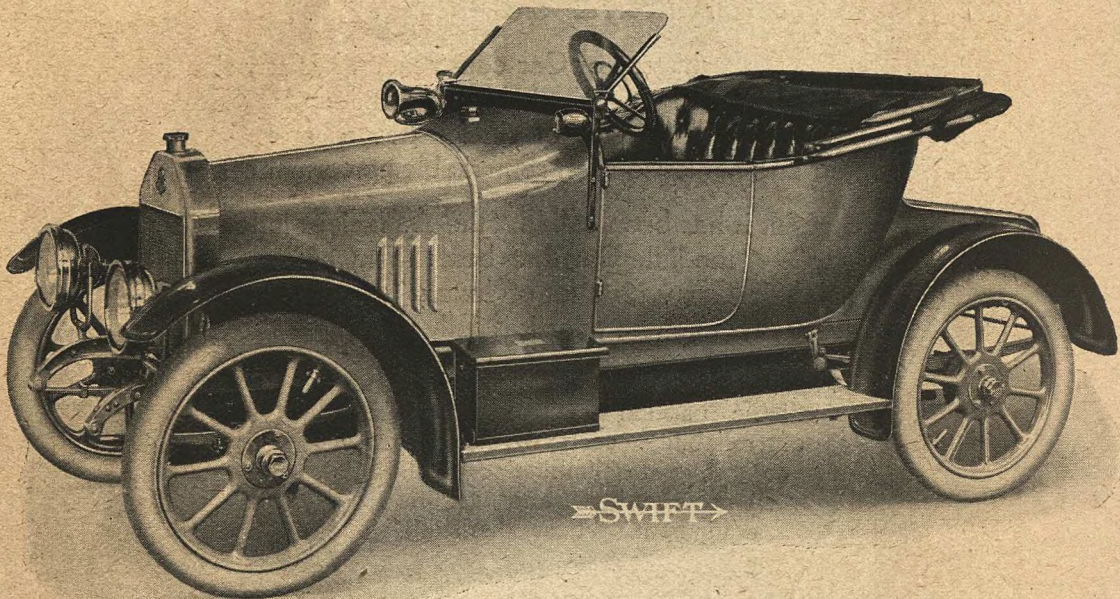
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C17

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"THE PERFECT LIGHT CAR."



Complete with **DYNAMO ELECTRIC LIGHTING SET, £200**

63 x 90 mm. BORE AND STROKE

FOUR CYLINDERS.

THREE BEARING CRANKSHAFT.

DETACHABLE STEEL WHEELS.

'10'

SPARE WHEEL AND TYRE,

ELECTRIC LIGHTING SET.

FIVE LAMPS, HOOD, SCREEN, HORN, AND KIT OF TOOLS.

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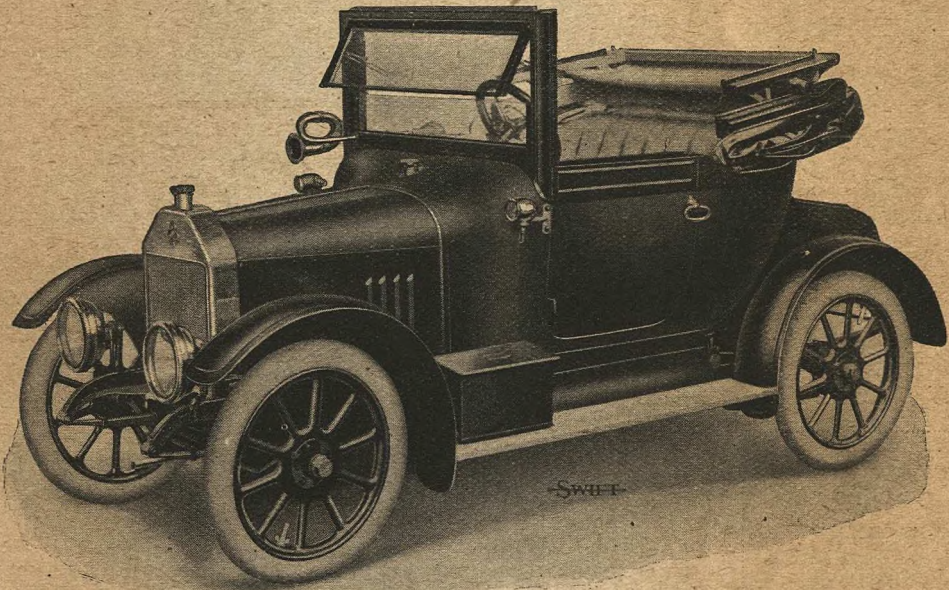
SWIFT MOTOR CO., LTD., COVENTRY.

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SWIFT

"THE IDEAL DOCTOR'S CAR."



COUPÉ complete with **DYNAMO ELECTRIC LIGHTING SET**, **£255**

No car has enjoyed greater popularity with Medical Practitioners than the **Swift**, as no make of car has proved so consistently its superiority on the score of **Reliability** and **Economy of Upkeep**.

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The **Swift 10 h.p. Coupe** is an admirable car for those requiring an "All Weather" Light Car. Intending purchasers should certainly obtain full particulars of the popular **Swift '10.'**

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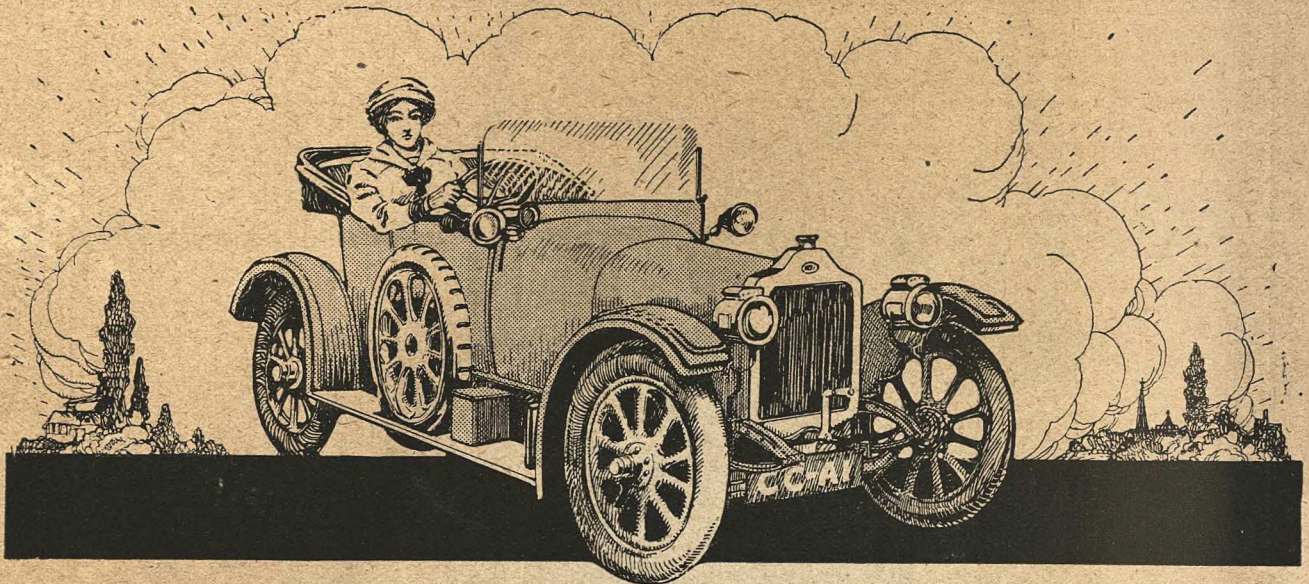
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C19



The Classic Calcott

is your

Best Investment for 1915

Its sterling merits—proved on the road—make it the best light car.

10·5
HORSE POWER.

Brief Specification.

H.P.—10·5. Cylinder—Four (Monobloc)
Bore and Stroke—65 x 110.
Speeds—Three and Reverse, Gate Change.
Ignition—Bosch Magneto (Variable).
Transmission—Bevel and Cardan Shaft.
Wheels—Sankey's Detachable, including
Spare Wheel.
Tyres—Dunlops, 700 x 80, two Grooved,
three Plain.
Clutch—Leather to Metal Cone.
Frame—Pressed Steel.
Cooling—Thermo-syphon.
Carburettor—Zenith.
Steering—Worm and Sector.
Brakes—Foot and hand internal, expand-
ing on rear wheels.
Springs—Half-elliptic.

£185
COMPLETE.

We say emphatically that the Classic Calcott is your best investment for 1915. This is not a bare statement. It is supported by ample proof—supplied by practical motorists. For instance, an owner, who informs us that he has driven most makes of cars, says: "It is an excellent investment because you have fitted an engine of sensible dimensions instead of trying to keep within a certain number of c.c.'s."

The engine capacity of the Calcott, it should be added, is 1,456 c.c., which is greater than standard light car practice. It is this strong feature, coupled with higher efficiency and thoroughly sound construction, which makes the Calcott such an excellent investment and established it as the best light car. There are no alterations in the construction of the chassis for 1915, although several notable improvements have been made in detail in the body. The car is now streamline, and mudguards dome shaped.

The general handsome appearance of the Calcott is beautifully illustrated in our new catalogue. Write for it; sent post free.

CALCOTT BROS., LD., COVENTRY

Telephone—91.

Telegrams—"Calcotts"



1915 DESIGN (contd.).

these two units—indeed, it is useless to endeavour to avoid it—and the only course is to make allowance for it.

A method of frame construction which presents considerable possibilities is that adopted on the Lagonda, in which the metal body panels are actually part of the frame. Wood frames were once fairly common even for big cars, and, as regards the side frames, there are many worse materials. The Stellite is an excellent example of such a frame, which is simple, inexpensive and able to absorb vibration. It also possesses ample strength without that unyielding rigidity which is the weakness of the tubular frame.

Steering.

The simplest type of steering is that popularized by the Bedelia, in which the wheels are coupled to an axle which is pivoted at the centre, the steering being effected by wires from either end of the axle, which are attached to a bobbin at the base of the steering column. Such steering is also fitted to the Carden, the reel being directly under the steering wheel; but while wire steering is favoured, the centrally-pivoted axle is now generally replaced by one of the Ackermann type, in which the wheels are centrally pivoted. The G.N. steering and that of the simple Winter chassis are both excellent examples of wire steering, the whole of the wires being visible from the steering centres to the reel around which they wind. On these lines nothing can be brought against this system, which is reliable, simple and without backlash.

The same could not be said, however, for some of the earlier systems, in which the wires were led round corners, and were largely invisible, so that they stretched, and chafed, and failed without warning.

Steering by tiller is now almost extinct except with certain types, such as the A.-C. Sociable and the Girling parcelcar, where it is certainly the neatest and most convenient method. On the whole, the wheel is universal, even where the steering is direct, i.e., the column carries a lever at its bottom end which is directly coupled to the steering head without the interposition of gearing. The Gordon has steering of this kind, and so has the Morgan. The simplest form of geared steering is the rack and pinion used on the Humberette, Whiting-Grant, Stellite, Ranger, Tiny, and many others.

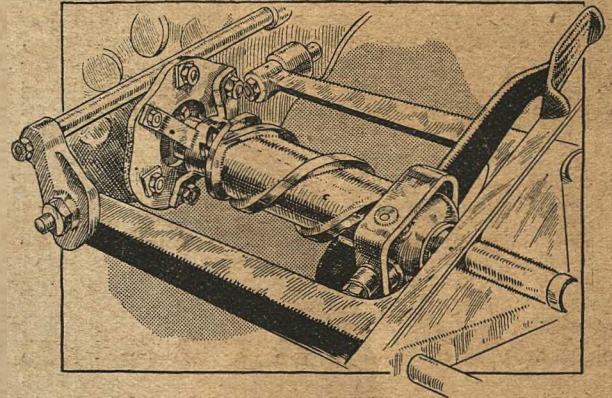
What is virtually a rack-and-pinion system, although in appearance it more resembles the conventional worm-and-segment steering, is the bevel. In this case the steering column carries a bevel pinion, which meshes with a bevel segment mounted on a cross-spindle, provided with a downward arm, which is connected by a rod with the steering heads. This system is neat, but is more expensive to make than the rack and pinion, and, like it, is not irreversible. To overcome this, many chassis have a system similar to the bevel, but replace the pinion and sector by a worm and a toothed segment. The worm can then turn the segment, but the segment cannot turn the worm. In practice absolute irreversibility may not be obtained, but the average worm-and-segment system gives sufficient to prevent the wheel being taken out of the driver's hands should any obstacle or inequality in the road be struck.

The worm-and-segment steering is undoubtedly the most popular, being found on all the best-known light cars, and with the gearing enclosed and packed with grease reliability is obtained and wear reduced considerably. Of course, in time there is wear, resulting in backlash, and, in most cases, the segment has to be renewed, although adjustments are provided in a

few cases by which the worm and segment may be put deeper into mesh when worn. A very good plan which is now being considerably adopted is to use a complete worm wheel, instead of a segment only, so that, when wear occurs, the wheel can be given a quarter turn and an unworn surface be brought into use. This complete worm wheel is now to be found on a number of chassis, including the Jennings, Chater Lea, A.-C., and others.

A variation of the worm steering gear is the worm and nut, in which rotation of the worm moves an internally-threaded block up and down, this block or nut in turn communicating angular motion to a cross spindle by engaging a lever arm. The Mercury steering gear is of this kind.

There is scope for some little criticism in the angles used for steering columns and in the diameter of wheel



Details of the Horstmann foot-starter, which acts on the clutch shaft.

often used. Steering wheels should be of ample diameter, so as to reduce the effort required for turning and to give a comfortable position for the arms. Small wheels are especially objectionable when the steering is not irreversible, and in all cases detract from the appearance of a car. Steering columns are often too much raked or set too far back, so that the wheel is too close to the body. These may be small points, but they are of importance, and the firms which are making the most popular vehicles have, apparently, appreciated them.

Springing Systems.

The springing of a fast but light vehicle presents one of the most difficult of problems, and the diverse systems employed on light car chassis show the different ideas that prevail on this subject.

Many of the best-established designs, one may almost say the majority, employ semi-elliptic springs forward and either semi-elliptic or three-quarter elliptic at the rear. The Singer is a well-known example of the former and the Marlborough of the latter. Although still described as semi-elliptic, most such springs are nowadays practically flat, and improvement has consisted in increasing their length and building them up of a larger number of thinner leaves.

Semi-elliptic springs are certainly the most used for front axles, but at the rear quite a diversity of types is favoured. A very common combination, of which the Warren-Lambert is a good type, is semi-elliptics forward and quarter-elliptics at the rear. The latter give a high degree of flexibility and are extremely simple, as the springs are bolted solidly to the frame and slide on the axle, thus requiring no shackles or parts liable to wear.

1915 DESIGN (contd.).

These rear springs are found in a number of cases—the Humberette is one and the G.W.K. another—in combination with a forward transverse spring. This method of springing gives a three-point suspension to the frame, which is therefore not so much liable to distortion on bad roads. The front axle in this case requires radius rods to take the thrust. The Jennings employs transverse springs both front and rear similarly mounted to those of the Ford, the effect being a practically two-point suspension, so that the frame remains on an even keel however uneven the road surface.

Quarter-elliptic springs are often used at both front and rear, as in the case of the Stellite and Marshall-Arter, and give a simple and effective springing system. On the Baby Peugeot this type of spring is used but reversed, while on the Old Mill the springs are kept flat and are bolted outside the frame, the leaves being continued through the clip and provided with a second anchorage. The springs on this car are also combined with a radius rod mounted above them, so that a parallel motion is given to the axle. A similar result is obtained on the Gilyard front axle by using double quarter-elliptics connected above and below the axle.

These quarter-elliptic springs are often described as of the cantilever type, but the true cantilever spring is a flat, semi-elliptic inverted with its centre pivoted to the frame, its rear end attached to the axle, and its front end fixed or shackled to the frame. Undoubtedly this type of spring gives the most efficient suspension, and as the heaviest part of the spring is attached to the frame it relieves the axle of a considerable amount of unsprung weight. Its use on light cars is unfortunately not common, and the Mercury affords the outstanding example of the application of this method of springing to a light car chassis. The Alldays is another good example.

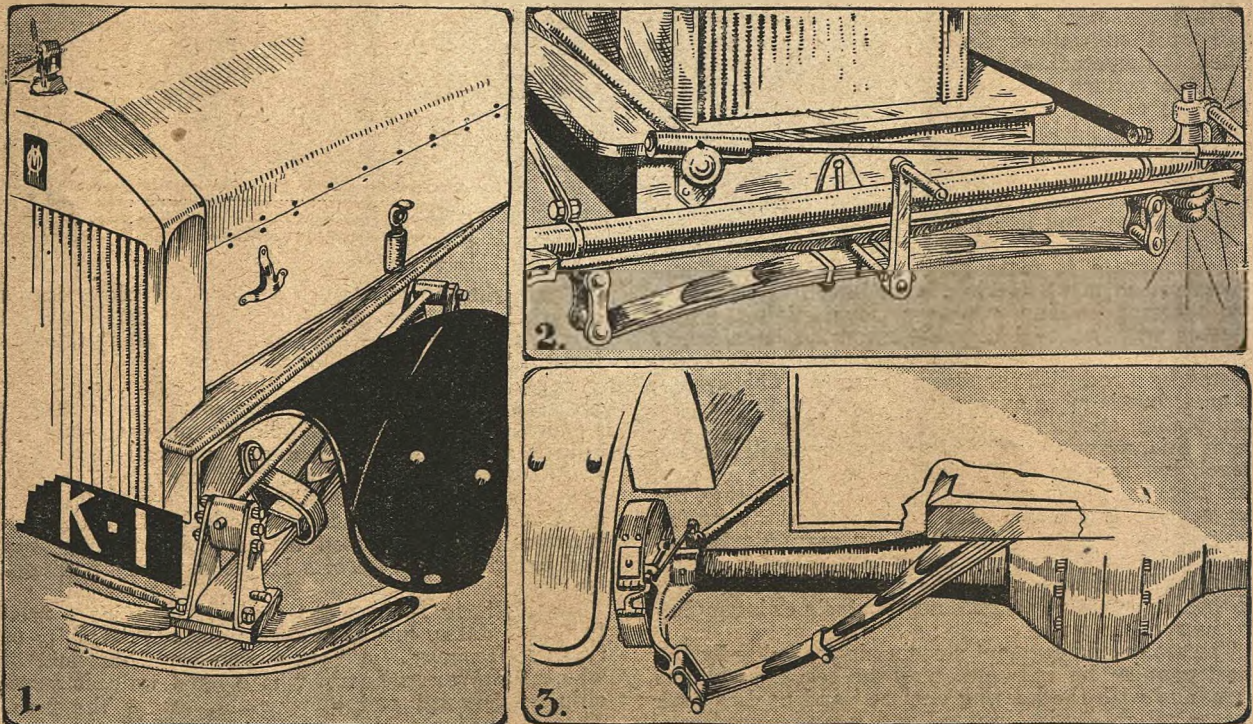
The spiral spring is not much used, as it is really not suitable for chassis springing unless it is combined with some frictional device. A spiral spring once set in motion continues to oscillate indefinitely, there being nothing to bring it to rest, while with a leaf spring the energy of the shock is dissipated in friction between the leaves of the spring. However, the spiral spring is used with success on some of the lighter machines. On the centrally-pivoted axle of the Carden, for example, it gives the equivalent of a three-point suspension. On the L.M. and the Morgan it is used for the front axle, now covered in on the latter, by the way, and it is to be found combined with rear springs of the semi-elliptic type in a few cases with the object of taking up the smaller shocks.

The Standard has double springs, taking the place of a rear shackle, these being normally in compression, while the Singer fits a shock-absorbing device in the same position. Springs are usually attached above the axle, but in some cases they are placed below axle level—underslung as it is termed—this being so in the case of the Adamson, the frame being also underslung. The rear cross-spring referred to in the case of the Whiting-Grant may also be so described, together with the flat transverse spring on the D-Ultra, which is below the axle altogether.

It will be seen, then, that a very great number of springing systems are in use, which goes to show that there is not yet any agreement as to the most suitable type for light cars.

Wheelbase and Wheel Diameter.

Lengthening the wheelbase certainly means a longer frame, a greater length of transmission and added weight, and it is therefore very doubtful whether the advantages of steadiness, ease of steering, etc., outweigh the great extra weight. The Winco actually has a 9 ft. 6 in. wheelbase, and the



1. Parallel front springing on the Old Mill. 2. The underslung transverse spring on the front axle of the D-Ultra. 3. How the back cross-spring of the Whiting-Grant is underslung.

*Estab.*

1650.

The Safe, Silent, Sensible Car,

a Car that has won favour among the best judges of automobile values in the country. Such is the Alldays two-seater, four-cylinder Light Car.

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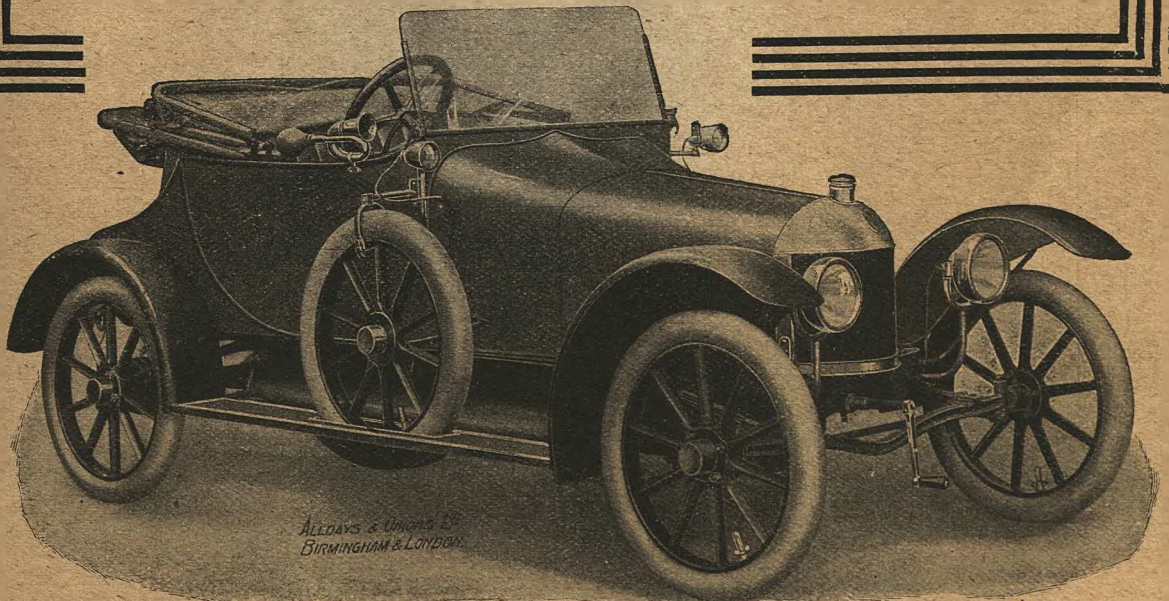
is supplied complete with hood, screen, detachable wheels, spare wheel and tyre, electric lighting installation, including head lamp, side and tail lamps, dynamo, switch-board, etc., at the inclusive price of £175.

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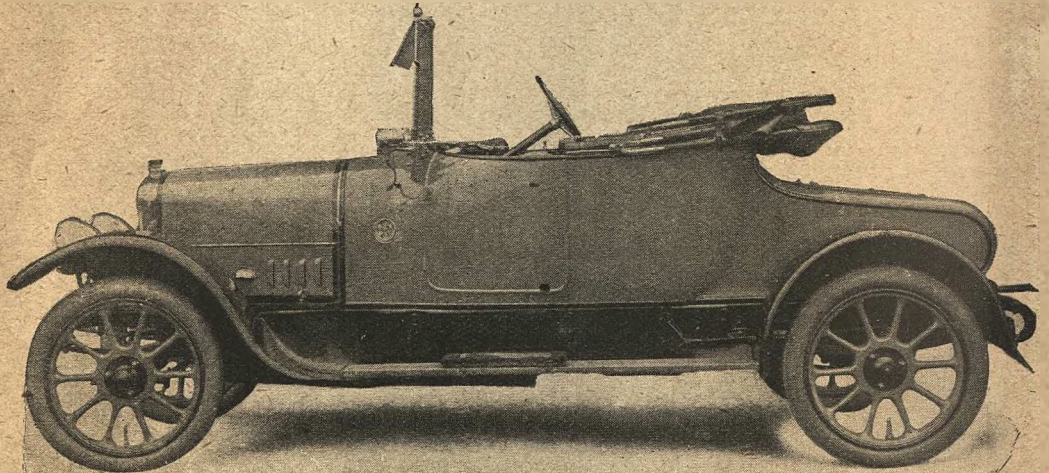
CALTHOR

“Which is the HANDSOMEST 1915 Light Car?”

was the first point to be determined at the Cyclecar Club's Rally at Hatfield. No fewer than 80 vehicles assembled. Miss Hands' CALTHORPE Minor was declared the winner, with Mr. H. Joyce's CALTHORPE Minor Coupe second.

This was the first of the series of Rallies organised to acquaint the public with the features of the 1915 Light Cars, in the absence of the Olympia Show. It serves but to confirm public opinion as shown at Olympia last year, where the smart little CALTHORPE Minor was the centre of attraction.

Not only is the CALTHORPE Minor the handsomest light car, but it is also the fastest, and the most wonderful on hills. Take a trial run and judge for yourself.



Calthorpe Minors are made in the following models:

Calthorpe Minor Delivery Van with 5 Palmer Cord Tyres, 700x85, oil side and tail lamps and all tools. Screen head lamps, and wiring extra... **160 Gns.**

Calthorpe Minor 2-seater Torpedo, complete with Cape hood, single folding screen, including 5 Detachable Sankey wheels, 5 Palmer Cord Tyres, 2 acetylene head lamps, 2 electric side and tail lamps, horn and all tools, complete, ready for the road **170 Gns.**

Grand Duke Michael type (two-seater Torpedo with dicky seat), same specification as above **180 Gns.**

Calthorpe Minor 4-seater Torpedo, fitted with one-man hood, double folding screen, two acetylene head lamps, two electric side lamps and tail lamp, five Sankey wheels, five 700 x 85 Palmer Cord Tyres, complete with horn and all tools **190 Gns.**

Calthorpe Minor Coupe, luxuriously finished, upholstered in best cloth, fitted with spring cushions, 5 tyres, two acetylene head lamps, two electric side and tail lamps and all tools **200 Gns.**

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PE = 1915 Models

Awarded FIRST and SECOND PRIZES for "APPEARANCE" in The Cyclecar Club's Rally

Extracts from "The Light Car and Cyclecar," 23rd Nov., 1914.

(80 cars competing)

—21st Nov., 1914.

"First prize in the appearance competition went to Miss Hands, daughter of Mr. George Hands, of the Calthorpe Motor Co., whose Calthorpe was universally acclaimed the handsomest. It was a well-designed Grand Duke Michael Type (as illustrated on opposite page), of graceful proportions, a pleasing shade of lemon yellow with black wings; second prize was also won by a Calthorpe Coupe (illustrated below) finished in blue and black with nickel fittings."

"Quite a feature of the gathering was the number of 4-seated types, and of these it would be hard to find a smarter example than the Calthorpe."

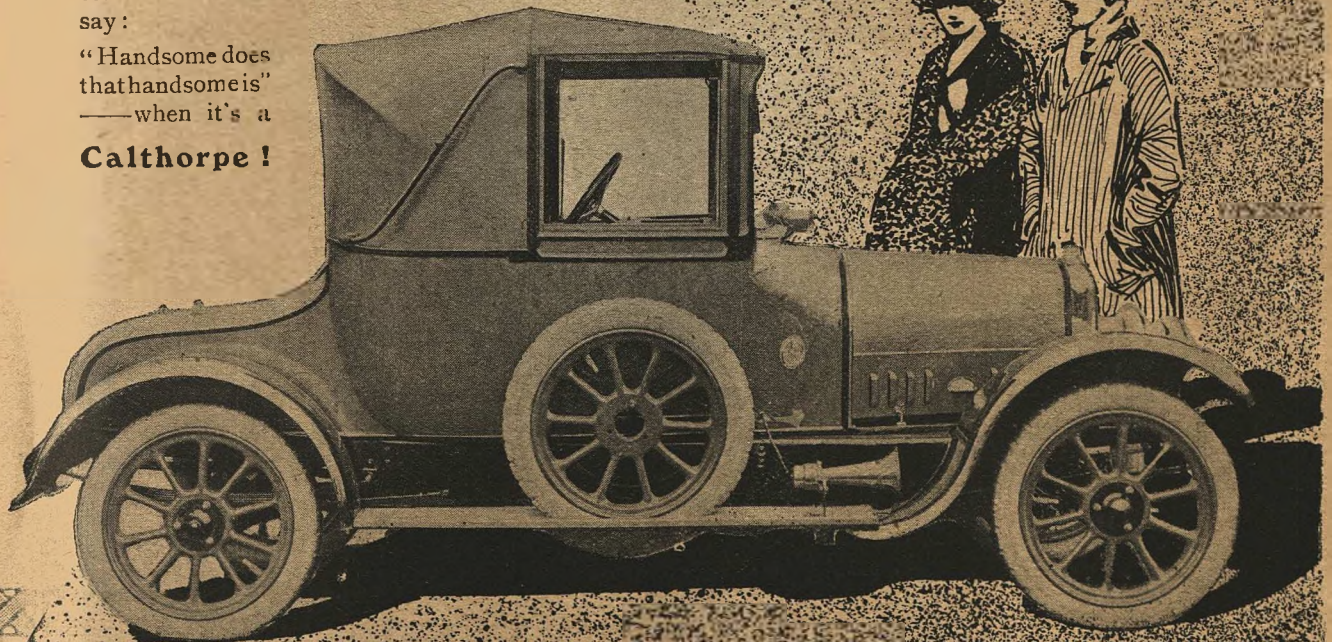
Extract from "The Light Car," 25th Nov.

And ———

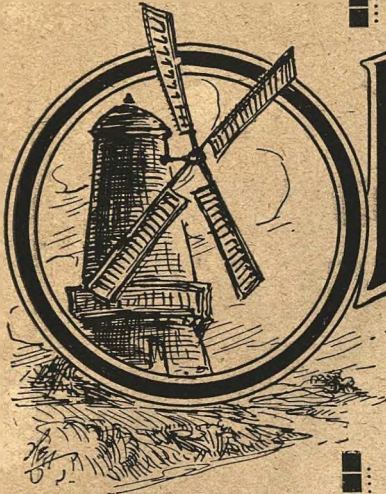
in this case we can reverse the old motto and say:

"Handsome does that handsome is" — when it's a

Calthorpe!



"The Car that Glides."



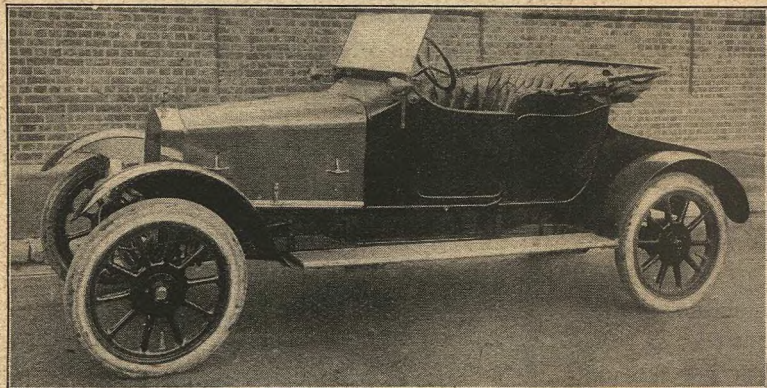
OLD MILL

10 b.h.p. at 1,500 r.p.m.; 17 h.p. at 2,600 r.p.m. Engine is capable of running at 3,000 r.p.m. for long periods. Four cylinders, 64 x 85; wheelbase, 9 feet; weight, 12 cwt.; speeds, three forward and reverse; road clearance, 9½ inches.

An Ideal
Car for
Ladies.

A Pleasure
to Drive.

Perfect -
Springing
on Big -
Car Lines.



Price £220 complete.

A few good points :

Starts from seat. Five Sankey Wheels and Tyres. First-class Coachwork. Dynamo lighting, including two side, one headlight and novel backlight. Flush speedometer, electric horn, brass screen, hood,

**OLD MILL WORKS,
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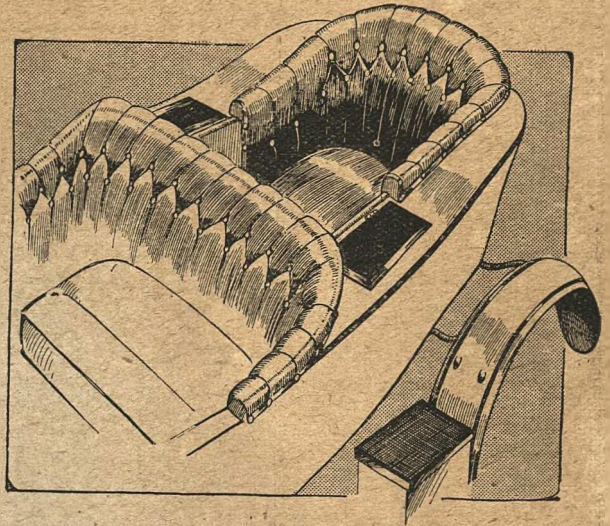
1915 DESIGN (contd.).

Mercury, the Marlborough and the Norma a wheel-base of 9 ft. Of 8 ft. 6 ins. and over are the A.-C., Adamson, Autocrat, Horstmann, Lagonda and Marshall-Arter, while the Calthorpe, Alldays, Meteorite, Stellite and Sirron are none of them less than 8 ft. The shortest wheelbases are possessed by the Baby Peugeot, 6 ft., and the Carden, 6 ft. 6 ins.

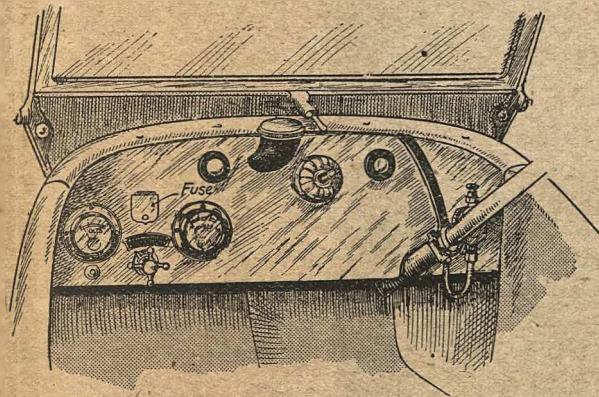
With this question of wheelbase is bound up that of track and height, and all three certainly deserve a little more study than they have received. Many light cars suffer from too narrow a track and many from too high a frame. The increase of track is a fairly simple matter, and the lowering of the frame is not very difficult. Of course, it is an advantage if straight channel side members are used, these being cheaper and easier to line up than a frame raised at the rear to give axle clearance. Also, a low frame of the latter type requires a dropped-front axle, but, after all, these modifications mean very little to any concern building in quantity.

It may be said that road clearance is thereby unduly decreased and that a low-built chassis is not desired, but both those drawbacks can be got over by the use of larger wheels. After all, the stability of a vehicle is mainly determined by the relative posi-

ousted by some form of disc wheel, which certainly has a smart appearance and is ideal as regards cleaning. The cleaning difficulty is indeed one of the reasons why the wire wheel has not been largely used



A three-seated body on a Hurlin chassis. Note the neat locker spaces on either side of the rear seat.



An example of a neatly arranged dash on the Singer, showing the electric lighting controls, ignition switch and oil indicator.

tions of the centre of gravity and the point of support, i.e., the hubs. If two vehicles have chassis of the same height and track, the one with the larger wheels will be the more stable. Moreover, the larger wheel reduces vibration, absorbs less power on a rough road, and generally gives greater tyre economy.

But here again progress is to be noted, and both wheel diameters and tyre sections have steadily increased during the past two years. For a time 650 mm. by 65 mm. was practically the standard size, but while to-day many of the lighter chassis, such as the Humberette, G.W.K., Morgan, and Ranger have this size of tyres, we find a majority with 700 mm. by 80 mm. tyres, among them being the Alldays, Calcott, Day-Leeds, Deemster, Singer, Lagonda, Stellite, Standard, and Swift. Some, including the Calthorpe, Hurlin, Meteorite, Mercury, and Sirron, fit tyres of 85 mm. section, while the Winco and Whiting-Grant go still one better with tyres of 750 mm. by 85 mm.

Type of Wheel.

As regards the type of wheel used it is evident that the steel detachable wheel is one of the most-popular. The wire wheel is naturally in demand for the lightest types with fixed wheels, but even here it may be

on light cars. These vehicles are mostly driven by their owners, and a wheel that is easily cleaned is preferred. The Sankey steel wheel is the popular make, and is built up of two halves welded together.

Brakes.

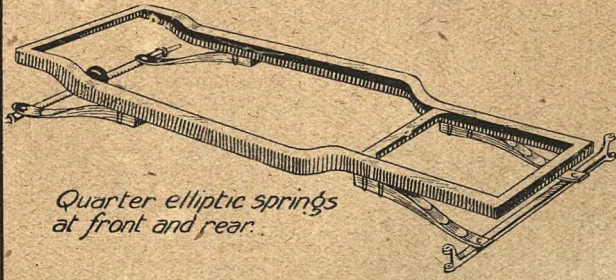
A few light cars are fitted with a foot brake at the rear of the gearbox—the Swift and the Humberette, for example—but the great majority have both foot and hand brakes acting within drums on the rear hubs. Internal expanding brakes are almost universal in this position, and in most cases the brakes are very effective, although for next year several makers have seen fit to enlarge their brake drums. The tendency is to use rods for operating the brakes rather than wire, but the latter is used in some instances, as it lends itself to simple compensation. Adjusting nuts are not always so conveniently placed as they might be, and in this respect the Bayard might be taken as a model, all four brakes having a big wing nut each, handily situated to the rear of the axle. Rear wheel brakes cannot, of course, give the stopping power of the fast-running brake on the gearbox, but they possess the considerable advantage of relieving the transmission of the braking strains. Where worm drive is utilized, an excellent compromise can be effected by fitting the hand brake on the tail of the worm shaft, which is done in the case of the A.-C.

Some Cyclecar Types.

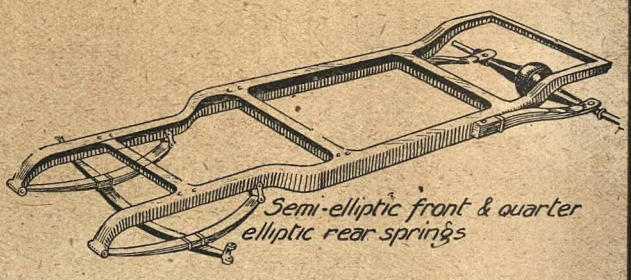
Almost every conceivable type of transmission is employed on light cars and cyclecars. The properly designed final belt drive has proved quite satisfactory, and there are a number of examples with a shaft or chain drive from engine to a pulley shaft and thence by belts, giving great efficiency.

One of the best examples of the simple drive is the Victor, in which the first drive is by chain to a two-speed gearbox and then by side belts to the

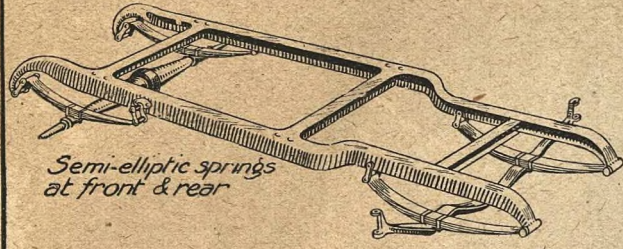
TYPICAL EXAMPLES OF LIGHT CAR AND CYCLECAR SPRINGING



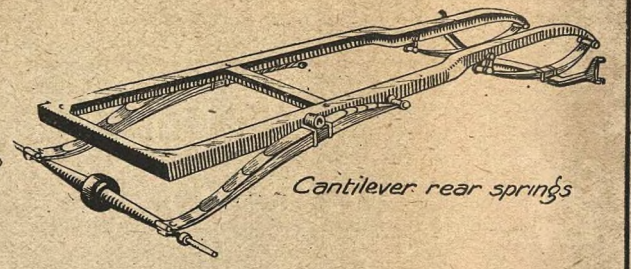
Quarter elliptic springs at front and rear.



Semi-elliptic front & quarter elliptic rear springs



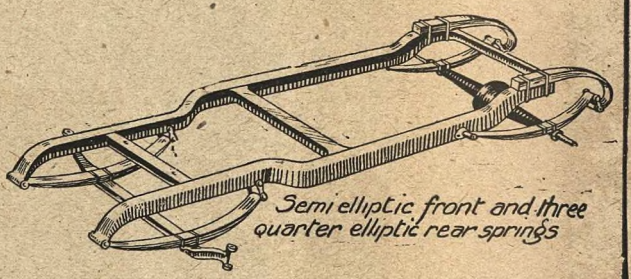
Semi-elliptic springs at front & rear



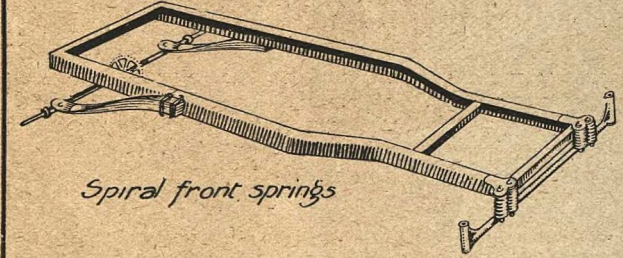
Cantilever rear springs



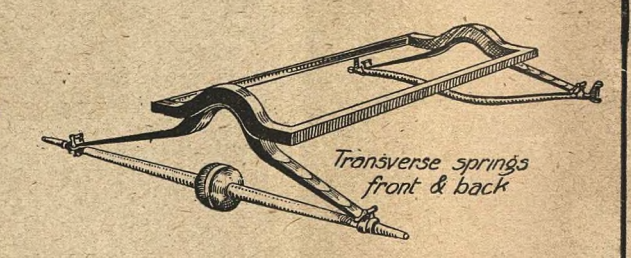
Front transverse springs & quarter elliptic rear



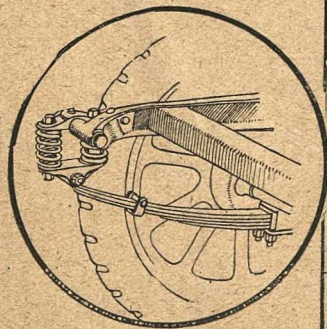
Semi elliptic front and three quarter elliptic rear springs



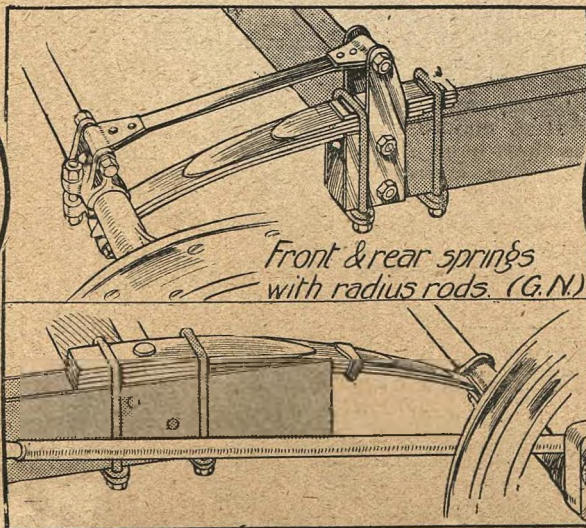
Spiral front springs



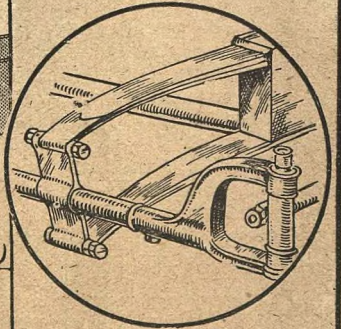
Transverse springs front & back



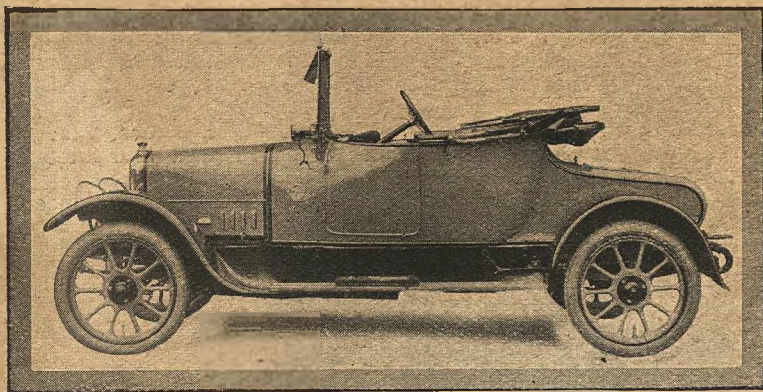
Auxiliary spiral springs (Standard)



Front & rear springs with radius rods. (G.N.)



Twin front springs (Gilyard)



The Grand Duke Michael model Calthorpe which won the first prize for appearance at the Cyclecar Club Rally.

rear wheels. This is a wonderful proposition at £100, for it has a water-cooled engine, a light coach-built body, and is splendidly finished. The Adamson affords an example of the shaft and belt drive, with an intermediate three-speed gearbox, and has an under-slung frame and a wide, comfortable body luxuriously finished.

Nothing could be simpler than the transmission of the Carden monocoar, which merely consists of a chain direct from the engine at the rear to the axle. This, however, is now combined with an equally simple two-speed gear, which provides a low gear of 11 to 1, with a top gear of $4\frac{1}{2}$ to 1. The depression of a pedal withdraws the clutch so that the engine sprocket revolves, but a friction wheel attached to a second sprocket is swung up to engage another friction wheel fixed to the crankshaft. The gear is reduced by means of these friction wheels, and the chain is driven by the second sprocket.

The new G.N. tourist model is a two-speed cyclecar of great simplicity and lightness (it weighs only $4\frac{1}{2}$ cwt. complete), the transmission being by two chains, either of which can be brought into operation as desired by means of a sliding dog clutch and thence by long belts over big pulleys. It has a wide body, the seating position of which is very comfortable. This machine sells at £100 with hood, screen, lamps, etc. The Grand Prix G.N. is a more sporting model, very fast, with two, three or four gears, obtained by chains and dog clutches between the shaft and final belt drive. The Morgan two-speed gear is practically the same, the first stage of the transmission in this case being by shaft from the engine to a bevel gear from which the driving chains are taken to the single rear driving wheel.

Epicyclic gears are, strangely enough, very little used on either light cars or cyclecars, the A.-C. Sociable being about the only familiar example.

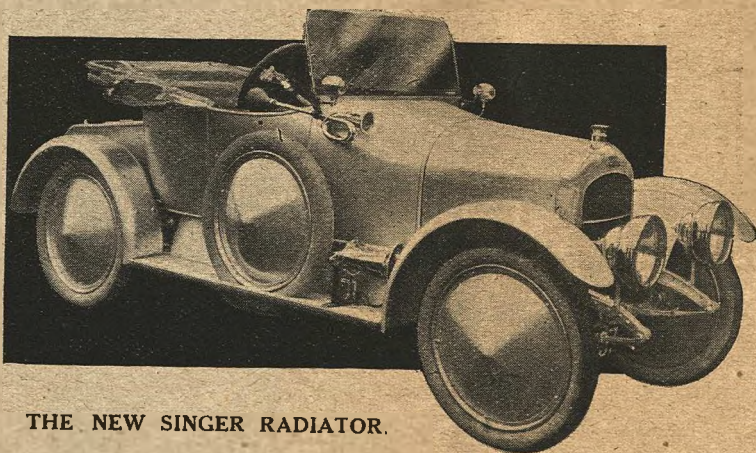
Where belts are used larger pulleys are now usually fitted, thus affording an efficient transmission. Friction drive stands much where it did, but has been adopted on the Kennedy in conjunction with a shaft and belt drive. This drive conforms to correct principles, inasmuch as the pressure of the wheel on the disc is reduced as the gear is raised. The G.W.K. still stands as the perfected example of friction drive, and is now to be obtained with a four-seated body and such luxuries as electric lighting and starting.

As regards the number of gears there is a strong tendency to increase them, and here the friction

drive certainly scores. It is, of course, just the small engine that requires the most gears, but it is generally considered that the expense puts more than three gears out of the question. Certainly two-speed gears are no longer in favour for any but the simplest vehicles, and the Stellite, despite its remarkable engine power and flexibility, is now made with three speeds. The Marshall-Arter is no longer made with two speeds, and the de P. and the J.B.S. now have four.

All-chain drives are represented by such machines as the Crouch, the J.A.R., and the Ranger, and the three-wheeled Robertson has also a two-stage chain drive. The engine is 85 mm. by 85 mm. twin air-cooled with enclosed driving chains. Semi-elliptic springs are fitted on either side of the front hub and also to each rear wheel.

Another very simple form of two-seater is the Aviette, which has four wheels, however, the front wheels being mounted on a centrally-pivoted axle and steered by cables, while the Winter affords an example of a simple light machine with a four-cylinder air-cooled engine and the refinement of a mechanical engine starter. This cyclecar has wire steering, but the front wheels are each pivoted on the ordinary Ackermann system, the wires being, of course, visible for their whole length.



THE NEW SINGER RADIATOR.

The photo. shows the new radiator design of the Singers. The body-work and disc wheels in aluminium finish was produced by the North Wales Motor Exchange of Wrexham, who exhibited this car at the Cyclecar Club Rally.

Coachwork and General Details.

As mechanical details become more perfect, increasing attention is given to less vital matters, such as finish of coachwork and fittings. An example of such finish is to be found in the Singer, which, having arrived at something like finality, is now being refined to an exceptional degree. The fitting of instruments to the dash is just one direction in which one notes improvement, but the most obvious is the better lines of the bodies, comfort being combined with an elegance of outline. Bonnet, dash, and body are made to merge, and the effect is enhanced either by adopting a pointed radiator, as on the Horstmann, Wilton, Marshall-Arter, etc., or by rounding the forward edges of the usual flat-fronted cooler, as done in the case of the Singer, Swift, and Enfield.

Bodies are receiving much the same care as the

1915 DESIGN (contd.).

chassis, and the new Deemster, for example, has its framing built up of angle steel, with acetylene welded joints. The panels are attached by copper rivets and wood is only used at the edges, where it takes no strain, the result being a body that does not warp and that remains free from the squeaks and rattles that so quickly develop in many light car bodies.

One direction in which improvement is possible in many cases is in the provision of easily-removable floorboards. Some floorboards actually are screwed into place, and in many cases no provision is given for getting at the axle, or rear universal if there is one. All floorboards should be fitted with rings for easy lifting, and should be metal-edged, so as to drop neatly and easily into place. For makers to discourage the proper lubrication and adjustment of their chassis by not providing proper access is the worst possible policy, and this is a point which buyers would do well to bear in mind.

Domed wings, as now fitted to the Calcott, improve its appearance immensely, while they are being adopted in many other instances.

With engines of increased efficiency, it has been possible to fit bodies of a more elaborate nature.

Thus, coupé bodies are now commonly fitted to Singer, Calthorpe, and other cars whose engines still adhere to the original limit of 1100 c.c., and the power is found to be quite ample, even for four-seated bodies. The A.-C., Calthorpe, and Stellite are now commonly carrying four-seated bodies, with no apparent diminution of speed and hill-climbing powers.

The construction of such bodies is by no means easy, for they must not be unduly heavy, and yet must be substantial enough to stand hard service. The coupé, in particular, is now popular as a handy vehicle for both business and pleasure, being weather-proof and comfortable.

Cyclecar makers have now paid greater attention to the question of appearance. The light and cheap belt-driven machine need not be less pleasing in appearance than the most expensive of light cars, and in proof of this the new Kennedy and the de P. may be quoted as really handsome machines. Among the simplest types the newly-introduced Crompton single-seater deserves a word of commendation for its appearance and its detail finish, gear and brake levers, pedals, etc., being of a more substantial and better-finished type than is generally associated with this class of chassis.

1915 MODELS—The Latest Features in Brief.

The £255 Swift coupé.

The new radiator on the Singer.

A four-seated coupé Morris-Oxford.

A Tourist model G.N. at 88 guineas.

The four-speed gearbox of the Riley.

The electric starter on the Whiting-Grant.

The dashboard radiator on the Charronette.

The gearbox engine-starter on the Deemster.

The 100-guinea Saxon with enclosed shaft drive.

Disc wheels and detachable rims on the J.B.S.

The leather ring universals on the Tiny chassis.

The worm and wheel steering on the Chater Lea.

The underslung front cross-spring on the D-Ultra.

An ingenious mechanical starter on the Horstmann.

The smart pointed radiator on the latest Day-Leeds.

The combined petrol tap and switch on the Gamage two-

seater.

The "classy" appearance of the friction and belt-driven Kennedy.

The compensated cable-operated brakes on the Warren-Lambert.

The horizontally-opposed engines of the 8 h.p. Jowett and the Lord.

Complete equipment and water-cooled engine on the £100 Victor cyclecar.

The G.W.K. four-seater.

The lowered frame of the A.-C.

The front springing of the Old Mill.

The convenient oil filler on the D.L.

The underslung frame of the Adamson.

The new rounded-edge Enfield radiator.

The adjustable pedals on the Atalanta.

The Lagonda four-seater at 150 guineas.

The Ford type of springs on the Jennings.

A three-speed axle gearbox for the Stellite.

The two-speed gear on the Carden monocar.

Accessible brake adjustments on the Bayard.

The pressure-fed petrol supply on the Perry.

The four-cylinder air-cooled engine on the Winter.

The double exhaust pipes on the Meteorite engine.

The pointed radiator adopted on the Marshall Arter.

Front springs and magneto bevel drive covered in on the Morgan.

The lowered wheelbase and dynamo lighting equipment of the new Alldays.

True cantilever suspension and totally-enclosed transmission on the Mercury.

The A.-C., G.W.K., Lagonda, Calthorpe, Stellite, Autocrat, D.L., Mercury and Gordon four-seated light cars and many others with three seats.

Addenda: Specifications of Light Cars Received Too Late for Classification.

10 h.p. MARLBOROUGH. £200.

No. of seats, two; cooling, water; No. of cylinders, four; bore and stroke, 62 mm. by 100 mm.; cubic capacity, 1200 c.c.; carburetter, Zenith; control, foot; lubrication, mechanical pump; clutch, multiple-disc; No. of speeds, three and reverse; transmission, shaft and bevel; springing, semi-elliptic front, three-quarter elliptic rear; steering, worm and segment; wheelbase, 9 ft.; track, 4 ft.; ground clearance 9 ins.; size of wheels, 700 mm. by 85 mm.; weight, 12 cwt.; equipment, lamps, hood, screen, spare wheel, speedometer, etc.; selling agents, T. B. André, 10, Dering Street, Oxford Street, London

CSO

10 h.p. RILEY. £195.

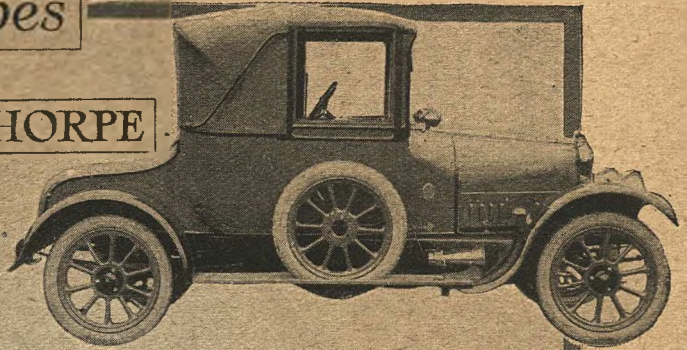
No. of seats, two; make of engine, Riley; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 63 mm. by 88 mm.; cubic capacity, 1096 c.c.; carburetter, Zenith; control, foot; lubrication, mechanical pump; clutch, cone; No. of speeds, four and reverse; transmission, shaft and bevel; springing, semi-elliptic; steering, worm and wheel; wheelbase, 8 ft.; track, 4 ft.; ground clearance, 9 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 10 cwt.; equipment, complete with hood, screen, spare wheel, lamps, tools, etc.; selling agents, Riley Motor Manufacturing Co., Coventry.

10 h.p. LORD. £100.

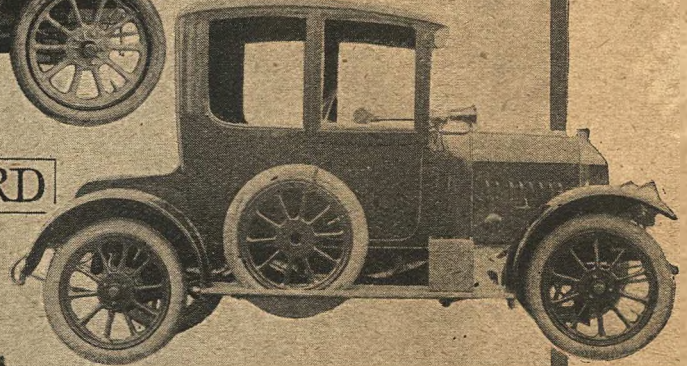
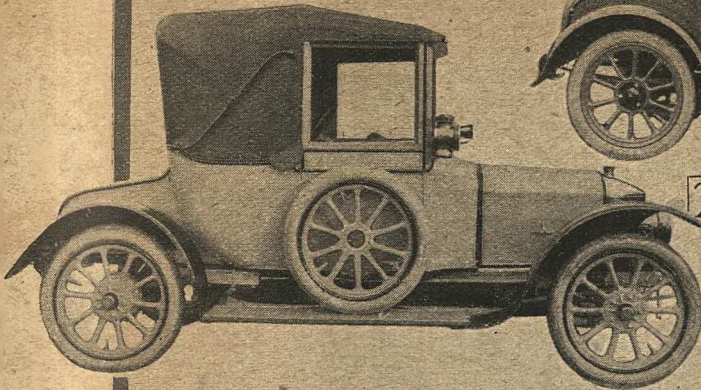
No. of seats, two; make of engine, Lord; cooling, thermo-syphon; No. of cylinders, two, horizontally-opposed; bore and stroke, 86 mm. by 92 mm.; cubic capacity, 1068 c.c.; control, foot; lubrication, pump; transmission, friction and belts; gear ratios, from 3½ to 17-1; springing, quarter-elliptic; steering, bobbin and cable; wheelbase, 8 ft.; track, 3 ft. 8 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 7½ cwt.; equipment, hood, screen, spare wheel, electric lights, speedometer, tool kit, etc.; selling agents, Motts' Engineering Works, Surbiton.

Some Coupés

The CALTHORPE

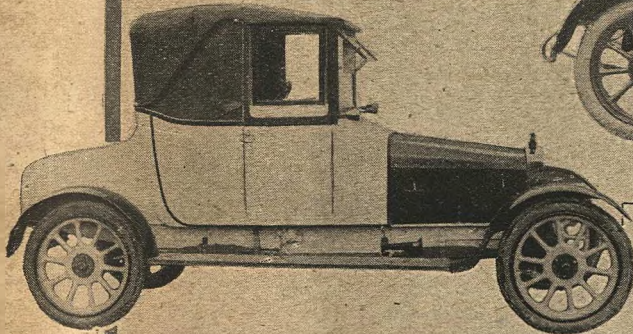


The DEEMSTER

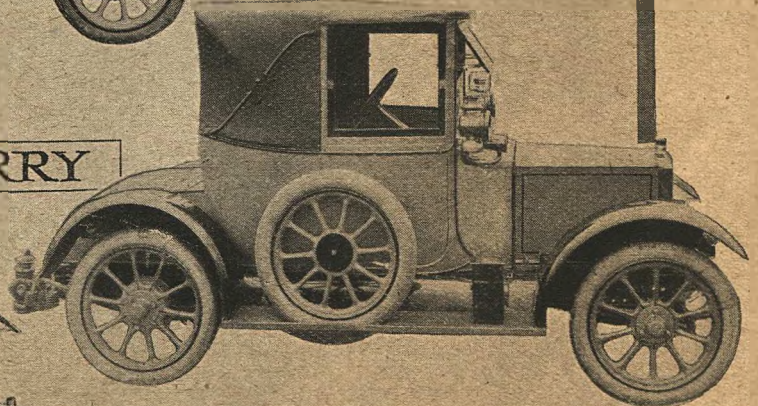


The MORRIS OXFORD

The OLD MILL



The PERRY



The WHITING GRANT

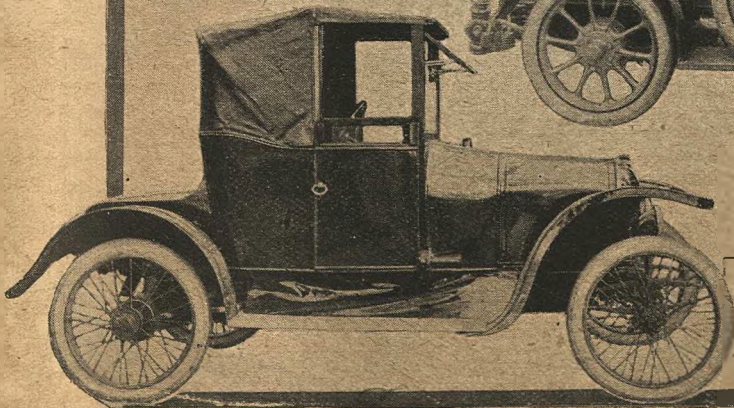
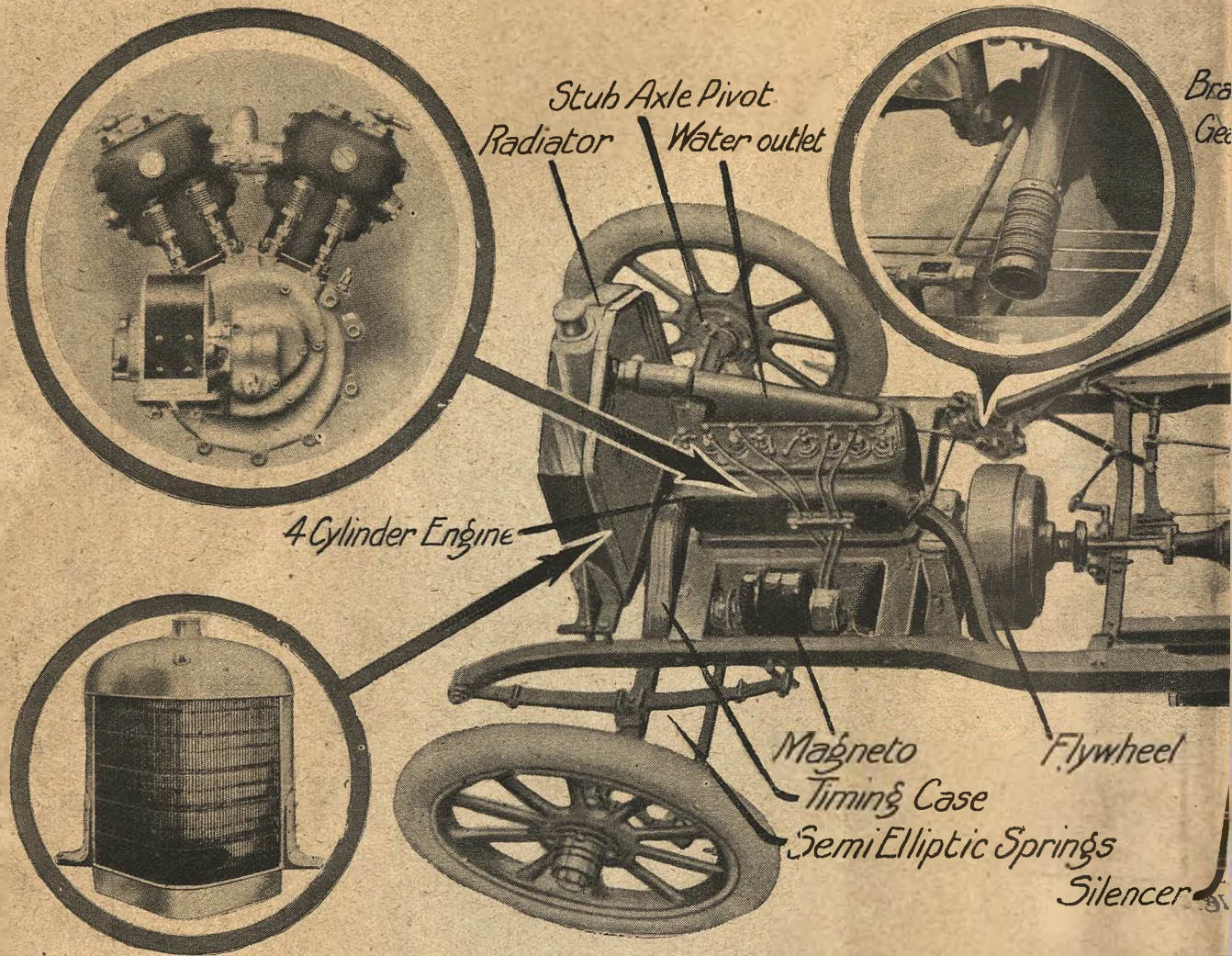


Chart of a Conventional Chassis with Alternative Features



THE chart above represents a chassis of a conventional light car, and is, indeed, based on several machines, chiefly the popular Calcott. Commencing at the radiator, it will be noticed that this is of the flat type; but a very common pattern is the pointed, shown as an alternative, this being that used on the Deemster.

In engines there are, of course, a great variety of types. The four-cylinder engine shown in the chassis is typical of the modern light car power plant. The cylinders form one casting, with internal inlet passages, the carburetter being attached to the off side so as to leave the valves entirely accessible.

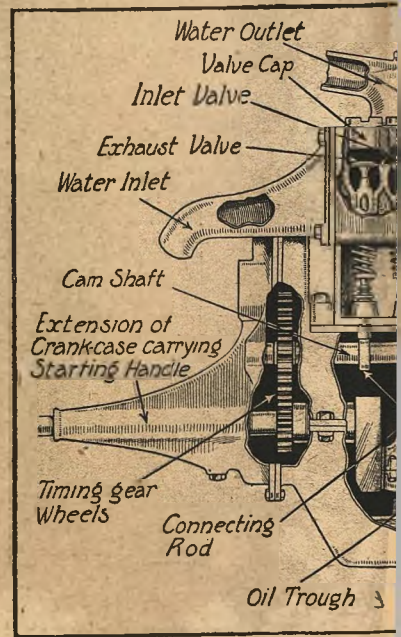
The section is of an engine of this kind, except that the carburetter is attached to the valve side and the exhaust trunk is a separate casting bolted to the cylinders and not cast with them. The engine shown has a pinion timing gear, but this is now often replaced by a silent chain drive for camshaft and magneto.

The crankshaft, it will be noticed, is of the two-bearing type, but a centre bearing is generally employed in addition. The big-ends are here lubricated by troughs, into which the big-ends dip, these troughs being supplied by a mechanical pump which draws oil from the sump.

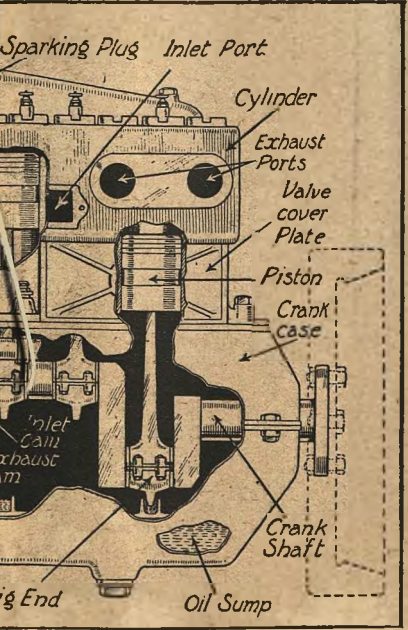
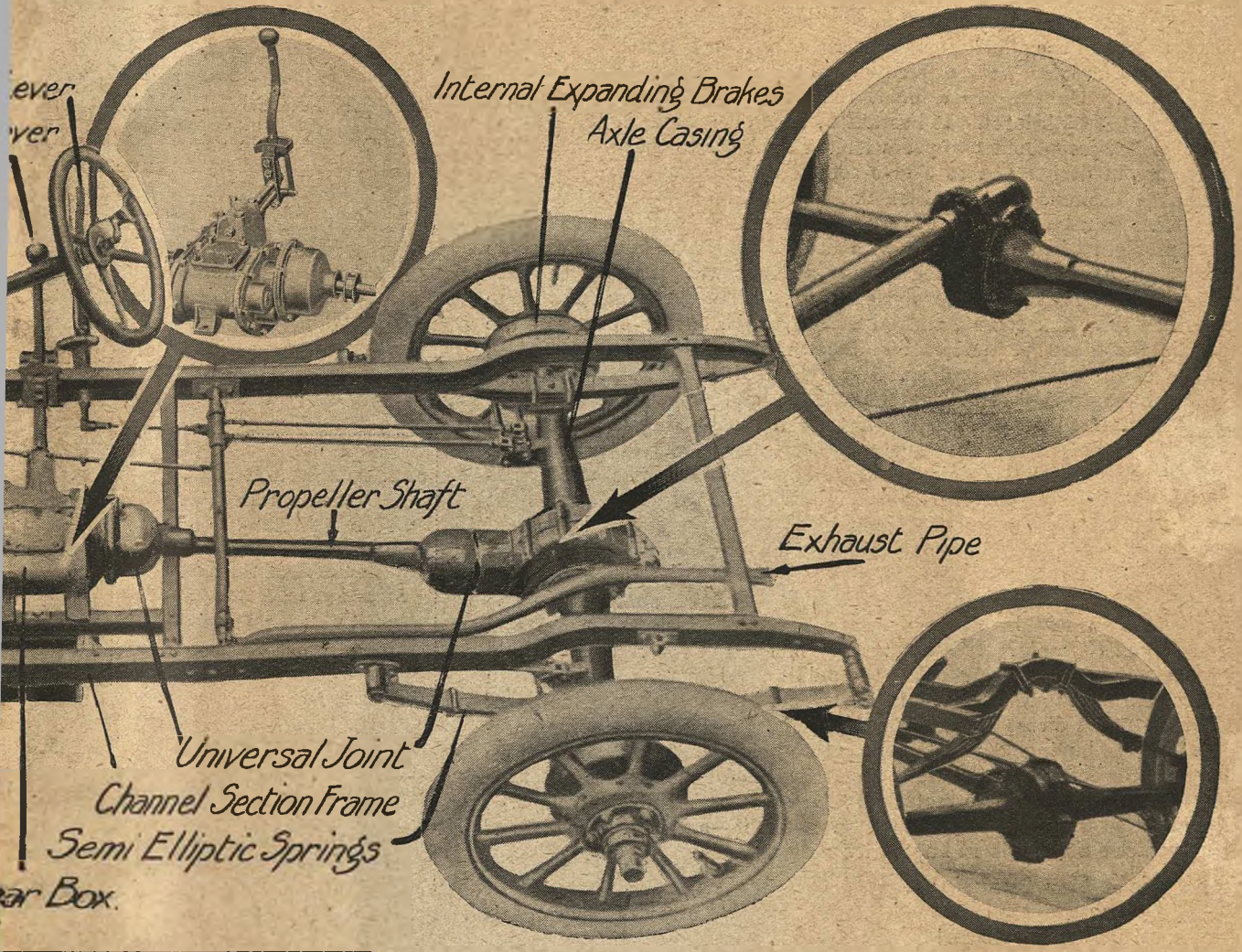
On lighter machines, a V-type twin-cylinder engine is often used, that shown insetted being the Precision, as fitted to the simple Victor machine.

Coming to the steering, that illustrated on the chassis is the worm and segment, which gives irreversibility; but a system used on many lighter chassis is that in which wires from the steering heads are wound around a bobbin at the base of the steering column. The illustration inset shows how this is carried out on the De P. cyclecar.

The gearboxes shown are of the sliding type, provided with gate control, the lever and its quadrant being carried from the gearbox so as to be independent



and Explanatory Sectional View of a Four-cylinder Engine.



of the frame. The chassis is shown with a final drive by a bevel, while the shaft is uncovered and provided with a universal joint at each end.

A variation on this is a worm transmission, and the inset shows the Lagonda drive, in which the driving shaft is enclosed in a tube that serves to take the thrust of the axle to the frame.

There is, of course, a great diversity in springing, as will be seen from our page illustrating the various methods in common use elsewhere in this issue. In the chassis shown here, semi-elliptic springs are used to connect both front and rear axles to the frame; but another method of springing the rear axle is the Jennings, as shown, this being by a transverse single spring.

The frame shown consists of a steel pressing of channel section, the depth of which increases towards the centre where the most strength is required. The frame is also narrowed in front, so that the front wheels can be given a maximum lock. At the rear the frame is raised to give ample clearance to the axle without raising the general height of the chassis. Several other kinds of frame are in use, and the Humberette has a frame built up from tubes, while the Stellite has its two side members of wood.

The engine and gearbox are sometimes carried directly from the main frame, and sometimes one or the other or both are mounted on an inner frame. In other cases the engine and gearbox form a single unit.

As regards brakes, these are shown on the rear wheels, this being the commonest practice on light cars, the foot and hand brakes acting side by side inside a wide drum. In some cases, however, the foot brake is fitted to a drum immediately behind the gearbox.

The wheels are of the steel detachable type, secured by six nuts, easily removed and replaced by means of a brace.

Topics of the Day

Wanted—A Spring Show.

THE light car and cyclecar industry is in a position totally different to that of the allied trades concerned with the motorcar and motor-bicycle. The latter have existed long enough for design to settle down somewhat. On the other hand, the newer industry has only just reached that high level. It has taken, as it always will for new types of vehicles, just about two years for the light car to throw aside early mistakes of design and to evolve something as near to perfection as could be desired. The decision not to hold a Show this year came therefore as a bad blow to the manufacturers. They were faced with the problem of marking time with their old models until a suitable opportunity was provided for making a debut with the new ones, or carrying out improvements straightaway. The great majority have followed the latter course, and we have done our best to put before the public the latest particulars and illustrations of the very wonderful range of moderately-priced small cars for 1915. A Show, however, would have provided still greater publicity, and although the Cyclecar Club's excellent series of rallies has given those living in London an opportunity of seeing the new machines, thousands of people who would have visited Olympia are unable this year to make a comparative inspection of the very fine examples of 1915 cyclecars and light cars. Now, is a Spring Show possible? It must cover all types of machines, and therefore would have to be organized jointly by the Society of Motor Manufacturers and Traders and the Cycle and Motor Cycle Manufacturers and Traders' Union—the two controlling trade bodies. It would be unnecessary to furbish it with the pomp and panoply of Olympia. It is not the Exhibition but the cars that would attract, and we are certain that the public would come to see them in their tens of thousands. In the early spring—say, the beginning of March—much direct business would result, for this is the commencement of the buying season, human nature being what it is, much as we deplore the fallacy that there is a certain time of the year to purchase anything appertaining to motoring. An accessory exhibition might be included as well, if the manufacturers want it—but for the makers of the vehicles a Show is an imperative necessity.

The Light Car Luxurious.

HAD such a Show been held, what a splendid array of new models we should have seen! The bodywork equals, and in some cases excels, the finest efforts of the coachbuilders displayed at the big-car Show of last year. The ingenuity of designers has remedied faults revealed in two years' progress, and many chassis teem with interesting and novel features. The comfort of driver and passenger has been studiously considered. The problem of lighting has received the greatest attention, and although the self-starter is but rarely fitted, the adoption of mechanical starting apparatus operated from the driving seat shows that we are getting very near the abolition of the antiquated starting handle. Probably the mechanical starter will meet the requirements of the majority of people, especially where the first cost is an important consideration.

And Its Equipment.

IN this issue we have not been able to deal with the equipment of the light car or cyclecar. Two years ago there were few manufacturers catering specially for the requirements of owners of the new type of vehicles. To-day the subject is a vast one, and every week sees some interesting production introduced that falls within the wide range of accessories specially designed for the light car. We have decided, therefore, to deal more fully with the equipment of the light car and cyclecar than has ever been attempted before, and will produce a special number of this journal on Monday, 14th December. Our readers will find this special number of exceptional interest and utility.

The Light Car and Cyclecar

Mondays—1d.

Conducted by EDMUND DANGERFIELD.

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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 Wednesday morning to ensure careful attention and allow time to submit proofs, except when an earlier time is specified.

Press Times.

IMPORTANT LATE NEWS and Photographs can be accepted for insertion in the following Monday's issue by special arrangement previously.

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.

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LIGHT UP

Next Saturday, 4.51 p.m.

LIGHT CARS & CYCLECARS

for
1915

In the following pages we give the latest particulars available of 1915 light cars and cyclecars. Some of the illustrations were only obtainable at the 1915 Model Rallies, when the new models made their first appearance.

Particulars in most cases have been supplied by the manufacturers, and great care has been taken in their compilation, but we do not guarantee their accuracy. Certain cars that are considered to be immature are omitted. The industry has now got beyond the stage when experimental machines should be included in a list of cars actually marketed. The various machines are placed in alphabetical order, and for the convenience of those readers who are guided in their choice more by price than by any other consideration, a list is given also in which the various models are placed in order according to their price.

For the benefit of Colonial readers we have included in the particulars the ground clearance, overall width and track of each machine, three very important dimensions to prospective owners overseas.

The price given in each case is that of the machine with the equipment outlined in each list.

A.-C. SOCIABLE. £95 16s. 6d.

No. of seats, two; make of engine, A.-C.; cooling, air; No. of cylinders, one; bore and stroke, 95 mm. by 102 mm.; cubic capacity, 723 c.c.; carburettor, Brown and Barlow; control, hand levers by Bowden wire; lubrication, semi-automatic; clutch, multiple plate; No. of speeds, two; gear ratios, $4\frac{1}{2}$ -1, $12\frac{3}{4}$ -1; transmission, chain; springing, front half-elliptics, rear quarter-elliptics; steering, tiller (direct); fuel capacity, $2\frac{1}{4}$ gallons; wheelbase, 6 ft. 2 ins.; track, 4 ft. 6 ins.; overall width, 5 ft. 2 ins.; ground clearance, 5 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 5 cwt. 2 qrs.; equipment, ready for the road; selling agents, Auto-Carriers (1911), Ltd., Ferry Works, Thames Ditton, Surrey.

10 h.p. A.-C. LIGHT CAR. £175.

No. of seats, two; make of engine, four-cylinder water-cooled A.-C.; bore and stroke, 59 mm. by 100 mm. (1096 c.c.); carburettor, Zenith; control, hand and foot; lubrication, automatic by pump; clutch, disc, Ferodo to metal; No. of speeds, three and reverse; gear ratios, $13\frac{1}{2}$ -1, $7\frac{1}{2}$ -1, $4\frac{1}{2}$ -1 or $14\frac{1}{2}$ -1, $8\frac{1}{2}$ -1, $4\frac{1}{2}$ -1; transmission, cardan shaft, worm drive; springing, front transverse, rear quarter-elliptic; steering, worm and sector; wheelbase, 8 ft. $5\frac{1}{2}$ ins.; track, 3 ft. 10 ins.; overall width, 4 ft. 6 ins.; ground clearance, 8 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 10 cwt. 1 qr.; equipment, hood, screen, three lamps, spare wheel, etc.; selling agents, Auto-Carriers (1911), Ltd., Ferry Works, Thames Ditton, Surrey.

12 h.p. A.-C. LIGHT CAR. £200.

No. of seats, two and dickey; make of engine, four-cylinder water-cooled A.-C.; bore and stroke, 65 mm. by 100 mm.; cubic capacity, 1327 c.c.; carburettor, Zenith; control, hand and foot;

lubrication, automatic by pump; clutch, disc, Ferodo to metal; No. of speeds, three and reverse; gear ratios, same as on 10 h.p. model; transmission, cardan shaft and worm drive; springing, front transverse, rear quarter-elliptics; steering, worm and sector; fuel capacity, $4\frac{1}{2}$ gallons; wheelbase, 8 ft. $5\frac{1}{2}$ ins.; track, 3 ft. 10 ins.; overall width, 4 ft. 6 ins.; ground clearance, 8 ins.; size of wheels, 700 mm. by 85 mm.; approx. weight, 10 cwt. 3 qrs.; equipment, ready for road; selling agents, Auto-Carriers (1911), Ltd., Ferry Works, Thames Ditton, Surrey. (A four-seater model as above is listed, the price being £215, or with dynamo lighting set, £232.)

9 h.p. ADAMSON. £131 5s.

No. of seats, two; make of engine, Alpha; cooling, water, thermo-syphon; No. of cylinders, two or four; bore and stroke, 85.7 mm. by 95.2 mm. (2-cyl.), 60.3 mm. by 95.2 mm. (4-cyl.); cubic capacity, 1099 c.c. (2-cyl.), 1088 c.c. (4-cyl.); carburettor, Solex; control, foot (hand lever for magneto); lubrication, splash and mechanical; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 11.9-1, 6.9-1, 3.9-1; transmission, shaft and belts; springing, semi-elliptics fore and aft; steering, cable and bobbin; fuel capacity, 4 gallons; wheelbase, 8 ft. 6 ins.; track, 4 ft.; ground clearance, $8\frac{1}{2}$ ins.; size of wheels, 700 mm. by 65 mm.; approx. weight, $7\frac{1}{2}$ cwt.; equipment, tools, pump, horn, jack; selling agents, R. Barton Adamson and Co., Enfield Highway, Middlesex.

8-10 h.p. ALLDAYS. £175.

No. of seats, two; engine, four-cylinder Alldays; cooling, water, thermo-syphon; bore and stroke, 59 mm. by 100 mm. (1093 c.c.); carburettor, Solex or Zenith; control, foot accelerator; lubrication, forced; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 13.5-1, 9.3-1, 5.3-1; transmission, shaft

and worm drive; springing, cantilever; steering, worm and sector; fuel capacity, 5 gallons; wheelbase, 8 ft. $1\frac{1}{2}$ ins.; track, 4 ft.; overall width, 5 ft.; ground clearance, $6\frac{1}{2}$ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 11 cwt.; equipment, hood, screen, detachable steel or wire wheels, spare wheel, electric lighting, horn, tools, etc.; selling agents, Alldays and Onions Pneumatic Engineering Co., Ltd., Matchless Works, Birmingham.

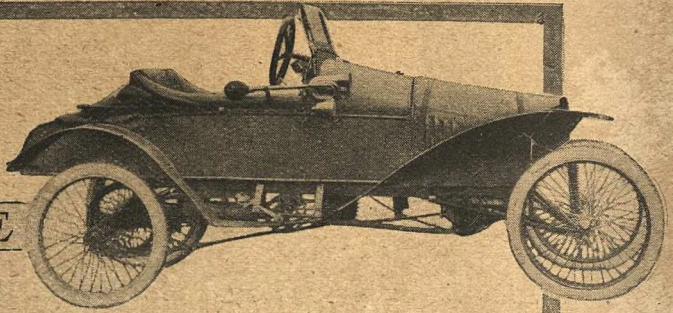
8-10 h.p. ARDEN. £185.

No. of seats, two or four; cooling, water, thermo-syphon; No. of cylinders, four; bore and stroke, 60.3 mm. by 95.2 mm. or 66.7 mm. by 95.2 mm. (10-12 h.p.); cubic capacity, 1092 c.c. or 1400 c.c.; carburettor, Zenith; control, foot accelerator; lubrication, pump; clutch, cone (Thermoid lined); No. of speeds, three and reverse; gear ratios, 13-1, 7-1, $4\frac{1}{2}$ -1; transmission, shaft; springing, semi-elliptic; steering, worm and sector; fuel capacity, $4\frac{1}{2}$ gallons; wheelbase, 8 ft.; track, 3 ft. 10 ins.; overall width, 4 ft. 7 ins.; ground clearance, $8\frac{1}{2}$ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 10 cwt.; equipment, hood, screen, tools, etc.; selling agents, Arden Motor Co., Ltd., Berkswell, near Coventry.

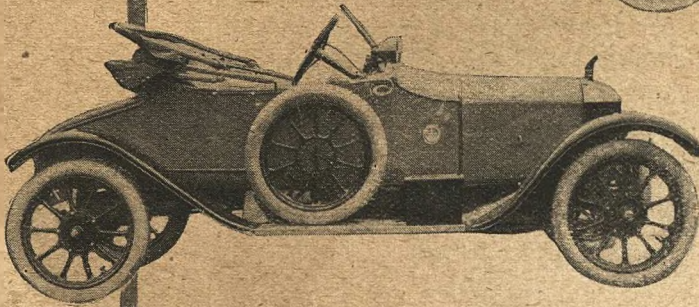
ATALANTA. £195.

No. of seats, two; make of engine, Atalanta; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 63 mm. by 88 mm.; carburettor, Zenith; control, foot; lubrication, mechanical pump; clutch, expanding; No. of speeds, three and reverse; transmission, shaft and bevel; springing, semi-elliptic; steering, worm and wheel; fuel capacity, 5 gallons; wheelbase, 8 ft. 6 ins.; track, 3 ft. 11 ins.; size of wheels, 700 mm. by 80 mm.; equipment, spare wheel, hood, screen, speedometer, etc.; selling agents, Atalanta Light Cars, 141, St. Stephen's House, Westminster, London.

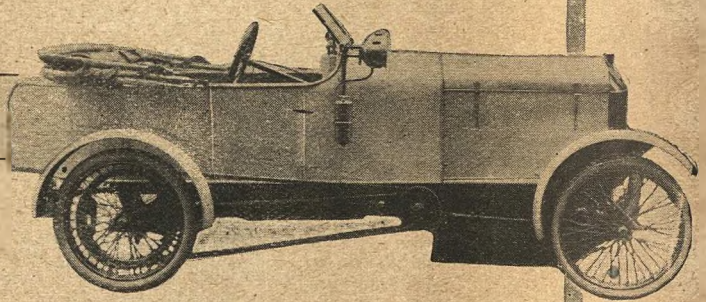
The AVIETTE



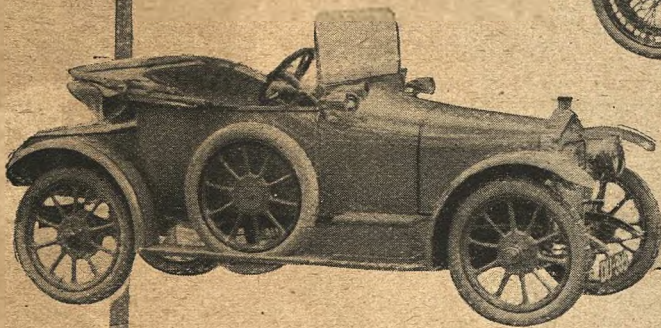
The A.C.



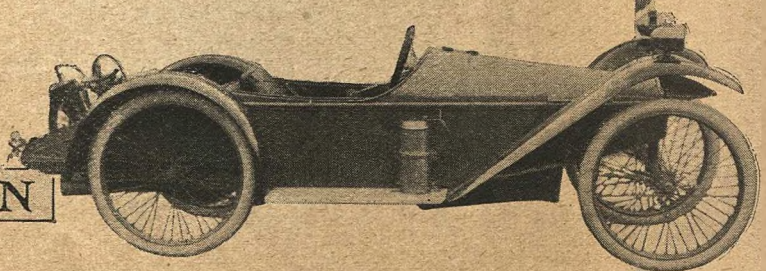
The BUCKINGHAM



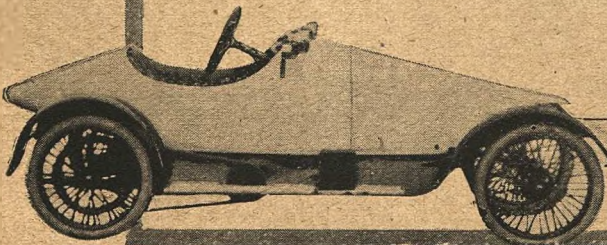
The CALCOTT



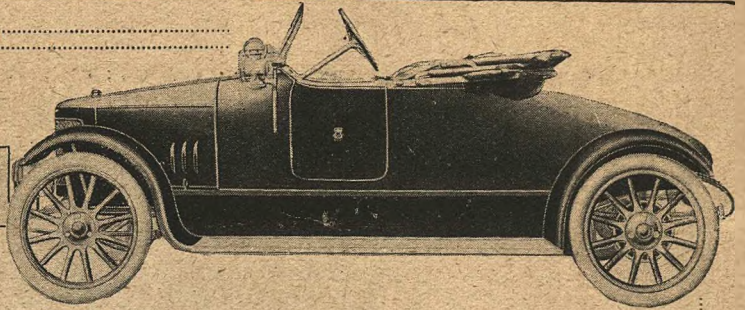
The CARDEN



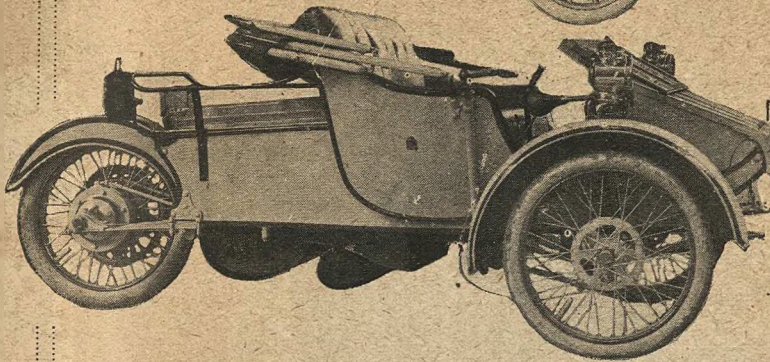
The CROMPTON



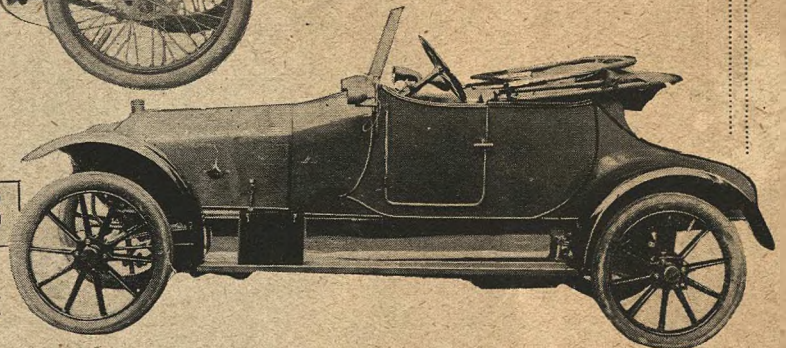
The AUTOCRAT



The A.C.



The ALLDAYS

**10-12 h.p. AUTOCRAT. £194 5s.**

No. of seats, two or four (£204 15s.); cooling, thermo-syphon water; No. of cylinders, four; bore and stroke, 60 mm. by 95 mm.; cubic capacity, 1088 c.c.; carburetter, Zenith or Solex; control, foot and hand; lubrication, forced feed; clutch, Hele-Shaw; No. of speeds, three forward and reverse; gear ratios, 13 to 1, 8 to 1, 4 to 1; transmission, shaft and bevel; springing, semi-elliptic front and three-quarter elliptic rear; steering, worm and wheel; wheelbase, 8 ft. 6 ins.; track, 4 ft.; overall width, 5 ft.; ground clearance, 9½ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 10 cwt.; equipment, hood, screen, spare wheel, five lamps and horn; selling agents, The Autocrat Light Car Co., Balsall Heath, Birmingham. (A four-seater with a 1300 c.c. engine is marketed at £220 10s.)

10 h.p. AVERIES. £165.

No. of seats, two or three; make of engine, Averages; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 59.16 mm. by 100 mm.; cubic capacity, 1096 c.c.; carburetter, Claudel; control, foot; lubrication, pump; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 12-1, 7-1, and 4-1; transmission, shaft and worm; springing, semi-elliptic in front and three-quarter elliptic at rear; steering, rack and pinion; fuel capacity, 4 gallons; wheelbase, 7 ft. 10 ins.; track, 3 ft. 9 ins.; overall width, 4 ft. 5 ins.; ground clearance, 8 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 8½ cwt.; equipment, complete; selling agents, Averages Ponette, Ltd., Englefield Green, Surrey.

5-6 h.p. AVIETTE. £70.

No. of seats, two; make of engine, J.A.P. or Blumfield; cooling, air or water (£78 15s.); No. of cylinders, two; bore and stroke, 67 mm. by 95 mm.; cubic capacity, 670 c.c.; carburetter, Brown and Barlow; control, hand; lubrication, hand pump; clutch, friction discs; No. of speeds, three; transmission, belts; springing, quarter-elliptics; steering, bobbin and cable; fuel capacity, 2 gallons; wheelbase, 7 ft.; track, 3 ft. 3 ins.; overall width, 3 ft. 6 ins.; size of wheels, 26 by 2½; approx. weight, 4½ cwt.; selling agents, Hurlin and Co., Ltd., Mare Street, Hackney. (A 4 h.p. and an 8 h.p. model are also listed.)

8 h.p. BAYARD. £180.

No. of seats, two; make of engine, Bayard; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 100 mm.; cubic capacity, 1131 c.c.; carburetter, Bayard; control, foot; lubrication, mechanical pump; clutch, Ferodo cone; No. of speeds, three and reverse; gear ratios, 4.5, 7.8 and 13.5 to 1; transmission, shaft and bevel; springing, semi-elliptic; steering, worm and sector; fuel capacity, 5 gallons; wheelbase, 7 ft. 11 ins.; track, 3 ft. 9½ ins.; overall width, 4 ft. 6 ins.; ground clearance, 7 ins.; size of wheels, 650 mm. voiturette légère; approx. weight, 10 cwt.; equipment, five lamps, hood, screen, etc.; selling agents, Bayard Cars, Ltd., 155, Great Portland Street, London, W.

BEDELIA. £108.

No. of seats, two; make of engine, Bedelia; cooling, air; No. of cylinders, two; bore and stroke, 80 mm. by 100 mm.; cubic capacity, 1008 c.c.; carburetter, Loxguemare; control, foot and hand; lubrication, force pump; clutch, belt; No. of speeds, variable; gear ratios, 4 to 1 on top; transmission, chain and belt; springing, coil front and semi-elliptic in rear; steering, bobbin and cable; fuel capacity, 2 gallons; wheelbase, 9 ft.; track, 3 ft. 6 ins.; overall width, 37 ins.; ground clearance, 8 ins.; size of wheels, 26 by 2½; approx. weight, 425 lb.; selling agents, Palmer's Garage, Merton Tram Terminus, Tooting, London, S.W.

12 h.p. BUCKINGHAM. £126.

No. of seats, two; make of engine, Buckingham; cooling, water; No. of cylinders, two; bore and stroke, 89 mm. by 88 mm.; cubic capacity, 1096 c.c.; carburetter, Solex; control, hand; No. of speeds, two; gear ratios, 4 and 8 to 1; transmission, chain and belts; springing, transverse front and quarter-elliptic rear; steering, bobbin and cable; wheelbase, 7 ft. 2 ins.; track, 3 ft. 8 ins.; overall width, 4 ft. 4 ins.; ground clearance, 7½ ins.; size of wheels, 650 mm. by 65 mm.; equipment, hood, screen, etc.; selling agents, J. F. Buckingham, The Buckingham Engine Works, Spon Street, Coventry. (Also a single-cylinder model at £91 7s., and a de luxe model at £141 15s.)

14th December—Order "The Light Car and Cyclecar" Equipment Number.

1915 MODELS (contd.).

10.5 h.p. CALCOTT. £185.

No. of seats, two and dickey; make of engine, Calcott; cooling, water; No. of cylinders, four; bore and stroke, 65 mm. by 110 mm.; cubic capacity, 1456 c.c.; carburetter, Zenith; control, hand and foot; lubrication, mechanical pump; clutch, leather cone; No. of speeds, three and reverse; transmission, shaft and bevel; springing, semi-elliptic; steering, worm and sector; wheelbase, 7 ft. 6 ins.; track, 3 ft. 9 ins.; overall width, 4 ft. 6 ins.; ground clearance, 9 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 11½ cwt.; equipment, five lamps, hood, screen, spare wheel, etc. (£15 is charged for dynamo equipment and £15 for starter); selling agents, Calcott Bros., Ltd., Gosford Street, Coventry.

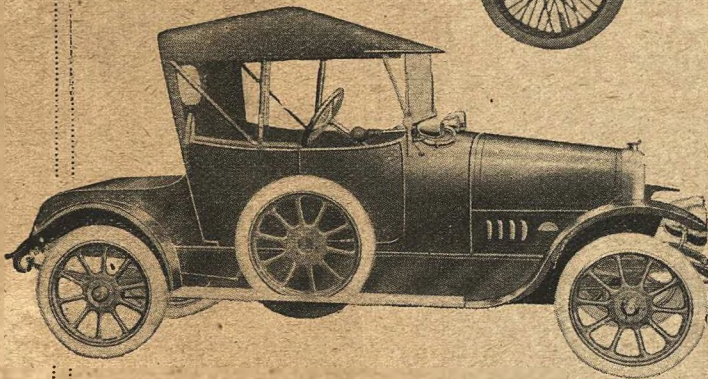
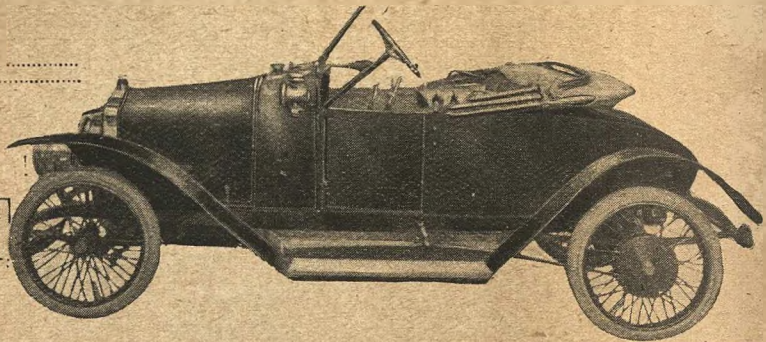
5 h.p. GARDEN. £70.

No. of seats, one; make of engine, J.A.P.; cooling, air; No. of cylinders, two; bore and stroke, 70 mm. by 85 mm.; cubic capacity, 654 c.c.; carburetter, Amac or Binks; control, foot; lubrication, drip feed; clutch, multiple-disc; No. of speeds, one or two; gear ratios, model B 5½ to 1, model F 4¾ and 8½ to 1; transmission, chain; springing, spiral front and cantilever in rear; steering, wire and bobbin; fuel capacity, 2½ gallons; wheelbase, 6 ft. 6 ins.; track, 2 ft. 6 ins.; overall width, 3 ft. 2 ins.; ground clearance, 6 ins.; size of wheels, 26 by 2½; approx. weight, 3 cwt.; selling agents, Carden Engineering Co., Somerset Road, Teddington, S.W. (Model F £80.)

8 h.p. CHATER LEA. £142 16s.

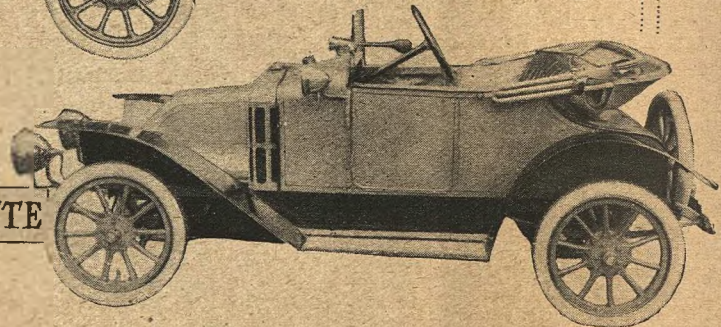
No. of seats, two; make of engine, Chater Lea; cooling, water; No. of cylinders, two; bore and stroke, 85 mm. by 85 mm.; cubic capacity, 964 c.c.; carburetter, Zenith; control, foot; lubrication, semi-automatic; clutch, leather cone; No. of speeds, three; gear ratios, 13-1, 6¾-1, and 4½-1; transmission, shaft and worm; springing, semi-elliptic; steering, worm and wheel; fuel capacity, 3 gallons; wheelbase, 7 ft. 6 ins.; track, 3 ft. 10 ins.; overall width, 4 ft. 7 ins.; ground clearance, 8½ ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 7 cwt.; equipment, hood, screen, lamps, etc.; selling agents, Chater Lea, Ltd., 74-84, Banner Street, London, E.C. (Also a four-cylinder model at £173 5s.)

The BAYARD



The CALTHORPE

The CHARRONETTE

**CALTHORPE MINOR. £178 10s.**

No. of seats, two or four (£199 10s.); make of engine, Calthorpe; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 62 mm. by 90 mm.; cubic capacity, 1087 c.c.; carburetter, Claudel-Hobson; control, hand and foot; lubrication, pump; clutch, Hele-Shaw; No. of speeds, three and reverse; gear ratios, 13.2, 7.7, 4 to 1 or 14.3, 8.3, 4.3 to 1; transmission, shaft and bevel; springing, semi-elliptic; steering, worm and sector; fuel capacity, 5 gallons; wheelbase, 8 ft. 3 ins.; track, 3 ft. 3 ins.; overall width, 4 ft. 4 ins.; ground clearance, 7½ ins.; size of wheels, 700 mm. by 85 mm.; approx. weight, 10 cwt. two-seater, 11 cwt. four-seater; equipment, spare wheel and full equipment ready for the road; selling agents, Calthorpe Motor Co. (1912), Ltd., Bordesley Green, Birmingham.

8 h.p. CHARRONETTE. £194 5s.

No. of seats, two; make of engine, Charron; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 58 mm. by 100 mm.; cubic capacity, 1049 c.c.; carburetter, Marvel; control, foot; lubrication, chains and trough; clutch, leather cone; No. of speeds, three; transmission, shaft and bevel; springing, semi-elliptic; steering, worm and sector; wheelbase, 7 ft. 2 ins.; track, 3 ft. 5½ ins.; overall width, 4 ft. 3 ins.; ground clearance, 8 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 10¾ cwt.; equipment, lamps and horn, spare wheel, etc.; selling agents, Charron Cars, 65, Piccadilly, London, W.

CROUCH GARETTE. £132 15s.

No. of seats, three; make of engine, Crouch; cooling, water; No. of cylinders, two; bore and stroke, 85 mm. by 90 mm.; cubic capacity, 1200 c.c.; carburetter, Cox "streamline"; control, foot and hand; lubrication, drip and hand; clutch, Thermoid cone; No. of speeds, three; gear ratios, 14½, 8 and 4½ to 1; transmission, chain; springing, Lanchester type; steering, rack and pinion; fuel capacity, 3½ gallons; wheelbase, 7 ft. 6 ins.; track, 4 ft.; overall width, 4 ft. 9 ins.; ground clearance, 6¾ ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 8½ cwt.; equipment, lamps, hood, screen, etc.; selling agents, Crouch Motors, Ltd., Tower Gate Works, Cork Street, Coventry.

Extract from

(Advertisement).

The Light Car and Cyclecar

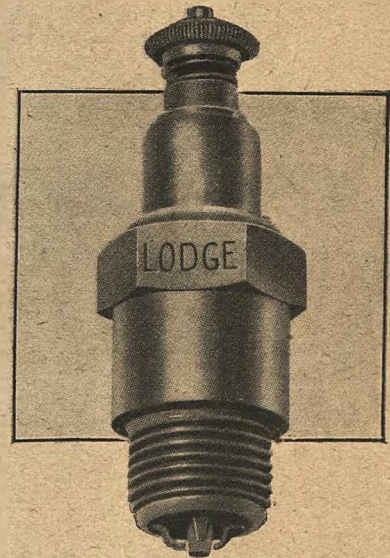
THE CALL OF
THE ROAD.



THE JOTTINGS OF
JOHN GILPIN, JNR.

16th Nov., 1914 (p. 636).

I HAVE previously commented on the fact that modern high-speed engines, and also those with which the compression is fairly high, have found out weaknesses in standard plugs that a few years ago we thought had been eliminated for good. This led to some interesting correspondence with the Lodge Sparking Plug Co., Ltd., as the result of which they promised a new plug of such sturdy construction that it would laugh at 4,000 r.p.m., and so cooled that it would never pre-ignite. Six weeks ago a set of the new plugs arrived, and were immediately placed in my engine with results that can only be termed entirely satisfactory. This new plug does keep cool, and although it has had every opportunity does not pre-ignite. In nearly 2,000 miles I have only once had to take out a plug that was misfiring, when it was found badly sooted up as the natural corollary to a flooding carburetter. The Model B Lodge plug, as it is known, has mica insulation, but of its exact construction nothing can be said as yet, as it is only provisionally patented. A large number have been supplied for the Army aeroplanes, where reliability, of course, is rather more essential than in the 10 h.p. car of John Bull, Esq.



A plug that will stand an engine running at 4,000 r.p.m. The latest Lodge Model B plug, with mica insulation. It does not pre-ignite.

LODGE PLUGS.

British made. Stocked by all dealers.

Price 4/- each.

THE LODGE SPARKING PLUG CO., LTD., BIRMINGHAM

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.

C39



Speed Economy **STRE**

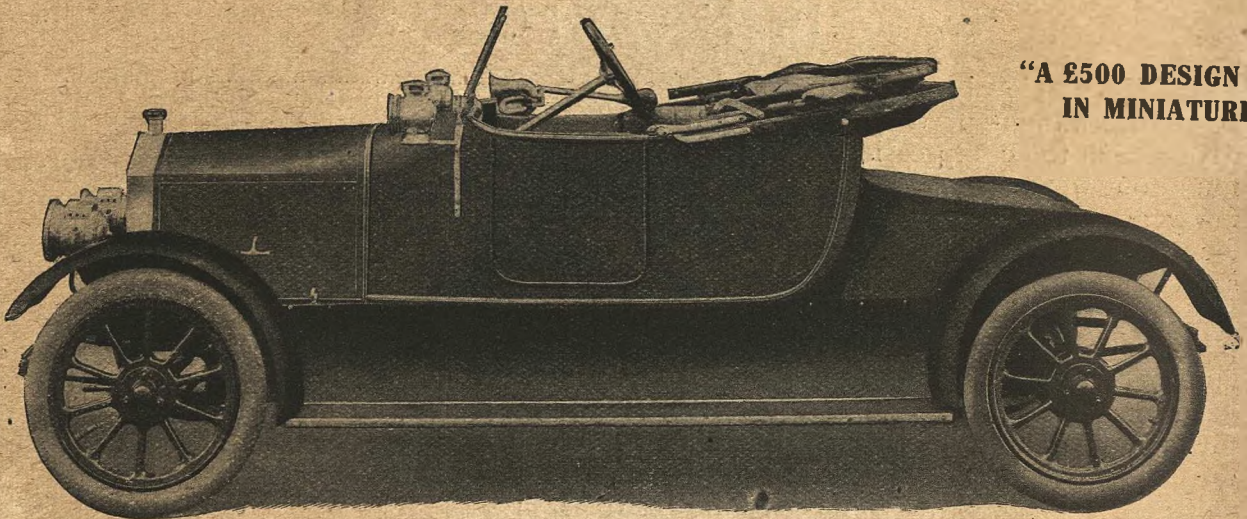
Agents' enquiries solicited where not already represented.

The

1915 MODEL

9.5 H.P. R.A.C. RATING.

LIGHT CAR



"A £500 DESIGN CAR
IN MINIATURE."

STANDARD TWO-SEATER.

Price with equipment **£184**

Code Word—TWOMETO.

COUPE

Code Word—

Standard Colours

EQUIPMENT includes Hood, Screen, Side Curtains, 5 Sankey Steel Detachable Wheels, 5 Tyres, 700 x 85 mm., 2 Acetylene Headlamps, Generator, 2 Oil Side and Tail Lamps, Pump, Jack, Tool Kit.

Electric Lighting Set from **£12 12 0** extra. Electric Lighting and Self-Starter, **£25.**

Highest Grade Coachwork, Leather Upholstery.

EXPORT.

LARGE

Owing to the unprecedented **strength to last** and **resist shock**, together with generous ground clearance, the "METEORITE" is eminently suitable for the strenuous conditions of service in the Colonies.

Manufacturers: **Meteor Motors, Ltd.,**

Telephone—6935 WESTERN.

Telegrams—"METEORMOTO, LONDON."

Code—A.B.C. 5th EDITION.

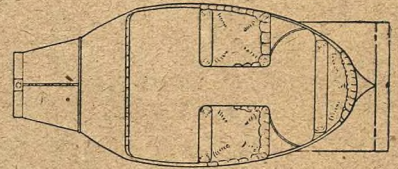


STRENGTH . . . Silence . . . Flexibility



METEORITE

ENTIRELY BRITISH



3-seater Plan.

All Seats under Hood.
Sliding Driver's Seat.

9.5 H.P. R.A.C. RATING.



230 complete.
PMETO.

STANDARD THREE-SEATER.

Price with equipment **£195**

Code Word—**THREMETO.**

(Meteor Motors, Ltd., Sole Licensees Mulliner's Registered Design.)

"Arcadian Blue" or Grey.

BRIEF SPECIFICATION : 4-cylinder Engine, 62 bore, 110 stroke, 3 Bearing Crankshaft, Leather Cone Clutch, 3-speed and reverse Ball-bearing Gearbox, Enclosed Transmission, **Full Floating** and **Reinforced** Rear Axle, Bevel Drive, Large and Efficient Brakes of Special Design, Fully Compensating, Worm and Worm-wheel Irreversible Steering, $\frac{3}{4}$ Elliptical Rear Springs, Pressed Steel Frame, Wheel-base 8 ft. 6 in., Track 4 ft. 2 in.

OUTPUT.

EARLY DELIVERIES.

NO FREAK FEATURES IN DESIGN.

WRITE FOR LATEST CATALOGUE, profusely illustrated, and giving all information.

Showrooms :

**7, Harrington Road, South Kensington,
LONDON, S.W.**

Chairman—THE RIGHT HON. THE LORD TENTERDEN.



**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.

HENLEY TYRES

FOR
LIGHT
CARS
AND
CYCLE-
CARS

This Tyre has a red composition tread that is hard to cut—does not overheat and retains the studs.

It will be noted that the tread is practically dovetailed into the tyre walls, so cannot 'strip.'

**W.T. HENLEY'S TELEGRAPH
WORKS ——— Co., Ltd.,**

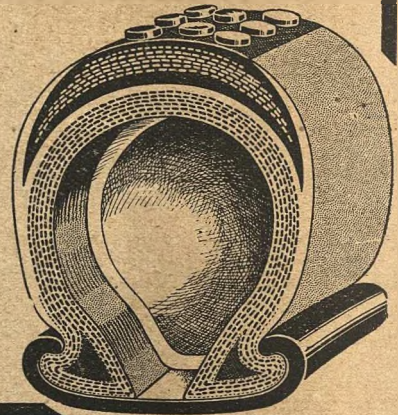
Blomfield Street, London Wall, E.C.

Telephone : 4560 London Wall.

Telegraphic Address :
"Henletel, Ave., London."

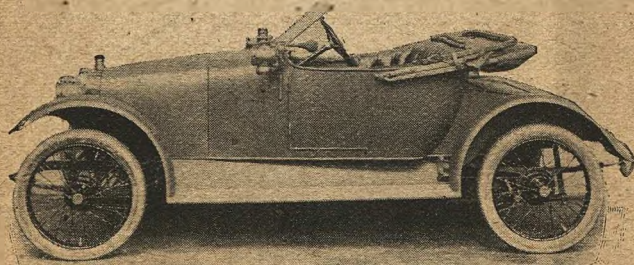
The 1915 'Red-Centre'
Steel Stud Non-Skid
"Henley" is the Ideal
Tyre for Light Car
Owners.

Write for Catalogue.



The
NEW 1915
RILEY
10 H.P. LIGHT CAR

THE car of distinction and merit,
the smart, reliable, convenient,
"economical to run" car, which has
withstood the severest tests to which
any light car has been subjected.



SPECIFICATION. ENGINE : 63 bore x 88 stroke. Monobloc cylinder, cooled by Thermo-syphon. Induction pipe cast between cylinders : this enables the gases to be heated and ensures better vaporisation. GEAR BOX : Four speeds and reverse, improved gate change, sliding gears on castellated shaft running on annular ball bearings, direct drive on top. Each gear wheel on secondary shaft is a separate unit. STEERING GEAR : Worm and worm wheel ; the worm wheel when worn can be changed in position : column is adjustable to any angle ; the rake can be varied to suit purchaser. SPRINGING : Semi-elliptic springs are used on the front, and $\frac{3}{4}$ elliptic on the rear. These are exceptionally long and wide, the front springs are 31" in length and back springs 40", the camber of the springs being reduced, rolling at high speed is prevented. WHEELBASE : 8 feet. WHEELS : Riley detachable. TYRES : DUNLOP 700 x 80, grooved on back wheels, plain on fronts.

RILEY MOTOR MANUFACTURING CO., COVENTRY.

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

1915 MODELS (contd.).

5 h.p. CROMPTON. £85.

No. of seats, one; make of engine, J.A.P.; cooling, air; No. of cylinders, two; bore and stroke, 70 mm. by 85 mm.; carburetter, Amac; control, hand; lubrication, pump; clutch, multiple-disc; No. of speeds, two; transmission, belts; springing, quarter-elliptic; steering, direct; fuel capacity, $3\frac{1}{2}$ gallons; wheelbase, 7 ft. 6 ins.; track, 3 ft.; overall width, 3 ft. 9 ins.; ground clearance, 6 ins.; size of wheels, 26 ins. by $2\frac{1}{2}$ ins.; selling agents, H.D.C. Motors, Ltd., 141, Broadway, West Hendon, London, N.W. (Also a three-speed two-seater - at £99 15s.)

10 h.p. CUMMIKAR. £175.

No. of seats, two; make of engine, Cummiakar; cooling, water; No. of cylinders, four; bore and stroke, 65 mm. by 96 mm.; carburetter, Zenith; lubrication, forced feed; clutch, cone; No. of speeds, three; gear ratios, 14, 8 and 4 to 1; transmission, shaft; springing, three-quarter elliptic; steering, worm and sector; fuel capacity, 8 gallons; wheelbase, 7 ft. 10 ins.; track, 3 ft. 11 ins.; ground clearance, $8\frac{1}{2}$ ins.; size of wheels, 700 mm. by 85 mm.; approx. weight, $11\frac{1}{2}$ cwt.; equipment, hood, screen, five lamps, etc.; selling agents, Cumming, Wheeler and Wright, Ltd., 71-75, Britannia Road, Walham Green, London, S.W.

1915 Equipment—See our issue of 14th December.

10 h.p. DAY-LEEDS. £175.

No. of seats, two; make of engine, Day-Leeds; cooling, water; No. of cylinders, four; bore and stroke, 64 mm. by 100 mm.; cubic capacity, 1286 c.c.; carburetter, S.U.; control, foot; lubrication, chain and troughs; clutch, leather cone; No. of speeds, three; gear ratios, 4.5, 7, and 12.7 to 1; transmission, shaft and bevel; springing, semi-elliptic; steering, worm and sector; fuel capacity, $4\frac{1}{2}$ gallons; wheelbase, 7 ft. 9 ins.; track, 3 ft. 9 ins.; overall width, 4 ft. 8 ins.; ground clearance, 8 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, $11\frac{1}{2}$ cwt.; equipment, hood, screen, lamp, spare wheel, etc.; selling agents, Job Day and Sons, Ltd., Ellenby Lane, Leeds.

10 h.p. DEEMSTER. £195.

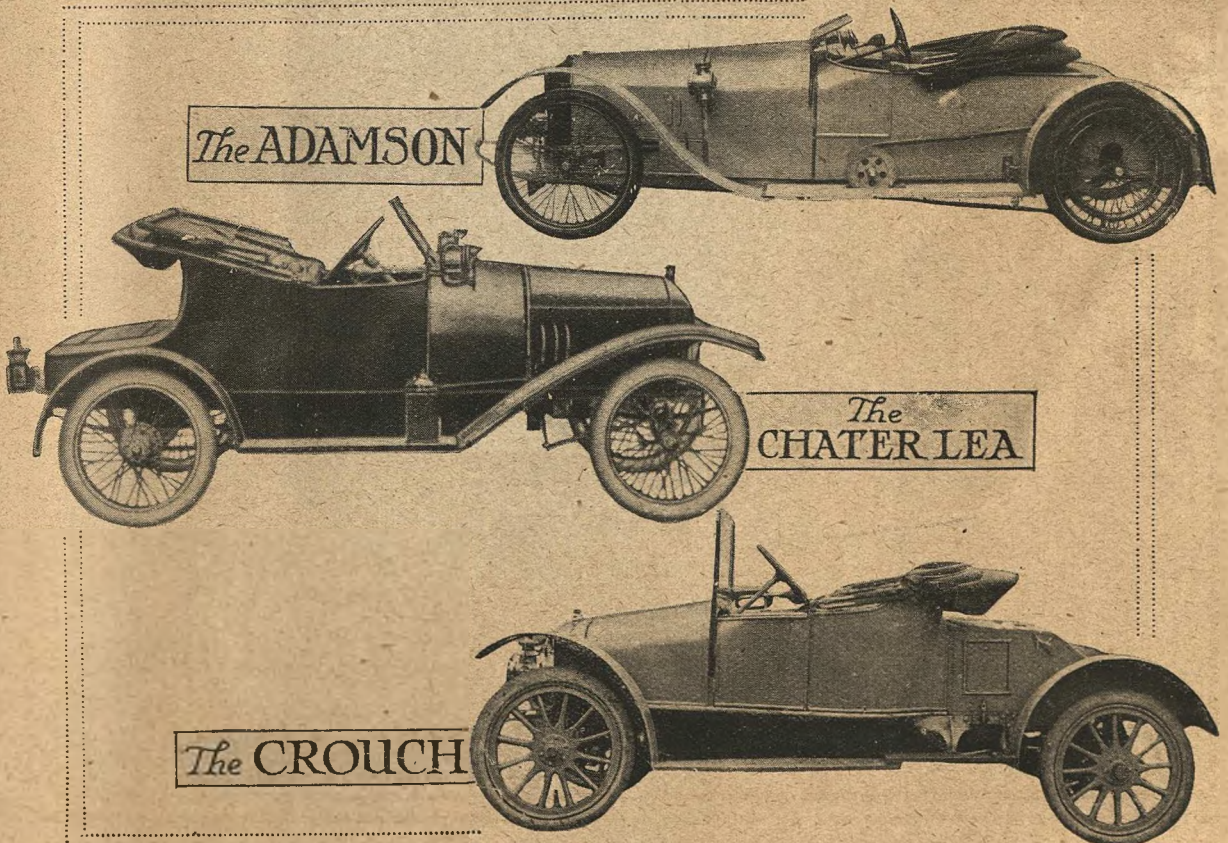
No. of seats, two; make of engine, Ogston; cooling, water; No. of cylinders, four; bore and stroke, 62 mm. by 90 mm.; cubic capacity, 1087 c.c.; carburetter, Stewart-Precision; control, foot and hand; lubrication, mechanical pump; clutch, Ferodo cone; No. of speeds, three and reverse; gear ratios, 4.5, 8.15, and 13.77 to 1; transmission, shaft and bevel; springing, semi-elliptic front and quarter-elliptic in rear; steering, worm and nut; fuel capacity, 5 gallons; wheelbase, 7 ft. 9 ins.; track, 4 ft.; overall width, 5 ft.; ground clearance, $8\frac{1}{2}$ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, $8\frac{1}{2}$ cwt.; equipment, hood, screen, five lamps, spare wheel, etc., £10 extra for electric lighting; selling agents, Jarrott, Ltd., 24-27, Orchard Street, Oxford Street, London, W.

10 h.p. DE P. £210.

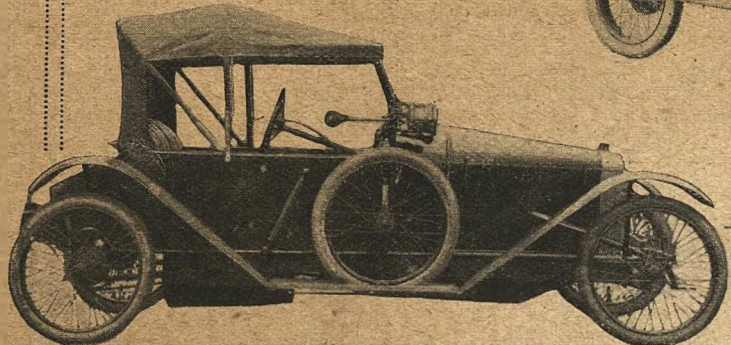
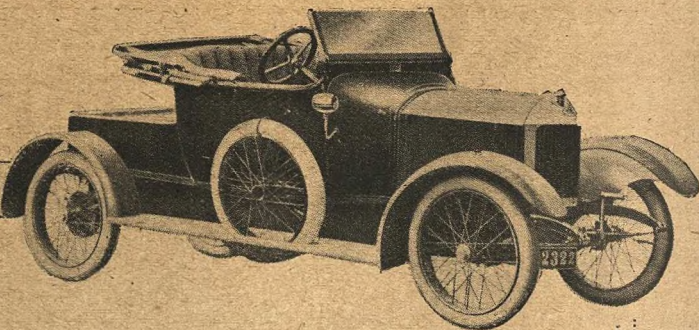
No. of seats, two and dickey; cooling, water; No. of cylinders, four; bore and stroke, 64 mm. by 85 mm.; cubic capacity, 1098 c.c.; carburetter, Solex; lubrication, forced feed; clutch, cone; No. of speeds, four; gear ratios, 4.3, 7, 11 and 17 to 1; transmission, shaft and bevel; springing, semi-elliptic front and three-quarter in rear; steering, worm and sector; fuel capacity, 5 gallons; wheelbase, 8 ft. 6 ins.; track, 4 ft.; overall width, 4 ft. 6 ins.; ground clearance, 9 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 11 cwt.; selling agents, The Deptford Co., Ltd., Alpha Road, New Cross, London, S.E. (Also a cyclecar at £136 10s. and a three-speed model at £198.)

10 h.p. D-ULTRA. £110.

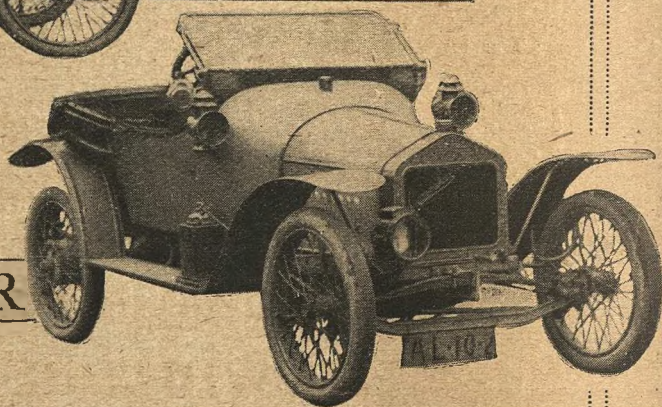
No. of seats, two; make of engine, Lister; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 88 mm.; carburetter, Amac; control, hand and foot; lubrication, semi-automatic; No. of speeds, four; gear ratios, 3.8, 5, 9 and 16 to 1; transmission, friction; springing, transverse in front and quarter-elliptic in rear; steering, rack and pinion; fuel capacity, $3\frac{1}{4}$ gallons; wheelbase, 8 ft.; track, 3 ft. 6 ins.; overall width, 4 ft.; ground clearance, 8 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 7 cwt.; equipment, hood, screen, spare wheel, lamps, etc.; selling agents, D.U. Manufacturing Co., Charlotte Place, North Street, Old Town, Clapham, London, S.W. (Also two-cylinder air-cooled model at £100.)



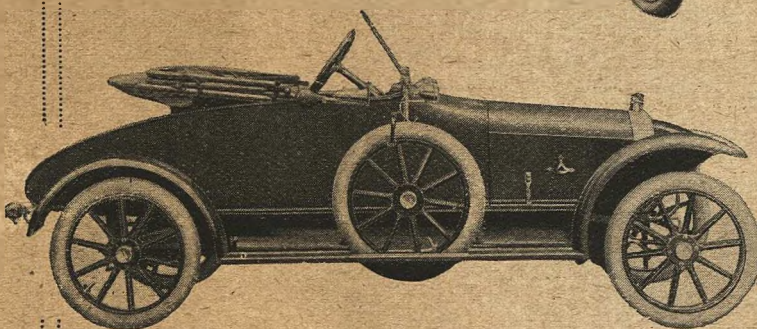
The DAY LEEDS



The D. ULTRA

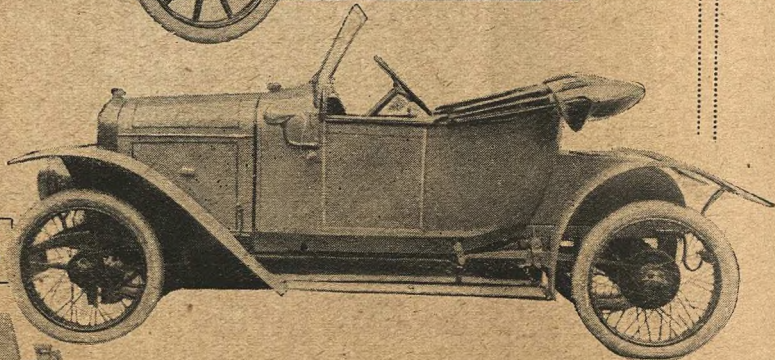


The CUMMIKAR

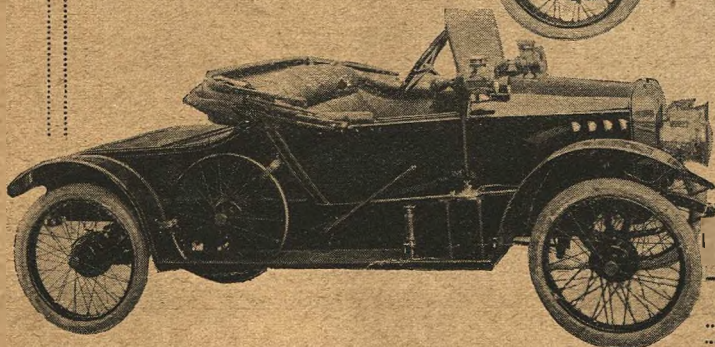


The ENFIELD

The GAMAGE



The G.W.K.



WHITING GRANT

fitted with Electric Self-Starter and Lighting.
(The Starter that starts with a touch of the finger.)

1915 COUPE — PRICE £195.
1915 TWO-SEATER — PRICE £160.

Specification :

11.9 h.p. four-cylinder monobloc engine (68 mm. x 102 mm.);
automatic carburetter; magneto ignition; thermo-syphon cooling;
electric starting and lighting system; English bodies.

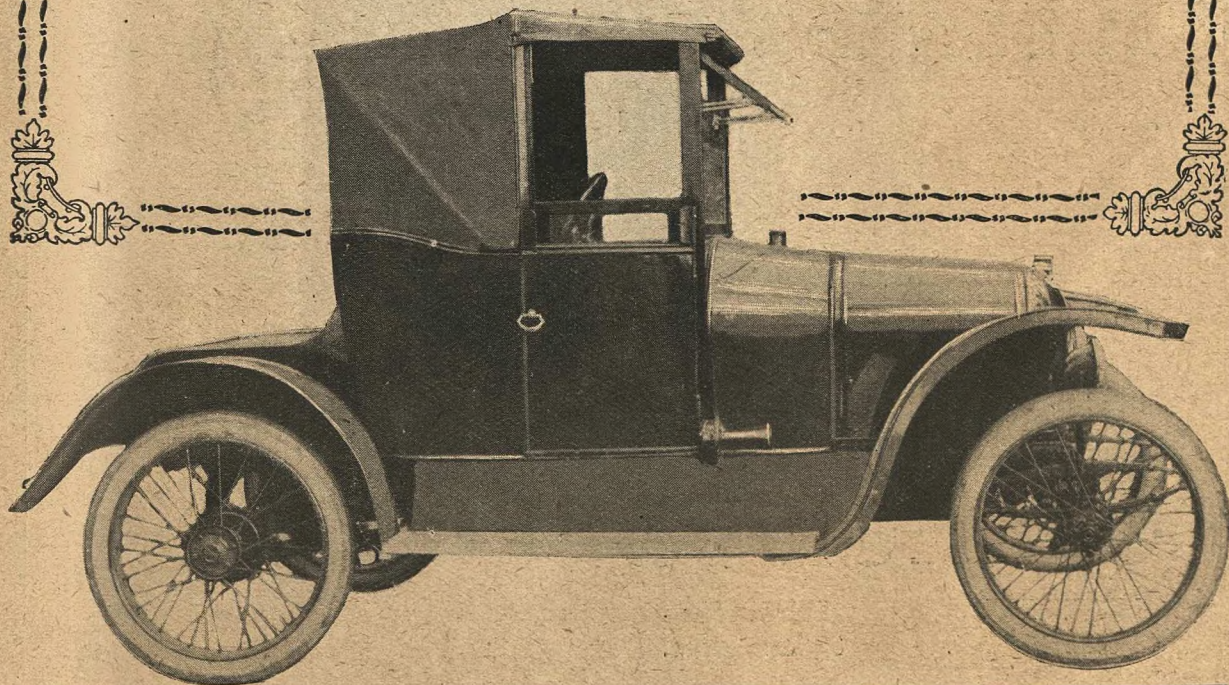
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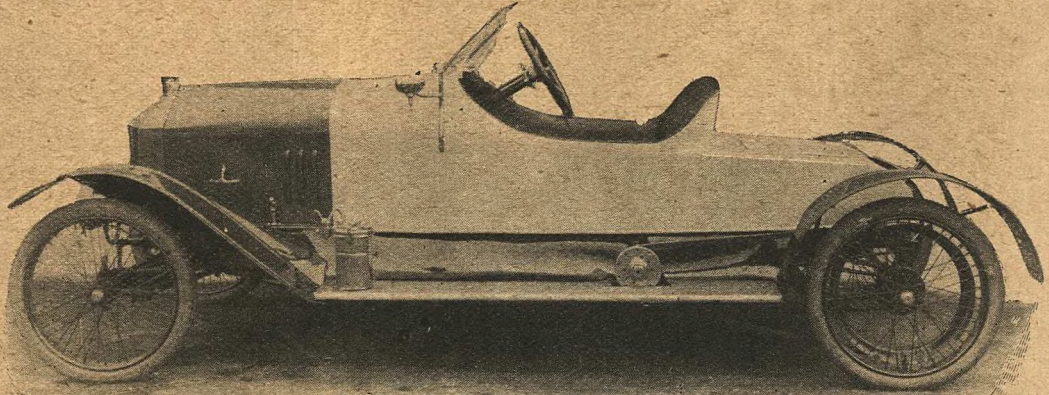


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☐ "THE SUPERTYRE." The small sizes of this tyre are the exact facsimile both in quality and construction of the tyres that came through the 5000 miles R.A.C. Test with flying colours. It is the finest all-rubber non-skid under all conditions, while the extra thickness and unique quality of the tread make it the tyre for HEAVY WEAR, and ensure freedom from puncture.

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☐ The casing of this tyre is of the finest and strongest quality, but the strength is not obtained at the expense of resiliency. The rubber is a specially toughened grey compound and the grooves which wear evenly throughout afford a good non-skid until they entirely disappear. It does not catch in the tramlines, and is easy to steer.

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☐ This tyre, whilst not possessing any distinctive non-skid features, is a good, solid, honest and reliable article. The strong casing enables the tyre to stand up well to the road and is sufficiently flexible to prevent "Deadness." The rubber tread gives a tenacious grip on the road which renders it exceptionally suitable for racing or Light Cars.

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☐ The tread of this tyre possesses remarkable wearing quality even under severe strain. It is so constructed that it presents a sharp square surface to the road, and this combined with the unique quality of the rubber affords a sure grip even on dangerous or loose roads. Its quality and substance have made it the tyre for mileage and durability.

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☐ The base of this tyre is made specially to stand the strain of driving wheels, both on 3 and 4 wheel cyclecars. The unique construction of the tread gives all the advantage in wearing surface and resiliency of the Plain Rubber Tyre with the added efficiency of both Rubber and Steel non-skid effects for varying conditions.

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☐ For those who prefer a Steel Non-Skid on a Leather Tread we cannot too highly recommend the Clincher pattern. All the materials are the finest and the tyre possesses remarkable vitality and durability. The studs are perfectly secure, and when they are worn away it can be retreaded for further service.

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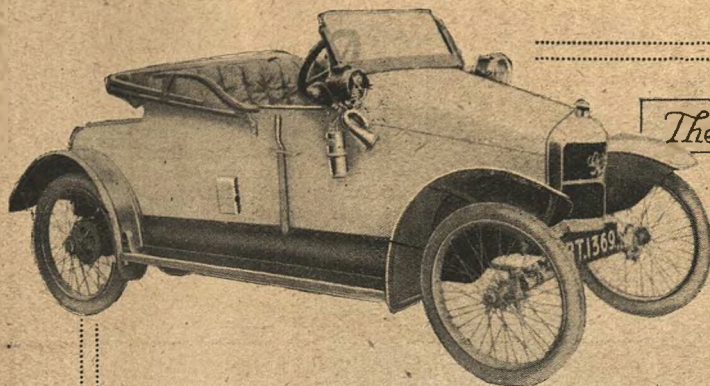
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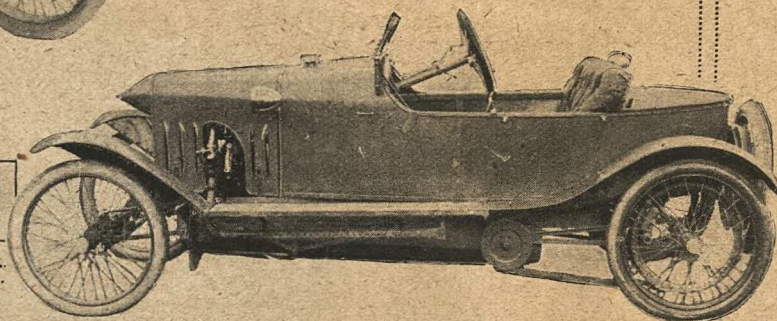
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Castle Mills, Edinburgh.



The GORDON

The G.N.

**DOUGLAS. £184.**

No. of seats, two; make of engine, Douglas; cooling, water; bore and stroke, 88 mm. by 88 mm.; cubic capacity, 1070 c.c.; clutch, cone; No. of speeds, three; transmission, shaft and bevel; steering, worm and sector; wheelbase, 8 ft.; track, 3 ft. 11 ins.; ground clearance, 8 ins.; size of wheels, 700 mm. by 80 mm.; equipment, hood and screen, dynamo lighting, tool kit, etc.; selling agents, Douglas Bros., Kingswood, Bristol.

ENFIELD. £175.

No. of seats, two; make of engine, Enfield; cooling, water; No. of cylinders, four; bore and stroke, 59 mm. by 100 mm.; cubic capacity, 1093 c.c.; carburetter, Solex; control, foot; lubrication, pump; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 5.3, 9.3, 15.6 to 1; transmission, shaft and worm; springing, cantilever; steering, worm and sector; fuel capacity, 4½ gallons; wheelbase, 8 ft.; track, 4 ft.; overall width, 4 ft. 11 ins.; ground clearance, 7½ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 11½ cwt.; equipment, complete with dynamo set; selling agents, Enfield Autocar Co., Ltd., Fallows Road, Sparkbrook, Birmingham. (Price of three-seater is £190.)

10 h.p. G.N. £112.

No. of seats, two; make of engine, G.N.; cooling, air; No. of cylinders, two; bore and stroke, 84 mm. by 98 mm.; cubic capacity, 1086 c.c.; carburetter, B. and B. with pilot jet; control, hand; lubrication, hand pump; clutch, plate clutch; No. of speeds, three and reverse; gear ratios, 11.8, 6, and 4.6 to 1; transmission, shaft, chain and belt; springing, cantilever; steering, cable and bobbin; wheelbase, 8 ft.; track, 3 ft. 4 ins.; overall width, 4 ft. 2 ins.; ground clearance, 9½ ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 6 cwt.; selling agents, G.N., Ltd., Etna Works, Bell Lane, Hendon, London, N.W.

G.N. TOURIST MODEL. £92 8s.

No. of seats, two; make of engine, G.N. 90 degrees; cooling, air; No. of cylinders, two; bore and stroke, 84 mm. by 98 mm.; cubic capacity, 1086 c.c.; carburetter, B. and B.; control, hand; lubrication, pump; clutch, single-plate; No. of speeds, two; gear ratios, 8½ and 4 to 1; transmission, chains and belts; springing, cantilever; steering, cable; fuel capacity, 3 gallons; wheelbase, 7 ft. 3 ins.; track, 3 ft. 8 ins.; overall width, 4 ft. 4 ins.; ground clearance, 10 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 4 cwt.; equipment, hood, screen, lamps, etc.; selling agents, G.N., Ltd., Etna Works, Bell Lane, Hendon, London, N.W.

8 h.p. G.W.K. £157 10s.

No. of seats, two and four (£178 10s.); make of engine, G.W.K.; cooling, water; No. of cylinders, two; bore and stroke, 85.8 mm. by 92 mm.; cubic capacity, 1065 c.c.; carburetter, Solex; control, foot; lubrication, hand pump; No. of speeds, four and reverse; gear ratios, 4, 4.9, 6.5 and 10 to 1, or 4.6, 5.7, 7.5 and 11.8 to 1 (four-seater); transmission, friction, shaft and bevel; springing, semi-elliptic front and quarter-elliptic rear; steering, rack and pinion; fuel capacity, 4 gallons; wheelbase, 7 ft. 7 ins.; track, 3 ft. 9 ins.; overall width, 4 ft. 8 ins.; ground clearance, 9 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 9½ cwt.; equipment, lamps and detachable wheels; selling agents, G.W.K., Ltd., Home Works, Datchet, Bucks. (Also a model de luxe at £199 10s., with dynamo set.)

GAMAGE. £190.

No. of seats, two; make of engine, Chapuis-Dornier; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 110 mm.; cubic capacity, 1244 c.c.; carburetter, Zenith; control, foot; lubrication, mechanical pump; clutch, cone;

No. of speeds, four and reverse; transmission, shaft; springing, semi-elliptic in front and cantilever in rear; steering, worm and sector; fuel capacity, 6 gallons; wheelbase, 7 ft.; track, 3 ft. 6 ins.; overall width, 4 ft.; ground clearance, 7 ins.; size of wheels, 700 mm. by 85 mm.; approx. weight, 11 cwt.; equipment, dynamo lighting, five lamps, mechanical seat starter; selling agents, A. W. Gamage, Ltd., Holborn, London, E.C.

8 h.p. GILYARD. £100.

No. of seats, two; make of engine, Chater Lea; cooling, air; No. of cylinders, two; bore and stroke, 85 mm. by 85 mm.; carburetter, B. and B.; control, hand; lubrication, drip feed; clutch, metal plate; No. of speeds, three; gear ratios, 3½, 5½ and 12½ to 1; transmission, chain; springing, semi-elliptic front, cantilever rear; steering, direct; fuel capacity, three gallons; wheelbase, 6 ft. 8 ins.; track, 3 ft. 8 ins.; overall width, 4 ft. 6 ins.; ground clearance, 8 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 5 cwt.; equipment, lamps, horn, etc.; selling agents, Barker-end Engineering Co., 7, North Wing, Bradford.

GORDON. £135.

No. of seats, two; make of engine, J.A.P.; cooling, water; No. of cylinders, two; bore and stroke, 85 mm. by 95 mm.; cubic capacity, 1074 c.c.; carburetter, Gordon; control, hand; lubrication, forced; clutch, cone; No. of speeds, three and reverse; gear ratios, 13, 7 and 4 to 1; transmission, enclosed chain; springing, quarter-elliptic; steering, direct; fuel capacity, 4 gallons; wheelbase, 7 ft. 6 ins.; track, 3 ft. 8 ins.; overall width, 4 ft. 6 ins.; ground clearance, 7 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 7 cwt.; equipment, hood, screen and lamps; selling agents, East Riding Engineering Works, Beverley, Yorks.

1915 MODELS (contd.).

HAMPTON. £185.

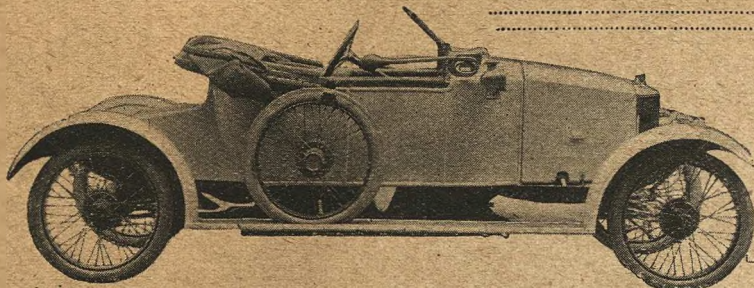
No. of seats, two; make of engine, Chapuis-Dornier; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 110 mm.; cubic capacity, 1244 c.c.; carburetter, Zenith; control, foot; lubrication, forced feed; clutch, leather cone; No. of speeds, three; transmission, shaft and bevel; springing, semi-elliptic front, three-quarter elliptic rear; steering, worm and sector; fuel capacity, 6 gallons; wheelbase, 8 ft. 6 ins.; track, 4 ft.;

The Accessory Number of "The Light Car and Cyclecar" (14th December) will deal with Engines, Lighting Sets, Tyres and Wheels, Speedometers, Horns, and many devices which will make for comfort in a light car or cyclecar.

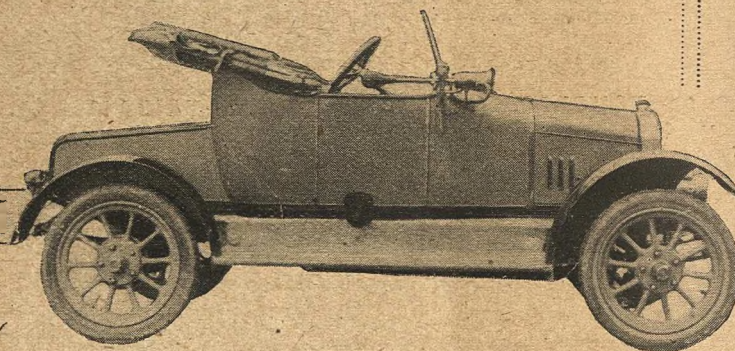
HORSTMANN. £155.

No. of seats, two; make of engine, Horstmann; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 60 mm. by 88 mm.; cubic capacity, 992 c.c.; carburetter, S.U.; control, foot;

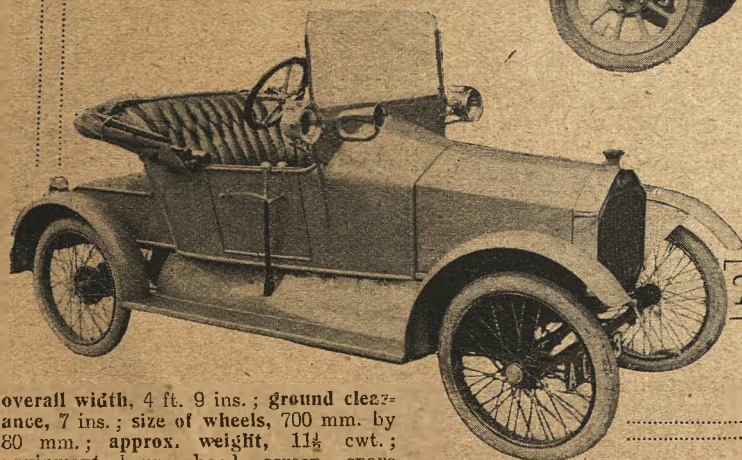
c.c.; carburetter, Smith's four-jet; control, hand and foot; lubrication, Best and Lloyd; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 4.46, 7.87 and 13.6 to 1; transmission, shaft and bevel; springing, quarter-elliptic; steering, rack and pinion; fuel capacity, 3 gallons; wheelbase, 7 ft. 5 ins.; track, 3 ft. 6 ins.; overall width, 4 ft. 6 ins.; ground clearance, 8 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 8 cwt.; equipment, lamps, hood, screen, etc.; selling agents, Humber, Ltd., Coventry.



The HORSTMANN



The HILLMAN



The HUMBERETTE

overall width, 4 ft. 9 ins.; ground clearance, 7 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 11½ cwt.; equipment, lamps, hood, screen, spare wheel, etc.; selling agents, Hampton Engineering Co., Ltd., Lifford Mills, Lifford, Birmingham.

9 h.p. HILLMAN. £200.

No. of seats, two; make of engine, Hillman; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 120 mm.; cubic capacity, 1357 c.c.; control, foot; No. of speeds, three and reverse; gear ratios, 4.5, 7.63, and 13.12 to 1; transmission, shaft and worm; springing, semi-elliptic; steering, worm and sector; wheelbase, 7 ft. 9 ins.; track, 4 ft.; overall width, 5 ft.; ground clearance, 8 ins.; size of wheels, 700 mm. by 85 mm.; equipment, lamps, hood, screen, spare wheel, etc.; selling agents, Hillman Motor Co., Ltd., Coventry.

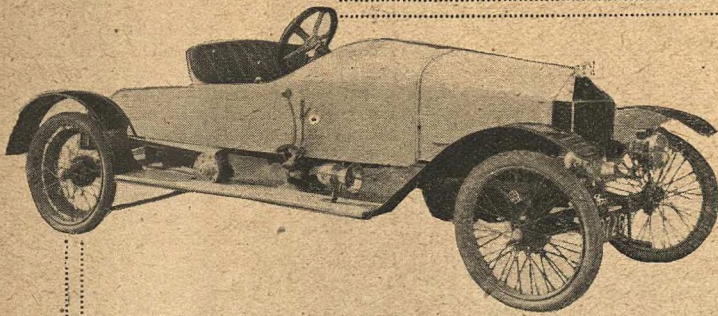
lubrication, mechanical pump; clutch, leather cone; No. of speeds, three and reverse; transmission, shaft and bevel; springing, quarter-elliptic; steering, worm and sector; wheelbase, 8 ft. 8 ins.; track, 4 ft.; ground clearance, 8½ ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 8 cwt.; equipment, lamps, hood, screen, spare wheel, etc.; selling agents, Horstmann Cars, Ltd., Bath; or 64, Gloucester Road, London, S.W.

8 h.p. HUMBERETTE. £135.

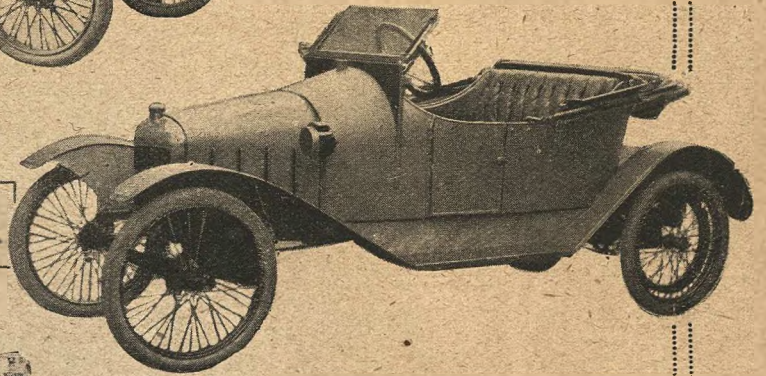
No. of seats, two; make of engine, Humber; cooling, water and air (£120); No. of cylinders, two; bore and stroke, 84 mm. by 90 mm.; cubic capacity, 992

10 h.p. HURLINGAR. £190.

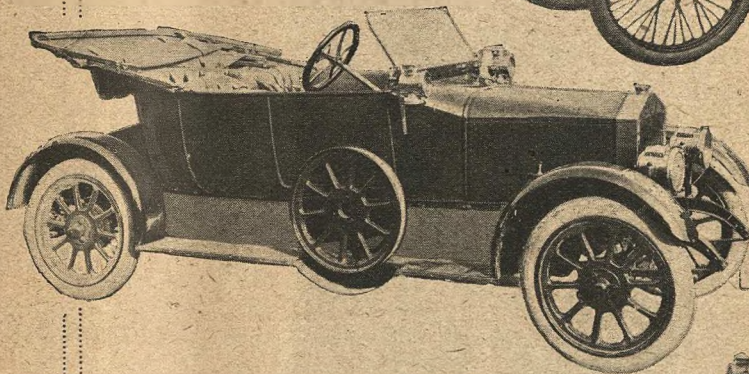
No. of seats, two; make of engine, Ballot; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 100 mm.; carburetter, Zenith; control, foot; lubrication, mechanical pump; clutch, multiple-disc; No. of speeds, three and reverse; transmission, shaft and bevel; springing, semi-elliptic front, three-quarter-elliptic rear; steering, worm and nut; wheelbase, 9 ft.; track, 4 ft.; overall width, 4 ft. 6 ins.; size of wheels 700 mm. by 85 mm.; approx. weight, 7 cwt.; equipment, hood, screen, lamps, etc.; selling agents, Hurlin and Co., Mare Street, Hackney, London.



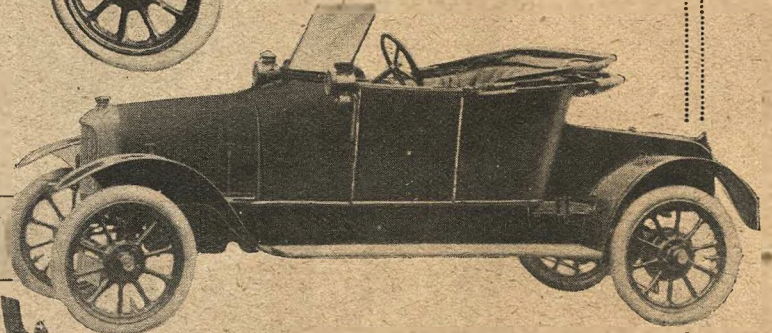
The KENNEDY



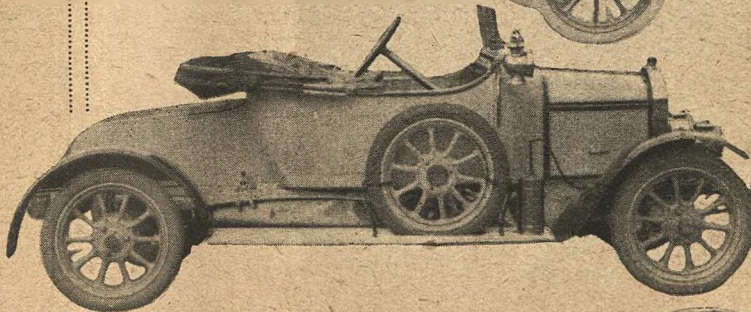
The L.M.



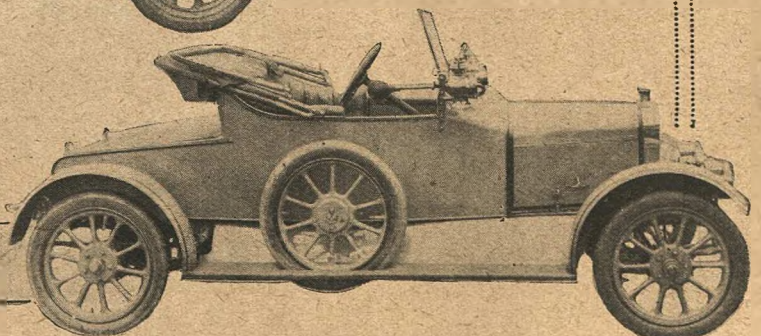
The METEORITE



The MARSHALL
ARTER



The MERCURY



The
Mc KENZIE

1915 MODELS (contd.).

8 h.p. J.A.R. £115.

No. of seats, two; make of engine, Precision; cooling, air; No. of cylinders, two; bore and stroke, 85 mm. by 85 mm.; carburetter, Sthenos; control, foot; lubrication, hand pump; clutch, plate; No. of speeds, two; gear ratios, 9 and 4½ to 1; transmission, chains; springing, quarter-elliptic; steering, rack and pinion; fuel capacity, 5 gallons; wheelbase, 6 ft. 9 ins.; track, 3 ft. 9 ins.; overall width, 4 ft. 6 ins.; size of wheels, 26 by 2½; approx. weight, 6½ cwt.; equipment, hood, screen, etc.; selling agent, J. A. Ryley, 73, Weaman Street, Birmingham.

10 h.p. J.B.S. £150.

No. of seats, two; make of engine, Blumfield; cooling, water; No. of cylinders, two; bore and stroke, 88 mm. by 90 mm.; cubic capacity, 1095 c.c.; carburetter, Solex; control, foot and hand; lubrication, forced feed; clutch, leather cone; No. of speeds, four and reverse; gear ratios, 4½, 6½, 9 and 14 to 1; transmission, shaft and bevel; springing, semi-elliptic; steering, rack and pinion; fuel capacity, 3½ gallons; wheelbase, 7 ft. 6 ins.; track, 4 ft.; overall width, 4 ft. 10 ins.; ground clearance, 8 ins.; size of

wheels, 700 mm. by 80 mm.; approx. weight, 9½ cwt.; equipment, hood, screen, etc.; selling agents, J. Bagshaw and Sons, Ltd., Victoria Motor Works, Batley, Yorks.

10 h.p. (4-cyl.) J.B.S. £175 5s.

No. of seats, two; make of engine, Dorman; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 64 mm. by 85 mm.; cubic capacity, 1094 c.c.; carburetter, Zenith; control, foot and hand; lubrication, mechanical; clutch, Ferodo; No. of speeds, four and reverse; gear ratios, 4½, 6½, 9 and 14 to 1; transmission, shaft and bevel; springing, semi-elliptic; steering, rack and pinion; fuel capacity, 4 gallons; wheelbase, 8 ft.; track, 4 ft.; overall width, 4 ft. 10 ins.; ground clearance, 9 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 10 cwt.; equipment, hood, screen, spare rim, etc.; selling agents, J. Bagshaw and Sons, Ltd., Victoria Motor Works, Batley, Yorks. (A de luxe model with a dynamo and starter and extra seat at £230.)

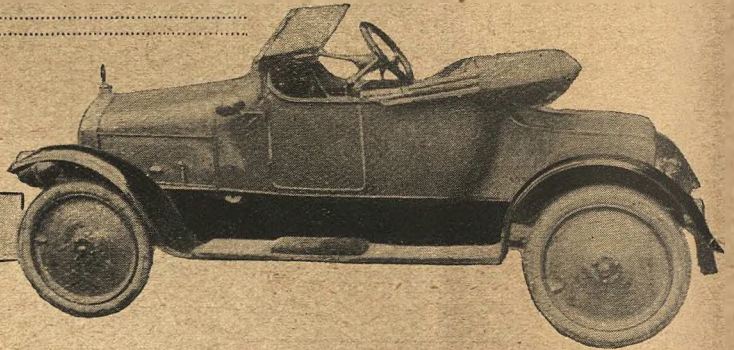
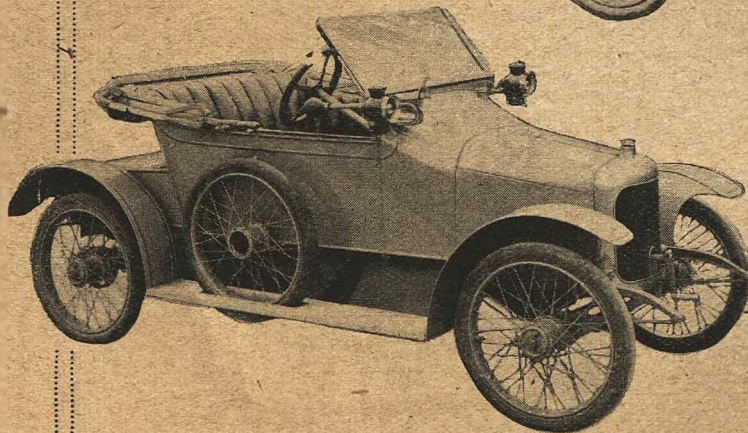
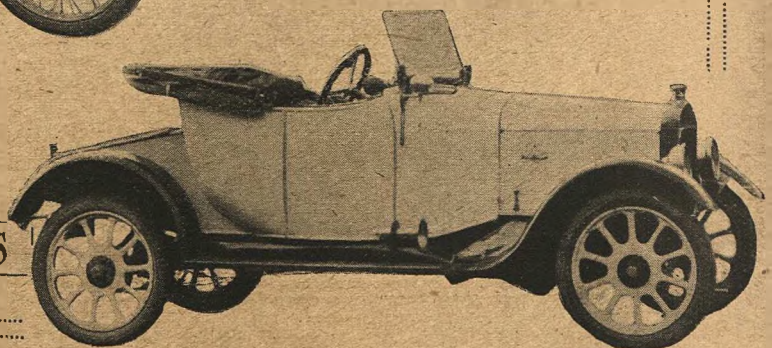
10 h.p. JENNINGS. £194 5s.

No. of seats, two and dickey; make of engine, Dorman; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 64 mm. by 85 mm.; cubic capacity, 1094

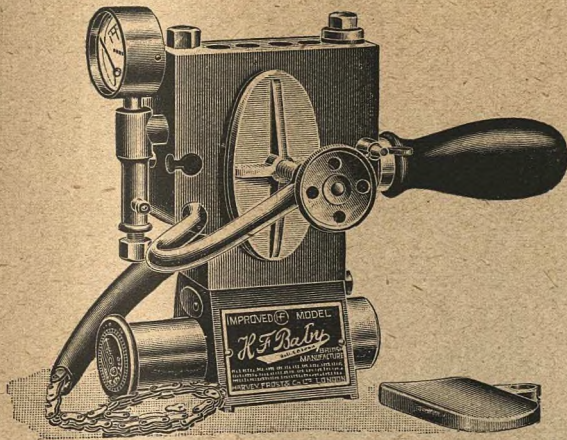
c.c.; carburetter, Zenith; control, foot; lubrication, mechanical pump; clutch, Ferodo cone; No. of speeds, four; gear ratios, 5, 8.6 and 14.6 to 1; transmission, shaft; springing, transverse; steering, worm and wheel; fuel capacity, 4½ gallons; wheelbase, 8 ft.; track, 3 ft. 8 ins.; overall width, 4 ft. 4 ins.; ground clearance, 7½ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 11 cwt.; equipment, hood, screen, etc.; selling agents, The Jennings-Chalmers Light Car Co., Albert Works, Scholefield Street, Birmingham.

8 h.p. JOWETT. £152 5s.

No. of seats, two; make of engine, Jowett; cooling, thermo-syphon; No. of cylinders, two; bore and stroke, 72 mm. by 101.5 mm.; cubic capacity, 815.8 c.c.; carburetter, Longuemare; control, foot; lubrication, mechanical pump; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 4.5, 6.6 and 11.8 to 1; transmission, shaft and bevel; springing, semi-elliptic front, three-quarter-elliptic rear; steering, wheel; fuel capacity, 4 gallons; wheelbase, 7 ft.; track, 3 ft. 9 ins.; overall width, 4 ft. 6 ins.; ground clearance, 8 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 7½ cwt.; equipment, hood, screen, etc.; selling agents, Jowett Motor Mfg. Co., Grosvenor Road, Bradford.

The J.B.S.*The JOWETT**The JENNINGS*

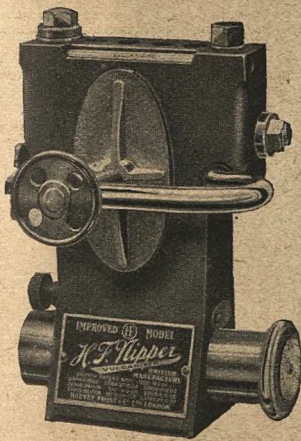
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The H.F. "Baby" Vulcanizer,

improved pattern, complete equipment, and including a supply of H.F. Plastene ready for immediate use. Packed in fibre case for touring

£3



The H.F. "Nipper" Vulcanizer,

complete equipment, and including a supply of H.F. Plastene ready for immediate use. Packed in fibre case ...

39/6

—it's worth while to remember that the care of Covers is every bit as important a matter as the care of Tubes. The Cover is the protector of the Tube and it cannot act efficiently unless it is entirely sound. Moreover, a neglected cut allows water and grit to penetrate to the canvas foundation of the Cover with most destructive results.

The use of an H.F. Portable Vulcanizer makes it easy for the Motorist to keep Covers and Tubes thoroughly roadworthy, and by arresting damage in its initial stages, to secure a maximum mileage from his tyres.

Covers are repaired *in position on the wheels* by vulcanizing new rubber into the damaged parts. Tubes are repaired, not by sticking on patches, but by *re-making* the injured area.

The H.F. "Nipper" Vulcanizer repairs Tubes and Covers perfectly and is an excellent little apparatus for Light Car owners, for whom it was specially designed.

The H.F. "Baby" Vulcanizer has a greater range than the H.F. "Nipper," will repair a Tube and Cover simultaneously, and is regulated by means of a Pressure Gauge instead of a Thermometer.

It is worthy of record that British Government Departments have been supplied, since war broke out, with no fewer than 500 H.F. "Baby" Vulcanizers, in addition to hundreds of other H.F. Vulcanizing Plants, Materials and Appliances supplied to them and to our Allies.

Free Trial. We will send on request, any address in the United Kingdom, an H.F. "Baby" or an H.F. "Nipper" for free trial at the motorists' convenience. No prepayment or deposit required, and no obligation to purchase entailed.

A Booklet *fully describing either of these appliances, free to enquirers.*

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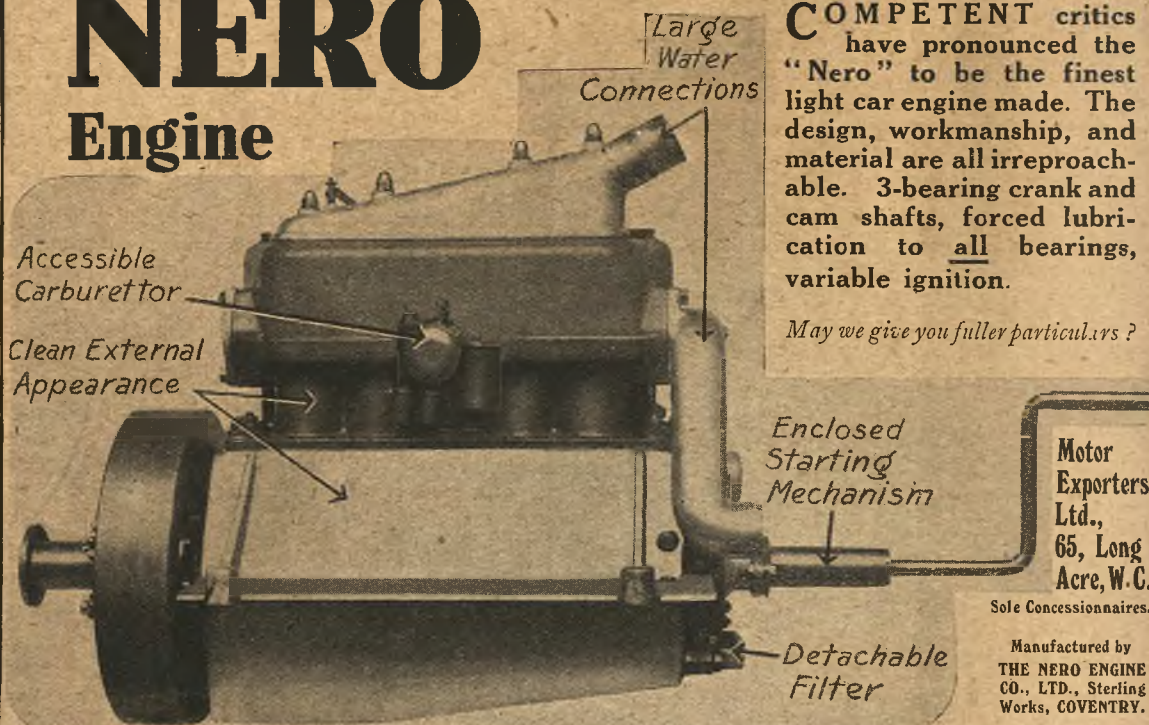
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The 10 h.p.

NERO

Engine



COMPETENT critics have pronounced the "Nero" to be the finest light car engine made. The design, workmanship, and material are all irrefragable. 3-bearing crank and cam shafts, forced lubrication to all bearings, variable ignition.

May we give you fuller particulars?

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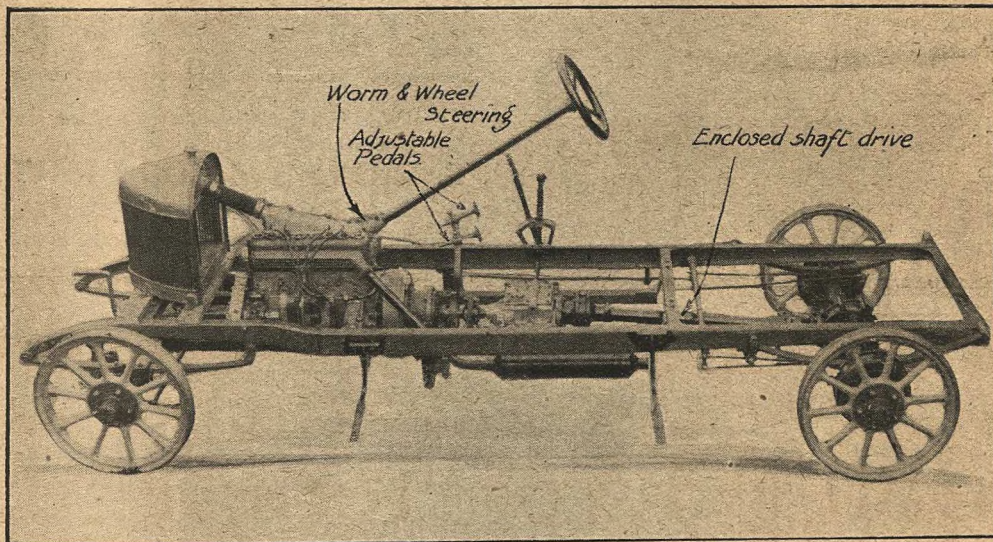
invite correspondence with Foreign and Colonial Dealers who desire to arrange Agencies for British Light Cars. Terms inclusive of packing, insurance and freight quoted. The interests of our customers are well looked after, and much delay in making arrangements is avoided.

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ATALANTA
 LIGHT CAR

"The Acme of Refinement."



£195 fully equipped. Specially designed for work throughout the Empire.

SPECIFICATION:—

ENGINE.—4-cylinder monobloc, bore 63 mm., stroke 88 mm., forced lubrication, three crankshaft bearings, enclosed valves, adjustable tappets, waterproof variable magneto, Zenith carburettor, detachable crank case, helical timing gear, and numerous other refinements.

CLUTCH.—"Saver" patent metal to metal, fool proof, running in oil and adjustable from exterior, no moving parts outside.

GEARS.—Three speeds and reverse, direct top, ball bearings, gate change, gears of B.N.D. steel.

TRANSMISSION.—Cardan shaft and pin type universal joint, enclosed in torque tube and ball joint.

BACK AXLE.—Very strong bevel driven with differential, ball bearings and thrust washers adjustable from outside, bevel pinion removable, shafts of $1\frac{1}{8}$ in. chrome vanadium steel, gears of 110-ton steel.

FRONT AXLE.—Strong H-section drop forging.

CONTROLS.—Adjustable pedals, ignition lever, switch.

WHEELS.—5 Sankay steel detachable.

TYRES.—700 x 85 mm., with spare cover and tube.

FRAME.—Channel steel, semi-elliptic springs.

BRAKES.—Two pairs internal expanding in 9 $\frac{1}{2}$ in. drums.

STEERING.—Worm and wheel, black celluloid steering wheel.

BODY.—Handsome two-seater with scuttle dash, size of seat cushion 42 x 18 x 5 ins., high sides, tool box, trimmed best pegamoid, domed wings and bootings.

EQUIPMENT.—Folding hood, wind-screen, 5 lamps and generator, pump, horn, speedometer, tool kit, jack, tyre outfit, oil gauge.

FINISH.—Chassis black, body painted to choice.

TRACK.—4 feet, wheelbase 8 ft. 6 ins., ground clearance 9 ins.

Sole Export Concessionaires:—

MOTOR EXPORTERS, LTD., 65, Long Acre, LONDON, W.C.

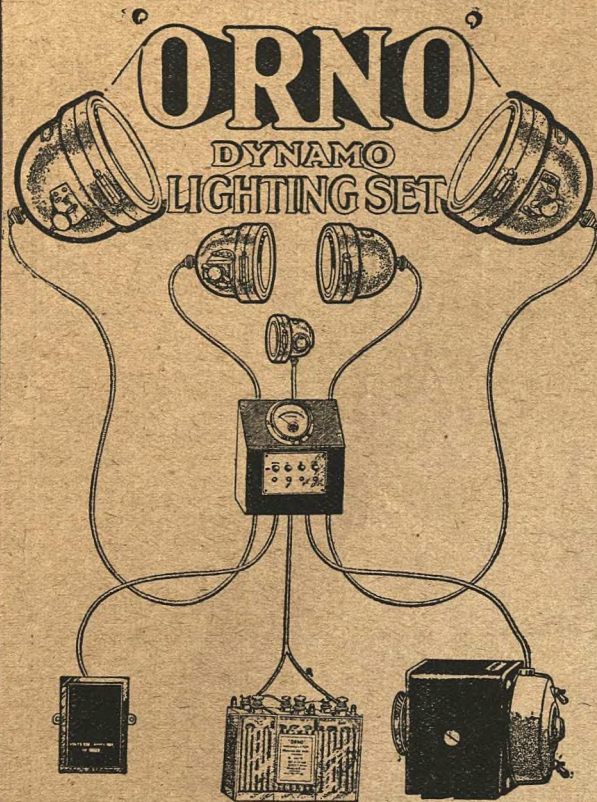
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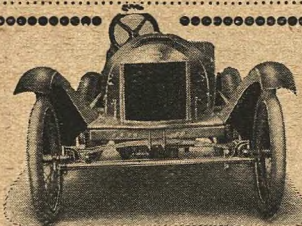
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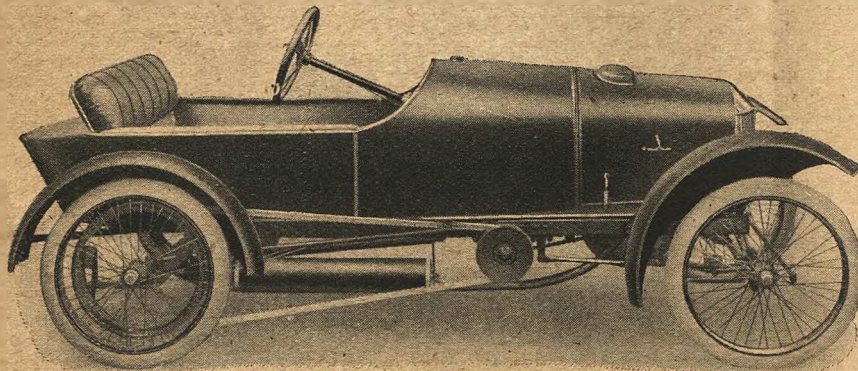
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J. F. BUCKINGHAM, Engine Specialist,
The Buckingham Engine Works,
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1915 MODELS (contd.).

11.5 h.p. KENNEDY. £131 5s.

No. of seats, two; make of engine, Kennedy; cooling, water; No. of cylinders, four; bore and stroke, 69 mm. by 90 mm.; cubic capacity, 1346 c.c.; carburetter, Zenith; control, hand and foot; lubrication, mechanical pump; clutch, friction discs; No. of speeds, four and reverse; transmission, belts; springing, quarter-elliptic; steering, rack and pinion; wheelbase, 9 ft.; track, 4 ft.; overall width, 4 ft. 8 ins.; ground clearance, 9½ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 8 cwt.; equipment, lamps, hood, screen; selling agents, Kennedy, Skipton and Co., 70, Rutland Street, Leicester.

11 h.p. LAGONDA COUPE. £150.

No. of seats, two; make of engine, Lagonda; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 67 mm. by 77.8 mm.; cubic capacity, 1098 c.c.; control, foot; lubrication, forced; clutch, leather cone; No. of speeds, three and reverse; transmission, shaft and worm; springing, transverse front and quarter-elliptic rear; wheelbase, 7 ft. 9 ins.; track, 3 ft. 10 ins.; overall width, 4 ft. 8 ins.; ground clearance, 9 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 9¼ cwt.; equipment, lamps, spare wheel, etc.; selling agents, Tollemache and Griffin, Ltd., 195, Hammersmith Road, London, W. (Also a Colonial model at £145 and a four-seater at £157 10s.)

8 h.p. L.M. £100.

No. of seats, two; make of engine, J.A.P.; cooling, air or water (£10 extra); No. of cylinders, two; bore and stroke, 85 mm. by 85 mm.; cubic capacity, 964 c.c.; carburetter, B. and B.; control, hand; lubrication, sight feed; clutch, multi-disc; No. of speeds, two or three and reverse (£10 extra); gear ratios, 10½ and 4½ to 1; transmission, chains; springing, coil and quarter-elliptic; steering, direct; fuel capacity, 4¼ gallons; wheelbase, 7 ft. 9 ins.; track, 3 ft. 3 ins.; overall width, 3 ft. 8 ins.; ground clearance, 8 ins.; size of wheels, 26 ins. by 2½ ins.; approx. weight, 5½ cwt.; equipment, lamps, hood, screen, etc.; selling agents, Cunningham (Motors), Ltd. Clitheroe, Lancs.

10 h.p. LUCAR. £199 10s.

No. of seats, two; make of engine, Aster; cooling, water; No. of cylinders, four; bore and stroke, 59 mm. by 100 mm.; carburetter, Zenith; control, foot; lubrication, pump; clutch, metal-to-metal; No. of speeds, three; gear ratios, 4½, 8 and 14 to 1; transmission, shaft and worm; springing, semi-elliptic; steering, worm and wheel; fuel capacity, 4 gallons; wheelbase, 7 ft. 6 ins.; track, 3 ft. 9 ins.; overall width, 4 ft. 6 ins.; ground clearance, 8½ ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 12 cwt.; equipment, hood, screen, lamps, dynamo, spare wheel, etc.; selling agents, Lucar, Ltd., 240, Brixton Hill, London, S.W.

MARSHALL-ARTER. £176 8s.

No. of seats, two; make of engine, Chapuis - Dornier; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 60 mm. by 110 mm.; cubic capacity, 1244 c.c.; carburetter, Zenith; control, foot; lubrication, forced; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 14½, 7 and 4½ to 1; transmission, shaft and bevel; springing, quarter-elliptic; steering, bevel and quadrant; fuel capacity, 5 gallons; wheelbase, 8 ft. 9 ins.; track, 3 ft. 8½ ins.; overall width, 4 ft. 4 ins.; ground clearance, 7½ ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 12½ cwt.; equipment, lamp, spare wheel, hood, screen; selling agents, Marshall-Arter, Ltd., Beavor Lane, Hammersmith, London, W.

McKENZIE. £175.

No. of seats, two; cooling, water; No. of cylinders, four; bore and stroke, 58 mm. by 110 mm.; cubic capacity, 1151 c.c.; carburetter, Solex; control, foot; lubrication, pumps and troughs; clutch, cone; No. of speeds, three and reverse; transmission, shaft and worm; springing, semi-elliptic; steering, worm and sector; fuel capacity, 4 gallons; wheelbase, 8 ft. 6 ins.; track, 4 ft.; overall width, 5 ft. 9 ins.; ground clearance, 11 ins.; size of

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wheels, 700 mm. by 80 mm.; approx. weight, 11 cwt.; equipment, five lamps, hood, screen, spare wheel, etc.; selling agents, Chester Motor Co., 1, Chester Street, Grosvenor Place, London, W.

8-10 h.p. MEDEA. £175.

No. of seats, two and dickey; make of engine, Chapuis-Dornier; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 110 mm.; cubic capacity, 1244 c.c.; carburetter, Zenith; control, foot and hand; lubrication, forced feed; clutch, plate; No. of speeds, three and reverse; gear ratios, 4.2, 8.4, and 16.8 to 1; transmission, shaft and bevel; springing, cantilever; steering, spur gear; fuel capacity, 5 gallons; wheelbase, 8 ft. 3 ins.; track, 4 ft. 3 ins.; overall width, 5 ft.; ground clearance, 9 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 12 cwt.; equipment, five electric lamps, hood, screen and spare wheel; selling agents, Mead and Deakin, Rushey Lane, Tyseley, Birmingham.

10 h.p. METEORITE. £195.

No. of seats, three; make of engine, Meteor; cooling, water; No. of cylinders, four; bore and stroke, 62 mm. by 110 mm.; cubic capacity, 1328.4 c.c.; carburetter, automatic; control, foot and hand; lubrication, mechanical pump; clutch, leather cone; No. of speeds, three; gear ratios, 4½, 9 and 16 to 1; transmission, shaft and bevel; springing, half-elliptic front, three-quarter elliptic rear; steering, worm and segment; fuel capacity, 5 gallons; wheelbase, 8 ft. 6 ins.; track, 4 ft. 2 ins.; overall width, 5 ft.; ground clearance, 9 ins.; size of

wheels, 700 mm. by 85 mm.; approx. weight, 12 cwt.; equipment, hood, screen, etc.; selling agents, Meteor Motors, Ltd., 7, Harrington Road, South Kensington, London, S.W. (Also a two-seater at £184 and a coupé at £225.)

10 h.p. MERCURY. £190.

No. of seats, two; make of engine, Medina-Hutchings; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 64 mm. by 102 mm.; cubic capacity, 1298 c.c.; carburetter, Zenith; control, hand and foot; lubrication, pump; clutch, expanding ring; No. of speeds, three; gear ratios, 4.2, 6.5 and 12.5 to 1; transmission, shaft and bevel; springing, cantilever; steering, worm and nut; fuel capacity, 6 gallons; wheelbase, 9 ft.; track, 4 ft.; overall width, 5 ft.; ground clearance, 7½ ins.; size of wheels, 700 mm. by 85 mm.; approx. weight, 12 cwt.; equipment, hood, screen, etc.; selling agents, Medina Engineering Co., Ltd., Gould Road, Twickenham, London, S.W.

MORGAN. £89 5s.

No. of seats, two; make of engine, J.A.P.; cooling, air; No. of cylinders, two; bore and stroke, 85 mm. by 85 mm.; cubic capacity, 961 c.c.; carburetter, Brown and Barlow; control, hand; lubrication, pump; clutch, cone; No. of speeds, two; gear ratios, 4½ and 8 to 1; transmission, shaft and chain; steering, direct; fuel capacity, 4 gallons; track, 3 ft. 6 ins.; overall width, 3 ft. 9 ins.; ground clearance, 6 ins.; size of wheels, 26 by 2½; approx. weight, 4 cwt.; equipment, tools, pump, etc.; selling agents, Morgan Motor Co., Ltd., Malvern. (Several other models are also listed.)

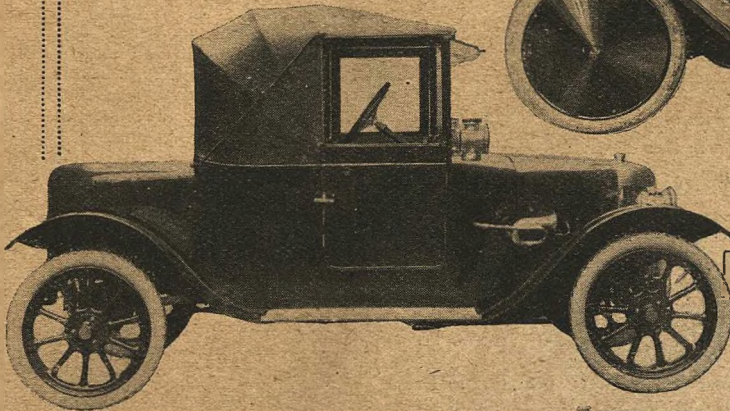
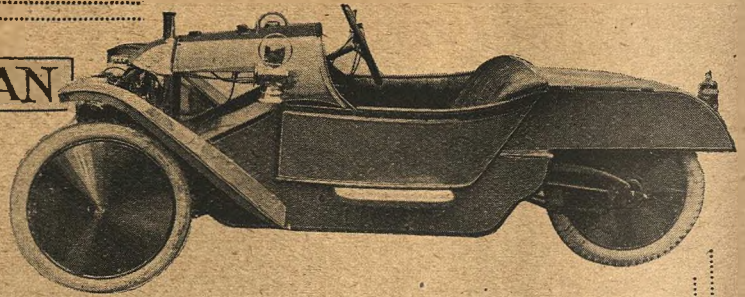
GRAND PRIX MORGAN. £115.

No. of seats, two; cooling, water; No. of cylinders, two; bore and stroke, 85 mm. by 85 mm.; cubic capacity, 961 c.c.; carburetter, Amac; control, hand; lubrication, pump; No. of speeds, two; transmission, shaft and chain; springing, front coil rear quarter-elliptic; steering, direct by wheel; wheelbase, 7 ft.; track, 3 ft. 9 ins.; overall width, 4 ft. 6 ins.; ground clearance, 6 ins.; approx. weight, 4½ cwt.; equipment, tools, etc.; selling agents, Morgan Motor Co., Ltd., Worcester Road, Malvern. (Also a Grand Prix model with overhead valves and a 90 mm. by 77½ mm. engine and several other models are made.)

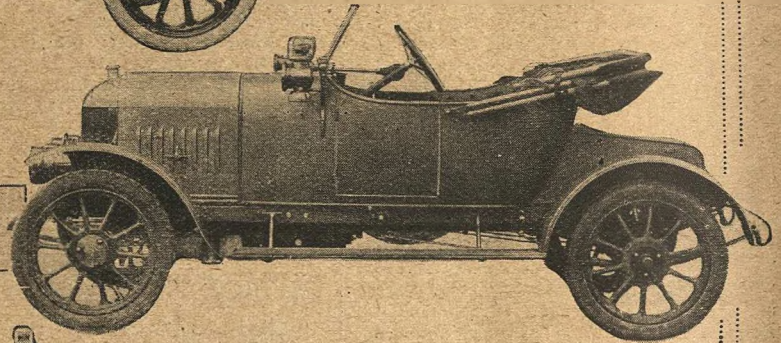
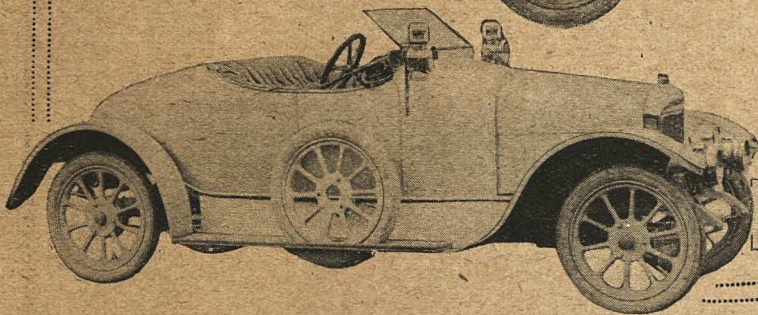
De Luxe MORRIS-OXFORD.**£199 10s.**

No. of seats, two; make of engine, White and Poppe; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 90 mm.; cubic capacity, 1018 c.c.; carburetter, White and Poppe; control, foot; lubrication, mechanical; clutch, multiple-disc; No. of speeds, three and reverse; gear ratios, 4.6, 8 and 16 to 1; transmission, shaft and worm; springing, semi-elliptic front and three-quarter elliptic rear; steering, worm and wheel; fuel capacity, 6 gallons; wheelbase, 7 ft. 6 ins.; track, 3 ft. 9 ins.; overall width, 4 ft. 4 ins.; ground clearance, 8½ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 12½ cwt.; equipment, hood, screen, five lamps, spare wheel, etc.; selling agents, W.R.M. Motors, Ltd., The Cowley Motor Works, Cowley, near Oxford.

The MORGAN



The LAGONDA

The MORRIS-
OXFORD

The NEWEY

MORRIS-OXFORD. £173 5s.

No. of seats, two; make of engine, White and Poppe; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 90 mm.; cubic capacity, 1018 c.c.; carburetter, White and Poppe; control, foot; lubrication, mechanical; clutch, multiple-disc; No. of speeds, three; gear ratios, 4.2, 7 and 14 to 1; transmission, shaft and worm; springing, semi-elliptic front, three-quarter-elliptic rear; steering, worm and wheel; fuel capacity, 4 gallons; wheelbase, 7 ft.; track, 3 ft. 6 ins.; overall width, 4 ft. 1 in.; ground clearance, 7½ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 10½ cwt.; equipment, hood, screen, five lamps, spare wheel, etc.; selling agents, as de luxe model.

NARDINI. £210.

No. of seats, two; make of engine, Altos; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 110 mm.; cubic capacity, 1244 c.c.; carburetter, Zenith; control, foot; lubrication, pump and trough; clutch, leather cone; No. of speeds, three and reverse; transmission, shaft; springing, semi-elliptic;

steering, worm and sector; wheelbase, 8 ft. 5 ins.; track, 4 ft.; equipment, hood, screen, five lamps and tools; selling agents, Altos, Ltd., 12 Vauxhall Bridge Road, Westminster, London.

NEWEY. £204 15s.

No. of seats, two; make of engine, Aster; cooling, thermo-syphon; No. of cylinders, four; bore and stroke, 65 mm. by 100 mm.; cubic capacity, 1324 c.c.; carburetter, Solex; control, foot; lubrication, mechanical pump; clutch, multiple-plate; No. of speeds, three and reverse; transmission, shaft and bevel; springing, semi-elliptic front, three-quarter elliptic rear; steering, worm and sector; fuel capacity, 5 gallons; wheelbase, 9 ft.; track, 3 ft. 10 ins.; overall width, 4 ft. 7½ ins.; ground clearance, 7½ ins.; approx. weight, 12 cwt.; equipment, five lamps, hood, screen, etc.; selling agents, Gordon Newey, Ltd., 77-81, Bristol Street, Birmingham.

10 h.p. NORMA. £200.

No. of seats, two; make of engine, Norma; cooling, water; No. of cylinders, four; bore and stroke, 65 mm. by 110 mm.; cubic capacity, 1460 c.c.; carburet-

ter, Zenith; control, foot; lubrication, splash; clutch, leather cone; No. of speeds, three and reverse; transmission, shaft; springing, quarter-elliptic; steering, worm and segment; fuel capacity, 5 gallons; wheelbase, 9 ft.; track, 4 ft.; overall width, 5 ft.; ground clearance, 8 ins.; size of wheels, 700 mm. by 75 mm.; approx. weight, 8½ cwt.; equipment, hood, screen, spare wheel, etc.; selling agents, Autocarium, Ltd., 10, Poland Street, Oxford Street, London.

10 h.p. OMNIUM. £180.

No. of seats, two; make of engine, Omnium; cooling, water; No. of cylinders, four; bore and stroke, 59 mm. by 100 mm.; cubic capacity, 1094 c.c.; carburetter, Solex; lubrication, mechanical pump; clutch, leather cone; No. of speeds, three and reverse; transmission, shaft; springing, cantilever; steering, worm and sector; fuel capacity, 8 gallons; wheelbase, 8 ft. 6 ins.; track, 4 ft. 2 ins.; overall width, 4 ft. 9 ins.; approx. weight, 12½ cwt.; equipment, hood, screen, etc.; selling agents, Omnium Motor Co., Ltd., 198, Great Portland Street, London, W.



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THE steel stud is rapidly losing caste amongst up-to-date motorists. It has failed in its mission. It does not prevent skidding, and if one would motor in safety in the dimly lighted streets of London, skidding is the one thing that must be abolished right NOW.

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"There's nothing like rubber," and when it is vulcanised into a tyre in the form of rubber rivets,

the tyre tread and the tyre holding them inseparably together as in the Goodyear All-weather Tread, only then is rubber doing its duty in excelsis. No "wheel-spinning" when starting up—no sliding when brakes are put on.

Why fit tyres that are suitable for one road condition only, when you can have the Goodyear with the "All-weather" Tread suitable for all conditions?

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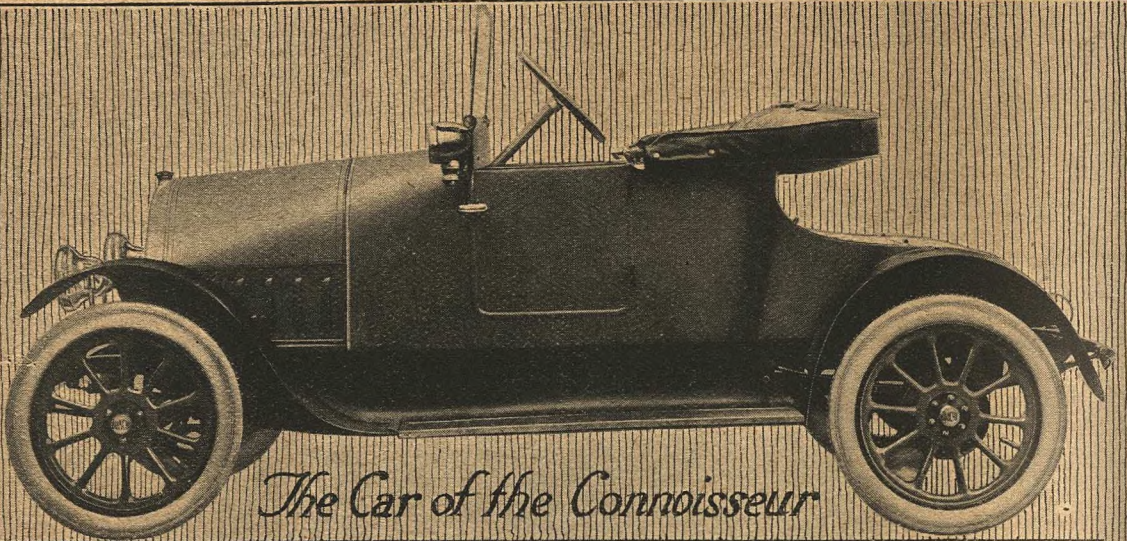
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(all Ireland except Ulster).

H. WHITEHEAD & CO.,
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Bianchi Light Car de Luxe

THE latest product of the world-famous Bianchi Engineering Works at Milan is the new model Bianchi 4-cylinder 10-12 h.p. Light Car de Luxe. Like all Bianchi models for 1915 it carries a Guarantee for

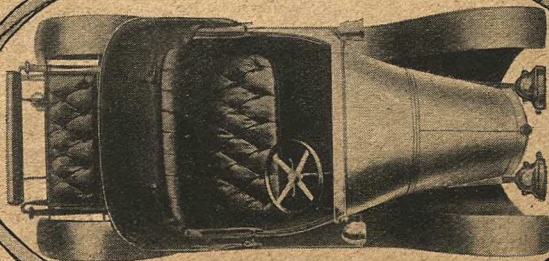
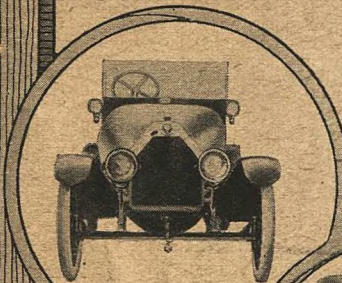
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irrespective of time. It is in every way worthy of the Bianchi reputation for perfect workmanship and efficiency

It has a 10 inch longer wheelbase, and also a wider track than any other small car. The body is roomy and comfortable in the highest degree, and carries a folding Dicky Seat. The equipment includes hood, screen, 5 detachable wheels, 5 tyres, C.A.V. electric lighting outfit and 5 lamps, and C.A.V. electric self-starter. The price is

£285 Complete.

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for particulars.*



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Motors
Limited*

*26, St. James St.
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1915 MODELS (contd.).

10 h.p. OLD MILL. £220.

No. of seats, two; cooling, water; No. of cylinders, four; bore and stroke, 64 mm. by 85 mm.; cubic capacity, 1094 c.c.; carburetter, Zenith; control, foot; lubrication, mechanical pump and troughs; clutch, Ferodo cone; No. of speeds, three; transmission, shaft; springing, quarter-elliptic; steering, rack and pinion; wheelbase, 9 ft.; track, 3 ft. 10 ins.; ground clearance, 9½ ins.; size of wheels, 750 mm. by 85 mm.; approx. weight, 12¾ cwt.; equipment, spare wheel, speedometer, hood and screen, etc.; selling agents, Old Mill Cars, 8, Leadenhall Street, London, E.C.

BABY PEUGEOT. £160.

No. of seats, two; make of engine, Peugeot; cooling, water and pump; No. of cylinders, four; bore and stroke, 55 mm. by 90 mm.; cubic capacity, 855 c.c.; carburetter, Zenith; control, foot; lubrication, splash; clutch, leather cone; No. of speeds, three; transmission, shaft and bevel; springing, quarter-elliptic and Ruffault shock absorbers; steering, worm and sector; fuel capacity, 6 gallons; wheelbase, 6 ft.; track, 3 ft. 5 ins.; overall width, 4 ft. 2 ins.; ground clearance, 7 ins.; size of wheels, 550 mm. by 65 mm.; approx. weight, 8 cwt.; equipment, three lamps, horn and all tools; selling agents, Peugeot (England), Ltd., 10, Brompton Road, London, S.W.

8 h.p. RANGER. £115.

No. of seats, two; make of engine, Precision; cooling, water; No. of cylinders, two; bore and stroke, 85 mm. by 85 mm.; cubic capacity, 960 c.c.; carburetter, Polyrhoe; control, hand; lubrication, sight drip feed; clutch, leather-to-metal; No. of speeds, two and reverse; gear ratios, 4½ and 10½ to 1; transmission, chain; springing, transverse front, quarter-elliptic rear; steering, rack and pinion; fuel capacity, 4 gallons; wheelbase, 7 ft. 3 ins.; track, 3 ft. 9 ins.; overall width, 4 ft. 6 ins.; ground clearance, 9 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 7 cwt.; selling agents, Ranger Cycle Car Co., West Orchard, Coventry.

8 h.p. ROBERTSON. £95.

No. of seats, two; make of engine, J.A.P. or Precision; cooling, air; No. of cylinders, two; bore and stroke, 85 mm. by 85 mm.; cubic capacity, 965 c.c.; carburetter, Brown and Barlow; control, hand; lubrication, hand pump; clutch, metal-to-metal; No. of speeds, two; gear ratios, 4½ and 9 to 1; transmission, chains; springing, semi-elliptic; fuel capacity, 2½ gallons; wheelbase, 6 ft. 10 ins.; track, 3 ft. 9 ins.; overall width, 4 ft. 3½ ins.; ground clearance, 7 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 4 cwt.; equipment, lamps, tools, etc.; selling agents, James Robertson, 147-149, Cross Street, Sale and Ashton-on-Mersey, Manchester.

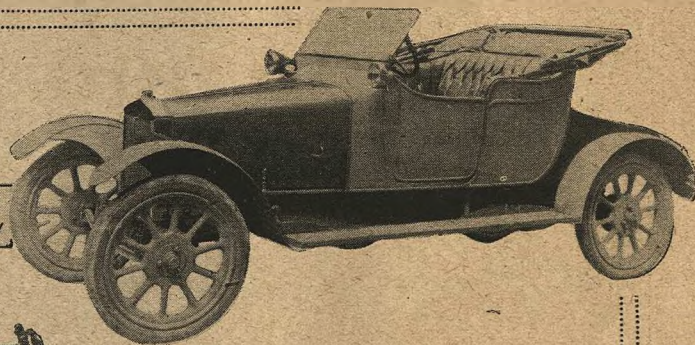
11.1 h.p. SAXON. £105.

No. of seats, two; make of engine, Continental; cooling, water; No. of cylinders, four; bore and stroke, 67 mm. by 102 mm.; cubic capacity, 1420 c.c.; carburetter, Mayer; control, foot; lubrication, splash; clutch, Raybestos and steel plates; No. of speeds, two and reverse; transmission, shaft and bevel; springing, cantilever; steering, bevel and sector; wheelbase, 8 ft.; track, 4 ft. 6 ins.; ground clearance, 9 ins.; size of wheels, 28 ins. by 3 ins.; equipment, lamps, hood, screen, etc.; selling agents, L. C. Rawlence and Co., 40, Sackville Street, London, W.

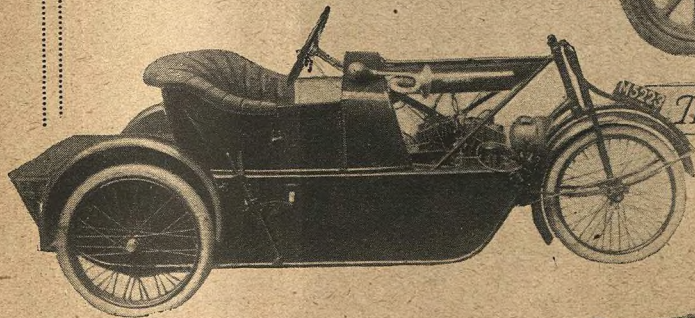
10-12 h.p. SIRRON. £210.

No. of seats, two; make of engine, Sirron; cooling, water; No. of cylinders, four; bore and stroke, 60 mm. by 120 mm.; cubic capacity, 1350 c.c.; carburetter, Zenith; lubrication, forced feed; clutch, cone; No. of speeds, three; gear ratios, 14, 7½ and 4 to 1; transmission, shaft; springing, semi-elliptic front and three-quarter-elliptic rear; steering, worm and sector; fuel capacity, 8 gallons; wheelbase, 8 ft.; track, 4 ft.; ground clearance, 8½ ins.; size of wheels, 700 mm. by 85 mm.; approx. weight, 12 cwt.; equipment, hood, screen, lamps, etc.; selling agents, Cummings, Wheeler and Wright, Ltd., 71-75 Britannia Road, Walham Green, London, S.W.

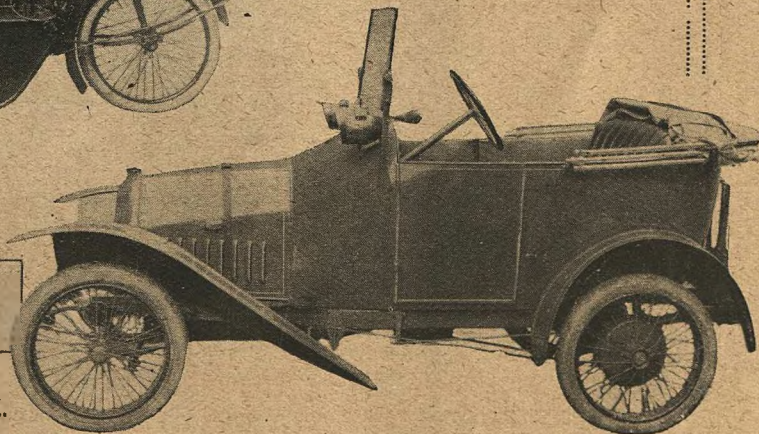
The OLD MILL



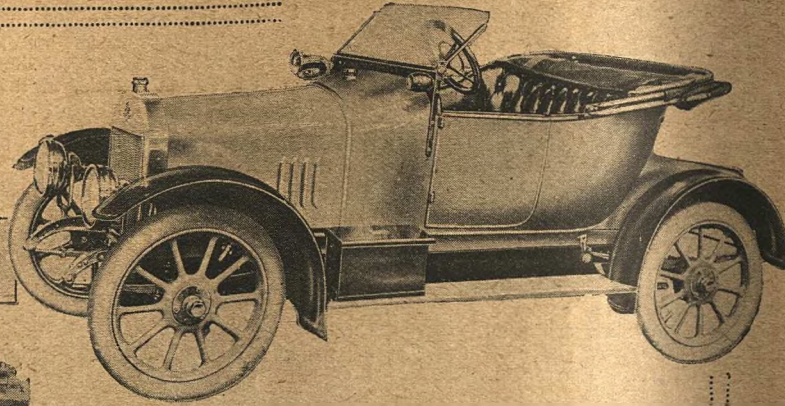
The ROBERTSON



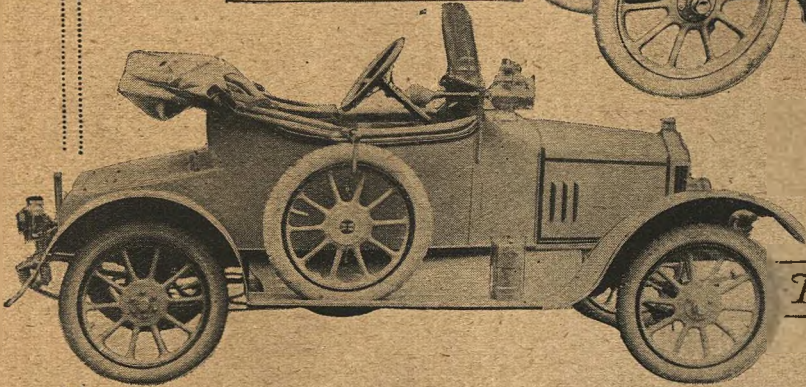
The BABY PEUGEOT



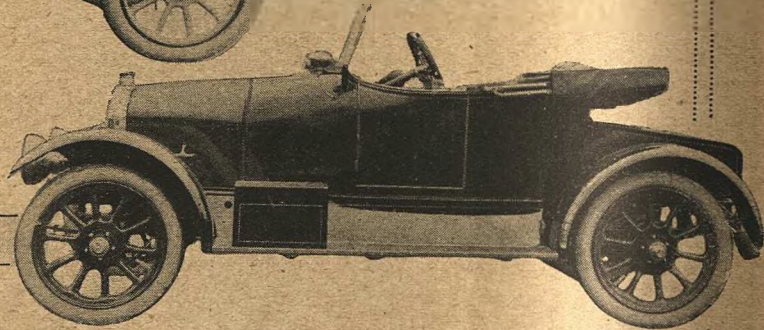
The 10 H.P.
SWIFT



The STANDARD



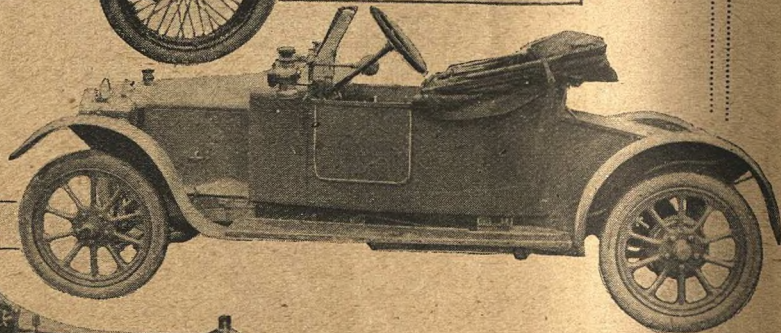
The SINGER



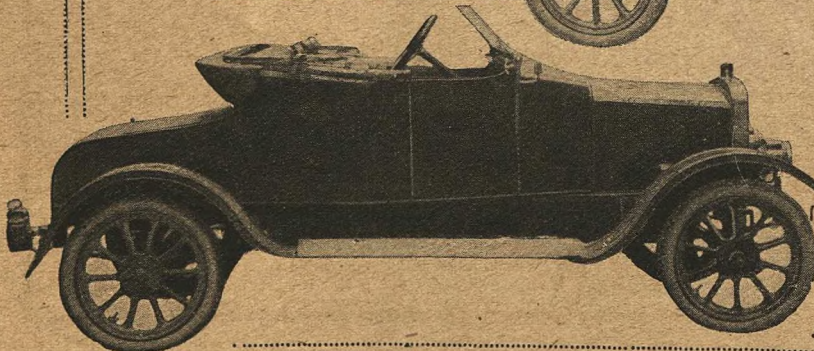
The SAXON



The STELLITE



The TINY

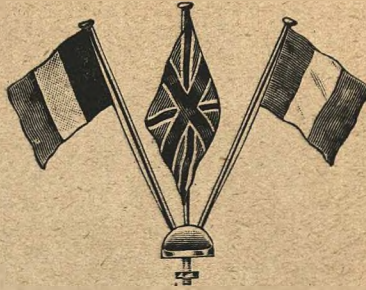


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SMITH'S CYCLECAR WATCH.



No. 62. Reliable 30 hour Lever Movement, £1 5 0.
 No. 26a. Reliable best 8-day Movement, £1 15 0.



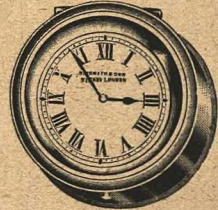
Sets of Three Good Quality Flags in Bunting, any Combination, on Strong Brass Base and Masts. Price 7/6 complete for Radiator Cap.

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Single Flag on Strong Brass Mast for Radiator Cap. Price 3/6

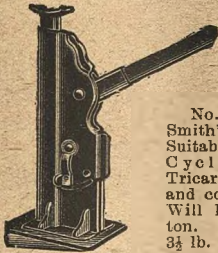
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SMITH'S MOTOR WATCH.



No. 30A. Equally suitable for Motor and Cyclecar. Our famous 8-day Lever, £2 2s. Brass or Nickel.

SMITH'S CYCLECAR JACK.



No. 303. Smith's Jack. Suitable for Cyclecars, Tricars. Neat and compact. Will lift one ton. Weight 3½ lb.

Price—4/6 each.

The "Midget."

Fitted with our Special Adjustable Bracket Cardan or Gear Drive.

Rock-steady under any vibration, yet accurate and unaffected by temperatures.



Speedometer.

Speed to 60 miles. Total distance Recorder with Trip Recorder.

Price—
 Brass, £4 10 0
 Nickel, £4 15 0
 Dial 3½ inches.

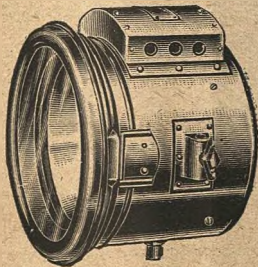
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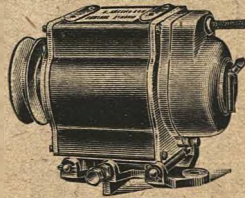
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1 No. 3 DYNAMO, 6 volts, 7-8 amps.	£8 8 0
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The best Acetylene Generator.

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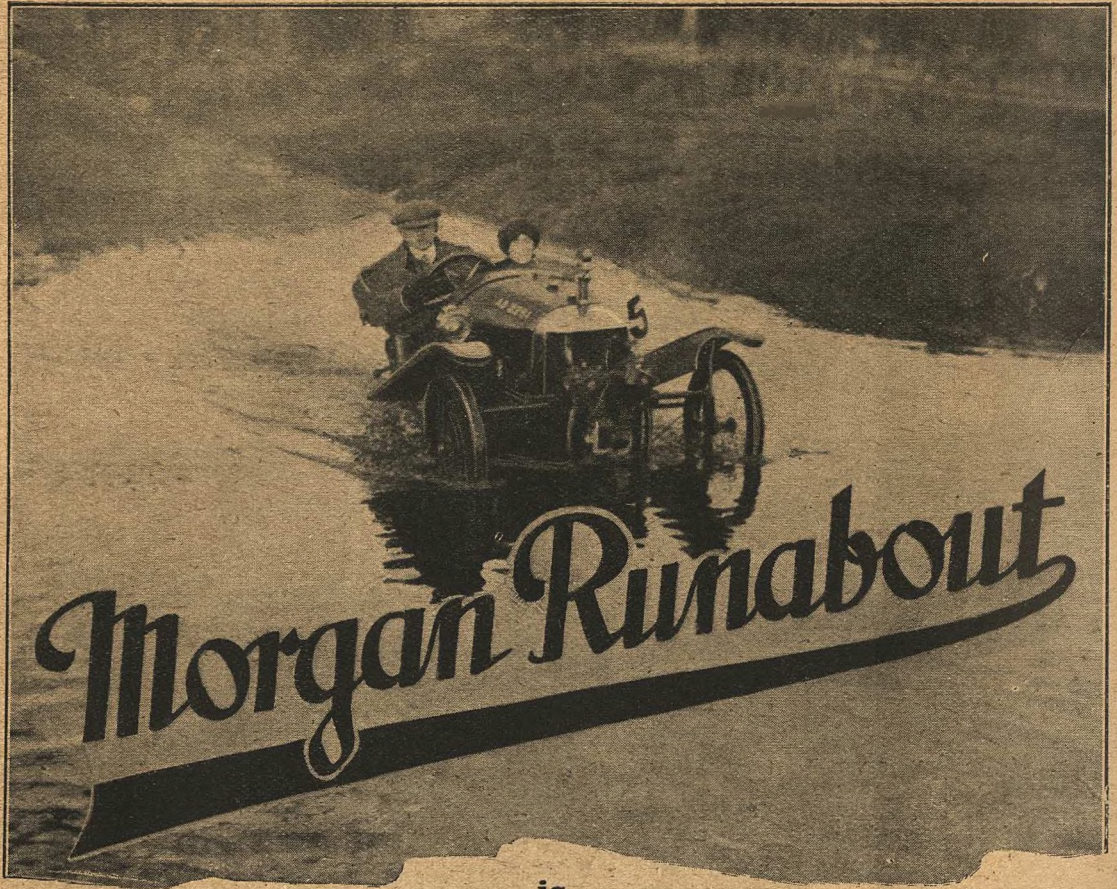
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is

**The Most Economical
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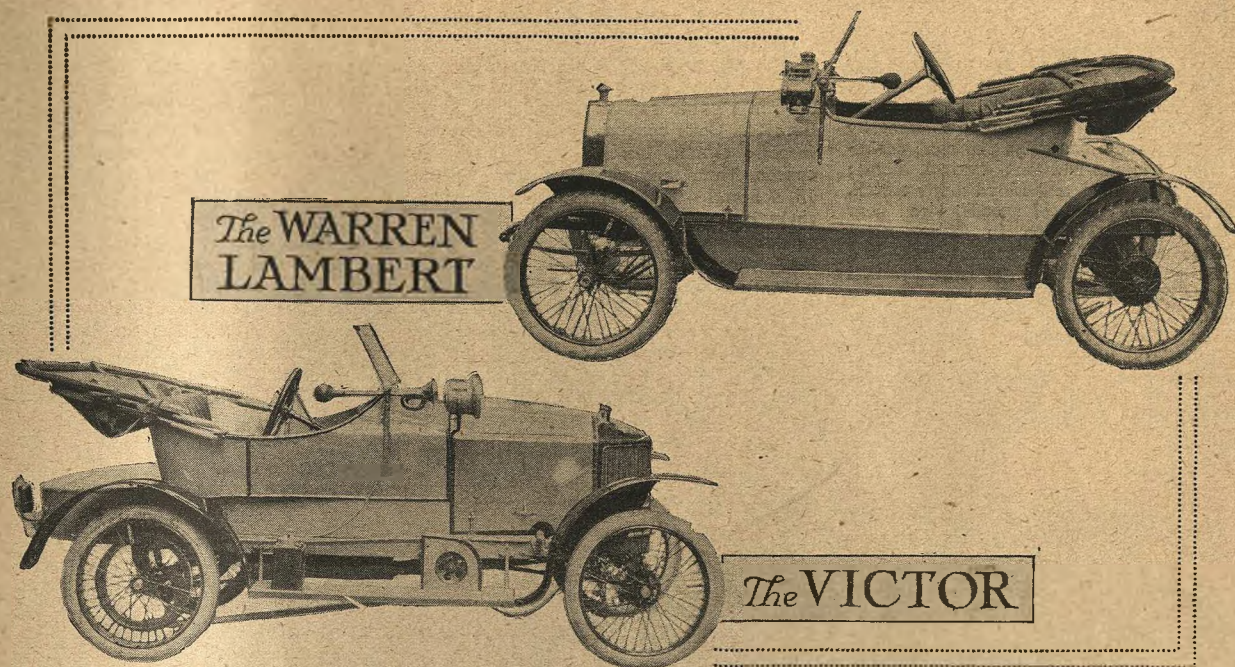
on account of its simplicity and lightness.

Its Speed and Reliability

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The VICTOR

10 h.p. SINGER. £195.

No. of seats, two; make of engine, Singer; cooling, water; No. of cylinders, four; bore and stroke, 63 mm. by 88 mm.; cubic capacity, 1096 c.c.; carburetter, Claudel-Hobson; control, hand and foot; lubrication, automatic; clutch, leather cone; No. of speeds, three; gear ratios, 4.3, 7.2, and 13.6 to 1; transmission, shaft; springing, semi-elliptic and shock absorbers; steering, worm and sector; wheelbase, 7 ft. 6 ins.; track, 3 ft. 6 ins.; overall width, 5 ft.; ground clearance, 8 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 10½ cwt.; equipment, lamps, etc. (Coupé model with dynamo set £260, or with acetylene £250.)

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No. of seats, two; make of engine, Standard; cooling, water; No. of cylinders, four; bore and stroke, 62 mm. by 90 mm.; cubic capacity, 1088 c.c.; carburetter, Zenith; control, hand and foot; lubrication, mechanical pump; clutch, Ferodo disc; No. of speeds, three and reverse; gear ratios, 4.5 to 1 top, 15 to 1 bottom; transmission, shaft and worm; springing, semi-elliptic; steering, worm and segment; fuel capacity, 6 gallons; wheelbase, 7 ft. 6 ins.; track, 4 ft.; overall width, 5 ft. 1½ ins.; ground clearance, 9¼ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 12 cwt.; equipment, lamps; hood, screen, spare wheel, etc.; selling agents, Standard Motor Co., Ltd., Coventry; London agents, The Pytchley Autocar Co., 216, Great Portland Street, London, W.

9.45 h.p. STELLITE. £157 10s.

No. of seats, two; make of engine, Wolsley; cooling, water; No. of cylinders, four; bore and stroke, 62 mm. by 89 mm.; cubic capacity, 1074 c.c.; carburetter, Wolsley S.U.; control, foot; lubrication, pump and troughs; clutch, leather cone; No. of speeds, two; gear

ratios, 12.2 and 4.8 to 1; transmission, worm; springing, cantilever; steering, rack and pinion; fuel capacity, 6 gallons; wheelbase, 8 ft. 3 ins.; track, 3 ft. 10 ins.; overall width, 4 ft. 9 ins.; ground clearance, 6½ ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 11 cwt.; equipment, hood, screen, etc.; selling agents, Electrical Ordnance Accessories Co., Ltd., Cheston Road, Aston, Birmingham. (Also Stellite de Luxe with three speeds, £195.)

7 h.p. SWIFT. £140.

No. of seats, two; make of engine, Swift; cooling, water; No. of cylinders, two; bore and stroke, 75 mm. by 110 mm.; cubic capacity, 972 c.c.; carburetter, Longuemare; control, foot and hand; lubrication, pressure feed; clutch, cone; No. of speeds, three and reverse; gear ratios, 16.8, 7.1 and 4.2 to 1; transmission, shaft and bevel; springing, semi-elliptic; steering, worm and segment; fuel capacity, 5 gallons; wheelbase, 7 ft. 3 ins.; track, 3 ft. 7 ins.; overall width, 4 ft. 3 ins.; ground clearance, 9 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 8½ cwt.; equipment, hood, screen, lamps, etc.; selling agents, Swift Cycle Co., Ltd., Cheylesmore, Coventry.

10 h.p. SWIFT. £200.

No. of seats, two; make of engine, Swift; cooling, water; No. of cylinders, four; bore and stroke, 63 mm. by 90 mm.; cubic capacity, 1122 c.c.; carburetter, Longuemare; control, hand and foot;

lubrication, mechanical pump; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 16.8, 6.9 and 4.2; transmission, shaft and bevel; springing, semi-elliptic; steering, worm and segment; fuel capacity, 6 gallons; wheelbase, 7 ft. 3 ins.; track, 3 ft. 7 ins.; overall width, 4 ft. 6 ins.; ground clearance, 9 ins.; size of wheels, 700 mm. by 80 mm.; equipment, dynamo lighting set, hood, screen, etc.; selling agents, Swift Motor Co., Ltd., Cheylesmore, Coventry

10 h.p. TINY. £157.

No. of seats, two; make of engine, Dorman; cooling, water; No. of cylinders, four; bore and stroke, 63.5 mm. by 85.7 mm.; cubic capacity, 1098 c.c.; carburetter, Zenith; control, foot; lubrication, mechanical pump; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 12½, 7.2 and 4½ to 1; transmission, shaft and bevel; springing, half-elliptic; steering, rack and pinion; fuel capacity, 4 gallons; wheelbase, 8 ft.; track, 3 ft. 8 ins.; overall width, 4 ft. 3 ins.; ground clearance, 10 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 9½ cwt.; equipment, hood, screen, lamps, etc.; selling agents, Nan son Barker and Co., Esholt, Yorkshire.

8-10 h.p. UNIQUE. £165.

No. of seats, two; make of engine, Unique; cooling, water; No. of cylinders, two; bore and stroke, 85 mm. by 88 mm.; cubic capacity, 1034 c.c.; carburetter, Zenith; control, foot; lubrication, splash; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 4, 7 and 12 to 1; transmission, shaft; springing, semi-elliptic; steering, worm and segment; fuel capacity, 3 gallons; wheelbase, 7 ft. 6 ins.; track, 4 ft.; overall width, 5 ft.; ground clearance, 8 ins.; size of wheels, 700 mm. by 85 mm.; approx. weight, 7½ cwt.; equipment, lamps, hood, screen, etc.; selling agents, The Motor Carrier and Cycle Co., Old Town, Clapham, London, S.W.

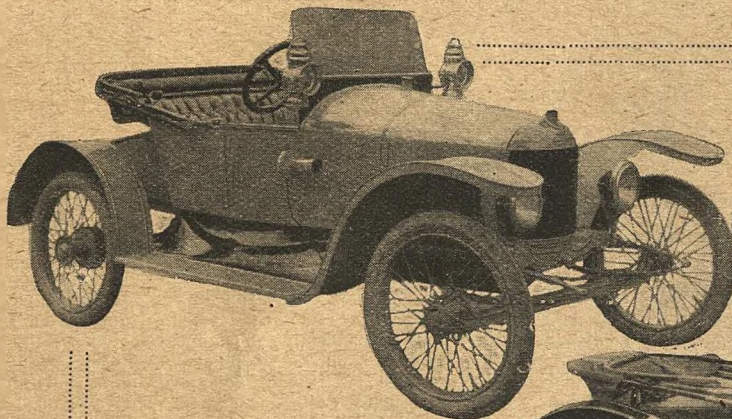
For the sake of uniformity, the address to which inquiries should be forwarded is, in each case, placed after the classification of "Selling Agents," whether the address of the manufacturers, the sole concessionaires, or other agents is given.

The prices are given in plain figures in preference to "guineas."

1915 MODELS (contd.).

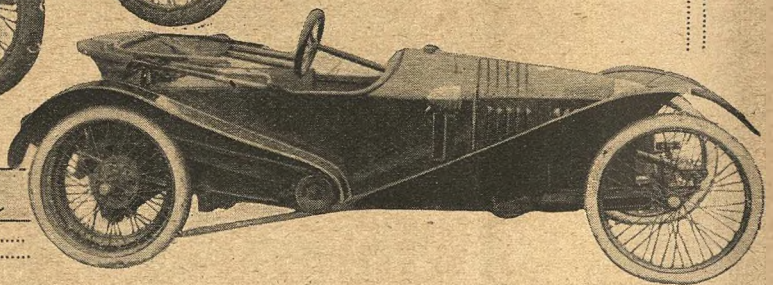
8 h.p. VICTOR. £100.

No. of seats, two; make of engine, Precision; cooling, water; No. of cylinders, two; bore and stroke, 85 mm. by 85 mm.; cubic capacity, 965 c.c.; carburetter, Claudel-Hobson; control, hand; lubrication, Best and Lloyd drip; clutch, Ferodo cone, No. of speeds, two; gear ratios, 5 and 11.6 to 1; transmission, belts; springing, transverse front and cantilever rear; steering, direct; fuel capacity, 3 gallons; wheelbase, 7 ft.; track, 3 ft. 6 ins.; overall width, 4 ft. 6 ins.; ground clearance, 10 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 6½ cwt.; equipment, hood, screen, lamps, etc.; selling agents, Tyler Apparatus Co., 15, Gerrard Street, London, W.



The
WHITING-GRANT

The **WINTER**

**VICEROY. £178 10s.**

No. of seats, two; make of engine, Viceroy; cooling, water; No. of cylinders, four; bore and stroke, 58 mm. by 110 mm.; cubic capacity, 1162 c.c.; carburetter, Solex or Zenith; control, foot; lubrication, splash; clutch, Ferodo cone; No. of speeds, three and reverse; transmission, shaft and bevel; springing, semi-elliptic front, three-quarter elliptic rear; steering, worm; wheelbase, 8 ft. 3 ins.; track, 3 ft. 10 ins.; overall width, 4 ft. 7 ins.; size of wheels, 700 mm. by 80 mm.; equipment, spare wheel, hood, screen, five lamps; selling agents, Viceroy Motors, Ltd., Nottingham.

WARREN-LAMBERT. £157 10s.

No. of seats, two; make of engine, Dorman; No. of cylinders, four; bore and stroke, 64 mm. by 85 mm.; cubic capacity, 1094 c.c.; carburetter, Cox; control, foot; lubrication, forced; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 15, 7.5 and 4 to 1; steering, direct; fuel capacity, 4 gallons; wheelbase, 7 ft. 2 ins.; track, 3 ft. 6 ins.; ground clearance, 9 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 7½ cwt.; selling agents, The Warren-Lambert Engineering Co., 142, Uxbridge Road, Shepherd's Bush, London, W.

WARREN-LAMBERT. £131 5s.

No. of seats, two; make of engine, Blumfield; cooling, water; No. of cylinders, two; bore and stroke, 88 mm. by 90 mm.; cubic capacity, 1095 c.c.; carburetter, Cox; control, foot; lubrication, forced; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 15, 7.5 and 4 to 1; transmission, bevel; springing, semi-elliptic and quarter-elliptic; steering, direct; fuel capacity, 4 gallons; wheelbase, 7 ft. 2 ins.; track, 3 ft. 6 ins.; overall width, 4 ft. 2 ins.; ground clearance, 9½ ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 7½ cwt.; selling agents, The Warren-Lambert Engineering Co., Ltd., 142, Uxbridge Road, Shepherd's Bush, London, W.

12 h.p. WILTON. £195.

No. of seats, three; make of engine, Wilton; cooling, water; No. of cylinders, four; bore and stroke, 66½ mm. by 95 mm.; cubic capacity, 1319 c.c.; carburetter, Zenith; control, hand and foot; lubrication, mechanical pump; clutch, Ferodo disc; No. of speeds, three; gear ratios, 4, 8 and 14 to 1; transmission, shaft and bevel; springing, semi-elliptic front, three-quarter-elliptic rear; steering, worm and wheel; wheelbase, 9 ft.; track, 4 ft.; overall width, 4 ft. 8 ins.; ground clearance, 9 ins.; size of wheels, 700 mm. by 80 mm.; approx. weight, 11½ cwt.; equipment, five lamps, horn, etc.; selling agents, Wilton Cars, Ltd., 7a, St. John's Hill, Clapham Junction, London, S.W.

WHITING-GRANT. £160.

No. of seats, two; make of engine, Grant; cooling, water; No. of cylinders, four; bore and stroke, 68 mm. by 102 mm.; cubic capacity, 1525 c.c.; control, foot; lubrication, splash; clutch, leather cone; No. of speeds, two and reverse; transmission, shaft; springing, full elliptic front and transverse rear; steering, rack and pinion; fuel capacity, 6 gallons; wheelbase, 7 ft. 7 ins.; track, 4 ft. 10 ins.; overall width, 5 ft. 6 ins.; ground clearance, 11 ins.; size of wheels, 750 mm. by 85 mm.; approx. weight, 11 cwt.; equipment, hood, screen, dynamo, self-starter, etc.; selling agents, Whiting, Ltd., 334-340, Euston Road, London, N.W.

8-10 h.p. WINGO. £165.

No. of seats, two; make of engine, Winco; cooling, water; No. of cylinders, two; bore and stroke, 85 mm. by 92 mm.; cubic capacity, 1040 c.c.; carburetter, Holley; control, foot; lubrication, automatic; clutch, leather cone; No. of speeds, three and reverse; transmission, shaft; springing, semi-elliptic; wheelbase, 9 ft. 6 ins.; track, 4 ft.; overall width, 5 ft. 1 in.; ground clearance, 10 ins.; size of wheels, 750 mm. by 85 mm.; approx. weight, 8½ cwt.; selling agents, Stringer and Co. (Sheffield), Ltd., Wincockbank Steel Works, Sheffield.

8-10 h.p. WINTER. £105.

No. of seats, two; make of engine, Winter; cooling, air; No. of cylinders, four; bore and stroke, 65 mm. by 75 mm.; cubic capacity, 988 c.c.; control, hand; No. of speeds, two; gear ratios, 5½ and 11 to 1; transmission, belts; springing, quarter-elliptic; steering, bobbin and cables; wheelbase, 7 ft.; track, 3 ft. 9 ins.; overall width, 4 ft.; ground clearance, 8½ ins.; size of wheels, 26 ins. by 2½ ins.; equipment, lamps, etc.; selling agents, Winter and Co., 62, West Hill, Wandsworth, London-S.W. (Also a 6 h.p. twin air-cooled model at £85 and a larger one at £95.)

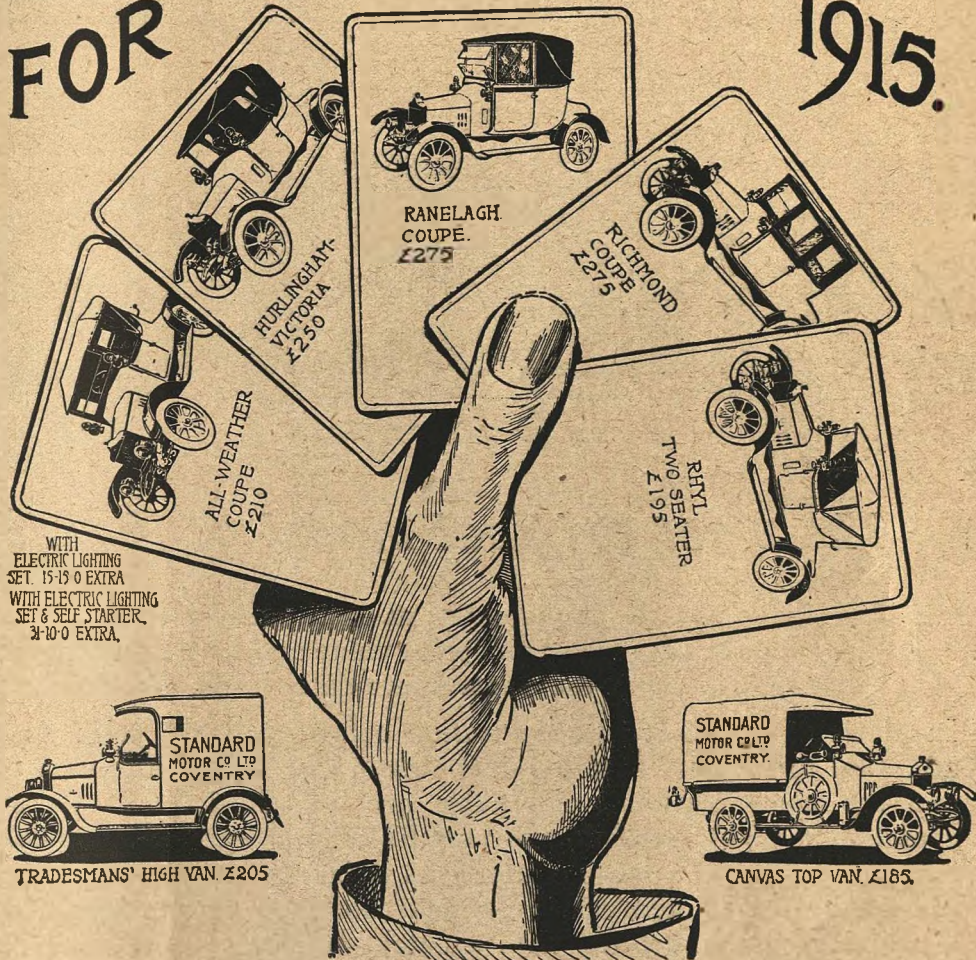
WOODROW. £157 10s.

No. of seats, two; cooling, water; No. of cylinders, two; bore and stroke, 85 mm. by 96 mm.; cubic capacity, 1098 c.c.; carburetter, Cox streamline; control, foot; lubrication, sight feed; clutch, leather cone; No. of speeds, three and reverse; gear ratios, 4.3, 6.4 and 10.2 to 1; transmission, shaft and bevel; steering, rack and pinion; wheelbase, 7 ft. 6 ins.; track, 4 ft.; overall width, 4 ft. 8 ins.; ground clearance, 9 ins.; size of wheels, 650 mm. by 65 mm.; approx. weight, 10 cwt.; equipment, lamps, horn, etc.; selling agents, Woodrow and Co., 82, Wellington Road N., Stockport.

A GOOD HAND

FOR

1915.



WITH ELECTRIC LIGHTING SET. 15-19 0 EXTRA
 WITH ELECTRIC LIGHTING SET & SELF STARTER. 31-10-0 EXTRA.

ALL VEHICLES SUPPLIED COMPLETE WITH FIVE LAMPS, BULB HORN, SPARE WHEEL & TYRE, FIBRE MAT, FULL KIT OF TOOLS, JACK & PUMP, ETC.

Write for fuller details of these interesting models.

The Standard Motor Co Ltd

COVENTRY.

London Agents, The Rykley Autocar Co Ltd 216, GrPortland St W.

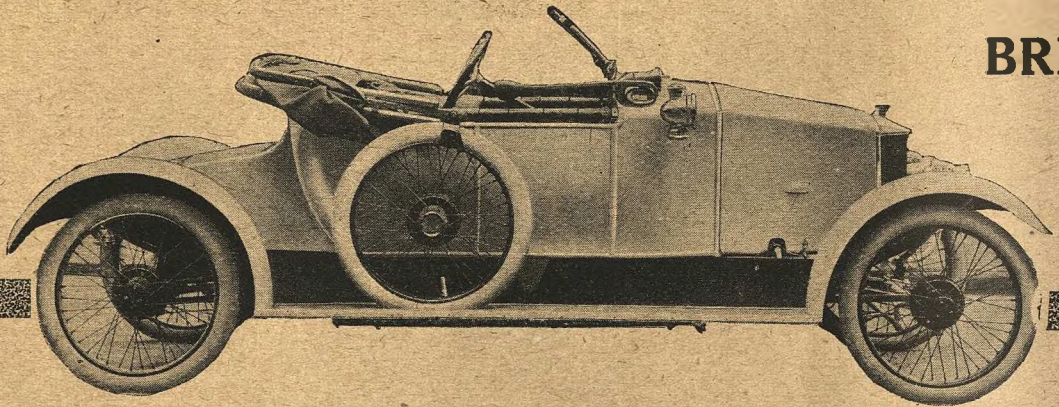
TO THE READER

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A25

The Horstmann

"The Car Without a



BRITISH

The most original model of the Year.

THE above phrase adequately sums up the 1915 Horstmann Car. This latest model is really wonderful value and its many extremely novel features make it the most up-to-date Light Car ever produced.

In placing the following specification before you we wish to call your attention to the fact that the Horstmann Car is British made throughout and the finest materials obtainable are used in its manufacture. The Horstmann Light Car is low in initial cost and very economical to run—the most important consideration—its smart appearance and cosy body appeal to all who appreciate comfort combined with attractiveness. The 4-cylinder engine is fitted with a patent starter operated by push pedal from the driver's seat. This pedal starter is unique, it is most efficient and reliable and obviates the necessity of a starting handle. The Horstmann is the ideal car for the amateur on account of it being so simple, not only to drive but to understand thoroughly.

Will you write us for our 1915 Catalogue, or better still, let us arrange a trial run for you and let us demonstrate the many unique features.

HORSTMANN CARS, Ltd.
James Street West, BATH, Somerset, England.

Works 'Phone—639 Bath.

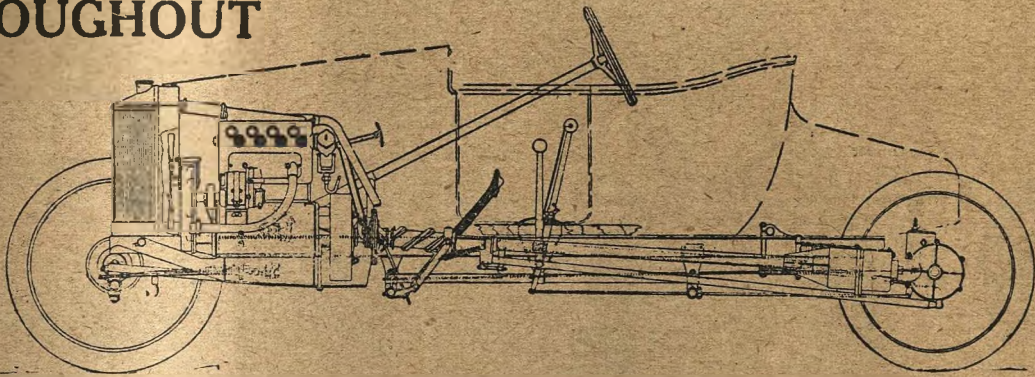
London Office—64, GLOUCESTER RD., S.W.

'Phone—6256 Kensington.

Car Starting Handle

Winner of the
FIRST PRIZE
 (for Novelty)
 at the Cyclecar Club's
 Rally on 21st November.

THROUGHOUT



Specification of the Horstmann Chassis.

CYLINDER CAPACITY—995 cubic centimetres.

WHEEL BASE—3 feet 8 inches.

ROAD CLEARANCE—8½ inches.

WHEEL TRACK—4 feet.

WEIGHT OF COMPLETE CAR—approximately 8 cwt.

PETROL CONSUMPTION—45 miles per gallon.

ENGINE.—Four-cyl. monobloc, 60 mm. bore by 80 mm. stroke. R.A.C. rating 8.9 h.p., developing over 15 h.p., at 2,000 revs. per minute; enclosed horizontal valve gear of patented design; adjustable single chain drive to the camshaft magneto, and fan.

The whole engine unit is carried by an aluminium casting, which fits on to the frame, and embodies the oil-sump, forms radiator support, trunnion bearings for transmission and controls, bracket for steering gear, and a dust-proof undershield for entire engine unit, accessibility to all parts being a strong feature.

COOLING—Thermo-syphon by flat tube radiator, and fan.

LUBRICATION.—Plunger pump delivering oil to froughs under big-ends and to main bearings. Oil reservoir in sump.

IGNITION.—H.T. waterproof magneto, fitted with Horstmann Patent Automatic Advance.

CARBURETTER.—S.U. Automatic situated on back of cylinder. Petrol tank in dash.

BRAKES.—Metal to Metal contracting foot brake on differential casing. Hand brake, compensated expanding in back wheels.

FRAME.—Channel steel, with tubular cross members.

TRANSMISSION.—By leather cone clutch, leather universal joint, enclosed propeller shaft to 3-speed and reverse gear box on back axle, gears always in mesh type, with patent selecting and locking gear, thence by bevel gear and differential to live axle.

SPRINGS.—Quarter elliptic springs, made from best English steel.

WHEELS.—Five detachable wire wheels. Four 650 by 65 mm. car tyres.

PATENT ENGINE STARTING.—By push pedal from driver's seat. The starting pedal operates on a fast worm, which rotates the engine at a high speed, thereby obviating the necessity of a starting handle.

STEERING.—By bevel and sector adjustable for wear and rake.

CONTROL.—Usual arrangements, gate change speed, accelerator pedal hand adjusted for slow running. Pedals adjustable for length of leg.

EQUIPMENT.—Hood, screen, two acetylene head lamps and generator, two side lamps, oil tail lamp, horn, number plates, tools, pump, jack, etc.

PRICE (as illustrated), but without HEAD lamps, generator, or tyre on spare wheel ...

£145 : 0 : 0

PRICE COMPLETE OF HORSTMANN CAR (as illustrated), but without tyre on spare wheel ...

£155 : 0 : 0

THE HORSTMANN MODEL-DE-LUXE is fitted with the Standard Chassis; the extra value is given in upholstery (best leather), special body finish, larger tyres, and dynamo lighting set. Price complete ...

175 Gns.

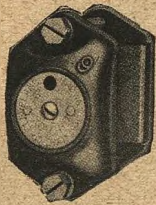
THE "LITTLE GIANT" LIGHT CAR JACK.



Price 4/6.

All pressed steel. No Castings. Light in weight, but a giant in strength. Weight, 3 lb. Height down, 10 in.

"BROWN" OIL BOX.
The Automatic Lubricator of Leaf Springs.



Feeds oil automatically between the leaves of the spring, ensuring ease in riding and more comfort. Easily attached. Entirely automatic in operation. Price 5/6 each.

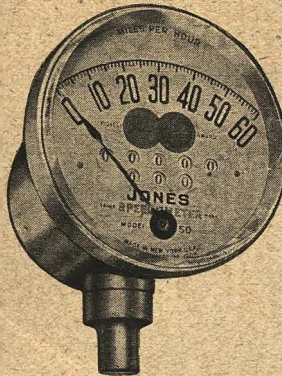
The **JONES** SPEEDOMETER

STEADY AS A ROCK.

The most dependable, the most accurate Speedometer in the World. Highest Award and Gold Medal R.A.C. only Official Speed Trials.

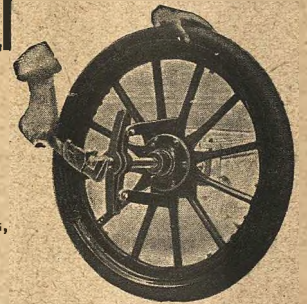
Gold Medal Turin Exhibition.

Prices from £3 10 0



JONES SPEEDOMETERS are constructed on the centrifugal gyroscopic principle, entirely unaffected by temperature changes or the proximity of magnetic or electrical devices. Its principle is that of a natural law, as unalterable as the law of gravity, and positively constant. Every single instrument is individually calibrated by expert instrument makers, and their accuracy is endorsed by the highest authorities the world over.

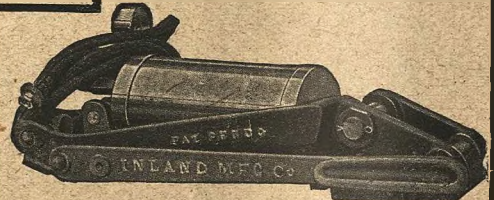
THE "LITTLE GIANT" WHEEL PULLER.



Price, per set, 28/-

Complete with long and short arms. Quickly removes the most obstinate wheels without risk of damage. Three adjustments for large or small diameter hubs. Indispensable.

"INLAND" HAND AIR PUMP.

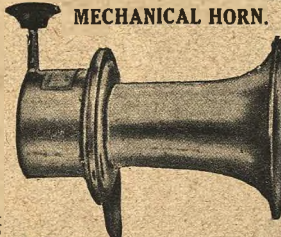


A compact collapsible pump for the car or garage. Length over all with handle folded, 13 1/2 in. Clamps to running board, operated by extension handle of great leverage, and power developed about nine times that of the ordinary foot or hand pump. No back-bending or straining, no fatigue. Price £2.

THE "LONG" MECHANICAL HORN.

In moments when danger is imminent a warning that is unmistakable and infallible in action is imperative—all motorists at some time or other have realised the important part a warning device has to play under certain conditions. Insist on the most reliable of all for your motor—THE LONG HORN

Prices from £2 . 15 . 0



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Don't PATCH your Tubes MEND them with a 'MUSTIKON.'

The "Mustikon" method is the very latest way of dealing with punctures—the result of three years of careful thought and experiment. The "Mustikon" is an all-rubber stud that repairs the tube on the *inside*—the proper place—the stem of the stud effectively plugs up the puncture, and, further, the outside cup of the stud, which is specially treated with a self-vulcanizing compound, becomes one with the tube when fixed, making a perfect, practical and permanent repair. There is no trouble in fixing the "Mustikon"—you can mend anything from a pin hole to a burst in a minute. The troubles of the old-fashioned method of using patches are entirely banished—no patches to come off—no leaking or creeping. Why not use the up-to-date method and mend your tubes with a

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The "MUSTIKON" Cyclecar Outfit.

PRICE **7/6** EACH.

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AND
OPINIONS.



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

A PENANCE FOR TEN MILLIONS.

A Trenchant Letter from Mr. C. A. Smith.

The other evening I had occasion to take my car to London, and on coming towards Thames Ditton I was amused to see the shaded lights. These then continued all the way to Putney Bridge. I will own that night lights were about as useless a thing as one could have, for the moon gave such illumination that it put all else in the shade. (What a chance those zealous Zeppelinites missed. Their way could not have been clearer from across the seas.) So I wandered along through Kingston until, reaching the tram terminus at the top of Kingston Hill, a sudden call of "stop" from the policeman on point duty startled me.

"You've got four lights going on your car and only two are allowed."

I proceeded to put the two stinkoradomes out, and remarked that I had come through the delightful town of Kingston and no one had remarked on my imitation Brock's. The reply that I ought to have been stopped and that the force below were neglecting their duty reminded me that there are men and men. And as I passed the Robin Hood I wondered how long such a ridiculous regulation should be enforced, whilst from Kingston to Putney I counted 15 pair-horse vehicles absolutely disregarding the Lights on Vehicles Act (1907).

There they were—luckily for me the moon had not been interfered with by the L.C.C.—and there they are, and on all the roads around London the owners of vans deliberately ignore the law in this way. The lamps are not attached at the sides of the carriage and so constructed as to display to the rear a red light visible for a reasonable distance. No notice is ever taken by the police of these vans, so dangerous to other swifter road users. Some this particular evening had no lamps alight at all. I wonder why it is the police neglect to enforce a sensible by-law?

Putney Bridge was in darkness, and so was Parsons Green, where the motor traffic goes, but just across the grass and through the trees and along the houses I saw the street lamps were in use, and giving quite a brilliant show. Along the Green Park (from Hyde Park Corner) a row of taxis with their two front lamps alight gave one the impression that something must be wrong in the present administration of London's lighting.

The Thames should be covered up first if London really wants to hide itself from any hostile airships. I am not an aviator, but it would appear to me that once the river were sighted at Greenwich it would be easy for the steersman to follow the shimmering waters—moon or no moon—up to Westminster Bridge and beyond if he chose.

I really cannot understand why nearly ten millions of people in London should be put to so much inconvenience every night, when a 'phone message from Shoeburyness. Woolwich or Southend to the London gas and electric-light companies that a Zeppelin had just passed along would give these people the opportunity to cut off the supply absolutely at the fountain head—a warning bell and the turning of a tap. But, after all, supposing there were no lights in London at all, that would not prevent the dropping of bombs, would it?

Personally, I am of opinion that there are other forces at work; there are some people about, you know, who wish everyone to go to bed early, to avoid theatres and music-halls, to take nourishment at certain hours, to drive motors without headlights, and all to exist without alcoholic liquors. Perhaps the most extraordinary penance imposed on London's millions is the early closing at 10 p.m. Hundreds through this are out of work, and the public are put to a host of trouble to provide themselves with reasonable refreshment, whilst the soldiers (bless them!) have strict orders to be in barracks every night at 9.30! The ten-millioners are certainly a dangerous lot, wanting things after 10 o'clock, and I am glad I live in the country now.

One word more to conclude, for I am afraid I am trespassing on your space. Last week, at Victoria Station, my sister, on arrival from Paris, was asked whether she had any German newspapers on her or in her trunks: if she had, they must be given up forthwith. On receiving the assurance that she had none, the officials allowed her to leave without making any request to open her baggage for examination.

From this it looks very much as if the authorities do not wish us to see how the German Press must be gloating over London's fear of a Zeppelin raid and the penances imposed upon a terrified population.

Cobham.

(Late hon. treasurer, A. C. U.)

The Magneto Problem.

When the war started we heard that several English concerns had commenced to manufacture magnetos. We believe a few single-cylinder models have been turned out, but we do not think that any have attempted to produce one for a V-twin. We are anxious to know if this is so. At present we are using an American magneto, which is giving very satisfactory results, but, of course, we should prefer to fit a British make if this were possible.

Now, while new designs are being brought out, would it not be as well to incorporate the spark-advance mechanism in the magneto itself? The present fittings are as a rule very clumsy. The carburettor makers have made a good job of their controls years ago, and there is no reason why the magneto people should not do likewise.

Malvern.

MORGAN MOTOR Co.

Air-cooling for Traffic Work.

Seeing in a recent issue some remarks about air-cooled engines, I would just like to add a few words. At the beginning of August, on a very hot day, a friend and myself came up to town on my Morgan (8 h.p. air-cooled J.A.P.). Not finding a convenient garage near Paddington Station, we decided to go on—our route being through Oxford Street, Regent Street, Piccadilly to Wardour Street, where we found a garage. We were traffic driving for nearly an hour—mostly on low gear—and there was absolutely no sign of overheating, not even on the return journey.

I think it is essential to have the carburation in perfect tune. I might mention that I lost a nut from the brake collar, and the bolt caught against the sprocket, but fortunately it did not do much damage.

Banbury.

F. J. COOKE.

Monday, 14th December—See THE EQUIPMENT NUMBER, "The Light Car and Cyclecar."

THE IDEAL CYCLECAR TRANSMISSION.

The Simplicity of Chains and Belts Without a Bevel-Driven Shaft.

The Victor Transmission.

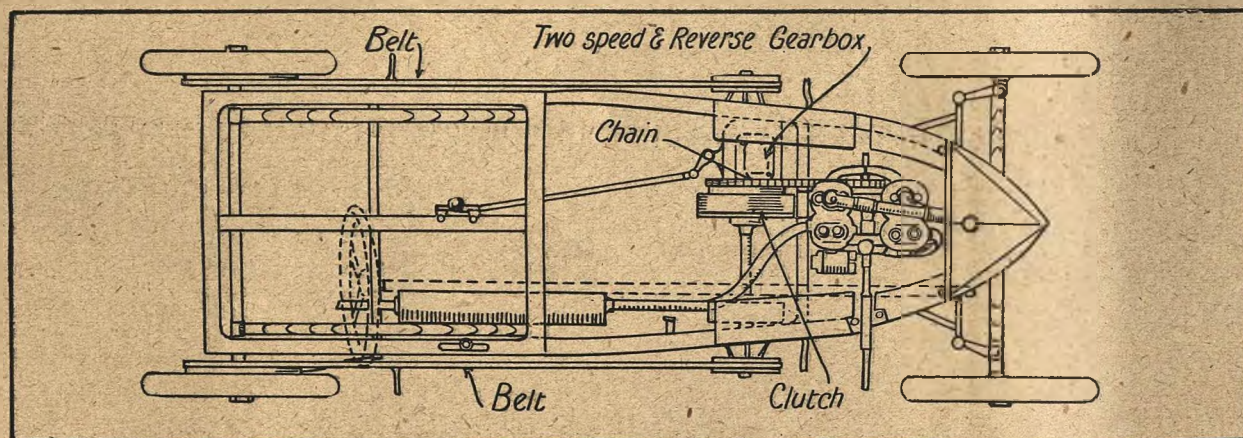
With reference to Mr. A. G. Frazer Nash's letter on the subject of cyclecar transmission, it is a most curious fact, from our point of view, that Messrs. G. N., Ltd., should adopt in their 1915 programme a form of transmission as an improvement which has been the salient factor of the Victor design from the very commencement. On referring to the chassis plan view on page 4 of our catalogue, you will see that our initial drive is by chain direct from a sprocket on the crankshaft to a larger sprocket on the countershaft, thence by belts to the rear wheels over a pulley. The only difference is that we embody on our countershaft a two-speed-and-reverse gearbox, but the whole of the reduction from the engine speed to the back wheels when in top gear is on the chain and the belts, as the top gear is merely a couple of dogs engaging direct.

In the matter of the belts, it will be also observed from this plan view that from our design we are able to get a much

Ingenious—But Hardly Simple.

There is much in the design of Mr. W. H. Birlus's ideal cyclecar described in a recent issue. Very little thought concerning weight distribution shows the conventional arrangement of having the engine in front is radically poor from a theoretical point of view. For easy riding, freedom from skidding, and ability to hold the road well, what are the chief requirements? Surely that the weight be, as near as possible, midway between the wheels, and the wheelbase to be fairly long. Practical consideration of the different functions of the front and back wheels makes it desirable that there should be more weight on the back than the front. There are two chief weights to be dealt with—the engine and the passengers; and it is not good to have one at one end and the other at the other. They should be lumped together near the centre.

When one comes to think of it, there is a good deal of material and labour wasted in the conventional design of the light car or cyclecar. The power has to be delivered at the



The transmission of the Victor cyclecar by chains and belts, with a gearbox on the countershaft.

longer belt, and, consequently, there is absolutely no slip whatever in the worst weather.

We agree with Mr. Frazer Nash that there is, unfortunately, some prejudice in the public mind, but we are confident that the success the few remaining belt-driven machines have attained will very quickly overcome this prejudice, which after all nobody can really describe when they are asked to put their objections into words.

TYLER APPARATUS CO., LTD.,
G. W. PEARSON, General Manager.

Thoughts on Simplicity.

I am delighted to see you are giving more space to the vexed question of the simple cyclecar. There must be thousands like myself who are looking for one at £100 (or a little less). That is all we can afford, considering there will be many more expenses to meet—garage room, petrol, oil, repairs, etc.; but, together, they must not run beyond 1d. a mile touring, or 1½d. for, say, a traveller who is everlastingly stopping.

Your articles are just to the point. You, perhaps, have little evidence of the interest taken in every issue of your journal by nearly half of the great middle class, all on the lookout for a really reliable and durable cheap car, and simple withal. Many of us have a smattering of mechanics, and some a pretty good knowledge of engineering, and these latter (among whom I reckon myself) must have smiled at most of the productions at Olympia in 1912. They all violated the most elementary principles of engineering. I went to order one, but no—they were, I thought, only just beginning to "evolve," and I could see trouble for any purchaser.

The main thing wanted in the production of a good cyclecar that shall sell for £80 or £90, and a good profit at that, is to standardize a well-thought-out proposition, and then make 10,000 of them. That's where the Americans will beat us every time. What is the use of turning them out by ones or twos, and each one then differing somewhere. That is where the expense comes in.

JOSEPH WISE.

back wheels. Therefore, we place the power plant right at the front, as far away as possible. One gets better cooling; but that is easily managed otherwise. One gets a long propeller shaft, which is good, because it gives less angular movement for a given spring deflection than a short one. The greatest objection to Mr. Birlus's design is the aesthetic one of appearance. The sketch given I presume is, of course, not intended to be to scale. If it were, the distance from the front of the seat to the pedals would be too short for comfort, unless both seat and back were of the proportions found in large touring bodies. A very great improvement in appearance, also, would be obtained by increasing this distance and lengthening the wheelbase correspondingly. As a rough idea of the kind of improvement I am suggesting, the brief description of a small monocoar I am now building for myself may be of interest. It is not so pleasing as it might be, because it is being made out of an old 3½ h.p. tricar. The leading dimensions are:—Wheels, 650 mm. by 65 mm.; wheelbase, 96 ins.; body underslung with a ground clearance of 10 ins.; springing with quarter ellipsics.

My own ideal cyclecar would be very much on the lines of Mr. Birlus's design as regards the distribution of its parts; but the engine would differ widely from present practice. It would have four horizontal cylinders at 90 degrees, possibly in two planes, driving a vertical crankshaft. The flywheel would be beneath, and would be connected (through a plunging flexible joint) to a three-speed-and-reverse gearbox on the back axle, the torque to be taken by a long stay running well to the front of the chassis, spring-loaded and ball-jointed. With a large worm wheel of light construction, the crankshaft axis would come fairly well forward of the axle. The two practical difficulties that present themselves at once are oil leakage down the crankshaft and the plunging joint. The first could be overcome by suitable catch pits and by forced lubrication. The plunging joint would be a large hexagon sliding in a pot, something like a piston in a cylinder; the other joint a simple crosspin.

M.G.

Wickham Market.

THOUGHTS AND OPINIONS (contd.).

Knocking and a Suggested Cure.

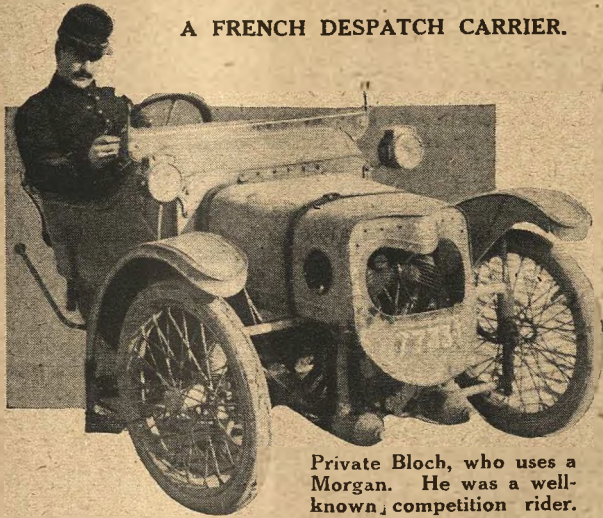
I am the owner of a light car, which I bought new in July last. It has had a good share of work since that date, but lately, after running a few miles, the engine knocks slightly.

A friend recommends using a mixture of petrol No. 2 and benzole, occasionally adding a gill of good lubricating oil. He assures me it will stop the carbonizing of the cylinders and prevent the knocking. Is this correct? OIL.

Blackpool.

[We should say that the engine wants decarbonizing. The remedy suggested is not likely to prevent carbon deposit.—Ed.]

A FRENCH DESPATCH CARRIER.



Private Bloch, who uses a Morgan. He was a well-known competition rider.

Magneto Supply.

With reference to your article on the magneto famine, in our opinion the shortage of magneto supplies to some manufacturers at this very moment is really due to their not having availed themselves of our notification at the beginning of the war. When war broke out we realized immediately that there would necessarily be a shortage of supplies, and to help the manufacturers in every way possible we immediately advised them that we were in a position to supply magnetos at the rate of 100 per day three weeks from date of order. It, however, was not until October that manufacturers really got going with us, and had we had the two months notice on required deliveries which we hoped to have received, we should have been able to satisfy practically every manufacturer in this country. This is without a doubt; as it is now, we are receiving shipments at the rate of 1200 magnetos per week.

SPLITDORF ELECTRIC

London, E.C.

F. FARQUHAR, Manager.

Running Cost Tables.

I wish to express my appreciation of the letter published in a recent issue of THE LIGHT CAR AND CYCLECAR from "Convert," giving the running costs of his Morgan.

I have read and preserved all the tables of costs I have seen in your journal since I became a reader some six months ago, but have not previously seen any figures relating to the Morgan.

As I am much attracted by this machine, "Convert's" figures are very interesting, and particularly so by reason of the comparison with the expenses of his former motorcycle.

I have collected and analyzed a number of figures relating to motorcycles and sidecar combinations, and a few more tables compiled on the lines of "Convert's" would be a great help in deciding which is the better proposition—sidecar or cyclecar.

I must say how much I admire the spirit which prompts "Convert" to give his experiences for the benefit of other readers, especially intending purchasers and beginners.

Nelson, Lancs.

ANALYSIS.

Running Costs of Sidecar or Light Car.

With reference to your article of running expenses in issue of 9th November, I enclose you an account for the short time (four months) I have run a light car, and am surprised at the low cost. As a sidecarist of six years experience, I find it averaged £30 per year for 4000-5000 miles a season, and hesitated to indulge in a light car, because the expense seemed beyond me. But let the figures below speak for themselves:—

	Sidecar.	Light Car.
	£ s. d.	£ s. d.
Petrol, 59 gallons at 1s. 6d. ...	4 8 6	4 8 6
Oil, 2 gallons 6s., carbide 1s. 6d. ...	0 7 6	0 7 6
Tax £2 2s. licence 5s. ...	2 7 0	2 10 5*
Insurance and rent ...	5 4 3	
Spare tyre and tube ...	2 9 0	—

£14 16 3 £7 6 5

*Pro rata.

Or 3555d. for 3010 miles with the sidecar and 1757d. for 3019 miles with the light car.

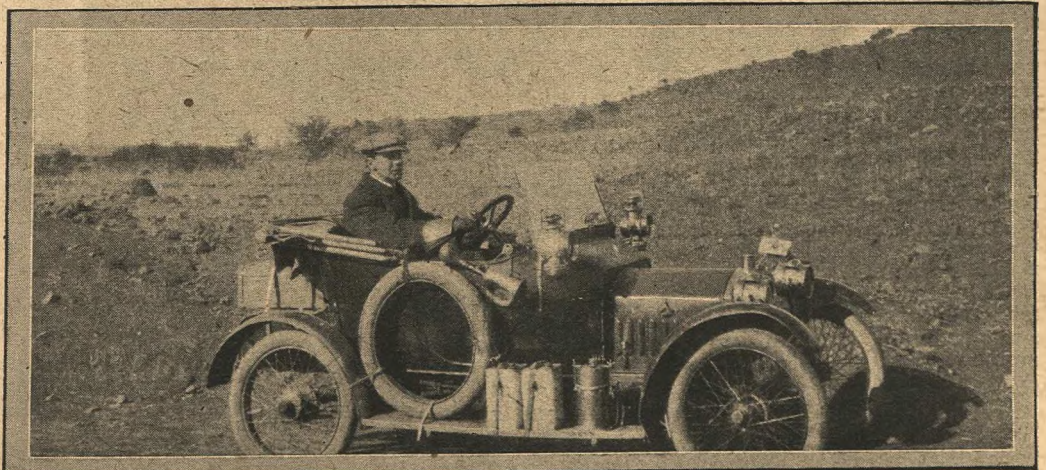
As I have only run the car four months, I should deduct two-thirds of the tax, licence, rent and insurance, i.e., pro rata, for the period used, also the spare tyre and tube unused, which is under a separate heading. The petrol consumption is 51 miles to a gallon, oil 1500 miles to a gallon. The tyres seem good for a similar distance to that covered. On easy roads I average 62 miles to a gallon, but the 51 miles stated includes a few climbs each of Sutton Bank, Wass Bank, Greenhaw Hill, etc. It actually costs less to run than a sidecar combination, and in comfort, protection, and cleanliness there is no comparison. I have only had one involuntary stop in 3000 miles (a sooted plug). Mileage registered by Watford speedometer. The only item omitted is the A.A. subscription, which, being transferred, I have not included. If these running costs (a shade over a half-penny per mile for two persons) can be improved, somebody is motoring cheaply. The car is a Jowett, and cost me (new) £150. "AK 3385."

Bradford.

ON THE
VELDT IN
SOUTH
AFRICA.



Mr. F. G.
Turner's
Enfield
Autolette.





The challenge cup presented by the proprietors of the "Light Car and Cyclecar," which is at present held by Mr. B. Haywood (Singer).

THE HOUR RECORD.

Its History—Attempts in the Near Future.

wood, on the Singer, covered 62 miles 1136 yds. in the hour.

Four months later the Singer increased this by a distance of nearly 10 miles, covering the extraordinary distance of 72 miles 976 yds., at which the record has since stood.

Such, then, is the history of the hour record, and it shows the rapid progress which was made in the early days of the new motoring movement. It also shows to what a pitch of excellence modern machines have been brought.

The procedure to be taken by the would-be record breaker is as follows. Twenty-four hours notice of the attempt must be given to the A.C.U., 89, Pall Mall, London, S.W., and the Brooklands track men and an official timekeeper must be engaged.

The fees to be paid are:—A.C.U. permit 10s. 6d., track and timekeeper's fees six guineas, and if electrical timing is employed a further fee has to be paid. Electrical timing is not generally used, and the fraction of the last lap is estimated in one of two ways. Either the machine is watched and its position noted when the hour elapses or the distance is calculated by working out the distance to the nearest lap and calculating from that and the average speed the exact distance covered in the hour.

THE hour record! Those three simple words conjure up a vision of the huge saucer of Brooklands, a little group of interested spectators, and a dark speck moving round the track at what appears to be a mere crawl, but what is nearer 70 or 80 miles an hour.

For some reason the hour record seems to take one's fancy more than any other record, more even than the flying mile or kilometre when the highest speeds are attained. Why is it?

Probably because it is the severest test a machine can have, for an hour "all out" is more trying than a few seconds "all out," as in short-distance records, or a few hours at a less trying speed, as in long-distance records.

The value of high-speed tests to the industry as a whole is scarcely realized, but springing and steering must be brought to as near perfection as possible, while engine power and transmission efficiency are also severely tested.

It was early in 1912 that the proprietors of our sister journal, "Motor Cycling," offered a handsome silver challenge cup to be held for a year by the owner of the cyclecar covering the greatest distance in one hour at Brooklands. When this journal made its appearance as "The Cyclecar" the trophy became linked up with it, as was only natural.

Keen Competition.

During the first week in May, 1912, Mr. W. Ward, driving a Bedelia, covered 43½ miles in the hour without trouble of any kind, thus creating the record. It was but little more than a month before Mr. J. T. Wood, on the G.W.K., carried off the record with nearly 45 miles, only to have it wrested from him in July by Mr. Ward's Bedelia, which this time covered 45 miles 278 yds. in the hour.

In September this was raised by 226 yds. by the Bedelia, this time driven by Mr. A. F. Jones, but a week later Mr. Wood and his G.W.K. once more wrested it from the Bedelia, putting the figures up to 47.79 miles.

Six weeks later a three-wheeler made a splendid performance, putting the record up to 55.19 miles: this was Mr. H. F. S. Morgan's Morgan. Mr. Wood again recovered the record a few days later with over 56 miles in the hour.

Then, on 23rd November, 1912, Mr. Morgan came very near to the coveted figure of 60 miles in the hour, the actual figure being 59 miles 1120 yds. This stood till the second week in May, when Mr. Hay-

A FINAL WORD.

AS this issue of THE LIGHT CAR AND CYCLECAR will fall into the hands of a number of new readers, we should like to say a brief word about ourselves, who founded the movement.

This journal was founded in 1912, and is the only one that really covers the whole "new motoring" movement, dealing with cyclecars from the simplest type and stopping short at cars which, because of their size, weight and price, do not represent economical motoring. This is all the more important in view of the fact that it is hard to distinguish the heavier-built cars from what are modern light cars, and because THE LIGHT CAR AND CYCLECAR makes this distinction, it has the sympathy of the public, which means, of course, the largest circulation. The entire staff are practical owners of light cars and cyclecars.

We are at all times prepared to advise readers on all matters appertaining to the pastime. Special technical advice is given by Dr. A. M. Low, D.Sc., A.C.G.I. (exclusively to this journal); and legal questions are answered by a lawyer. Touring routes and information are also supplied. A stamped addressed envelope should be enclosed for replies.

"The Light Car and Cyclecar"

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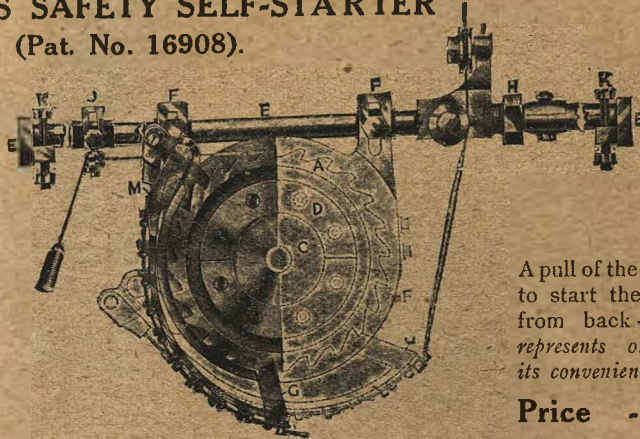
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The only tool required to fit this starter is an ordinary adjustable spanner.

The starter is fixed on the clutch shaft.



A wire cable passes through the floorboards and is attached to a handle.

A pull of the handle is sufficient to start the car. No danger from back-firing. Its price represents only a fraction of its convenience.

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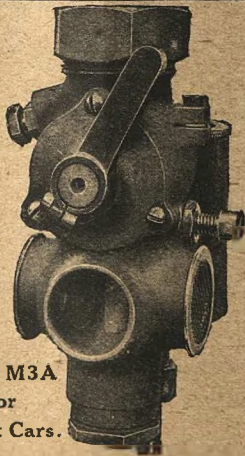
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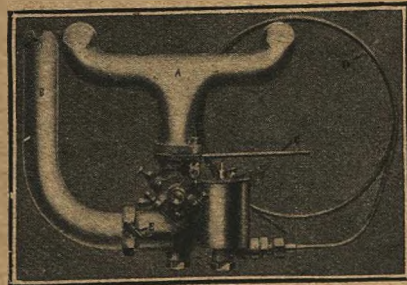


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**THE "JOWETT"
8 H.P. CAR.**

There is a form of two-cylinder engine which certainly never had the vogue to which it is entitled—the type in which the cylinders are opposed and the cranks are at 180°. An examination of this type of engine shows, firstly, that the impulses are equally distributed; secondly, that the fundamental

ing rods to each piston. The equal intervals between the impulses place the horizontal opposed twin far before the V twins. I also suggested that the radiator might be integral with the horizontal twin, thereby giving ample "head" for "thermo-siphon" water cooling, and that its low centre of gravity was a condenser of space economy. I have no doubt what the engine's speed will be.

er engine. The horizontal opposed engine better than a V engine. The horizontal opposed engine the virtues of the horizontal opposed engine can be such that we believe it still has a future for light, and more cars if some ingenious designer can embody it in the scheme of a nice little car so that it does not quite disfigure the vehicle in this it would be better than a V engine.

horizontally-opposed twin will in all probability be found much of in the future. With cranks at 180 degrees, and if the cylinders are even better, and if the cylinders are in the same perpendicular plane, the perfect balance is obtained. It is not necessary to

horizontal balance was applied, but the horizontally-opposed twin with the cranks at 180 degrees is an improvement on the V type, and when the difficulty of fitting a cooling plane has been overcome there is no reason why it should not come into general use.

run very quietly, the engine turning over with that vibrationless, silky "putt," common to this type of motor engine. The horizontally-opposed two-cylinder is not like a twin engine, and it is not inferiorly comparable with a four cylinder; it has some definite quality all its own—a very fascinating quality. Probably it is really the entire absence of the periodic vibrations usual in a four, that come and go at various speeds.

Incidentally too, within the last two or three years the horizontal opposed engine has enjoyed an extraordinary vogue in the motor cycle world owing to the beautifully smooth running and high speeds attained by it.

It is lubrication systems what are in most urgent need of reform. Let us have vertical or positive feed to the bearings, not marginal feed to the crank case.

the horizontally-opposed engine surface were such. The horizontally-opposed engine is the best form of engine that it is possible to use, and the torque is accessible. The horizontally-opposed engine has more even than with the V type, while the balance of the reciprocating parts is better than it is in the V type. The horizontally-opposed engine is a better type of engine than the V type. For a twin the horizontally-opposed engine is undoubtedly the better type. However, it is not necessary to

the horizontally-opposed engine is a better type of engine than the V type. For a twin the horizontally-opposed engine is undoubtedly the better type. However, it is not necessary to

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Vibrationless.	Standard Equipment Hood, Screen, Side and Tail Lamps, Horn, Tools, Jack, and DETACHABLE WHEEL complete.	PETROL CONSUMPTION 50 Miles to the Gallon. OIL CONSUMPTION— 1,000 Miles to the Gallon. 1915 CARS NOW READY.	Silent.
Sturdy.	Climb Anything.	JOWETT MOTOR MFG. CO Grosvenor Road - - BRADFORD	Economical.

Price - 145 Guineas.

— THE —

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...made me an enthusiastic adherent of the cycle-car.

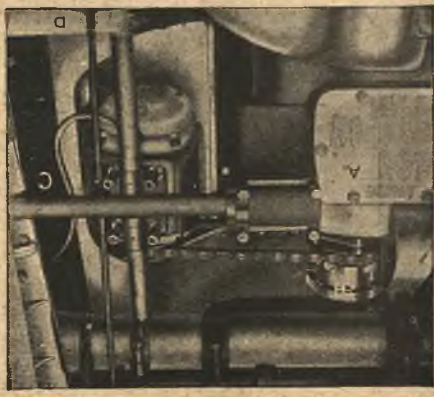
W. H.

Cycle-car Experiences.

I was much interested in your article "A Plea for the Simple Cycle-car," since I have been driving a Rollo car for some little time. This car is designed on almost the identical lines indicated in your article, having four wheels, variable pulleys on the countershaft (which is chain driven), two 1 in. Whittle belts to rear wheels, air-cooled engine, and steel tubular frame. I find the belt drive is most satisfactory. I have had no belt slip, and very little stretch. The differential action is quite satisfactory, and the driving-wheel tyres show no signs of wear due to having no differential.

Manchester.

VINCENT H. SUGDEN.



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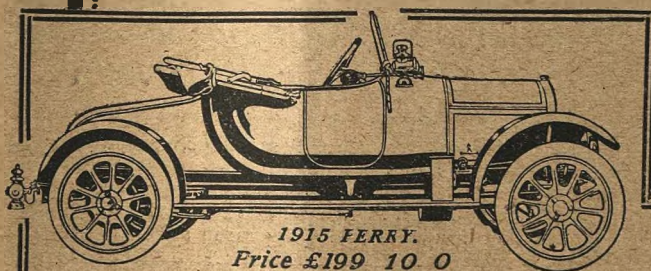
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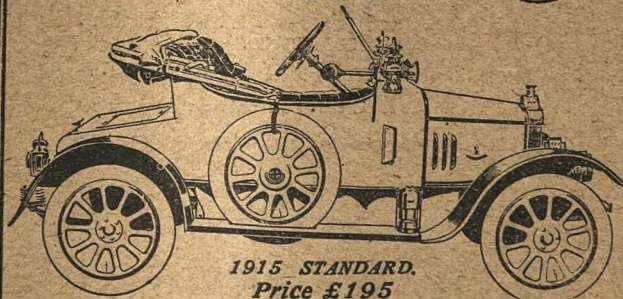
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I also stock all 1915 Models in SWIFT, CALCOTT, etc. and still have several rare Bargains in 1914 Cars at greatly reduced prices.

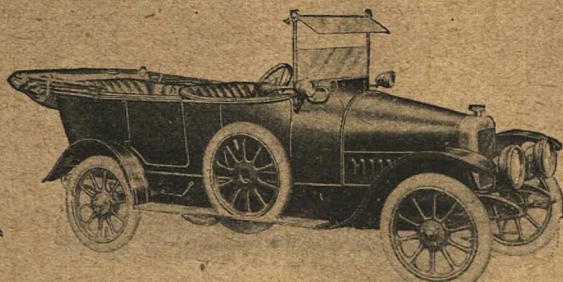
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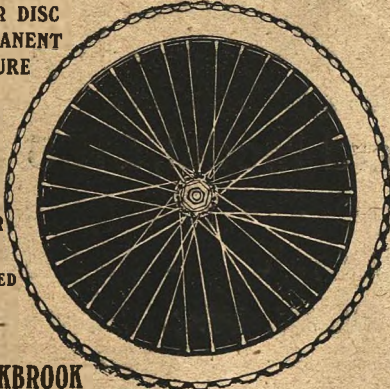
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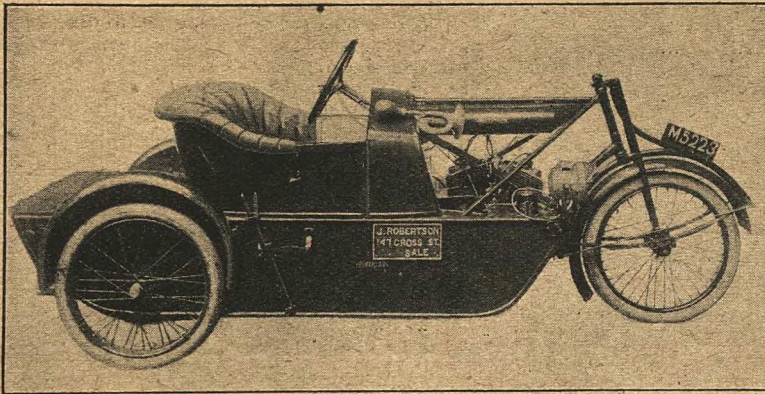
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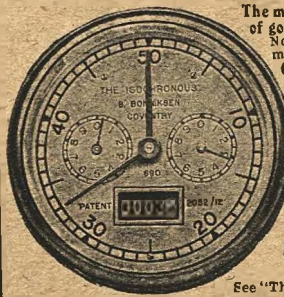
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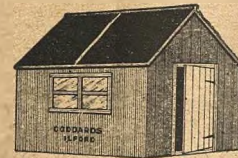
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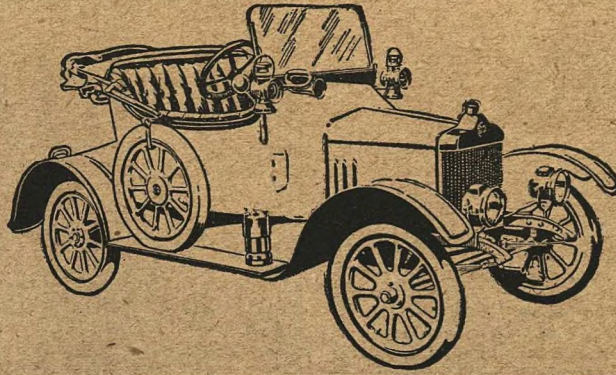
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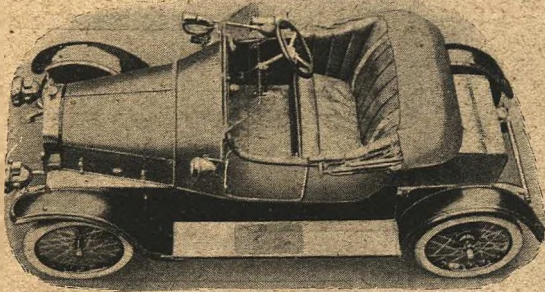
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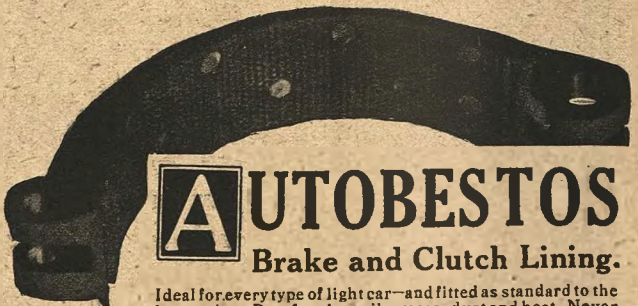
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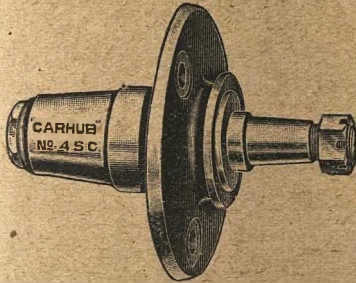
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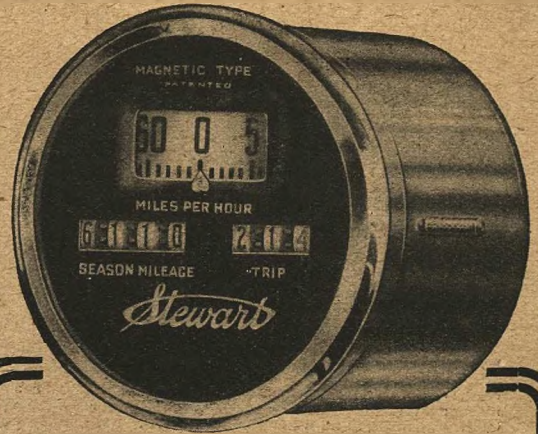
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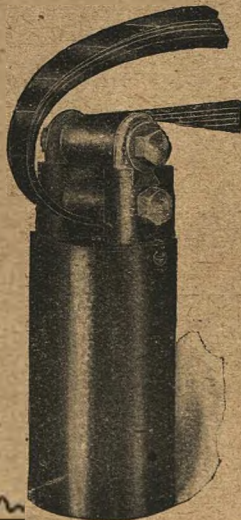
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G.N. cyclecar, late 1913 model, two-seater, grey torpedo body, detachable wire wheels, electric lamps, etc., good tyres, guaranteed perfect, fast and reliable, £55 or offer. White, The Warren, Guildford. 106-j146

G.N. G.N. G.N. 1914, three-speed and full equipment, tuition free, £90. Cass's, the Light Car and Cyclecar Specialist, 5 Warren Street, Euston Road. Museum 632. Trade 106-761

G.W.K.s from stock, on deferred terms; write for Buyers' Guide. Harrods, Ltd., Brompton Road, S.W. Trade zzz-614

G.W.K. light cars, always in stock for immediate delivery. Stewart and Arden, 18 Woodstock Street (off Oxford Street), Bond Street, London, W. Trade 111-137

G.W.K. de Luxe, fully equipped, immediate delivery, deposit 30 guineas secures, balance 12 monthly instalments £10 15s. 3d., less rebate, exchange entertained. Service Co., 292 High Holborn, London. Trade zzz-643

G.W.K., immediate delivery of 1915 models. Sole district agents, The Exeter Motor Cycle and Light Car Co., Ltd., 7 Bath Road, Exeter, and 28 Tavistock Road, Plymouth. Trade 106-740

G.W.K. G.W.K. G.W.K. 1915, delivery one week, write for list, tuition free. Cass's, the Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road. Museum 623. Trade 106-760

G.W.K., 1914, fitted with speedometer, lamps, hood, screen, tools, jack, etc., in nice condition, any severe trial given, 100 guineas; motorcycle or motorcycle and sidcar taken in exchange. Seen Wauchope's, 9 Shoe Lane, London, E.C. Trade 106-705

G.W.K., two-seater, new 1914 £150 model, slightly shop-soiled, to clear £133. Alexanders, 115, Lothian Road, Edinburgh. Trade 107-710

G.W.K., two and four-seater 1915 models, immediate delivery, trade supplied, exchanges arranged. Maudes' Motor Mart, 136 Great Portland Street, W. Trade 131-720

G.W.K., 1913, coach-painted grey, five lamps, generator, hood, screen, horn, tools, spares, foot starter, detachable extra seat, back tyres unpunctured and nearly new non-skids, spare tyre unused, engine lately overhauled and rebushed for owner's own use, there being no expectation of selling until this week, always owner-driven, carefully used, no breakdowns, fast and very economical to run, ready for any test anywhere, nothing to conceal, 95 guineas cash. Rev. Heaton Renshaw, St. Peter's Vicarage, Cheltenham. 106-j187

G.W.K., 1912-13, two-cylinder, watercooled, painted buff, speedometer, Stepney, new hood and side curtains, screen, acetylene headlamp, side and tail lamps, tyres almost new, tools, spares, £90. 3 Exeter Street, Saltburn-by-the-Sea. 106-j214

G.W.K., late 1913, hood, screen, speedometer (Cowey), clock, electric side and tail lamps, two Lucas headlights, just repainted and varnished, engine overhauled, all guaranteed in perfect condition, £110 or near offer. McNeillie, 47 Staines Road, Hounslow. Trade 106-j179

HILLMAN, the latest model, 9 h.p., complete with dynamo equipment, in stock, £200. Smith and Francis, 22 Pantons Street, Haymarket. Trade 166-724

HILLMAN, 1914, just overhauled by ourselves, hood, screen, five lamps, speedometer, spare wheel with tyre, tools, etc., a bargain at £147 10s. cash. G. N. Higgs, 31 Vauxhall Bridge Road, Victoria, S.W. Trade 106-698

HORSTMANN light car, self-starter, Bosch magneto, complete with five lamps, hood and screen, price £155, any trial. Letzer, Clarence Street, Kingston-on-Thames. Trade 106-714

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 guaranteed, no extra cost, trial runs by appointment. Write for illustrated catalogues, or call at 69 Great Queen Street, Kingsway. Recent 5086. Trade 106-700

HUMBERETTES, from stock, on deferred terms; write for Buyers' Guide. Harrods, Ltd., Brompton Road, S.W. Trade zzz-611

LIGHT CARS AND CYCLECARS FOR SALE (continued).

HUMBERETTE, air-cooled, excellent condition throughout, owner gone to the Front, £67 10s. Samson and Veal, 12 Woodstock Street, Oxford Street. Mayfair 6826.

Trade zzz-412

HUMBERETTE, in magnificent condition, tyres as new, speedometer, head and tail lamps, runs beautifully, absolutely as new and unscratched, must sell at once, 67 guineas. Julian, Broad Street, Reading. Biggest dealer in the South. 43 years reputation.

Trade zzz-747

HUMBERETTE, 1913, a very fine car, in the best of mechanical condition, paintwork good (light grey), hood with side curtains, screen, P. and R. electric headlight, dash and tail lamps, three oil lamps, speedometer, Stepney with new tyre, all tyres as new, luggage carrier, tools, etc., £72 10s. cash. G. N. Higgs, 31 Vauxhall Bridge Road, Victoria, S.W.

Trade 106-696

HUMBERETTE, 1913, fully equipped, in excellent condition, £55 lowest. 3 Camden Lane, York Road, Holloway, N.

Trade 106-j173

HUMBERETTE, 1914 model, water-cooled engine, three speeds and reverse, two new spare covers, any severe trial given, machine in specially good condition, inspection cordially invited, £97 10s.; motorcycle or motorcyle and sidecar accepted in part payment. Wauchope's, 9 Shoe Lane, Fleet Street, London.

Trade 106-704

HUMBERETTE, 8 h.p., 1913 model, a sound and reliable second-hand machine, excellent in appearance, complete with hood, screen, lamps, tools, £67 10s., unprecedented bargain. Wauchope's, 9 Shoe Lane, Fleet Street, London.

Trade 106-701

HUMBERETTE, late 1913, excellent condition, hood, screen, lamps, horn, Stepney and tyre, speedometer, Klaxon hooter, etc., £75. Seen at Eastern Garage, 418 Romford Road, Forest Gate, E.

Trade 106-708

HUMBERETTE, latest 1914 water-cooled, fully equipped, a few trial runs only, recommended and maker's full guarantee, offers wanted. Lankester, 83 Victoria Road, Surbiton.

Trade 106-715

HUMBERETTE, 1913 model, dark green, in exceptional fine condition throughout, 60 guineas. 26 Hallswelle Road, Golder's Green.

106-j154

HUMBERETTE, 1913, straight from Humber works after complete overhaul and repainted brown, as new, tyres perfect, £70 or near. City Garage, Coventry. Trade 106-j170

HUMBERETTE, 1913, complete, good condition, owing to unexpected delivery new car will sell (cash) £10 below lowest Humberette advertised here this week. Newell, Aylesford, Maidstone.

106-j215

INVICTA, late 1913, 9 h.p. twin J.A.P., watercooled Chater Lea gearbox, three forward and reverse, then by final chain drive, complete with lamp, horn, tools, clock, hood, screen, spare covers, tubes, valves, French grey, done 900 miles, cost £140, accept £75 or reasonable offer. Dickinson, Lyndhurst, Ormskirk Road, Aintree.

106-j206

KENDALL, 1913, 8 h.p. J.A.P., hood, screen, lamps, good tyres, bargain, £60; take motorcycle in exchange. South-Eastern Garage, Herne Hill.

Trade 106-j211

LAGONDA, 11 h.p., coupé, detachable wheels, fully equipped, £150; also one demonstration model, many extras, £127 10s. Taylor, Ltd., 21a Store Street, W.C.

Trade zzz-919

LAGONDA, Lagonda, Lagonda. 1914 coupe and full equipment, tuition free, £115. Cass's, The Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road. Museum 623.

Trade 106-758

LAGONDA, Lagonda, Lagonda. 1915 models, immediate delivery, tuition free. Cass's, The Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road. Museum 623.

Trade 106-759

LAGONDA coupe, brand new, accept £142 10s. Colmore Depot, 49 John Bright Street, Birmingham. Trade 106-732

LAGONDA, July, 1914, not done 500 miles, coupé, 11 h.p., must sell, any reasonable price. Renshaw, Tewkesbury Road, Cheltenham.

106-j186

MERLIN-CHASE light car, 10 h.p. Dorman engine, four-cylinder, Branson's special body, hood, screen, five Sankey wheels, 700 by 85, pressure feed, speedometer, and all tools, built to order, cost over £260, used few weeks only, accept best offer over £200. Head, 112 Wellesley Road, Croydon. Tel., Croydon 273.

106-j145

LIGHT CARS AND CYCLECARS FOR SALE (continued).

MORGAN Grand Prix monocar, 90 bore, air-cooled twin J.A.P. engine, all tyres in splendid condition, 700 by 80 covers, painted white and black, guaranteed to lap Brooklands at 50 m.p.h., two headlamps and generator, offers. Box No. 4204, care of "The Light Car and Cyclecar."

Trade zzz-166

MORGAN, 1914, pink, sporting hood, screen, lamps, speedometer, spares, Wilkinson carburetter, 70 m.p.g., excellent condition, best turnout; Yorkshire, £80. Black, 55 Balby Road, Doncaster.

106-h681

MORGAN, immediate delivery of 1915 sporting model, complete with lamps, hood, screen, headlights, etc.; send for list. Julian, Morgan Specialist, Broad Street, Reading; 43 years reputation.

Trade zzz-657

MORGAN, Morgan, Morgan. 1915 models, delivery seven days, tuition free. Write for catalogue. Cass's, The Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road. Museum 623.

Trade 106-757

MORGAN runabouts, all 1915 models in stock, with or without dynamo lighting sets, immediate delivery. Colmore Depot, 49 John Bright Street, Birmingham. Trade 106-735

MORGANS, immediate delivery of 1915 models, sole agents for Devon, from 85 guineas. The Exeter Motor Cycle and Light Car Co., Ltd., 7 Bath Road, Exeter, and 28 Tavistock Road, Plymouth.

Trade 106-739

MORGAN, late 1913, standard, overhauled and repainted few weeks ago, new leather hood, screen, two P. and H. headlights and generator, speedometer, clock, spares, tools, etc., luggage carrier, perfect condition and appearance, £67 10s. cash. G. N. Higgs, 31 Vauxhall Bridge Road, Victoria, S.W.

Trade 106-697

MORGAN, 8 h.p., 1913, standard model, fitted with speedometer, lamps, hooter, hood and screen, complete, a bargain at £57 10s. Wauchope's, 9 Shoe Lane, Fleet Street, London.

Trade 106-702

MORGAN, grand model, very smart turnout, two-speed gear and free engine, any severe trial given, £75. Seen at Wauchope's, 9 Shoe Lane, London.

Trade 106-706

MORGANS. All 1915 models, immediate delivery, exchange or easy payments, trade supplied. Maudes' Motor Mart, 136 Great Portland Street, W.

Trade 131-718

MORGAN 1915 models now ready for delivery, exchanges, easy terms. Write to us if you want the best terms and quickest delivery. Elce and Co., 15 Bishopsgate Avenue, Camomile Street, E.C. 'Phone, Avenue 5548. Trade 106-721

MORGAN, 1913, sporting, green, hood, screen, acetylene lamps, clock, speedometer, spares, dual lubrication, just overhauled, any trial, offers over £64. 43 Hartford Road, Huntingdon.

106-j160

MORGAN, late 1913, sporting body, screen, speedometer, lamps, mats, 3 in. tyres, car is as new, exceptionally well preserved and in pink of condition, painted biscuit, lined khaki, seen by appointment, £69 10s. W., 219 Mitcham Lane, Streatham.

107-j156

MORGAN, 1914, Grand Prix, water cooled, J.A.P., guaranteed in perfect condition throughout, complete with screen, electric side and tail lamps, automatic lubrication, Binks three-jet or B. and B. semi-automatic carburetters, spare chains, valves, large quantity tools, etc., foot mats, luggage platform, Klaxon and Lucas horns, 700 by 80 Dunlops front, 700 by 65 heavy Kempshall back, all in good condition, any trial and examination given, cost £125, offers. 128 Coltman Street, Hull.

Trade 108-j151

MORGANS. Having contracted for a quantity for 1915 season, and having in stock for immediate delivery Grand Prix and sporting models, better than ever, solicit your inspection or inquiry. Potter, Leicester Grove, Blackman Lane, Leeds. Tel., 4046.

Trade 106-j143

MORGAN, Grand Prix, as new, Rushmore head, electric side and tail lamps, screen, £87 10s. 823 Stratford Road, Birmingham.

106-j172

MORGAN, 1912, engine just overhauled, painted grey, excellent condition, complete with lamps, horn, speedometer and tools, bargain, £59 10s. King, Stapleford, Cambs. 106-j205

MORGAN runabout, 1914 Grand Prix model, 8-10 h.p., over, head valve, water-cooled J.A.P. engine, fitted with steel pistons, special beaten metal streamline two-seater body, screen, winner of three firsts and passenger-machine championship, Weston-super-Mare Speed Trials, June, 1914, very fast, £125. F. G. Cox and Co., Perry Road, Bristol.

Trade 106-j200

LIGHT CARS AND CYCLECARS FOR SALE

(continued).

MORGANS. Morgans. Morgans. Sole agent for Worcester. Early delivery 1915 models; exchanges, repairs, spare parts; free tuition on agent's own car. Boddington, Worcester. Trade 106-j167

MORGAN, 1914 Grand Prix, Royal blue, 700 by 85 Stepney Road Grip and Stelastic tyres, new condition, Lucas cyclecar lamps and electric tail lamp, Binks carburetter, first-class condition, powerful, fast, price £85. G. W. Braithwaite, 96 Highgate, Kendal. Trade 106-j203

MORRIS-OXFORD. For quick deliveries write to H. W. Cranham, Wholesale and Retail Agent, 221 Deansgate, Manchester. Trade 112-583

MORRIS-OXFORD light cars, always in stock for immediate delivery. Stewart and Ardern, 18 Woodstock Street (off Oxford Street), London, W. Trade 111-f36

MORRIS-OXFORD, 1914 model, cabriolet de luxe, built specially to connoisseur's requirements, C.A.V. electric lighting outfit, two-seater, can seat three, in perfect order, only used for town work, ideal for doctor, can be seen in London, and trial run given at any time, cost £270 in April. Box No. 4543, care of "The Light Car and Cyclecar." zzz-353

MORRIS-OXFORD, sole agents for Surrey and parts of Sussex and Hampshire, the quality light car, best delivery dates, free tuition, etc. The Haslemere Motor Co., Ltd., Haslemere. Phone, 43. Trade zzz-261

MORRIS-OXFORD, immediate delivery, popular model, 165 guineas. The Exeter Motor Cycle and Light Car Co., Ltd., 7 Bath Road, Exeter, and 28 Tavistock Road, Plymouth. Trade 106-738

MORRIS-OXFORD, all models, immediate delivery, cash and exchanges. Colmore Depot, 49 John Bright Street, Birmingham. Trade 106-734

MORRIS-OXFORD, 1914, 10 h.p., complete with hood, screen, five lamps, horn, tinpiece, Walford speedometer, luggage carrier, mat, five Sankey detachable wheels, Dunlop grooved tyres, condition as new, will accept £145 or near offer, owner buying larger car. Box No. 4580, care of "The Light Car and Cyclecar." 106-728

MORRIS-OXFORD. Morris-Oxford. Morris-Oxford, 1914, de luxe, and full equipment, cost £230, price £165, tuition free. Cass's, the Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road. Museum 623. Trade 106-755

MORRIS-OXFORD. Morris-Oxford. Morris-Oxford, 1915 models; immediate delivery, tuition free. Cass's, the Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road. Museum 623. Trade 106-756

PERRY, 1915, four-cylinder, 11.9 h.p., Lucas electric lighting set, 200 guineas, immediate delivery, cash or easy terms. Campion Depot, Moor, Sheffield. Trade 139-689

PERRY light cars, trial runs arranged; also Humberette, Morgan, and Marlborough. Turpins, 22 and 29 Preston Road, Brighton. Trade 125-f356

PERRY, 1915, delivery next week of 11.9 four-cylinder model, with electric lighting set and dickey seat, price 205 guineas, motorcycle or light car taken in part exchange. Julian, Broad Street, Reading. Biggest dealer in the South. 43 years reputation. Trade zzz-564

PERRY, 1915, four-cylinder, two-seater, dynamo lighting, 200 guineas. Yorkshire agents. Central Garage, Ltd., Guildford Street, Leeds. Trade 106-655

PERRY. Perry. Perry. 1915, 11.9, four-cylinder, three-speed and reverse, gate change, five Sankey 750 by 85 wheels and tyres, five lamps, generator and horn, coupe, £252 10s.; four-seater, £220 10s.; two-seater, £199 10s.; Lucas dynamo lighting outfit and five lamps, £10 10s. extra; dickey seat £4 4s. extra; delivery ten days, tuition free; the last word in light cars; do not fail to see the Perry before you buy, or you will regret it. Cass's, the Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road. Museum 623. Trade 106-754

PERRY, 1914, new June, not done 800 miles, absolutely like new, fully equipped, good reasons sale, £120, any trial. Kirkpatrick, 32 Stanley Street, Bedford. 106-j159

PERRY, coupe, nearly new, five lamps, spare wheel, speedometer, electric horn, loose covers and other extras, accept £150. Payn, 69 St. Andrew's Road, Exmouth. 107-j157

PERRY car, 1915, 11.9 h.p., four-cylinder, four-seater model, complete hood, screen, Lucas dynamo lighting set, Sankey detachable wheels (five), fitted with 750 by 85 Dunlop tyres, immediate delivery from stock, £231. F. G. Cox and Co., Perry Road, Bristol. Trade 106-j199

LIGHT CARS AND CYCLECARS FOR SALE

(continued).

PERRY light car, 1914, two-cylinder model, complete, hood, screen, three lamps, horn, five Sankey detachable wheels and 700 by 80 Dunlop tyres, shop soiled, £135. F. G. Cox and Co., Perry Road, Bristol. Trade 106-j198

RANGER, 1914, fully equipped, just delivered, £23 down, 12 monthly payments of £7 17s. 2d. Service Co., 292 High Holborn. Trade zzz-340

ROLLO tandem two-seater, 1912, 8-10 J.A.P. engine, perfect order, hood, screen, lamps, speedometer, £35. Boughton, Upton-on-Severn. Trade 106-j208

ROLLO 1913 cyclecar, 8-10 J.A.P. engine, handsome, two-seated sociable body, hood, screen, lamps, tools, car nearly brand new, £50, photo. B. Toms, Catherine Street, Leicester. 106-j204

ROLLO 1913 8 h.p. cyclecar, J.A.P. engine, Bosch magneto, hood, screen, speedometer, headlamp, side and tail lamps, horn, £50. Eastern Garage, 418 Romford Road, Forest Gate, E. Trade 106-707

SAXON! SAXON!! SAXON!!! The super-excellent light car, 10 h.p., four-cylinder, two-seater, complete, 100 guineas. Communicate with the pioneer agents, Western Motor Works, Chislehurst, Kent. Trade 129-g766

SINGERS, from stock, on deferred terms; write for Buyers' Guide. Harrods, Ltd., Brompton Road, S.W. Trade zzz-612

SINGER, 1913, light car, painted blue, in perfect condition, £115, any trial. Harold Petty, 32 King Street, Leicester. Trade 107-646

SINGER, 1914, dynamo lighting, delivered July, practically new, only done few miles, fully equipped, cost £206, buying four-seater, guarantee perfect, any trial, free tuition and delivery, £150. Davidson, 9 Church Drive, Daybrook, Nottingham. Trade 106-h667

SINGER light car, 1915 model actually in stock. This wonderful car is fitted with dynamo electric lighting set, hood, screen, horn, painted suede grey, upholstered brown leather, with new type body, and is a most luxurious car. Price complete with dickey seat 202 guineas. Motorcycle or light car taken in part payment. Easy terms arranged. Free delivery included. We give expert tuition in driving and overhauling, and do everything possible to assist purchasers. Julian, Singer Specialist, Broad Street, Reading. Biggest dealer in the South; 43 years reputation. Trade zzz-746

SINGER, 10 h.p., light car, late 1913 model, with 1914 improvements, speedometer, two spare wheels, complete outfit, just repainted dark green, special bargain, £115. Lamborn Motors, Ltd., 3 Elizabeth Street, Victoria, S.W. Trade 106-722

SINGER, 10 h.p., first genuine 1915 model in London, nickel-plated fittings, special radiator, etc., trial runs given, immediate delivery, £195, or dynamo lighting 195 guineas. Bamford and Martin, Ltd., Callow Street, Fulham Road, S.W. Kensington 3920. Trade 106-j158

SINGER, 1914, purchased June, not done 3000, special dickey, dynamo lighting set, new condition throughout, price with speedometer, clock, electric horn, etc., £155, lowest, absolute bargain. Apply, 169 Green Street, Bethnal Green. 106-j195

SINGER light car, 1914 model, with dynamo lighting set, hood, screen, horn and electric horn, steering column, lamp, clock, speedometer, luggage fitment, all in perfect order, any trial, £163, tyres in good condition. Murray, 39 Redington Road, Hampstead, N.W. 106-j191

SINGER coupe, the most luxurious light car coupe ever produced, dynamo lighting, large headlights, side and tail and two inside lamps, speedometer, clock, flower vase, tools, etc., spare wheel complete, painted maroon with black top and mouldings, upholstered Bedford cord, a most suitable car for a lady or professional man; we have thoroughly overhauled it, and it runs as well as when new; it cost £260, and we will accept £175; any trial in London. G. N. Higgs, 31 Vauxhall Bridge Road, Victoria, S.W. Trade 106-699

SINGER, 1914 de luxe model, with dynamo lighting set, dickey seat, usual equipment, speedometer, and new spare tyre, etc., £165. Eastern Garage, 418, Romford Road, Forest Gate, E. Trade 106-709

SINGER, 1915 models, delivery ex stock, open and coupe cars; motorcycles or light cars accepted in exchange; liberal allowances; trade supplied. Maude's Motor Mart, 136 Great Portland Street, W. Trade 131-716

LIGHT CARS AND CYCLECARS FOR SALE (continued).

SINGER light car, 1913, 10 h.p., excellent condition, electric side and tail lamps, acetylene head lamps and generator, hood, screen, speedometer, horn, exhaust whistle, extra oil tail lamp, spare wheel, two extra tyres, fully insured, policy will be transferred, complete, £125. A. C., 47 Hereford Road, Westbourne Grove, Bayswater, London, W. Phone, Park 1503. 107-j144

STANDARD, 1915 model, complete with dickey seat, electric lighting set, self-starter, grooved tyres on back wheels, price £231 10s. Send for full particulars of this magnificent car. Motorcycle or light car taken in part payment. Easy terms arranged. We include free delivery and expert tuition in driving and overhauling, and generally do everything possible to assist customers. Julian, Standard Specialist, Broad Street, Reading. Biggest dealer in the South; 43 years reputation. Trade zzz-748

STANDARD, 1914, 9.5, five lamps, detachable wheels, speedometer, oversize tyres, £145. Smith and Francis, 22 Pantou Street, Haymarket. Trade 106-726

STANDARD, 9.5, new July, electric horn, speedometer, clock, covers, perfect condition, price £155, no offers. Box No. 4578, care of "The Light Car and Cyclecar." 106-j219

STELLITE, two-seaters, dickey seat, detachable wheels, etc., latest models, two for immediate delivery in our showrooms. Wood and Phillips, Dorking. Trade 107-g780

SWIFT, 1915, 10 h.p., four-cylinder, dynamo and full equipment, £200, or £240 down and 12 monthly payments of £13 13s. 4d., subject bonus; exchanges arranged. Service Co., 292 High Holborn, London. Trade zzz-629

SWIFT, 10 h.p., late 1913, two-seater, five detachable wheels, speedometer, completely equipped, £145. Smith and Francis, 22 Pantou Street, Haymarket. Trade 106-725

SWIFT, Swift, Swift, 1915 models, one week delivery. Write for list, tuition free. Cass's, The Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road. Museum 623. Trade 106-753

SWIFT, 10, four-cylinder, "the perfect light car." 1915 model, complete with electric lighting equipment, £200 cash or deferred terms; call and try and then buy. Wholesale and Retail Dealers, Heath's Garage, The Motorists' Market of the Midlands, John Bright Street, Birmingham. Trade 106-743

SWIFTS, 1915 models, ex-stock, open and coupe cars; motor-cycles or light cars accepted in exchange; liberal allowances; trade supplied. Maude's Motor Mart, 136 Great Portland Street, W. Trade 131-717

SWIFT 1914 light car, only used but little and carefully, mechanically sound throughout, complete with all lamps, hood, screen, £110, or exchange. Wauchope's, 9 Shoe Lane, Fleet Street, London. Trade 106-703

VICTOR cyclecar, 1914, brand new, 8 h.p., two-speed and reverse, water-cooled, £105. The Exeter Motor Cycle and Light Car Co., Ltd., 7 Bath Road, Exeter, and 28 Tavistock Road, Plymouth. Trade 106-741

VICTOR, 1914, 8 h.p., water cooled, hood, screen, tools, speedometer, done 1000 miles, perfect condition, a bargain, £85. Box No. 4570, care of "The Light Car and Cyclecar." 106-j163

WHITING-GRANT, Whiting-Grant, Whiting-Grant, 1915 models, immediate delivery, tuition free, absolutely the last word in American light cars. Cass's, The Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road. Museum £23. Trade 106-752

WINTER, 1915, four-cylinder model, ready, unequalled in traffic, holds the road, perfectly sprung, starts from driver's seat, 100 guineas, specification. 62 West Hill, Wandsworth. Trade 106-j189

MISCELLANEOUS LIGHT CARS AND CYCLECARS.

BRIGHTON. Perry, Humberette, Morgan, Marlborough. Trial runs given. Easy terms arranged. Turpin, 22 and 25 Preston Road. Trade 114-842

BARGAINS in Morgans, G.W.K.s and other cyclecars and light cars at Spencer's Garage, Uxbridge. Trade 132-36
A.-C. Sociable, £39 10s.; 8-10 twin Bedelia, £39 10s.; 1914 three-speed G.N., £85; 8 h.p. Victor, £59 10s.; 8 h.p. Sabella-J.A.P., £49 10s.; 1914 Lagonda, £120; cash offers or exchange considered. Motor Exchange, Westgate, Halifax. Trade 107-j212

MISCELLANECUS LIGHT CARS AND CYCLECARS (continued).

TRADESMAN'S new three-wheel motor parcelcar for light delivery, used few times for demonstration, usual price £105, accept £60 for quick sale. F. H. Møen, Ltd., 514 Gray's Inn Road. Trade 108-j148

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 Road, Leytonstone, London, N.E. Trade zzz-505

VALVE-GRINDING compound, fast cutting, clean finish, 10 years reputation, no emery; large tin, 7 $\frac{1}{2}$ d. post free. Williams Bros., Lytham. Trade 118-b923

NEW, guaranteed worm-driven back axles, suitable for cars up to 12 cwt., 4 ft. track, complete with hubs, price £24 cash; also radiators at clearance prices. Turners, Lever Street, Wolverhampton. Trade zzz-43

SPECIAL line. Brand new two side and tail electric lamps, heavy brass or nickel-plated, latest torpedo design, best English make, complete with Osram metallic filament bulbs, armoured wire to each lamp, tumbler switch and 25-ampere hour actual lighting capacity Essex accumulator in metal case, the whole set ready for immediate use, 54s. Send for illustrated catalogue to the Essex Accumulator Co., 497-499 Grove Green Road, Leytonstone, London, N.E. Trade zzz-506

LANGLEY, Sheet Metal Specialists; radiators, any pattern, made and repaired; bonnets, tanks, wings, panels, etc., maker of the famous all-metal bodies: Unity Works, Malvern Link. Trade 114-g379

CYCLECAR chassis, four wheels, belt-driven, two-speed, epicyclic gear, wheel steering, tyres, without engine, £9 10s. Pitcher, 44 Brigstock Road, Thornton Heath, Surrey. 106-g786

AMERICAN component parts. Design, construction, quality and prices unapproachable, agents wanted. Below.

AMERICAN component parts. The Farmer engines and unit power plant, 2 $\frac{1}{2}$ by 4 ins., adopted by all the live American light car manufacturers, send for lists, inspect it. Agents wanted. Below.

AMERICAN component parts. Salisbury axles, new standard worm and bevel drive, full-floating light car types just out, blue prints supplied. Agents wanted. Below.

AMERICAN component parts. The Zephyr carburettors, highest efficiency, lowest consumption, one-half the price of all others. Agents wanted. Below.

AMERICAN component parts. Steering sets, universal joints, radius rods, brake rods, ball-socket tie rods. Send your inquiries. American Car and Specialities Co., 169 Queen's Park, London. Telephone, 2478 North. Trade 107-h635

GARAGE, portable, for small car, double doors, and windows, strong bench, seasoned wood throughout, condition as new, £5. 35 Hayter Road, Brixton, S.W. 106-647

CASS'S Motor Mart, the only light car and cyclecar specialists, can give immediate delivery of 1915 A.-C. 10 h.p., Calcott, G.W.K., Lagonda, all models, Morris-Oxford, Stellite, Wilton, and seven days delivery of A.-C. 12 h.p., Morgan, Perry, Saxon, Singer, Standard, Swift, Victor and any other make, and can supply several new and second-hand 1914 light cars and cyclecars at bargain prices. Write for lists. Exchanges arranged, tuition free, deferred payments. The Light Car and Cyclecar Specialists, 5 Warren Street, Euston Road, W. Museum 623. Trade 106-750

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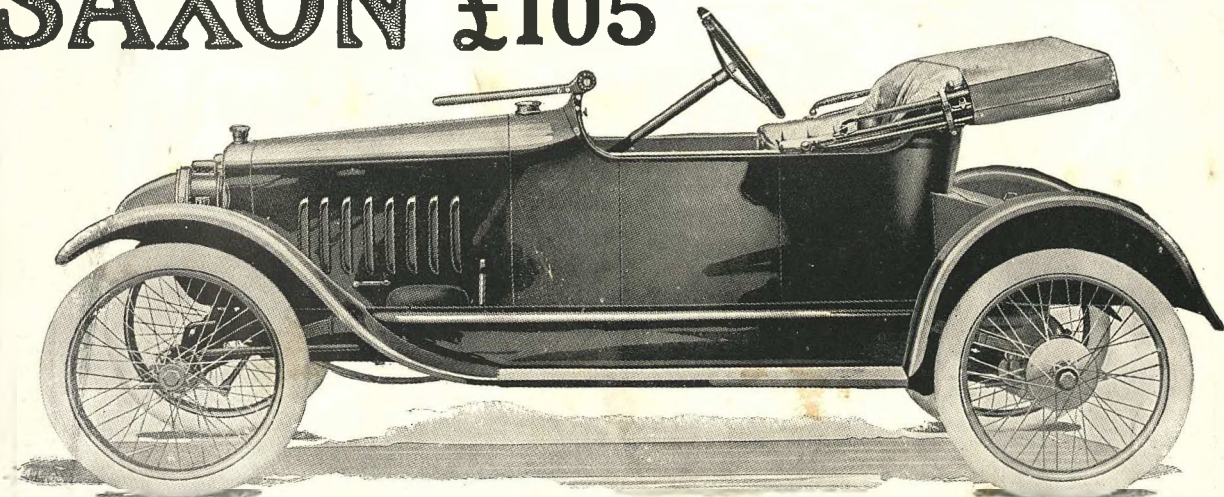
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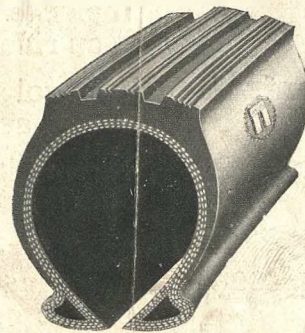
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