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19

The only Small Car Journal

Total Eclipse

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June 29,
6.20 a.m.

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MADE IN ENGLAND

Nothing can ecli
the supremacy o

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OF KENSINGTON

offer you any make of car upon the market to-day on the following EASIEST OF ALL PAYMENT TERMS:—The Car of your choice will be delivered to you against the first of twelve equal monthly instalments. No deposit, as has always been required in the past, is asked for.

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You really should write for a copy of our new 1927 44-page Buyer's Guide, for it tells you all about our liberal "Service after Sale" as well as containing invaluable information which every motorist ought to possess—this fine illustrated guide is FREE for the asking.

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The following give excellent and very economical service.

MORGAN from **£89** to **£140**
JOWETT from **£139** to **£185**
AUSTIN from **£145** to **£775**
SINGER from **£148 10** to **£350**

EXCHANGE—We have an excellent market for used cars, let us take yours in part exchange for a new model.

May we send you an Illustrated Catalogue describing the car which interests you particularly?

To ensure satisfaction Taylors supply Second-hand Cars upon 7 days' Trial.

THIS WEEK'S SECOND-HAND SNIPS.

ROVER, 1920, 8 h.p., 2-Seater	£25
AUSTIN, 1925, 7 h.p., 2/3-Seater	£95
CITROEN, 1924, 11 h.p., Coupe	£87 10
AERO MORGAN, 1927, 10 h.p., J.A.P.	£115
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'Phone: Kensington 8558/9 and 5540. 'Grams: "Dynametro, Southkens."

And these Car Owners never realised how their Car COULD Run until we proved it to them.

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What an advertisement *says* and what the advertised product *does* are often two different matters.

Here's an exception, for in many instances where Car owners have fitted a

performance has exceeded our claims. In any case we prefer you to

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Under our special 30 Days' money-back-guarantee, we will send you a B & B for your Car.

Doesn't it stand to reason that we couldn't make such an offer if we were not certain of your satisfaction?

Prices from £3 - 10 - 0
Models to suit all Cars.

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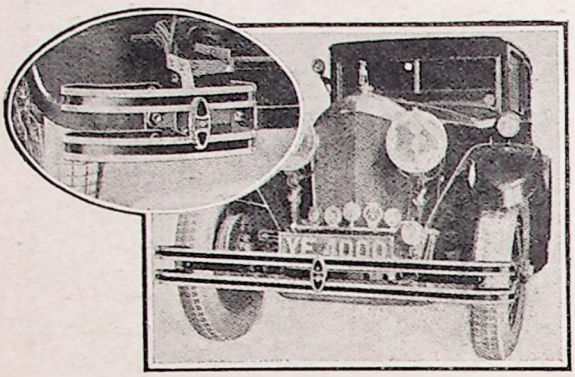
WHEN REPLYING to advertisements, mention "The Light Car and Cyclecar." It helps the advertiser and you, and assists the small car movement generally.

Pyrene Bumpers
Protect every make of Car



(Photograph by courtesy of Messrs. Jack Barclay, Ltd.)

WHATEVER car you may be running, it does not pay to risk costly damage to your Radiator, Lamps, Wings, etc., which even a minor collision involves. Then there is always the danger that may arise from a burst petrol tank. Owners of all makes of cars are now enjoying Safer Motoring by fitting Pyrene Bumpers—they will save *your* car from damage and yourself from trouble and even personal injury.

"The Bumper with the Leaf-Spring Buffer."
Patent applied for.

PYRENE BUMPERS are distinctive in design and construction. The special spring steel is exceptionally resilient and ensures maximum absorption of shocks. An ingenious leaf-spring Buffer re-enforces the main bars, provides additional strength, and evenly distributes force of impact. Brackets are strong, substantial, and easily fitted. Pyrene Bumpers are made in three sizes, all handsomely finished in Nickel and Black.

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No. 1 (Small), £3 - 10 - 0 each. No. 2 (Medium) £4 - 0 - 0 each.
No. 3 (Large) .. £5 - 0 - 0 each.

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No. 3 (Large) .. £5 5 - 0 per pair.

All the above prices include standard brackets, except in the few cases where special brackets are required, when an extra charge of 10/- may be necessary.

Pyrene TRADE MARK MOTOR CAR BUMPERS

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Makers of the famous Pyrene Fire Extinguisher.
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1/- EACH
4/- per set of 4
Complete with Adapter, Resilient Non-vibratory Plug and Insulator, Nickel-plated.

You can buy this great little fitment at your local garage, accessory dealer, or direct from

Telegrams: "Trolinx, Churton, London." **LECTRO LINX LIMITED,** Manufacturers of Clix Radio Fitments, (Motor Dept.) **254, Vauxhall Bridge Rd., LONDON, S.W.1.** Telephone: Victoria 5120
Write for descriptive leaflet.

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HAND PROPELLED AND MOTOR DRIVEN INVALID CHAIRS

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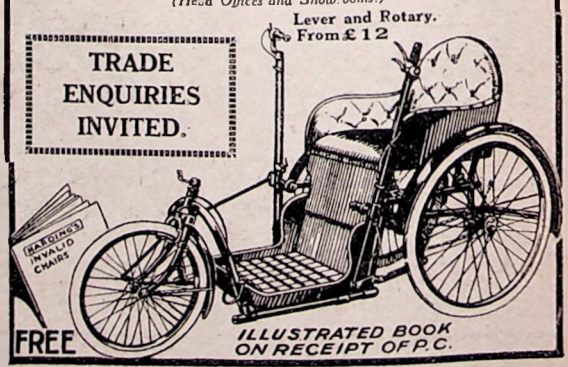
TRADE ENQUIRIES INVITED.



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

✱ NEXT WEEK!

ANNUAL SUMMER NUMBER CONTENTS.

Great Number on Tuesday, June 28th.

THE RUDGE-WHITWORTH 24-HOUR RACE.

Special Report by Aeroplane. Illustrated by Bryan de Grineau.

J.C.C. HIGH SPEED TRIAL AT BROOKLANDS.

And all the News and News Pictures.

AUSTIN, MORRIS, A.C., BUICK, CHEVROLET, VULCAN, BEARDMORE, CADILLAC ETC.

THE STERN ORACLE

ABRIDGED RECOMMENDATION CHART.

MAKE.	SUM.	MAKE.	SUM.
A.C. 4-cyl.	WWh	Lanchester	WWm
A.C. 6-cyl.	WWm	Lancia (Lambda)	WWm
Alvis	WWh	Lancia (other models)	WWh
Armstrong-Siddeley	WWh	Minerva	WWm
Austin (all models)	WWh	Morris	WWm
Bean	WWm	Renault 8 h.p.	WWm
Bentley	WWh	Rolls-Royce	WWh
Buick	WWm	Rover 8 h.p.	WWeh
Citroen 7·5 h.p.	WWm	Rover 9·20 h.p.	WWm
Citroen(other models)	WWh	Rover (other models)	WWh
Clyno	WWh	Singer	WWm
Crossley	WWh	Standard 11 h.p.	WWm
Daimler	WWm	Standard 14 h.p.	WWh
Dodge Bros.	WWm	Sunbeam	WWm
Essex	WWm	Swift	WWm
Fiat	WWh	Vauxhall 23/60 h.p.	WWm
Ford	WWl	Vauxhall (other models)	WWh
Humber 8 h.p.	WWm	Vulcan	WWh
Humber (other models)	WWh	Wolseley	WWh
Lagonda	WWm		

Send for "FIRST AID FOR THE CAR," which contains a complete chart for all makes of cars, and a fund of useful information and hints to motorists.

Take the Law of Lubrication into your own Hands

Bench tests of engines lubricated with Sternol WW, as well as the experience of tens of thousands of users on the road, prove that if you use Sternol WW you will never need to put your car in *dock*, never need to have it subjected to *cross-examination* for traces of carbon deposit, never have it *ushered* into a garage in undignified helplessness nor *pay costs for wilful damage*.

Sternol WW is a British made product, an oil without an equal and every drop you buy is subjected to our special voltolising process. Moreover, it is of identically the same quality as the Sternol WW on which 68 world's speed records were recently obtained at Brooklands.

These are just a few of the popular cars, the makers of which have officially approved Sternol WW.

Sternol WW

MOTOR OIL

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

Makes Engines Purr Like Pussies

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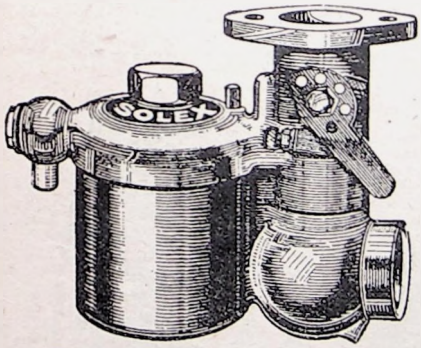
MENTION of "The Light Car and Cyclecar" when corresponding with advertisers assists the cause of economical motoring.

A Savings Bank in your Car

Put your money into a "Solex" Carburettor and save pounds in the season. On any make of car, on any journey, "Solex" saves money in reduced petrol consumption and gives better running too! In addition to which "Solex" is the simplest and most trouble-free carburettor in the world.

Send for details of our 30 days FREE Trial offer and prove "Solex" economy at our expense.



30 DAYS FREE TRIAL

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

Read what 'Solex' users say:

MORRIS.—"We certify that 'Solex' has improved our Morris by 20 m.p.g." **A-C.**—"Easier starting, better acceleration, greater climbing powers, increased m.p.g." **7 h.p. FIAT.**—"'Solex' gives us 6 miles more to the gallon, much superior to the previous carburettor." **ROVER 9 h.p.**—"Doing about 45 to the gallon. The engine is a pleasure to drive." **CLYNO.**—"404 miles on 10 gallons, and 248 miles on 6 gallons." **7 h.p. AUSTIN.**—"Average 51 m.p.g." **SINGER.**—"52 m.p.g with four up."

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THE NO-TROUBLE CARBURETTOR

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Telegrams: "Solexcarb, Baker, London."

't Solex—and note the difference'

Goodall Ltd.

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

We'll decide on this car - and take it now

Instant Delivery Week —at Newnhams

June 20th to 25th.

AT this season of the year vague delivery promises are very unsatisfactory. By careful anticipation of demand we are in a position to offer for *instant delivery* nearly 100 brand new cars of the most popular and attractive makes. All of these are on view in our showrooms and available for your inspection. You can select the actual car you fancy and drive it away, ready licensed, within an hour—a deferred payment case *might* take 15 minutes longer.

Our recent "USED CAR" show proved so popular that this department is very urgently in need of replenishment, so that we shall be very glad of an opportunity to allow an exceptionally good price for your old car in part payment for a new one.

Practically a full range of models of the following makes will be available subject to being unsold, and definite specifications of colours and upholsteries will be supplied on request.

Established over 30 years

(It makes *such* a difference, you know.)

NEWNHAM
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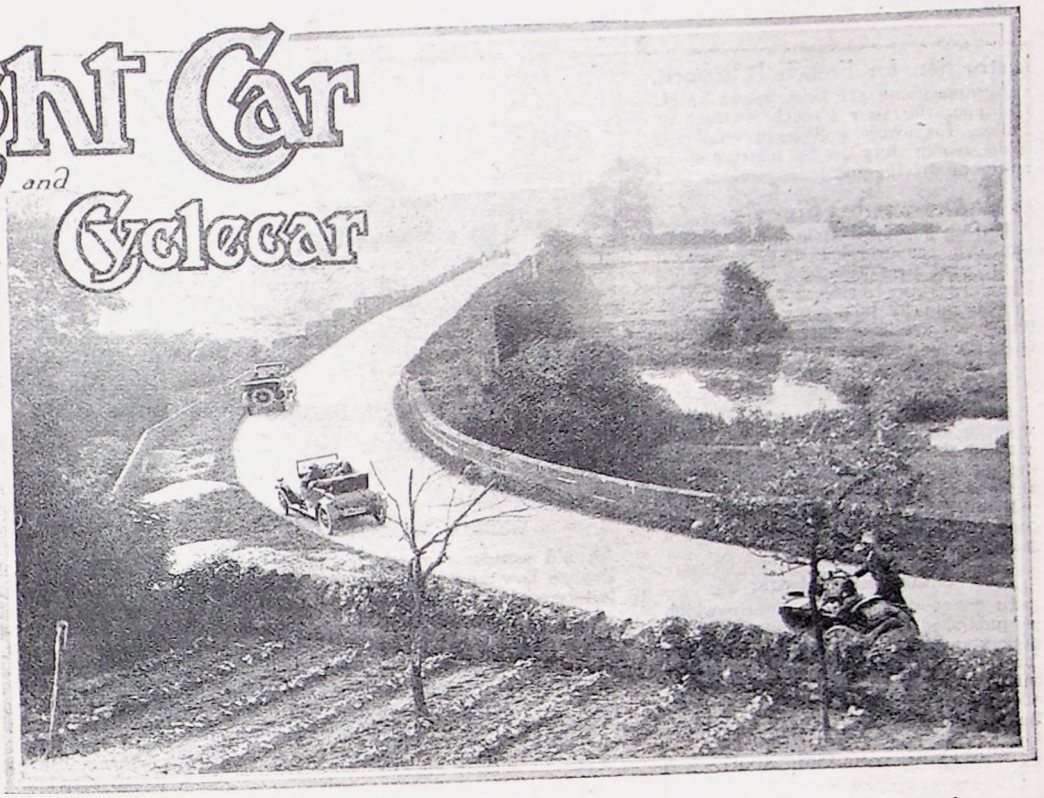
Telephone—RIVERSIDE 4646 (Private Exchange).

EXCHANGES BY POST

We will make a DEFINITE allowance offer by post for your present car in part payment for any new model and our quotation will include FREE delivery and collection to any address in the United Kingdom. Full particulars of this and other exceptionally attractive facilities unobtainable elsewhere are given in our brochure "Cars of Beauty," a free copy of which will gladly be sent on request.

A SCOTTISH TOUR. A copy of this booklet describing a very interesting tour in the extreme north-west and west coast districts of Scotland, written and illustrated by a member of the firm who knows the country well, will gladly be sent free to anyone interested.

The Light Car and Cyclecar



SWANKESTONE BRIDGE. — Said to have been built in the 13th century at the expense of two spinsters whose lovers were drowned whilst trying to ford the river, Swankestone Bridge, over the Trent, is approached by a viaduct running across several meadows.

NOTES, NEWS & GOSSIP of the WEEK

The Eclipse.

Don't forget the total eclipse on June 29th. Car owners will be exceptionally fortunate in being able to reach the best vantage points with ease and in comfort.

T.T. Race Reports.

Motor Cycling gives news no time to get stale. The Junior Tourist Trophy Race was held last Monday and special editions were on sale the same evening. The Lightweight Race was held on Wednesday; at 6 o'clock that night everyone in the Isle of Man had a copy containing a complete report of both races.

This Week.

In an article entitled "What is Meant by 'Performance,'" simple and straightforward methods of checking the general efficiency of a car are explained in detail. Owners of Clyno cars will be interested in an article which deals with keeping in tune the 11 h.p. and 12 h.p. models, whilst on our centre pages an owner-driver with a considerable experience puts forward his views on the requirements of light car owners for 1928.

ON OTHER PAGES

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LIGHTING-UP TIMES (Rear Lamps) for Saturday, June 18th.

London	9.48	Birmingham	10.1
Newcastle	10.16	Liverpool	10.13
Edinburgh	10.30	Bristol	9.58

Moon—Last quarter, June 22nd.

Reckless Driving—Old Style.

The driver of a pony and trap was fined 10s. at Bromley, Kent, for reckless driving on the Sevenoaks road. A constable said the trap was driven from side to side of the road, a woman passenger was thrown out and Bank Holiday traffic held up. It is interesting to speculate upon the probable penalty had the vehicle been a car.

Parisians Getting Desperate.

With the object of checking the theft of cars in Paris—about 50 per day are stolen, it is estimated—the Minister of Justice will probably issue a decree compelling all garage proprietors to keep special registers of cars that pass through their hands, together with the names and addresses of the owners.

Whitsun Holiday Motoring.

The records obtained by the Automobile Association from reports sent in by A.A. road patrols show that, although the weather was not so ideal for motoring during the Whitsun holidays as it was during Easter, there was a considerably larger number of motorists on the roads, but accidents were fewer than at Easter.

Next Week.

"Why Engines Get Dirty" will be the title of an instructive article which deals with carbon formation and methods of reducing it to a minimum. Another article of a technical nature, but written in non-technical manner, will explain how an accumulator works. We hope also to publish the test-run report of a 1½-litre Bugatti car.

Instruction for French Policemen.

Arrangements are being made by M. Chiappe, the new French Prefect of Police, for every policeman employed upon traffic duty to be instructed in motorcar driving and management.

Dry-weather Squeaks.

During any spell of hot, dry weather one can see worried drivers turning their cars first this way, then that. They are trying to trace the dry-weather squeak and he is a very elusive imp. The best cure is to wait for a wet run, then the imp often vanishes.

Level-crossings Again.

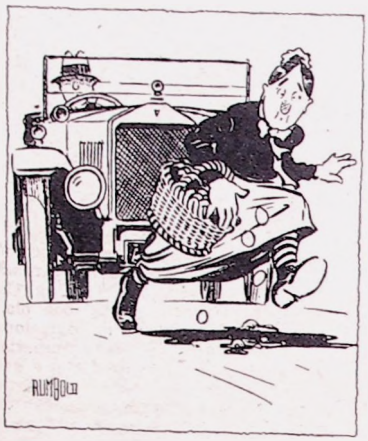
An accident was narrowly averted when a car coming from East Acton crashed through the L.M.S. level-crossing gates. The approach is on a decline and the driver found himself unable to pull up. The line was cleared just in time to permit the safe passage of a train.

Steam Light Cars.

In connection with an article which we published recently on steam cars, we understand that a company has been formed with the object of manufacturing these vehicles. The concern in question is British Steam Motors, Ltd., Lady Dane Garage, Faversham, Kent.

A Dangerous Cliff Road.

Holiday-makers who have enjoyed the excellent view which is to be obtained from the top of the cliff road at Walton-on-the-Naze will learn with regret that the Essex County Council is seeking an order to close part of the parade to heavy vehicles, and also, possibly, to all motor traffic. This course is made necessary by the unsafe condition of the cliff road accentuated by the passage of heavy chars-à-bancs carrying sight-seers.



WEEKLY WISDOM.

An old woman crosseth the road. Beware how thou blowest thy horn, lest peradventure she loseth her head and thou thy licence.

This is the first of a series of motoring hints which, although dealt with in an amusing style, are nevertheless worth taking to heart.

Where is It?

Those who drive regularly in London, or those who visit the metropolis only occasionally, will find Tucker's Metropolitan Taxi Guide an invaluable publication, as it contains the location of 6,000 every-day destinations. The booklet can be obtained from the publishers, Messrs. W. H. Tucker and Sons, 3, Stockwell Park Road, Clapham Road, London, S.W.9, post free 8d., or it may be ordered from any newsagent or bookseller, price 6d.

The Latest Air Record——

——is said to be held by a garage mechanic who fully inflated four balloon tyres in as many minutes.

The Seven Fat Years.

A Melbourne dealer estimates that Australia will require 1,000,000 cars during the next seven years. This represents an enormous increase on the demand for the last seven lean years, and it is anticipated that British makers will capture a large share in the market.

Alton Towers.

Motorists in the Peak District will find Alton Towers, the one-time seat of the Earls of Shrewsbury and now a pleasure ground for visitors, a very attractive venue. Alton Towers is situated near Uttoxeter, and special attractions are arranged during the season.

Cardinal Watches Racing.

Among the spectators at the speed trials organized last Saturday by the Oxford University and the Public Schools' Motor Clubs was His Eminence Cardinal Bourne. The event took place at Heythrop Park, a Jesuit seminary, and a private road afforded an extremely sporting course of about 1½ miles in length. Conspicuously good performances were put up by Frazer-Nash cars; in particular, G. W. Bagshawe, the well-known O.U.M.C. driver, treated the crowd to some thrills. The 1,100 c.c. class was won by A. MacLachlan (Austin Seven), the runners-up being F. Buckland (Austin Seven) and R. Corbett (G.N.). In the 1,500 c.c. class, honours fell to D. K. Thornton (Alvis), R. Beaver (Frazer-Nash), and G. W. Bagshawe (Frazer-Nash), and their times were not bettered by the larger cars competing in the unlimited class.

THE INDIANAPOLIS WINNER. —— **Driving a 1,500 c.c. Duesenburg car George Souders won the 500-mile Indianapolis race at an average speed of 97.451 m.p.h. Souders is a college student, with very little previous racing experience. He is 24 years of age.**

Canadian Substitute for Petrol.

Canadian scientists are investigating the possibility of obtaining a substitute for petrol from a by-product in the manufacture of sulphite pulp for newsprint. Sulphite mills in Canada

Signs similar to that shown above are being erected at many points in Birmingham.

annually waste a tremendous potential source of industrial alcohol which, it is believed, if mixed with benzine, would prove very satisfactory as a fuel for use in internal-combustion engines, says Reuter. Alcohol is subject to heavy Excise duties in this country.

Wonderful!

According to a statement made by the Minister of Transport, when Piccadilly, London, is repaved in August or September, the water company, the gas company, the electricity undertaking and the Post Office will all do their subterranean work at the same time. Evidently the age of miracles has not yet passed.

Singer Junior Success.

Although it had been in service for 3,500 miles, a Singer Junior car was entered by the Spanish Trading Co., Ltd., for some races which took place on Sunday, May 15th, in Barcelona. The only preparations made were that the engine was decarbonized and a new exhaust valve fitted. Just before the start of the race it was found that the engine was knocking badly, but as it had been sealed in compliance with regulations the cause of the knock could not be investigated. In spite of this handicap the car, which was carrying ballast weighing 2 cwt., won the first prize in the 1,100 c.c. class and climbed a five-kilom. gradient of 1 in 18 at an average speed of over 28 m.p.h. The whole of the race was run in second gear, and when the engine was dismantled afterwards it was found that it had been running on three cylinders only owing to a valve tappet having slacked off. It is claimed that, had the engine been running properly, its speed probably would have been 35 m.p.h. We understand that the Singer Junior has created a very good impression in Spain.

PARLIAMENT TO DISCUSS THE RAID.

NOW that the Trade Unions Bill, which has blocked the path for many weeks, is soon to be completed by the House of Commons, an approach will be made to the Committee stage of the Finance Bill. This will provide the first really effectual opportunity available to Members to attack in detail the Chancellor's proposals for motor taxation and his raid upon the Road Fund.

Mr. Churchill will find that he will be attacked and questioned from all sides of the House on this subject. Mr. Lloyd George, who was the original creator of the Fund, will move that the amount which Mr. Churchill proposes to allocate out of it to general taxation shall be reduced by one-half; while the Labour Party have an amendment to reduce the allocation by 25 per cent. On the other hand, many Unionist Members will press the Chancellor of the Exchequer to devote much more of the Road Fund to the improvement of rural roads.

A lively fight is expected on these various proposals. Mr. Churchill, it goes without saying, will defend himself with the vigour and ingenuity for which he is famous in the House. But he will find it hard indeed to give a convincing answer to the contentions of Government supporters, as well as opponents, that he has broken faith with motorists. He has taken funds which were contributed for the specific purpose of road maintenance and improvement, and used them for other purposes—an act which is not justified. By doing so, Members will point out, the Chancellor is not only putting a check upon the ever-increasing necessity for providing better roads, but he is also putting an extra burden of taxation, for general purposes of the State, upon motorists. It is admitted that the Chancellor is hard pressed to make ends meet in a year of extraordinary difficulty, but this is felt to be no justification for diverting the Road Fund from its primary and legitimate purposes.

Members from rural districts have already pointed out that, with a depleted Road Fund, the lesser roads are bound to suffer, as the localities cannot afford to maintain them out of local rates, at modern transport standards. The Chancellor's statement that he is really giving more money this year than has ever been given before for such roads does not carry conviction.

How great is the need for the utilization of the Road Fund for its original purposes was emphasized by figures given by the Minister of Transport on Monday, in answer to a question, showing an almost five-fold increase in the number of private motor-cars since 1914. In that year the number was 132,015, compared with 572,444 in February of this year. The increase which has taken place even within a year was shown by the fact that in February, 1926, the number of licences current was 498,188.

J.C.C. High-speed Trial.

Over 50 entries have been received for the third annual High-speed Reliability Trial organized by the Junior Car Club, which takes place at Brooklands to-morrow. This trial is run under actual road conditions, as part of the grounds of Brooklands is used in addition to the track. A complete circuit of the course will measure three miles and there will be 34 circuits in the trial. Special arrangements are being made to enable spectators to watch the trial from various parts of the circuit.

The following is a list of the entries:—

CLASS A.

Standard Touring Cars having engines not exceeding 1,100 c.c. Average speed 34 m.p.h.

R. A. Myers, Gwynne, 55 by 100.
C. Anthony, Senechal, 59 by 100.
C. E. Wood, Talbot, 60 by 95.
C. W. D. Chinery, Gwynne, 55 by 100.
Calcott Reilly, Austin, 56 by 76.
F. C. Gordon England, Austin, 56 by 76.
J. A. Macnab, Salmson, 62 by 90.
J. W. Twyford, Singer, 56 by 86.
A. Braid, Austin, 56 by 76.
D. C. Lorkin, Rover, 60 by 95.
F. J. Clark, Salmson, 62 by 90.
F. H. Boyd-Carpenter, Austin, 56 by 76.
H. N. Thompson, Austin, 56 by 76.
C. G. N. Cox, Austin, 56 by 76.

CLASS B.

Standard Touring Cars with engines exceeding 1,100 c.c. but not exceeding 1,500 c.c. Average speed 38 m.p.h.

A. A. Pollard, Aston-Martin, 66.5 by 107.
W. L. Booty, Aston-Martin, 66.5 by 107.
J. G. Green, Lea-Francis, 69 by 100.
H. W. Pitt, A.C., 69 by 100.
St. J. C. Nixon, A.C., 69 by 100.
H. Allardice, A.C., 69 by 100.
Miss L. M. Roper, A.C., 69 by 100.
O. H. C. Cornish, Frazer-Nash, 69 by 100.
Miss W. M. Pink, Alvis, 68 by 103.
George Roberts, Bugatti, 69 by 100.
S. E. A. Watson, Surrey, 69 by 100.

CLASS C.

Standard Sports Cars with engines not exceeding 1,500 c.c. Average speed 41 m.p.h.

W. H. Green, Alvis, 68 by 103.
C. J. Randall, Aston-Martin, 66.5 by 107.
G. Newman, Salmson, 62 by 90.
A. E. Clutterbuck, Alvis, 68 by 103.
L. C. Pockney, Newton-Ceirano, 65 by 110.
V. Gillow, Riley, 65.8 by 110.
C. S. Chalfont, Rover, 60 by 95.
S. H. Newsome, Lea-Francis, 69 by 100.
J. H. Whittindale, Lea-Francis, 69 by 100.
C. M. C. Turner, Gwynne, 57 by 100.
S. G. Nash, A.C., 69 by 100.
R. M. V. Sutton, Lea-Francis, 69 by 100.
Gordon Hendy, Lea-Francis, 69 by 100.
H. W. Stonard, Amilcar, 60 by 95.
R. M. Andrews, Lea-Francis, 69 by 100.
Lord Waleran, Frazer-Nash, 69 by 100.
Mrs. R. Urquhart Dykes, Alvis, 68 by 103.
A. R. Abbott, Lea-Francis, 69 by 100.
R. C. Porter, Amilcar, 60 by 95.
S. E. Ellis, Amilcar, 60 by 95.

CLASS D.

Non-standard Cars with engines not exceeding 1,500 c.c., in full touring trim (racing cars not eligible). Average speed 43 m.p.h.

Guy H. Martineau.
L. Martineau.
A. Arnold.
T. E. Rose Richards.
R. H. Corbett.
W. B. Bryan.
R. A. Myers.
P. J. Calvert.

In accordance with the regulations, no particulars of the cars in this class may be published.

Motoring Maps.

We understand that Messrs. William Porteous and Co., 9, Royal Exchange Place, Glasgow, have published the third edition of their 70-mile map of Glasgow and district. It is to a scale of half an inch to the mile and has been brought up to date by the inclusion of the new Western Boulevard in Glasgow, the new Edinburgh and Glasgow road and the latest City boundaries. The publishers specialize also in other maps of Scottish districts and a leaflet dealing with these maps can be obtained upon application to the address given above.

WHAT IS MEANT BY "PERFORMANCE."

DEFINITE FIGURES SHOWING HOW A CAR BEHAVES ON THE ROAD, AND HOW THE POWER IS BEING USED, CAN EASILY BE OBTAINED BY ADOPTING THE METHODS DESCRIBED IN THIS ARTICLE.

IN order to obtain an accurate knowledge of the true performance of a car it is necessary to know several things, such as the maximum speed, the maximum rate of climb on all gears and the speed at which this maximum occurs, the maximum gradients climbable on different gears and, finally, the maximum acceleration. By maximum rate of climb is meant the rate of change of altitude when climbing a hill. We shall see later that this maximum value can occur only on a particular gradient.

One of the accompanying graphs shows a horse-power curve for the engine, kindly supplied by the makers of the car on which the tests were made. It indicates the h.p. delivered at the flywheel. If we consider the car as running at a steady speed on full throttle on a level road, there are three ways in which the power is being used. Some of it is absorbed by the transmission, some in overcoming tractive resistance or the resistance between the road and road wheels, and some in dealing with air resistance. Sometimes the term "tractive resistance" is used to indicate road resistance and air resistance. Here it means only road resistance. We may take these three resistances together and call them the power required on the level at a steady speed. There must be no acceleration, as another force is then called into play.

Available Horse-power.

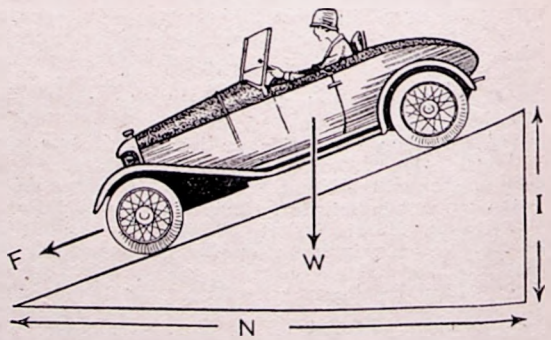
On full throttle on the level the car will travel only at one particular speed. At any speed or any number of r.p.m. below this the horse-power required will be less than that available at the engine. This surplus power may be used in two ways, either separately or together, first in climbing a hill and, secondly, in accelerating the car. When, therefore, we have the two curves showing h.p. available at the flywheel and h.p. required on the level we shall be able to calculate the rate at which the car will climb a hill and the maximum gradient it can climb on any particular gear ratio. Our first problem, however, is the determination of the h.p. required on the level.

The great difficulty about all car-performance calculations is in making an accurate estimate of air resistance. Various formulæ have been proposed, but they are all unsatisfactory, because every type of car is different. The best way will be to assume that the maximum speed is known. We are really concerned only with the hill-climbing capabilities of the car, and this method will give us more accurate results. At full speed all the h.p. is being used up on the level; knowing this speed and the gear ratio we can find the revolutions per minute of the engine, and from the h.p. curve we can determine the h.p. available, which is also the h.p. required, and as this power has to be absorbed in overcoming the air resistance and tractive resistance and transmission losses, the determination of these will give us a value for the air resistance.

Transmission and tractive resistance taken together can be determined quite easily. At very low speeds, say 2 m.p.h., the air resistance is negligible. The whole of the resistance is tractive and transmission resistance. Consequently, if we tow the car along at a steady speed behind a spring balance we shall obtain a figure for these resistances. This is the only experiment that needs to be done in deducing the performance.

It will be found that the most reliable figure will be obtained on a level surface, taking the mean of readings with the car moving in both directions and with the oil in the back axle and gearbox at working temperature. The experiment should be carried out with the car loaded to the weight for which the performance is required. Also the top gear should be in and the clutch out. The figure obtained for the car on which these tests were made was 19 lb.

Another method of finding the resistance would be to determine the slope down which the car would just run without accelerating. One of the accompanying sketches shows the car on a slope of this kind, i.e., 1 in N. The force acting down the hill is F, so that $F = \frac{W}{N}$, where W is the weight of the car and driver. Thus, if the gradient is known, the force F, which is the tractive plus transmission resistance, can be found.



Resistance to motion can be determined by allowing the car to run down a hill of known gradient, as explained in the text.

The tractive and transmission resistance will be constant at all speeds. The air resistance, on the other hand, is proportional to the square of the forward velocity. At low speeds tractive and transmission resistance predominates, but as the speed increases the air offers a much greater resistance, and on ordinary roads will be about three-quarters of the total resistance at, say, 35 m.p.h.

To find air resistance we have first to determine the horse-power available at the engine flywheel at maximum speed. To do this the m.p.h. is converted

into r.p.m. of the engine by the following formula:—

$$\text{r.p.m.} = \frac{\text{m.p.h.} \times G}{r} \div .0714 \qquad — (1)$$

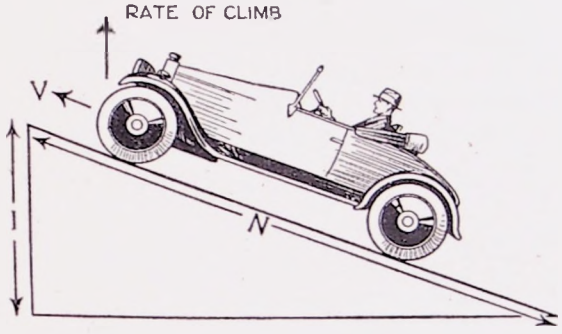
where r is the effective radius of the road wheels and G is the gear ratio. In the case of the car tested r = 1.1 ft., and the gear ratios were:—

1st gear	15.45	: 1
2nd ,,	8.69	: 1
3rd ,,	4.88	: 1

So that on top gear

$$\text{r.p.m.} = \frac{\text{m.p.h.}}{.0161} \qquad — (2)$$

Taking the actual maximum speed in top gear on the level as 37 m.p.h. the engine r.p.m. are 2,300. From the h.p. curve we find the corresponding h.p. to be 9.0. Converting this into tractive effort and then sub-



The rate of climb of a car depends upon several factors, but it is quite easy to calculate by means of a graph.

tracting the tractive and transmission losses will give a figure equal to the air resistance. The relation between tractive effort and h.p. is given by the simple formula:—

$$\text{Tractive effort} = \frac{\text{h.p.} \times 375}{V} \qquad — (3)$$

where V is the speed in m.p.h., so that the tractive effort corresponding to 9 h.p. at 37 m.p.h. is 91 lb. Subtracting the tractive resistance of 19 lb. from this gives 72 lb., which equals the air resistance at 37 m.p.h. Because air resistance is proportional to the square of the speed this gives a resistance of $\frac{72}{37^2}$, or .0527 lb. at 1 m.p.h. To find the resistance at any other speed multiply this figure by the square of that speed, thus

$$R = .0527\ V^2 \qquad — (4)$$

We are now in a position to construct a curve showing the horse-power required on the level. Taking the top gear first we select different values of r.p.m. and find the corresponding speed in m.p.h. by formula (2), and then finding the air resistance by (4) and, adding 19 for tractive and transmission resistance, the total resistance is found.

Thus, taking 1,500 r.p.m.

m.p.h. = .0161 × 1,500 = 24.1

Air resistance = .0527 × 24.1^2 = 30.5

Tractive effort = total resistance = 30.5 + 19 = 49.5

and from (3) h.p. required = $\frac{\text{V} \times \text{tractive effort required}}{375}$

$$= \frac{24.1 \times 49.5}{375} = 3.18 \text{ h.p.}$$

This has been done for several points, and the curve of h.p. required on the level is shown plotted against the engine b.h.p. curve in an accompanying graph.

At any value of r.p.m. the difference of the h.p. available and that required on the level shows the "spare" h.p., which can be used either to climb a hill or to accelerate. One thing to be noticed about the curves is that the maximum speed or the point where the two curves cross does not come at the peak of the engine h.p. curve. This means that, by under-gearing, the maximum speed has been sacrificed slightly to gain more spare h.p. for hill-climbing.

For low-powered cars it is certainly profitable to have the maximum speed on the level occur beyond the peak of the power curve, as otherwise in an undulating district continual gear changing would be necessary, causing greater wear and tear of parts and also reducing the average speed.

So far we have dealt only with top gear conditions on the level. In order to obtain a complete performance the same process is repeated for bottom and second gears by means of formulæ (1) to (4), the value for tractive and transmission losses being 19 lb. as before.

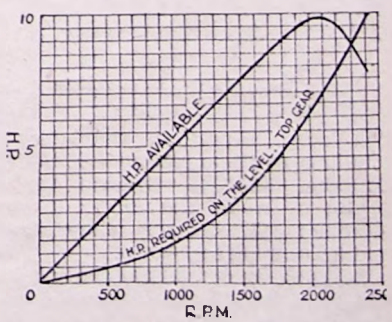
The curves of h.p. required on bottom and second gear will lie below that required for top gear. The maximum speed on these gears would not easily be determinable from the curves because we do not know exactly how the engine power curve behaves much beyond the peak.

As the curves for bottom and second gear lie below that for top gear the spare h.p., and consequently the rate of climb, is increased. This is reflected, of course, in the maximum gradient the car can climb.

Plotting a Graph.

Selecting again, say, 1,500 r.p.m. on top gear, the h.p. available at the engine is 7.55, the h.p. required is 3.18, and the difference, 4.37, represents the h.p. available for climbing a gradient. One h.p. is the absorption of work at the rate of 33,000 ft.-lb. per minute when 1 ft.-lb. represents the energy required to raise 1 lb. through a vertical distance of 1 ft. The weight of the car with two passengers in the case under consideration was 1,715 lb.

If we raise the car through a distance of 1 ft. vertically, 1,715 ft.-lb. of work have been done; if this is done in one minute the h.p. required is $\frac{1{,}715}{33{,}000}$ h.p. Therefore, a rate of climb of 1 ft. per minute consumes $\frac{1{,}715}{33{,}000}$, or .052 h.p. As we have, in this case, 4.37 h.p. available for climb, the rate of climb is $\frac{4.37}{.052}$, or 84 ft. per minute, which is the maximum rate of climb on top gear in this particular case.



These two curves show the difference between the b.h.p. and the power needed to drive the car.

In general, therefore, we may write:—

$$\text{R. of C.} = \frac{\text{h.p.}^1 \times 33{,}000}{W} \qquad — (5)$$

where h.p.^1 is the spare h.p. and W the total weight of the car.

By repeating for a number of points, the curves shown in one of the graphs are obtained where the rate of climb is shown plotted against speed in m.p.h.

By continuing the rate of climb curves for bottom and second gears to cut the zero, the maximum speeds

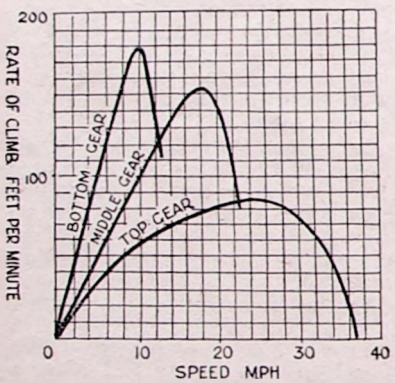
are found, which are respectively 15 m.p.h. and 25 m.p.h., and these figures compare very favourably with those shown by the speedometer on the car itself. The engine is, of course, being grossly over-revved at these speeds.

It will be seen from the curves that the maximum rate of climb on bottom gear is 175 ft.-min. This is quite a good rate of climb for a low-powered car. It must be noted, however, that this maximum rate of climb occurs only on one particular gradient at a speed of 10 m.p.h., the gradient being 1 in 5.2. To give an idea of what a rate of climb of 175 ft.-min. represents, suppose there were a good road up Snowdon with a constant gradient of 1 in 5.2. Then on full throttle the car would climb to the summit from sea-level in $\frac{3,560}{175}$ = 20.3 minutes, the summit of Snowdon being 3,560 ft. above sea-level.

The gradient which can be climbed may be of more interest than the rates of climb. To find the gradient at any value of r.p.m. we first find the forward speed in m.p.h. and then the rate of climb on whichever gear we require. By reference to one of the sketches it will be seen that if we express the gradient as 1 in N, where N is measured along the road surface and 1 is the perpendicular increase in height, then

$$\frac{N}{1} = \frac{V \times 88}{R.\ of\ C.} \text{ and } N = 88\ V/R.\ of\ C.$$

The constant, 88, being required to transfer m.p.h.



In this interesting graph speed is compared with rate of climb on each gear. The curves are very instructive.

to ft. per minute, in which units the rate of climb is expressed.

Taking again 1,500 r.p.m. on top gear, the corresponding speed is 24.1 × 88 ft.-min., and the rate of climb 61 ft.-min. Thus the gradient is

$$1 \text{ in } \frac{24.1 \times 88}{84} = 1 \text{ in } 25.3.$$

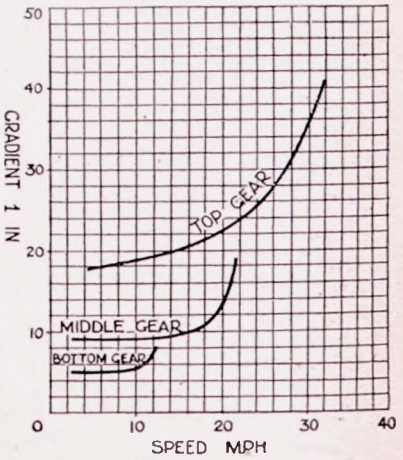
We know, therefore, that the car will climb this gradient at 24 m.p.h. on full throttle. By plotting the gradient climbable against the speed for different values of r.p.m. the curves in one of the graphs are obtained. There are many interesting facts to be found from these curves.

Suppose we are climbing a gradient of 1 in 30. This can be done, as seen from the top curve, in top gear at a speed of 28 m.p.h. If the hill is rushed the speed will gradually settle down to 28 m.p.h., and continue at this figure so long as the gradient is 1 in 30. Now suppose the gradient steepened to 1 in 20, we can climb the hill in top gear at 15 m.p.h. If we change into second gear the hill can be climbed at 22 m.p.h. on full throttle, but the engine would be over-revving at this speed, and by releasing the throttle a little a speed greater than 15 m.p.h. is obtained without detriment to the engine.

To climb a hill at the fastest speed and in the shortest time, the change should be made at the points where the curves for the respective gears intersect, if they do so at all. In this case the gears are fairly wide apart and the curves for second and top intersect at a point where the engine revs. on the lower gear are too high. The best hill-climb will, therefore, be made by changing at a point where the lower gear will give the maximum permissible engine revs.

Now let us consider changing from second to bottom gear. There is no object in changing at a greater speed than 12 m.p.h., because at this speed we are climbing a hill just as fast on second as on first gear,

By plotting a graph of this kind a driver will have a ready means of checking the climbing powers of his car.



and it will be noticed how flat are the corresponding curves. This means that along a gradient of 1 in 10 on second gear an increase of gradient will cause the speed to fall very rapidly and a change down will have to be made. The road performance of the car again confirms this.

On bottom gear the maximum speed is 12 m.p.h., if the engine revolutions are not to exceed 2,400 r.p.m., and the steepest gradient which can be climbed on full throttle is 1 in 4.8.

The maximum acceleration may also be found from the "spare" h.p., and it is best expressed in terms of the acceleration of a body falling freely due to gravity. A body, of whatever weight or size, falling in a perfect vacuum has an acceleration of about 32.2 ft. per second per second. This means that the velocity at the end of the first second is 32.2 ft.-sec., at the end of the second second the velocity will be 64.4 ft.-sec., and so on, gaining an increase of 32.2 ft.-sec. every second it travels. The quantity 32.2 ft.-sec. is called "g."

The acceleration of a car is given by:—

$$\text{Acceleration} = a = \left\{ \frac{\text{spare h.p.}}{V} \times .219 \right\} \text{ g.}$$

where V is in m.p.h.

The value of "a" at 1,500 r.p.m. on top gear is:—

$$a = \left\{ \frac{4.37 \text{ h.p.}}{24.1} \times .219 \right\} \text{ g.} = .04 \text{ g.}$$

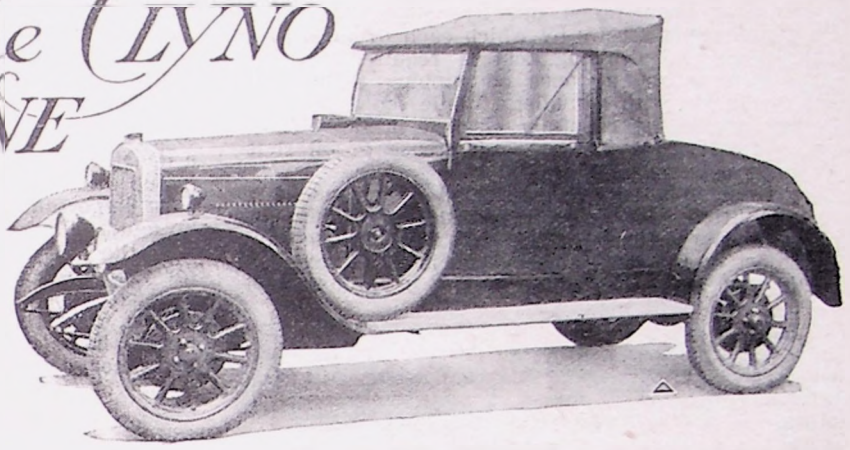
It will be found, of course, that as with the rate of climb the maximum acceleration occurs on bottom gear, and has a value of 0.206 g., that is 1/5th the acceleration of a freely-falling body at a speed of from 3 m.p.h. to 8 m.p.h. As the speed approaches the maximum for any particular gear so the acceleration approaches zero.

Many other interesting things can be found out from the curves of h.p. available and h.p. required on the level, such as the speed down a gradient, the speed against a head or side wind, the best gear ratio on which to climb a particular gradient and to give maximum speed on the level, and so on, but this is beyond the scope of this article.

The car used for the tests just described was a 7 h.p. Citroën, but the various formulæ are applicable to any make of car.

KEEPING the CLYNO in TUNE

PRACTICAL ADVICE FOR THE CLYNO OWNER TO SUPPLEMENT THAT GIVEN IN THE MANUFACTURERS' HANDBOOK.



DIFFERENCES in design and layout between the 11 h.p. and 12-28 h.p. Clyno models are slight, in so far as they affect ordinary routine maintenance work. The larger engine, however, has three main bearings instead of two. The arrangements of the dynamo and magneto drive on this unit are also rather different from those on the smaller one, but in practically all other respects lubrication and minor adjustments are carried out in precisely the same way on the larger car as on the smaller one.

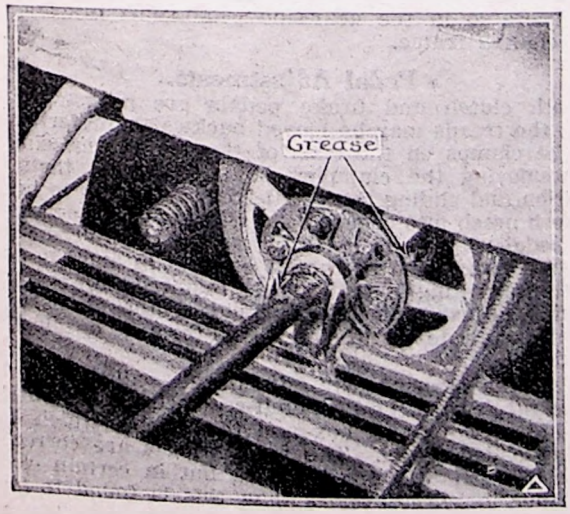
It is proposed to deal with the 11 h.p. car, mentioning points of difference between it and the 12-28 h.p. model as they arise.

Lubrication of the engine is by means of a plunger pump, operated by an eccentric on the camshaft. This pump being at all times wholly submerged does not in any circumstances have to be primed. It operates at an exceedingly low pressure, and no gauge or other tell-tale device is fitted or considered necessary.

From the pump the oil passes through internal oil-ways to four troughs, into which the big-ends dip. Oil passes also by means of two external copper pipes to the main bearings. From the front main bearing the overflow passes to the timing chain case, then up to the magneto and dynamo-shaft bearings.

The only filter in the circulation system is one immediately below the troughs, through which the oil falls on its way back into the sump. It is not necessary in the course of ordinary routine maintenance to clean out this filter, and the operation is one that can and need be tackled only when the sump is dropped.

The oil recommended by the manufacturers is Castrol XL. The sump should be drained for the first time after 500 miles' running, thereafter every 2,000 miles, and this is done simply by removing the plug in the base. It is recommended that, when the sump is empty, sufficient paraffin should be poured in through the oil-filler orifice just to reach the bottom-level mark on the dipstick. The car should then be swayed gently from side to side to splash the paraffin about, but the engine should not be turned. The drain plug should then be removed and ample time left for every trace of paraffin to run out.



Two greasing points on the transmission that are very important and apt to be overlooked.

The proper level of oil in the sump is as nearly as possible on the maximum mark, but not above it. Level readings should be taken only when the engine has been at rest for at least some minutes and the car is standing on a level surface.

The lubrication of all points throughout the chassis is explained thoroughly in the manufacturers' handbook. There are, however, certain points of importance that are apt to be overlooked. There are the two grease-gun nipples situated respectively one immediately in front of and one immediately behind the front fabric universal joint. The former of these lubricates the clutch spigot and the latter the clutch-withdrawal mechanism. These are easily reached by lifting up the floorboards. They need attention about every 250 miles, as do the four nipples whereby the brake-operating cross-shaft bearings are lubricated. These must in no circumstances be overlooked.

Lubrication of the gearbox and the back axle are straightforward enough operations. On the gearbox the filler plug is in the lid, whilst there is a small oil-level plug on the near side. The correct procedure is to remove the level plug and pour the gear oil—which for preference should be warmed so as to ensure complete fluidity—into the gearbox until the correct level is indicated by overflowing.

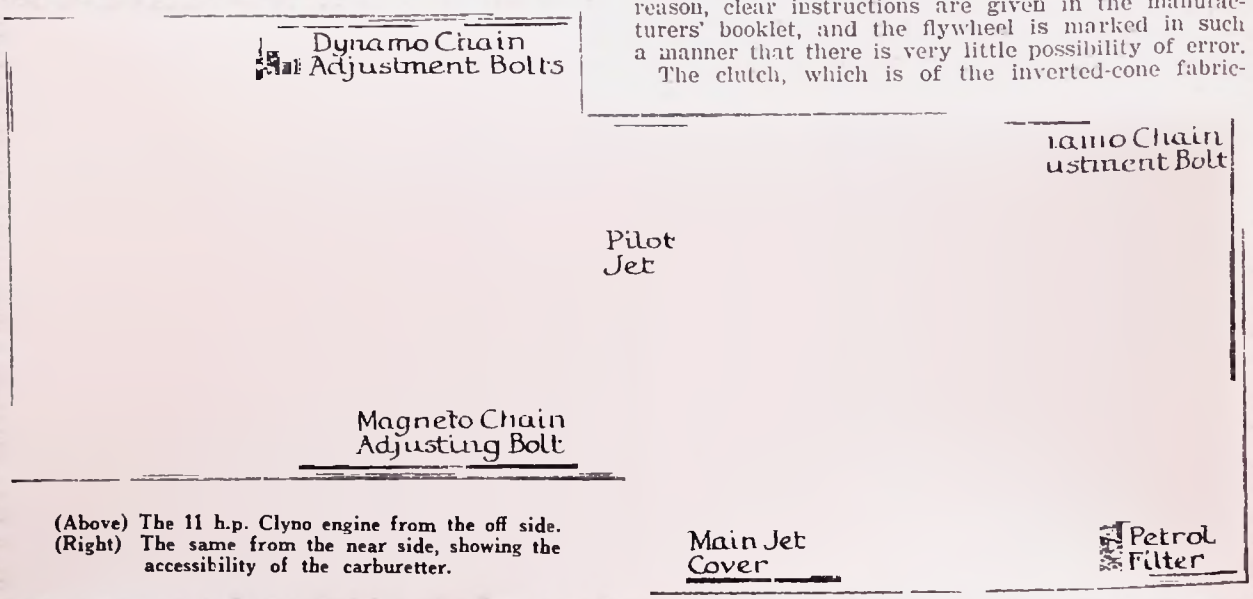
Rear-axle Lubrication.

The differential casing is provided with a combined filler and level-indicating plug at the top of a projection of the casting at the rear off side. It is necessary to pour in gear oil until no more can be induced to flow in. Both the gearbox and the back-axle casing should be completely drained and flushed out with paraffin (there is a drain plug situated in the lowest point of the differential casing) and refilled with fresh gear oil every 2,000 miles or so.

Practically all other important points on the chassis and transmission are lubricated by grease gun, and an excellent chart is provided showing all the points that need attention. There are one or two important places, however, that require special treatment. One of these is the two axle-shaft bearings on the back axle, to gain access to which the brake drums have to be removed. These require attention only about every 2,000 miles.

The brake drums are easily removed after the wheels have been taken off, by undoing the two countersunk grub screws by which each drum is held in position. No drawing tool is required, as the drums come away at once on tapping their rims from the inside with a mallet. While the drums are off they should be carefully cleaned inside with a petrol-soaked rag to remove any grease or oil that may have accumulated.

The front hubs, whilst lubricated by means of a gun, are fitted with screw plugs instead of nipples. To gain access to these the hub caps must be removed. The object of this special provision is to prevent the introduction of excessive quantities of grease, the result of which would be completely to upset the functioning of the front-wheel-brake mechanism.



(Above) The 11 h.p. Clyno engine from the off side. (Right) The same from the near side, showing the accessibility of the carburetter.

The steering box is kept filled with gear oil, introduced through the large filler orifice on its upper surface. Gear oil is simply poured in until the level reaches the lower edge of the orifice. Attention to this point should be required only about every 1,000 miles.

Decarbonizing the Clyno engine is thoroughly straightforward, as the head is detachable in the ordinary way. The usual care is required when reassembling to get the head-retaining nuts screwed down quite evenly. It is recommended that shellac or gold-size should be used in remaking the joint, but the main essential is absolute cleanliness. A new gasket should always be fitted when replacing the head.

Checking Tappet Clearances.

The grinding-in of the valves, which are of the ordinary side-by-side pattern, calls for no special comment or explanation. Correct clearances between valve stems and tappets are .006 in. for exhausts and .004 in. for inlets. Both of these clearances should be checked with the engine cold, and re-checked after the cylinder head has been finally tightened down as far as it will go after some 50 miles' running on the road.

An exclusive Clyno feature affecting the tappets is the provision that is made on the 11 h.p. model to take up any side-play which may develop as the result of wear of the tappet guides, which would in the ordinary way give rise to a certain amount of unnecessary noise. This takes the form of grub screws fitted with hexagonal locking nuts, which project from the side of the cylinder casing, one immediately opposite each tappet. The end of each grub screw is loaded with a small steel ball which engages in a groove machined in the tappet. It is not often that it becomes necessary to make use of these adjustments, unless tappets have been removed for any reason, but the correct method is very gently and gradually to screw home each grub screw (with the locking nut slacked off, of course) while the engine is running slowly, until the tappet just shows a tendency to stick up. The screw should then be slacked back a quarter of a turn and locked up. Excessive tightening-up of these grub screws must be avoided, and it is most important that they should be properly locked up again after turning.

In the ordinary way it should be quite unnecessary for the owner to disturb the timing of the valves or magneto, but, should this have to be done for any reason, clear instructions are given in the manufacturers' booklet, and the flywheel is marked in such a manner that there is very little possibility of error.

The clutch, which is of the inverted-cone fabric-lined pattern, requires little attention. The surfaces work dry and require no dressing of any kind.

The clutch-withdrawal mechanism is adjusted by altering the position of the two withdrawal forks relative to their cross-shaft. These forks are clamped in position and held by two $\frac{5}{16}$-in. bolts situated at their lower extremities. This is an adjustment that is very rarely required, but it must be made if the clearance between forks and thrust race becomes less than $\frac{1}{16}$ in. when the clutch is fully engaged. The lock-nuts on the bolts must be screwed up tightly, as accuracy of adjustment is important. The clutch-pedal stop consists of an adjusting screw with a lock-nut which is incorporated in the near-side pedal-shaft bracket on the chassis frame.

Pedal Adjustments.

Both clutch and brake pedals are adjustable in that the treads may be moved backwards or forwards in the clamps on the ends of the pedal arms simply by removing the clamping bolts that hold them in position and sliding the pedal tread in or out to bring a fresh notch into engagement. Similarly, the accelerator pedal may be adjusted by moving the fulcrum pin at its forward end so that it engages in another hole in the operating rod. Care is required, however, in making adjustments of this kind to the accelerator pedal so as to ensure that full-throttle opening is obtainable.

The only steering-gear adjustments called for, and these rarely, are the lock-limit-regulating studs on the outside of the worm box and the tie-rod, which has spring-loaded joints. The front wheels are correctly aligned when they toe in $\frac{1}{8}$ in., but in certain cases a rather larger allowance than this is found to give good results. It is strongly recommended that no attempt should be made to check or to vary the alignment of the front wheels with the aid of string,

wire or other home-made makeshifts as gauges. The work should be entrusted to some properly equipped garage where an accurate trammel gauge is available.

Brakes on the Clyno car consist of eight shoes working in four drums, one on each wheel. Compensation between the front pair and the rear pair is given by means of a lever mechanism at the base of the brake pedal. This compensator, however, comes into action only when the brakes are being actuated by means of the pedal. When the hand-brake lever is pulled on, the pedal is depressed. The push-rod underneath the floorboards operates the forward cross-shaft, which puts on the front-wheel brakes, but the rear-wheel brakes are in this case operated separately by means of a rod running from the hand-lever arm to the back-brake-operating shaft. Thus the hand and the foot operate independently on both front and rear drums.

To adjust the brakes, then, the procedure is as follows:—Jack up all four wheels and, ignoring the hand brake for the moment and leaving it in the "off" position, adjust the foot-brake shoes by means of the butterfly nuts at the end of each brake-operating rod until it is possible to apply the four brakes quite evenly by means of the pedal, still keeping an inch or so of pedal travel in reserve, even when the brakes are hard on. The simplest method of doing this is to get an assistant to hold the brake pedal slightly on and then to screw up the rear wing nuts until the wheels can just be turned by hand. The same adjustment must also be made in front. A check should then be made by releasing the pedal and making sure that all four wheels are quite free. When these adjustments have been made the hand brake will be automatically adjusted and will have several notches on the ratchet in reserve. It is possible to vary the position of the hand-brake lever independently by means of the adjustments on the push-rod and the rod connecting it to the rear brake-operating cross-shaft, but this should not in the ordinary way be necessary, as these adjustments are carefully set before the car leaves the factory.

The Carburetter.

The Cox Atmos carburetter calls for little attention, but the small filter between the petrol-pipe union and the main body of the carburetter requires cleaning out from time to time. The petrol-pipe union must be removed (with the petrol turned off, of course), and if the hexagonal nut between the union and the carburetter body is then unscrewed the gauze filter comes away with it.

The main jet is immediately beneath the large hexagonal brass nut to be found on the top of the carburetter body. It is attached to the small spiral spring, which is then exposed, and can be lifted out complete with its carrier.

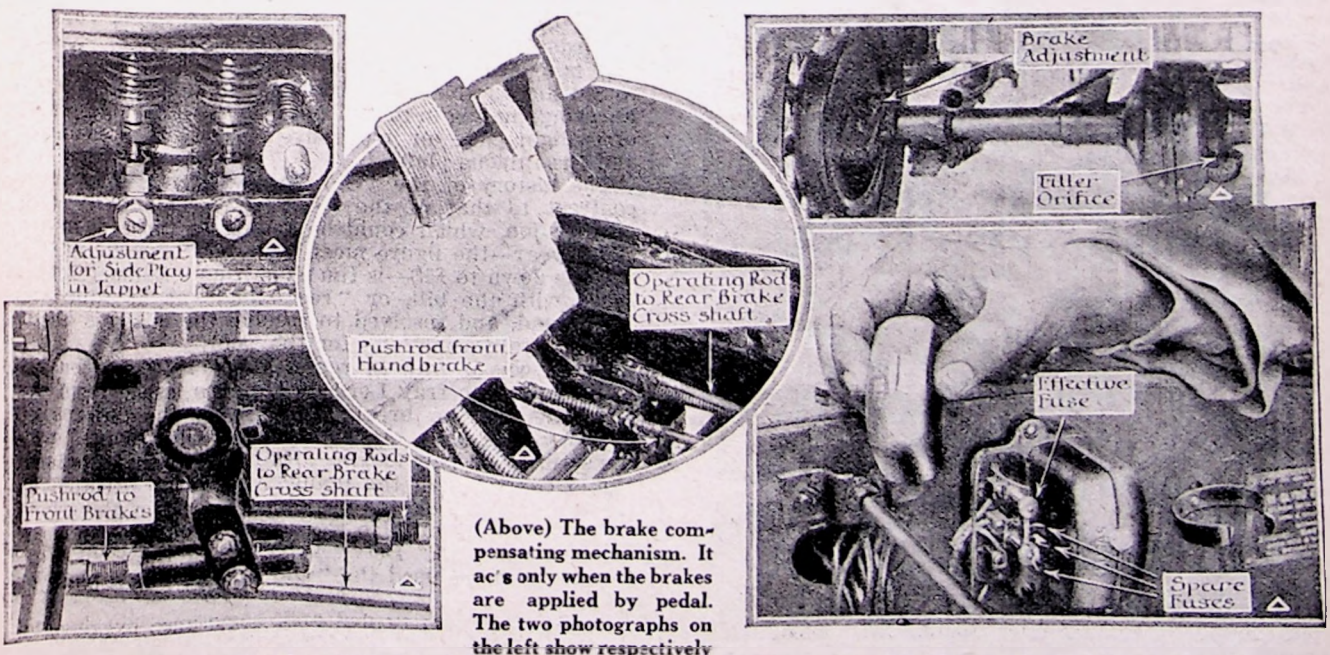
Adjustment of the slow-running mixture is by means of the small, slotted screw adjoining the large hexagonal nut. There is a spring collar to prevent this screw from being turned by ordinary vibration. The adjustment is delicate, and a fraction of a turn produces a great deal of difference. Turning the screw in an anti-clockwise direction weakens the mixture, and vice versa, the best setting being arrived at by experiment. The pilot jet, should it become choked, can be cleaned, without removal, by blowing out with a tyre pump. Detailed instructions for doing this are given in the handbook.

The electrical system calls for little special attention, apart from occasional lubrication of the various bearings, for which purpose only a few drops of thin machine oil should be used. Care is needed to keep the starter mechanism absolutely clean, and for this purpose occasional scrubbing of the drive and ring with a stiff brush and some paraffin is recommended. No oil is needed on the starter drive; in fact, the presence of oil is apt to cause jamming.

Chain Adjustment.

The dynamo and magneto are driven by means of separate chains, and simple adjustment is provided whereby the tensioning of these may be effected without dismantling. The dynamo is held in position by means of three bolts, the two outside ones of which are in slots, whilst the inside one is a fairly close fit in an ordinary circular hole. To tension the chain all that is necessary is to slack off these three nuts on the bolts and to pull up the dynamo, pivoting it about the inner bolt as a fulcrum. Only the bare hand should be used to lift the dynamo, and the tension of the chain will then be about correct. The lifting can easily be done with one hand while the nuts are manipulated with the other.

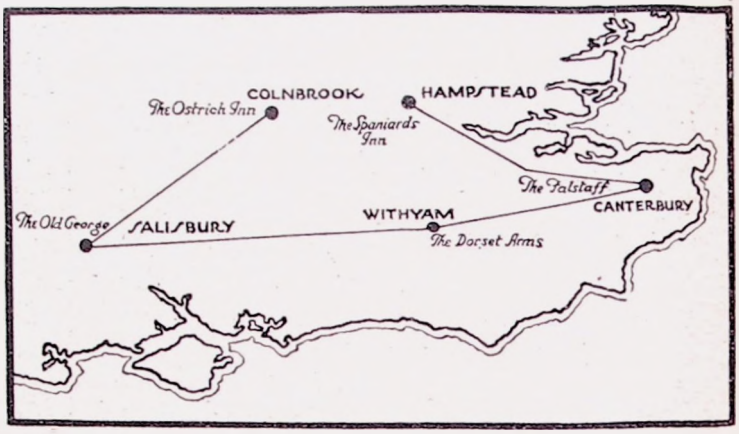
The magneto driving chain can also be tensioned, but the operation is rather more complicated and varies considerably on the two models. Full instructions for doing the job are given, however, in the Clyno handbook.



(Above) The brake compensating mechanism. It acts only when the brakes are applied by pedal. The two photographs on the left show respectively the adjustment point for tappet side-play and the hand-brake connections. On the right are shown (above) the back axle, and (below) the arrangement of the fuse and the spare fuses. They are protected normally by a metal cover.

TALES OF OLD TAVERNS.

A SHORT TOUR IN THE SOUTH OF ENGLAND EMBRACING SOME VERY INTERESTING OLD HOSTELRIES.



A sketch map of the route followed.

IN planning a short tour recently it was decided that beautiful scenery should not be its only feature, but that the trip should have some definite additional object, and in giving the vote to old English inns and taverns our party never regretted the choice. Whilst the country is studded with historic caravanserais, we headed for those with a real story to tell, and, sure enough, we found one in the very first place visited; search the country as you may, you will not find a more gruesome story attaching to a tavern.

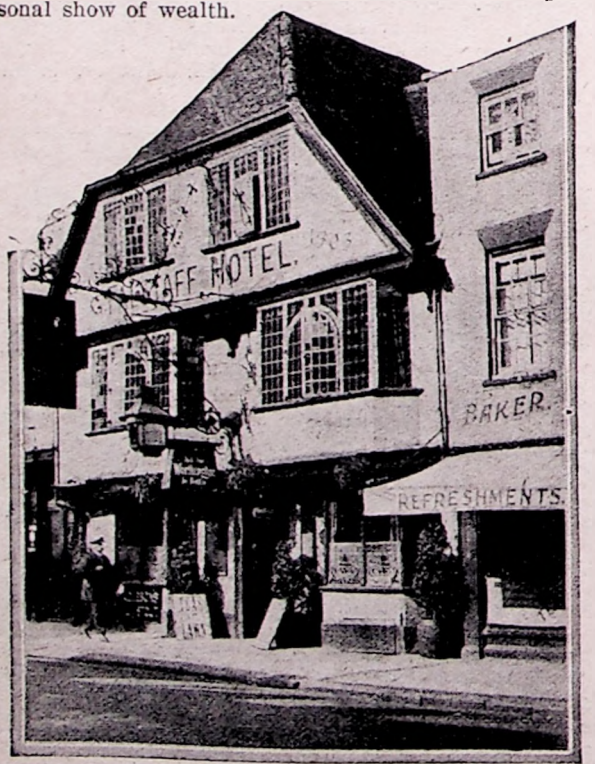
Sixteen miles along the Bath Road from London lies Colnbrook. The half-timbered building standing on the left as the narrow village street is entered is the Ostrich Inn; a few hundred years ago and it might well have been called the Murder Inn, for its story is a terrible one.

"Wife, I know of a fat pig if you want one," the landlord would say when an affluent and likely looking guest arrived.

"Then put him in the pigsty," she would retort.

It was no ordinary pigsty, however; even that would have been better. Instead it was a bedroom, with the bed clamped to a movable section of flooring. Once there, a guest was as good as dead, for directly below, in what is now the kitchen, was a vat of boiling brew—boding death most hideous.

The crafty landlord—one can hardly call him "mine host"—had only to draw the bolts in the room above for the bed to heel over and precipitate the occupant into the horror which awaited him below; then the "pigsty" was ready for the next traveller with a personal show of wealth.



The Falstaff Hotel, Canterbury, which is said to be over 500 years old.

The innkeeper had had his eye upon a visitor named Thomas Cole for some time, only, so the story goes, to be baulked of his prey at the last moment—a tavern brawl which kept the house up late, the illness of Cole himself, with someone tending him through the night, and so on; but the day came sure enough when poor Cole's number was up. Ill at ease, he prepared his will in the presence of the landlord; not even then was the latter moved to any finer feelings, and that night Cole arrived in the boiling brew by way of the bed in the "pigsty."

His extended absence from home—he would travel by road from Reading to London—caused a rare hullabaloo, and it was not long after searchers had found his horse, which the murderer had let loose, that they came also upon the body. The innkeeper was apprehended and he and his equally guilty wife expiated their crimes in the fashion of the times; they died, but in what manner it is not known. A vat of boiling brew would have been singularly appropriate.

One of Many.

Cole was but one victim; there were 59 others who entered the "pigsty" by the door and went out by the floor; hence the "House of Sixty Murders," or the "Murder Inn."

It is a pleasant run from the Bath Road hereabouts to Salisbury, which we compassed in fair time without hurrying, pulling in to Salisbury as the last few minutes of twilight gave an impressive majesty to Stonehenge and the famous plain.

The history of the "Old George" forms a pleasant contrast to that of the "Ostrich." This early 14th century inn, which could be rented in those days for £20 a year—the figure must have been exorbitant, for it came down to £13—is the place where Samuel Pepys, faced with the bill, or "reckoning," as he called it, "was mad, and resolved to trouble the mistress about it and obtain something for the poor."

There was a war on round about 1450, and on his way to join the fray Lord de Moleyns issued from the "Old George" to break scones with the citizens of Salisbury. A little earlier and the "Old George" was the scene of an ugly-looking affair; the same noble lord, out of favour with the public, was being besieged at the inn and it took the combined efforts of the whole weight of the Church to rescue him from the hands of the common herd. Between battles in the Civil War, Oliver Cromwell used the "Old George" as a place of rest.

At Salisbury we turned and, sometimes hugging the coast, sometimes going farther inland, we made our way through the Home Counties, with Canterbury as the main port of call. A stop was made en route at

Withyam, between East Grinstead and Tunbridge Wells, where at the "Dorset Arms," we heard that an old copper beer warmer was worth inspecting. This is a queer cone-shaped instrument, which it was customary to fill with ale and then place point downwards in the glowing embers of the hearth to mull the drink on a cold winter's night. We do not go to these lengths with our beer to-day.

The lover of such things will be interested, too, in the old cordial bottles, generous, portly black vessels, with lavish inscriptions in gold, as "noyeau" and "bitters." Some of the glasses from which they drank in those days would surprise the modern consumer of more "refained" tastes. The "Dorset Arms" has them stored away in cupboards.

It is rather a fine point as to which is the oldest inn in the country; some say that the "Royal Fountain," in Canterbury's High Street, with its 900 years, is entitled to the distinction. Legend places there the four knights who murdered Thomas à Becket in the cathedral; in the "Fountain" we may picture them hatching their plot within the security of its walls. We learned that what is surely one of the earliest written testimonials is in the possession of the keepers of this tavern—and was written by a German, too. The ambassador to the (then) Emperor of the Fatherland attended in Canterbury for the wedding of Edward I to Margaret of France, and stayed at the "Fountain." This is what he wrote back to his master:—"The inns in England are the best in Europe, those of Canterbury are the best in England, and the 'Fountain,' where I am now lodged as handsomely as I were in the king's palace, the best in Canterbury."

Other Very Old Inns.

A short walk brings one to the "Fleur-de-lis," 600 years old, and said to have belonged to Becket's butler; the "Sir John Falstaff," which stands in the shadow of the West Gate and dates from 1403; and the "Sun," a long way the baby of the quartette, having been an inn for about 400 years. All these old taverns, sharing 2,440 years between them, are to be found on the same side of the High Street; a quarter of a mile covers the four.

The old hostelries are really typical of Canterbury as a whole, for although there is much of the city which is unquestionably modern, the traces of mediævalism are indelibly inscribed in its quaint, old streets and picturesque buildings. No visitor should miss the majestic cathedral with its poignant associations with Thomas à Becket—in the north transept is the Chapel of the Martyrdom, where he was murdered by the four knights over 700 years ago—or the ancient West Gate, which forms such an impressive entry to the city on the London road and is another of Canterbury's links with the past; but with these we are not concerned; our subject is old taverns.

A visit was paid to the "George and Dragon" at Speldhurst, near Tunbridge Wells, not so very much younger than the "Fountain" at Canterbury, and then our party continued—for town and the heights of Hampstead.

There, in the "Spaniards," are still preserved the knives and forks and the pistols—a strange mixture—of Dick Turpin. We found it took a strong wrist to raise the pistols, massive weapons with which he held up scores of folk in the days before light cars were invented. Dick found the "Spaniards" and its subterranean passages convenient on more than one occasion. He was also an habitué of the "Ostrich" at Colnbrook, where, from a tiny window near the "pigsty," he once leaped to the yard and to the back of Black Bess when the Bow Street Runners came a little too near to be comfortable.

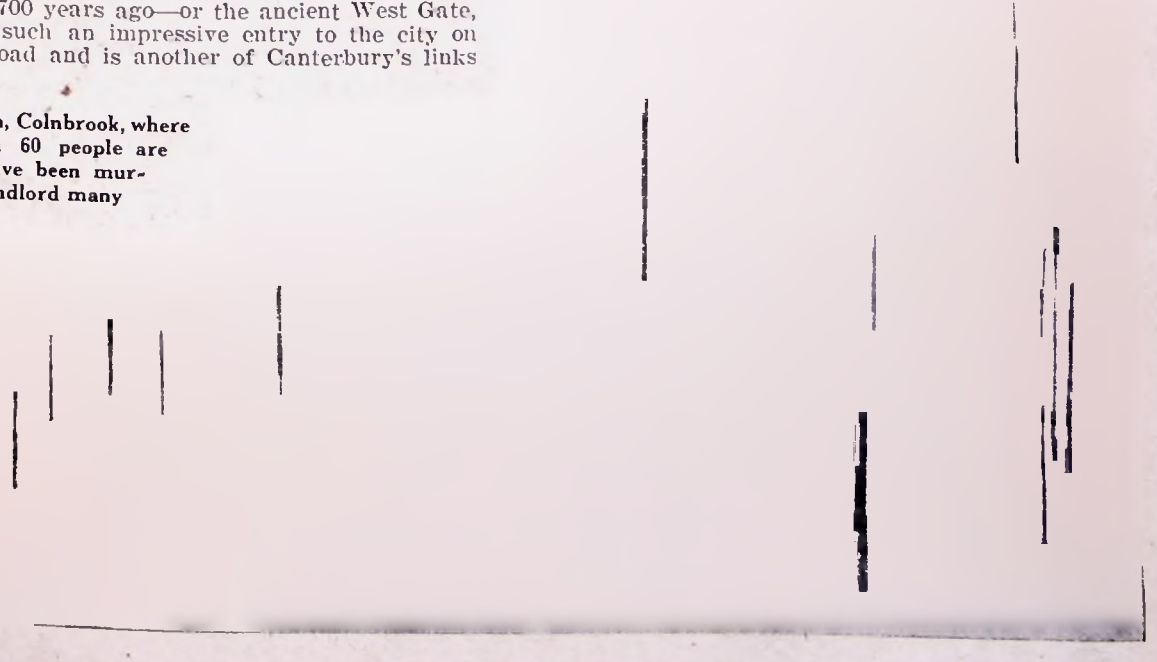
An Unsuspected Trap.

There is a story attached to the rifles of the Gordon Rioters, stacked in an upper room of the "Spaniards." On their way to fire the seat of the Lord Chief Justice at Ken Wood the rioters—their intention known to the landlord of the inn by which they had to pass—were enticed inside; in the cellars beneath, as unsuspecting guests, were entertained and, incidentally, made drunk, pending the arrival of a detachment of troops from Whitehall. Thus, when the rioters made to continue their journey they walked into custody instead; which was hardly the same thing.

The accompanying map gives an idea of the extent of the country covered in this interesting trip, on which the party enjoyed the inns as much as the outdoor travel. The same tour can, of course, be made starting from Salisbury in the west or Canterbury in the south-east.

Alike at the "Ostrich," the "Old George" and the Canterbury taverns, there is satisfactory accommodation for cars and comfortable sleeping and feeding quarters for tourists. V.H.

The Ostrich Inn, Colnbrook, where no fewer than 60 people are supposed to have been murdered by the landlord many years ago.



THE CHARM OF EVENING RUNS.

MANY OWNERS USE THEIR CARS ONLY AT WEEK-ENDS. HOW MUCH THEY MISS IS POINTED OUT IN THIS ARTICLE.

IT is surprising what a large number of motorists fail to take advantage of the extra hour provided by the daylight-saving scheme to go for short evening jaunts on week-days, but prefer to wait until the week-end. After a day's work the average driver certainly does not feel inclined to attempt a long run, but the enjoyment of a 20-mile or 30-mile trip, with a brief stop for a "pipe," must be experienced to be appreciated.

Those who live on the outskirts of a provincial town where a run of but a few miles takes them well into the country are particularly fortunate, for if they arrive home from business at about six o'clock, it means that from half-past six until dusk they are free to enjoy the sweet peace of the English countryside at eventide—a restful change from the bustle of the day.

". . . . free to enjoy the sweet peace of the English countryside at eventide—a restful change from the bustle of the day."

Runs of this kind need not make an owner neglect the usual routine of oiling, greasing and "tuning," which usually occupies an evening or so a week. True, the car will be used more, but remember that one of the most pleasant "garages" for minor adjustments may often be found beneath some leafy trees in a pleasant country lane. Some readers may object to the idea of out-door "tuning," on the grounds that they "do not like to get in a mess during a run." If this is the case, why not carry a discarded "mac." and a pair of old gloves in the car; they are sufficient to keep one clean for any but the dirtiest jobs.

The enjoyment and improved health obtained from these short runs—sometimes for a smoke and sometimes for tuning—after being cooped up in an office or workshop, will add a new zest to life which, if they have not been tried before, is surprising.

Motorists living in the centres of our largest towns are not so fortunately situated as their provincial cousins, but few indeed are those who cannot reach some large park or open space in a run lasting half an hour or so.

G.P.

AMONGST THE DALES OF DERBYSHIRE.

MANY motoring tourists will doubtless be making their first acquaintance with picturesque Derbyshire during the present season, and it may be of interest to them to know something of the literary associations of this fair county of delightful dales, heather-clad wastes, and beautiful streams. Derbyshire may not rival several other districts in the richness of its literary connections, yet there are many corners that may be explored with pleasure, both from a literary and a picturesque view-point.

The Kinderscout region, for instance, with its black mosses, grey rugged hills and wind-swept moors, is an attractive spot to all who have read "David Grieve." Under the shadow of the wild heights of Kinder Mrs. Humphry Ward penned that book which, despite diverse opinions upon its merits as a whole, undoubtedly grips the reader in many of its chapters.

In "Highways and Byways of Derbyshire" we read that:—

This valley has its place in literature; it is the Derbyshire home of David and Louie Grieve. Their thin-lipped, shrewish, grasping Aunt Hannah, and her shambling husband, Reuben, lived in one of the little farms which we see below us. Needham's Farm is its name in the novel, and the novelist herself stayed there whilst she wrote the book, at Marriott's Farm or Upper House, which, as its name suggests, is the highest inhabited house on this side of Kinderscout. . . . Mrs. Ward has done for Kinderscout what the Brontës did for Haworth and Keighley moors, and those who have time to spare will find reward in exploring for themselves the course of the Kinder, the little red brook where David set his miniature waterwheels, the ruined smithy where he sailed his boats in an iron pan, the shed at Clough End where he listened to the preacher, the mountain torrent of the Downfall that comes down roaring in flood through a deep, stony ravine, and the mermaid's pool where Jenny Crum was drowned, and to which the two children paid their midnight visit on Easter Eve."

The countryside around Kinderscout is reminiscent of the wild rugged desolation and grandeur of parts of the Highlands. Naturally, to explore such a region one must go on foot most of the way, and the crossing of this wonderful plateau, with its innumerable ravines, carved out of the peat, locally known as "groughs"—frequently ten to twenty feet deep—is something of an adventure. Many motorists are content to gaze upon Kinder's lofty escarpments of millstone grit from afar off; but anyone who delights in really wild country, with rocks and "cloughs" and moorland profusely covered with heather, bilberry, and bracken, should garage the car in one of the nearby villages and tramp to the edge of the Kinder plateau—which is about 2,000 feet above sea-level—and gaze upon the lonely countryside where David Grieve was born.

Tourists exploring the high Peak will probably find that Castleton people make much of the fact that Sir Walter Scott's "Peveril of the Peak" is associated with this district. Byron visited Castleton in company with Mary Chaworth, when they went to the famous Peak Cavern, and cowered in the boat while the ferryman, "a sort of Charon, waded at the stern and pushed it along the waterway."

Then there is the romantic legend associated with Haddon Hall and the beautiful Dorothy Vernon. Haddon Hall, by the way, has recently been restored into a place of residence by its owner, the Duke of Rutland. It is a romantic and picturesque relic of the old baronial days, nestling amid the trees by the banks of the silvery Wye, and may be seen by the traveller passing on the Rowsley-Bakewell road.

One part of Derbyshire is of very great literary

interest, namely, "Dovedale," the Eagledale of George Eliot's famous novel, "Adam Bede." To this dale came Hetty's secret lover, Arthur Donnithorne, a-fishing. In the book Adam describes it as a "wonderful sight; rocks and caves such as you never saw in your life. I never had a right notion o' rocks till I went there."

William Mottram, in his "True Story of George Eliot," comments: "To anyone knowing these parts there could be no manner of doubt that this description relates to Dovedale." In the novel we read of "that grim outskirt of Stonyshire, a bleak, treeless region, intersected by lines of cold, grey stone." This high, bleak country may be said to lie between Ashbourne and Wirksworth, and its tapering peaks are plainly visible from the top of Weaver, or the gentle height on which Norbury church stands.

Norbury, on the Derbyshire side of the River Dove, was the home of the Bedes. Ellastone, so closely associated with Adam Bede, should also be visited by the tourist. Wirksworth was also associated with Dinah Morris and the Bedes. With Ashbourne as a centre one can readily explore all this delightful countryside.

Dovedale itself would be of world-wide fame had no other pen than Charles Cotton's paid tribute to its remarkable beauties. It is the most picturesque and charming of all the Derbyshire dales; and is too well known to need further comment here. The hills are such as to have caused *Viator* to exclaim: "Bless me! What mountains are here! Are we not in Wales!" The crags, wooded heights, caves, and the swift, clear stream dashing through the gorge of Dovedale make a profound impression on the beholder. To view its glories it is necessary to leave the car at the southern entrance to the dale and proceed on foot.

Beresford Dale, too, should be included in every itinerary embracing this district. Here is the famous fishing house mentioned by Cotton, with the inscription, "Piscatoribus Sacrum, 1674," over the door. This delightful little place is associated with the venerable Izaak Walton and his friend.

Then we may find, at no great distance from Dovedale, the place where Thomas Moore lived in a cottage and wrote his "Lalla Rookh." Here, too, he penned those immortal lines, "Evening Bells."

In the picturesque grounds of Ilam Hall is the grotto in which Congreve is said to have written his comedy of "The Old Bachelor." Ilam, by the way, is a most charming village on the River Manifold, and the motorist, when in this neighbourhood, should pay it a visit.

Derbyshire, with its beautiful rivers, its wonderful dales, all tree-clad and green, its hills, moors and wild wastes, is a delightful touring ground, and within easy reach of the principal towns and cities of the Midlands. One might go much farther afield and fare worse.

A.S.

A SPEEDY FRENCH CAR.

AN interesting French light car which will be on the market in England shortly is the G.A.R., made by J. Gardahaut et Cie, of Asnières. It is a good example of the modern French sports car, built for fast driving over all kinds of roads, and although not previously seen in England, the G.A.R. has earned an international reputation. From its foundation, in 1919, the Gardahaut concern has maintained a vigorous export policy and, as a result, its productions are now well known in Spain, Belgium, Italy, Poland, Czecho-Slovakia, Holland and Germany.

There is nothing startling in the design of the G.A.R., which is a good-class French voiturette made on a proper production basis and selling at a very moderate figure. Two models are made, one having a 58 mm. by 85 mm. (898 c.c.) side-valve engine rated, in France, at 6 h.p., and the other with a 59 mm. by 100 mm. (1,094 c.c.) o.h.v. engine rated at 7 h.p.

The chassis is practically identical in both models, Messrs. Chapuis-Dornier supplying the power units, this make of engine having been employed exclusively in Gardahaut cars for the last eight years. The frame is trapezoidal in form and the side members have a gentle upsweep over the back axle. Rear suspension is by fairly long quarter-elliptics and front springing by half-elliptics.

A Ferodo-faced cone clutch and four-speed gearbox are common to both G.A.R. models, whilst Gleason spiral-bevel gearing is employed in the rear axle, which incorporates a differential. Gravity feed is used for the petrol supply, a capacious fuel tank holding about eight gallons being carried under the scuttle. Four-wheel brakes are, of course, fitted.

Orthodox design and sturdy construction are the keynotes of the chassis, whilst the workmanship and finish are up to a standard found in very much more expensive vehicles.

For competition work a modified version of the 7 h.p. chassis is made. In this case a 12-valve super-sports Chapuis-Dornier engine is fitted and forced induction is employed. A Cozette supercharger, mounted with its axis in a vertical position and driven by skew gearing from the forward end of the crankshaft, is used. The competition chassis, with 12-valve engine, can be supplied to the public either with or without the supercharger. No differential is fitted to the competition chassis, thus reducing the chance of wheel-spin.

In two-seater form, without supercharger, a speed of 80 m.p.h. is guaranteed, whilst with the supercharger the car will do well over 100 m.p.h.

The standard 6 h.p. G.A.R. is turned out in touring trim with a wide, comfortable two-seater body on distinctly English lines, but the car is quite light, weighing under 12 cwt. For the 7 h.p. model several forms of bodywork are available, one of the most popular being the four-seater sports. This is a typical example of present-day French open bodywork.

The four-seater G.A.R., as can be seen from this photograph, has quite pleasing lines; it will probably be marketed in this country in the near future.

Gardahaut productions are to be handled in England by the Boston Automobile Engineering Co., 103, Fulham Road, S.W. We understand that one of the supercharged competition cars will probably be seen at Brooklands in the near future.

Its behaviour on the track will unquestionably be watched with considerable interest by those motorists whose ideal is a car which has a really sporting performance but is not freakish, either in design or appearance. The competition models certainly seem to fulfil these requirements in every detail.

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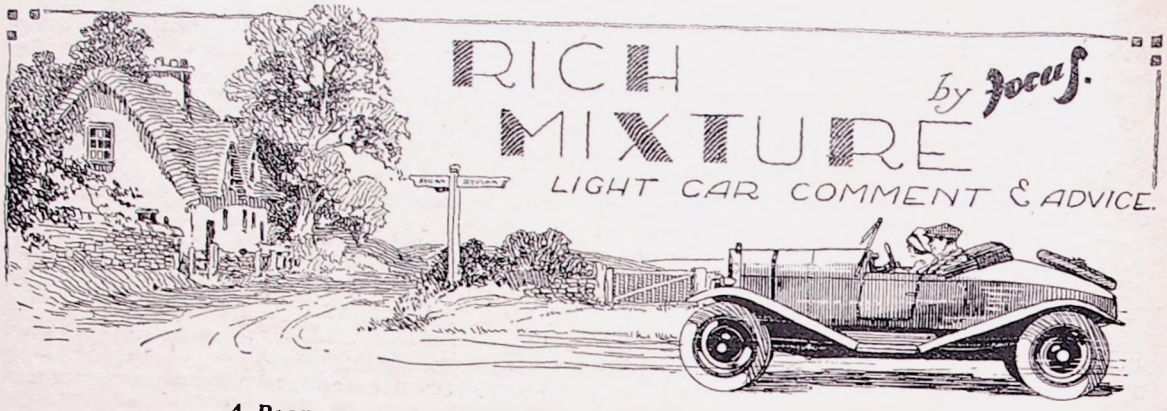

A Boon.

AN opportunity was given to me last week for testing the very last word in gearboxes. It is of the pre-selective epicyclic type and was fitted to a Vauxhall. This gearbox has been most favourably criticised by people who are far more eminent and clever in engineering matters than I am. I think its design and construction from an engineering point of view may, therefore, be taken for granted, and I think also that it could be depended upon to be reliable, capable of giving a long life and needing practically no attention. To drive the car to which it was fitted was sheer delight, even for an expert driver: for one who is never quite sure of his gear changes or who has a lurking dread of changing down it would be difficult to find words to express what a boon this remarkable gearbox is.

Easy Changing.

THERE is no gear lever of the accepted type, its place being taken by a small lever working in a quadrant on top of the steering wheel. This quadrant has six notches marked respectively R, N, 1, 2, 3 and 4. You take your place in the car, move the lever to the position N (neutral) and start the engine. To start off, the lever is moved to position 1, the clutch depressed and released and off you go. To change up, the lever is moved to the second position, the clutch pressed down, which causes second gear to engage itself, and the clutch engaged when the drive is taken up. The other upward and downward changes are made in exactly the same manner. If you are doing 50 m.p.h. in top and wish to change down either immediately or a few moments hence, you simply move the little lever into the required notch, depress the clutch, let it in again and the new gear is automatically selected and engaged.

It is impossible to make any kind of crash; only a very clumsy driver indeed causes the slightest jerk, and the car runs just as silently on any of the indirect ratios as it does on top.

The gearbox, of a size and type suitable for a 14-40 h.p. engine, costs the buyer of the car an extra £30, and is worth, in my opinion, twice as much in freedom from worry and anxiety, apart from the question of improved performance.

Once Tried . . .

THE principals of our light car manufacturing concerns should certainly try a car with one of these gearboxes fitted and learn the lessons which it teaches. I confidently believe that the first of them who offers to the public an attractive car with an equally fool-proof and delightful gear change could easily obtain an extra £25 per car, whilst so great would be the demand when a few hundred such cars were on the road that a waiting list of unmanageable proportions would soon be reported by the sales department of the enterprising concern in question.

If this is my impression, and I am a driver of many years' experience who has handled many dozens of different makes of light car, and who probably has more skill at gear changing than 99 per cent. of drivers, what must be the view of the general public?

Public Demand.

I DO not say that this Vauxhall gearbox is the embodiment of perfection, or that it even approaches finality in transmission design, but that it is a sweeping improvement upon sliding gears of the conventional type cannot be denied. Its arrival on the market will act as a much needed stimulus to designers, and it should go far to challenge the superiority of the present gearbox, from the caprices of which we have suffered for so long.

Those who are at the head of our manufacturing concerns cannot afford in the light of this new development to give anything save the most careful attention and consideration to any improvement upon the present type of gearbox to which their attention is called.

I believe on excellent grounds that the particular arrangement I have described will show the public that the sliding type of gearbox is no longer an unpleasant necessity. So soon as they appreciate that fact the demand for cars embodying something better will know no bounds.

Dangerous Simplicity.

TALK at the club the other evening had turned to the subject of ease of driving, and a young designer whose ideas are of the advanced type was dilating on the need for further simplification of controls. To his surprise he was taken to task by an old and choleric member, who bluntly declared that cars had now become far too easy to drive.

"Look what you've done," he complained. "You've made it possible for anyone not actually blind or certifiable to take the wheel of a car and be able to drive it with half-an-hour's instruction. And what's the result? You are turning loose on the roads thousands of people who haven't as much road sense as a rabbit. The roads are swarming with drivers all learning; but while it does not

require an ounce of skill to drive a car, it requires a ton to avoid trouble. And the more novices there are the worse it will be. Yet you are talking of making control still easier!"

While there is a grain of truth in this contention, I do not subscribe to the view that the novice is responsible for any considerable proportion of accidents. As a rule he or she is too fearful of being involved in a smash to take risks. The danger comes at a stage farther, when they have become familiar with driving and are lulled into a false sense of security, which is their undoing in an emergency.

The Human Element.

I HEARD of an example of this only a few days ago. A man who bought his first car in the spring was very proud of its servo brakes. Three months' driving on the road gave him confidence, and he then began to increase his average speed. On several occasions he narrowly escaped disaster, being saved only by the efficiency of his brakes, but, unfortunately, he deluded himself into believing that he had got himself out of the difficulties through sheer driving ability. Then one day he reached a road intersection just as another car was speeding across. All that he could do was to brake, but this was not sufficient and he rammed the other car broadside on.

Had he looked over to the left he would have had heaps of room in which to have gone behind the other car and avoid the smash. But he had not acquired the *instinct* to do so. No amount of mechanical aids in a car will ever replace the trained, alert brain—which is essential for speed with safety—and he is a wise driver who uses them to assist and not supplant it. The human element must always predominate.

All on a Sunday Morning.

HERE is a tale of woe which, however amusing, must strike a responsive chord in our sympathies. A certain car owner planning a day trip to the seaside with his family duly made preparations overnight with the object of starting in the early hours of Sunday morning. As usual in such cases, the rising was somewhat hurried, and after the picnic baskets and other impedimenta had been packed away and breakfast finished the scheduled time for starting had passed. Still, the car drew away at 5.30 a.m.

About a dozen miles had been covered when the engine suddenly spluttered and stopped. To the chorus of "What's happened?" father returned a guilty look. He had forgotten to fill up with petrol. He had no spare supply. Of other motorists there was not a sign and the nearest village was some miles distant. What was to be done? Divesting himself of his heavy coat, paterfamilias started to walk to the village, what time the passengers were glad to utilize the coat as an

IN THE VALE OF THE WHITE HORSE.

This famous Blowing Stone near Uffington is perforated with holes and, by blowing into the top one, a loud roar or moan is produced which can be heard for a long distance. Local tradition says it was used in olden days to call in the men from the Downs in times of strife.

extra wrap to protect themselves against the keen morning air.

Father's walk proved futile. There was only one purveyor of petrol in the village and the premises were locked up. Moreover, the solitary rustic astir casually remarked that the place was not open on Sundays. It was nearly 7.30 a.m. before they could obtain a gallon from another motorist, but by then the party had wolfed nearly all the provisions and were so cold and miserable that they decided to return home. A two-way petrol tap? Yes, the driver had one; but its safeguard had become a snare through his forgetting that he had previously turned it to "Reserve."

Air-valve Utility.

A POINT about extra-air valves that appears to have been overlooked so far by correspondents is their value as tell-tale devices when trying experimental carburetter settings. For example, I have recently fitted an extra-air valve to a certain sports car that I drive in frivolous moments, and while the fitting can hardly be said to have increased maximum speed appreciably, it has certainly told me some things about the carburetter adjustment that I had previously no means of finding out.

I thought, for example, that the slow-running mixture was about O.K., but I found that it could have been weaker, whilst at all speeds up to about 30 m.p.h. the mixture was on the rich side, although at higher speeds the automaticity of the carburetter left little to be desired. I am now wondering whether the air valve will be used very much, except as a brake, once the lessons it has taught me have been put into practice. In any case, this useful fitting will, I believe, have put me on the way to getting for the owner of the car another three to five m.p.g.

More Anomalies.

IN a recent issue a correspondent pertinently asked why manufacturers carefully enclose road springs in gaiters to ensure their being kept thoroughly lubricated and flexible and then fit shock absorbers to stiffen their action. Other anomalies could be quoted. For example: Why are we supplied with parts plated to resist the effects of weather and then have to apply vaseline to protect the plating? Again: Why do tyre manufacturers give us covers which are supposed to ensure greater comfort and then recommend a pressure that is invariably conducive to nothing of the kind?

When, years ago, tar was first used on the roads, its purpose was to suppress dust. To-day a dust plague is actually being produced by the use of sand to deaden tar, and in my particular district, through this cause, residents on main roads have recently had miniature Saharas in their gardens.

VARIETY LENDS CHARM.

Character is lent to the English landscape by the wide variety of different means for separating meadows and estates, delightful contrasts being provided by the red banks of the West, the stone walls of Derbyshire, the trim hedges of Warwickshire and the neat white railings of the more affluent districts. Above is a mud wall of the type often seen in Berkshire. It is thatched to prevent rain causing disintegration.

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

NO CAR WITH AN ENGINE CAPACITY EXCEEDING 1,500 C.C. (1½ LITRES) COMES WITHIN THE SCOPE OF THIS JOURNAL, THAT CAPACITY BEING GENERALLY RECOGNIZED AND ACCEPTED AS THE LIMIT FOR A LIGHT CAR ENGINE.

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Simplified Gear Changing.

IN "Rich Mixture" this week our contributor "Focus" describes his experiences at the wheel of a car fitted with a pre-selective epicyclic type of gearbox, and to quote his own expression, "it would be difficult to find words to express what a boon this remarkable gearbox is." Coming from a man so experienced as "Focus" in motoring matters, this opinion carries considerable weight, and, although at present the gearbox in question is fitted to only one make and model of car, it should provide food for reflection to other manufacturers who cling slavishly year after year to the orthodox "crash" gearbox without, apparently, making any attempt to provide something less crude. It cannot be denied that, however well designed an ordinary type of gearbox may be, it still proves the bugbear of all novices, and even experienced drivers find it at times a nuisance.

It is interesting to recall that last week we described a change-speed gear which presents many novel features and which from its description might be expected to give perfectly satisfactory results on a car. The great point with a transmission of this kind is, of course, the ease with which up-and-down gear changes can be made, but hitherto there have been certain mechanical objections to the particular principle employed. It seems reasonable to suppose, however, that the gear in question would provide a reliable and efficient form of transmission, and one which should make a distinct appeal to all those who find difficulty in using an orthodox gearbox—which means to ninety-nine motorists in a hundred.

Rear-seat Discomfort.

A POINT to which we frequently call attention is the relative discomfort of the rear seats of all cars. Those who are accustomed to riding "in front" find if they take a journey "behind" that road shocks are much more noticeable and much more unpleasant. Draughts and dust, which used to make purgatory of back-seat travel, need not be troublesome in these days of closed cars and efficient hoods and side curtains, but rough roads can still rob motoring of all its joys. They subject the rear-seat passengers to jars and jolts which, although the driver may hardly notice them, spoil his pleasure because he cannot fail to be aware that his family or friends are suffering more or less severe discomfort. Suspension systems which were readily—or, better still, automatically—adjustable to cope with differing loads would provide immediate relief, but they seem still as far off as ever. Shock absorbers have eased the situation without by any means providing a permanent cure. Improvement in spring design and heavier bodies and chassis which make the live load a smaller proportion of the total load than it used to be have also improved matters, but there is still room for the lot of the rear-seat passengers to be very considerably bettered, not only in the case of light, cheap cars, but in the case of the most costly luxury models. There is one simple, cheap and certain way to provide a marked measure of relief, and that is for manufacturers to fit deeper, softer and better-sprung cushions and squabs. Let us have comfortable back seats as one of the selling points of 1928 models.

Street Noises.

IN the House of Commons last week Mr. Pethick Lawrence asked whether the Minister of Transport had received any complaints as to "nervous shock caused by the unnecessary use of strident motor horns." This is a matter which has come into prominence recently, but it will be generally agreed that anybody familiar with road conditions must admit that unless a car is equipped with a reasonably loud warning signal, safe driving becomes extremely difficult. Those who doubt this have only to try making use of a soft-toned bulb horn when driving a car through a busy town.

The law requires that every motorcar shall be fitted with a device for giving audible and sufficient warning. This definition is somewhat vague, but obviously it means that the warning signal must be sufficiently loud to be heard at a reasonable distance, and how can this be accomplished on a road on which tramcars are running unless the horn be loud? In our opinion, it would be far more to the point if our legislators turned their attention for a little time to the raucous noises produced by vehicles other than motorcars. When these noises are reduced loud motor horns may become unnecessary.

AMATEUR MECHANICS AND THEIR TROUBLES—HINTS ON THE ART OF BRAZING—PINNING THE JOINT—AVOIDING OVERHEATING—CLEANING OFF SURPLUS BRASS AND FLUX—LOADED TUBES.

ALTHOUGH I am always anxious to do what I can in the way of encouraging builders of home-made cyclecars, I sometimes wonder whether, in their own interests, it would not be better if I adopted the guise of a wet-blanket in certain cases. A man may be a red-hot enthusiast and he may be a quite good driver, but it does not follow that he is a good mechanic; if he is not, no amount of keenness will help him to become a professional all-round fitter in the space of a week or two and to attempt to build a cyclecar with but a smattering of mechanical knowledge can end only in disappointment.

* * *

I am prompted to make these remarks by reason of a letter which I received a few days ago from a reader who has designed what appears to be quite a practical little cyclecar, if one can judge from the drawings and description which accompanied his letter. The chassis frame is to be composed largely of steel tubing brazed into suitable lugs, and here it is that my correspondent has met his Waterloo; he has no knowledge of brazing and the few attempts which he has made in this direction have proved most unsatisfactory.

* * *

I was not the least surprised to hear that he had found difficulty in this, because a very long experience is necessary before the art of brazing can be mastered, as there are many pitfalls awaiting the inexperienced. A few general hints, however, will be of assistance to amateur mechanics.

In the first place, it is essential that the tube and the lug into which it is to be brazed shall be perfectly clean and free from any traces of scale or grease. The tube should be a good fit in the lug—that is, a fairly close push-in fit—and it should be secured in position before brazing by drilling a ⅛-in. hole through the lug and the tube and hammering into the hole a piece of steel wire or a nail. Alternatively, special brazing pins can be bought for the purpose.

Before sliding the tube into the lug it is a good plan to coat it with a brazing flux such as borax made into a paste with water, or one of the proprietary compounds, such as Boron Compo, can be used.

* * *

The assembly should be placed in the brazing hearth in a position which will allow the spelter to be fed into the joint; plenty of coke or asbestos packing must be arranged around the lug, so as to concentrate the heat from the brazing torch as much as possible. A large paraffin brazing lamp can be used, but a gas blowpipe will be found more convenient, as better control over the flame can be obtained and, in addition, there is no risk of a choked jet or a depleted fuel supply whilst in the middle of the job.

* * *

As a general rule, it will be found more convenient to use brazing wire than spelter, but in either case an ample supply of flux must be fed into the joint with the molten brass. It is important that the tube should be kept sufficiently hot to ensure that the brass runs easily into the joint, but, at the same time, it must be borne in mind that overheating will burn both the brass and the steel, with the result that the joint will be weakened, possibly to a dangerous degree.

So soon as the actual brazing operation has been completed, the flame must be withdrawn and the tube given a few minutes in which to cool sufficiently for the brass to set. It can then be taken from the hearth and the surface of the metal in the region of the joint should at once be brushed with a special steel wire brazing brush; this will remove the scale and the surplus flux, making the final cleaning up with a file much easier.

The molten flux when it sets on the surface of the metal is glass-like both in hardness and appearance, and cannot be cut with a file. Gentle tapping with a hammer will, however, split it off in flakes, and this should be done before attempting to file away any surplus brass which may be present.

* * *

When it is doubtful if sufficient brass can be fed into a joint from the outside, it is a good plan to load the tube with spelter or with cuttings from the brazing rod, together with a supply of flux. Thus when the joint is heated the cuttings will melt and find their way into the joint from the inside. This advice holds good, however, only if the tube fits into a blind hole.

Another good plan when the size of the lug is great enough to stand it with safety is to drill a hole a quarter of an inch or so more in diameter through the lug and to use this hole as a point through which to feed the molten brass.

* * *

In order to prevent the flux and the brass from spreading beyond the joint, it is a good plan to coat the tube and other parts of the lug with a graphite paint, which will protect the metal and make the final cleaning-up much less laborious. A medium-cut file will be found convenient for this work, and when all surplus brass has been removed the tube and lug can be made smooth with a strip of emery cloth.

AN "ALL-ALVIS" DAY AT BROOKLANDS.

IT is greatly to the credit of Henlys, Ltd., and the Alvis Car and Engineering Co., Ltd., working jointly, that these two concerns were able to organize such a successful and enjoyable all-Alvis meeting at Brooklands on Saturday last, June 11th, and it says much for the enthusiasm of Alvis owners that so many were present.

Although the actual racing was timed to start at 2 o'clock, an appearance competition was held at 1.15 p.m., four prizes being offered for the best-kept Alvis cars and, in addition, there was another prize for the best-kept chauffeur-driven Alvis.

As is usual with events of this kind at the track, all races started and finished at the fork, thus enabling spectators to have a clear view of the proceedings. The first race was over a distance of two laps for Alvis cars other than 12-50 h.p. sports two-seaters, each car being handicapped according to model. In this race there were 29 starters and some quite exciting jockeying was to be seen as the cars rounded the members' banking. On the completion of the first lap A. E. Millard (12-40 h.p. 1925 model) was leading, but had to give place to M. J. Vaughan (12-50 h.p. 1923 model), who managed to win almost by a neck at 53.5 m.p.h., with G. L. Jackson (1927 Alvista) third.

The next race was the only one of the afternoon which was not exclusively Alvis, as it was open to any make of car. It was run over a distance of two laps, all cars starting from scratch. Naturally, a large number of Alvis cars took part in the event and it was fitting that this make should come in first, second and third.

Neck-and-neck Racing.

The first and second cars, driven by J. S. Hindmarsh and H. H. Brayshaw respectively, fought out a neck-and-neck duel almost from the start and finished with only about three-quarters of a length between them, whilst Mrs. Dykes was some little distance behind. During the whole of the two laps it was amusing to watch the fierce duels between a 14 h.p. Bean and an Austin Seven, these two cars going round with the Austin just behind and slightly to one side of the Bean.

The next event was a scratch race over a distance of three laps for Alvis cars capable of 75 m.p.h. or over. The premier award for this event was a silver cup, presented by our associated journal, *The Motor*. It was obvious from the start that Mrs. Dykes was out to win, as she made a particularly good get-away and at once took the lead. She was followed by four other cars and these remained in a bunch until the end of the lap, whilst Mrs. Dykes all the time continued to increase her lead so effectively that she crossed the line almost half a lap ahead of the second car, which was driven by C. N. Green, but J. S. Hindmarsh was so close to him that it seemed probable that they would tie for second place. Actually, however, Green managed to beat Hindmarsh by a matter of inches. Mrs. Dykes's speed was over 83 m.p.h.

A one-lap race for any Alvis car driven by a woman produced a field of six starters, with Mrs. Dykes scratch, from which position, in the short distance of one lap, it was almost impossible for her to get first place, and she did well, in fact, to come in second, with Mrs. Wichmann third. The winner, Mrs. Madison-Brown, led the rest of the field over the finishing-line by a distance of almost half a mile, at a speed of 56.21 m.p.h.

The new fork grand-stand proved very popular at the meeting, as the start and finish of all the events took place immediately in front of it. The photograph shows a race for standard Alvis cars in progress.

A Pageant of Progress.

To show the progress which has been made in the design of Alvis cars during the past six years, the next event took the form of a Pageant of Progress, in which Alvises for every year from 1921 to 1927 competed, whilst a 1923 200-Mile Race Alvis, driven by Major C. M. Harvey, was included to make the pageant representative of all Alvis activities.

Harvey, of course, was scratch and got away very well, but he was too much handicapped to win and had to be content with second place. The race was won by W. H. Green, driving a 1923 sports model, by a very big margin, third place being taken by W. Urquhart Dykes (1927 sports model).

A remarkable demonstration of scientific skidding formed the next item on the programme and probably interested and amused spectators even more than any of the races. The demonstration was given by Paul Dutoit, driving Major Harvey's Alvis racer. It is impossible to describe the amazing evolutions carried out by Dutoit, but it was obvious that he had complete control of the car even when it was spinning on its own axis. Not only did he skid the car at speed, but also by skilful manipulation of the brakes he pivoted the car whilst it was otherwise stationary, the back wheels spinning on the dry concrete and smoking to such an extent that they looked almost like catherine wheels, and it says much for their construction that they did not burst or take fire. It is a matter for congratulation also to the Alvis Co. that the car itself stood this gruelling test.

The starting-and-stopping competition proved amusing both to spectators and competitors. A large number of cars were entered for this event and the majority of them were handled in a really skilful manner. The rules were that the cars had to be driven down the course for a distance of 200 yds. and then to be stopped between two lines marked on the track about 15 ft. apart. The car overshooting the line had to be reversed until it stopped in the required position, the time being taken from the moment that it was started on its run until it was finally brought to rest with all of its wheels between the lines.

In their efforts to make good time many competitors drove too fast down the 200-yard approach and, as a result, their cars, with locked wheels, slid across the stopping area and had to be reversed into position—a proceeding which cost them many valuable seconds. Other competitors made perfectly judged stops.

The best performance was put up by W. H. Green (1923 sports two-seater), his time being 13¼ secs. The next best was that of G. C. U. Brown (1926 two-three-seater), whose time was 14⅗ secs., whilst J. J. Carver and T. H. V. Haydon tied for third place with 15⅗ secs.

Eliminating Heats.

The final event produced a huge field of starters, as it was a handicap race open to all Alvis cars which had taken part in the previous races. It was run in three one-lap heats, with a final of two laps. A number of cars were eliminated in the heats, with the result that there was a field of ten in the final. N. Rigby Whitmore, driving a 12-50 h.p. 1927 saloon, soon took the lead and was followed by T. W. Bennett and E. M. Neville, who were in close company. Whitmore remained in first place and won by over 300 yds. from Neville, who had succeeded in getting fairly well ahead of Bennett. The winner's speed was 55.4 m.p.h.

The prizes offered in the various races were of a very varied nature; they included drums of oil, picnic cases and so forth, in addition to two valuable silver cups.

At the conclusion of the meeting a treasure hunt was held, the winner receiving a £10 award.

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ON July 9th, 1926, *The Light Car and Cyclecar* published an article of mine, "What the Light Car Buyer Wants in 1927," and, judging from the number of appreciative letters this drew from readers, it really did hit off the public demand to a considerable degree.

Soon now we shall be thinking about the 1928 models, and it will be of interest to review matters again in the light of a further year's experience and see how the demands made in 1926 were met by the light cars of 1927.

First and foremost, one must confess to grievous disappointment that cellulose paintwork has not been more generally adopted. With very few exceptions, the makers of light cars still persist in giving us the old paint and varnish finish which is so impossible a proposition for the busy owner-driver, whose time for car cleaning is strictly limited, to keep in good trim for long.

This was the first and strongest demand made in my article last year, and it is again No. 1 on the list for 1928. The old cry that this system of finish was immature and unsatisfactory and that it peeled and cracked can no longer be urged, for some of the foremost makers of very expensive cars have adopted it. Rovers were one of the few manufacturers of light cars to standardize cellulose for 1927, and I hope very sincerely that they have reaped good measure for their enterprise.

I have no inside information, but it will be vastly surprising—and annoying—if many other makers have not scrapped the old finish by next October's Show.

Manufacturers' Difficulties.

One can, of course, see their difficulties. It is, presumably, a fairly big item to make the complete change-over from existing methods to cellulose, and with competition so fierce as it is in this market and prices cut so fine no firm cares about the initial expenditure unless it is forced upon them.

But whether they like it or not, cellulose is here, and, without the least doubt, here for good, until something even better is discovered. Those who hesitate too long may make the very unpleasant discovery that the delay has cost them in sales far more than the change-over would have done. In any case, this will have to be faced eventually, and so really they have everything to gain and nothing to lose by moving with the times and making the change now.

Again, Mr. Motor Manufacturer, we impecunious folk who clean our own cars, often under very difficult conditions, want cellulose, and we want it in 1928, not in 1929 or 1930.

It may be remembered that soon after my article appeared in 1926 the Rover company brought out a new model of the 9-20 h.p. range called the semi-sports, which embodied almost exactly one of the demands made, viz., for a car which has a bit more "pep" and liveliness than the ordinary tourer and yet is less costly and more orthodox in shape and weather protection than the genuine sports.

Judging by the number of these very attractive Rovers one has seen on the road during the past 12 months, this model has sold like hot cakes, and it is to be hoped that other firms will introduce similar models.

An Advanced Design.

The new Riley Nine, which created considerable interest at the Show because of its very advanced design, is another step in the right direction, and a big one, too. It has the performance of a semi-sports car, although not designated as such, and its four-speed gearbox, with constant mesh and, therefore, quite third gear, is a feature for which many of us have long been waiting.

Unfortunately, at the time of writing very few of these cars have been delivered to private owners, and I fear this model is not going to do much in the way of increasing road congestion in the present year of grace. But it should, surely, be available in some numbers for 1928.

A direction in which makers have disappointed us in 1927 is the retention of those horrible bits of bent iron which do duty for throttle and magneto controls. I repeat again what I said in 1926—we hate them. A hollow steering column is the place for such rods, with the levers on the wheel. Do, please, listen this time.

". . . the semi-sports . . . which has a bit more 'pep' and liveliness than the ordinary tourer and yet is less costly and more orthodox . . . than the genuine sports."

COMMODORE

WHAT IS YOUR IDEAL LIGHT CAR FOR NEXT YEAR? OUR CONTRIBUTOR "MARMADUKE" GIVES WHAT HE THINKS ARE THE AVERAGE OWNER'S OPINIONS.

There has been a decided improvement in the provision of more attractive-looking instrument boards. Some makers do seem to realize what a big selling point this is; others, however, still retain dashes which are obviously of cheap, stained wood, and badly done at that, which is most emphatically "penny wise, pound foolish."

The door question is a point on which public demand has at last been met, and it is now the exception to find a four-seater car which has not a means of exit for each passenger. Side curtains also in many cases are better than last year. Too many makers, however, still use the plain, round pegs without any means of keeping them tight. This sort invariably rattles in less than a year, and is quite out of date. Better methods of storing the curtains when not in use are still wanted, and no maker of an inexpensive car has yet found it possible to emulate Standard and Humber practice, in which the side screens let down into the bodywork. There is a wonderful harvest waiting for the first light car maker who will give us something on these lines.

Why Saloons are Popular.

Saloons seem to grow in popularity, partly, I think, because the hood of the average four-seater is such an intolerable nuisance to put up and down. I much prefer an open car, but to furl my present hood is a Herculean labour—last time I tried it the rear window got broken—and so it has remained in place now for months. But I shall not again make the mistake of buying a car with such a blot on its escutcheon.

There are several really excellent proprietary hoods on the market, and the wise maker, if he is unable to design anything so good himself, will see that his touring cars are fitted with one of these for 1928.

Then are we quite satisfied with our four-wheel brakes? Do they come up to the fond hopes and expectations we formed of them in theory? That, when properly adjusted, they are much more effective than the old pattern is admitted. But the crux of the matter lies in those three words—when properly adjusted.

Even if they were right when the car was delivered, which, believe me, is not always the case by any means, scandalous though this may be, within six months—less in hilly districts—as maintained by the average owner-driver, they are little or no better than the old type

This is the Achilles heel of four-wheel brakes. As at present arranged most of them are much too difficult to keep in proper adjustment, and the greater proportion of owners who do it on the hit-and-miss principle miss correct setting far more often than they hit it.

Some system of true and definite compensation, which can be relied upon to remain as such, and one point of adjustment for all four brakes is imperative if the man in the street is to obtain the full benefit of their stopping powers. Buyers of new cars are going to be very critical of this point in 1928.

Lastly, we light car owners are sick to death of the wretched quality of some of the tools and accessories supplied. Jacks, in particular, are an item over which I, and many others, often threaten to "throw a fit," as they have it in the West Country.

Inefficient Jacks.

Why, when I, as a private motorist, can obtain a really good article for as little as half a guinea, will makers, who, by buying in thousands, would probably get it for about half that sum, persist in sending out their cars equipped with an atrocity which in seven cases out of ten will not function properly, which sticks and jams and needs the strength of a Goliath to work?

Clocks, too, are very often uncertain timekeepers—at any rate, those fitted to most moderately priced cars. One admits that they have not the easiest of jobs, for grit and vibration are deadly enemies of small, intricate machinery. Possibly a solution will be found in the electric clock which can be definitely sealed.

Your cars are, in the main, so good, Mr. Motor Manufacturer, that it is surely "spoiling the ship for a ha'porth of tar" to vex us in these small ways. Will you not see to it that such little annoyances are abolished in 1928?

["Focus" will reply to this article in next week's issue. Meanwhile, our readers' opinions will be welcomed for the correspondence columns.—ED.]

"Saloons seem to grow in popularity, partly, I think, because the hood of the average four-seater is such an intolerable nuisance to put up and down.

LIGHT CARS CLIMB 1-IN-1½ GRADIENT.

These pictures give a good impression of the steepness of Dalton Bank. Both cars are Jowetts.

GOOD PERFORMANCES PUT UP IN HUDDERSFIELD M. S. C.'s THIRD DALTON BANK MEETING.

ALTHOUGH the Bradford Club can claim to have pioneered the freak-climb movement, other clubs have wasted little time in securing private grounds wherein the sport may be followed without let or hindrance, so far as the law is concerned. The activities of the Huddersfield Motor Sports Club furnish a case in point.

Last Saturday's climb was the third event to take place at Dalton Bank, as the hill is called, and the 6,000 spectators evidently regarded the handicap climb for cars of any capacity as the tit-bit of the day. In view of the nature of the course it was not surprising that most of the entries came within the light car category, and the interest of spectators was tuned to a high degree when J. Hepworth commenced the climb in a 7 h.p. Jowett.

Despite the smallness of the power unit, this car developed astonishing speed on the lower sections of the hill, and even when faced with the 1-in-1½ gradient kept up its revs in such fine style that the summit was reached in 23 seconds.

W. S. Canney then made a start, also driving a Jowett, but his climb was appreciably slower, and a time of 35 seconds was recorded.

L. Coles's 8.7 h.p. Frazer-Nash car was described as "Lion," and started off with an imposing roar. Unfortunately it petered out half-way up the hill; at a later stage, however, Coles redeemed himself by taking "Lion" up the hill in 25½ seconds. It was noted, by the way, that on one rear wheel L. Coles had fitted a specially designed cover having large rubber projections.

H. Canby (9.5 h.p. Salmson) started off well, but stopped twice on the easiest portion of the hill, and an examination proved the failure to be due to a choked jet, some tiny portions of rubber having come away from a flexible petrol pipe.

Although several other attempts were made no competitor succeeded in reducing J. Hepworth's time, this driver taking chief honours for the class.

SUCCESSFUL BRIGHTON-TO-BEER TRIAL.

THE Brighton and Hove Motor Club's second annual Brighton-to-Beer trial was voted "one of the best" by all who took part, a tribute which the organizers of trials seldom receive. True, it was raining when the competitors queued up for the start at 10 p.m. last Saturday near the Aquarium, but the spirits of trials enthusiasts are hard to damp.

There were 99 entrants, 64 of whom were motorcyclists and 7 Morgan drivers, while there were only 6 non-starters in the car class. Soon after 11 p.m. the last man was away Westward Ho, and the rain ceased with his departure on the 318-mile run.

A check was taken at Midhurst, where there was a stop for petrol. While A. Rundle's Sunbeam motorcycle was being filled, the spirit overflowed and caught fire. The machine blazed in the road for some time and the owner was compelled to finish the trial as a car passenger.

Just outside Petersfield there was more excitement in the shape of "Patrick's Precipice," a long, rough-surfaced, non-observed hill, included, according to the route card, "just to wake you up." It had that effect, particularly upon F. A. Boggis, who broke the low gear chain of his Aero-Morgan. He was delayed half an hour mending it by the light of matches, but was on time at the supper check at Ringwood.

After an excellent breakfast at Seaton the business of the day began. A descent of Salcombe brought the competitors to the tit-bit of the run—Harcombe Hill. This was a really good 1-in-2½ hair-pin gradient with a surface of loose, jagged flints.

The Morgans approached it in their usual meteoric style, but it was clear from the way they waltzed that their back tyres were suffering on the loose stuff. W. G. Godley and H. R. Taylor were the first to arrive, but they stalled soon after the hair-pin and made the ascent more difficult for Boggis and E. G. Mobbs, who followed immediately. Boggis took the hill fairly fast and carefully, making a very clean and easy climb, while Mobbs's old Grand Prix model made a surprisingly good ascent. H. G. Vidler came up well and he was quickly followed by J. G. Simpson Lee (Alvis), who was fast and spectacular. Another of the "hectic brigade" was H. C. Hamilton, whose old Talbot was better than its appearance suggested. The best climb of the day was put up by H. T. Pollocks (Austin Seven).

W. L. Bishop's Bishop Special came to a stop on the hair-pin, and S. Davies's Austin also "died" a slow death. Altogether the hill accounted for 16 failures.

Roncombe Hill, Pin Hill and St. Cyres Hill followed in fairly quick succession, and then the usual route through Beaminster led to White Sheet Hill, which was so dry that it was not observed. A secret check near Kittwhistle caught a few competitors, and another at Cadnam, between Ringwood and Romsey, entrapped those unwary ones who were tempted by the home "blind" to rush on and snatch a little sleep outside the final check at Winchester. A list of the finishers will be found among "Club Items."

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

B35

ARTISTS PARADISE

A PICTURESQUE OLD WILTSHIRE VILLAGE WHICH, ALTHOUGH ONLY TWO MILES OFF THE MAIN BATH ROAD, SEEMS TO BELONG TO THE PAST.

IN these days of obtrusive modernism, when new buildings are springing up in bewildering profusion along the roadways of our land, it is with a sense of restfulness that one finds oneself suddenly in a realm of old-time memories and memorials of the receding past.

Such, indeed, is Laycock, the wonderful old village of Wiltshire on the banks of the sleepy Avon. Laycock lies amid green pastures and tree-clad hills just three miles south from Chippenham by road and three miles north from Melksham, well known to motorists on account of its tyre production. Eight miles to the east is Devizes and eight miles west is Bath. From this one will gather that the district, of which this charming village is the centre, is one of historic interest and scenic beauty.

It was the abbey which gave birth to Laycock away back in the 13th century, or, at any rate, gave it a name among the villages of the past and lift from obscurity.

Tradition tells how an early British king Dynwal Moelmyd, had a castle on the spot long before the abbey walls were raised, while yet another tradition weaves an interesting story around an orphan child, Ela, who was banished to France. She was brought back to England by a pilgrim in the disguise of a troubadour, wedded to William Longsword, son of Henry II, and, in later years, she founded the Cathedral of Salisbury. In 1232 she erected the abbey at Laycock as a home for Augustinian canonesses, and was herself the first abbess.

Sir William Sharington purchased the abbey at the dissolution and converted it into a private residence, thus saving it from demolition. He was Master of the Mint of Bristol and received his knighthood from Queen Elizabeth, who was a guest at the abbey at the time.

It is, however, the village itself rather than the abbey that will charm the traveller as he enters its streets. Old houses, side by side, line the way, wonderfully picturesque with their timberwork and gable ends, their projecting stories and broad eaves. The familiar grey stone of Wiltshire is on every hand, and one notes the heavy stone slabs on the roofs, the low doorways and narrow windows.

The Red Lion Inn stands opposite to a 14th century barn in the main street, and before the village school is the old market cross. No matter in what direction one may look or along what street one may pass there is delight everywhere to the lover of the past, and it is not surprising that many artists make a pilgrimage to Laycock during the summer months.

The eastward run to Devizes is a delightful one, with the climb to Bewley Common, affording glorious views away to the eastern hills; Devizes itself is an historic old town; Henry VIII found it an excellent centre for hunting, whilst King John often visited the town, as also did Anne Boleyn in 1530. The market place is one of the most spacious in the country, with its 19th century cross and the famous Bear Inn.

The visitor to Laycock will doubtless make the acquaintance of Bradford-on-Avon before leaving the district, for at Bradford there is one of the very few chapels built on a bridge, and the old Saxon church is an architectural gem.

A.P.

The fine old abbey at Laycock which dates back to 1232. It was originally a home for Augustinian canonesses but, at the time of the dissolution of the monasteries, was turned into a private residence.

We welcome letters for publication in these columns, but take no responsibility for the opinions expressed. No anonymous communications will be accepted, but writers may use a nom de plume. To ensure publication in the next issue letters should be addressed to the Editor, "The Light Car and Cyclecar," 5-15, Rosebery Avenue, London, E.C.1, and should reach us on Monday. We reserve the right to make any alterations or deletions which we deem necessary. Please write only on one side of the paper and leave a wide margin.

SUSPENSION SYSTEM PROBLEMS.

The Difficulty of Obtaining Flexibility Without Bounce.

Preventing Rebound and——

If your correspondent, Mr. A. P. Swann, who recently suggested that spring leaves should be treated with a preparation which will prevent rust and at the same time damp out rebound, will ask Ferodo, Ltd., for particulars of their "spring interleaving" he will be well on the way towards solving the problem. Such, at any rate, is my personal experience. I have no direct or indirect connection with the concern in question, beyond that of a satisfied customer. A.H.R.

——Avoiding Rust.

Shock Absorbers and Spring Lubrication.

May I suggest to "Puzzled," whose letter appeared in your issue of May 27th, and to Mr. A. P. Swann who contributed a letter on June 3rd, a simple experiment which will illustrate the respective functions of springs and shock absorbers? Take any spiral spring, such as a valve spring, and secure one end to a bench, so that the axis of the spring is vertical. Now give the upper end of the spring a blow with a hammer. The energy of the blow is absorbed progressively by the deformation of the spring and the hammer is brought to rest without the jar which would be occasioned by a similar blow applied to a relatively incompressible object.

A Clear Explanation.

If the spring would now quietly return to its original shape and wait for the next blow, all would be well. But it does not. It overshoots its position of rest and performs a series of oscillations until the internal friction of the spring has used up all the energy of the original blow. Before repeating this experiment tie a piece of string, not too tightly, round the free coils of the spring. The spring compresses under the action of a blow as before, but when it tries to oscillate it comes up against the opposing force of the string at every upward movement. The result is that the oscillations die out much more quickly. We have here a spring fitted with what motorists call a rebound snubber.

Car springs are made flexible, lubricated and covered with gaiters, so that they may retain the conditions necessary to absorb shocks on the road. Shock absorbers are fitted for the purpose of reducing the subsequent oscillation of the spring, or "bounce" as it is sometimes called.

Snubbers reduce the movement of the spring in one direction only, the more common type of shock absorber offers resistance in both directions. There is something to be said for both types, but it should be remembered that car springs have to deal with two kinds of road shock: a bump above the level of the road surface and a pot-hole. No one suggests that the combination of springs and shock absorbers is perfect, but it is certainly an improvement on the type of suspension used a few years ago. COSINE.

Are Front Brakes Worth While?

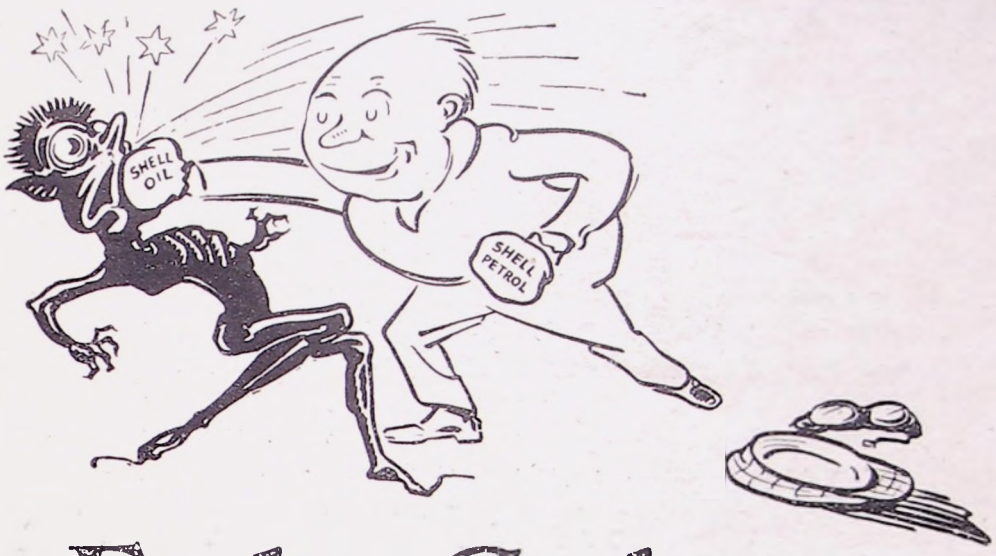
I wonder what percentage of the owners of modern cars are really satisfied with their four-wheel brakes? When these fittings were first introduced a good many of us rejoiced in the belief that the millennium had been brought appreciably nearer. I know I did, for one, because the greater part of my motoring is done in very narrow, winding and hilly country lanes, where there is a blind corner every 100 yds. or so, and where it is very often necessary to pull up very quickly when two cars meet at one of the danger-spots.

Modern Systems Criticised.

I was quickly disillusioned, however, and I can sympathize very sincerely with "Dunn-Browne," whose letter appeared in *The Light Car and Cyclecar* of May 27th. The fourth of his complaints regarding poor delivery tune reads, "The front-wheel brakes judder so badly that they are useless except for holding the car stationary." I do not know the make of his car, but, anyway, mine was not a cheap one, for it cost between £300 and £400, which is quite a fair price to pay these days. But those brakes!

I am not a particularly nervy individual, but within a few weeks they had me on the verge of being a nervous wreck. To put them on quick and hard, as one has to in an emergency, was to invite the most desperate juddering. The frightful part was that this juddering of the front brakes seemed to prevent the rear ones from acting also, and so the stopping power was reduced to practically nil just when it was most urgently needed. Of course, frantic letters went to the makers, who in the beginning said that rasping down the ends of the fabric linings on the shoes would effect a cure. This was done without the least improvement. Back went the car to the agents through whom it had been purchased, but, as so often happens in such cases of intermittent trouble, neither I nor their testers were at first able to get an example of the trouble when I was out with them.

Then for a while the juddering disappeared, although some-



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OUR READERS' OPINIONS (contd.).

times I literally had to force myself to use the foot brake to such an extent that its effects played on my nerves. Before long it began once more, but again I was unable to give the agents a demonstration of its evilness, and I think they began to look on me as a troublesome lunatic with a vivid imagination. At last, however, I was successful, for, jamming the brake on hard at about 40 m.p.h., we got a real bonanza judder. The mechanic nearly went through the hood, he was so alarmed, and it was, as he graphically remarked, "like as if the whole of 'er inside were being ripped out."

All this had occupied several months, during which time I had been in daily danger of a sticky end. Then things began to happen; my car was one of the earliest of a new season's models, the first year in which they had been fitted with four-wheel brakes. Possibly by this time the makers had had other letters in the same strain as mine. Anyway, in answer to a very strongly worded communication from the agents, down came a mechanic from H.Q. with new front springs, much stiffer than those originally fitted.

These did more or less stop serious recurrences of the trouble, but to this day I occasionally get slight symptoms of juddering, and this is nearly always a sign that the holding-down bolts of the front springs have slackened back a little; the veriest trifle will have this effect.

Recently I have driven three light cars of different makes, each the property of the average kind of private owner. All had four-wheel braking, and in not one case was the stopping effect superior in any marked degree to that of my last car, which had the rear wheels only braked.

All this, and letters like that from "Dunn-Browne," make me wonder if four-wheel braking is really suitable or advantageous for the average owner. How many of them have either the time or the inclination to jack up all the wheels every month or two in order to get the adjustments right? This, in my experience, must be done quite often if one lives in a hilly country where the brakes are in constant use. Do 10 per cent. of the owners of cheap cars go to this trouble? I question very much if this is the case, yet if they do not front-wheel brakes are of very little practical use, and so can only be considered an unnecessary complication.

I am not a designer, and so I am not going to attempt to criticise the layout of present-day systems of braking. At present it is the fashion to have them on all four wheels, and so no maker is likely to risk lost sales by the apparently retrograde step of going back to the old method of braking the rear wheels only; but unless adjustment can be made vastly easier and less complicated than it is to-day, I, for one, shall not be in the least surprised if eventually this step is taken by some makers.

Braking power is in relation to the diameter of the drums, and I should very much like to see a light car fitted with really big drums—say, for example, similar to those on the sports Bentley, which are practically the same size as the wheels. I may be wrong, but I believe that one would then have better stopping power in the two-braked wheels than is now obtained by four-wheel braking systems, with small 10-in. or 12-in. drums, as adjusted by the average owner-driver.

If this is so, then the change would be a good one in every way, for brakes would be cheaper to make, vastly less complicated to adjust and more effective in use. It would be very interesting to hear what readers think about the matter.

E. P. GRANT.

* * Curiously enough, "Marmaduke," whose article "What of 1928?" appears elsewhere in this issue, takes up a similar attitude towards four-wheel brakes. —ED.

Criticisms of "The Trade"—Water Cooling.

How Sales are Made——

I have driven a car for three years and the whole time it has given perfect satisfaction, and naturally when deciding to purchase a new car I went to the showrooms of its makers to inspect their latest model, which sells for close on £300. After an examination of the car the following conversation took place: "I notice there are only three doors." "Yes, owing to the right-hand change the driver's door is so difficult to use that we believe the owner would rather be without it." I challenged that statement very strongly. The conversation then continued as follows:—

——And Lost.

"Does the price include mat?" "No." "Does the price include driving mirror?" "No." "Does the price include envelope for hood?" "No." "Does the price include luggage grid?" "No." "Does the price include kick step mat?" "No."

The result of what I considered such short-sighted policy on the part of these manufacturers was that I bought a Singer Senior for £220 fitted with every conceivable gadget. I have yet to find out if the Singer will give as much satisfaction from the running point of view, but I do suggest to the manufacturers the way a novice looks at things.

SMALL PURSE.

Slipshod Garage Methods.

The experiences described by your correspondent "Disgusted" are, unfortunately, only too common nowadays. Simply to turn round, however, and vilify the entire garage-keeping fraternity does not seem to me to be a very progressive manner of tackling a rather big subject. The point is, what is wrong and how is it to be righted? The great difficulty seems to me to be the very vague ideas of their proper functions held by the majority of garage keepers. In a word, the future of the garage business seems to depend upon one thing, and that is specialization.

Specialization the Cure.

Again and again, stopping at a garage, one is confronted by the pathetic spectacle of one man, with perhaps one or two assistants, trying to run an ordinary garage, a second-hand car dealing establishment, two or three new car agencies, a petrol-filling station, a repair depot and a complete hire service. To do any one of these things properly requires capital, organization and concentration. To attempt to do two or three of them, or all of them, without ample backing is to court disaster. The result is that none of the things is done properly. The customer who stops for two gallons of petrol is kept waiting about while the locality is scoured for change for a 10s. note, and the unfortunate who goes into such a place to have remedied some obscure defect in the very elaborate lighting system of his costly car of Continental manufacture has my deepest sympathy.

Time and again, in every district, does one see cases of young men with modest capital making good by trying to do one thing only, but doing it well. Years ago, no doubt, the type of man who tried to run a complete motoring depot on a very small scale had some justification for his policy, as there was not the number of cars on the road to warrant specialization; but all this kind of thing has changed now. As usual, we must look to America to see what is likely to happen here 10 or 20 years hence. There, excepting in small country villages, the small general garage is extinct. If a man wants petrol he goes to a filling station; if accessories, to an accessory shop; if electrical repairs, to an establishment which has a complete library of diagrams and specifications of all known electrical systems, and is staffed by men who have spent some years at engineering colleges, being trained not as general mechanics, nor yet as general electricians, but as car electrical men pure and simple.

K. ROSS.

Cooling Systems of the Future.

Your correspondent "T. Totaller," in eulogizing water as the ideal cooling medium, certainly (as becomes one of his *nom de plume!*) makes out a strong case for this excellent liquid. In drawing attention to the very high specific heat of water, however, he surely focuses attention at the same time on a very grave drawback to water cooling, at any rate as now applied, and that is the long time that must of necessity elapse between the starting up of the engine and the attainment of the normal working temperature. This serious drawback, coupled with the freezing nuisance, in my opinion, completely rules out water as the cooling medium of the future.

Advantages and Drawbacks of Water.

FROTH BLOWER.

OUR READERS' OPINIONS (contd.).

High Mileages in a Given Time.

The recent letters on high mileages in a day are very interesting. My car is a 12-50 h.p. Alvis, but, in spite of that fact, it so happens that my longest distance for 12 hours is 337 miles! So far as I can see it is all a question of obtaining an opportunity to cover 400 or 600 miles at one time. As an example of what I mean, take these three recent runs of mine:—(a) Starting at 3.30 a.m. from Blackpool, I reached Cambridge at 9.20 a.m.—distance 216 miles; (b) starting at 10 a.m. from Cambridge, I drove to Cromer and was back at Cambridge by 5.30 p.m.—distance 244 miles; (c) leaving Cambridge at 6.30 p.m., I reached Nailsworth (Glouces.) at 11.30 p.m, —distance 160 miles.

216 Miles in Six Hours.

Actually, these runs were made on three different days; had I been so inclined I might easily have covered the total distance of 620 miles in the 20 hours, but it would not have been very remarkable, according to my views on the subject. Why not concentrate on the highest mileage in six hours instead of in 24 hours? I believe 216 miles is my greatest mileage within six hours. G. C. V. Brown.

"The Light Car and Cyclecar" Criticised.

As a reader of the motor papers and, more particularly, *The Light Car and Cyclecar*, I should like to comment on the contents of my favourite paper. First, the descriptions of new cars: could these not be supplied, and in greater detail, as the subject matter of the advertisements in place of the usual empty boasts of superior performance? The articles on the upkeep of various cars are of interest only to owners of cars of these makes, and, in any case, the details given are supplied by car makers in their instruction books.

Interesting Suggestions.

In the desert of words the articles by "Shacklepin" and "Focus," the news and the editorial pages are alone left to supply the voracious appetite of the motor enthusiast.

Suggestions? I offer two which might be of general interest. What town or village in this country but has a tale to tell? Let us, therefore, have some sketch of historical or local interest, of ancient lore or a tale of ghost walks. Every guide book in print mentions the burial place on Dunmail Raise, but how many people know the Ghost of Calgarth Park on Windermere?—and yet the latter tale has more picturesque interest.

Anyone can see the wonderful view from "X," looking over the valley of "Y," so why talk about the commonplace when there is a rich and unexplored kingdom of myth and fairy tale.

Secondly, let us have a series of articles on old-time cars, or models of unusual design—the differential belt drive of the Bedelia, the two-speed gearbox of the 1905 De Dion, and many another with a hint of greatness. Jean Surac.

* * * We shall be glad to receive comments on this letter.—Ed.

Tricks of the Tramways.

I was glad to see that in a recent issue you called attention to some of the dangers of trams. There is one point, however, which you did not mention and which, I think, is far more dangerous than any of those which you enumerated. At an important road junction near my home there is a single line and trams travelling in one direction switch over to the wrong side of the road without warning. This is bad enough, but it is not all. At night the trams are suddenly plunged into darkness as they cross the points to start their swerve to the off side, and this forms a veritable deathtrap to any drivers who are proceeding in the opposite direction and are not prepared for the manœuvre.

A Dangerous Practice.

Personally, I should like to see a minor accident at this point so that the driver of a private car could sue the tramway company for allowing one of their vehicles to pull over to the wrong side of the road without lights. I know the trams have special legislation in their favour, but I rather fancy that if sufficiently strong action were taken the decision would go against the tramway company. C.C.

How Many Gears?—Further Views.

Passing Vehicles on a Hill.

Surely the wranglers participating in the three or four-speed gearbox argument were answered by three consecutive paragraphs which appeared in "Rich Mixture" last week? "Focus," whose word to me, at least, is law, considers small cars to be woefully undergeared, and he thinks that the American notion of providing an extra-high top should be applied to English small cars. Finally, he advises drivers to engage an intermediate gear when passing modern high-speed buses on a bill. Now, "three-speeders" where are you? We of the four-speed clan can enjoy a high top gear ratio on the level which allows our cars to maintain a high road speed with a minimum of engine noise and fussiness, whilst when we come to that bus, that momentary slackening of speed, or that slight hill we have a gear at hand which gives us exhilarating acceleration or, in the case of a hill, a faster speed than if we had rushed the gradient in top.

"Focus" Quoted.

It takes a very good three-speed light car to hold its own with some of the present-day buses and chars-à-bancs when both are in second, but none of them can cope with the four-speeders. Third.

Two Gears Favoured.

I note with interest that the question of the maximum number of gear ratios suitable for light cars is now being thrashed out in your correspondence columns. Surely the whole matter can be reduced to the fact that the average owner desires the utmost simplicity in the controls of his car? It seems impossible at the present state of advancement in engine design that we can do away with the gearbox altogether, but how long will it be before the power-weight ratio of the usual small car of, say, 10 h.p., can be made large enough to make the use of more than two gear ratios superfluous?

Simplifying Controls.

In the meantime, cannot a further step be taken in the simplification of controls by the standard fitment of a combined clutch and brake pedal? I see no practical objection to a device of this nature, and have employed an amateur-made brake-clutch arrangement on my Austin Seven for some time past. The device seems to be eminently satisfactory in practice, the only trouble I have experienced (which could doubtless be overcome) is the fact that the engine cannot be used as a brake at the same time as the brakes applied by the pedal.

I confess that with the standard Austin Seven I find very little to grumble at in the way of complexity of control, but the combined pedal is nevertheless a great improvement, in my opinion. G. Conead.

Higher Averages Possible——

This question of three or four-speed gearboxes interests me, especially as I completed just over 33,000 miles in a 1926 three-speed car in just over 15 months, and now run a 10 h.p. Triumph with a four-speed box. My three-speed car, thanks to tuning and one or two small modifications, was capable of attaining over 70 m.p.h. on top gear and was never fussy at speed. On second gear 44 m.p.h. was attainable with much screaming of gears. However, the car climbed very well on top gear and would accelerate from about 18 m.p.h. on grades such as Hindhead to breast the summit at over 40 m.p.h., all on top.

——With Four Speeds.

However, having had a four-speed car I cannot visualize myself changing back to a "three-speeder" as my present car, although some 8 m.p.h. slower than my old car, puts up better averages over the same roads under like circumstance and is, withal, quiet on its gears.

As an example, I find on taking the average per run that the "four-speeder" is approximately 10 mins. faster on the London-Brighton run than the three-speeder, thus proving that a good third speed can discount any lack of speed on direct drive, even when this amounts to so much as 8 m.p.h. Changing up and down is more a pleasure than otherwise.

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12 x 9	16/-	18 x 15	39/-
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fills a need realized by every "Austin Seven" Owner. The extension is instantly fitted to the gear change lever by a clip and two bolts (no drilling or tapping is necessary). It may be placed exactly to suit the height and reach of the driver who can then effect a "change" into any gear without bending awkwardly forward and fumbling for the knob.
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MOTOR GAUGE No. 29.

This Gauge contains gauges for correctly setting: Spark gap, contact breaker, inlet valves on side-valve engines, exhaust valves on side-valve engines, inlet and exhaust on overhead valve engines, and plug cleaner. Price **2/9.** Post free.

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

B43

S.P.C.M. — GRAVE WARNING TO MOTORISTS.

NEW JOYS THAT HAVE THEIR DANGERS.

The Society for the Prevention of Cruelty to Motors finds it necessary to temper, with a strong note of caution, the sound advice given to motorists by Mr. Justice Sump in summing up a recent case.

The public will doubtless remember this case which was the outcome of proceedings instigated by the S.P.C.M. against a lady driver for wanton and negligent cruelty to her car by depriving it of the most important of the necessities of its life.

In consequence, thousands of motorists have seen the error of their ways mirrored in these proceedings, have gratefully accepted the advice of the learned judge, and have joyously entered upon an entirely new phase in motoring.

However, these new joys are not without their dangers. An engine with a new found spirit of *joie de vivre* strains at the leash as it were. At the slightest touch of the accelerator it bounds forward in a most alarming fashion, that is until you are used to it. Unwary motorists are reversing through brick walls, and so this note of warning.

ACCELERATE WITH CARE.

Having taken the judge's advice, drained your sump of the carbon-depositing oil you have hitherto used, and filled up with Adcol New Process Oil, go easy on the joy-step. The most gentle pressure from the daintiest toe and you experience the sensations of a gnat that has unwarily fluttered into the main blast of an electric fan — when you get your breath back try it again even more gently, or else take out a pilot's certificate and write that codicil to your will.

With reference to the latter course we have this morning received a letter from an enthusiastic user which reads as follows:—

"Since using Adcol I have halved my tyre bills as I've always two wheels off the ground. Yours gratefully U.R.A. Won."

MR. W. HEATH ROBINSON.

A remarkably interesting and informative booklet on lubrication and other problems for car owners is specially issued by Messrs. Alexander Duckham. It is entitled "Technical Talks" and is illustrated by Mr. W. HEATH ROBINSON, the world-famous humorist, in his own inimitable style. A copy will be sent on receipt of a postcard addressed to Messrs. Alexander Duckham & Co., Ltd., 6, Broad Street Place, London, E.C.2.

READERS' OPINIONS (contd.).

Cheap Electric Horns.

May I, as one who has recently joined the light car ranks, but up a small grumble? Why do manufacturers of low-priced models supply with their cars electric horns which are much less effective than a poor bulb horn and speedometers with no trip recorder? The average man wants to know his distances over short runs, and having to subtract, say, 3,717.3 from 3,842.1 is a nuisance, even if one can remember the first number, or has written it down somewhere. It is also annoying to have to buy a new and more powerful hooter for lorries and blind cross-roads. If cost is the only consideration, why will manufacturers not supply the trip recorder and leave out the electric horn, which is usually recognized as a dud? I know my remarks do not fit all cheap light cars, but they certainly apply to the two makes which I own.

"A Small Grumble."

HEADLIGHTS.

Photographing Noises.

I was very interested to read in a recent issue of your journal that General Motors, Ltd., have adopted definite methods for audiometric examination of motorcars. One of the greatest differences between the £1,000 and the £100 car is that the former performs its duties in comparative silence. Manufacturers often rely upon a mechanic's ear as a final test of their completed article, but the car varies after every meal and many sounds which can build up in an irritating manner are initially outside the audio-frequency band. Noise can produce physical sickness and is capable of refraction and reflection to an extraordinary extent.

Methods Discussed.

I think that the columns of *The Motor* and *The Light Car and Cyclecar* have contained examples of audiographs taken with the Low-Hilger audiometer and showing practically every sound of importance during the last 12 years. I have mentioned both the direct and oscillographic methods, but it has been my experience that the latter is apt to prove unreliable, owing to the manner in which electrical distortion and inertia effects prevent the true wave shape from being apparent with its harmonics and general characteristics.

A. M. Low, A.C.G.I., ETC.

CONDENSED CORRESPONDENCE.

In the list of non-finishers given at the end of our report of the London-Edinburgh Trial last week, Mr. J. Hobbs's name appeared. Mr. Hobbs informs us, however, that he checked in at the finish, and, so far as he is aware, fulfilled the necessary conditions for a "gold."

Following the recent correspondence on disfiguring the countryside with advertisements and petrol pumps "Zib" (Llandudno) expresses the opinion that many photographs of beautiful places or buildings are similarly spoiled by the inclusion of a car in an unduly prominent position in the foreground.

J.J., 122, Station Road, Hendon, N.W., proposes to leave London on the evening of Tuesday, June 28th, for either Yorkshire or North Wales, to see the eclipse, arriving back in London on the following evening or at midday on the Thursday, and wonders whether any other enthusiastic light car party would like to join him. He will be driving a two-seater and will have a companion, but he informs us he has some years' driving experience and would be prepared, if the other party preferred, to share in the handling and the running expenses of a four-seater.

INFORMATION WANTED.

WOLSELEY-STELLITE.—Hints on running the 1919 9.5 h.p. model and the chance to borrow or purchase an instruction book dealing with the car would oblige.—V. Corkish, 103, Lowther Street, Carlisle.

ROAD INFORMATION.—Any reader who has recently made the following journey is asked to state the conditions of the road and the nature of the gradients:—York, Boroughbridge, Catterick Bridge, Scotch Corner, Barnard Castle, Brough, Appleby to Penrith.—"Enquirer," 125, Bunhill Row, London, E.C.1.

CLUB ITEMS AND SPORTING EVENTS.

SURBITON M.C.

The open race meeting at Brooklands on July 2nd, commencing at 2 o'clock, includes five open races, one 50-mile handicap event for cars up to 3,000 c.c., and, in addition, the Surbiton members' handicap race (closed). Entries must reach the hon. organizer, Mr. F. W. Barnes, M.I.A.E., Rex House, St. Andrew's Square, Surbiton, by Thursday, June 23rd.

KENT AND SUSSEX L.C.C.

Speed trials will be held on the Race Hill, Lewes, on Saturday, June 25th, the first event starting at 2.30 p.m. prompt. There will be 12 general classes, and the awards include the Crawshay Challenge Trophy for the best performance by a touring car (club members only) and the Baker Challenge Cup for the best performance by a sporting car (club members only), the Normanhurst Challenge Cup for the fastest time in the racing class (club members), and also a special cup for the fastest time for members of other clubs competing. The event is open to members of the Brighton and Hove M.C., the Eastbourne M.C., Essex Club and Bexhill M.C., the entry forms and fees (10s. per class for club members and 15s. for members of invited clubs) must reach the hon. secretary, Mr. Lewis Humphries, 12, Malling Street, Lewes, Sussex, by Tuesday, June 21st.

SCOTTISH SIX DAYS'.

The route of the Edinburgh and D. M.C.'s Six Days' reliability trial will be as follows:—First day: Edinburgh, Stirling, Crieff, Kenmore (lunch), Aberfeldy, Kirkmichael, Braemar, Bridge of Coe, Fort William (lunch), Oban, 183 miles, and two observed hills. Second day: Perth, Augustus, Drumnadrochit and Inverness, 163 miles, and two observed hills. Third day: Strathpeffer, Jeantown (lunch), Lochcarron, Shiel Bridge, Strathcluanie, Achnashellach, Strathpeffer, Achterneed (lunch), Strathpeffer, 141 miles, and four observed hills. Fourth day: Strathpeffer, Inverness, Fort Augustus, Fort William (lunch), Oban, 178 miles, one observed hill. Fifth day: Oban, Loch Lossgoinn, Arrochar, Balloch, Falkirk (lunch), Edinburgh, 172 miles, three observed hills. Sixth day: Edinburgh, Cappercleuch, Selkirk, Blackford, Blackford (stop-and-start test), Edinburgh (lunch), 172 miles, three observed hills. The daily mileage is considerably less than in past years, and there is no doubt please many of the competitors. The total entry to date amounts to 60.

BIRMINGHAM MOTORCYCLE CLUB.

G. Orford, driving an Austin 7, won the Club Cup for the best performance by a car competitor in the Lycett Open-to-Centre trial, and he also won a gold medal in the Sangster trial for the best car performance. Both these trials were held during the Whitsuntide holiday. The route of the Lycett trial lay chiefly through Wales, starting at Llandudno and passing through Bettws-y-Coed to Urry's Pet, observed hill, which was followed almost immediately by a stop-and-restart test. There was a timed climb of Alty Bady, and Dolywern, Baxter's Monument and Blackstones were all observed. The finish was at Halesowen.

FORTHCOMING EVENTS.

June 18.

Rudge-Whitworth Cup Race, Le Mans.
J.C.C. High-speed Reliability Trial.
Blackpool M.C. Speed Trials.
Langford and D. L.C.C. Pineo Memorial Trial.
West Kent M.C. Reliability Trial.
Sheffield M.C. All-night Trial.
City of London M.A. Run to Bournemouth.

June 19.

Penya Rhin Grand Prix, Spain.
Liverpool M.C. Derbyshire Trial.
Morgan Club Cup Trial. Postponed.
Wood Green and D. M.C. Social Run to Clacton.
Leeds M.C. Novelty Team Trial
Leicester and D. M.C. Relay Race and Cricket Match.

June 22.

Cornish Half-day Trial.
Middlesbrough and D. M.C. Ladies' Trial.

June 23.

Leicester and D. M.C. Gymkhana.
Newcastle and D. M.C. Travers Speed Trial.

June 25.

M.C.C. Inter-team Trial.
Speed Trials, Fane Island, Denmark.
Kent and Sussex L.C.C. Speed Trials.
Saltburn Speed Trials.

WOODFORD AND D. M.C.C.

At an extraordinary general meeting held on June 13th a motion was passed dissolving the Woodford and District Motor Cycle Club.

CORNISH HALF-DAY TRIAL.

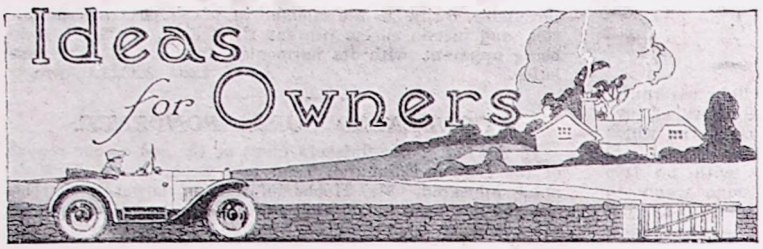
A sporting half-day trial in the neighbourhood of Bodmin will be held on June 22nd in aid of the Bodmin Motor Ambulance. The course, which although not freakish will be of a very sporting nature, will comprise a circle of about 70 miles, lunch being taken at Lostwithiel; it has been planned to embrace some of the prettiest inland scenery of Cornwall. A purely nominal entry free is being charged (solo motorcycles 3s., sidecars and three-wheelers 5s., cars 7s. 6d.), and the awards will take the form of first and second-class certificates. In addition several valuable "special" awards have been given by various donors. Further particulars and entry forms may be obtained from Mr. W. H. Jenkin, Church Square, Bodmin.

BRIGHTON-TO-BEER TRIAL.

The following drivers checked in at the finish of the Brighton and Hove M.C.'s Brighton-to-Beer trial. The report will be found elsewhere in this issue:—

Boggis, F. A. (Aero-Morgan).
Mobbs, E. G. (Morgan).
Vidler, H. G. (Aero-Morgan).
Maskell, A. C. (Morgan).
Lee, J. Simpson (S.S. Alvis).
Bedford, W. H. (Clyno).
Jackson, P. (A.C.).
Hamilton, H. O. (Talbot).
Sefton, Miss I. (A.C.).
Wright, T. M. Z. (Morris-Cowley).
Jefferies, H. (Frazer-Nash).
Duncan-Smith, D. (Frazer-Nash).
Conradi, C. D. (Salmson Sports).
Higgs, I. J. (Salmson Sports).
Smith, S. G. (Austin).
Stevens, G. P. (Riley).
Chandler, S. W. (Salmson).
Burrell, A. E. (Senechal).
Pollock, H. T. (Austin).
Kenterdine, J. H. B. (Austin).
Densham, J. H. (Ballot).
Weekes, Miss J. (A.C.).
Schodley, W. A. (Brocklebank).

These results are official.



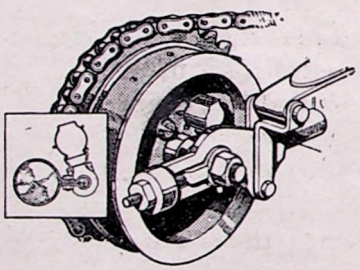
We invite readers to send us hints gained from their own experience for inclusion in this feature. Five shillings will be paid to the sender of any hint published, but we cannot undertake to return contributions not used.

Simple Mileage Record.

Morgan owners who like to keep some record of their yearly mileage may adopt with advantage the simple recording device described herewith.

The essential feature of the recorder is a cyclometer fitted to the back spindle by means of a steel clip, as shown in the sketch. The instrument should be fitted to the right-hand (low gear) side, and the recorder striker can then be fastened to one of the brake drum nuts.

An ordinary cyclometer gives quite useful service in such a position, and



A simple fixing for a mileage recorder on the back spindle of a Morgan cyclecar.

appears to be totally unaffected by the high speeds of which Aero Morgans, for example, are capable. A little grease should occasionally be applied to the striking mechanism to ensure noiseless operation.

Fiat Nine Headlamps.

The headlamps of 1926 Fiat Nines are not adjustable for focusing and the standard bulbs do not conform to British or American cap sizes. When, however, a bulb burns out the cap should be kept, for if the glass and electrodes are removed the cap of a British standard bulb will fit inside it. Two pieces of No. 28 gauge copper wire should be soldered to the contacts of the new bulb and the wire from the centre contact should be pressed through the hole at the end of the Fiat cap. The two caps should be held together with Plasticene and temporary contacts made with the holder. The new bulb may then be focused by adjusting it in the Plasticene, which should be replaced by plaster of paris when the correct position has been found. The wires may then be soldered permanently.

B46

Draining the Sump.

To prevent getting dirty oil over the hands when removing the sump drain plug, loosen the plug in the usual way with a spanner and wind a piece of string, about a yard long, round the thread. Then, by pulling the free end of the string quickly, the plug will not only be unscrewed but will be thrown clear of the receptacle placed beneath to catch the oil.

Starting Small Screw Threads.

Difficulty is frequently experienced in starting small, fine-threaded screws, owing generally to the inaccessibility of the hole in which the screw is to be placed and the use of a screwdriver of an incorrect size for the work in hand.

Screwdrivers for use in the garage should be magnetized by placing the metal portion across the poles of a magnet for a few minutes. It will then be found an easy matter to hold the screw firmly by the screwdriver until the threads engage.

There is little to be gained by attempting to magnetize screwdrivers carried with the toolkit, because vibration will soon reduce to a negligible amount the slight trace of residual magnetism that it is possible to induce into the steel by this process.

To Lubricate Springs.

One way to lubricate springs is to jack up the chassis frame of the car and then insert graphite grease between the leaves with the aid of an old table knife. This is a laborious job, however, and a plan which is nearly as successful, whilst being less trouble, is to mix in a tin about a quarter of a pint each of engine oil and paraffin and then paint this on to the springs with an old paint brush.

Renovating Chamois Leathers.

Chamois leathers which have deteriorated owing to extensive use may be easily renewed in the following manner. Wash the leathers in filtered rain water, or in distilled water, sprinkle them with powdered borax and scrub well. This will remove all trace of stain and rid the pores of the material of the collected dirt. When the leathers are quite clean they should be rinsed in filtered water and dried.

A Petrol Gauge.

It is sometimes useful in the case of a car fitted with a glass-tube type of petrol gauge to be able to take readings of the petrol level before and after a run to see how much the level has fallen. Most owners can approximate the amount of petrol indicated by an inch on the tubing, and it is, therefore, easy for them to estimate their m.p.g. A simple device which will help them in this respect is the fitting of a "tally" in the shape of a cheap fountain-pen clip of suitable size, the arm of which has been removed with a file. It should be sprung on to the shroud of the gauge glass, so that it can be slid up and down. Before the run it should be set to the fuel level indicated in the gauge, and at the end the difference in the level will easily be seen.

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

A.H.S. (Westgate).—Your exhaust pipe should be lagged with asbestos twine, which is the best heat insulator for the purpose, for a distance of about 8 ins. near the point where the pipe passes close to the carburetter. This will eliminate the danger of fire which might be caused by petrol dripping from the carburetter to the hot pipe.

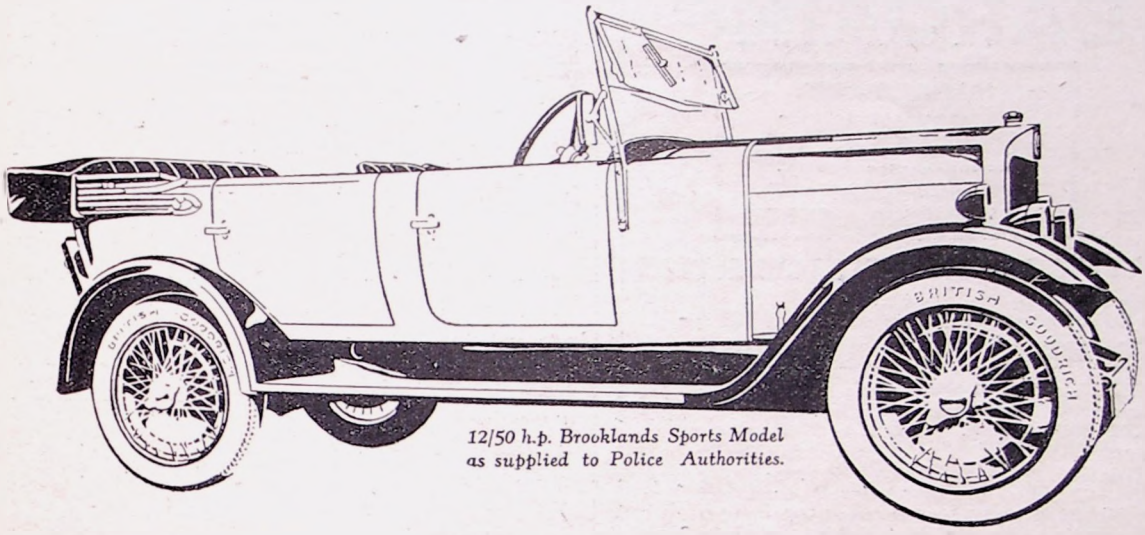
G.J.E. (Helensburgh).—A Morgan three-wheeler is entirely suitable for a Continental tour. You will find it an advantage, however, to have large section low-pressure tyres fitted with—in addition—shock absorbers on the back wheel. There is ample luggage room on the Family Aero model if the space provided for the rear passengers be used for this purpose.

N.M. (London, W.).—The average width of the Brooklands race track is approximately 100 ft. The length of a lap measured along the centre 50-ft. line is 2.76 miles

T.H.E. (Wrexham).—A self-starter could, of course, be fitted to your 1914 Baby Peugeot; but it would be a rather costly matter—somewhere about £15 would be a reasonable figure. In ordinary circumstances the car might be expected to give about 35 miles per line is 2.76 miles.

L.M. (Newington Butts).—The central electrodes of detachable plugs can readily be cleaned without removing the bodies of the plugs from the cylinders. The body should be held firmly while the nut holding the detachable portion is unscrewed; when the points have been cleaned and the central electrode replaced, care must be taken to see that the full strain of tightening the central nut is not taken by the threads holding the body of the plug in the cylinder.

Approved by the Police Authorities



12/50 h.p. Brooklands Sports Model as supplied to Police Authorities.

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MODELS AND PRICES.

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

B47

AROUND THE TRADE.

We learn from Fort Dunlop that the winners of four out of the five races which were run during the B.A.R.C. Whitsun meeting at Brooklands were using Dunlop tyres.

o-o

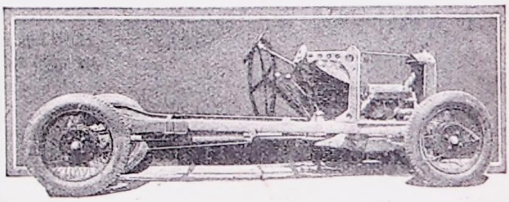
We are advised that Her Majesty, the Queen of Norway, has recently honoured Pass and Joyce, Ltd., by issuing a Royal Warrant appointing this concern as her automobile advisers and suppliers of motor carriages.

o-o

Messrs. Arthur Stuart and Co., 16, Little Portland Street, W.1, advise us that on June 25th they will be removing to larger premises just vacated by H. M. Hobson, Ltd., at 29-31, Vauxhall Bridge Road. Here there will be accommodation for 150 cars and the sale of petrol, tyres, etc.

o-o

Some interesting research tests have recently been made by the Champion Sparking Plug Co., Ltd. It was ascertained that a plug fires a charge about 1,500 times in each mile and that during a season's run of 10,000 miles each plug in a four-cylinder engine will give 15,000,000 sparks.



The chassis of the G.A.R., an attractive French light car of which more is likely to be heard in this country soon. It is described on another page.

At the B.A.R.C. Whitsun meeting K.L.G. plugs were used by nearly all the successful competitors. The Robinhood Engineering Works, Ltd., the makers, inform us that these plugs were fitted in five winning cars, four which secured second places and seven which came in third in the seven events held.

o-o

Readers with cars for sale would be well advised to keep a more careful eye on the "Wanted" columns in our small advertisements. A private advertiser recently complained that his willingness to pay £100 cash for the best small four-seater offered by a private owner, which he advertised among the "Wanteds," met with a very poor response.

o-o

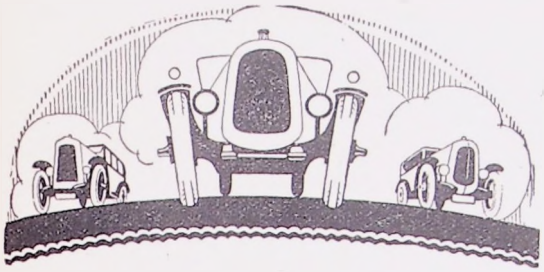
We have received from Price's Patent Candle Co., Ltd., Battersea, S.W.1, the manufacturers of Motorine oils, two excellent little manuals entitled respectively "The Car" and "The Motorcycle." They explain in plain language the theory of lubrication, and follow it up with a number of practical and really useful motoring hints. Price's will gladly forward copies to anyone who applies to them.

o-o

Motorists and prospective motorists on the look out for a new car will find that Allen-Bennett Motor Co., Ltd., Broad Green, London Road, West Croydon, have a very extensive and comprehensive range of agencies, while they have one of the biggest stocks of used cars in the district, and these can be obtained on very generous terms. They claim that their used cars are "engine tested and engine proved."

o-o

Both in the latest transatlantic flight by Messrs. Chamberlin and Levine and in the slightly earlier flight of Colonel Lindbergh, Hoffmann roller bearings were used on the crankshafts of the Wright "Whirlwind" engines employed. It is interesting to recall that the machine making the first non-stop transatlantic flight in 1919, namely, the Vickers-Vimy-Rolls, piloted by Captain Sir J. Alcock D.S.C., was similarly fitted.



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A-C., 1925, All Aluminium Sports, 2-seater ..	£185
CITROEN, 1926, 11·4 h.p., 3-seater	£95
,, 1925, 7 h.p., 3-seater	£85
,, 1925, 7 h.p., 2-seater	£60
CLYNO, 1927, 4-seater, as new	£150
,, 1925, 2 and 4-seaters, from	£85
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,, 1922, 10-15 h.p., 4-seater	£85
,, 1926, 9 h.p., 2-seater and dickey ..	£145
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HUMBER, 1925, 9-20 h.p., 4-seater, excellent condition	£165
ROVER, 1925, 9-20 h.p., 4-seater	£95
SINGER, 1926, 10-26 h.p., 4-seater, Saloon ..	£165
,, 1926, 10-26 h.p., 4-seater, excellent condition	£145
,, 1923, 10 h.p., 4-seater, excellent condition	£85
STANDARD, 1924, 11·4 h.p., 2-seater and dickey	£80
,, 1923, 11·6 h.p., 4-seater ..	£65
WOLSELEY, 1925, 11-22 h.p., 2 and 4-seaters, from	£95
,, 1922, 10 h.p., 2-seater coupe with dickey	£75
,, 1921, 10 h.p., 2-seater and dickey	£55

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