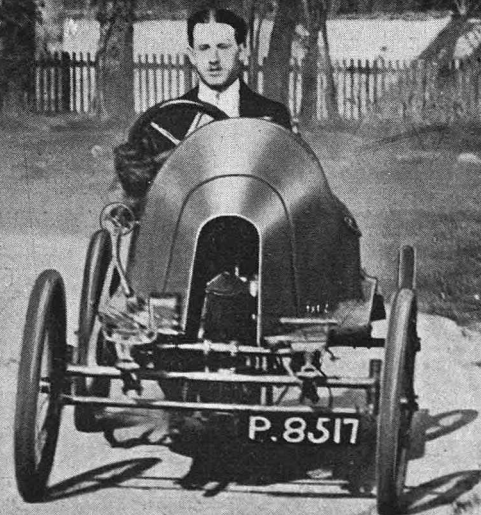


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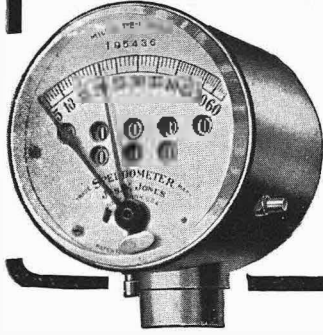
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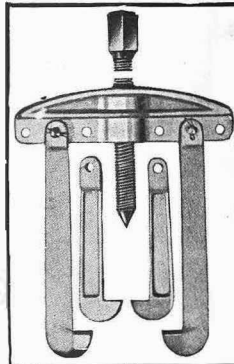
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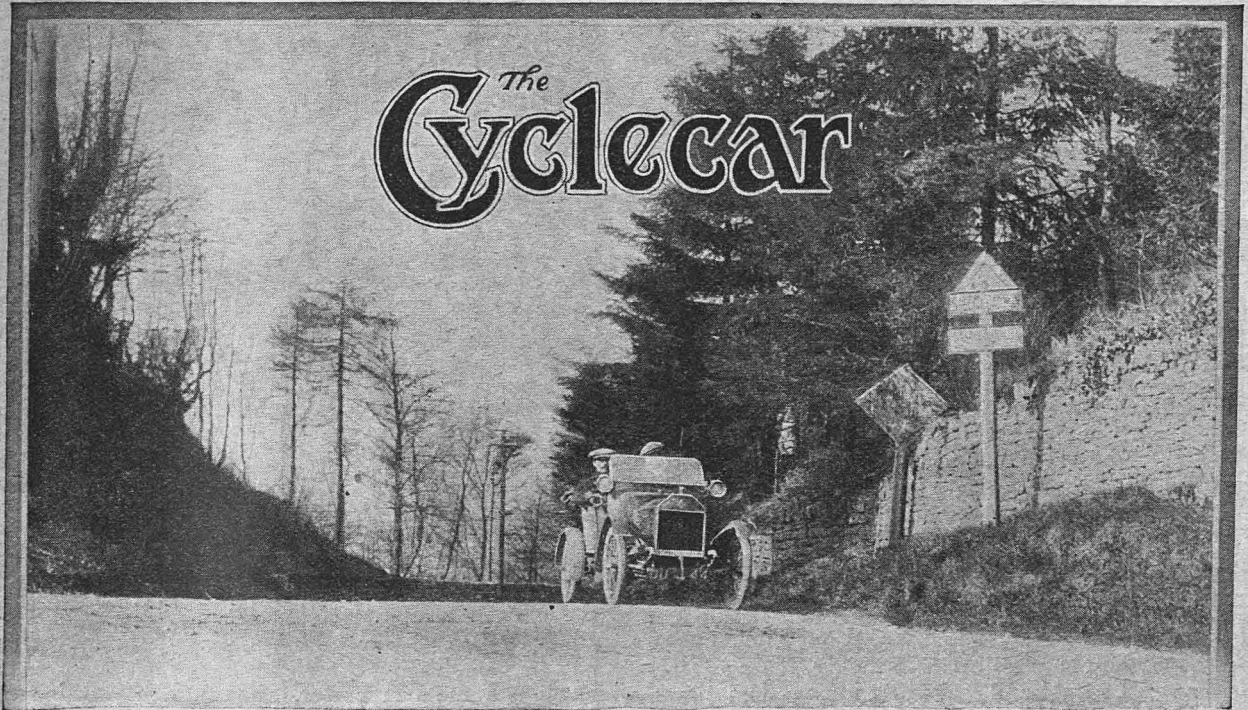
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A MIDLAND RALLY.

A Great Gathering of Cyclecarists at Stratford-on-Avon.—Restarting Tests on Sunrising Hill.—A Smoking Concert at Banbury next Saturday.

Saturday, 5th April.

Mid-day.—London cyclecarists leave for Red Lion Hotel, Banbury, via Watford, Beaconsfield and Aylesbury.

6 p.m.—High tea, Red Lion, Banbury.

8 p.m.—Smoking concert, to which all motorists are invited.

Sunday, 6th April.

11 a.m.—Stopping and restarting tests on Sunrising Hill.

12.30 p.m.—Meet and rally of Midland and London cyclecarists at Stratford-on-Avon.

1 p.m.—Official lunch.

2.30-7.30 p.m.—Return of London cyclecarists.

THE Cyclecar Club is organizing for next week-end an ambitious programme, including a rally of Midland cyclecarists on Sunday and a smoking concert on Saturday night. The object of this meeting is to bring into closer touch disciples of the new motoring in London and the provinces. The meeting place selected is the Swan's Nest, Stratford-on-Avon, on the banks of the Avon, forming, with its background of Shakespeare's Theatre and the town of Stratford, a most pleasing picture. All cyclecarists and others, whether they be motorists, motorcycleists or cyclists, interested in the new motoring, are invited to assemble at mid-day on Sunday next, 6th April.

Previous to this the London contingent of the Cyclecar Club will make the journey from town, starting from the tramway terminus at Canons Park, near Edgware, at 2 p.m., and will spend Saturday night at the Red Lion Hotel, Banbury, which is about 72 miles from London. Here it is proposed to organize a smoking concert, at 8 p.m. To this function all motorists are invited, and several novel and topical numbers have been prepared specially for the occasion. Seeing that lighting-up time is not till 7.30 p.m., the journey from London can be made comfortably on Saturday afternoon, the best route being via Edgware (7 miles), Watford (17 miles), Berkhamstead (28 miles), Aylesbury (40 miles), Bicester (57 miles), and Banbury (72 miles). At the Red Lion there is ample accommodation for a large number of machines, but those who intend to par-

ticipate in the run or propose motoring to the concert from a distance would do well to engage rooms in advance, as it is anticipated that a large muster will be present, and the resources of the hotel taxed.

The next day is fixed for the Midland meet at the Swan's Nest, Stratford-on-Avon, the road down Sunrising Hill, situated only eight miles from Banbury Cross, being taken. On the famous test hill, with its dangerous bend half-way and its gradient of 1 in 6, it is proposed to hold an impromptu series of stopping and restarting tests, in which all can compete. Many potential users of cyclecars will probably avail themselves of this opportunity of witnessing what will undoubtedly be the most difficult test of this particular nature to which a cyclecar has yet been subjected. The surface of the hill is excellent, the road wide, and altogether the spot is particularly well suited for this kind of trial. The cyclecarists are due to arrive at the hill about 11 a.m., and will remain there, weather permitting, till mid-day before completing the remaining 12 miles to the Swan's Nest, Stratford-on-Avon, for the Midland rally.

After lunch the return journey to town will be undertaken by the Londoners, the route followed being different to that taken on the outward journey. It is as follows:—Shipston-on-Stour (10 miles), Oxford (28 miles), Stokenchurch (46 miles), High Wycombe (53 miles), Uxbridge (67 miles), and London (94 miles). All should reach town either at or shortly after lighting-up time, unless it be desired to stop anywhere for tea.

THE CALL OF THE ROAD. . .

THE JOTTINGS OF JOHN GILPIN, JNR.

—CRITICISM OF CYCLECAR DESIGN.—

THE judges were asked to criticise the machines entered for the Cyclecar Club Trial, and after reading their painstaking report, published in THE CYCLECAR last week, it is very evident that they have done their work well. In fact, it is surprising how many bad points in design they discovered in a limited amount of time. No doubt a more thorough inspection, and a personal trial of each machine, would have provided even more useful data, together with the discovery of a greater number of excellent features in the machines. Perhaps a trial in which the observers were the judges, and changed places on the different cars frequently, would have more than an element of novelty in it, and would produce much very useful information. At the same time, the manufacturer's point of view should be published, for certain practice is often adopted as an expedient where circumstances will not allow of the right method being followed. Further, the manufacturer may be right and the expert wrong—sometimes.

It is to be hoped that the publication of the report will not produce an unfavourable impression of the particular makes of cyclecars entered for the trial in the minds of possible purchasers. Much the same criticism could be directed against almost any car made, for there is nothing perfect in this world. Also, there is room for differences of opinion upon the conclusions arrived at by the judges, Dr. A. M. Low and Mr. Glynn Rowden. Personally, I by no means agree that windscreens are necessary, or that passenger and driver get badly splashed with mud owing to inadequate mudguarding. There was plenty of opportunity for testing this, the course in places being very wet. Another point, borne out by practical tests by different members of our staff, is contrary to the opinions of the judges that direct steering is less tiring than the wire-and-hobbin type. I had the opportunity of passing one of the judges, in an effort to make up time, when his speedometer read 45 m.p.h.; I left him as if standing still. Cable steering was quite easy at this speed, but at high speeds direct steering is very tricky and tiring. The provision of springs at the ends of the cables intercepts shocks from the road, and, in fact, I think all users of cable-steered cyclecars will agree that it never gives any trouble, is easily looked after, and makes steering very easy indeed. I think, if Dr. Low would accompany me on a fairly long drive, and perhaps take the wheel himself, he would agree that there is a great deal of satisfaction to be derived from a machine that to his practical eye looks crude.

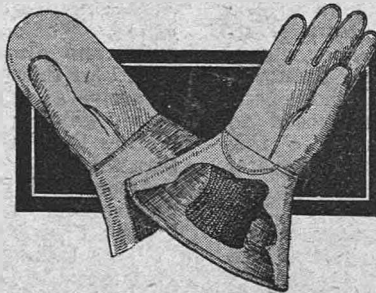
I notice the judges are very favourably disposed towards belt drive. I do not see how they could be otherwise, for this type of transmission was certainly not the cause of any failures, and had these machines been fitted with low gears of 16 to 1 some might have qualified for non-

stop awards. A reserve gear is undoubtedly a necessity, and much more valuable than a reverse. An ideal combination would be three gears with a ratio of 4 to 1, 7 to 1 and 14 to 1. The bottom gear would be sufficient for any practicable road in the United Kingdom. After all, Sudeley Hill is no worse than many steep ascents of a similar character to be met with in Devonshire or South Wales, and to ask a machine to get up such hills on an 8 to 1 gear is demanding something that is only possible when the engine develops its highest degree of efficiency.

I have often noticed that much better speeds can be extracted from an air-cooled engine when it is really hot, as, for instance, after climbing very long hills. During Easter I put this to a practical test. Coming from Chipping Norton, the very best speed I could obtain on favourable stretches of level road was two-minute miles. After taking Aston Rowant Hill on bottom gear, racing the engine most of the way, the machine ran much better, and soon after we were clocking miles in 1 min. 45 sec. This opinion is shared by a fellow cyclecarist, who advances the theory that a turn of low gear work, with plenty of oil, will often put the engine into good running order when, for the time being, it has lost its "tune." As the engine gets hot more oil escapes the piston rings, which have a looser fit, owing to the expansion of the heated cylinders. With the cylinder walls well lubricated, higher piston speeds are possible.

What with these efforts to obtain more speed and much too rich a mixture owing to a flooding carburetter, I suffered from overheating, with the result that less than 30 miles from home the exhaust valve in the front cylinder broke, fortunately, just as the resourceful hon. secretary of the Cyclecar Club caught us up. Now, if there is one thing that Mr. Frank Thomas delights in it is tinkering with his own or anybody else's machine. Good-hearted chap that he is, he was soon hard at work getting out a not too accessible valve, and, unfortunately, in replacing the inlet dome, the seating, which had crystallized, possibly through overheating, broke off short, and we were done. All efforts to get one cylinder to fire for any length of time were defeated by the carburetter, which, bad as it was for two cylinders, was positively unworkable for one. Efforts to correct the trouble proved, much

to our surprise, unavailing. Lowering the petrol level by altering the needle valve did not stop the flooding. We went so far as to shut off the supply altogether, and then flooded the carburetter by lifting the needle and got the single cylinder running. In a few minutes, however, although the needle was adjusted to shut off the supply altogether, the petrol was pouring out over the engine, which choked and came to a standstill. There was nothing for it but to be towed, and this is where your resourceful man comes in. Two spare belts were linked by their



Asbestos gloves, showing the fingerless type on left, and the woolen wrist-band in another pattern.

THE CALL OF THE ROAD (contd.).

fasteners, and each free end looped, in the one case round my front axle, and in the other to a frame member of Mr. Thomas's machine. The loops were secured by straps and held perfectly, the only breakage being a belt fastener, the bolt of which snapped off when nearing the journey's end. Thus we proceeded merrily home, "Hippothomas" spitting out showers of sparks from its big exhaust pipe and an odour of burnt oil, which was the only objectionable feature of being towed. Fortunately, a little light cyclecar does not require much power to draw it, and we kept up a good pace without mishap, but with many derisive remarks from jovial carousers.

During the last few months the question of suitable gloves has been a very pressing one with me, especially as a few hundred miles has always proved sufficient to ruin the glove on the right hand, which, naturally,

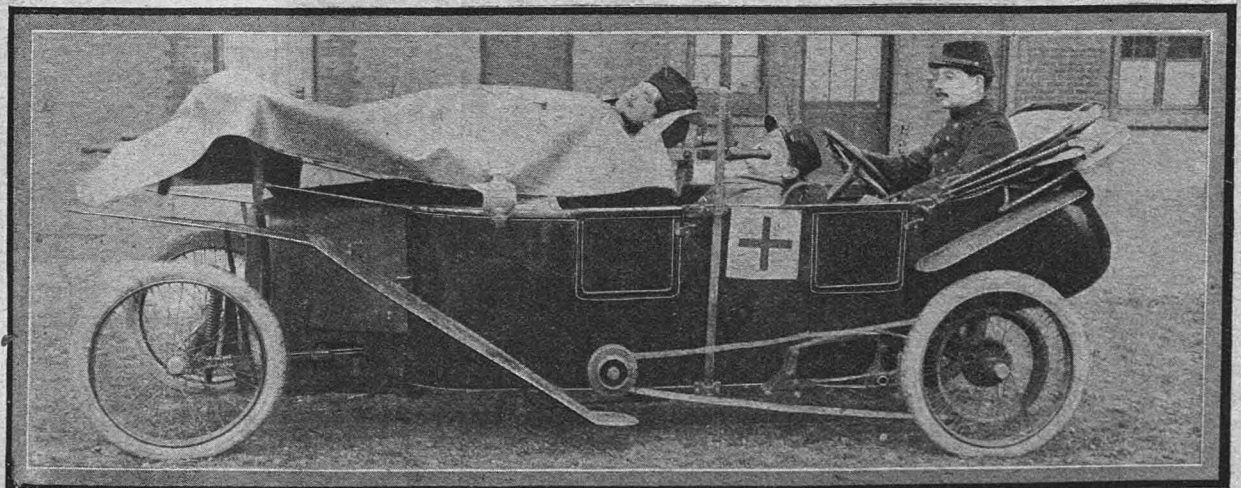
gets all the work of starting up, gear changing and so on. Ordinary leather gloves are worse than useless, wool wears through in a very short time, and it was rather as a last resource, prior to getting someone to make me a vulcanized rubber-faced glove, that I tried a pair of Asbestol gloves. The fact that they have stood 400 miles driving, without any sign of wear, is sufficient testimony to the quality of the material, which is a special feature. The wind cuffs and woollen mits inside the glove keep the hands fairly warm, although no glove will do this really effectively with separated fingers. The disadvantage of Asbestol gloves is that they are not waterproof—nor, for that matter, is any glove that I have tried; but this particular kind certainly lets the water in too freely through the seams, from which it trickles up the arm. They are, however, undoubtedly excellent gloves for motoring and worth their price.

JOHN GILPIN, JNR.

CYCLECARS IN THE FRENCH ARMY.

THE important rôle now played by motor vehicles in the French army is probably not realized by the French public, nor is it understood by the civilians of other nations. As each type of vehicle has become perfected it has been adopted for military purposes, until, at the last manoeuvres, the whole of the water, meat, bread and other provisions, as well as the ammunition and fodder, were carried by motor, a full army corps depending exclusively on motor vehicles for its supplies. It has been decided to abolish the use of horses for the artillery, some of the heavy guns at the present time being drawn by motor tractors. At the opposite end of the scale, motorcycles have been used for carrying urgent messages for a long time, and in the annual manoeuvres have given every satisfaction. The latest development is the adoption of the cyclecar for military purposes. The French military authorities are of the opinion that its most useful rôle is the carrying of wounded soldiers from the fighting line to the field ambulance. The chief advantage of the cyclecar is that, owing to its narrow width and low weight, it can travel through lanes, thus picking up men where it would be impossible for the motor ambulance vans to travel. Its speed, too, is at least triple that of a horse ambulance, a matter which is of immense importance where wounded men have to be dealt with.

Our illustrations show how an Automobilette has been equipped for ambulance work in the French army. It is an ordinary type of touring machine to which four stout vertical tubes have been attached, two of the tubes being at the front end of the machine and two others about midway along its length. An ordinary military type of stretcher is attached to these by means of four coil springs, thus assuring very easy riding for the wounded men. On reaching its destination, the stretcher is instantly detached. Under French law all motor vehicles from the 1 h.p. motorcycle to the 40 h.p. limousine, are liable to be called up for service on the outbreak of war, and in view of this possibility they are examined carefully and registered every year. If the owner is eligible for military service—and under the French conscription system practically every able-bodied man is eligible—he would be put in charge of the machine which he previously owned. In the case of cyclecars they would either be attached to the headquarters staff for carrying messages, or would be specially fitted up for ambulance work. In the machine shown, there is really room for two men: a seriously wounded soldier could be laid full length on the stretcher, and another, whose wounds were of a less serious nature, could be placed in a reclining position in the somewhat modified front seat.



An Automobilette fitted out as an ambulance car, with a special reclining front seat and supports for a stretcher.

OBTAINING INCREASED POWER:

How Greater Efficiency may be Obtained from the Engine, Transmission and all Frictional Parts, with More Power on Hills and Greater Flexibility at Slow Speeds.

By A. W. JUDGE, A.R.C.Sc., Wh.Sc.

Part. II.—The Valves, Engine Bearings and Carbonization.

IN the first article the value of increased power and efficiency was explained, and the effect upon power of lowering or raising the compression. We are led next to a consideration of the valves, and in so doing might remark that it is surprising what a lot of possible power is wasted through faulty valves. The seating of a poppet valve should be at an angle of about 45 degrees, although flat valves have been used in a few cases, but possess the disadvantages of greater warping and trapping of grit and carbon particles. The width of the seating should be quite small, and in good designs seldom exceeds 4 mm. across. The effect of too wide a seating is to cause the incoming or outgoing gases to be throttled or trapped, and so reduces the efficiency considerably. Diagram No. 5 illustrates this fairly clearly, and the lines of flow of the gas have been drawn, from data, for the case of a wide seat and a smaller correct seat; it will be seen that the latter allows nearly twice the amount of gas to flow past at the smallest section marked A. These two types of valve seatings are analogous to a hole through two different thicknesses of plate, as shown in the smaller inset drawings, and taken from hydraulic practice.

Another fruitful source of power loss is that due to the "pocketing" or bedding of the valves in their seatings, caused by the latter becoming worn down by constant valve grinding, bad design or material,

or excessive hammering due to strong valve springs. It will be observed from Diagram 6, which illustrates this defect, that the effect of pocketing of the valve is to reduce the effective opening of the valve when lifted by the cam, and a comparison with the correct valve seating, shown in Diagram 5, will make this point quite clear. The remedy in such cases is to have the "pocket" removed either by means of a flat-bottomed boring tool, or miller, or by using the portable valve seating machine with a flat valve seater, as sold for the purpose. The valve stem itself should be a good working fit in the valve guide, and protected from dust and grit as far as possible, as this quickly wears the stem and so reduces the value and effect of the guides. The writer has seen valve seatings on the valve and cylinder worn quite round instead of flat, through the valve stems wearing in this way, and, unfortunately, the roundness was generally far from even around the periphery of the valve.

Another important point to notice is that the amount of clearance between the valve stem end and the tappet is as small as possible, not exceeding 1-50th in., which clearance is to allow for stretching due to rapid action of the spring, and not, as generally stated, to allow for expansion, as this is a fallacy—the whole cylinder expanding and counteracting the valve expansion. The effect of any greater clearance than this is to reduce the lift of the valve and to alter the

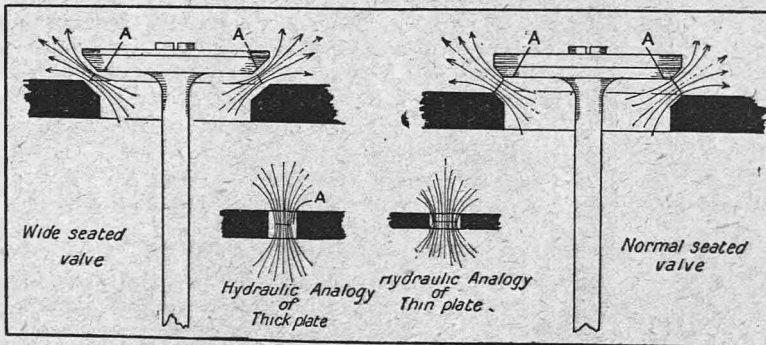


Diagram 5.—Showing throttling effect of wide-seated valve and correct width giving no throttling.

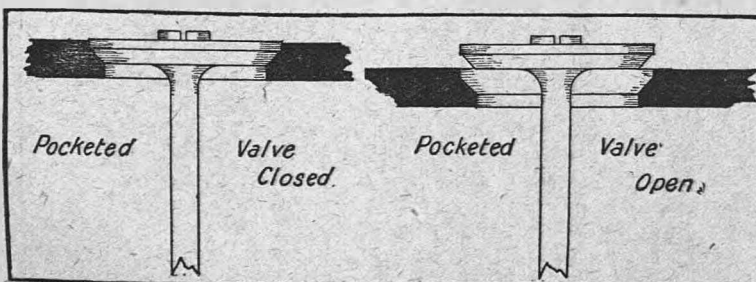


Diagram 6.—Showing a common form of valve pocketing and how it throttles gases flowing past.

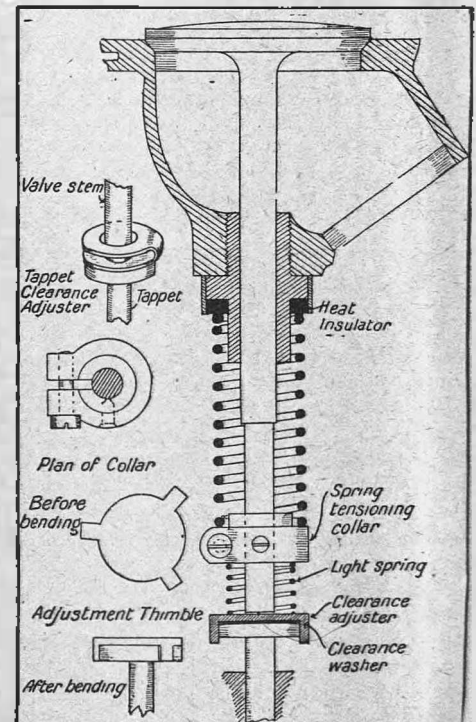


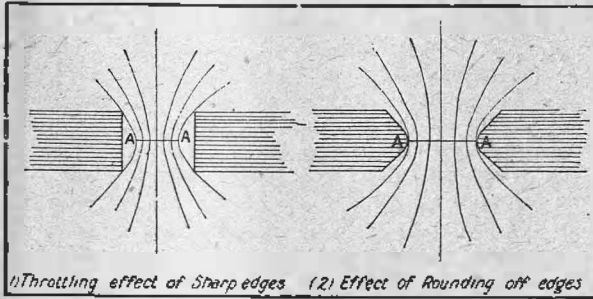
Diagram 7.—Illustrating methods of adjusting tappet clearance, spring tension, etc.

OBTAINING INCREASED POWER (contd.).

valve timing, as the valve will open later and close earlier, so particular attention should be given to this clearance adjustment. In most cases a small thimble can be made out of tin and slipped over the tappet, and devices are sold for this purpose as shown in Diagram 7, or a piece may be soldered to the tappet top or screwed thereto after softening the metal. The device shown fitted to the top of the tappet in Diagram 7 is very useful where no means of tappet adjustment is provided, and consists of a metal cup with a washer of the required thickness loosely slipped between it and the tappet, and shown in black in the diagram in the position it will occupy.

The Valve Springs.

Perhaps one of the most fruitful fields for experiment is that of the strength of the valve springs, and it is remarkable how the tension and elasticity (or quickness of action) of the springs can affect the power



(1) Throttling effect of Sharp edges (2) Effect of Rounding off edges

Diagram 8.—Illustrating the difference between a sharp-edged hole and a rounded-off one in throttling the passing gases as shown at Section A A.

and running of an engine. It is rather surprising that the makers do not fit an adjustable spring-tensioning device to all valves, as the effect of the high temperature and rapid working of the spring is to cause a big falling off in the elasticity of the material. A valve spring should be replaced after every 500 miles running in order to obtain the most out of the engine, unless some means of tensioning is fitted. In order to discover the suitability or otherwise of the spring tension, if a screw-driver be held under or above the valve spring collar whilst the engine is running, the effect upon the speed of varying the tension will be readily observable by pressing in each direction in turn, this being a very simple test.

The spring itself conducts heat from the cylinder from its top end, and this may be reduced by fitting a washer of some non-conducting material, such as hard wood, fibre, or asbestos wire, woven between the spring and cylinder, as shown in Diagram 7. This diagram also shows an easily-made collar for altering the spring tension by moving up or down the valve stem and locking in position by the two screws, besides being an easy means of taking the valve components apart. The smaller compression spring shown below serves to keep the tappet on to the cam rocker, or may be fitted under the tappet to keep it up against the valve stem in order to reduce the noise and hammering action there. Finally, the springs should be given the full benefit of any cooling air currents as much as possible. Wide coiled springs radiate the heat much better than close coiled ones, and allow much freer ingress and egress of air, be-

sides other mechanical advantages which they possess, therefore large springs are advisable.

If the valve spring on the inlet be too weak, the valve will not close quickly enough on the beginning of the compression stroke, with the result that a "blow back" of part of the charge occurs, and the power falls off through this, which also has the effect of limiting the engine speed.

Whilst upon the subject of valves it might be mentioned that steel with a high percentage of nickel, viz., 25 per cent. alloyed with it, will give a practi-

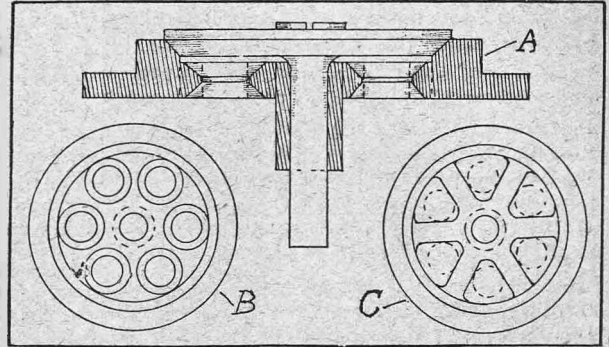


Diagram 9.—(A) Method of enlarging holes in valve seat by countersinking and enlargement of diameter. (B) Plan of valve seat showing this. (C) Plan of valve seat, showing alternative method (original holes shown dotted).

ally incorrodible and strong material well suited to exhaust valves, whilst a smaller percentage of about 8 per cent. will give a steel far stronger in resisting the impact stresses set up, and so will stretch very little compared with high nickel steels.

The inlet and exhaust ports themselves limit the amount of charge taken into the cylinder, so that any enlargement of the smallest section or reduction in the amount of deviation from the ideal straight line will be a great advantage. Thus, where gas enters a square-ended pipe, the effective area is much reduced by the square end, and is increased by rounding off the corner. Also, the overhead inlet valve ports or holes are usually the places of smallest effective area, although they may be equal in area to that of the inlet pipe, and some throttling of the charge occurs here. The writer has obtained marked improvement upon the power by making these holes streamline in form, by countersinking from each side and enlarging. Diagram 9 illustrates the effect of rounding off the corners upon the effective area of an orifice, which is well known in hydraulic practice, and in Diagram 9 will be noticed the methods of enlarging the effective area of the valve ports. In the second case, the original holes (shown dotted) have been filed to the shape of bars, and in some cases only three equidistant bars will prove amply strong enough, and give an appreciable increase in the area. Projecting screws, ridges and corners can be filed off, and sudden changes of section in the passages made gradual with beneficial results. The effect of too small a carburettor opening will be considered later.

The Valve Operating Parts.

Next in consideration comes the valve operating cams and timing wheels. If the cams become worn, the lift of the valves and also the timing will become altered. The remedy is to fit new cams, or, if skilful

OBTAINING INCREASED POWER (contd.).

enough, to soften the worn cams, face down the worn edge and pin or screw on a new part to the correct profile, and case-harden same again. Wear in the teeth of the timing wheels, although, fortunately, uncommon, will alter the timing of the valves to some extent; and also a fairly common trouble of the engine shaft timing wheel key working loose will also prove detrimental to the valve and magneto timing unless remedied.

The Engine Bearings.

Special attention is required periodically to the condition of the bearings and working parts of the engine, for any appreciable slackness (due to wear) of the gudgeon pin, big end and main bearings will not only cause noises and vibrations, absorbing power, but will allow the grit and carbon particles to get to the wearing surfaces much more readily. All wearing pins and shafts should be free from scoring, as this increases the frictional resistance considerably, and it is well worthy of the trouble to have these hardened parts trued up properly by grinding, and the bearings adjusted or newly fitted. Too tight a bearing will cause a very great loss of engine power, and will eventually seize up. If the piston and rings are too tight a fit, the frictional resistance set up at high speeds due to the rubbing which occurs is considerable.

Diagram 10 shows the effect of wear upon the big end bearing of the connecting rod, and method of taking it up, by carefully filing or planing down the faces marked A, which is common engineering practice, the pin being assumed to be true. One fairly common defect which develops in the gudgeon pin is that of the locking screw or device becoming loose, and so causing the pin to move slightly in the piston.

Quite a number of motorists are under the impression that it is important to allow the compressed air in the crankcase to be released into the outside air, and some fit extra "air release" valves for this purpose. Now it is known by experimenting with a petrol engine, by driving it around with an electric motor with the compression taps open and closed, and incidentally the throttle opening varied, that far

more power is required to work the engine with the compression taps open than with them closed. Similarly in the crankcase, it is of greater advantage to allow the air inside to be simply compressed and expanded on the down and up strokes, than to provide numerous small orifices for the air to be trapped and throttled in. A closed crankcase is common practice in steam engines working at high speeds, and is much more economical in oil consumption, due perhaps to the oil being partially forced out of likely places of leakage and sucked back again.

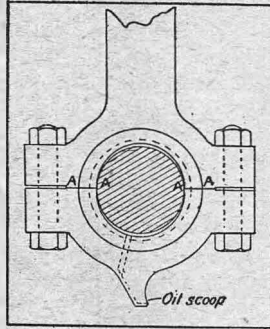


Diagram 10.—Showing oval shape of brasses in big end due to wear, and faces A A for re-adjustment.

Carbon Deposit.
Carbon deposit, when present in appreciable quantity, has a marked effect upon the power output in several ways. In the first instance, the carbon and carbonized matter takes up room in the cylinder, and if appreciable amount will raise the compression pressure, which in most cases will be a disadvantage, and apt to cause too early or premature explosion of the compressed charge. It is therefore advisable, more especially to owners of air-cooled engines, to remove this carbon deposit

periodically by the methods suggested in the motoring handbooks. Perhaps the chief disadvantage of the carbon deposit in the cylinder is upon the cooling of the engine, for it prevents the heat inside from reaching the water jackets or atmosphere, as it is well known that it is a bad conductor of heat, and consequently overheating, with its accompanying evils, is apt to occur. Carbon deposit causes much wear of the working parts, for the fine carbon particles become embedded in the softer bearing material and act as a kind of miniature grindstone upon the harder parts revolving at relatively high velocities.

Before concluding this portion of the subject dealing with the engine, attention is drawn to the working of the minor parts of the power unit, such as the oil pump, circulating pump, fan, etc., and their respective drives, for an appreciable amount of energy is used up in working these parts, and so care should be taken that the bearings, driving wheels or gears, etc., work quite freely, and are properly adjusted and lubricated, so that they function properly.

(To be continued)



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SOME idea of the rapid progress made by the cyclecar movement can be obtained when we mention that in the next issue of THE CYCLECAR will appear the photographs of 12 Midland lady drivers and their machines. The photographs are accompanied by an interesting article on the driving experiences of these fair devotees of the new motoring by Mrs. Hartley-Smith, herself a keen cyclecarist. We should welcome photographs of lady cyclecarists from other parts of the United Kingdom.

NOTICES.

Letters.

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

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

Press Times.

IMPORTANT LATE NEWS and Photographs can be accepted up to first post Monday morning for insertion in the following Wednesday's issue.

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

Return of MSS., &c.

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

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Topics of the Day

MANY manufacturers of cyclecars are finding the definition by weight a serious matter in designing a cyclecar, especially in the case of machines which are really light cars. This has prompted a suggestion from a correspondent that the weight limit should be removed, and a cyclecar defined simply as a three or four-wheeled vehicle other than a motor-bicycle and sidecar, with an engine capacity not exceeding 1100 c.c. This is a matter that requires very careful consideration. Manufacturers of small cars have been prompt to realize the advertising value of the cyclecar movement, and, wherever possible, to get in with it. Thus there are quite a number of cars of 8 h.p. or less which have not been designed to meet the cyclecar demand at all, but by lightening the chassis the manufacturers have been able to seize the advantages of the new movement, which incidentally embraces competitions and the right to exhibit at the cyclecar show. We have foreseen a demand for the weight limit to be increased, and there is as much to be said against as for this demand. The wider the definition the greater the variety of machines, termed "cyclecars," that will be offered to the public. This is excellent in one sense, providing that the object of the movement as a whole is not lost sight of. If in the public mind an impression is created that a cyclecar is a small car of any power from 8 h.p. to 20 h.p., weighing anything from half to 1½ ton, and costing from £140 to £250, we shall be no further advanced than we were three years ago.

Raising the Weight Limit.

THE greatest mistake in the present definition is the acceptance of machines with a chassis weight not exceeding 6 cwt. where the body is not inseparable. The one definition of a total maximum weight of the complete vehicle ought to be taken as the rigid line, but this is not expressing an opinion that the weight complete should remain at 7 cwt. As a matter of fact, many of the simplest cyclecars exceed this weight when put on the scales. The manufacturer who, for show or competition purposes, has to pare down the chassis weight to 6 cwt. is working under a great disadvantage. It is extremely difficult under such circumstances to produce a satisfactory vehicle, and it is next to impossible to sell it at a low price, such as the cyclecar movement demands. Given more latitude it would be easier to produce the £100 miniature car, and it would give better results on test. This should be fairly obvious, for the lighter the construction the greater the expense of production, that is, of course, so far as following the orthodox lines of big car practice is concerned. Either such machines should be relegated to the light car class by the abolition of a chassis weight definition, or some other variation of the definition adopted, such as by raising the total weight.

An Error in the Definition.

THIS brings up the question of the objects of the cyclecar movement. Those who originated it had in view the requirements of a very large class who were provided with the choice of a motor-bicycle and sidecar combination and a cheap light car. This section of the public is a very large one, having means too limited to consider the purchase of a car or its upkeep, somewhat afraid of the motor-bicycle, and also not possessed of sufficient confidence to drive a car. Their requirements are well met by the cyclecar—a machine easier to handle than a motorcar, having greater stability than the motor-bicycle while affording more comfort to driver and passenger alike, and almost as cheap to purchase and as economical to run as a motor-bicycle and sidecar. Surely there must always be a big demand for such a machine, and one that cannot be ignored? More expensive types, with greater complication, less economical in use, will appeal to those of wider tastes and greater spending power, but for the majority the simple cyclecar is the ideal compromise between the motor-bicycle and the motorcar.

The Objects of the Movement.

THE USES OF A PASSENGER.—Sketched by John Bryan for "The Cyclecar."

ON STARTING I FIND THAT A PASSENGER IS A KIND OF ODD-JOB-HANDY-MAN

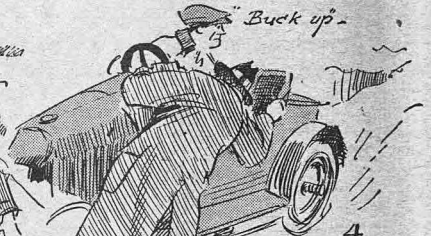


1 HE HAS TO COAX THE ENGINE TO PRODUCE ENERGY WITH THE SWEAT OF HIS BROW



2 MUST BE AN EXPERT ON TYRE REPAIRS

3 A GLEANER OF SHED BELTS AND CAPS

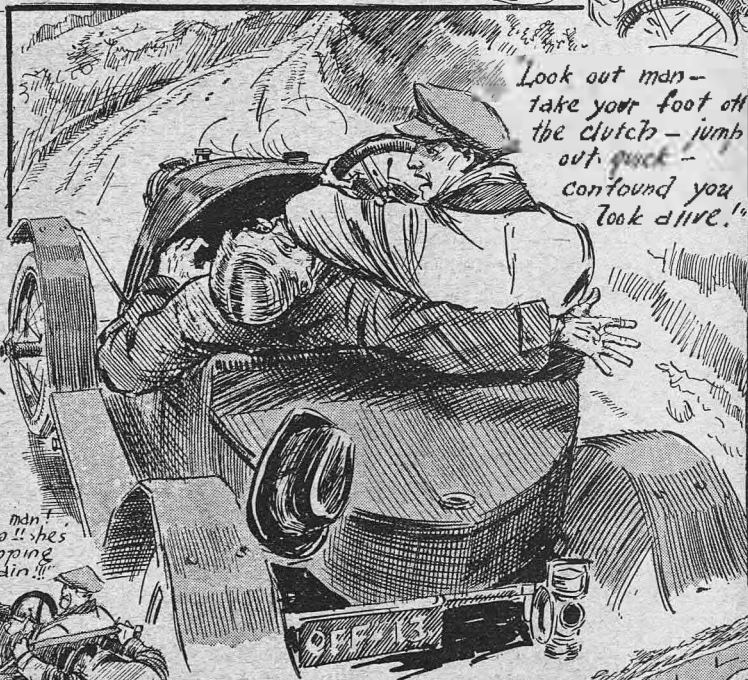


4 AN EFFICIENT REVERSING-GEAR



5 WHY DON'T YOU KEEP YOUR EYES OPEN?

5 AN R.A.C. & AA. ROAD SCOUT MIXED IN ONE, IF THE WAY IS UNCERTAIN



6 LOOK OUT MAN—TAKE YOUR FOOT OFF THE CLUTCH—JUMP OUT QUICK—CONFOUND YOU LOOK DIRTY!

6 WHEN IN DANGER OF CONKING OUT ON HILLS—AN ACROBATIC BOTTOM-GEAR



7 A SELF-STARTER—AFTER WHICH



8 A RECORD HILL CLIMBER



9 HE IS HELD RESPONSIBLE FOR ALL HAPPENINGS.

PETROL



9 HE HAS TO PUT UP WITH THE DRIVER EXCHANGING HIM FOR A LADY ACQUAINTANCE OVERTAKEN ON THE ROAD!



11 AND IS EXPECTED TO HAVE HUGELY ENJOYED THE EXPERIENCE

THE CYCLECAR WORLD.

Notes, News and Gossip of The New Motoring.

CHIEF EVENT OF THE WEEK-END:

Midland Rally at Stratford.

(See First Page).

Light up Saturday, 5th April, 7.35 p.m.

Rally at Stratford!

Every cyclecarist should endeavour to turn up.

The rendezvous is the Swan's Nest, the time 12 mid-day, Sunday, 6th April.

These meets of cyclecarists have a great educational value for the public, and do much to arouse interest in the new motoring.

One thousand miles in a fortnight is the record of Mr. H. Hulbert, who drives a Singer, and uses it for business and pleasure purposes.

The Oakleigh Motor Co. think that the cyclecar referred to by a Brighton reader in *THE CYCLECAR* of 12th March is the L.A.D., made by them.

There are many who would never make good drivers of either motor-bicycles or motorcars, who feel quite at home on a cyclecar after 100 miles experience.

A fragment of conversation. Shepherd (neglecting his flock to cyclecarist chain repairing): "Is that chain broke?" (One hour later): "That chain be broke, never fear." (After two hours): "Aye, that chain's broke, and I must be minding me sheep."

Two well-known belt-driven cyclecars will be brought out in new form shortly, with rather startling innovations of design. As they are experimental as yet, it is not likely that they will be offered to the public for some time.

We recently examined some Lyso belts which had been run on a cyclecar for 18 months, during which time a considerable distance had been traversed. They were certainly in an excellent condition, and should still give satisfaction for a long time.

So far as we can ascertain, no intimation to the Press was given by the B.M.C.R.C. that the cyclecar high-speed reliability trial would start at 10 a.m. The information was not given to us until the end of the week, but it is obviously a most important item.

The photograph on the front cover this week was taken in the members' enclosure on the charming fir-clad slopes of Brooklands, above the test hill, and the cyclecar is the Carlette, which was described in the issue of *THE CYCLECAR* for 12th March. A feature of the machine is its single belt drive.

At the last meeting of the Auto-Cycle Union the following were elected to serve on the competitions sub-committee:—Rev. E. P. Greenhill, Capt. Davidson, and Messrs. Southcombe May, A. V. Ebbelwhite, A. G. Reynolds, J. W. G. Brooker, E. M. P. Boileau, E. J. Feeney, A. Sharp and Stanley Carter. Only one of these gentlemen owns a cyclecar, and yet the committee are empowered to make rules for cyclecar trials and generally to encourage the new motoring!

A sidecar combination which was recently entered for a 3000 miles trial, officially observed by the A.C.U., was withdrawn after 1217 miles had been traversed. During the trial the kick starter chain was lost, part of the gear and clutch-actuating mechanism disappeared, the gear rod connection broke, the petrol tank became loose, while seven attempts had to be made on Sunrising Hill before the summit was reached. Finally, the top tube of the frame broke. Altogether there were 28 stops, various fittings breaking or shaking loose. Can any cyclecar beat this?

Great disappointment is felt in Ireland over the abandonment of the proposed cyclecar race.

Four thousand miles on one friction disc. Such is the record of the Rev. E. P. Greenhill's G.W.K.

The simple cyclecar provides an excellent compromise between the motor-bicycle and the motorcar.

Why does a well-known cyclecarist always carry a sleeping tent and ground sheet with him when out on the road?

The manufacturers of the Rollo cyclecar are shortly experimenting with a model fitted with an American two-stroke engine.

A police constable in the North of London has built a four-wheeled cyclecar in his spare time. He estimates that it only cost him £40.

Entries close for the Grand Prix cyclecar race on 30th April. Entry forms and printed particulars of the race can be obtained from *THE CYCLECAR*, 7-15, Rosebery Avenue, London, E.C.

A set of Rom tyres fitted to the cyclecar belonging to a member of the staff have completed well over 2000 miles, the only puncture being caused by a nip in one in putting them on originally. There is practically no sign of wear, and only a few small cuts.

The sparking plug department of Messrs. Lodge Bros. and Co. will be amalgamated from 31st March with the Mascot Co., Rugby. The new company will be known as The Lodge Sparking Plug Co., Ltd., and their registered offices will be at Wrentham Street, Birmingham.

The weight of a simple monocoar, fully loaded up, and with all accessories, proved to be 4½ cwt. when tested on the L.C.C. scales. A belt-driven machine, similarly equipped, with heavy tyres, a spare wheel, and a full kit of tools and spare parts, tipped the beam at 7 cwt. 8 lb.

"Do '60,' wouldn't she, sir?" said a constable to us the other day, anent a rather racy-looking cyclecar from which it would be difficult to extract 30 m.p.h. But there, the police look upon most of these machines as miniature racing cars. Let us hope they will not act accordingly.

The journal that so frequently prints remarks deprecating the cyclecar did so again last week, together with much other useful information on "cyclecars" that anywhere else would be termed "motorcars." These efforts to keep pace with the movement are really quite amusing.

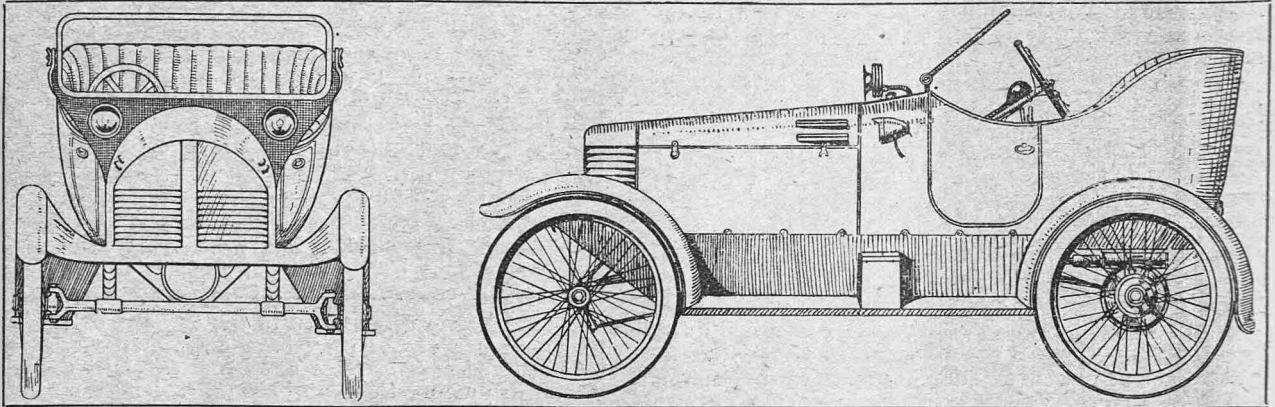
The interest taken in cyclecars in Ireland is immense, and there are vast numbers of people anxiously awaiting the advent of a machine which will stand the strain of the Irish roads. Certainly we know of no better test for a cyclecar than to drive it in Ireland for a considerable length of time. The first manufacturer who thus demonstrates the capabilities of his machine in the "distressful country" should reap a rich reward in the shape of orders.

From all accounts it appears that the north-western district of London is in the happy position of having sporting policemen. One member of the "force" has actually built a cyclecar for himself, and is very interested in the "new motoring." The other day we met him with two rims and two hubs, and he informed us that a neighbouring garage had commissioned him to make up two wheels. Several others, though not actually cyclecarists, are keen followers of the movement.

THE DALLISON CYCLECAR.

ARRANGEMENTS are now being made by the Dallison Gearing and Motor Co., of Sutton Road, Erdington, to turn out 30 of their cyclecars per week. It will be remembered that this machine is to be fitted with an 8 h.p. air-cooled Precision engine, a V.H. magneto, and a B. and B. carburetter. In front of the bonnet special louvres are placed, which can be regulated from the driver's seat, to vary the amount of air to the engine. The drive is taken from the engine through the patent Dallison gear, which gives five speeds forward and a reverse to the live back axle, an overhead worm being fitted.

The axle is also provided with a floating differential. The frame is constructed of channel steel, stiffened with ash, and is mounted on the axles by semi-elliptical springs. Steering is by worm and sector, while the wheels are shod with 26 in. by 2½ in. Continental tyres. The wheelbase is 6 ft. and the track 3 ft. 6 in. The price of the complete machine will be 100 guineas, which will include electric lamps, hood, screen, tools, etc., while a hand-starter, which is worked from the driver's seat, will be fitted as standard. We give illustrations of the machine from the side and front. It was described in *THE CYCLECAR*, 12th March.



Front and side views of the Dallison cyclecar, 30 of which, we are informed, will be turned out weekly.

WHERE BENZOLE CAN BE OBTAINED.

At the request of several readers who wish to experiment with benzole, we give below a list of places where it can be obtained. The price varies from 1s. 2d. to 1s. 6d. a gallon.

Accrington.—Altham Benzole Co., The Altham and Great Hanwood Colliery.
 Barnsley.—Mitchell Main Colliery Co.
 Birmingham.—M. Whittingham Jones, 27, Edgbaston Road; Henry Garner, Ltd., 120-124, Alcester Road.
 Cleckheaton.—Henry Ellison and Co., Cleckheaton; The Old Silkstone Chemical Works.
 Cumberland.—West Cumberland Bye-Product Co., Ltd., Flimby, near Maryport.
 Cheshire.—C. R. Alexander, 132, Ashley Road, Hale, Altrincham.
 Gateshead-on-Tyne.—Judge, Brand and Co., Ltd.
 Glasgow.—William Baird and Co., Ltd.; Richard Smith's Executors, West Street; Brotherton and Co., Provan Chemical Works.
 Hull.—Blenkin and Son, 76, Queen Street; Major and Co., Ltd., Sculcoates.
 Inverness and Nairn.—Macrae and Dick.
 Knottingley, Yorks.—Stainsby and Lyon, Ltd., Aire Tar Works.
 Lancashire.—Wigan Coal and Iron Co., Ltd.; Messrs. W. Metcalf, Ltd., Church; The Automobile Trading Co., Barrow Street, St. Helens.
 Leeds.—Brotherton and Co., Ltd.; George Exley and Son, Hunslet Lane (in two-gallon tins); R. Wilkie, 68, Albion Street.
 Leicester.—Green and Co., Evesham Road.
 Liverpool.—Brotherton and Co.; Bradbury and Hirsch, 11, Dale Street; Theo and Co., 6, Hatton Garden, 15, Johnson Street.
 London and Suburbs.—Gas Light and Coke Co., Ltd., Westminster, Beckton, Woolwich, and Goswell Road depots; Gas Lighting Improvement Co., Ltd., Salisbury House, London Wall, E.C.; Otto Gas Co., Queen Street Place; A. W. Gamage, Ltd., Holborn, E.C. (who supply in two-gallon tins); Thos. Crow and Sons, West Ham, E.; South Metropolitan Gas Co., Ordnance Works, Tunnel Avenue, E. Greenwich; Southern Automobiles, Ltd., Westcombe Hill, Blackheath, S.E.; Central Motor Co., Ltd., 110, High

Street, Croydon; The Elhurst Garage, 47, Streatham Hill, S.W. (in two-gallon tins); S. Bowley and Son, Wellington Works, Battersea Bridge, S.W.; Smith and Milroy, Ltd., High Street, St. Mary Cray, Kent; G. Stone and Co., Park Garage, Thornton Road, Clapham Park, S.W.; Longman's Garage, 90, Upper Gloucester Place, N.W.; Clifford and Co., Motor Works, Main Road, Sidcup, S.E.; The Mostyn Garage and Engineering Co., Akerman Road, North Brixton, S.W.; Ariel and General Repairs, Ltd., Camberwell New Road, S.E.; S. Brock and Co., Thornton Road, Thornton Heath; Smith and Mitchelmore, Ltd., 1-21, Avenue Close, Poplars Avenue, Cricklewood.
 Manchester.—Hardman and Holden, Miles Plating; J. E. C. Lord, Ship Canal Tar Works, Weaste; Messrs. Crawfords, Ltd., Chorlton Road and Stretford Road; The Clayton Aniline Co., Ltd., Clayton; Baxendale and Co., Ltd., Miller Street Works and Warehouses.
 Middlesbrough.—Bolckow, Vaughan and Co., Ltd.; Sadler and Co.
 Normanton.—Whitwood Chemical Works.
 Rotherham.—Ellison and Mitchell, Ltd., Don Chemical Works, Kilnhurst.
 Staffordshire.—Birchenwood Colliery Co., Ltd.; Kildsgrove, near Stoke-on-Trent (not retail); Major and Co., Ltd., Wolverhampton.
 Sunderland.—Brotherton and Co.
 Surrey.—Byfleet Automobile Engineering Co., Old Woking Road, Byfleet (for Byfleet district only).

The M.C.C. Hill-climb.

A special class for cyclecars has been arranged in the hill-climb organized by the Motor Cycling Club for 12th April. The climb is intended to test the flexibility of the machines, and the first portion of the hill must be covered as slowly as possible. The machine is then brought to a standstill, and the final portion of the hill must be covered as fast as possible from a standing start. The winning cyclecar will be that which has the greatest difference in time between its slow and fast climbs. Entries close on 7th April, and the competition is only open to members.

THE TRUNER CHAIN-DRIVEN CYCLECAR.

A Four-wheeler with a Positive Drive at a Moderate Price.

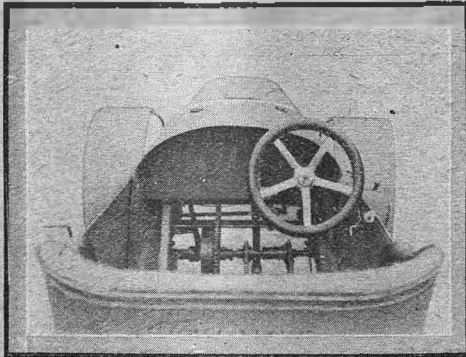
THE distinctive features of the Truner cyclecar, made by Messrs. Turner and Co., of High Street, Willesden, are the transmission by chains throughout, and the drive by the off rear wheel. The engine, an 8 h.p. J.A.P., is set parallel with the frame, driving by chain to a cone clutch mounted on the first countershaft. Two chains connect this shaft with a second one set further back, one chain serving for each speed, the ratios being $5\frac{1}{2}$ and $10\frac{1}{2}$ to 1. Either of the sprockets can be locked to the countershaft by means of a double-ended dog clutch, which is operated through the hollow shaft by a small handle mounted on the scuttle dash. The ash frame is mounted on the axles by means of half-elliptic springs, the suspension, by personal trial, being quite satisfactory; a roomy two-seater body is fitted, and the control levers for the Amac carburetter are mounted on the steering column. The steering is direct, and the wire wheels are shod with 26 in. by 2½ in. Sirdar tyres. A large toolbox is provided behind the seat, and the mud-guarding is well carried out. Accessibility of the en-

gine and gears has been studied, and the engine can be removed by detaching four bolts. Correct weight distribution has also received attention, the weight being 4½ cwt. In the course of a short spin, we found the machine ran very smoothly, and it is rarely necessary to change speed. The operation of the change speed is very easy, engagement of the dogs being facilitated by "backing off" their reverse faces. The price of the machine is 80 guineas complete.

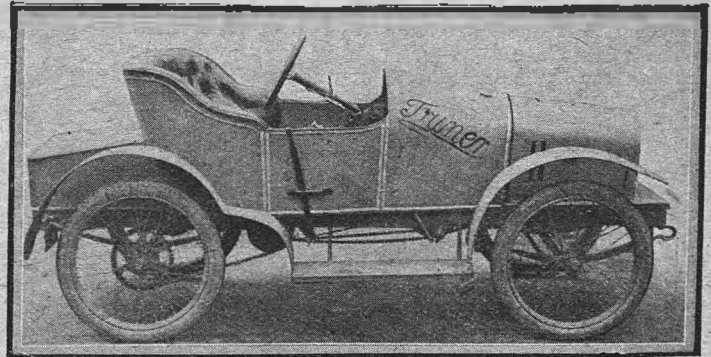
The Eagle cyclecar described recently was not actually new, but was brought out a year ago.

In the next issue of THE CYCLECAR we expect to publish the first fully-illustrated description of some new cyclecars of considerable interest.

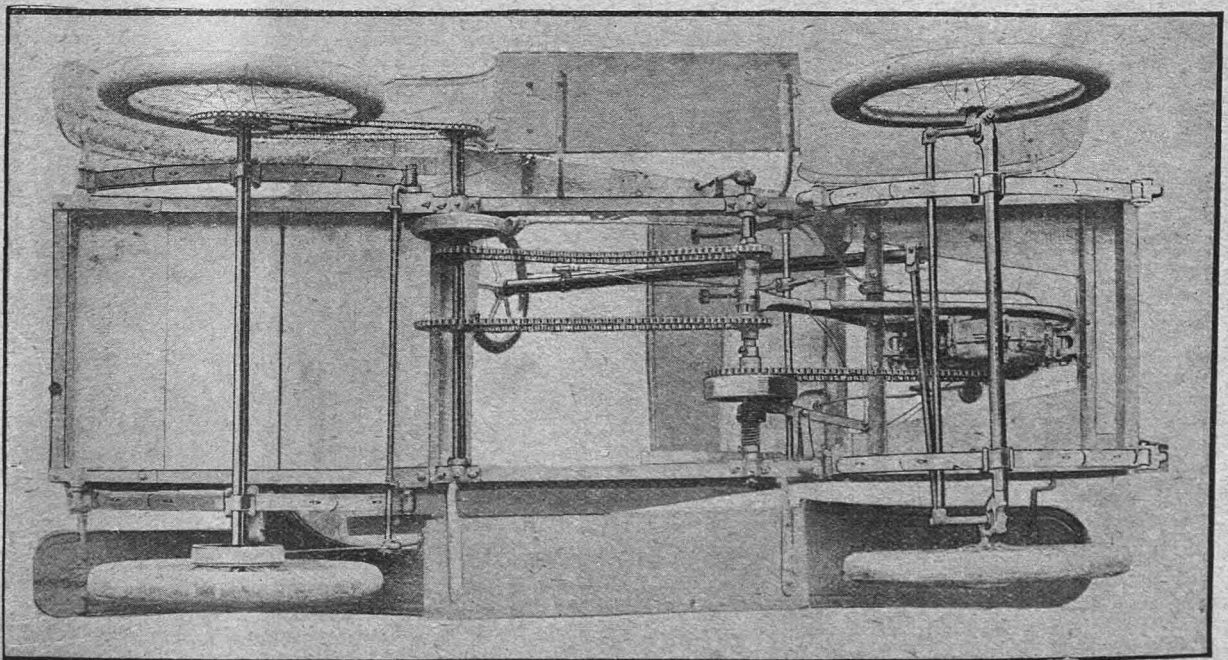
With reference to the letter from Mrs. Hartley-Smith in our last issue and the footnote appearing thereto, we understand that the Swift cyclecar did not actually pass another competitor on Nailsworth "W," but waited until they had all ascended.



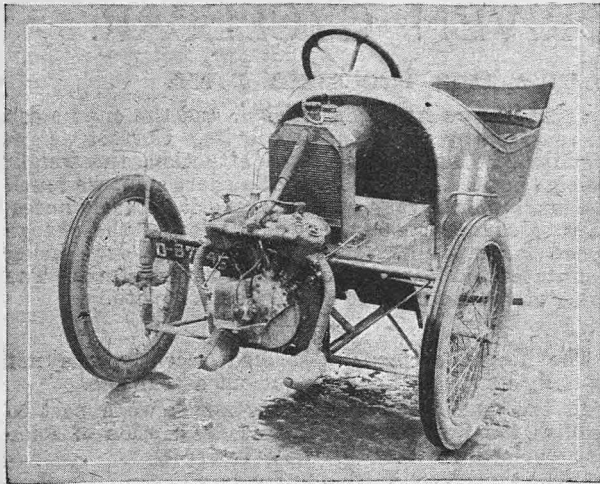
Rear view of the Truner cyclecar, showing first countershaft and clutch.



Side view of the chain-driven Truner cyclecar, showing the roomy locker at the rear, and the single final chain drive.



View from the underside of the Truner cyclecar, showing the dog-clutches used for changing speed.



The water-cooled Blumfield-engined Morgan, entered by Mr. N. F. Holder. It was placed second in the 1100 c.c. class.

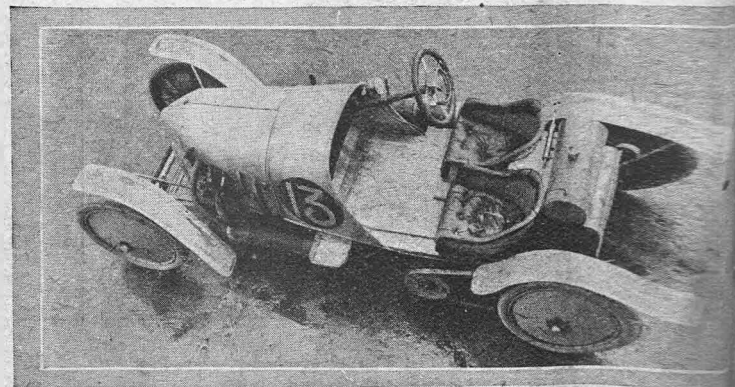
IF the 100 miles high-speed reliability trial for cyclecars, run off by the B.M.C.R.C. at Brooklands last Saturday, was as dull for the drivers as it was for the spectators, then it was a dreary proceeding indeed. Perhaps the rain damped the spectators' enthusiasm unduly, but even if it did, there was little or no excitement in seeing 11 cyclecars running round the track at between 30 and 40 miles an hour. The idea of the test was that drivers in the 750 c.c. class had to run at a minimum speed of 30 m.p.h., whilst those in the 1100 c.c. class had to run at a minimum speed of 35 m.p.h., the driver in each class whose variation in lap times was the smallest being the winner.

The following started:—In the 750 c.c. class, Mr. J. Mundy (A.-C.) and Mr. V. Busby (Morgan-Blumfield). In the 1100 c.c. class, Mr. N. F. Holder (Morgan-Blumfield), Mr. A. W. Lambert (Morgan-J.A.P.), Mr. A. G. Fraser Nash and Mr. C. M. Whitehead (G.N.), Mr. G. W. Hands (Calthorpe), Mr. J. T. Wood (G.W.K.), Mr. L. F. de Peyrecave (Duo), Mr. B. Haywood (Singer), and Mr. R. P. Aldersey (Carlette). Early on it became obvious that the Singer was

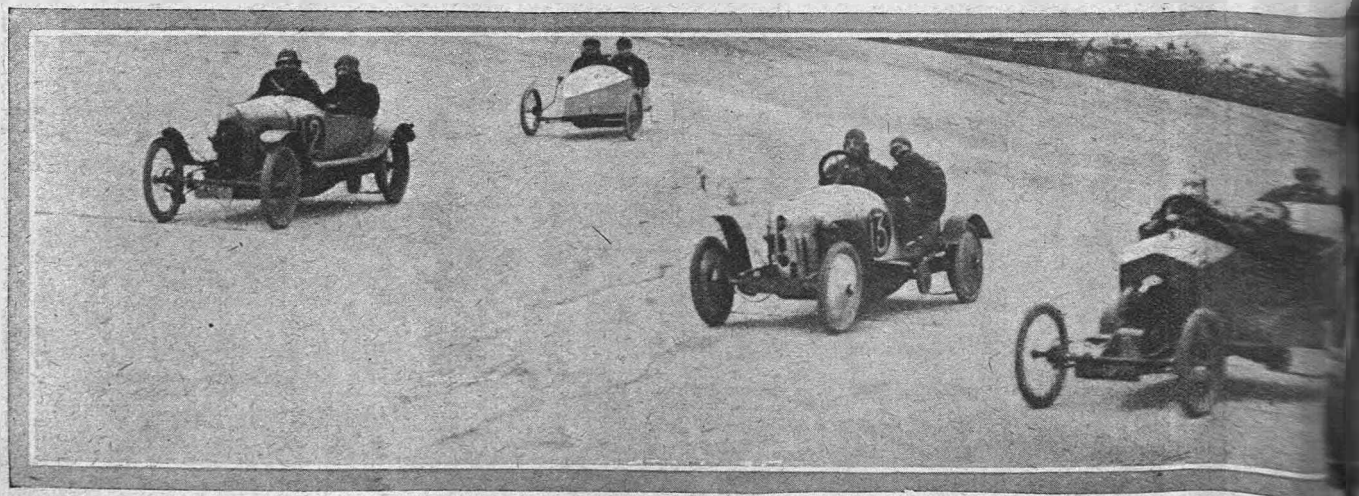
THE HIGH SPEED Morgans Win Both Classes in the

going for the 100 miles and two hours cyclecar records, for it was lapping regularly at between 40 and 45 miles per hour. The other competitors contented themselves with running round at speeds approximating to the minimum allowed. Generally, the passenger acted as timekeeper and directed the driver as to when he should cross the line. The result was that some competitors approached the line very slowly indeed, awaiting the instant to complete the lap.

The procession round and round the track was most uninteresting from the point of view of the spectators. Soon it came on to rain heavily, which tested the belt-driven G.N.s and the Duo transmission. For miles these machines ran splendidly, the new Grand Prix G.N.s running with the greatest regularity. On these machines the engine is set transversely in the frame and drives to a countershaft by means of a shaft. The final drive is by belts over 8 in. pulleys. Unfortunately, Mr. Nash punctured, and had to retire, whilst Mr. Whitehead had fitted new belts before starting and stopped to take out the initial stretch when it rained. Meanwhile, the stream-line-bodied A.-C. and Mr.



Mr. C. M. Whitehead's G.N., with his own design of body, showing arrangement of passenger's seat and the special petrol tank, underneath which is a tool cupboard. Mr. Whitehead finished third.



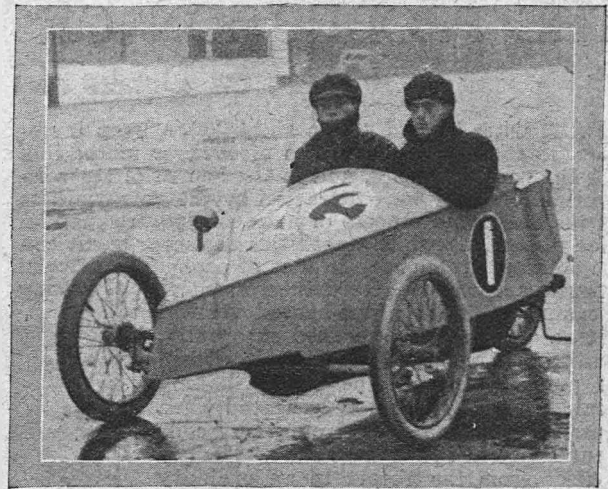
A composite view of the trial in progress. The machines appearing in the photograph are: first, Mr. Nash's G.N., followed by G.W.K. Mr. Hands's Calthorpe follows, then Mr. Busby's Morgan, entered for the 750 c.c. class, and Mr. Lambert's machine, Carlette, with its single

RELIABILITY TRIAL.

The Singer Disqualified for Overweight.

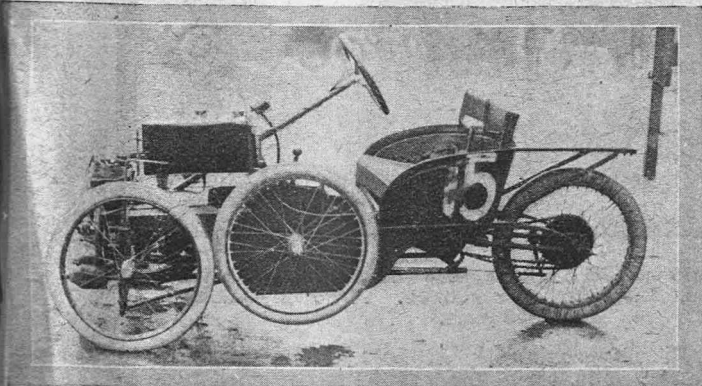
Busby's Morgan had been lapping very regularly in the 750 c.c. class. The latter, however, had the central electrode of his plug blow out, and had to stop. Trouble also befell several other competitors in the big class. Mr. Wood (G.W.K.) picked up nails in his off rear and near front tyre, but quickly put on a new rear cover and tube and went on with a flat front tyre. When this left the rim he deemed it advisable to retire, and came in with the cover round the passenger's body. Everyone commented on the smooth running of the Singer and Calthorpe, the former being fitted with two carburetters and a very neat receptacle for the spare wheel. After five laps the Carlette machine retired, owing to backfiring in the carburetter; the driver having also broken his steering wheel before the race started, found it somewhat tricky to control his machine.

Mr. Holder, on the water-cooled Blumfield-Morgan, on which a neat honeycomb radiator is fitted just behind the engine, experienced trouble with a broken petrol pipe, which his passenger held up to the union for many miles. Soon after this contretemps, the off front wheel of the Duo came off.



Mr. J. Mundy's A.-C., with its novel sporting type of body tapered at both ends.

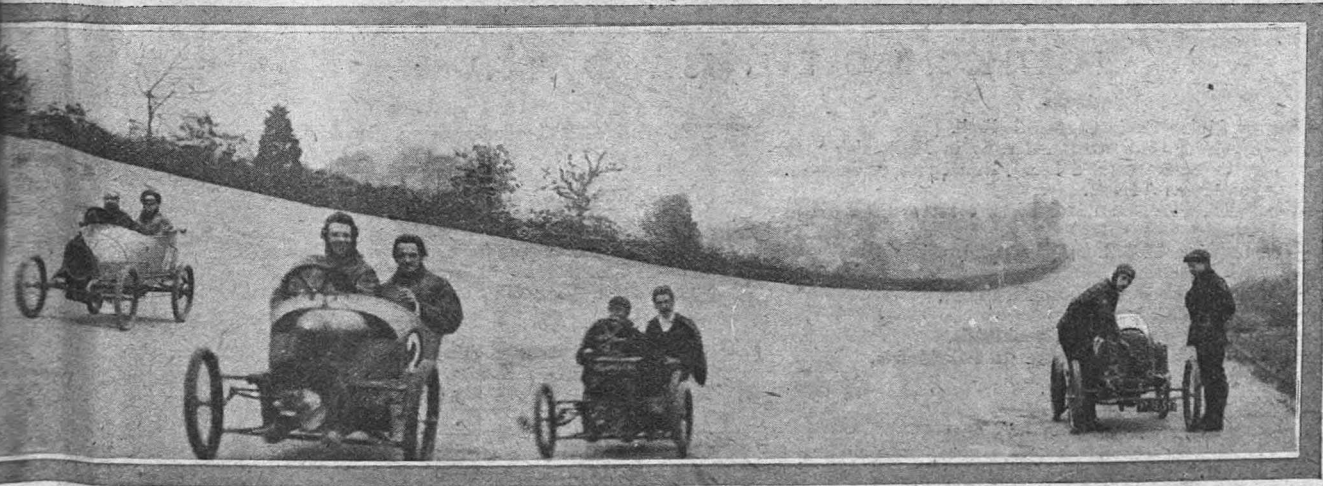
The Singer was the first to finish, followed at considerable intervals by the rest of the survivors. It was decided then to weigh the machines, which brought to light the fact that the chassis weight of the Singer was 36 lb. overweight, and the machine was therefore disqualified. The results of the event are given below, and show that the Morgan three-wheelers scored in each class:—



Mr. A. W. Lambert's Morgan, on which he won in the 1100 c.c. class. A feature of the machine is the arrangement for carrying a spare wheel shown above.

		Difference in time.			Total time 100 miles.	
		M. S.	Fast.	Slow.	M. S.	H. M. S.
CLASS A, 750 cc.						
1.	Mr. V. Busby (Morgan)	4	59½	4	51½	9 11 2 54 49
2.	Mr. J. Mundy (A.-C.) ...	12	36½	4	15	16 50½ 2 65 51
CLASS B, 1100 c.c.						
1.	Mr. A. W. Lambert (Morgan)	0	16	4	6	4 29 2 35 10½
2.	Mr. N. F. Holder (Morgan) ...	4	15½	9	53	8 5½ 2 37 36½
3.	Mr. C. M. Whitehead (G.N.)	13	11	3	56	16 19 2 40 44½
	Mr. G. W. Hands (Calthorpe)	0	20½	4	49	4 49 2 51 41½

Mr. J. T. Wood (G.W.K.) completed 29 laps (tyre trouble); Mr. L. F. de Peyrecave (Duo), 23 laps (front wheel broke); Mr. H. G. Nash (G.N.), 20 laps (punctured both rear wheels); Mr. R. P. Aldersey (Holstein-J.A.P.), 6 laps (carburetter trouble); Mr. B. Haywood (Singer), disqualified for overweight. Mr. Hands did not maintain his minimum speed.



Whitehead's G.N., above which on the banking is Mr. Mundy's A.-C., then Mr. de Peyrecave's Duo, behind which is Mr. Wood's ... these two being the winners in their respective classes. Stopped on the edge of the track is Mr. Aldersey's ... had carburetter trouble.

THE PRODUCTION OF CHEAPER MOTOR FUEL.

A Few Details of the del Monte Process.

OUR sister journal, "The Motor," has been investigating the possibilities of cheaper motor fuel for the past two years, and in the course of their investigations they were attracted by the potentialities of the del Monte process of low temperature distillation of coal, by which quantities of motor spirit can be obtained from cheap grades of coal. The process is extremely simple, consisting essentially of baking "cannel" coal in a gas-heated vertical retort. The retort is heated externally, and at the same time gas is either drawn or pumped through the bed of baking coal. The gas is previously heated when passing through gas-circulating coils round the outside of the retort. The gas passes from the retort to an ordinary type of cooling and scrubbing apparatus, and thence to an ordinary gasometer. From the gas thus obtained from the coal sulphate of ammonia, benzine, and other light hydrocarbon oils are derived, in addition to the motor spirit. In an accurate test which was carried out at the suggestion of "The Motor," it was found that from 2 cwt. of "cannel" coal 51.8 pints of crude oil were obtained. This is at the rate of 64.7 gallons of oil per ton of coal. From this crude oil no less than 24 gallons of "petrol equivalent" can be obtained per ton of "cannel" coal. Many valuable by-products, such as solvent naphtha, pitch, varnishing oils, etc., are also obtained, and the ready sale for these by-products assures profits being made, even if the motor spirit has to be sold at a loss under the stress of competition. The solid residue left in the retort can also be used as a fuel.

The motor spirit was tested on Brooklands against Shell I spirit. The engine started easily, the exhaust was practically odourless and smokeless, and the car covered 28.8 miles to the gallon, compared with 25.6 miles per gallon with Shell I. At a temperature of 55.5 degrees Fahr. the new spirit has a specific gravity of .746.

With regard to the commercial possibilities of the

process, "The Motor" suggested to the proprietors, Messrs. Oil and Carbon Products, Ltd., 37, Walbrook, London, E.C., and Barnes, S.W., that they should obtain a report from a reliable source. They therefore submitted the matter to Mr. Bertram Blount, F.I.C., of 76, York Street, Westminster, London, S.W., and he has issued a report showing that it is possible to make a profit of £91,233 per annum from a plant



The old and the new: The Truner cyclecar, described on page 497, and the "Plough Inn," Kingsbury, near Hendon. A hostelry dating back 800 years.

costing approximately £150,000, the motor spirit to be sold at 1s. per gallon. If the motor spirit were to be given away, it would still be possible to make a profit of £31,000 from the sale of the by-products and residue; thus the proprietors of the process would be independent of competition in the motor spirit market. Truly, this process may be said to have vast possibilities.

FORTHCOMING EVENTS AND FIXTURES.

APRIL.

- 2nd.—Surrey Motor Cycle Club hill-climb.
- 5th, 6th.—Cyclecar Club week-end rally in Midlands; Saturday to Banbury (Red Lion), Sunday to Stratford-on-Avon (Swans' Nest).
- 5th.—Woolwich, Plumstead and District Motor Club one-day trial.
- 12th.—Birmingham M.C.C. one-day trial.
- 12th.—M.C.C. hill-climb.
- 19th.—Cyclecar Club fuel-consumption trial.
- 19th.—Bristol M.C.C. trial.
- 26th.—B.M.C.R.C. meeting at Brooklands.
- 27th.—Cyclecar Club afternoon run to Brooklands.

MAY.

- 3rd.—Herts. M.C.C. hill-climb.
- 9th, 10th.—M.C.C. London-Edinburgh trial.
- 12th (Whit-Monday).—B.A.R.C. race meeting, Brooklands.
- 17th.—B.M.C.R.C. race meeting.

JUNE.

- 4th, 6th.—Tourist Trophy race in the Isle of Man.
- 7th.—Midland A.C. hill-climb at Shelsley Walsh.

JUNE.

- 14th.—B.M.C.R.C. race meeting, Brooklands.
- 19th.—Cardiff M.C. hill-climb at Caerphilly.
- 21st.—B.A.R.C. race meeting, Brooklands.
- 21st.—Cardiff M.C. speed trials at Porthcawl.

JULY.

- 2nd.—Grand Prix race for cyclecars, Amiens.
- 5th.—M.C.C. meeting at Brooklands.
- 21st to 26th.—Scottish Six-days Trial.

AUGUST.

- 4th.—B.A.R.C. race meeting, Brooklands.
- 9th.—B.M.C.R.C. race meeting, Brooklands.
- 11th to 16th.—A.C.U. Six-days Trial.

SEPTEMBER.

- 13th.—B.M.C.R.C. race meeting, Brooklands.
- 24th.—A.C.U. Autumn One-day Trial.
- 27th.—B.A.R.C. race meeting, Brooklands.

OCTOBER.

- 11th.—B.M.C.R.C. race meeting, Brooklands.

Club secretaries would oblige by forwarding the dates of other cyclecar events.

A TALE OF WOE.

The Troubles of an Amateur Builder, and the Delight of a Favoured Village

TRULY life would be exceedingly dull if all cyclecars were perfect; but it is becoming a question—though only when we are very wet and depressed—whether our own particular cyclecar is not a little *too* imperfect to be nice. We are not ashamed to admit—in fact, we are rather proud—that this particular machine is of our own design and construction, with the exception of the engine. Now there may be some esoteric influence exerted by amateur-built frames upon the power units they are asked to support, but whether this influence could have been the cause of the big-end bearings of our engine not being provided with some means whereby oil could be adequately afforded them, is rather an open question. This being so, it was not to be wondered at that before the cyclecar had run many miles it developed a conscientious and decided objection to run with any degree of certainty. The trouble developed in this wise. Late one night we were sauntering along the usual greased tramlines, when, without warning, the engine suddenly stopped, which caused the machine to slide along for 20 yards and us to dismount and prospect. Of course we imagined “something” had seized, but, on engaging the starting handle, found all free, the engine starting at once. We reached home without further trouble, but still a little mystified.

Synchronized Stoppages.

The following day, towards the close of the afternoon, we made rather a late start to keep an appointment some 60 miles away. The engine started up readily enough, but just as we were taking our seats it stopped with alarming suddenness. This dual operation of starting and taking our seats must have been repeated quite twenty times, and as on each occasion it was possible to turn the engine with its usual freedom by the handle, we did not suspect bearing trouble, but, instead, accused the carburetter of harbouring water, the petrol pipe of secreting dirt, and the harmless magneto of every imaginable evil. Then at last, to our delight and surprise, the engine showed a strong desire to continue, and we safely accomplished our 60-mile jaunt without a stop—in fact, we hardly dared to. However, we had kept our appointment, although rather late, and after a well-earned night's rest, rose to a very substantial breakfast—necessary as it transpired—and prepared to start again. There was no question about the quantity and quality of oil, but the engine followed exactly the same tactics as on the previous afternoon, starting at each pull over, and just as we were feeling elated, stopping dead.

On this occasion the entertainment was continued till the local rustics, village children and others, who should have been elsewhere, came to regard our efforts as a sort of cinematograph continuous performance. They would retire for a brief time for meals, returning with portions thereof to consume during the free exhibitions we were providing. The entertainment started at 9.30 in the morning and continued till 9.30 in the evening. Every possible part of the carburetter and magneto was examined and overhauled a dozen times, and everything, except taking the engine completely down, was done—cylinders off, two different carburetters tried, a score of different plugs, new carbon brushes, and everything we could possibly think of. It was most enjoyable—for the villagers. At 4.30 it began to rain, but the enthusi-

astic crowd produced umbrellas, and, to give them their due, offered us shelter. Feeling, as it were, in their debt, we endeavoured to improve the performance, but instead of our redoubled efforts producing the desired result, the entertainment suddenly came to a somewhat tragic conclusion, the engine resolutely refusing to turn at all. The audience could scarcely believe their eyes, for they seemed hardly to realize that the long entertainment was over, as we retired in search of a meal and a rest.

Whether it was enthusiasm, obstinacy or what you will, we were very soon at our job again. The news spread with wireless magic, lanterns were brought and dozens of small hands were soon helping to catch the shower of nuts, bolts, etc., which began to fly? By this time the children knew their parts thoroughly—those who held the different parts—and we proceeded apace. Of course, as we were now convinced as to what had happened—that the big end had seized—the mention of the word paraffin produced a supply that would have freed even a worse engine. Now it is a remarkable fact that, as we particularly wished to reach home at any rate before the next morning, the paraffin, aided by much muscular effort, did its work. We nearly smiled again, but the audience were so keen on assisting in the performance that it became rather difficult to select the particular part required from the dozen or so that were presented. However, all was soon nearly ready again, and the engine started with not only a roar, but—well, we are thinking of running on paraffin in future. We had not troubled to run the paraffin out, so for a good ten minutes it was allowed to burn out in the usual rather unpleasant way. Fortunately, there was no local fire-brigade, or we might have been “put out,” and the only section of the audience who exhibited any alarm were the members of the adjoining farmyards.

The Village Rejoices.

How those cows bellowed! The human element of the crowd regarded it as the transformation scene of the pantomime, a kind of grand finale, and cheered themselves hoarse. Presently we stopped the performance, and as the engine started again, first pull, we positively shrieked with delight, gave all the children pennies, stood the older folk their supper beer, and departed poorer but very happy men. All went well until within a few miles of home, when suddenly another stoppage occurred, but again the engine, apparently quite free, started easily, and we reached home successfully, if somewhat late. There was now no longer any mystery.

Once more the engine had to come completely down, and later in the week it did. Perhaps the verdict is that we were very inexperienced and very stupid not to have guessed the trouble at first—it is always so easy to diagnose other people's troubles and to see clearly when once you know—but read a little further and think us more hopeless still. Those bearings were all carefully cleaned, all the ways were cleared, and proper holes were drilled for big-end lubrication; but we foolishly left the main bearing with the cause of most of the trouble just as it was. True we knew of an engine of old with even a much shorter bearing which always had an oil-way along one of the crank case webs to reach the greater way down the bearing and also we knew of such things as oil scoops, ring and helical grooves, but still we blindly put the engine up again as it was. For a time it seemed a



IS IT AS BAD AS THIS?

New Enthusiast (proud owner of a diminutive hybrid cyclecar): "How do? old feller; come out and have a run, I've got the car outside."
Old Feller: "Car?—car, where?"

perfect order, and with more oil than petrol we again set out for a run the next week-end.

It was no wonder we were popular in that little village. They concluded on our appearance that we had come once again to cheer "the lonely winter of their discontent"—and we did not disappoint them! Exactly the same performance was presented, and they seemed to think we did it on purpose. The grand finale this time, however, was rather more dramatic, not to say tragic. All the paraffin in the village failed to appease the offended dignity of a seized-up solid main shaft, and the entertainment thus ended early, although some of the enthusiastic audience deemed it part of the show to escort us for three miles to the nearest telephone, when we rang up a good friend, the proud owner of a cyclecar, who promised to come over in the morning to tow us home.

Of course it was still raining in the morning, but our friend arrived on his cyclecar, skipping ropes were borrowed, and, with more cheers and pinafore waving, we proceeded slowly homewards. We can throw a little mud ourselves, but if a real genuine feast is wanted, try being inseparably connected at about 20 paces distant behind that cyclecar. What a journey it was! There were a few real hills on the way, and it was not to be expected that a cyclecar would carry its own passengers and tow two others on a fairly heavy chassis as well, without occasionally insisting on some assistance being given.

That night we discussed the position by the fireside in some small degree of comfort. We were now fairly certain that the main bearing was undoubtedly the trouble, and we determined to make a thorough job of it ourselves, so, later in the week, having recovered

our temper and spirits, we took that engine down once more, and one solid hour was fully occupied by three fairly hefty individuals in getting half of the crankcase off the shaft. The shaft was then smoothed up, and the bush skimmed out, a ring being turned out well towards the outer end. As the webs were rather too light to drill, we put a $\frac{1}{2}$ in. tube from the crankcase above the bush through the boss down to the ring. Further and deeper grooves were made, and by the time we had finished we were prepared to stake our lives upon the behaviour of that bearing in future. Never were bearings more carefully examined, every one of that engine receiving our most painstaking attention.

By the next week-end we were on the road once more, and for the first time in its brief existence that engine began to turn over. So far—true only a week or so—all goes well, and if nothing else happens we shall soon have another and brighter story to tell.

C. C. MILES.

An Indispensable Handbook.

All cyclecarists, particularly those whose motoring experiences are not varied or long, should have in their possession a copy of the "Cyclecar Manual," which sells at 1s. if bound in paper, or 1s. 6d. in cloth. The simplest language is used to describe and explain the various parts of a cyclecar, so that they can be understood by any novice. By keeping the Manual on the machine itself, any defect which may reveal itself when out on the road can be accurately diagnosed by referring to its pages. The last chapter, entitled "The Cyclecar and the Law," explains the regulations to be complied with.

"VETTING" A SECOND-HAND CYCLECAR.

Bad Points to Look Out For Before Purchasing.

It is hoped that these notes may prove useful to the prospective buyer of a second-hand cyclecar when he first sees the machine and listens to its praises sung by its owner. First, it is a good thing to try and find out the real reason why the car is for sale, since, if one believes all the aforesaid praises, it seems extraordinary that anyone should want to get rid of such a superlative machine. Then try and extract the year of manufacture, and how many miles running has been accomplished. After that a thorough inspection of all parts is necessary, and how to proceed in this last matter I will endeavour to explain as simply and as clearly as possible.

The Engine.

We will begin with the most important unit—the engine. Since most of the vitals of the engine are covered up, it is difficult to tell except on the road the condition of such parts as bearings, journals or pistons, but careful examination will reveal if there is much wear in the valve guides, tappets or other exposed parts. To test for play in valve stems and guides, try to pull and push the ends of the stems when each valve in turn is raised by its cam. Much looseness will cause trouble in the case of inlet valves by allowing air to be drawn through, so weakening the mixture. In the case of loose exhaust valves only slight extra noise can be caused. The tappets can also be tested in the same way, but since lubrication of these parts is usually fairly easy practically no play should be found. The space between the end of the valve stem and the tappet should not exceed about 1-32 in., and note should be taken at the same time if there is any method of taking up wear at this point. An exhaust valve may be removed, and an examination of its face and stem will indicate if it is made of proper material and not burnt by the exhaust being throttled or by too rich a mixture being used. It will be instructive to notice if the valve is easily removed or not, as it will be a job the new owner will have to perform occasionally. The valve having been replaced lubricating arrangements should be examined to see if they work properly, likewise the carburetter and magneto controls.

Turning now to the carburetter, see if any leakage of petrol takes place when the petrol tap is on, or whether the float chamber floods of itself without the float being depressed. If it does, it is a sign that the needle valve requires attention. Indications of damage to nuts or screws of the carburetter, or indeed of the whole machine, should be looked for, as thereby parts which frequently give trouble may be located with accuracy.

The magneto may usually be taken for granted, provided starting up is easy and misfires do not occur, though it is just as well to see if the spark is good when the engine is pulled over, by removing a plug. A fat blue spark shows all is well with the electrical arrangements, and the next point may be taken.

Now the engine may be started up, particular note being taken of the ease or otherwise of this operation. Much priming or flooding shows that the carburetter is not tuned up well. Once running, try how slow the engine will turn over, and whether it accelerates well on opening the throttle, and particularly if any knock occurs when picking up. A knock will show that a big end is loose, as pre-ignition should not occur as the engine has only just been started and could not have got too hot. The engine having been switched off, the compression of each cylinder should

be tried. To do this it is best to remove a plug from every cylinder except the one to be tested in turn, then there is no mistake as to which cylinder is on the compression stroke, and it is easy to hear if hissing comes from either the valve seat, valve cap, or into the crank chamber. The last is the worst, as it indicates the piston rings are faulty, or possibly that the cylinder walls are scored or worn oval. A little oil applied round the valve caps will instantly show by bubbles if the leak is taking place there. Each cylinder should have equal compression, indicated by the equal pull required to turn the crank in each case against the compression.

The radiator or fan, if any, next calls for attention. A cursory inspection will show if there are any leaks in the radiator either active or repaired. The fan bearing may be tested by shaking.

Transmission.

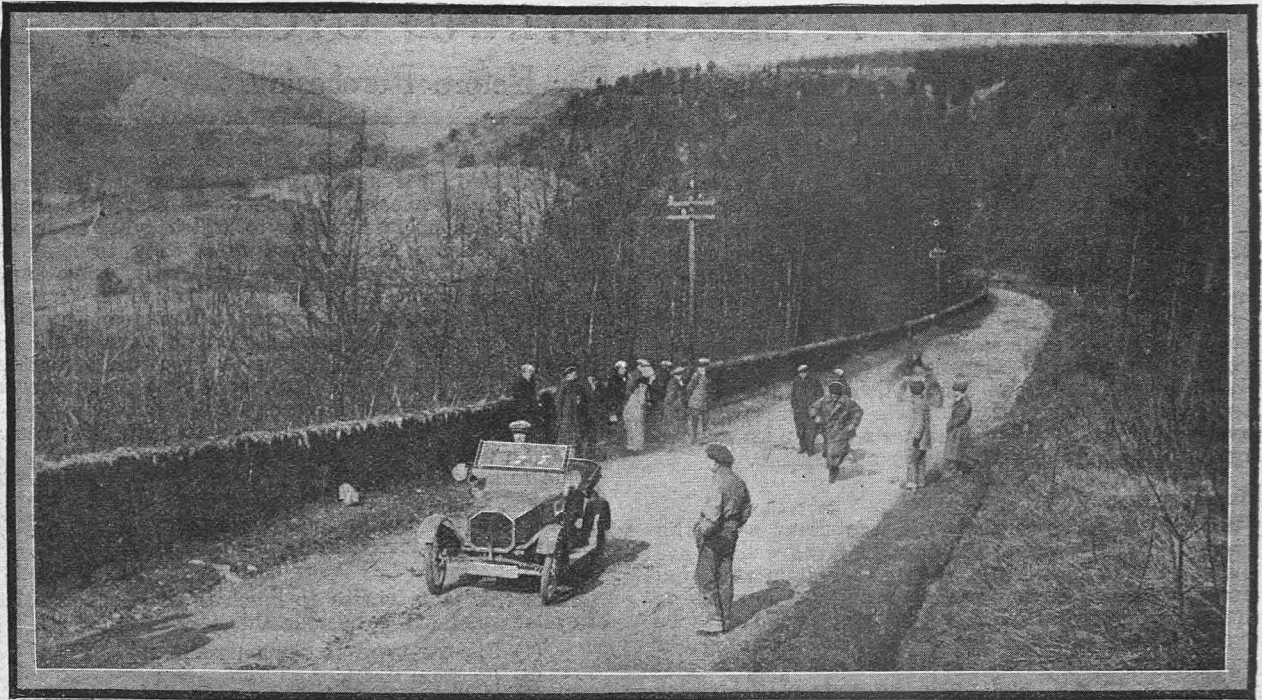
Since this item varies so much in different classes of cyclecars, I will subdivide this section into:—

- (1) Big car type of transmission.
- (2) Friction discs.
- (3) Belt transmission.

(1) In this class begin by having the gearbox cover removed, and also some grease from each gear wheel. By feeling the edges and faces of the teeth an estimate can be arrived at of the amount of running they have had, also of the skill of the driver in gear changing. All gears which slide into mesh have the edges of the teeth rounded off, but in cars which have had rough handling these edges are chipped and broken. The gearbox bearings may be tested by trying to shake the shafts; a small amount of end play does not matter, but other movement shows wear. The sliding member should be felt to see if it is loose on its feather or square shaft. The gear lever should be moved into each notch, and note taken if the gear wheels come opposite each other, as otherwise bad adjustment or wear has taken place in the rods and links of the gear-shifting mechanism.

The clutch should be withdrawn, and the leather or other surface inspected. The frictional surfaces may be burnt or glazed from continued slip. The universal joints next claim attention. Holding the brake drum behind the gearbox try and rotate the cardan shaft, when any appreciable wear in the joint pins will be apparent. The brake may be tested to see if it is hard on when the pedal is moved about one-third of its travel. Coming now to the back axle, the chief places of wear are in the bevel and crown pinions. A certain amount of backlash is always present, but it should not be possible to turn the propeller shaft more than about 15 degrees without turning the crown wheel. The back wheels may be jacked up and shaken transversely to make sure they are tight on the axle shafts, and that the latter are tight in the differential pinions. In plain bearings more play is usually allowed by the manufacturers intentionally.

(2) The chief places to look for wear in this form of drive are the faces of the friction discs. Flat places on the driven disc should be carefully looked for as this indicates both harsh running as an effect, and slip at starting as a cause—both serious objections. The final transmission is probably by chain or bevel gear. In the case of the first look at the chain wheels, if badly worn the teeth will be sharp-pointed. Shaking the shaft on which the disc slides will reveal any looseness in its bearings.



EXERCISE FOR THE PASSENGER.

Mr. Bamford's Humberette, which was a standard machine with standard gears, has to drop the passenger on Birdlip Hill in the Cyclecar Club trial. The unfortunate passenger may be observed running after the machine.

(3) The V grooves of the pulleys are the most probable place of wear. The sides should be flat and should form an angle of 28 degrees with each other. The belts themselves should be flexible, not perished and not cracked. If the pulleys are of the expanding type the loose part may be worn where it slides towards the fixed part.

The countershaft bearings are best tested by attempting to shake the shaft when the belts are removed or allowed to be in their slackest position.

Steering.

This being a mechanism on which the very life of the motorist depends should be put to a very careful scrutiny. Especially is this true in the case of cable steering. Any frayed wires should be looked upon with the greatest suspicion, and all shackle pins should be examined to make sure they are not dangerously worn. With rack-and-pinion steering, an idea of the wear may be got by the angle through which the steering wheel may be rotated before the road wheels move. This should not be more than about 10 degrees, or, say, 2 in. on the outside of the steering wheel before the front wheels move.

Since tyres can be renewed easily, wear on these should not weigh too heavily with the prospective buyer. Bad cuts and blisters should be noted, also cracks near the bead. The condition of the tubes must be taken at the word of the owner.

Too much attention must not be given to the condition of the paintwork, but doors, if any, should be tried to see if they shut easily and do not rattle. The screen, if one is fitted, should likewise be scrutinized, and the hood put up to allow holes and weak places in the fabric to be seen.

Extras, such as tools, spare parts, etc., should be examined, but do not buy an inferior car just because it has a nice set of tools or because several old tyres are thrown in. It is sometimes only the old trick of giving something away with a pound of tea.

The Trial Run.

The trial run is really not so important as some think if the foregoing examination has been thorough, though it should not be scamped. The run should be of fairly long duration, and preferably over roads well known to the would-be purchaser. By this means he can tell by the car's performances on hills, up which perhaps he has taken another cyclecar previously, the comparative powers of the two machines. A route comprising some hills of different kinds of gradient, say, one long ascent of slight gradient and one of as steep a gradient as can conveniently be found, will best reveal the weaknesses of the machine. A piece of bad road to test the springing, and a piece of flat straight to try the speed, where the police trouble not, will also be an advantage. Stopping and starting on a hill will often reveal weak spots. Perhaps the clutch is fierce and stops the engine, or the brake may not work to prevent the car running backwards on a steep gradient.

If the engine is air-cooled, special steps should be taken to make sure overheating and "conking" on hills are absent. To ascertain this a change up after running on low gear for some little time should be made; any tendency to overheat will be at once detected by the metallic "conk" given out by the engine. Loose big-ends or worn pistons will emit a different sound when the engine is picking up after running light on the level.

Tricks on the part of the driver should be watched for, as often a car can be made to run more sweetly by judicious clutch slipping or the like.

The purchaser should take the wheel himself for some time and try if all the controls work properly, and also if the driving position is comfortable.

Finally, do not decide in a hurry. One is able to come to a better decision after thinking things over than deciding on the spot, especially as the seller will naturally try to help one to decide in his favour.

G. L. COLOMB.

THOUGHTS AND OPINIONS.



*"The suggestions of to-day may
be the realities of to-morrow."*



THE VALUE OF COMPETITIONS.

The Futility of a Weight Limit.

May I be permitted to endorse the remarks of your contributor, "John Gilpin, Jr.," regarding the A.-C.U. regulations for cyclecars, and to go even a step further and suggest that a cyclecar be defined as "a three or four-wheeled machine (other than a bicycle and sidecar) with engine capacity of not more than 1100 c.c."? I believe that such a definition, which leaves the manufacturer free to build his machine exactly as he thinks best, would be more to the interests of the public than the present one. To fix an arbitrary maximum weight is tempting manufacturers to cut down parts, many of which are vital to the safety of the passengers. At the present time we have a definition which takes into consideration engine capacity and weight, the latter being that of the chassis unladen. Imagine the chaos at the beginning or end of a one-day trial if the judges insisted on having all the machines stripped of their bodies, mudguards, etc., their tanks emptied and the chassis weighed. With a large number of competitors this would be impossible; further, what private owner would be willing to have his paint damaged, as would inevitably occur? The object of a trial is surely to prove what a given car is capable of. This is what the public want to know. They can be left to themselves to say if the machine they think of buying comes up to their requirements in comfort, cleanliness and silence. With the stiff courses which are now the rule, a machine cannot be made very heavy, or it will be unable, with an engine of 1100 c.c., to average 20 m.p.h., and climb all hills; further, it must be strongly made if it is to compete in such events as the Scottish and English Six Days Trials with any hope of success. There is one thing which should, I think, be done in every trial, viz., that the gear ratios of all machines should be published and manufacturers should be made to run only similar machines

to those they are willing to sell to the public. Petrol consumption might also be published, for this could be easily checked by sealing all tanks at the start and only allowing an official to fill them at the luncheon stop, when he could measure the exact amount put in, the morning run being long enough to give a fair result.

CHANDOS W. JAMIESON.

London, W.

Cyclecar and Sidecar Competitions.

May we protest against the suggestion of your interesting contributor, "John Gilpin, Jr.," that THE CYCLECAR should cease to publish results of trials in which motorcycles and sidecars compete with cyclecars? Surely the cyclecar is not afraid of the sidecar. It is by converting the users of sidecars to the superior attraction of the cyclecar that the demand for cyclecars will grow. But how can we convert them unless we prove by competitive tests the superiority of the cyclecar?

MORGAN MOTOR CO., LTD.

Freak Hills and Low Gears.

The inclusion of freak hills in reliability trials has always appeared to me to be wrong. Some of these "pimples" are so steep, and their surfaces are in such a bad condition that the competitors are compelled to fit specially low gears, otherwise their chances of success would be nil. Now the ordinary private owner has no wish to go "mountaineering," hence the results of these trials give him very little help in his choice of a machine. What I suggest is this: All trials should be run over a course which does not include "freak" hills, and every competing machine should be absolutely standard, as sold to the public. Under these regulations these trials would be of some use to the public.

London, S.W.

P. C. MOONEY.



Making light of a stiff gradient. Mr. Bamford's Humberette on the Nailsworth "W," a Gloucestershire gradient.

THOUGHTS AND OPINIONS (contd.).

Awards in the One-day A.-C.U. Trial.

A very extraordinary and, to us, ridiculous decision has arisen from the awards made in the last One-day A.-C.U. Trial. As you are aware, a single-seated "passenger" (?) machine obtained a first-class certificate and silver medal. We do not begrudge the award in any way, but our own machine, which carried a passenger, made a non-stop also, but, in a moment of excitement, the passenger did not remain normally seated. The absurd part of this disqualification is that the secretary of the A.-C.U. informs us that "there is no doubt that if the A.-C. machine which made so creditable a performance in the One day Trial had not carried a passenger it would have been entitled to a certificate and a medal, which, I deem, is illogical and unfair to yourself." We think you will agree that we were unjustly treated.

Thames Ditton. AUTO-CARRIERS (1911) LTD.

"What Make Is It?"

Replying to Mr. John Plunket's inquiry as to the make of machine he saw, it was undoubtedly one of my Baby Peugeot demonstration cars, as the letter "V" is that allotted to me for my trade numbers in the county borough of Dublin. Some of his assumptions, such as the dummy radiator, are incorrect, and I hope to have the opportunity of putting him right on these points later on.

Dublin.

J. PULLAR PHIBBS.

Writ Sarcastic.

The "new motoring" is a pastime from which much actual profit may be made, as a study of advertisements will show. Thus: the first really genuine advertisement that caught my eye was an improved fool-proof carburetter, the use of which guaranteed the lucky investor a saving of at least 25 per cent. Accordingly, on it went; and the car seemed to run quite as well as before. The next, vouched for by two correspondents to a contemporary, advocated the use of camphor, to give the petrol a kind of "cocktail," thereby effecting a saving of another 20 per cent. One would have thought that the carburetter above referred to was the very last word in that direction; but no, another 50 per cent. could be obtained by the use of somebody or other's petrol saver jet. So in that went! A shock absorber (and, I suppose, weight-adder) next promised a paltry 10 per cent.; a foul-proof sparking plug another 15 per cent.; and a silencer still another 15 per cent.; and I am by no means sure that further gain in power and efficiency was not claimed for a map holder and a particular brand of waterproof clothing. There were numerous other devices of less modest pretensions; but perhaps what I have here set down will be sufficient to convince the most hard-headed and obtuse that the net saving in those I have enumerated must result, not in a loss, but in an actual gain of at least 35 per cent., which, reduced to plain language, means that your running expenses cost you nothing!

Horley.

RUNNING EXPENSES.



"Yes, sir, just as you come past 'e jumped right out at me a hiss'n' and a spittin' and a kickin' up a dust, but I tackled 'im properly with my spade and got the better of 'im, but 'e wore the toughest snake as ever I did see!"

DOES IT PAY TO BUILD A CYCLECAR ?

A Conversion at a Cost of £5.

It would be regrettable if "False Economy's" letter, in your issue of the 12th ult., should act as a deterrent to the great number of amateur cyclecar builders there must be up and down the country, especially those converting old tricars. I am at present engaged on a 1905 3½ h.p. Phoenix Trimo that has seen considerable service, and I consider that it will make a very satisfactory vehicle in its new form. The alterations include cutting out the bicycle frame, except the back forks and the bottom bracket, removing the forecar, putting the engine right forward in the frame between the front wheels, stiffening the frame by means of ash planks laid on the side tubes, staying the back wheel with two diagonal tubes, fitting tiller steering and providing a two-seater sociable body. The whole of this work, including rebor-ing the cylinder and a new piston, I expect will cost no more than £5, because I am doing practically everything myself. I have a very small workshop with an apology for a lathe and a few hand tools. I would not think of spending a lot of money on the job, but I know, when the machine is finished, it will be satisfactory, and it is to those in a similar position to myself that I should like to give a few words of encouragement. Of course, the job takes time; in fact, I have been about three months on mine, but I

have only the body to make now and the final fitting-up to do, so I expect in another two months to have it completed. If one buys the parts ready to assemble, as "False Economy" has found, it comes out more expensive than buying the complete vehicle.
London, S.W. DENBIGH COLLETT.

Made Everything Himself.

Referring to the letter on the subject of "Home-built Cyclecars," appearing in THE CYCLECAR recently, it might interest some readers to know that I have built a cyclecar for which I have not bought a lot of component parts like "False Economy," but have made everything, with the exception of the engine and wheels, which I purchased second-hand for a small sum. The frame is made of four ash battens, the body of sheet tin on a wooden frame with a scuttle dash, whilst the machine has chain drive from the engine to the home-made variable gear, and another chain to the live axle. The building of a cyclecar is a most interesting hobby, and is economical if done in the right way.
Scarborough. C.E.W.

[A machine assembled by an amateur, out of new component parts, is bound to be more expensive and less satisfactory than if it were bought complete, in our opinion.—ED. THE CYCLECAR.]

To Flood or Not to Flood.

In THE CYCLECAR of 19th March "LAG225" says with reference to starting up his A.-C. that a B. and B. adjustable jet carburetter should never be flooded. Now I use my A.-C. every day, and in cold weather can get the engine invariably to start on the second pull by flooding the carburetter. I have all the air ports covered with gauze, so am unable to see any harm.
P82.

Kingston-on-Thames.

A Machine's Identity Revealed

We notice in THE CYCLECAR of 12th March a photo. taken on the Epping Road, underneath which is the query, "What make of machine is this?" As a matter of fact, we built the machine to a customer's order over two years ago, and the particulars are as follow:—Ash frame, 4 h.p. water-cooled J.A.P. engine, two-speed Chater Lea gearbox, central chain drive, thermo-syphon cooling, starting handle connected direct to gearbox, and short change-speed lever just above. The body was hardly large enough to take two comfortably, although, as often as not, a passenger was carried. The original owner used the machine for several thousand miles, and on one occasion at least we know of its having taken a load of four adults along Brighton sea-front: two in the body, one standing on the back axle, and one sitting astride the bonnet.

THE CRIPPS CYCLE
AND MOTOR CO.
Forest Gate, E.

Heavy Spirit Experiences.

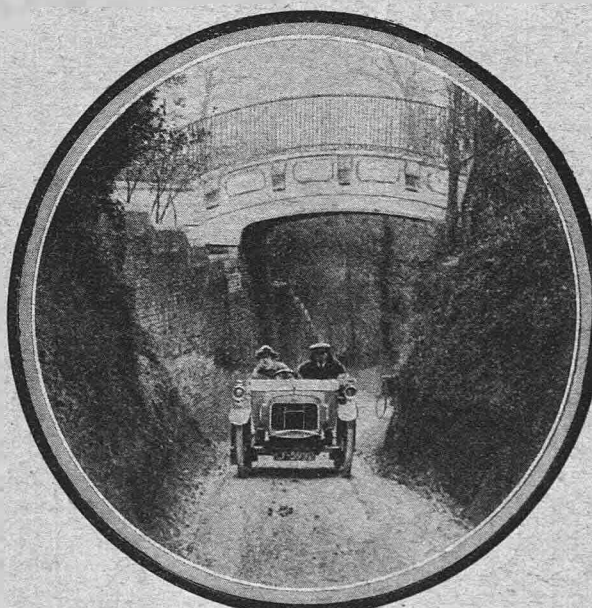
I should like to suggest, as an owner of an A.-C. three-seater, to other owners thereof, the use of Taxibus spirit. I have a B. and B. variable jet carburetter, and have found no change necessary when using the heavy spirit, which I have at present only tried experimentally, though with, it seems to me, a slight increase of power. The saving in price is, of course, considerable.
P. S. WHITE.

Kingston Hill.

Fitting a New Cover.

Difficulty is often experienced in fitting a new cover, by its slipping off the rim when it has once been placed in position. It is often uncertain whether the valve hole in the rim will coincide with the corresponding slots in the cover. To overcome these difficulties, keep a spare security bolt. Place the portion of one bead where the valve slot is situated on the rim in its proper position, and through the valve hole fit a security bolt, and tighten it up to its limit. This will hold the valve slot directly over the hole in the rim, and, at the same time, facilitate fitting the cover, as it will give a definite place to work round from. Once one bead has been placed in position, the security bolt should be taken out.
H.S.T.

Correspondents should write on one side of the paper only. All letters must be accompanied by the name and address of the sender, not necessarily for publication, but preference is given to signed letters.



In leafy Surrey. Bowler's Green Hill, a steep acclivity just off the Portsmouth road, near Hindhead, one of the observed hills in the recent A.-C.U. trial. The cyclecar is Miss Ellis's G.W.K.

NOTES AND QUERIES.

Selected Replies to Interesting Questions.

Readers are asked to write on one side of the paper only, and to use a separate slip for each question. All queries are answered by post, and a stamped addressed envelope for the reply should be enclosed.

THE question of cyclecar storage is an important one, and judging by the number of queries I receive on this subject it is evident that cyclecarists are not satisfied with the prices which they are charged for the garaging of their machines. Many ask, "What is the correct charge per night?" but it is impossible to give any definite reply, as the price varies in different places. Even in the same town it is generally found that no two garages have the same scale of charges. From personal experience, the average charge per day of 24 hours is about 9d., whilst for a week it is usually 3s. Even at these prices some cyclecarists would consider themselves overcharged, but there is only one remedy, which has been mentioned before in *THE CYCLECAR*, and that is to institute a scheme of co-operation. No doubt this is somewhat difficult at the present time, unless a cyclecarist has friends who are either motorcyclists or "new motorists," but in the course of time it is almost certain that there will be numerous cyclecar clubs throughout the country, and the members thereof will no doubt combine and rent suitable places in which to store their machines at materially reduced prices to those now charged.

* * *

SLOW RUNNING. WITH a motor-bicycle engine it is often a matter of considerable difficulty to make it run slowly, and as many amateur cyclecar builders use such engines in their machines they are confronted with the problem as to how to get the engine to tick over. The addition of an extra flywheel, as "E.L." (Kilburn) suggests, would certainly assist in making the engine run more slowly. In fact many cyclecar manufacturers adopt this practice, and the results obtained give every satisfaction. Of course, there may be, and probably are, engines the crankshafts of which would be unable to bear the extra strain thus imposed. The main engine bearings might also suffer, and wear at an excessive rate. Without resorting to these measures it is surprising how slow an engine can be made to run by careful tuning up of the carburetter and magneto, and it is in these directions that I would advise "E.L." to devote his energies, before attempting to add an extra flywheel. He might try fitting a pilot jet.

* * *

PILOT JETS. IT is always a matter of considerable annoyance if the engine stops in traffic, and a hasty dismount to start it becomes necessary. There are several ways of overcoming, or rather guarding against, this trouble. The simplest perhaps is to fit a stop for the throttle slide in the carburetter itself, or else to regulate the length of the controlling wire, so that a minute quantity of mixture can gain access to the cylinder when the lever is in the "off" position. Another method, which is certainly the most satisfactory, is to fit a pilot jet. As may be

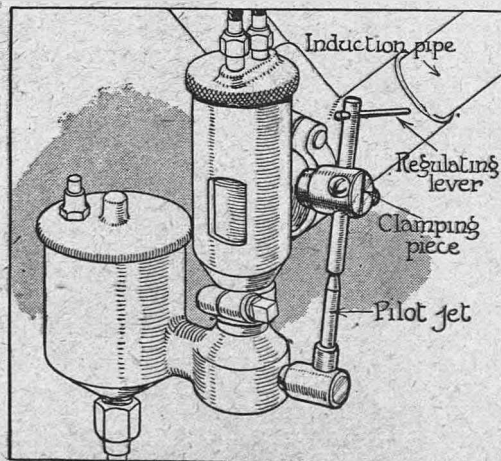
seen from the illustration of the G.N. pilot jet, a small jet is screwed into a suitable holder, which in turn is fixed into the bottom of the mixing chamber, so that the petrol in the float chamber has a clear passage to the auxiliary jet. Over the jet is placed a small tube, which can be rotated for the purpose of regulation by a lever, while it is held in position by a metal clamp which is fixed into the induction pipe. As this clamp is bored out, there is a free passage from the engine to the pilot jet, even if the throttle is completely closed. By regulating the size of the aperture between the induction pipe and the jet, by means of the small lever provided, it is possible to make the engine run so that it will just "tick over." It is undoubtedly a great convenience to be able to put both levers in the off position and at the same time to know that the engine will not stop.

ONE OR TWO LEVER CARBURETTERS? WITH petrol at 1s. 9d. a gallon, an economical carburetter is a necessity, and it is with this in view that "G.R.B." (Eastbourne) sends a query as to the respective merits of automatic and two-lever carburetters. In the hands of an expert two-lever carburetters give a very high standard of efficiency, which is due to the skilful handling of the levers, but if the driver be a novice I advise him to invest in an automatic vaporizer. With the latter, if it is adjusted properly, he will always be certain of getting a proper mixture, whilst the bad handling of a two-lever carburetter will often result in the engine receiving a non-explosive mixture which may bring the machine to a standstill. The automatic variety is probably the more difficult to adjust, but the various manufacturers supply instructions for "tuning" should it for some reason or other become necessary. As regards simplicity of construction the two-lever type is to be recommended, but for simplicity of control the automatic variety is difficult to beat.

* * *

ADJUSTMENTS FOR BENZOLE.

ALTHOUGH in some cases no alteration in the carburetter is necessary when running on benzole, yet it frequently happens that adjustments have to be effected in order to obtain the correct mixture and the best results. "R.J.F." (Campden) knows that he has to weight the float, but has no idea as to the extra amount that should be added. The simplest method of ascertaining this is to insert the float in a glass containing petrol, and to mark the depth to which it sinks. Then place it in another glass containing benzole and weight it until it sinks to the mark made when in the petrol. The amount of extra air is more a matter of experiment than of calculation, and a few hours spent in varying the size of the air port will soon result in the discovery of the quantity of air required, if the testing is carefully carried out on the road.



The pilot jet now fitted to the B. and B. carburetters on all G.N. cyclecars.

CROSS-COUNTRY COMMENTS.

Getting up the "Revs."—The Battle Between Air and Water Cooling— Prejudice Against Belt Drive.

THERE is a curious fascination in improving a machine and in tuning it up by various adjustments to give better results. Indeed, to many people the satisfaction of having increased the efficiency of their cyclecar and the time spent in attaining this end is an even greater pleasure than actually driving the machine on the road. This is the case with me; but, luckily, I have not anything like reached the limit of efficiency of which "The Jabberwock" is capable. I took the machine down to Brooklands the other day, removed the mudguards, which would otherwise have slowed me three miles an hour, and did several laps straight off the reel at 50 miles an hour. Seeing that the top gear ratio is as low as 4½-1, it seems that the 90 mm. by 77½ mm. J.A.P. engine is turning over at about 3000 revolutions a minute, which speed may, I think, be increased to 3500 by eliminating friction in the transmission system, fitting bigger inlet and exhaust ports and pipes, a larger carburetter and an oil lead direct to the front cylinder, which is liable to be starved of oil on the side-by-side valve J.A.P. engines, though on the overhead-valve type, I am told, it is the back cylinder that is inclined to be neglected in this respect. Having secured my "revs.," the next thing to do will be to experiment with gear ratios, and with this type of engine I do not think that anything above 4-1 will be an advantage. On a T.T. motor-bicycle I have proved conclusively that on the road I can obtain faster speeds with a 4½-1 gear than with either a 4-1 or 4¼-1, the trials being conducted with the help of a speedometer. With the 4-1 gear the machine is considerably slower than with the 4½-1, which is probably quite different to what most people would imagine. Of course, it is quite useless to carry out tests like this without timed tests, and, for that reason, the experiments on the Morgan will have to be conducted at Brooklands against the watch.

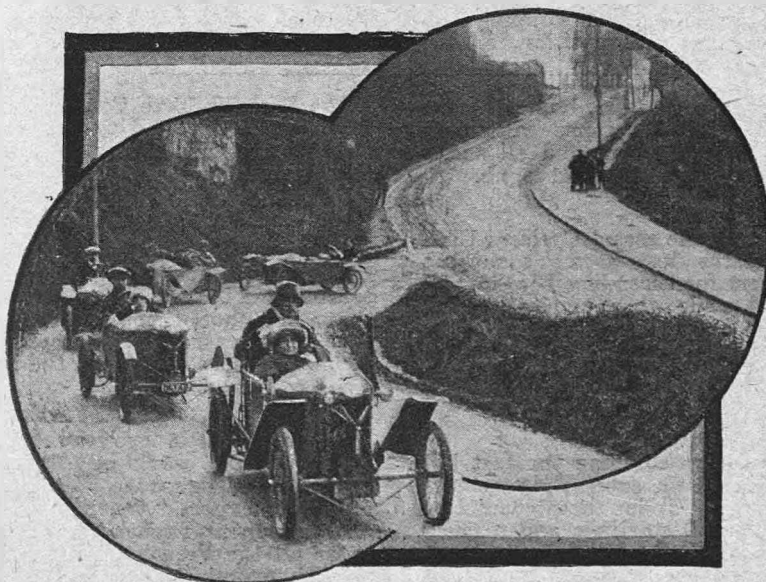
In the search for efficiency, there is going to be a tremendous struggle between air and water cooling. Those who saw the 100 miles cyclecar high-speed reliability trial at Brooklands last Saturday could not help being impressed by the simplicity and reliability of the water-cooling arrangements on Mr. Holder's Blumfield-Morgan. The additional weight did not appear worth considering, judging it by a comparison of this machine with the others of a similar make but employing air cooling. The radiator was fitted very snugly just

behind the engine, and was used in conjunction with the thermo-syphon system of cooling. Whether the radiator should be held rigidly on the frame or whether it should be pivoted or hinged in some manner is a matter for experiment with each machine. It is a very serious question, too, because if we are to experience constant trouble with leaking joints and cracked radiators, water cooling will not make much headway. In the Grand Prix cyclecar race, for which entries are coming in nicely, there will be several water-cooled machines, among them an 8 h.p. overhead-valve Precision, fitted in a well-known three-wheeler, to be driven by Mr. Jack Woodhouse. I may be wrong, but I think in a long road race I would prefer a well-run-in air-cooled engine, with its greater simplicity, rather than run the risk of trouble with a water-cooling system which, I admit, may be more efficient. At the same time, over the flying kilometre there is no reason why the air-cooled engine should not be as fast as that employing water cooling, for it is only in a long race that the superior stamina of the water-cooled engine should show up.

Whilst dealing with the question of air and water cooling, I cannot resist the temptation to criticise the manner in which the air-cooled engine is shut in in many machines. In many cases it is completely enclosed in an imitation of a car bonnet, whilst in others some attempt at cooling is obtained by allowing the cylinder heads to protrude through the side of the bonnet. Surely this is wrong. An air-cooled engine should be left exposed to the draught as much as possible. Sometimes, as the judges said in their report of the Cyclecar Club's Trial, it may even be advisable to fit a fan to assist cooling. Some makers already do this, and one I know who found his fan of such assistance that with it he could climb Porlock, and without it he could not. Naturally, these fans must not be of the gimcrack nature of those used in the early motorcycling days. They must be more on a

par with the fans used for cooling the radiators on cars, and, if properly designed and fitted, there is no reason why they should give any more trouble than these devices.

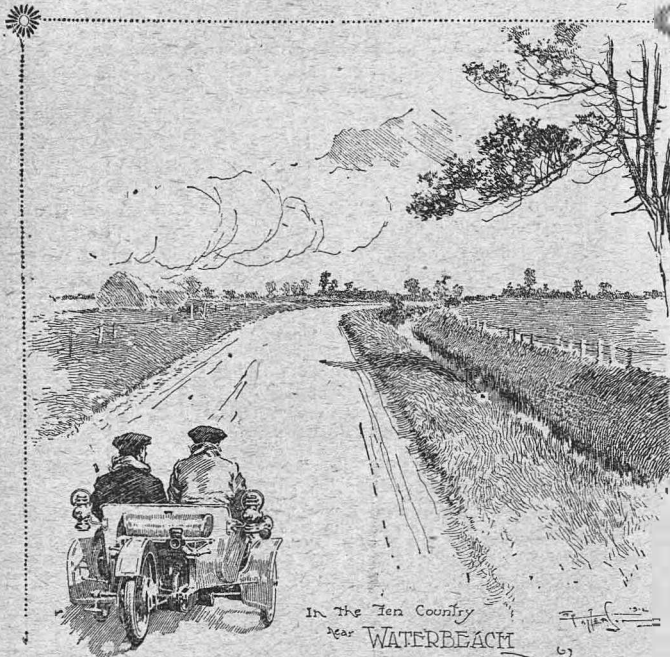
Motorbuses seem to be rendering most of the roads on which they operate almost unbearable for other road users. I cannot imagine anything much more unpleasant for a cyclecarist than to drive over the first 10 miles of the Bath Road from Hounslow. When I was last over this stretch, the road



A fleet of five Bedelias snapped in the environs of Paris.

CROSS-COUNTRY COMMENTS (contd.).

had been worked into a series of ripples and pot-holes. The softer parts evidently having been churned away when wet by heavy traffic, whilst the harder parts remained. It is quite an easy matter for the motorist to detect by feel alone the track of the motorbus. I was in Wiltshire a few months ago, and suddenly, in the midst of the hard flint and chalk roads, came upon a stretch in a most shocking state of neglect—so I thought. On inquiring the reason,



I was informed that some of the Great Western Railway's motorbuses frequented this section of road, hence its condition.

I was rather amused at the letter from Messrs. Auto-Carriers regarding the awards in the A.-C.U. One-day Spring Trial. They are dissatisfied because they have lost the highest award because a passenger on one of their excellent little three-wheelers attempted to prevent the rear wheel from slipping on a hill, and thereby left his normal position, as the

On Saturday afternoon, when a fairly high wind was blowing, a standard Duo fully equipped with mudguards, headlight, windscreen, hood, and all accessories and spares, completed two laps at 41 m.p.h.

A Curious Anomaly.

One of the competitors in the recent Cyclecar Club trial, whose total of marks lost seems somewhat abnormal, lost 98 of them for ascending Birdlip Hill too fast (speed 10 m.p.h.), while other competitors who failed altogether on the hill had only 10 marks deducted. As a matter of fact, most of the marks lost by the competitors can be accounted for by their speed up the test hills.

From a Standing Start.

We hear of many cyclecars climbing the test hill at Brooklands, but nearly all the successful machines have taken a running start. Under these conditions the performance is not at all startling, and a much better test would be to climb the hill from a standing start, or, better still, to restart on the 1 in 4 portion near the top. What machine will carry out the latter test first?

B38

A.-C.U. rules say. The fact that a monocarist, also driving a three-wheeler, was awarded top marks strikes them as illogical, because if the A.-C. had not carried a passenger it would also have won a medal. My point is this. The monocarist was situated in a worse position for preventing back wheel slip than the A.-C. passenger, whose combined weight should have had greater effect on the antics of the rear wheel than the weight of the driver of the mono. Which recalls to my mind the fact that, in cyclecar events, clubs had better state on the rules whether one or two persons must be carried. As everyone knows, the A.-C.U. definition of a cyclecar says nothing on this point.

Ever since I drove a G.N. 60 miles in the rain some 12 months ago, I had been friendly disposed towards belt drive for cyclecars when designed on correct lines. Those correct lines incorporate very large solid pulleys, very large belts and a good length of belt. Unfortunately, there still exists a prejudice against belt drive, a prejudice which is so strong that a manufacturer I know of who has experimented with a new model, with transmission as suggested above, is actually thinking of abandoning it owing to the prejudice against it existing in the public mind. It is a thousand pities, I admit, for the belt is so sweet and supple, so easily renewed and repaired, so clean to adjust and so cheap to make. Luckily, there is one way of converting the public, and if only some manufacturer would be bold enough to seize this opportunity he would have gone a long way in assisting the cause of the simple cyclecar. All he has to do is to enter in all reliability trials and races on a belt-driven cyclecar, designed on the correct lines, and come through with flying colours. If this fact were rammed home to the public, and the machine with double belt drive won a few reliability trials, the prejudice would soon die away. Unfortunately, so many competition drivers are careless in attending to the small details of their machines. They enter trials without taking the preliminary slip out of their belts; they do not even trouble to see that the pulleys are in line, or that the fasteners are new and correctly fitted. The inevitable stop occurs, the relentless reporter notes the cause, and the public say, "Belt drive again; I told you so!" One G.N. in last Saturday's trial had old tyres, and punctured, and the other new and unstretched belts, which of course required their first tightening; otherwise, either could have won.

The Michelin Tyre Co., of Fulham Road, London, S.W., would be glad to hear from readers of THE CYCLECAR of disfiguring wayside advertisements of their tyres.

Rollo Extensions.

We looked in at the new Rollo premises at Bradford Street, Birmingham, the other day, and found a scene of busy activity. The new works are very extensive, and the makers hope to have everything shipshape in a short time. Naturally, the output will be greatly increased, which is much to be desired, as, owing to numerous orders, the present works are not equal to the demand.

French Competitions.

An enthusiastic cyclecar driver, well known in cyclecar circles, would be pleased to act as passenger in the Grand Prix race. He speaks French fluently, and is an expert "tuner."

A prominent French competition rider desires to enter all the French trials in the interests of some English manufacturer.

We shall be pleased to put anyone interested in communication with either of the above gentlemen.