

The Cyclocar



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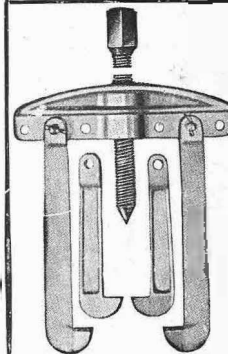
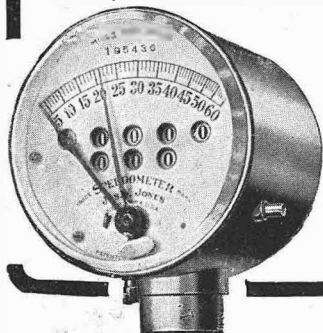
I may say that I have used practically every speedometer on the market, and I have found the "Jones" to be far and away the best, not only for the steadiness of the indicator, but also for the extreme accuracy with which it measures the mileage. I have found the trip simply invaluable for reliability trials, as I can reset the trip mileage to zero at every point on the route card, and in addition can cover every tenth in 18 secs, which in these days of secret checks galore is very often extremely necessary. I would strongly advise every motor-cyclist who contemplates competing in reliability trials, and who wishes to put up a good performance, to invest in a "Jones Trip," as no other speedometer will serve him so well.

(Signed) J. BROWNE,
Captain Dublin and Dist. M.C.C.

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MONOCAR OR MOTOR-BICYCLE?

Why Not a Single-seated Cyclecar for Those Who Want Cheap Motoring Without the Disadvantages of a Motor-bicycle?

TWO THOUSAND miles of winter driving on an 8 h.p. monocar has conveyed an idea of the great possibilities for this type of machine. During the winter months I have also covered a good many hundred miles on a motor-bicycle. This experience with two different types of machine catering for the same class of man makes possible some very interesting comparisons. Let me tackle the question, first of all, from the pleasure point of view. A motor-bicycle is hardly as comfortable to drive as a cyclecar, especially in bad weather or in traffic, whilst it has less protection from weather and is liable to sideslip. On a monocar, however, the driver can be completely protected against the elements, sits in a comfortable bucket seat, and drives by a steering wheel. For traffic work I infinitely prefer the monocar, on account of its increased stability and safety.

The advantages of the single-seated cyclecar are even more prominent from the point of view of the business or professional man. There is not the necessity to wear fantastic overalls; the driver need not present himself at his client's door covered in mud from head to foot; whilst he can take a good weight of samples with him on his journeys. It may be argued that a sidecarist could take an equal amount of samples on his machine, but, even granting this, he would be exposed to the elements. Amongst business men I feel sure there is a wonderful opening for the simple monocar, for there must be hundreds of commercial travellers using motor-bicycles who, during the winter

months, when their tasks are least enviable, must long for the protection, stability, and increased comfort such as the monocar would supply.

Few manufacturers consider it worth their while to list a monocar as yet, but it is notable that the number of single-seaters is being added to. There are now half-a-dozen at prices from £55. It is only seldom that one meets a man who shares the view that for the simple single-seater there is a great future. It may be that the craze for passenger-carrying has eclipsed the other idea, but those who advance the argument that it is quite an easy matter to construct a machine for two, if one is going to make a three or four-wheeler, overlook the fact that the single-seater pure and simple can be built lighter and cheaper than the two-seater and is quite a different proposition.

The monocar, as a type, is quite different from the duocar. There are many points in the design of a successful monocar that require attention. To compete with the motor-bicycle, the machine must be economical to run. Hence it must be light and of fairly low power. Yet it must be capable of averaging 20 m.p.h. Its luggage-carrying capacity must be better than it is on a motor-bicycle, and it must provide fair protection from the weather for the driver. It is an advantage to be able to start the engine whilst seated, and it would also be advisable to fit some kind of hand-reversing instrument for use on very rare occasions. The machine must be produced cheaply, and for that reason there are many who would favour the

MONOCAR OR MOTOR-BICYCLE (contd.).

three-wheeler which, if a quickly detachable and interchangeable wheel, such as that used on the Lea-Francis and Clyno motor-bicycles, were fitted, would be an important advantage. In practice, I have not found that three tracks have any serious drawbacks.

My suggested price is £75, and the specification is

as follows:—5-6 h.p., low-compression air-cooled twin engine, simple two-speed gear or friction drive, 2½ in. tyres with detachable and interchangeable wheels; simple type of shell-shaped body, with some accommodation for luggage and samples; total weight, 4 cwt. Such a machine should be run at a cost of less than that of a motor-bicycle and sidecar and very little more than that of a solo motor-bicycle. McM.

THE CALL OF
THE ROAD. . .THE JOTTINGS OF
JOHN GILPIN, JNR

—THE LIGHTING OF A CYCLECAR.—

WHEN the coupe and landaulet types of bodies for motorcars were introduced makers of side lamps found they were faced with a difficulty. The contour of the bodywork set up new and varying currents of air that prevented oil lamps from keeping alight. The difficulty, of course, has been overcome, and so, no doubt, will one that has arisen with regard to the tail lamps fitted to cyclecars. Whether it is because of the low build of the cyclecar, which brings the tail lamp near the ground, or merely due to the streamline form of the body, certain it is that on a number of cyclecars a tail lamp of the paraffin type will not keep alight. Now, paraffin is the most easily procurable fuel that can be found for lamps, for even a wayside cottage can usually supply a small quantity, sufficient to see the motorist home. Paraffin lamps have the further advantage of requiring very little attention, but if the design of the lamp, or the body of the cyclecar, prevents them being kept alight, the owner must look for some other source of illumination. I have had this difficulty more or less continuously—for on occasions the tail light has given no trouble at all—and have had at length, somewhat reluctantly, to abandon paraffin altogether. I have tried three different types of well-known tail lamps without success. The first I smashed, and parted with it without regret, buying as a replacement one that promised

to resist any form of air current, and designed not to go out through jolting. It was rather worse than the first. Even a backfire in the silencer would extinguish it. As a final resource I borrowed a lamp supposed to be the last word in tail-lamp design, and it fared no better than the others. Sometimes they would keep alight for long periods and at all speeds; at other times every jolt would extinguish them. The difficulty in my case is enhanced by carrying a spare wheel on the back of the body, the effect of which is to increase the dust raised by the machine and to augment draughts that affect the lamp.

The alternatives were an electric or an acetylene tail lamp, and although I am not conveniently situated for recharging accumulators, I decided to try the former. If one is going to carry accumulators there is no reason, except the not very heavy additional expense, why a complete set with side lights should not be fitted, and this I have done with the most satisfactory results.

The lamps selected were Rotax Torpedo type (No. 203), their neat and clean appearance being particularly attractive, especially to enthusiastic owners, who usually polish their brasswork themselves. A set of three lamps, two accumulators, teak accumulator box, complete with wires and switches, costs rather less than £5, which is a moderate outlay for a well-finished, solidly-constructed lighting equipment.



"John Gilpin, Jr.'s" "Garrulous Signpost" on Newlands Corner, Surrey, referred to in his notes last week. The upper arm points a road to Albury, "impassable to motorists," and the lower one indicates a route to St. Martha's Chapel, as merely a "green track."

THE CALL OF THE ROAD (contd.).

They are a distinct ornament to the machine, and give a surprisingly good light, almost equal to acetylene, and the relief from tail lamp worries is something every cyclecarist can appreciate. Not being able to get an accumulator charged at a moment's notice I carry two, so that when one gives out it is an easy matter to switch on to the other. The accumulator box has been placed on the running boards and the switches on the box, at a point easily reached from the passenger's seat. The side lamps are carried on the dash, and the pair of Solar acetylene headlamps that complete my lighting outfit are extended to a much more favourable position above the front mudguards, carried on a cross-bar riveted on the mud-guard stays. The accompanying photo. will give an idea of the arrangement, which was suggested and carried out by Messrs. G. N. Higgs. The electric lamps are raised above the usual position, so as not to cast shadows of the headlamps on the road.

Powerful lights are absolutely necessary for night driving, and always will be until there is a guarantee that every object on the road, be it a dog, a

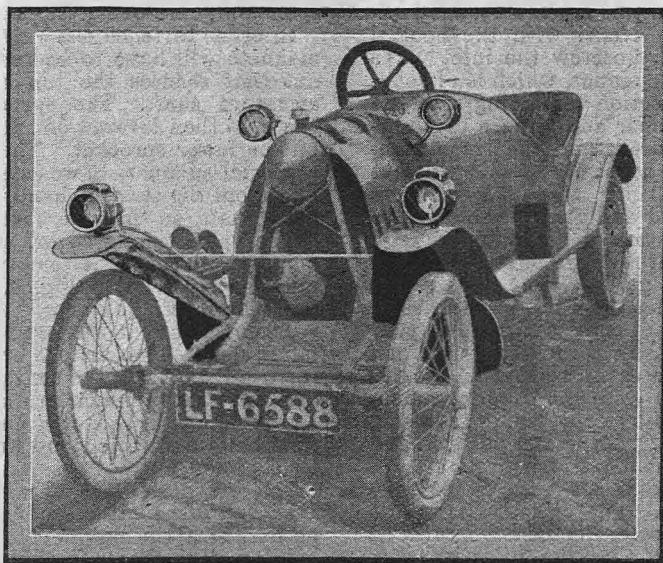
pedestrian, a cyclist, or a road-mending obstruction, is adequately lighted. With good lamps it does not matter a "tinker's cuss" whether any other user of the road is lighted or not. Tail lamps on cycles or carts I usually find give more trouble to the overtaking driver than would be experienced if they were not so lighted, for it is not easy to determine the width and position of a cart, or to discriminate between a cycle and a wider vehicle, when a single rear light is used. The objection to powerful lights is that when meeting them the rays are absolutely blinding, especially for the cyclecarist, who sits low down and gets the full effect of headlamps on cars. If some simple, cheap, and effective method of "dowsing the glim" when another vehicle approached could be hit upon it would get over this difficulty, but the additional expense is a factor that outweighs other considerations. Swivelling lights that turn their beams in the direction of the travel of the machine (as when rounding a corner) would be a great convenience, and although they are alleged to be contrary to the law this is a moot point, and one that could be safely ignored.

One reason that good lamps are essential for cyclecars is that any speed above 10 miles an hour with the comparatively poor illumination afforded by paraffin is positively dangerous. Further, with an air-cooled engine 10 miles an hour usually means travelling on low gear, which, for long distances, is not particularly

good for the engine. This is a point where a water-cooled cyclecar has a distinct advantage, as is the case for driving in traffic, providing the cooling system is really efficient—which it certainly is not on some water-cooled cyclecars. Given an efficiently cooled engine, however, it is possible to proceed at a crawl through dense traffic for long distances without the engine overheating and the plugs sooting or oiling up. Much depends upon the carburetter, however.

Mr. Frank Thomas has made some interesting experiments with headlamps. The best results were obtained by rigging up a bracket behind the seats, high above the heads of passenger and driver. The

beam was projected on the road just in front of the machine, and there were no back rays to dazzle and confuse the driver. Such an arrangement soon had to be abandoned, however, for, as can be imagined, its appearance was too unusual. Now he carries a headlamp above the petrol tank, as does a member of our staff. The result is a fair compromise, although the position of the lamp is too close to the petrol tank to be called ideal, and to some extent interferes with the driver's vision. It is not easy to arrange the position of the lamps satisfactorily on a cyclecar, and it would



The lighting of a cyclecar. Rotax electric side lamps and Solar headlamps. See the accompanying notes.

be interesting to hear the results of experiments in this direction made by readers. I notice that Mr. Nash on his machine has found an excellent place for the headlight bracket: just in front of the torpedo bonnet, between the wheels.

A 4-volt 40-ampere hour (full rating) accumulator should light three 4-volt lamps of the usual small size for 10 hours, after having been recharged several times, when its maximum capacity will be reached. If two accumulators are carried, there is no particular advantage in coupling them together, except the longer duration of the light, thus avoiding the necessity for connecting up the spare accumulator on all-night driving, unless light for 8-volt lamps is required. For 4-volt lamps the free negative terminals of each 4-volt accumulator must be coupled to each other, and the two positive terminals together. For 8-volt lamps the negative terminal of one accumulator is coupled to the positive of the other.

The ideal lighting equipment would be from a dynamo set, with two 8-volt headlamps, two 4-volt side lamps and a tail light. Without the accumulators to worry about, the only disadvantage of electric lighting would be overcome; but there are few cyclecars that can spare the power to drive a dynamo, there are not many machines in which space could be found for installing it, and the expense is an item that only few could bear.

JOHN GILPIN, JNR.

HOW TO DISMANTLE AN ENGINE.

A Simple Task when the Correct Sequence of Operation is Followed.

(See Illustrations on Page 541.)

THE dismantling of an engine to its component parts looks a somewhat difficult task, but in reality it is comparatively simple. The illustrations show a 10 h.p. J.A.P. cyclecar engine.

We will suppose that the engine has been removed from the frame and placed on a bench to be disassembled (Fig. 1). The first step to take is to disconnect the carburetter, and this is done by unscrewing the inlet pipe unions. Next, with the special spanner generally provided, unscrew the inlet valve locking rings. If the special spanner, which is of semi-circular shape, with a projection for fitting into the slots, is not to hand, a hammer and a piece of blunted metal must be procured, and the rings hammered round. Do not use a chisel, as this will cut away the shoulders of the ring. In Fig. 2 we have the carburetter disconnected and also the inlet valve domes detached from the heads of the cylinder.

The long inlet valve tappet rods are next abstracted by lifting them out of their guides. The inlet valves are removed by simply lifting them out of their seating. If, however, they do not come out readily, pour a little petrol on them, and, by pulling to and fro on the valve stem, they will be easily removed. If it is desired to remove the valve from the cage for grinding-in purposes, this is done by depressing the spring and removing the cotter pin. A valve in position and disassembled into its component parts is shown.

Having removed the inlets, the next step is to remove the exhaust valves. The easiest way to do this will be to procure a special implement known as an exhaust valve extractor. Failing this, insert a screwdriver between the last two radiating fins and, holding down the valve, lever the spring up by lifting under the cotter. The cotter pin is then withdrawn and the valve drawn out of the top of the cylinder.

The next step is to remove the cylinders. All that has to be done is to unscrew the four holding-down nuts situated at the base of each cylinder. Each cylinder is then lifted off, exposing the pistons and connecting rods together with the piston rings.

The exhaust valve tappets are next withdrawn and the sparking plugs unscrewed (Fig. 4). The gudgeon pins are then knocked out. This is done by abstract-

ing the locking wire and unscrewing the locking screw (through which the wire runs). This screw fits into a depression of the gudgeon pin and prevents it moving. The piston rings are next taken off by inserting a thin piece of steel between the ends of the rings, lifting one end out of the groove, and running the steel slip round the piston, when the ring will spring off, care being taken not to snap the ring.

In order to reach the valve timing mechanism, the magneto will have to be removed by unscrewing the nut that secures the top sprocket to the magneto armature shaft. The sprocket, together with the chain, is then levered off, and the chain can be lifted off the lower sprocket. This is then unscrewed with a special spanner, there being no locking nut. Next knock out the starting handle pin running through the main shaft, so that the cover plate may be removed.

The valve timing cover, which is integral with the magneto platform, is removed by undoing the fixing nuts clearly seen in Fig. 4. The magneto platform and valve timing cover will then come away complete.

The magneto is removed by unscrewing the four fixing nuts. The contact breaker cover and ring are removed, exposing the contact breaker. The exhaust and inlet cams, which are situated on either side of the pinion, and rocker arms are withdrawn, the engine bolts unscrewed and knocked out, and the half-time pinion unscrewed. The crankcase can then be divided, exposing the fly-wheels and connecting rods.

In Fig. 6 the valve timing mechanism is shown, together with the engine bolts. The grooves cut for leading oil to the main shaft can be seen, also the oil holes drilled through the little ends of the connecting rods, which ensure lubrication of the gudgeon pins.

In Fig. 7 the locking screw for the crank pin, on which the connecting rods work, is shown, together with its little locking screw. The latter is first unscrewed and then the crank pin nut. The fly-wheels can then be divided and the connecting rods drawn off the crank pin, together with the big-end bearings.

The engine has now been reduced to its component parts, the whole collection of which will be seen in the photographs. The dismantling of an engine is thus a comparatively simple operation.

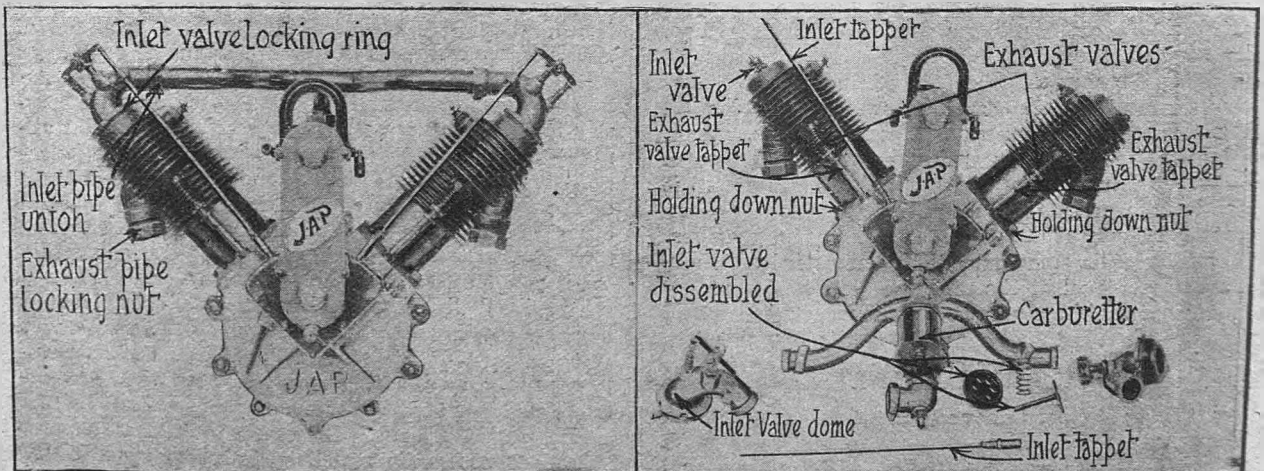


Fig. 1.—A 90 degrees J.A.P. engine before dismantling.

Fig. 2.—Showing the inlet pipes and valves dismantled.

HOW TO DISMANTLE AN ENGINE. (See Description on Page 540.)

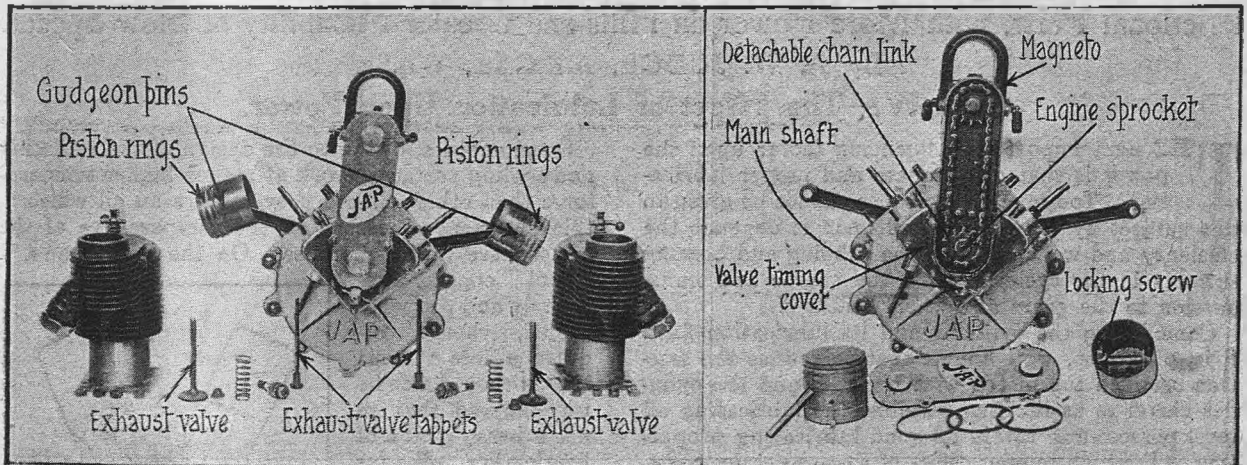


Fig. 3.—A further stage—the cylinders detached.

Fig. 4.—The magneto chain exposed and pistons removed.

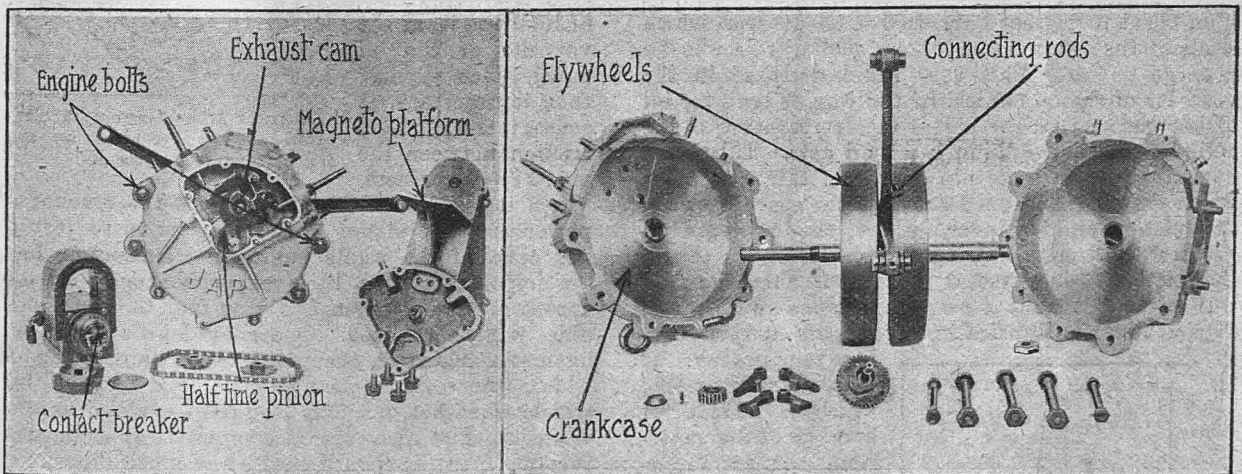
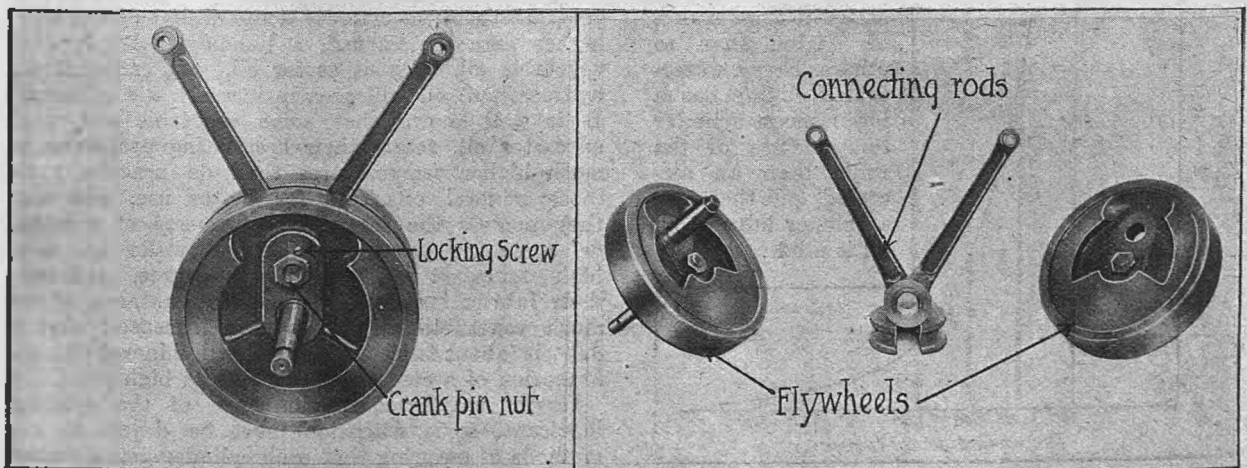


Fig. 5.—The timing gear exposed.

Fig. 6.—The crank-case and flywheels.



Figs. 7 and 8.—The flywheels, connecting rods, etc.

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 IV.—The Effect of Lubrication Upon Power.

THE next important influencing factor upon the power is that of adequate and proper lubrication. Too much importance cannot be given to this subject by the owner, and upon it depends the efficiency and wear of all of the rubbing and bearing surfaces in the cyclecar, from the engine and transmission to the gears and wheel bearings.

Considering the cylinder and its lubrication first, it is, of course, well known that to reduce the friction between the pistoa with its rings and the cylinder barrel to as little as possible, the lubricating oil must possess and retain its good lubricating properties at the high temperatures of these working parts.

If the reader will refer to Diagram 17, in which the viscosity of lubricating oil is represented by the height of the vertical lines at the temperatures stated, he will notice that the viscosity of this mineral oil falls from 146 at 70 degrees Fahr. to 6 at 180 degrees, which is about the temperature of the cooling water in an average engine. This very rapid decrease in the viscosity of the oil (which, by the way, is true for all makes) means that the higher the temperature of the cylinder walls, the thinner the oil gets. This is an advantage up to a certain degree of thinness, after which the oil is squeezed out from the space between the piston and cylinder, where the pressure is greatest, and metallic rubbing occurs, which causes the friction to increase as much as 20 times its normal value. Hence it is necessary to use an oil which does not lose its lubricating properties at the working

temperature of the cylinder walls, which is a kind of average of the explosion, exhaust, induction and compression temperatures. This is the reason why some oils are better suited to some makes of engine than to others. Thus a water-cooled engine has a lower mean cylinder temperature of the walls than an air-cooled, and therefore a thinner lubricating oil is used.

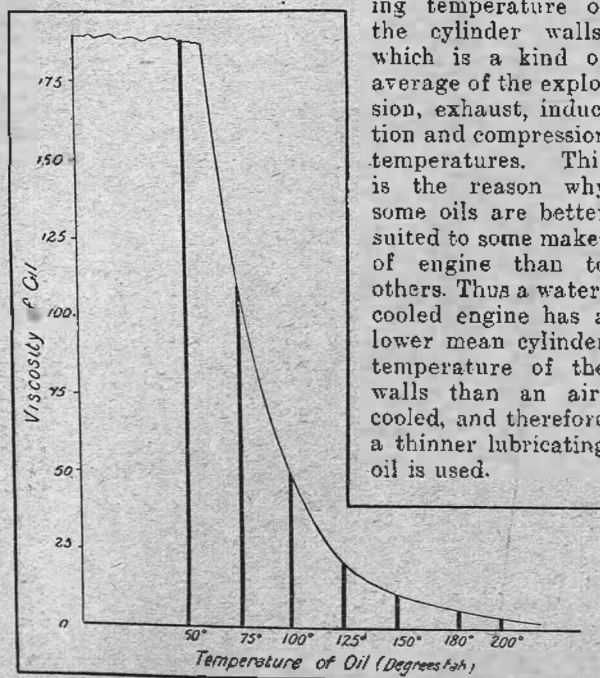


Diagram 17.—How the viscosity of mineral lubricating oil falls off with temperature rise.

Some engines, owing to the design of the radiating and cooling surfaces, work at rather higher temperatures than others, hence they require an oil which is thicker or more viscous at the temperature of the atmosphere than otherwise. On the other hand, a "cool" engine, adequately and properly cooled, should require a less viscous oil. It should also be remembered that to use a heavy grade of lubricating oil for the cylinder will often cause the power lost by friction to increase, instead of lowering it, as the viscosity of the oil being much greater than is necessary, it causes increased fluid friction between the working surfaces.

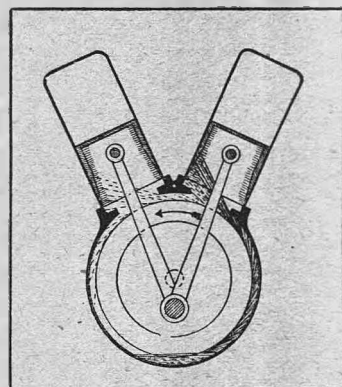


Diagram 18.—Unequal lubrication of the cylinders on the splash system.

When it is further mentioned that the amount of power lost by piston friction amounts to just 50 per cent. of the whole engine friction power loss, the importance of a little experimenting with different grades of oil in order to find the most suitable, will be realized. One should be safeguarded against using some cheap brands of lubricating oil which, when cold, appear to have good "body," but which, when hot, not only lose their useful degree of viscosity, but also are decomposed or "burnt," forming heavy carbon deposits and much dilution of the charge in the cylinder, owing to the oil on the walls distilling and "cracking" all the time the operations are being performed. For those engines which work at high speeds and compressions, and generally those the cylinder temperatures of which are higher than the normal, a judicious mixture of a vegetable oil, such as castor oil, and mineral (or hydrocarbon) oil will greatly increase the efficiency. It is well known that some vegetable oils, such as castor oil, retain their lubricating properties at much higher temperatures than do practically all those mineral oils sold for motor use, and also they possess the remarkable property of creeping or spreading over the cylinder walls at these high temperatures, which, of course, enhances their lubricating value. The disadvantages of too much vegetable oil lie in the increased carbon deposit (about twice as much as with mineral oil), the formation of a corrosive acid, and its high price.

Having mentioned the influence of the cylinder lubricant, some attention must be drawn to the methods of ensuring that each cylinder gets as much oil, and sufficient, as any other cylinder, and my remarks will be chiefly confined to the more unfortunate

OBTAINING INCREASED POWER (contd.).

case of the air-cooled engine. Taking the typical case of a twin-cylinder with internal flywheels, the usual method of lubrication is to allow the flywheel to dip into the freshly-pumped-in oil in the lowest part of crankcase, and to carry some of this oil around, flinging it as it rotates tangentially.

It is evident from the simple diagram (Diagram 18) that the greatest amount of oil is flung off to the rear cylinder slot, and that a considerably smaller quantity finds its way into the front cylinder, and then usually only on to one side of the cylinder, which, unfortunately, happens to be the wrong side, as the greatest thrust occurs on the opposite side. This very unequal degree of lubrication means one of two evils, viz., that either it is necessary considerably to over-oil the back cylinder in order that the front one gets just sufficient, or that the front one is starved. The writer recently made some tests upon a cyclecar type of air-cooled twin, and, after about 1000 miles running with liberal lubrication, but not so much as to cause a smoky exhaust, examined the pistons and cylinders. The back piston had 3.6 grams of car-

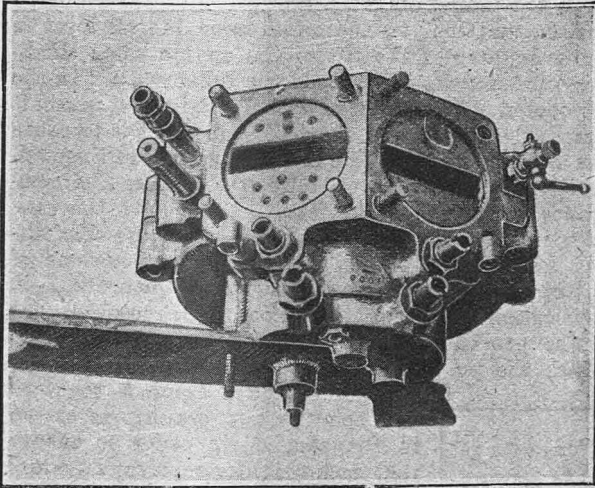


Diagram 19.—Method of enlarging effective area of front baffle plates to ensure equal cylinder lubrication.

bon upon it, whilst the front had only 1.2 grams, and, further, the side of greatest piston thrust on the latter had very little carbon at all on it. The cylinders themselves had very nearly the same proportions of carbon deposit, which goes to show that, roughly speaking, the back cylinder had over three times more oil than the front. In order to obviate a similar occurrence, the front baffle plates on the crankcase were drilled so that the oil from the flywheel rims could pass through, and the piston on the front cylinder had a few holes (countersunk on each side) drilled in the side upon which the oil was most required. The net result was a greatly reduced oil consumption and equal lubrication.

A sure sign of unequal cylinder lubrication in new engines, and in those in which other things are the same, is in the difference between the compressions when hot of the two cylinders (or more), for it is important to remember that the compression greatly depends upon the quantity and quality of the oil on the walls of the engine cylinders.

The photographs in Diagrams 19 and 20 show the methods of enlarging the effective area of the front baffle plate and drilling the piston. It must be, of course, remembered by those who adopt this effective expedient that the piston must only be drilled below the lowest ring and in the thinnest part, where its strength is unaffected by the removal of the metal.

Another method of improving the lubrication of a V-type twin is: to introduce the lubricating oil into

the bottom of the cylinder between it and the crankcase, somewhat as shown in Diagram 21, so that the oil first lubricates the front cylinder, and at the same time is also supplied to the crankcase sump or bottom.

Next in consideration comes the lubrication of the bearings, which is equally important with the foregoing. First let

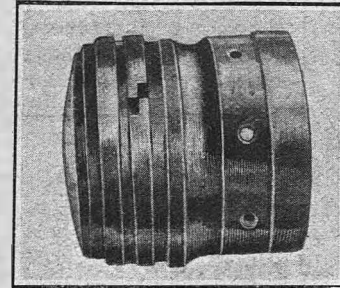


Diagram 20.—Photograph of oil holes in front piston, placed there to ensure better lubrication.

us consider exactly what happens when a shaft rotates in a bearing and is well lubricated.

Referring to Diagram 22, it will be seen that the oil forms a film between the shaft and its bearing, and that where the shaft presses most upon the bearing, the thickness of the oil film is least, and this film is thickest at the place of least pressure. From this and experiments we are led to the following practical conclusions, viz., that the nature of the lubricant be such that it is not too "thin," or lacking in viscosity to be squeezed out, as, when the pressure breaks this oil film, the metallic surfaces touch, and a kind of welding occurs which results in "seizing," or in small particles of the metal being torn out and carried around, the friction increasing as much as 50 times its previous value. Next, in all bearings see that the oil holes are drilled in the place where the pressure is least (or oil film thickest), as, when the holes are drilled at the place of greatest pressure (as upon the top of the connecting rod nearest the piston), the oil film is broken and the oil squeezed into the hole, and tests have shown that the frictional loss of power goes up by over 30 per cent.

The wearing or rubbing surfaces must be finished off as smoothly as possible for minimum of friction, because, should any of the shafts become "scored," the friction goes up very considerably, and only grinding up the pins or shafts and fitting new bearings will remedy this. Other important

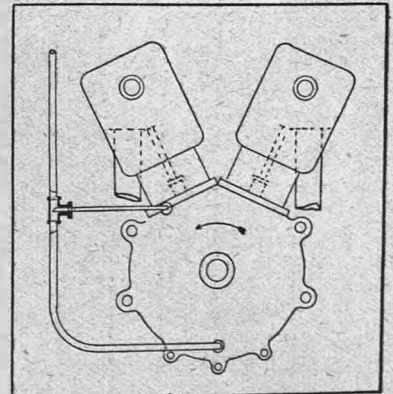


Diagram 21.—Simple method of ensuring more equal cylinder lubrication on the splash system.

OBTAINING INCREASED POWER (contd.).

precautions to be taken are to see that the oil grooves are sufficient, in the proper place, and free from grit and quite clear, and also to keep the interior of the crankcase and lubricating oil as clean as possible, the former by an occasional flushing out with paraffin.

If any particles of carbon, dust, or metal become introduced into the oil, these quickly find their

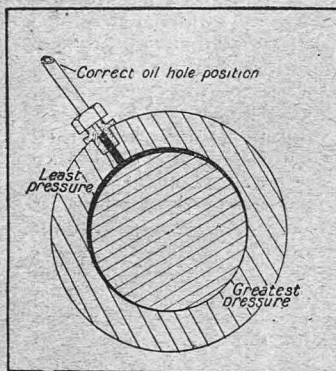


Diagram 22.—How the thickness of the oil film depends upon the pressure.

way into the bearings and become embedded in the softer material, and act like small grindstones upon the harder, besides destroying the oil film which is always necessary for lubrication.

It is quite possible to maintain a bearing unworn appreciably for years if attention be given to these points, and to approach the efficiency of properly designed and lubricated ball bearings. A useful hint is to cut away slightly the material of the bearing at the places of least pressure, as shown, in the case of uniformly rotating shafts, etc., in the main bearings, countershafts, etc. Engineering practice has shown that the friction and wear are both much decreased by this process, which is illustrated in Diagram 23—in some cases where the introduction of an oil pad of some absorbent and soft substance is permissible, a very great decrease of friction occurs. Introduction of the oil under pressure, of course, is a great asset, as the oil film is maintained much better without fear of breaking, and the provision of an adequate and regular supply is essential, so that automatic lubrication is very desirable, and will often prove very valuable in cases where the personal element is relied upon for attention to the lubrication.

If attention be paid to the essential points considered, a very great reduction in the power lost by friction can be made, in those cases where otherwise insufficient attention is given. It should be also mentioned that a little attention is well repaid in examining all oil holes and grooves, for the whole of the bearings on a cyclecar, and seeing that these are quite free from deleterious matter. A thin oil is suited best to ball bearings and where the pressures are comparatively small, and heavy oils and grease to places of great pressure, such as

the gearbox and rear axle bearings, for the heavier lubricants withstand heavier pressures without squeezing out, and vice versa.

In the case of the bearings inside the crankcase, of course, a kind of compromise has to be adopted, as the thick oil suited to cylinder lubrication is not the best by any means for, say, the ball bearings, or, again, the timing wheels would prefer a thicker lubricant than the main crankshaft bearing.

The cooling of the lubricating oil is also a necessary feature if its lubricating value for all the parts is desired, so that in cases where the oil is circulated by means of some form of pump, the inclusion in the oil-pipe circuit of an oil-cooling reservoir will be beneficial. Residue oil in the crankcase and sump becomes thicker as time goes on, and gradually loses its lubricating value, being chiefly composed of the heavier oil constituents not vaporized and carbon particles, so that, as mentioned earlier, this must be periodically cleaned out and the oil renewed.

The subject of lubrication and its bearing upon the power is a large one, and volumes could be written without exhausting it, so that the more important features only have been here considered. Perhaps one more point will be of interest to cyclecarists, and that is, the effect upon the oil level in the crankcase of the tilt of the engine when climbing hills, and its effect upon the lubrication. In the air-cooled V twin, placed with its axis of crankshaft across the frame, the effect of such a tilt is to cause the back cylinder, which is slightly less well cooled, to obtain much more oil than it requires, a circumstance which cannot be much helped. In the case of a side-by-side twin water-cooled engine this tilting causes all of the oil to flow towards one end of the crankcase, as shown in Diagram 24, hence uneven lubrication will occur when most oil is required.

The provision in the crankcase of a sump from which the pump draws of course obviates this defect, otherwise a baffle is required between the two cranks, as shown in Diagram 25, in order to ensure that each cylinder receives an equal degree of lubricant.

In the case of V-type twins, placed with their crankshafts parallel with the length of the car, the effect of climbing a hill upon the oil level is to cause the flywheel or crank nearest the rear of the car to perform most or all of the oil-splashing

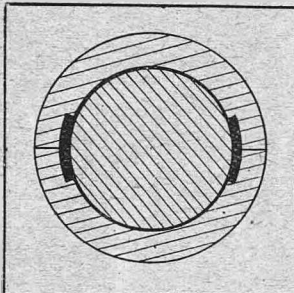


Diagram 23.—Improvement of bearing by cutting away sides as shown in the section.

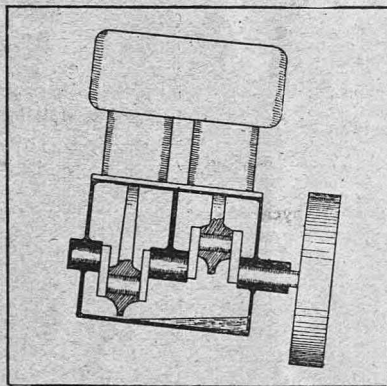


Diagram 24.—Effect of tilt of engine upon oil level, with no baffle plates.

process, so that only that proportion of the cylinders on the side nearest the rear receives a supply of lubricant.

(To be continued.)

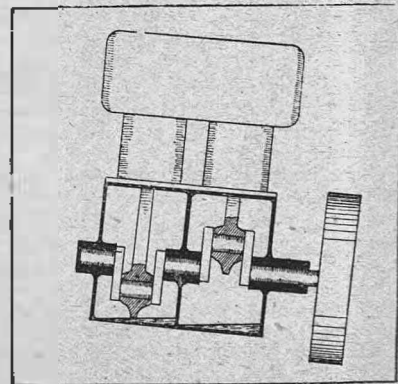


Diagram 25.—Even lubrication procured by baffle plates.

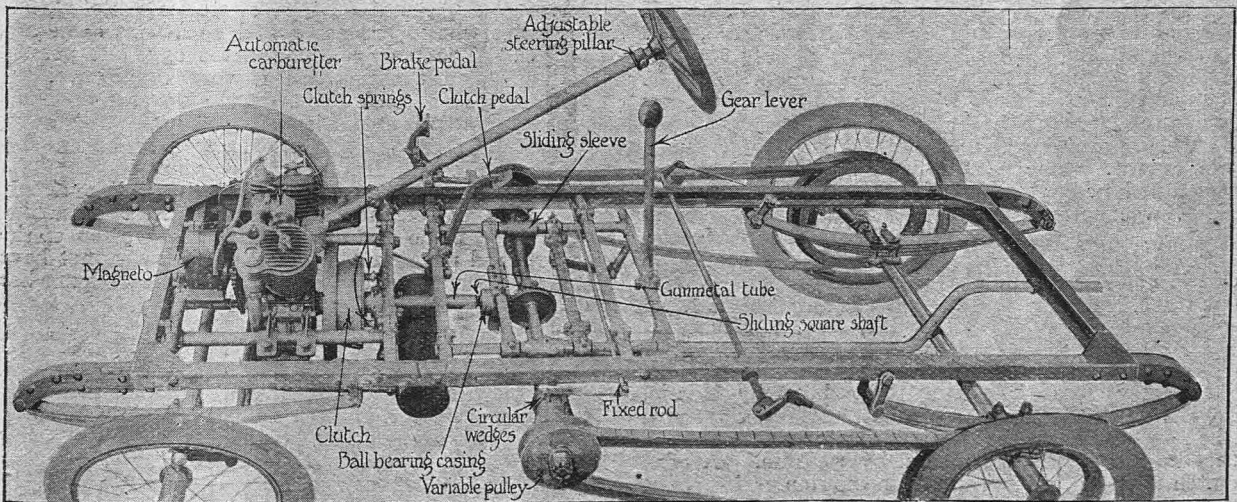
MORE NEW CYCLECARS.

NEW BELT-DRIVEN MACHINE EMBODYING VERY NOVEL FEATURES.

Variable Pulleys—Sliding Countershaft—Shaft and Bevel Drive to Countershaft.

WITH variable pulleys one naturally expects to see a hinged back axle incorporated in the design, but the cyclecar constructed by Mr. T. J. Sydney, 10, Warwick Road, Hampton Wick, has a sliding countershaft, which is bevel driven by the engine. The solid shaft is mounted on ball bearings, which are housed in gunmetal cases, whilst the latter in turn are rigidly secured to long sleeves which slide on longitudinal tubes. The driven bevel is situated near the centre of the countershaft, and at each extremity is fitted a variable pulley, the outside flanges of which are fixed, whilst the inner flanges are allowed to move laterally. These flanges slide on two substantial feathers, and are forced outwards by circular wedges, all thrust being taken on ball-thrust washers. One set of these wedges is coupled up by rods to the frame. Thus when the countershaft is moved backwards or forwards, the pulleys contract or expand. By this arrangement only one lever, which is centrally placed in the chassis, is required for gear changing, and the belts remain at the same tension throughout the whole range of gears, thus simplifying the driving of the machine.

magneto, which is situated in front slightly on the near side, is driven by a chain from a sprocket on the crankshaft. The front axle is tubular, and is attached to the frame by semi-elliptical springs. The back axle is also tubular, and the rear semi-elliptical springs are shackled at their forward ends, whilst their other extremities are hinged to the frame, which is of channel steel, suitably strengthened by tubular cross members, and the steering, which is of the Ackermann type, is controlled direct by a wheel of large diameter. The angle of the steering column can be readily altered if desired, whilst its length can also be adjusted by loosening one bolt. The wheels, which are of the wire variety, are shod with 26 in. by 2½ in. tyres. Brakes of the motorcycle type are fitted to the belt rims on the back wheels, and are controlled by a pedal. A two-seated, torpedo-shaped body is fitted, and a deep scuttle provides protection for the occupants. Although this machine will not be offered to the public by the manufacturer, we understand that the cost of making it was extremely moderate. The whole chassis appears to be very substantially built, and is the result of an



Chassis of the very novel belt-driven cyclecar which is being produced by Mr. T. J. Sydney.

The 8 h.p. Chater Lea engine is mounted transversely in the frame, and is provided with an extra outside flywheel, to which is bolted direct the outside member of the cone clutch. The diameter of the flywheel is 13 in., whilst that of the clutch is 9 in. The inner member of the latter is lined with Raybestos, and the necessary pressure is obtained by three small spiral springs, the tension of which can be readily regulated by hand. To take the thrust when the clutch is disengaged a ball thrust washer is provided. Keyed to the clutch shaft by two substantial keys is a gunmetal tube, in the rear end of which slides the square shaft that carries the small driving bevel. The shaft itself revolves on two ball bearings fitted close to the bevel, the casing which holds them being clamped to the sliding countershaft cradle. This method of construction allows the whole cradle to move backwards or forwards without putting any thrust on the clutch shaft.

An automatic J.A.P. carburettor placed between the cylinders supplies the mixture, whilst a U.H.

immense amount of experimenting. Mr. Sydney is willing to dispose of the manufacturing rights, and he informs us that he has had several offers, but as yet has not accepted any one of them.

An Interesting Model.

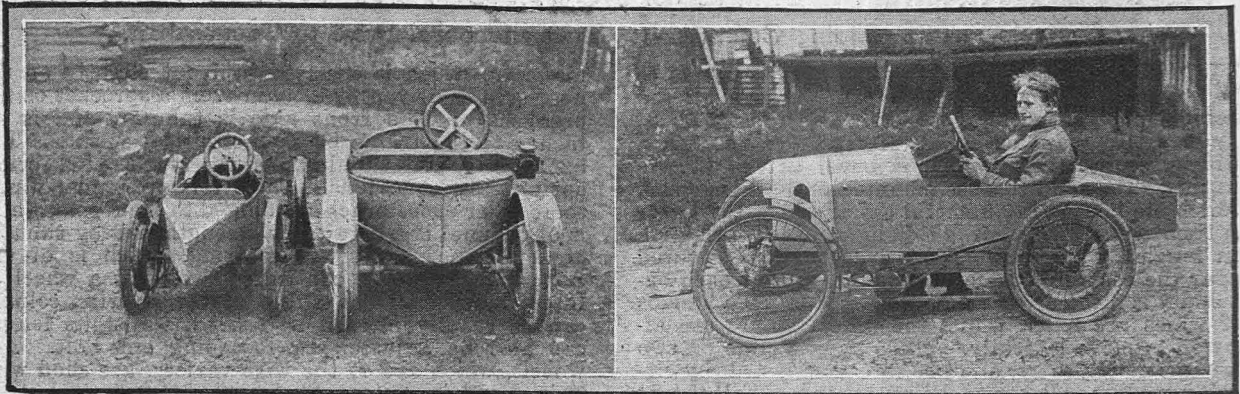
Next week we hope to give a full detailed description and illustrations of a very interesting new model which is being produced by one of the largest cyclecar manufacturers. The new cyclecar will bear no resemblance whatever to its predecessors. We understand that the machine has been well tested.

The Effect of the Grand Prix.

We hear that the maker of a very original cyclecar is at present engaged in producing a Grand Prix model, the transmission system of which is designed on very novel lines. The Grand Prix appears to be arousing great enthusiasm, for several machines are being specially built for this race by private individuals who hope to compete.

A FEATHERWEIGHT SINGLE-SEATER

2½ h.p. Engine, 1½ cwt. Monocar.



The "G.N.-ette," a novel single-seater, weighing only 1½ cwt., made by an employee at the G.N. Works. To give an idea of its diminutive proportions it is shown next to a G.N. There is a hole in the floorboards through which the driver can put his feet to reverse—a rather quaint idea.

WHAT must be one of the lightest cyclecars in existence has just been built by an employee of Messrs. G.N., Ltd., in his spare time, and its owner has aptly named it the G.N.-ette, for in appearance it closely resembles a G.N., whilst many of its parts were supplied by Messrs. G.N., Ltd. The weight of the complete machine is only 1½ cwt., making it a simple matter for one person to lift it bodily off the ground. Its small weight is principally due to the fact that the body consists of a framework of wood, over which is stretched some very thin canvas. The engine is a single-cylinder air-cooled 2½ h.p. De Dion, and it drives, by means of a chain, a countershaft which revolves in gunmetal bearings. On the rear end of this countershaft a variable pulley is mounted, but it is only used as a clutch, not as a means of varying the gear ratio. Only one wheel is driven, and the ratio is about 5½ to 1. A

U.H. magneto is fitted, and the carburetter is a Longuemare, both being controlled by levers mounted on the dashboard. The frame is of ash, and is bolted direct to the tubular axles without any springs being fitted. The Ackermann type of steering is used, and the front wheels are controlled by a wire cable and bobbin. The body accommodates only one person, and although the machine is very diminutive, the driver does not look top-heavy. The small engine can develop, it is said, a speed of 35 m.p.h., whilst its hill-climbing capabilities are claimed to be remarkable. The owner has left an opening in the floorboards, and when he requires to "reverse" he simply places his feet on the ground and pushes the machine backwards while seated. With the exception of the engine and magneto the whole machine cannot have cost the owner much more than £2. The designer has entirely dispensed with any springing.

A New Miniature Car.

A new cyclecar has lately been built by Messrs. Taylor, Swetnam and Co., of Albert Street, Coventry. The power unit is a twin-cylinder water-cooled engine, the dimensions being 88 mm. by 130 mm. A cone clutch is fitted, whilst the transmission is by shaft. A large gearbox, giving three speeds and a reverse, is provided, and an automatic carburetter controlled by an accelerator pedal. There are three control pedals for the clutch, accelerator, and footbrake respectively, whilst a hand brake is also fitted, both brakes operating on the back wheels. The front of the machine is on half-elliptic springs, whilst the method of springing in the rear is worthy of note. An ordinary quarter-elliptic is employed, but another one is placed the reverse way on the top of this, the latter acting as a shock absorber. 700 mm. by 85 mm. wire wheels are fitted. The petrol tank has a capacity of five gallons, the consumption of the engine being about 45 m.p.g. The machine is very speedy, and it is claimed that it can do 50 m.p.h. An exceedingly smart streamline two-seated body is provided, the bonnet coming flush with the dash, and a large box for carrying spares is let into the back of the body. The steering pillar has a large rake, and the steering wheel, which is of good size, controls the front wheels through a rack and pinion gear. The machine altogether possesses a very smart and racy appearance, and is sold, complete with hood, screen, lamps, and toolkit, for £140.

B18

A Complete and Practical Motor Handbook.

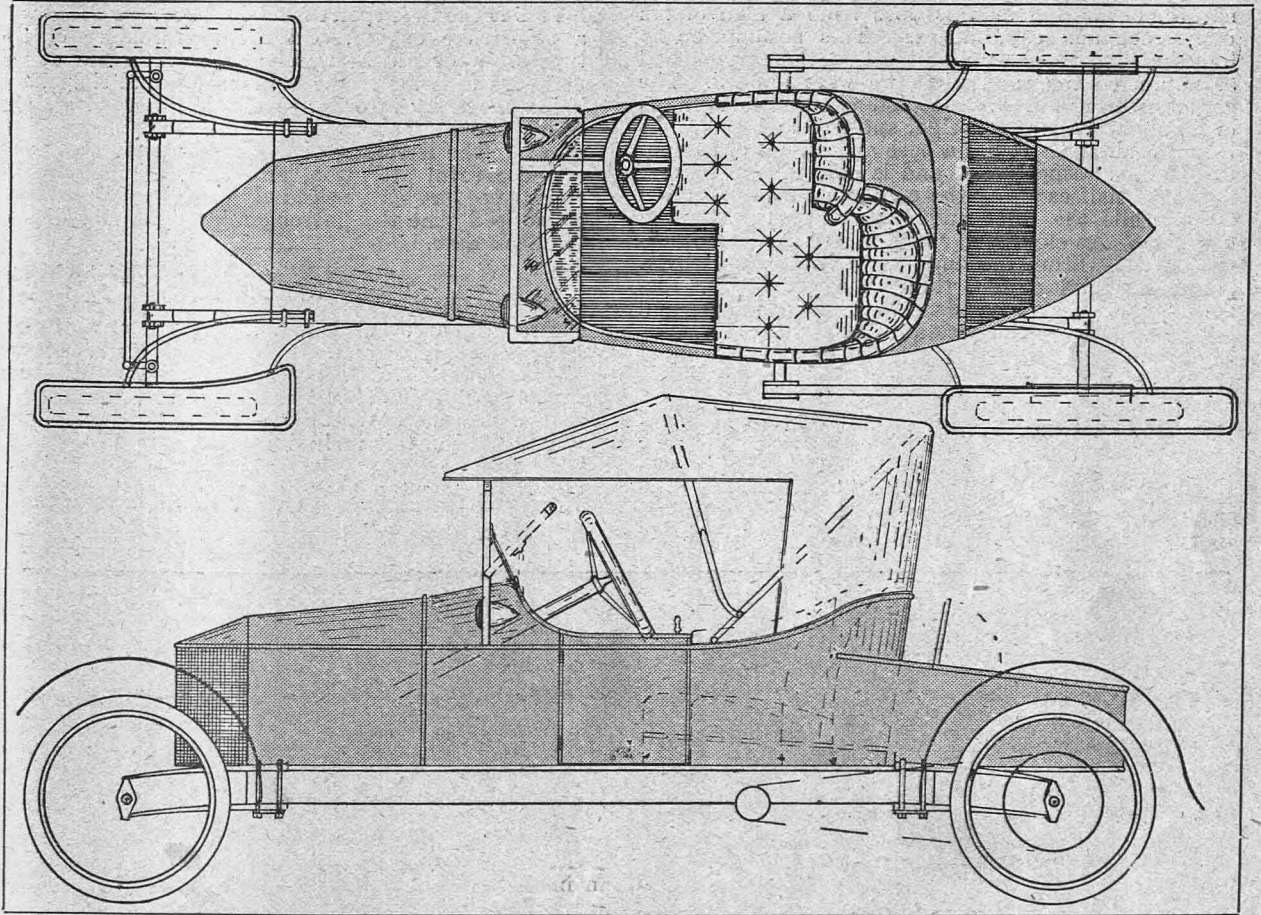
By far the most instructive and useful handbook issued in connection with self-propelled vehicles is "The Motor Manual," the sixteenth edition of which has just been issued. Since this manual was first published 270,000 copies have been sold, and the present edition of 40,000 copies has been carefully revised and brought up-to-date. The provision of an index, by which instant reference may be made to any portion of the manual, is but one of the detail improvements incorporated. The manual deals in the simplest language with the constituent parts of a motorcar, it contains directions for driving, gives assistance in regard to adjustments, and is generally a "vade mecum" for the ordinary motorist. It is useful alike to both novice and expert, the chapters on "The Motor Vehicle and the Law" and on "Formulae, Tables, and Explanations of Technical Terms" shedding light on what are otherwise obscure subjects to the motorist. An interesting chapter for the practical driver is one dealing with "The Motorist's Workshop." Simple tools, suitable for all running repairs, are described, and directions are given, in simple language, for carrying out various repairs and replacements with a minimum of expense and trouble. "The Motor Manual" may be obtained for 1s. 6d. at any booksellers, or will be sent post free to any address in the British Isles for 1s. 9d. by the publishers, Temple Press, Ltd., 7-15, Rosebery Avenue, London, E.C. It is bound in cloth.

THE LESTER TWO-SEATED CYCLECAR.

8 h.p. Water-cooled Engine and a Choice of Chain or Belt Drive.

IN our issue of 12th March we gave particulars of the extremely attractive monocar made by the Lester Engineering Co., of Aldine Works, Uxbridge Road, London, W., and we can now describe the two-seated model. It differs from the monocar in a number of points, chiefly in the provision of water-cooling to the engine, which is either a J.A.P. or Precision as desired by the purchaser. This engine is mounted behind a pointed Lamplough tubular radiator, and the water circulates on the thermo-syphon principle. The body is extremely roomy, and the seats are "staggered," that is, the passenger's seat is slightly to the rear of

The constructors have not sacrificed comfort to speed, but at the same time the machine is by no means slow, and can be tuned to attain a high rate of speed if desired. Steering is by wire cables passing round a hard wood bobbin at the base of the steering column, which is controlled by a large diameter steering wheel. The pedals are of substantial size and are conveniently situated, the comfort of the passengers being studied throughout. Complete with five lamps, hood, and glass screen, the two-seater model sells for £100, which appears to be on the low side considering the design and material.



Plan and side view of the Lester cyclecar, a new machine of the simple type with the choice of chain or belt drive, showing the "staggered" arrangement of the seating.

that of the driver. The bodies are well finished, and the owner of a Lester need never be ashamed of the appearance of his machine. The detail work is carried out extremely well, but the painting deserves a special word of praise, as we have rarely seen better.

The transmission is the same as on the monocar, that is, by shaft to the countershaft, which is friction driven, and to the back wheels by belts or a single chain, as desired by the purchaser. The ash frame is stiffened by steel tie rods, and is sprung well between the axles by double quarter elliptic springs. The magneto is mounted in front of the engine in an accessible position, and is chain-driven from the camshaft, while the Lukin carburettor is doubly controlled by a hand lever and pedal. The frame is wider and heavier in the two-seater model, and the wheel track will be 3 ft. 10 in., with a wheelbase of 9 ft.

The New Car Number of "The Motor."

"The Motor" this week is a number containing 108 pages of letterpress. It deals in the main with the theme of the new car, and in a series of articles offers information and advice to the owner of a new car. "Pointers for the New Car Owner" is a comprehensive treatise on a complete subject, while the article "The Joy of the Road" will appeal with force to every user of a motor vehicle. One article will particularly interest cyclecarists. It is entitled "Ninepence for Fourpence," and it deals in a chatty way with the experiences of a man in quest of a £100 car, and concludes with some cogent reasons why he should have a cyclecar. The issue contains a supplement of 44 pages, "New Cars of 1913," which forms the most complete, illustrated buyers' guide published.

A TWO-STROKE ENGINE DEVELOPING 16 H.P.

The Medinger Cyclecar, Built by the Famous Driver of a Sunbeam Car in the Grand Prix.

A NOVELTY in cyclecar design is the fitting of a two-stroke valveless engine, which is the chief feature of a new-comer, the Medinger. Although at present in a more or less experimental stage, it has given an excellent account of itself, and, with minor alterations and modifications, presents practically what will be the finished machine. Chief amongst the alterations will be a bevel drive in lieu of the existing chain. The designer and builder is M. Emile Medinger, of Worcester Street, Wolverhampton, who will be recalled as the pilot of one of the successful Sunbeams in last year's Grand Prix. Naturally, one looks for something of a speedy nature, emanating as this does from a man of his experience and capabilities. This assumption is fully justified when we mention that the car touched 50 m.p.h. on the road when we were aboard. The engine, which is a water-cooled two-stroke twin, is of M. Medinger's own design, and develops 16 h.p. at 1800 revolutions. It has a bore and stroke of 80 mm. by 100 mm. respectively, and is cast in two halves, the lower half carrying the magneto on an extended table, while the inlet and exhaust port pipes are bolted on. An elongated radiator terminates a tapering bonnet. From the engine, transmission is by a leather-to-metal clutch, through a gearbox (three-speed), which has a bevel drive to the countershaft, and thence by chain to the back axle, but in future models by cardan shaft and bevel. The chassis is of channel section, and is supported upon four semi-elliptic springs. Three pedals are fitted, viz., the accelerator, the pedal for the clutch, and that for the external contracting brake, which operates on the rear axle chain sprocket. A countershaft brake is also provided, the hand lever for which operates in a quadrant beside the change-speed lever. Steering is by a small bevel at the base of the column to a bevel

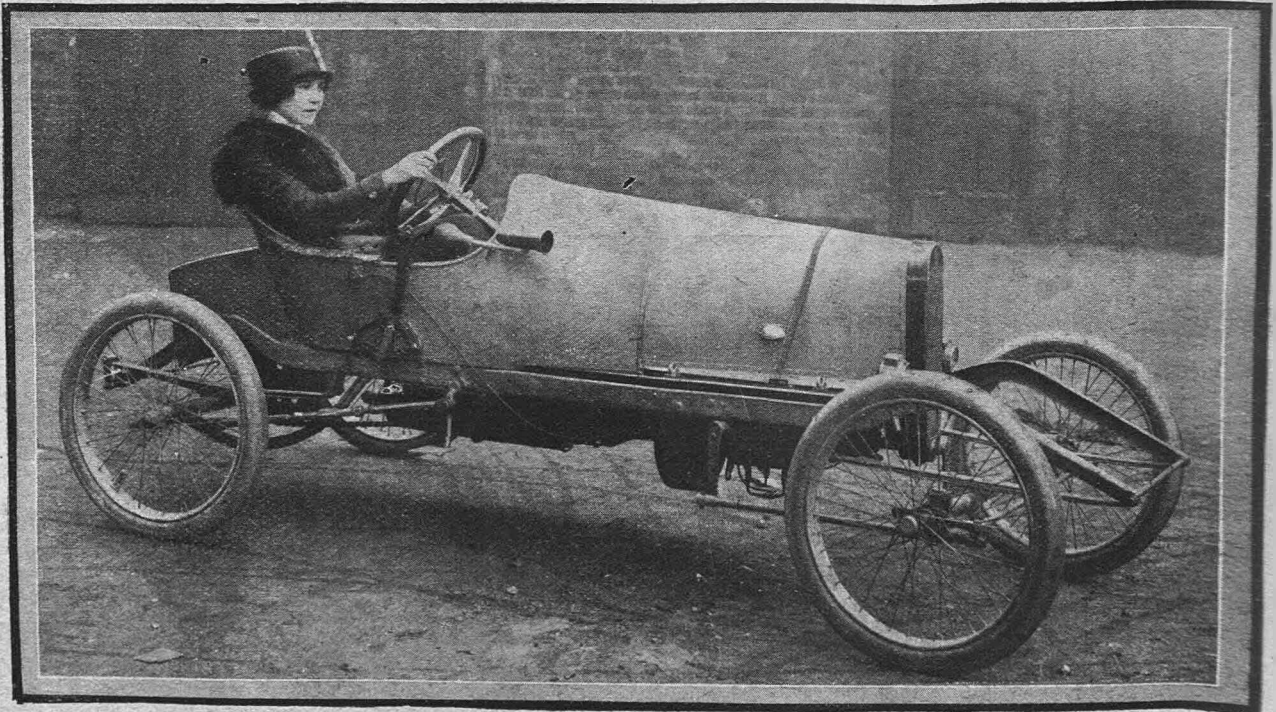
operating the steering arm. The front axle is of the straight tubular type, and a good lock is allowed for. The machine has a long wheelbase and broad track, and the weight complete works out at about 5 cwt. The whole turnout has a rakish appearance, and there is seating to accommodate two persons.

M. Medinger has recently been experimenting with paraffin, and finds his engine behaves splendidly when it is used, very satisfactory results having been obtained. The standard Senspray carburetter fitted has had no alteration and seems to vaporize the mixture well. A little priming with petrol is all that is required to start the engine running satisfactorily.

This is the first cyclecar to be described fitted with a two-stroke engine, and the performance of this type of motor will be watched with interest. It will be noted that the frame is of an unusual shape, this being necessary in order to obtain flat road springs, which should make the machine hold the road at speed. The lessening of the head resistance has received careful attention, and the designer's racing experience has been extremely useful to him. It will be noticed that the passengers' weight is well over the back axle.

Top Gear Traffic Tests.

Messrs. Globe Cars, Ltd., 37b, Duke Street, Manchester Square, London, W., entered one of their standard 8 h.p. cars for a top gear test in London traffic under R.A.C. observation, which was carried out last Thursday. The car was run on the scales, the front axle weight being 537 lb. and back axle weight 622 lb., this including eight gallons of petrol. The driver of the car, Mr. McGregor, turned the scale at 147 lb. The top gear has a ratio of 4 to 1. The result of the trial cannot be dealt with until the publication of the official report by the R.A.C.

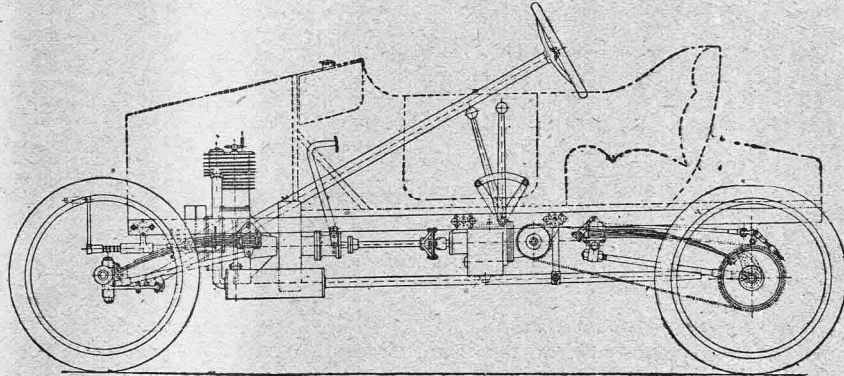


Side view of the Medinger cyclecar, the novel feature of which is a two-stroke twin cylinder engine. Its body design closely resembles that of a Sunbeam racer. The designer, M. Medinger, was one of the three drivers of the Sunbeams that won the three-litre race in the Grand Prix last year.

NEW CYCLECARS (contd.).

The Ranger Cyclecar.

IN an early issue of February we gave an illustration of the West cyclecar. This machine is now being manufactured in quantities by the Ranger Cyclecar Co., of Coventry, and the sole concession for their sale is held by Messrs. Polyrhoe Carburet-

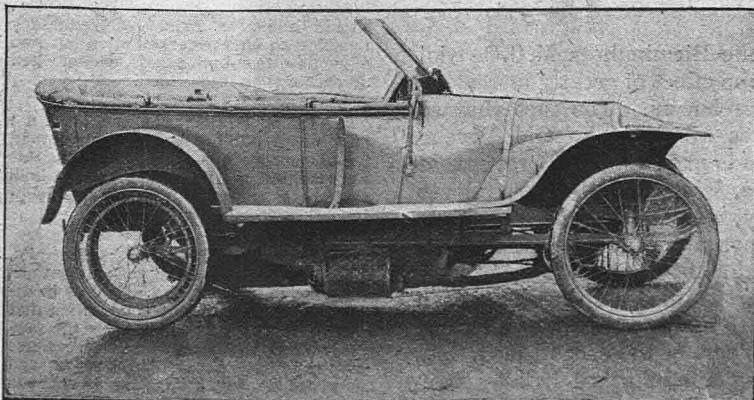


Side elevation of the Ranger cyclecar, a chain-driven machine.

ter, Ltd., 144, Gt. Portland Street, London, W., and the cyclecar has been re-christened the Ranger.

The frame is constructed of ash with pressed-steel liners and tubular cross members, and is supported on the axles by shackled quarter-elliptic springs, the movement of the axles being controlled by radius rods fore and aft. The 8 h.p. air-cooled Precision engine is set across the frame, and a leather-to-metal cone clutch is enclosed in the outside flywheel. A universally-jointed propeller shaft transmits the drive to a two-speed and reverse gearbox, from which the final drive is by chain to the back axle. No differential is provided, but one wheel can slip on the axle when rounding corners. External contracting brakes, lined with Ferodo, are provided on the countershaft and rear wheels. Steering is by rack and pinion, the control levers being mounted on the steering wheel. A Bosch magneto and a special Polyrhoe carburetter are fitted. The cyclecar, which is priced at £105, is provided with a two-seater body and side and tail lamps, and for an extra 25s. a horn, a kit of tools, a pump, etc., are provided.

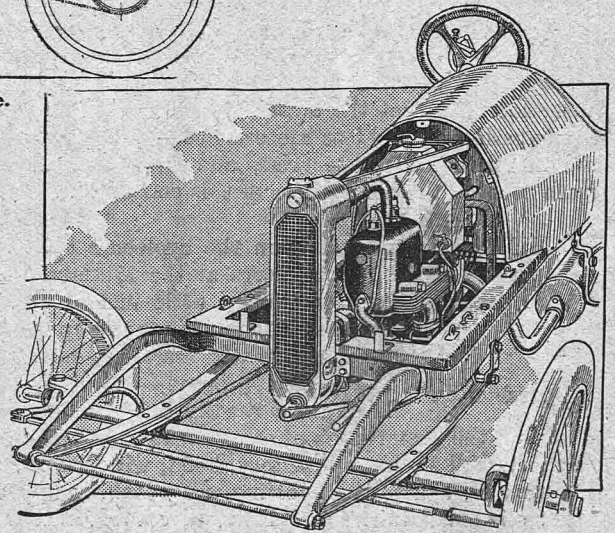
Those who want to learn something about carburation should write to Messrs. Brown and Barlow, Ltd., Westwood Road, Witton, Birmingham, for a copy of their "Hints and Tips," mentioning THE CYCLECAR.



One of the first cyclecars built by Mr. J. V. Carden, whose smart single-seater was described and illustrated in our last issue. The machine illustrated above is a tandem-seated belt-driven machine.

A Water-cooled Duo.

FOR the benefit of prospective customers who for some reason or other dislike an air-cooled engine, Messrs. Duocars, Ltd., of 76, York Street, Westminster, have produced a water-cooled model. The engine is an 8 h.p. J.A.P. with a bore and stroke of 85 mm. by 85 mm. respectively, and the copper-tube radiator is shaped similarly to that on the famous Metallurgique cars. Cooling is effected on the thermo-syphon system, and all the pipes are of large diameter, which should ensure a good flow of water. The price of this model is 104 guineas. The machine in all other respects is similar to the standard model, but the makers are also prepared to supply the new auxiliary two-speed model, described in the last issue of THE CYCLECAR, with a water-cooled engine as an extra.



Front-view and engine of the Médinger cyclecar, described on the previous page.

A New Light Globe.

The absence of Globe cars in competitions is not due to any fear on the part of the manufacturers as to the machine's ability to come through the various trials with success, but to the fact that they are barred on account of the chassis being 56 lb. over weight. We hear, however, that a specially light model will shortly be made and entered for competitions from time to time, as it will then be well within the cyclecar limit.

In the description of the Grand Prix G.N. in last week's issue of THE CYCLECAR we omitted to point out that further particulars can be obtained not from the works, but from the sole agents, Messrs. G. N. Higgs, 31, Vauxhall Bridge Road, London, S.W.

The Warne cyclecar, which has the most luxurious bodywork of the "simple" type of machine, has been for some long tests lately, and will now be entered for a great many competitions. We believe it will prove very successful, and should do much to make fresh converts to the new motoring.

Topics of the Day

WE seem to remember reading a remark to the effect that what would motor driving be like when thousands of inexperienced cyclecarists used the roads? The thousands are mostly waiting deliveries, and have not begun to use the roads yet. When they do, we sincerely trust that their driving skill will be a thought better than that of the average motorist. Many drivers of cars strike us as being under the impression that it is positively dangerous to take corners on their proper side, or to make way for an approaching vehicle. On the other hand they appear to possess unbounded confidence in their brakes and their skill to avoid a smash, as when crossing main roads "all out," although it is difficult to understand why. The owner-driver of a motorcar, however, can be thankful that comparatively few cyclecars will fall into the hands of chauffeurs who, with some bright exceptions of course, are decidedly the most careless drivers as a class. As for the owners of cyclecars, we think that most of them, having invested a substantial portion of their ready cash in a motor vehicle, will take good care that it is not damaged by careless use. Our own opinion, based on many years observation, is that the owner of a motorcar has far more to fear from the experienced reckless motorist than ever he will in the future from the inexperienced cyclecarist, and every few hundred miles we get fresh proof of the correctness of this contention.

THE remarks passed upon the cyclecars by various onlookers and many possible purchasers at the Midland Rally of the Cyclecar Club were interesting and not a little instructive. A preponderating number indicated that the appearance of any particular machine was more the dominant factor than anything else. Some—especially the fair sex—capitulated most readily to the charms of a pleasing shade of paint; the preferences of others leaned in the direction of maximum comfort, well sprung upholstery, hood, windscreen, and the finish of the fittings; or, again, the sporting, racy-looking appearance of the bodywork elicited admiration. It is, of course, rather a hopeless task to please all tastes, but the trend of design in motorcar bodywork should not be lost sight of by the cyclecar manufacturer. In motorcars public inclination leans to the touring type of racing car, with streamline body and pointed prow, but fitted with hood and windscreen. The cyclecar manufacturer who can make the best compromise on these lines will attract the greatest number of orders, quite irrespective of chassis design, transmission or other features that are the first consideration of the expert. We are rather surprised that the coachbuilders have not, as yet, made a bid for the custom of the cyclecar purchaser.

THE performances of the cyclecars in the Birmingham M.C.C. trial on Saturday last will probably have the effect of greatly increasing the already large number of potential purchasers. The fact that so many different machines climbed the Old Wyche Cutting at Malvern, a gradient of 1 in 2.96, proves that with suitable gear ratios, cyclecars can be made to ascend almost any freak hill in the country, which should be more than sufficient to instill confidence in the machines when they are required for ordinary touring purposes. Failures in reliability trials are but rarely traceable to actual defects in manufacture. In the past they have been due in nearly all cases to lack of attention to fitting suitable gear ratios, to neglect of the adjustment of various fittings, or to sheer ill-luck. As entrants realize that it is no use making a haphazard holiday of a reliability trial, and that if they hope to succeed they must take as much care in seeing that their machines are in proper order as they would if they were undertaking a 1000 miles tour, the proportion of successes will be very much greater.

The Cyclecar

Wednesdays—1d.

Conducted by EDMUND DANGERFIELD.

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NEXT WEDNESDAY.

Next Wednesday's issue of THE CYCLECAR will be an instructive issue, for it will contain the illustrated description of some remarkable hill-climbing performances of belt-driven cyclecars and a report of the Cyclecar Club's Fuel-Consumption Trial.

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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Advertisements of Cyclecars for Sale, new or second-hand, Sunday Announcements, and Rates for Advertisements, will be found amongst the end pages.

THE CYCLECAR WORLD.

Notes, News and Gossip of The New Motoring.

THE CHIEF EVENT OF THE WEEK-END :

Fuel-Consumption Trial at Cobham (Surrey), Saturday,
19th April.

Light up 7.58 p.m.

The new Rolfe cyclecar was seen, out on the road during the Birmingham passenger machine trial on Saturday.

THE CYCLECAR is the only journal to publish illustrated descriptions of all the new cyclecars as they are introduced.

The full team of Morgans for the Grand Prix race—a maximum of four being allowed, including private owner's machines—has been entered.

In each issue of THE CYCLECAR we have given illustrated descriptions of new cyclecars, and "still they come," for there is no end to new designs.

The contrast between the meagre report in a certain quarter of the great Midland rally and the successful character of the event is most amusing. One would think it was almost a failure. Why this bias?

The next article in Mr. Judge's interesting series on obtaining increased power refers to carburation, in the improvement of which he gives many useful hints for obtaining greater power and lower consumption of fuel.

Capt. Clarke met with an unfortunate accident last week. His Invicta cyclecar ran backwards on a hill, pinning him against some railings. Several of his ribs were broken, while other internal injuries, it is feared, were sustained.

The front cover picture this week depicts one corner of the busy scene at Stratford-on-Avon on the occasion of the great Midland rally. The cyclecar in the foreground is the Invicta, the neat appearance of which attracted considerable attention.

A writer in the "London Magazine" is under the impression that cyclecars indulge in tail-wagging, and that they cannot hold the road. We do wish people who write this kind of thing would get someone to take them out for a ride and demonstrate the absurdity of these statements.

Mr. C. M. Keiller (G.W.K.) is a likely aspirant to the cyclecar hour record. With an engine giving off 24 h.p. and a higher gear than he used last year, he should put the record to over 60. He will then have to meet Mr. Morgan with a special water-cooled overhead-valve J.A.P. racing engine. Seventy miles in the hour?

The Cyclecar Club's fuel-consumption trial next Saturday will be a splendid opportunity for demonstrating the advantages of benzole as a fuel. Judging by private tests, any owner who uses benzole should perform well, and should stand a good chance of putting up the largest mileage to the gallon or win on formulæ (which take into account the weight of machine and passenger).

Precision engines will be heard of a good deal in the future for cyclecar work, for Mr. F. E. Baker has built up a rough cyclecar chassis for testing engines in. It was seen on Birdliv Hill on Saturday. Mr. J. A. Prestwich has also a Morgan on order for the very same purpose, so that it is obvious that manufacturers are appreciating the importance of devoting special attention to the improvement of an engine for cyclecar work.

Next week, the description of the new four-wheeled belt-driven A.-O.

A reader of THE CYCLECAR is decorating his "den" with a frieze made up of our front cover pictures.

Practically all manufacturers are behindhand with deliveries of cyclecars, so that orders should be placed early.

Whose was the yellow Bedelia that skipped through the 10-mile limit in Church Cobham at the week-end with great "allez-ing"?

The largest automobile firms in the United States are interesting themselves in the cyclecar, but the motorcycle manufacturers as yet are hardly concerned.

An anonymous donor has offered a cup to the Cyclecar Club, the object of which will be the special encouragement of the private owner in various competitions.

It is probable that two G.W.K.s will be entered for the Grand Prix race. The drivers mentioned as likely to enter are Messrs. C. M. Keiller and V. Wilberforce.

Those who want to see the motorcar market at a glance should purchase a copy of "The Motor" this week, which illustrates and describes over 300 cars in a special 44-page supplement presented with the New Car Number.

We believe that an English cyclecar will win the Grand Prix race, for English engines are, generally speaking, faster and more reliable. Entries close at the end of this month. Forms and copies of the regulations can be obtained from our offices.

Very large numbers of spectators lined the route of the Birmingham M.C.C. trial last Saturday. The course was published exclusively in "Motor Cycling" and THE CYCLECAR. Both journals make a great point of giving exclusive information, and are "out first" with all important news.

A number of belt-driven cyclecars performed some extraordinary hill-climbing feats in Kent at the week-end. Up Chalk Pit one machine carried four heavy passengers, while another had six persons actually on board when it reached the summit. An illustrated description of these climbs will appear in our next issue.

No doubt many machines entered for the Grand Prix cyclecar race will be tuned up on Brooklands track, which is ideal for the purpose. This should be an incentive to attempts on the hour track record, at present held by a Morgan at nearly 60 miles. To obtain the hour record would be an excellent preliminary to the road race.

The next Cyclecar Club run will be to Brooklands on Sunday afternoon, 27th April, to see the flying. Those who are not members of either the B.A.R.C. or the B.M.C.R.C. will be admitted on payment of 2s. 6d. for the cyclecar and 1s. each for driver and passenger. Membership of the first costs four guineas, and of the other two guineas per annum, plus entrance fees.

One great advantage of the cyclecar is that, partly owing to its low build and light weight, it holds the road at high speeds, takes abrupt corners without any sign of overturning, does not skid, and is economical on tyres, in spite of the theorist in the "R.A.C. Journal," who is for ever arguing about some imaginary "bugbear" of the lack of adhesion of the back wheels on the ground.

Some Remarkable Photos. of the Trial Appear on Pages 563 and 564.

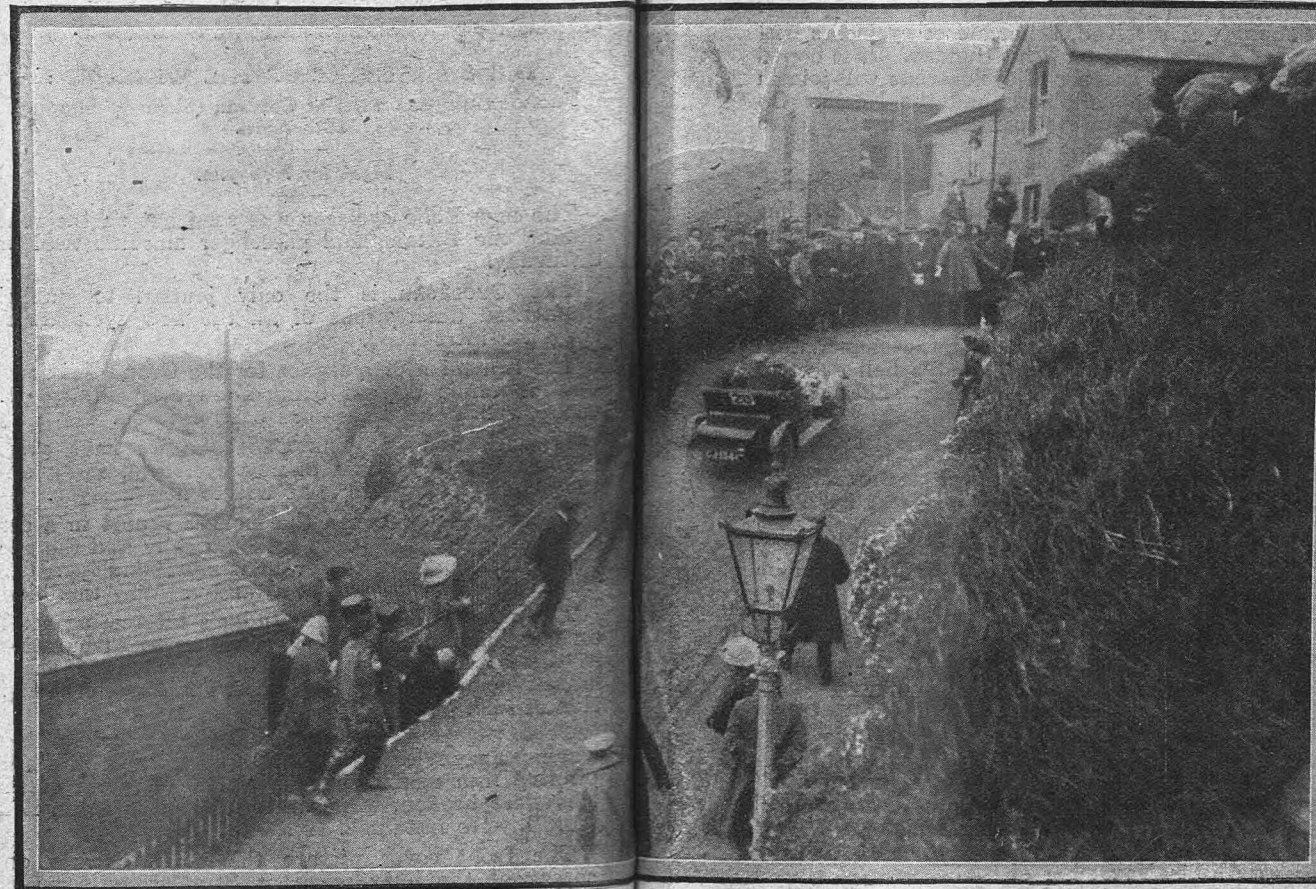
THE Birmingham M.C.C. passenger machine trial, which was held in the Midlands last Saturday, proved still further the remarkably rapid improvement which is being made in cyclecars, both in the direction of reliability and hill-climbing. A few months ago it was considered a marvellous performance for any of the more recently introduced cyclecars to climb Sudeley or Birdlip in a trial, but in last Saturday's event hardly a single failure was recorded on these hills, and even the Old Wyche Cutting, Malvern, with its culminating gradient of 1 in 2.96, failed to stop 50 per cent. of the machines.

The trial demonstrated, as we have said, the vast improvements that are being effected in the modern cyclecar. The hundreds of spectators who crowded round the top bend on the Old Wyche Cutting, Malvern, expressed in no uncertain language their astonishment at the manner in which the Humberettes, Morgans, Alldays, G.W.K., and Singer negotiated this terrific climb. Naturally the Morgans, being locally built, received the biggest reception, whilst the works were decorated and the Cyclecar Hour Record Challenge Cup displayed in the road through which the competitors passed. Mr. Morgan had a new type of body on his machine, a torpedo tank being substituted for the ordinary bonnet.

Several drivers took the new and easier road up to the summit of the Wyche, among them being Mr. Keiller (G.W.K.) and Mr. Wintle (Rollo). The former found out his mistake, returned, and made a good climb, though he was late at the cheek in consequence and lost his gold medal. Mr. Martin's Singer failed the first time, but returned to the foot of the hill and then made a splendid ascent. This machine has a 15-1 low gear, which has been made specially for the owner. To do this, part of the gearbox and a small portion of a ball race have been removed, but the results appear to justify the trouble the owner has gone to. The two Alldays cars made a very good show on this hill, as did the three Humberettes driven by Messrs. Evans, Wright, and Southam. The first-named unfortunately suffered from a loose

CYCLECARS HILL-CLIMBERS.

Old Wyche, Birdlip and Sudeley Not Too Steep for a Cyclecar.



throttle control in a non-stop section, which lost him his gold medal.

The course then followed was through Ledbury, Ross, Gloucester, to Birdlip Hill. Here all the machines made good, with the exception of Mr. Wintle's sociable Rollo, which stopped quite near the summit. Mr. Oliver (Morgan) also lost his gold medal through miscalculating his time by a minute at the control at the top of Birdlip. Lunch was served at the Plough Hotel, Cheltenham, the worst part of the return journey being the climb up Sudeley Hill. Luckily the road was in good condition, and back-wheel slip was not troublesome, as it is on this hill when the road is wet. The Humberettes, Alldays, and Morgans repeated their fine performances of the morning, as did the G.W.K. The P.D.A., which was fitted with a water-cooled Precision engine, also made a good performance, as did the Rollo. The rest of the run through Stow, Moreton-in-Marsh, Evesham, and back to Birmingham was quite easy. The official results of the trial show that for the team prize the Morgan team were placed second to the James motor-bicycle and sidecar. The following, subject to confirmation by the committee, were awarded gold medals:—Messrs. L. Martin (Singer), Sam Wright (Humberette), H. F. S. Morgan (Morgan), and F. H. Stevenson (Morgan). The following were awarded silver medals:—Messrs. F. H. Southam (Humberette), Oliver (Morgan), P. H. Jones (Morgan), and P. J. Evans (Humberette). The following were awarded bronze medals:—Messrs. C. M. Keiller (G.W.K.) and Wm. Guilding (Alldays). The following completed the course:—Messrs. Pickering (P.D.A.) and Wintle (Rollo).

Mr. Priest, of Humbers, made quite a lot of money in wagers, owing to the successful manner in which the three Humberettes climbed the old Wyche Cutting.

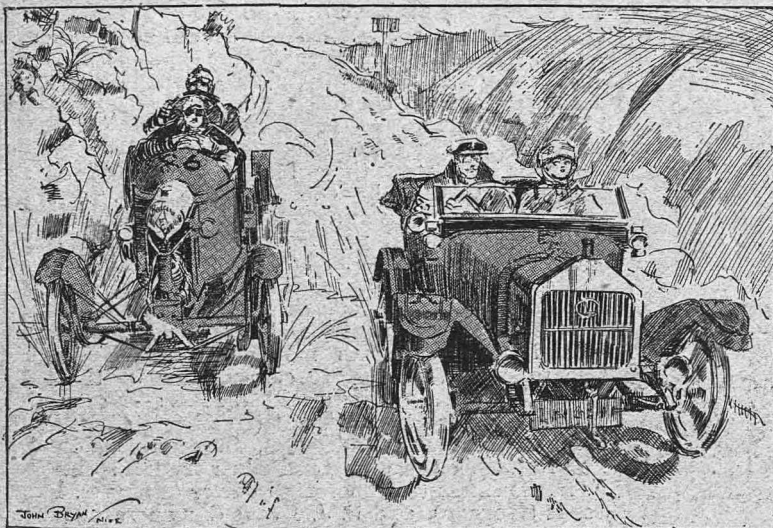
Most of the cyclecars went up the test hills far faster than many 20 h.p. cars could have done. Besides, there are not many cars that *could* have climbed the old Wyche cutting, which was surveyed to be 1 in 2.96 at the steepest part! The cyclecars did not require to be pushed or towed up the hill.



Cyclecars made remarkable climbs in the Birmingham M.C.C. Trial on Saturday. The upper photo. shows Mr. Gunder's midget car ascending the Wyche Cutting, with its gradient of 1 in 2.96. Mr. Lionel Martin's Singer is shown climbing the hill in the left-hand photo., and on the right is Mr. Morgan, with a new type of body on his Morgan, on Birdlip.

Performance of Cyclecars in the Paris-Nice.

Three cyclecars, two Bedelias and a Chater Lea, started for the Paris-Nice reliability trial, which finished at Nice last Wednesday, and two of these officially completed the course, the driver of one of the Bedelias having changed the magneto. This Be-



A sketch on the Esterol during the Paris-Nice tour. Mr. and Mrs. Chater Lea (Chater Lea cyclecar) leading Bonville's Bedelia through a carris (watersplash) in the mountains between Marseilles and Nice.

delia had previously been penalized 17 points for late arrival at Dijon. The driver of the second Bedelia, M. Bonville, had obtained special leave from the Army to drive in this event.

At Nice a speed trial was held over the flying kilometre on the Promenade des Anglais. M. Bonville's Bedelia accomplished the fastest time, namely, 51 sec., or 44 m.p.h., and the Chater Lea, which was a full touring model with screen and hood, took 1 min. 3 sec. A complaint was lodged that the Chater Lea was over-weight, and the owner, Mr. W. Chater Lea, was instructed to have his machine weighed. The result is not yet known.

Pressure on the Press.

The American motorcycle manufacturers, are, one by one, taking exception to the publishing of cyclecar news in the motorcycle papers of the United States. More than that, several of the makers have announced an opinion that the cyclecar belongs to the automobile industry. In other words, the bicycle producers are refusing to recognize the light car for reasons quite obvious to the trade in general. Two, at least, of the leading manufacturers have suggested to one of the motorcycle magazine publishers that cyclecar news should be omitted. They declare that they are not afraid of competition, but that attention should be devoted solely to the booming of the two-wheeler as before. When the cyclecar movement was inaugurated in "Motor Cycling" similar representation was made to the editor by English concerns, but was speedily withdrawn.

Oil consumption seems to vary between wide limits. We recently heard of a machine which has and continues to run 1600 miles to a gallon. Can any other machines improve upon this mileage for either a water- or air-cooled engine?

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Cyclecar Club Fixtures.

The projected gymkhana of the Cyclecar Club has been postponed, and a run to Westerham will be held on Saturday afternoon, 3rd May, instead. At Whitsun, Buxton will be the headquarters, and if sufficient support is received, a parade of cyclecars will take place on Whit Sunday. It is hoped that a number of cyclecarists will join in from the Midlands and the North. On 25th May a cyclecar rally will take place at Brighton.

New Cheap American Cyclecar.

A new cyclecar at the price of £74 has just been introduced in America. The Auto-Ette Co., of Chrisman, Ill., are the manufacturers of this machine, the chief features of which are, weight 400 lb., engine 9 h.p. air-cooled, with two speeds and reverse, side-by-side accommodation for two passengers, double belt drive to rear wheels, torpedo body, and a wheel-base of 8 ft.

Cyclecar Race at Brooklands.

At the Whit Monday Race Meeting of the B.A.R.C. the first cyclecar handicap will be run. This will be over a distance of 5 miles, and one male passenger may be carried at option. Entrants will be required to state whether their engines have drilled cylinders or auxiliary exhaust ports. Entries close on 29th April, at 12 noon, and the race will be run on 12th May.

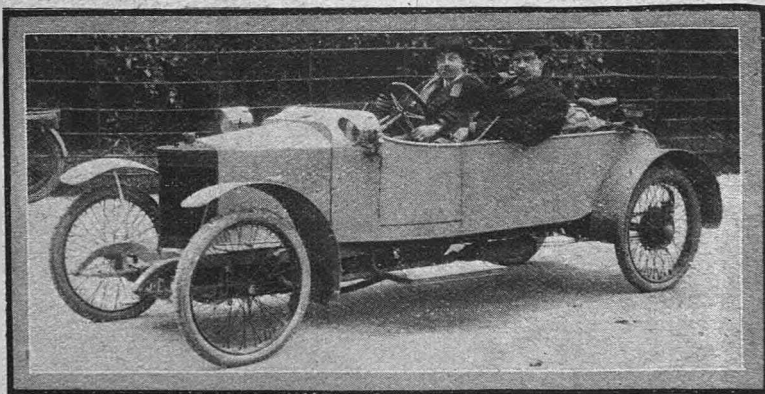
Unfounded Rumours.

Rumours regarding the liquidation of the Rom Tyre Co. are without foundation. They arose over the formal announcement in the "London Gazette" of the winding up of the old parent company, all assets and liabilities being taken over by the Rom Tyre and Rubber Co. (1909). Ltd., when the capital was increased in November of that year.

R.A.C. Gala Day at Brooklands.

On 31st May, there will be an inter-club meeting and gala day of the associated clubs at Brooklands, and one item of the programme is an open handicap race for cyclecars, for which four trophies and prizes are offered.

A band of navvies, armed with ropes, was hired by the Birmingham club to pull up machines which failed on the Malvern test hill. Few cyclecars required their services, it might be noted.



The Precision water-cooled cyclecar engine under test in a machine specially built for the purpose.

THE M.C.C. HILL-CLIMB: A TEST OF FLEXIBILITY AND SPEED.

LAST SATURDAY the M.C.C. held a most interesting hill-climb at Kop, near Princes Risborough. In order to test flexibility as well as speed, entrants were required to climb the first portion of the hill as slowly as possible, stop dead at a given

the G.W.K. into the side of the road, and was assisted off by many willing hands.

Mr. W. J. Wainwright, on a 12 h.p. Rover car, was next up. He also was very slow, and on restarting tore up the road and startled the spectators with his



Mr. J. Talfourd Wood successfully restarting in the M.C.C. Flexibility Hill-climb test on Saturday at Kop Hill.

point, restart again on a gradient of about 1 in 7, and finish the climb as fast as possible. There was a very fair muster of motorcyclists, but unfortunately only two cyclecars were entered, those being the G.W.K.s of Messrs. J. T. Wood and V. Wilberforce. In consequence, the classes for cars and cyclecars were combined, there being also only two starters in the car class. The first up was Mr. J. T. Wood, who approached the stopping point at a slow walk, and then accelerated well up to the top of the hill. Wilberforce, however, on his flush-sided racing model, was even slower. He must have taken nearly 10 minutes to reach the stopping place, and at no point did he exceed 2 m.p.h. Unfortunately, this extraordinarily slow ascent was of no avail, for Mr. Wilberforce was unable to effect a restart, as he was afraid of damaging his discs. He consequently backed

rapid acceleration. Mr. J. V. Hooydonk, on a Phoenix car, also put up a very creditable performance. The winner was the man whose difference between his slow and fast sections was greatest, and the results were as follow: 1, W. J. Wainwright (Rover), 4 min. 37½ sec. difference; 2, Mr. J. V. Hooydonk (Phoenix), 2 min. 23½ sec.; 3, Mr. J. T. Wood (G.W.K.), 1 min 11½ sec.

Hill-climb in Lancashire.

The Lancashire Automobile Club is holding a hill-climb on 3rd May at Waddington Fells, near Clitheroe. There is a special class for cyclecars which do not weigh more than 7 cwt. unladen, and there will be two awards, one for fastest time and the other on a formula. Entries close on 25th April.

FORTHCOMING EVENTS AND FIXTURES.

APRIL.

- 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.—Cyclecar Club run to Westerham.
- 3rd.—Herts. M.C.C. hill-climb.
- 9th, 10th.—M.C.C. London-Edinburgh trial.
- 10th, 12th.—Cyclecar Club Buxton tour and parade.
- 12th (Whit-Monday).—B.A.R.C. race meeting, Brooklands.
- 17th.—B.M.C.R.C. race meeting.
- 25th.—Cyclecar Club rally at Brighton.

JUNE.

- 4th, 6th.—Tourist Trophy races in the Isle of Man.
- 7th.—Midland A.C. hill-climb at Shelsley Walsh.
- 14th.—B.M.C.R.C. race meeting, Brooklands.
- 19th.—Cardiff M.C. hill-climb at Caerphilly.

JUNE.

- 21st.—B.A.R.C. race meeting, Brooklands.
- 21st.—Cardiff M.C. speed trials at Porthcawl.

JULY.

- 5th.—M.C.C. meeting at Brooklands.
- 13th.—Grand Prix race for cyclecars. Amiens.
- 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.

TESTING THE PETROL CONSUMPTION OF CYCLECARS.

Next Saturday's Important Trial.

COBHAM will be an interesting centre for cyclecarists and those thinking of taking up the new motoring on Saturday next, when the Cyclecar Club will conduct a fuel-consumption trial. The object of the trial is to find out not only the very lowest consumption for any type of machine and any fuel, but also to determine the relative economy in conjunction with the comfort provided by the machine and its engine capacity.

The first test will almost certainly prove that the simplest three-wheeler, which will probably be the lightest machine entering, has the lowest consumption of petrol for the distance covered. On formula, however, the greater the weight of the complete machine and passengers, and the larger the engine capacity, the more petrol it will be expected to consume, which is to its advantage.

The trial starts from 2 o'clock, at which hour the tank of the first cyclecar will be filled up and despatched from the yard of the White Lion Hotel, Cobham. To suit the convenience of entrants the machines may be presented for the trial at any time up to 3.30 p.m. The filling up of the tanks will be conducted by Dr. A. M. Low and Mr. A. E. Parnacott. Dr. Low has invented a special apparatus for determining the quantity of petrol in the tank. Different methods will be used for filling different tanks, and the process in each case carefully noted, so that when the course has been followed the tanks will be replenished in order to ascertain the amount of fuel consumption in exactly the same way as they were originally filled.

The tanks having been filled, the machines will be despatched to Cobham Stud close by, where each will be weighed with its full load of passengers. Engines may be stopped at a uniform point. After weighing, the machine will follow a course of about 25 miles in a maximum time of two hours. Nothing is to be gained by travelling fast, and speed is therefore left to the discretion of the competitors, although a summons for driving to the common danger or exceeding the speed limit would entail disqualification at the discretion of the committee. The course passes through two 10-mile limits at Leatherhead and Cobham.

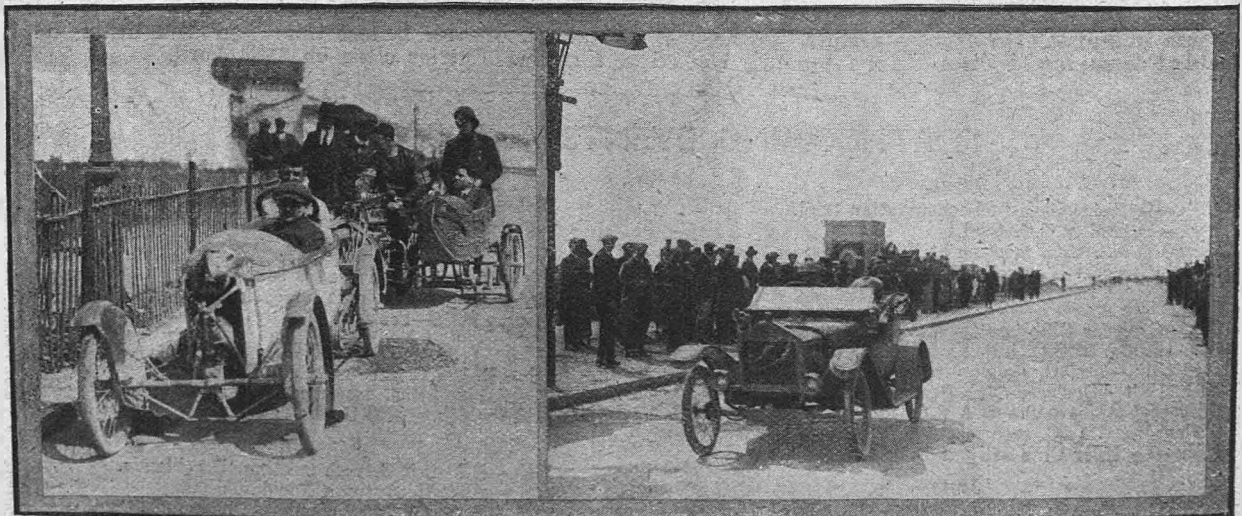
For the benefit of those who would like to follow the trial we give the route in full. The map of the

course appeared in last week's issue of THE CYCLECAR, to which readers are referred.

On leaving the yard of the White Lion Hotel competitors turn left to Church Cobham (10-mile limit), turning right in the centre of the village, past the church, crossing the River Mole, and keeping straight on to the entrance to Cobham Stud. After weighing, the same direction is followed through Downside to the cross roads, where the left road near the railway by Eflingham Junction Station is taken to Eflingham (Guildford Road), turning left to Leatherhead (10 mile limit), and left at the Swan, bearing right after passing the Clock Tower, and at half-mile bearing left at the fork. The Kingston road is taken, turning right at the Golf Club, up Telegraph Hill to Chesington and Hook. Here the course is rather tricky; the following are the directions in brief:—Left, bearing right to cross roads; turn left, keeping right at fork down a steep hill with a sharp turn to left and right at bottom to Claygate; right and immediately left to the Foley Arms; right, left under railway, bearing left and then straight on over cross-roads to the Esher-Leatherhead road opposite the gate of Claremont Park; turn left to Oxshott. A mile and a quarter further on a sharp turn to right is taken (signpost to Stoke D'Abernon and Cobham), sharp to right again and right at foot of short, steep descent on striking the Leatherhead-Cobham road, over the railway at Cobham Station to Church Cobham (10 mile limit), taking the right-hand fork to the main Portsmouth road, and turning left to the White Lion. Competing machines will carry red, white and blue streamers in a prominent position.

As far as available assistance will permit, marshals will be placed at difficult corners, but no doubt the above instructions will be sufficient for both competitors and those who wish to observe the trial. Offers of assistance in marshalling at corners would be esteemed by the trials hon. sec., Mr. A. C. Armstrong, "Meadows," Hook, Surrey, to whom entries (which close to-day) and inquiries should be sent.

It will be interesting to see if any cyclecar can be run at the remarkably low consumption of 100 miles to the gallon, although for a comfortable four-wheeled two-seater cyclecar 50 miles to the gallon would be a very creditable performance.



The Paris-Nice Trial. On left, the Bedelia finishes; on right, the Chater Lea, the only English cyclecar in the trial.

CROSS-COUNTRY COMMENTS.

Tuning-up for the Grand Prix—A Discussion on One or Two-lever Carburetters.

IT is a recognized fact that certain makes of machines are more popular than others in certain districts. In all probability they have obtained a predominant position owing to the pioneer work accomplished by some enterprising agent or private owner. Those who have been interested in a cyclecar for some months have watched some pioneer driver and his machine most carefully. They see him out on the road at week ends; he is seldom in trouble, and his machine generally runs well. What is the result? In time, those who were previously in doubt gain confidence, and summon up enough courage to order a similar machine. Others do the same, with the result that in certain districts a certain machine obtains an overwhelming popularity. A striking example of this was afforded me the other day at the Stratford-on-Avon rally. Humberettes and Morgans were there in numbers, but only one G.W.K. did I see. Now had the rally been at Brighton or Henley there would have been more G.W.K.s there than any other make. It is just the same with cars and motor-bicycles. Get a good man on a machine in a district, and it is almost certain that in a few months time other machines of the same make will be found in the same town.

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I am looking forward to the cyclecar Grand Prix race which takes place in July, and have already begun to think out details for my racer. A study of the rules reveals the fact that mudguards must be fitted, and as this is one of the few parts on my machine which has broken I am looking round for a better system of staying the guard. Probably I shall adopt the motor-bicycle or sidecar type, both on account of its lightness and small wind resistance. Every part of the machine will have to receive attention, and for that reason I am not at all certain that a body is advisable or necessary, for in the event of an adjustment having to be made, the fewer parts in the way the quicker will the work be done. Then, again, the less there is on the machine the less there is to give trouble. Reduction of weight is also important.

Springs, bolts, and nuts will require the most attention. Springs will have to be taken apart, cleaned and greased, and then assembled, bound round with insulating tape and cord, and finally treated with shellac. Nuts and bolts can also be treated with insulating tape and shellac, and in this connection a good tip was given me by a motorbus tester the other day. A spring washer or split pin is not enough to secure a nut and bolt on a machine where there is much vibration, such as a motorbus or racing cyclecar. He advised fitting an extra lock-nut in order to make all secure. Other points in which trouble may occur are the petrol tank and oil and petrol pipes. Some drivers will be fitting two petrol pipes from the tank to the carburetter, so that if one breaks they simply turn off the tap and run on the other pipe. On machines in which the engine is carried well forward on the frame, it will be advisable to fit a gauze screen of some kind to prevent stones hurled up by other machines from injuring the mechanism.

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The engine, the most important part of the whole machine, can very well be tuned up at Brooklands before being taken over to France. If it will stand 10 laps all out at 50 or 60 miles an hour without any sign of drying up, it should be good enough for the big road race. The driver will have to fit up his oil tank and control levers so that they are easily operated by him when seated in the racing position made possible by the increased rake on the steering and low-placed seat incorporated in the design of the Grand Prix machine, so as to cut down every ounce of wind resistance. One thing, however, cannot be discovered at Brooklands, and that is the question of gear ratios. Only an actual trial on the Picardy circuit can determine that. The course is practically level, and includes one or two severe corners. Consequently, I do not think that there will be much advantage in having any more than two speeds. What is required is a fast second, say, about 6½-1, for picking up on corners, and a top gear of about 4-1 for sustained



Cyclecar and American car. A tandem-seated Scello and a Flanders.



AN INTERESTING CONVERSION.

A 3½ h.p. water-cooled Singer tricar, of about 10 years ago, converted into a sociable three-seater. Two views of it are shown on Sunrising Hill, where it made its appearance on the occasion of the Midland Rally.

speeds. On long declines the engine can be throttled down slightly to prevent it racing unduly, but as the event should be won at 42 m.p.h. or 45 m.p.h., there should be no need to drive the engine to its utmost limit. Indeed, it will be good generalship and reliability rather than excessive bursts of speed that will see the first man over the tape.

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The importance of keeping the wheel bearings well adjusted and lubricated is not appreciated by the average cyclecarist. Yet a little attention from time to time bestowed on these important parts will be well repaid by the increased ease of running, and, in the case of the front wheel, the maintenance of sweet steering. Many cyclecarists forget even to lubricate their wheels let alone adjust the bearings, with the result that when they have learnt better and covered about 5000 miles, the damage is done, and they can only remedy it by fitting new cones. On my monocar the adjustment of the front-wheel bearings makes an enormous difference to the ease of steering. When the wheels are slack, there is a tendency for them to set up a series of tiny wobbblings which are only felt when steering with one hand. Generally I treat the bearings with grease or oil, but now I am trying a tin of Price's hub lubricant, which is, as its name implies, made specially for the purpose.

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Half-a-dozen cyclecarists sat round a blazing fire at a Midland hotel the other evening, and discussed the respective merits of the automatic and hand-controlled carburetter. One recommended the Binks, or Indian, type of vaporizer, which is equipped with a pilot jet for slow running, whilst another was equally enthusiastic in his support of the hand-controlled air type as exemplified by the B. and B. Now, I have tried positively all the typical cyclecar carburetters, and, after my experience, I look at the question in this light. If an automatic or one-lever-control carburetter can be made to run a V engine very slowly indeed, also can be left to run the engine for five or ten minutes on end with absolute evenness and cer-

tainty, and, moreover, can allow the same machine to accelerate to high speeds without choking or spluttering, then the device is suitable for the general public, and is probably more simple to handle than the hand-controlled type. But, on the other hand, I cannot see how the automatic carburetter can possibly be as efficient as one hand-controlled, on which a very fair compromise between slow running and speed can be obtained with careful timing. I grant that for the inexperienced driver the one-lever is better, but I think that the expert will always prefer the hand-controlled air, that is, if he requires the greatest efficiency. Perhaps he might add a pilot jet for slow running, but I do not think that he would give up his air control. By this he can counteract variations in the atmosphere, in the speed of the engine, and in the density of the petrol, and, by so doing, can economize petrol in a manner well worth considering.

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It is to be hoped that the Auto-Cycle Union and the motor-cycling clubs will not make any attempt to freeze out the monocar from their trials this year. Let them include a class for these machines. The possibilities of the monocar are only recognized by a few who have given more than a casual consideration to the idea. Some of my motor-cycling friends acknowledge the possibilities of the monocar as a suitable machine for the commercial traveller or doctor or business man; among them I am glad to count the present secretary of the Auto-Cycle Union. Unfortunately the majority give the real value of the single-seater no consideration. If you are to have a cyclecar, you might just as well have a two-seater, they say. You need not use the seat when you do not want to. But herein they are quite wrong. The monocar proper can be constructed more cheaply and lighter than a machine intended to be used—even occasionally—as a two-seater. Tyres, transmission, frame, and engine of a single or a monocar are all of a different type. But the ordinary man only takes a superficial view of the movement, and condemns it at sight.

McM.

THOUGHTS AND OPINIONS.



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



OBTAINING INCREASED POWER.

Interesting Criticism of Mr. A. W. Judge's Informative Series.

I am extremely interested in Mr. Judge's series of articles on "Obtaining Increased Power," and more especially so in the instalment appearing in your issue of the 2nd April. There are a great many amateurs who are sufficiently keen to try all Mr. Judge's "tips" in an endeavour to increase the power of their machines for trials and other purposes, and this being the case, I venture to suggest that they should be warned. For instance, it is no amateur's job to cut a true valve seat with an arbor or boring tool; nor is it explained that to strip the two halves of a worn bearing is insufficient to ensure a good bearing surface. Moreover, the fitting of the two halves is not the easy job it may seem on paper, in that it is so essential to strip these dead level. Then with regard to such alterations as increasing the area of inlet holes in overhead valves on the lines suggested in figures A and B in Mr. Judge's Diagram 8. Whilst five amateurs out of 10 might do the job satisfactorily, the other five would probably either squash or distort the cage in the vice or damage the part with unsuitable tools. Mr. Judge's method of varying the strength of the valve spring as depicted in Diagram 7 would seem almost ideal, but I venture to think that if this fitment was applied to a standard spring on the average cyclecar engine valve and adjusted so as further to compress that spring an appreciable amount, that when the cam lifted the valve its full amount something would

"go"; this, of course, depends entirely on the spring, but from observations I have made I find that when fully compressed the coils of the average spring are so close together as to make further compression a matter of danger.

These is only one other statement in Mr. Judge's article which I wish to criticise, and that is in connection with crankcase relief valves. I am in complete accord with him when he says that it is harder to turn an engine with its compression tap open, and I proved this some years ago, but I cannot agree that a pressure release of good dimensions is unnecessary. My experience was (in the old days of motorcycling) that without an orifice oil was forced out of the crankcase at every place where a working part protruded, except when an engine was new. I think Mr. Judge will admit that if a hole large enough to permit of oil being poured into the engine be fitted, it will release the pressure sufficiently to avoid the possibility of its endeavouring to get out elsewhere, and will in no way increase the load on the engine. The fact that practically every motorcar and cyclecar manufacturer is fitting "breathers" to his engines points that there is some very good reason for doing so. In conclusion, I have to thank Mr. Judge for some very interesting reading, and to say that I am looking forward to his next instalment with pleasure.

London, W.

S. C. WESTALL.

THE STRAIN OF IRISH ROADS.

5000 Miles Without Trouble.

I notice in the issue of THE CYCLECAR for 2nd April that there are vast numbers of people in Ireland awaiting the advent of a machine which will stand the strain of the roads thereof. I purchased a G.N. cyclecar in March, 1912, which has covered over 5000 miles on these roads, and shows no signs of shaking to pieces; in fact, the only wear I have experienced is in the bearings of the front wheels, nor do I have any difficulty in starting, one pull as a rule being sufficient.

Cappoquin.

"READER."

A Top Gear Run.

I have read the paragraph in the issue of THE CYCLECAR of 2nd April on the interest taken in cyclecars in Ireland, and can thoroughly endorse it. I consider that there are now several cyclecars capable of standing the strain of our "terrible" roads. As proof of this I may mention that with my Morgan (coach-built body) recently I decided to attempt a high gear run to the village of Woodenbridge in Wicklow, which is 45 miles from Dublin. In order to eliminate all doubt on the subject of gears, I removed the low gear chain, and reached Woodenbridge in 1 hr. 50 min. from Dublin, having only one stop en route owing to the engine showing signs of overheating after climbing within ten yards of the top of Rathdrum Hill (a famous climb of 1½ miles). The machine was examined by a skilled mechanic at the start, and again at the finish of the return journey, which was accomplished in 2 hr. 10 min. non-stop, and with the exception of a broken mudguard stay there were no

additional signs of wear and tear. I think this is a good performance over bad roads and in a hilly district.

Dublin.

R. C. WATERS.

Transit to the Isle of Wight.

The matter of transit between the Isle of Wight and the mainland may interest many owners of cyclecars, for the only ways by which machines, however small, could be taken over have been either by "tug-boat" from Portsmouth to Ryde (a mode of transit that does not improve a cyclecar, as the methods of embarking and disembarking at either place are of the roughest description) or by that from Lymington to Yarmouth, a route which is very much out-of-the-way for people at this side of the Isle of Wight. The best way, however, is by steamer from Southampton to Cowes, but it is rather expensive. Now there are two things which I would suggest to the cyclecar organizations. Firstly, to prevail upon the railway and steamboat companies to make a very substantial reduction for genuine cyclecars by all routes, and particularly by the last one mentioned. Secondly, that new and special appliances should be installed at Portsmouth Harbour Station and at Ryde Pier Head for embarking and landing cyclecars and other motor vehicles, so that they could travel on the deck of the passenger steamers in the luggage space. The companies want waking up all along the line about here, so far as efficient transit is concerned. At both the above-mentioned stations there are powerful cranes capable of lifting any cyclecar either in a "cage" or by a sling. Really, the methods and prices in this out-of-date part of England are surprising.

Ryde, Isle of Wight.

"QUADRANT."

THOUGHTS AND OPINIONS (contd.).

A Challenge.

In reading the reports in the motor Press of the Cyclecar High Speed Reliability Trial at Brooklands, I was very surprised to notice how inaccurate the majority of them were, terming the event the cyclecar "race." Their description must have conveyed the impression to many readers that the Singer would have won had it not been overweight. Now this event was purely a reliability trial, and the winner was the one who had the smallest difference between his fastest and slowest lap times, providing that in class B he averaged 35 m.p.h. There was therefore no object in running for a much higher average than 35 m.p.h. Personally I decided to run at 37 m.p.h.; my Morgan ran with great regularity, and at the finish the variation between my fastest and slowest lap times was only 16 seconds. As no other machine did so well as this I was adjudged the winner; and even if the Singer had averaged 60 m.p.h., and had not been overweight, it would not have won, as it had a much greater variation between its lap times than I had. Unfortunately, first impressions stick, and no doubt many people, after reading the accounts referred to above, will think that the Singer is faster than the Morgan. In order to prove that this is not so, I challenge the Singer—or any other cyclecar—to a race at Brooklands over any distance up to 100 miles. Although my machine would conform to the A.-C.U. definition, I should not object to the acceptor's being overweight, so that if the Singer competes against me it could be fitted with the larger radiator which was found necessary on Brooklands. This is a purely sporting challenge, but I suppose some stakes are necessary, so being only a poor agent, I suggest that a cup value £10, to be paid for by the loser, would meet the case.

Putney.

A. W. LAMBERT.

[The inaccuracies in the reports of the event referred to do not apply to the report which appeared in THE CYCLECAR.—ED. THE CYCLECAR.]

A Private Trial on a Singer.

Owing to a slipping clutch and carburettor trouble the 10 h.p. Singer failed on Sudeley Hill in the Cyclecar Club reliability trial, but knowing the capabilities of the car, we decided to carry out a strenuous private test on our own account. A large passenger was secured, and by adding leaden weights we brought the "passenger" weight up to no less than 30 stone. We then went along towards the Crystal Palace, taking Gipsy Hill on second, in spite of a traffic stop half-way up. The first real hill on our course was Jasper Road, and seeing the road rise mercilessly up before us in no uncertain manner, we feared failure—but, no, the little engine hauled us over the gradient, which is certified as 1 in 4, without the slightest hesitation. We next tackled Cudham Church Hill the engine pulling the car irresistibly over the long rise past Keston on top gear. Cudham's precipitous slope of 1 in 4.3 was taken without a falter, which, considering the weight carried, will be appreciated as a good climb by those who know this particular hill. Passing on down Westerham through Godstone up Blethingley slope on top to Reigate, we attacked Pebble Coombe with great success (gradient 1 in 5), following the recent A.-C.U. trial course over Ranmore Common (1 in 6) to the Mount, Guildford, which was taken twice in succession, the second time round the "hairpin."

London, S.W.

BAMFORD AND MARTIN, LTD.

[It is a pity this excellent result was not achieved under official observation, and we suggest to Messrs. Bamford and Martin, Ltd., that they should seize an early opportunity of an A.-C.U. test.—ED. THE CYCLECAR.]

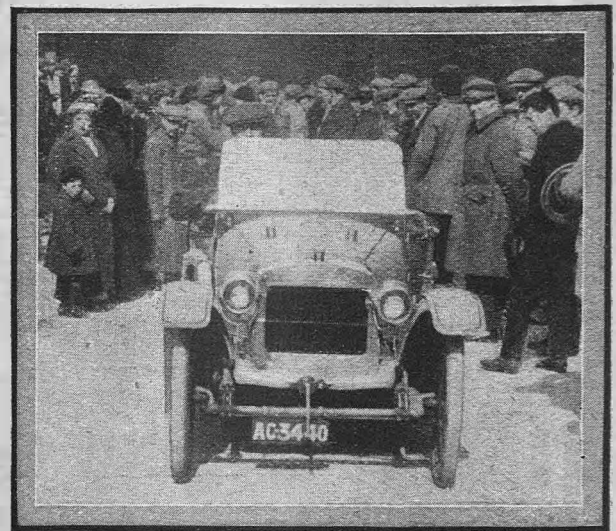
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Weight Limit.

The question raised in your columns in regard to the weight limit for cyclecars will, no doubt, be emphasized by the disqualification of the Singer at Brooklands. We ourselves make one of the lightest cyclecars, believing that lightness is essential to economy and speed. But we should, nevertheless, be glad to see the weight limit removed. Our contention has always been that the cyclecar movement is best served by competition, and that competition cannot be on too broad a basis. We should welcome competition with the light car, as we do with the sidecar, for converts may be made from both sides. Certainly the record of the Singer shows that at present the light cyclecar has nothing to fear from competition; and, it should be otherwise in the future, so much the better for the development of the "new motor-ing."

THE MORGAN MOTOR CO.

Malvern.



The Invicta restarting in the stopping and starting tests on Sunrising Hill on the occasion of the Midland rally.

Building a Cyclecar.

My advice to "Half-inch Mechanic" in the issue of THE CYCLECAR for 12th March was not to build up parts. My opinion is that the only advantages gained are a machine to your own specification and experience. I must congratulate "C.E.W.," a description of whose machine appeared in a recent issue of THE CYCLECAR, on his practical mechanical ability. Very few, unless they are trained mechanics, can make springs, variable gears, do brazing, hand forging, and turning. As for converting an old machine, I agree with "Half-inch Mechanic" that it may not prove a thing of beauty, and I doubt if it would be a joy even for a short time. With old reassembled parts trouble must come, and that quickly. "FALSE ECONOMY."

Edinburgh.

I think "False Economy" is right when he says it is cheaper to buy a new cyclecar than to build, if one has to buy all the parts at retail price and pay carriage or postage on each. But I think my letter on cyclecar dimensions, which appeared in THE CYCLECAR, 26th February, made it clear that I should like to have a rough working description of a cyclecar made by an amateur. I find in the letter from "C.E.W.," appearing 2nd April, that he made almost everything himself: but he does not give the necessary sizes to enable anyone to make one like it.

"HALF-INCH MECHANIC."

THOUGHTS AND OPINIONS (contd.).

A Fair Owner of an A.-C.

The accompanying photograph is of Miss Dorothy Minton, who is seated beside her brother. She has driven an A.-C. Sociable for the last three years, and is a keen, enthusiastic cyclecarist. Near Bewdley, Worcestershire, where she lives, there are several capital hills to test a machine of this description, including Farlow Bank. The A.-C. has run well for three years, and to-day it is in capital condition.

Miss Minton strongly recommends others to experience the facilities and pleasure in getting about in these little machines. L. J. WALKER.
Birmingham.



Miss Dorothy Minton driving an A.-C. Sociable.

Petrol Consumption on an A.-C.

I have recently entered the ranks of cyclecarists, having purchased a second-hand A.-C. Sociable, with which I am very pleased. The other day I filled my tank and went for a run of from 50 to 55 miles at the most, and when I arrived home my tank was practically empty. Now I think 25 miles to the gallon is a bit stiff for a little machine, when I know a four-cylinder 16.2 h.p. five-seated car that will do as well. The road, although not perfect, was in fair average condition in Montgomeryshire, and it is not a question of driving, for I have had some experience with motorcycles and cars, when I seldom had the throttle more than half open and throttled down as much as possible on low gear, whilst the carburetter was automatic as regards air. I noticed recently in THE CYCLECAR that an A.-C. owner in Manchester had an average consumption of 39 m.p.g., which is better, but not what it ought to be. Would some of your readers who own A.-C.s state their petrol consumption? There is one thing in regard to an A.-C., and that is you can always rely upon it accomplishing a journey without trouble, which does not seem to be the case with some other makes. Oswestry.

[It is obvious that our correspondent is either the victim of a most imperfect mixture, and his carburetter therefore requires adjusting, or else a serious leak of petrol. Twenty-five miles to the gallon is absurd for an A.-C., as we know from our own experience.—ED. THE CYCLECAR.]

"PETROL."

Our Front Cover.

May I congratulate you on the really fine photographs which appear weekly on the cover of THE CYCLECAR? I have taken the trouble to have them cut off and framed, but I think the photograph on last week's issue "caps the lot." A. M. WEST.
Birmingham.

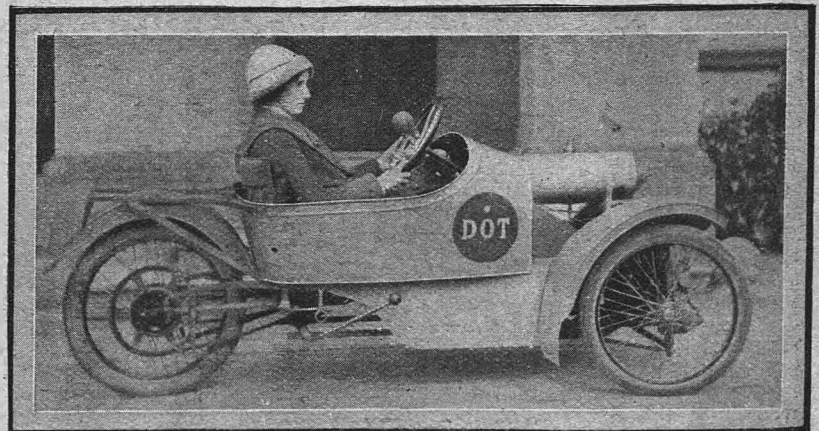
The Agents and the Cyclecar Movement.

With regard to the footnote to my letter in THE CYCLECAR dated 9th April, you state that the majority of agents were guided by their own opinions and had never given the cyclecar movement and its possibilities real thought. You seriously misjudge the agent, who has probably had years of experience. He can gauge the public requirements to a nicety, and is therefore the best judge of what is required, not being in business for his health. I entirely disagree with you when you say that he has never given the possibilities of the cyclecar movement real thought. ALLEN H. SELWYN.
London, W.

[How could the agent have "years of experience" of a movement so young? We have discussed the cyclecar movement with a number of agents in all parts of the country, who have for the most part not yet thought it out, so we must adhere to our original statement.—ED. THE CYCLECAR.]

Cyclecars and the Police.

With regard to the paragraph that appeared in a recent issue of THE CYCLECAR about the racy appearance of cyclecars and the police, might I say that I have just been summoned for driving, as the constable said in his evidence, "a racing motorcar at a speed of between 35 and 40 m.p.h."? This was up an



Another lady driver, Miss Dorothy Morgan, sister of Mr. H. F. S. Morgan, the maker of the Morgan three-wheeler.

approximate gradient of 1 in 15! I should have difficulty in getting 30 m.p.h. on the level out of my machine, and to make it the more impossible the belts were slipping badly. Motor technicalities, however, did not appeal to the bench, and I left the court poorer and with an unwelcome addition to my licence. O. HOOK.
London, S.W.

Automatic Carburetters.

I should be pleased to know whether any of your readers have experienced carburetter troubles when a gale has been blowing? My carburetter is an automatic one, and although sheltered by a bonnet, its adjustment always becomes disturbed in a high wind. I notice that on several occasions you have made comments on this point. R. T. BEST.
D35

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.

NUMEROUS inquiries for "the best cyclecar" are very difficult to answer, the questions requiring to be qualified by some mention as to limit of price, whether the machine is to be a four or a three-wheeler, if it is to be used in a hot climate or a hilly country, and the owner's preferences in regard to tandem or sociable seating, and an idea of previous experience of motoring is desirable. If he has studied the subject at all the inquirer has probably formed definite opinions in regard to certain types of cyclecars, and it would help if these were mentioned. Finally, a numbered list of machines to select from should be given if possible, and a copy kept of the numbers for comparing with the reply when it arrives.

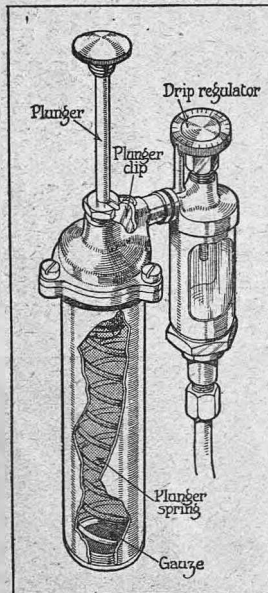
LUBRICATION SYSTEMS.

THE most efficient lubrication system is perhaps that known as the "force feed," for with this type oil is fed under pressure direct to where it is required. Of course, to install such a system is expensive, and for that reason the number of cyclecar manufacturers that adopt it may be counted on the fingers of one hand, whilst in each case, too, the engine they fit is a four-cylinder one. The usual method of lubricating a cyclecar engine is that known as the splash system, the oil being sucked out of a tank by a hand pump and then forced into the crankcase, where it comes into contact with the revolving crankshaft or flywheels, if they are fitted internally, and is then splashed about. It thus finds its way on to the cylinder walls, to the gudgeon pin and all points requiring lubrication. A pumpful is given at intervals, and for this reason it follows that at times the engine is over-oiled, whilst at other times it has not sufficient lubricant. To remedy this many makers fit some kind of drip feed, whereby the engine is supplied continuously with oil, though the amount that is flowing at any time is small, which is certainly a more efficient method. To obtain this continual drip, which can usually be regulated by a thumbscrew, some manufacturers place the outlet pipe at the bottom of the tank and rely on gravity to convey the oil to the crankcase. Other makers, however, fit a Best and Lloyd semi-automatic lubricator, which can be fitted to any oil tank and the working of which is extremely simple. A pump is provided, and by pushing the plunger down to its limit the barrel of the pump is filled with oil. On releasing the plunger a spring forces the oil up to a regulator, where it drips into the pipe that finally conducts it to the crankcase. When the plunger comes to the end of its travel the oil ceases to flow, but on pressing it down again a fresh pumpful of oil becomes ready for use. Thus the lubricator is simply a means whereby the usual pumpful of oil can be given a drop at a time to the engine, whilst the rate of the supply can be regulated by a tap. When the engine is stopped the oil can be cut off by pushing the plunger down as far as possible, and locking it there by the neat clip provided. These comments arise out of a query from "W.D.B." (Southend).

WHEN TO OIL

"F.C." (Harrogate) asks whether he should give any extra oil to the engine when his machine has to climb a hill. Certainly it is advisable to let the engine have a larger quantity of oil when it is called upon to do hard work, such as to propel the machine up a gradient. As "K.C.'s" cyclecar is fitted with a drip feed, a certain amount of trouble will be experienced. On coming to the foot of a hill the regulating thumbscrew will have to be unscrewed slightly to increase the flow of the oil, and when the top of the hill is reached the regulator will have to be reset. It would

almost be more satisfactory to fit an auxiliary hand pump, for with it the engine could be given extra oil whenever it required it without any alteration having to be made in the main supply. A maxim that is useful to remember in the matter of lubrication is always to use the brand of oil that is recommended by the maker of the engine. It is a peculiar fact which is hard to explain that some engines appear to run better on one brand of oil, whilst other engines with the same class of oil may not give the best results.



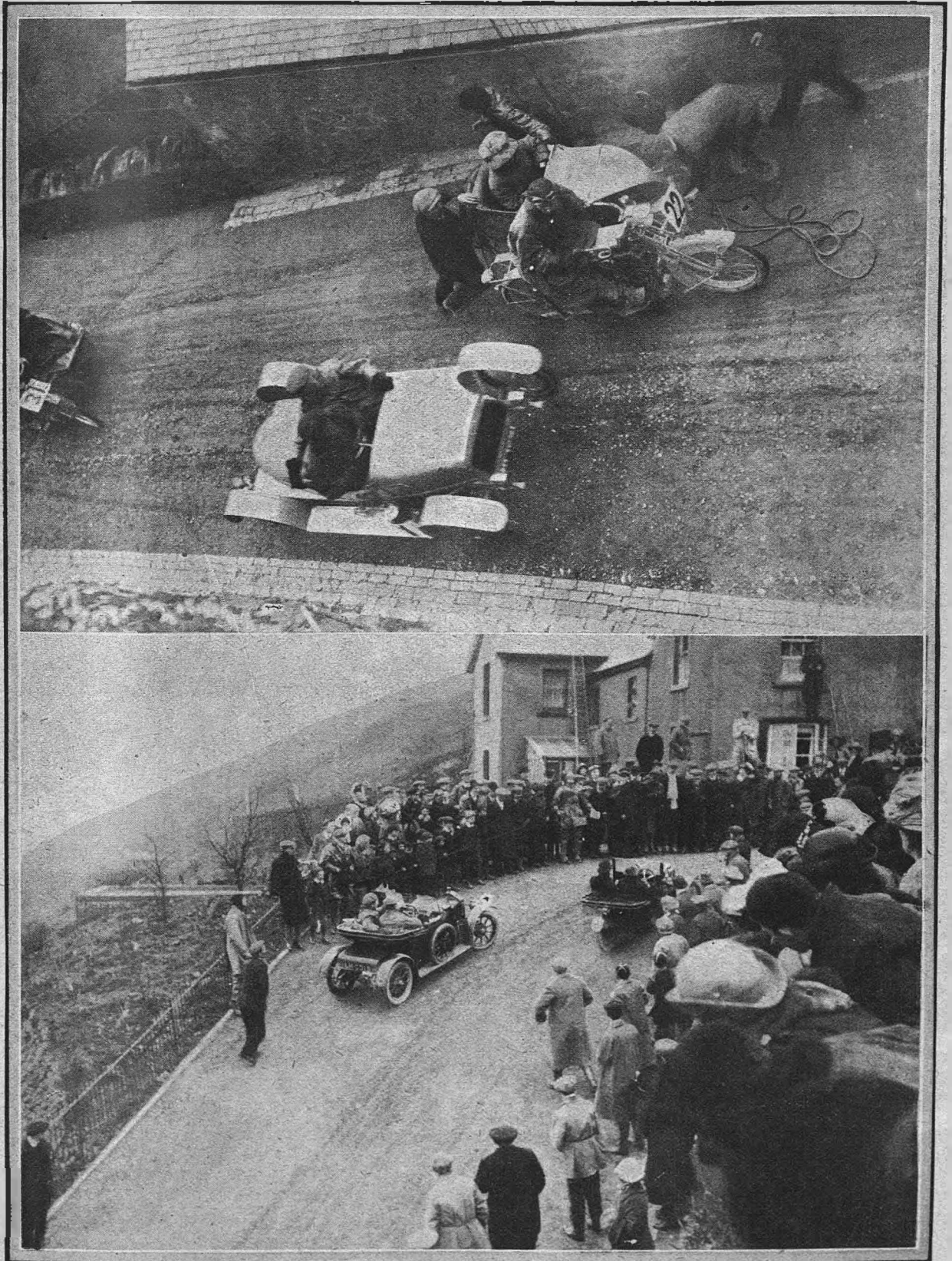
A Best and Lloyd semi-automatic lubricator.

GEAR RATIOS.

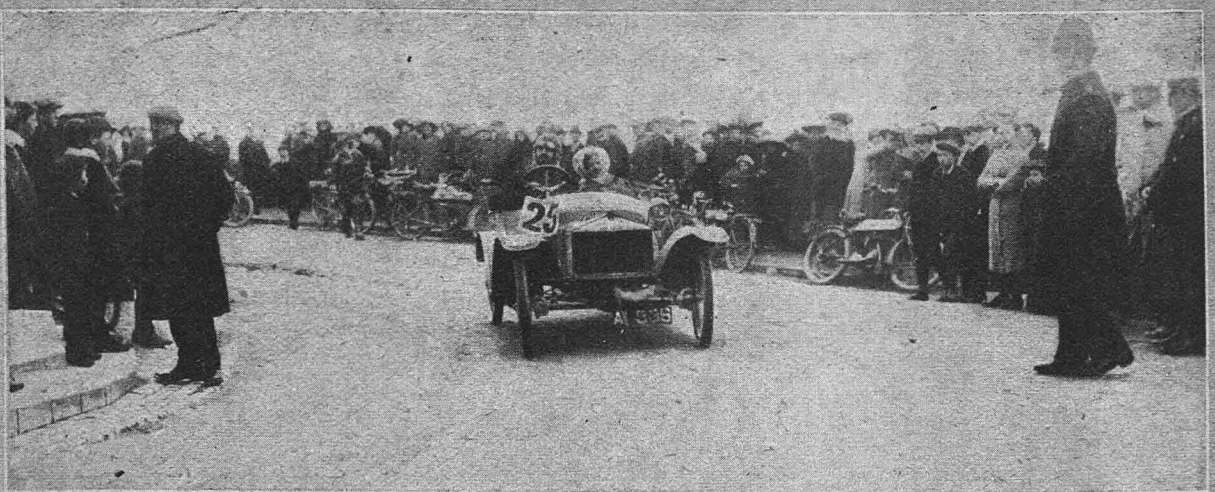
As the majority of cyclecarists are probably new to the ranks of motoring, many of them are naturally puzzled as to the meaning of some of the terms used in connection with cyclecars. "R.A.S." (Swansea) is in doubt as to what "gear ratio" means. When a cyclecarist says that his gear ratio at any particular moment is 10 to 1 he means that the engine, or rather the flywheel, revolves 10 times whilst the driving road wheel rotates once. Another correspondent "W.M." (Amersham) asks: "How shall I find what my gear ratio is?" There are many ways of determining the ratio. It may be done by calculation, but the most satisfactory as well as one of the

most correct methods is to put the machine in whatever gear is in question and place a mark on the circumference of the wheel where it touches the ground. Engage the starting handle, turn the engine round, and count the number of revolutions that the crankshaft makes until the mark on the back wheel comes relatively into the same position as it started in. For instance, if the crankshaft had to be rotated $8\frac{1}{2}$ times, the gear ratio would be $8\frac{1}{2}$ to 1. Care must, of course, be taken that there is no slip in the transmission, and the points where this is likely to occur are at the clutch, friction discs, or belts. To reduce this tendency to slip the driving wheel, or wheels, might be jacked up. To make the task easier, the compression taps should be opened, whilst, of course, the magneto should be switched off, or the petrol turned off, to prevent the engine firing. "T.P." (York) is building a cyclecar and is puzzled as to what ratio he should make the low gear. Unless hills with abnormally steep gradients are likely to be encountered, a good average low gear ratio is about 10 to 1, but if the machine is heavy an even lower gear could be used with advantage. In no cyclecar, however, should a gear lower than 16 to 1 be necessary.

THE BIRMINGHAM M.C.C. TRIAL.



Two remarkable photos of ascents of the Old Wyche Cutting (1 in 2'96). Top (taken from above): Mr. Keiller's G.W.K. passing a sidecar competitor who had to be towed. Bottom: A Morgan and a Strger.



Top : Mr. H. C. Pickering (P.D.A.) on top of the Old Wyche Cutting. Centre : Mr. E. R. Wintle (Rollo) makes a good ascent of Sudeley. Bottom : Mr. P. J. Evans (Humberette) on Birdlip. (See the centre pages.)

for the cause of the new motorcars

RAA