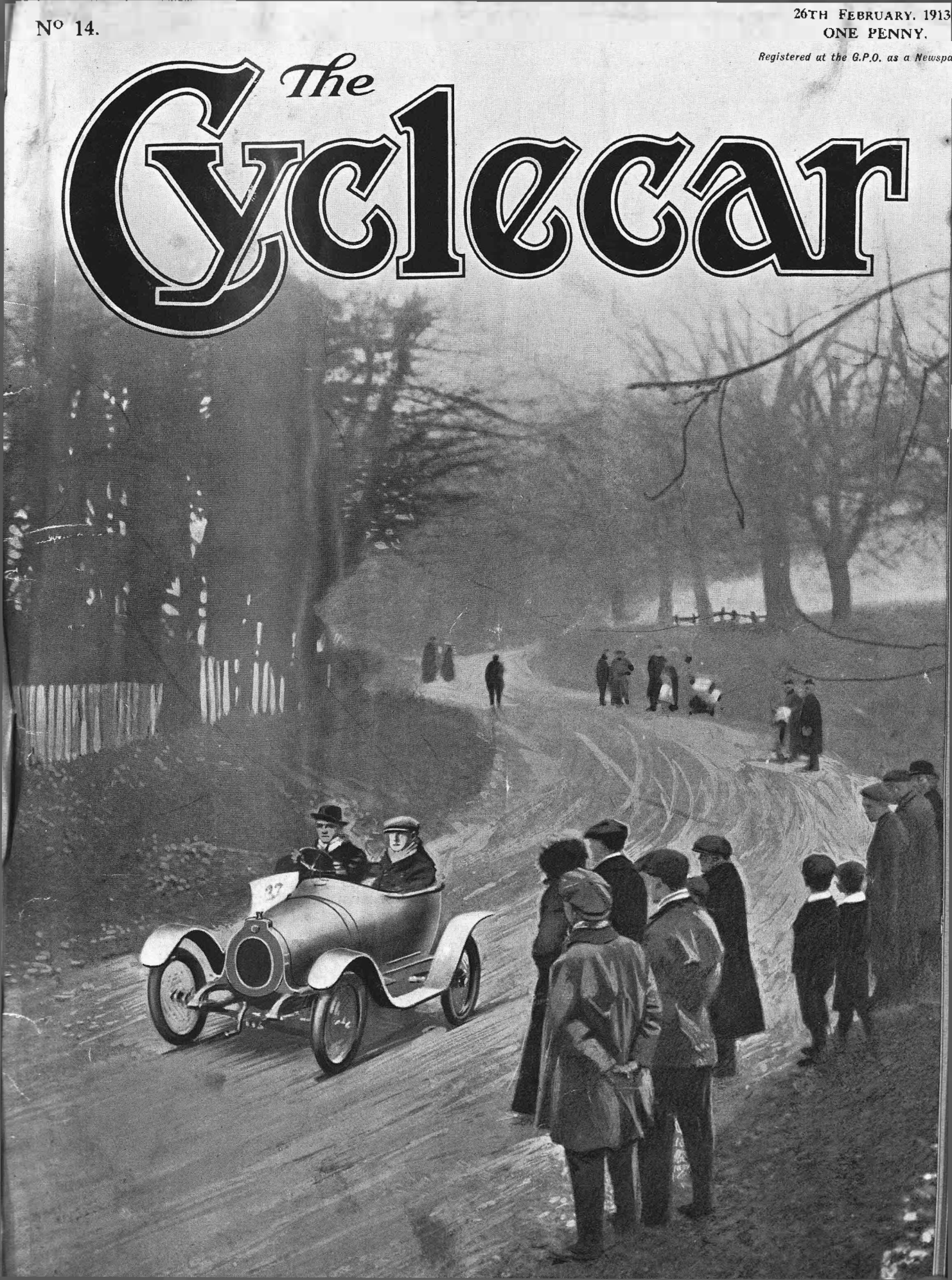
No 14.

26TH FEBRUARY. 1913
ONE PENNY.

Registered at the G.P.O. as a Newspa

The Cyclecar



A Humberette climbing Church Hill, Caterham, which has a gradient of 1 in 9.

THE CALL OF THE ROAD. . .

THE JOTTINGS OF JOHN GILPIN, JNR.

——TOP-GEAR ASCENTS.——

SPLENDIDLY as my engine is pulling just now, I never dreamed for a moment that it was possible to take a hill as steep as 1 in 12 on top gear, the gear ratio being 4¾ to 1, which is fairly high. However, the feat has been accomplished. Accompanied by the driver of a Duo, who was without a passenger, we tackled numerous fairly tough hills, the roads being in excellent condition. The first was Telegraph Hill, near Leatherhead, which, after a long rise, terminates in a gradient of about 1 in 15 for a couple of hundred yards. Quarter throttle was quite sufficient to get up that at the legal limit. The next was the long rise from Leatherhead to Bookham Common, along the Guildford road. According to the Contour Book, this has a gradient of 1 in 11, and is about a mile in length, the steepest portion being about a quarter of a mile from the bottom. Owing to the risk of another vehicle appearing at the corner by the Rising Sun at the foot of the hill, no attempt was made to "rush" it, and the throttle was not opened until the ascent was tackled, a charge of oil being given at the same time. The engine readily responded, the speed increased, and I gave slightly more air. As the gradient steepened and an indefinable alteration of the note of the exhaust indicated that the engine would shortly commence to knock, I gradually closed the air and opened the throttle. The engine pulled splendidly until the very steepest portion was surmounted, and then, on the slightly easier gradient, commenced to knock quite unexpectedly. I closed the air, but it was no use, and a change down to low gear was made, getting into top a few hundred yards further on. This failure was directly attributable to overheating and pre-ignition, the mixture igniting before the charge was fully compressed, and thus causing the engine to knock. Another charge of oil might have saved the situation, so I will make another attempt shortly and report the result. The Duo, which had not the extra weight of a passenger, but had the disadvantage of single-lever carburetter control, made an ascent on nearly top gear at a tremendous turn of speed, it being one of the great advantages of the variable pulley type of belt-driven machine that minute reductions of the gear are possible.

No other hill presented any difficulty until Guildford

THE CALL OF THE ROAD (contd.).

was reached. Here I took full advantage of the 10 miles speed limit and the steep descent to cool the engine. I proceeded to throttle right back, and run dead slow against the compression of the engine until symptoms of pre-ignition disappeared. Then, changing into low gear and cutting out the magneto, I crawled down the steep High Street with throttle and air full open, to take the fullest advantage of the cooling effect of the unfired mixture. The turn at the bottom of the hill was negotiated carefully and the top gear put in. Then, to my dismay, the approach to the hill over the steep bridge by the railway was blocked. Throttling down to a crawl, I expected momentarily to have to change down, but an opening in the traffic saved the situation, the engine responded instantly to the throttle, and we were over, only to get temporarily blocked at the foot of the real part of the ascent. Here I injected a charge of oil, slowed to a crawl, and opened out at the very foot of the 1 in 12. The engine instantly responded, and as we were in the 10-mile limit, had to be retarded until the end of this stretch, when I opened out again and flew to the summit like a bird, reducing the throttle and giving more air all the while. The ascent could have been made at twice the speed. I did not put foot to clutch nor hand to gear lever at any time.

Flexibility.

This is a real indication of flexibility. With the very best of cars few will develop power on a hill at low speeds or crawl on top gear at four miles an hour (except with a very low gear ratio) on the level. It is a tribute to the B. and B. carburetter and the two-lever control system, which I have previously stated I do not think can be improved upon, and to the efficiency of the engine of the G.N. type. This has a bore and stroke of 80 mm. by 98 mm. (giving a cubical capacity of 985 c.c., or 7.9 h.p. by R.A.C. rating), and a very large outside flywheel. I hope to succeed in getting up Bookham Common Hill on top at the next attempt, and am also contemplating top-gear ascents of Reigate and Titsey Hills. The former is only 1 in 13 on its steepest part, but its length makes the feat difficult; the latter has its steepest gradient in the first few hundred yards, and as it is 1 in 8, I regard the successful issue of the test as being practically impossible.

As it might be assumed that the machine was fitted with a very light set of tyres, which would make a great deal of difference in hill-climbing, it might be pointed out that, on the contrary, they are almost as heavy as any made, being Rom combination (steel-studded with rubber bands). I believe in heavy tyres, and think that the first cost justifies the freedom from trouble. My set ran a month before requiring to be pumped up. They were inflated "board" hard, which, at the end of another 150 miles, found out a weak place in the inner tube of the near-side back wheel. Two little nips, apparently made with a tyre lever, indicated carelessness in putting on the covers. All the wheels are interchangeable, and I carry a spare neatly mounted on a dummy axle at the back of the machine, so that it was an easy task to replace the punctured wheel. This, on examination, proved to be in wonderful condition after nearly 700 miles driving. One or two almost invisible cuts (the hole having closed up instead of gaping) were all that could be traced, in spite of running over many miles of newly-metalled road and climbing hills at speed. The studs were in perfect condition.

Lubrication.

In previous jottings reference has been made to the difficulty of obtaining suitable oil. Not every engine requires the same oil and as my tank is placed in an exposed position, and the oil has to be pumped into the engine through a somewhat small pipe, too heavy a lubricant is perfectly useless. After several experiments I have found an oil that apparently answers perfectly: the real test is the condition of the cylinders when they are taken down for cleaning. This is Monogram motorcycle oil "555." There is a spring fitted to the pump plunger, and it is now only necessary to pull it up and let it go, when the oil is gradually injected into the crankcase. With a heavier oil the pump requires supplementary pressure. I have a five-gallon drum, which can be taken as a "tip" to other cyclecarists, for this is a much cheaper method of purchasing oil than in small tins. The oil should be poured into a number of tins—a strenuous operation—and is then ready for use.

Steering.

"Look at the steering, isn't it absurd? Why, it's only bits of string round a cotton reel." The critic who thus described somewhat crudely a form of steering common to many cyclecars was evidently not familiar with the fact that "wire and bobbin" steering was frequently used on cars and, when properly applied, gave no trouble. It was used very extensively on the smaller Rover cars, and there is really no reason whatever why it should not be used on cyclecars. It is simple, inexpensive, easily adjusted, perfectly reliable, and does not develop "backlash" so readily as in other types, yet is viewed with considerable suspicion by the public. After driving several types of simple cyclecars with cable steering, it would take a great deal to convince me that there is anything wrong with this system. Steering I find invariably very easy, especially as it is more or less direct, and a very slight turn of the wheel is all that is necessary to take any corner. To afford an ample margin of safety, every machine of the cable-steered type should have two independent wires, for if one is broken the other would hold. Most of them do; some have three wires. A fracture of the cable would be much more unlikely than the interruption of the steering connections by the loss of a bolt, a point that the driver should always guard against, and he should, of course, periodically examine all nuts and bolts on the steering connections. In all the types of cable-steered cyclecars with which I am familiar, the wires are in full view, and the fraying strands would give warning of a breakage.

* * *

To my notes last week on the utility of the road "scouts" and "guides" might have been added some comments on the information they can give to those touring in an unfamiliar district. Not only can they warn the driver of bad stretches of road, flooded roads, or stretches under repair, but they can advise on the best of alternative routes, or upon the nearest routes to various distant towns.

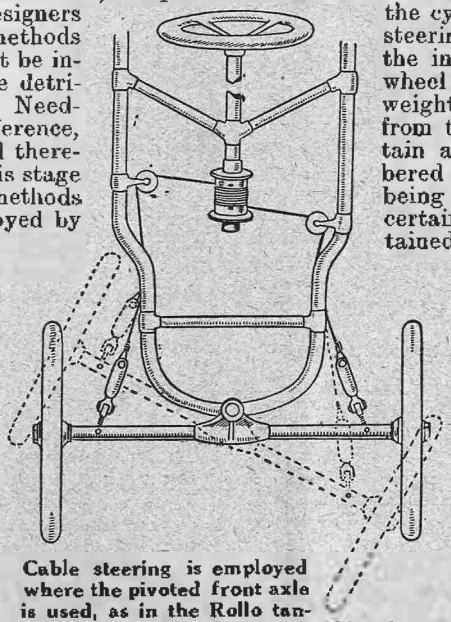
JOHN GILPIN, JNR.

A REVIEW OF CYCLECAR STEERING SYSTEMS.

The Advantages and Disadvantages of Each Type.

IT is safe to assert that of all the parts and the various movements incorporated in the mechanical parts of a chassis the efficiency and trustworthiness of the steering mechanism assume an importance which, for obvious reasons, should rank second to none. This being so, it may strike some of our readers as incongruous that, whereas car practice appears to have long ago accepted the principle of control through a worm and corresponding wheel (or part of a wheel) as providing the best medium, cyclecar designers are indulging in a multiplicity of methods which, it is apt to be assumed, must be inferior to this system, and therefore detrimental to the safety of the users. Needless to say, this is an incorrect inference, though possibly a natural one, and therefore it will perhaps be helpful at this stage to touch on the several alternative methods which are being successfully employed by cyclecar designers.

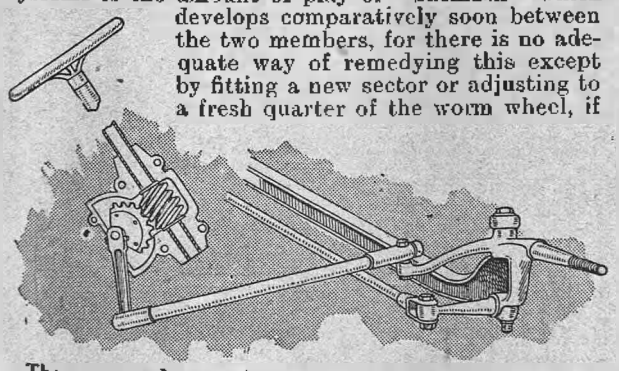
As a preface, we may remark that the chief claim of the worm type of steering is its "irreversibility"—that is to say, any obstruction in the road which is struck a glancing blow by one or other of the steering wheels in their course, would fail to deflect them from their set direction by reason of both the oblique pitch of the worm transmitting gear (which is cut to favour easy transmission through one end only) and the reducing effect obtainable. To a certain extent this characteristic does exist, but since it is always possible to revolve the steering wheel of any car by gripping the front wheels and forcing them in one direction or the other, it follows that this desirable feature is not present in toto—in fact, far from it—although it is certainly easy enough to negative any slight shocks transmitted to the steering wheel end by providing a wheel of sufficiently large diameter to afford a good leverage for the driver. One point in particular, however, where worm-and-sector steering fails to compare favourably with direct systems is the amount of play or "backlash" which develops comparatively soon between the two members, for there is no adequate way of remedying this except by fitting a new sector or adjusting to a fresh quarter of the worm wheel, if a complete wheel is provided instead of a sector. Seeing that this system is considerably more expensive to install than the most costly of the alternative types, one does not appear to be getting quite such good value for money as the cyclecar is expected to represent, and as the one real disadvantage in direct steering, when applied to heavy cars, no longer applies when employed on a vehicle not exceeding 6 cwt. or 7 cwt., readers may feel reassured on the complete efficacy of this type for the cyclecar. The disadvantage of direct steering for the medium and heavy car is the increased effort required to hold the wheel to the desired course against the weight of the vehicle when deflecting from the straight, endeavouring to maintain a straight course on a heavily-cambered road, etc., in each case the effort being perhaps calculated to require a certain amount of undesirable and sustained tension; but with a light vehicle this is in no way noticeable, whilst the provision of an ample-sized steering wheel gives the driver an additional leverage, which enables him to counteract at once any tendency evinced by a road obstruction to deflect the road wheels from their course.



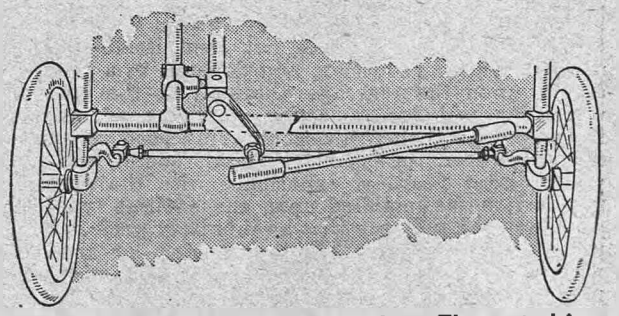
Cable steering is employed where the pivoted front axle is used, as in the Rollo tandem. Spring boxes intercept and insulate the steering wheel from road shocks.

In connection with this point it is interesting to note that the principle of carrying the stub axles behind the swivel centres has been very largely adopted among cyclecar designers, and this provides a trailing castor effect, which tends to automaticity of steering, the driving force naturally compelling the stubs to maintain a position aft of the pivotal centres; and as both wheels are coupled to move in sympathy through a tie bar, movement of the wheels out of the straight, either one way or the other, is resisted by this action sufficiently to render the straight-ahead direction the natural one for the mechanism to assume when under way, even after deflection by road obstacles.

The various types of steering include those known by the following names:—(1) Cable; (2) direct; (3) rack-and-pinion; and (4) worm and segment, or "irreversible" steering, the cost of the different systems being, generally speaking, in the above



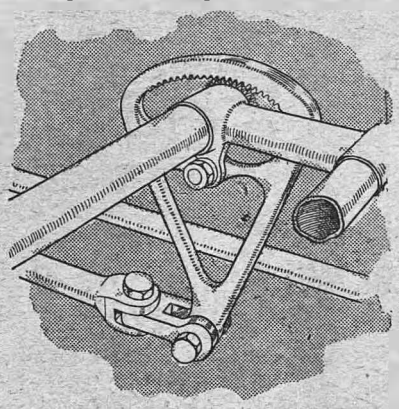
The worm and sector irreversible steering. The shocks from the road wheels are not transmitted to the steering wheel owing to the method of reduction in transmission.



A form of Ackerman direct steering. The control is transmitted positively from a crank at the end of the steering column. This form of steering is embodied in the Rollo sociable.

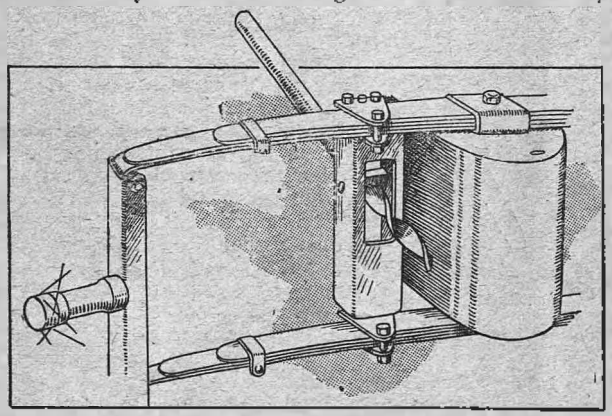
CYCLECAR STEERING SYSTEMS (contd.).

order, the cheapest being the first-named. In this type we certainly get the effect in the simplest manner possible, and provided every precaution is taken to ensure an ample margin of strength in the cables and their fastenings, there is little against this system, except conservatism on the part of the public, for not only can it be designed with a low-geared action by means of lessening bobbin diameter, but the irreversibility (or its effect) can be still further assisted by the insertion of spring boxes in the cable run to insulate the steering rod—and consequently the control wheel—from the innumerable smaller "snatches" which might be distinguishable. A large diameter wheel, in addition to the foregoing safeguards, should provide all that is in any way necessary to ensure comfort and to eliminate arm-ache or tension.



The Rudge-Whitworth rack-and-pinion steering system.

The direct system was, perhaps, the earliest one to attain any standardized vogue in the motor world,



The unusual steering system adopted on the Parnacott cyclecar. The end of the steering column is provided with a screw, and as this is rotated it turns the whole of the front carriage about its centre.

for in car practice it preceded the now universal worm-and-sector. As a system its principle is similar to both the cable and the rack-and-pinion in that it is direct in action, but in one respect it is the inferior of both, as it does not lend itself to any method of gear reduction, and depends to a greater extent upon the leverage obtained at the control wheel for resisting deflection of the road wheels from the straight when encountering road inequalities. However, the type is perfectly sound, and the writer, after years of experience with the pattern in question—as installed upon the earliest types of machine—can only say that he infinitely prefers it to the indirect control. Whether custom or instinct with long use dulls the perceptibilities in any particular direction or not is immaterial, but fatigue from steering was never noticeable, nor was there any undue tendency to "play the guttersnipe" on a cambered surface.

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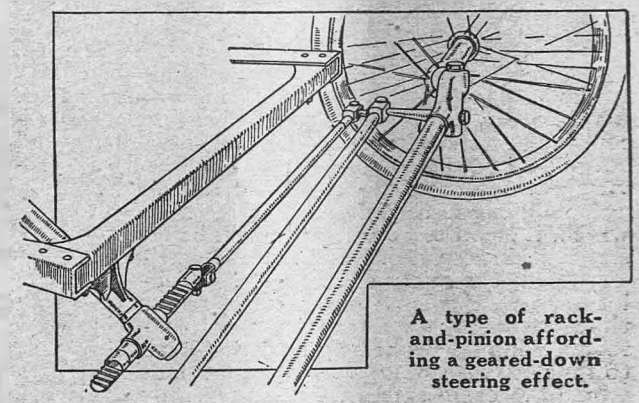
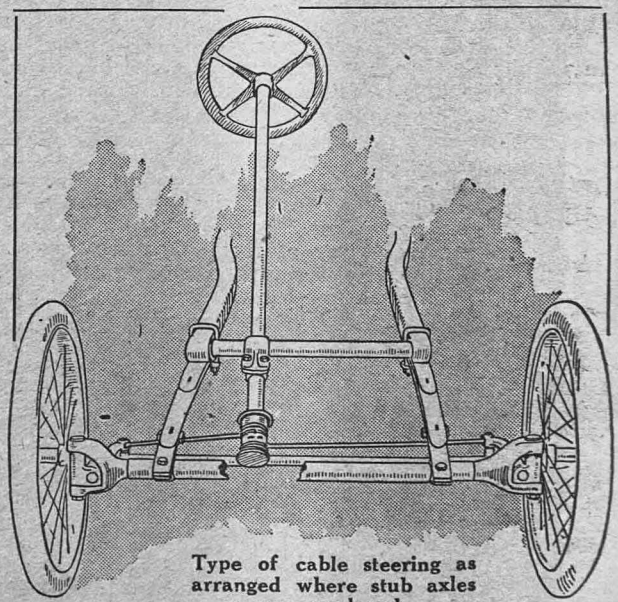
Control through rack and pinion provides, as above stated, for a geared-down movement, inasmuch as the pinion can be varied as regards the number of teeth employed, a small pinion requiring an increased rotation of the control wheel over a pinion of increased diameter; in every other respect the system follows generally the orthodox lines and forms a method with which one can find no fault, especially if the rack should be provided with a long sleeve bearing to exclude dust and dirt from the mechanism, a feature which is not, however, existent



A type of rack-and-pinion affording a geared-down steering effect.

in the sketch we reproduce of this system. Whatever the design adopted, a point should be made of enclosing all steering joints in leather casings to keep out dust and other abrasive substances which, when mixed with the oil in the joints, will cause rapid wear, resulting in abnormal play in the connections, with corresponding loss of absolute control.

The system employed on the Rudge cyclecar is a combination of the direct and rack-and-pinion types. The end of the steering column carries a pinion meshing with internally-cut teeth on a pivoted quadrant. Thus a geared-down result is obtained, whilst the device is compact. The Parnacott steering is a combination of the central-pivot and worm-and-nut types. The parallel leaf springs, taking the place of the front axle on this unorthodox machine, are pivoted at the centre, and move as in the centre-pivot system. The operation is by a flat, helical piece of steel, which acts in the same way as a corkscrew, causing the front axle to be deflected to one side or the other as desired.



Type of cable steering as arranged where stub axles are employed.

THE CYCLECAR WORLD.

Notes, News and Gossip of The New Motoring.

FORTHCOMING EVENTS AND FIXTURES.

Feb.
28th ... Cyclecar Club. Lecture by Mr. A. E. Parnacott, Connaught Rooms, Gt. Queen Street, London, W.C.

Mar.
1st ... A.-C.U. One-Day Trial.

Mar.
2nd ... Cyclecar Club, Run to Biggleswade (Swan), lunch, and Redbourn (Bull), tea.
8th ... Herts M.C.C. Half-day Trial.
15th ... Cyclecar Club Non-stop Trial—M.C.C. Opening Run to Brighton—Essex M.C. Hill-climb.

Mar.
21st ... Cyclecar Club, Easter Tour.
29th ... B.M.C.R.C. 100 Miles High Speed Reliability Trial.

Lighting up time for 1st March 6.37 p.m.

Petrol up again!

The standard quality price is now 1s. 9d.

Rumours of increasing prices caused a tremendous run on petrol at the week-end. It was very scarce.

Two tins of petrol purchased on the road recently contained one-and-a-quarter and one-and-a-half gallons respectively.

Two well-known Coventry firms, who each make a four-wheeler at present fitted with an air-cooled engine, are shortly putting them on the market with water-cooled engines.

Many a reader carries a camera on his excursions into the country, and he or she might note that suitable interesting snapshots are always welcome for publication in The Cyclecar.

A member of the Cyclecar Club ran out of petrol one mile from civilization and pushed his machine that distance uphill! He remarked afterwards he was glad it was not a Rolls-Royce!

We like the look of a new cyclecar that turned up at Bury Hill at the week-end, the B.P.D. It has long belt drive, big pulleys, a car type gearbox, and altogether is a very workmanlike job.

Should the *driver* begin to "conk," "John Gilpin, Jnr.," suggests giving less air and more gas. The gas, of course, should be administered in the form of soda with the correct proportion of spirit.

We noticed that the new piece of road which has just been constructed between Dorking and Horsham was extensively used during the week-end. Although the old road, with its tortuous bends remains, all traffic takes to the new route.

Hold an old hack-saw blade in your teeth and place the other end against each cylinder in turn is a method that has been suggested for finding out where a "knock" is. We can suggest biting the sparking plug to discover which cylinder is firing.

In this issue we give the first complete details of the Automobilette, a most interesting French cyclecar. The clearness and completeness of the illustrations and description are, of course, only possible now that the movement has a journal of its own.

It is very cold driving of nights at present, and gloves are essential to those who do not favour windscreens. In the event of gloves being lost or it being impossible to obtain some, a very excellent substitute can be made of a pair of woollen stockings or socks.

On the entry forms of the Cyclecar Club trial, competitors have to enter their gear ratios. It is to be hoped that the judges make full use of this information in their report, for obviously a very low gear ratio discounts the value of a performance in a slow hill-climbing test.

Cyclecars are becoming much more in evidence on the roads in the Midlands. During last week-end we noticed several around Stratford, Birmingham and Coventry. Doubtless, as soon as Easter is here, and from then onwards, at each week-end numerous recruits will be added to the pastime

A glorious week-end.

The Cyclecar Club had a big muster at Beaconsfield on Saturday.

Cyclecar repairs are cheap. A new front axle, fitted complete, sometimes costs less than 30s., on the simple type of machine.

On Sunday next the Cyclecar Club have a run to Biggleswade (The Swan) for lunch, returning by way of Redbourn (The Bull) for tea.

We never remember the view from the top of Bury Hill (above Arundel) looking finer than on Sunday last. Objects 20 miles away could be distinguished.

One speaker at the A.-C.U. dinner referred to his ancient quadcar as a cyclecar. Ten years hence, the same kind of people will refer to their Autowheels as an early form of motorcar.

One of the Globes that came down to the Cyclecar Club run on Saturday was running exceedingly well, and easily took the test hill on top gear, a performance shared by a G.N., a Duo and a Morgan.

The Super that came down to the Cyclecar Club run on Saturday, painted a brilliant crimson, was much admired. It was built to the order of the Prince of Assam, to whom it was to be delivered after the run.

An enterprising driver of a hearse endeavoured to stimulate business by deliberately pulling his vehicle right across our track without warning on Saturday. We took the ditch and avoided disaster by a hair's-breadth.

On Saturday next the A.-C.U. Spring One-day Trial is run off on a southern course, starting from Dorking. The route is a secret one. It is generally admitted that a mistake was made in imposing restrictions on design in the cyclecar class.

"Something's gone!" exclaimed the driver of an L.M. as the machine refused to budge from the precincts of the Swan, Pulborough, on Sunday. And then it started with a jerk, while the dozen individuals who had been holding on to it discreetly retired.

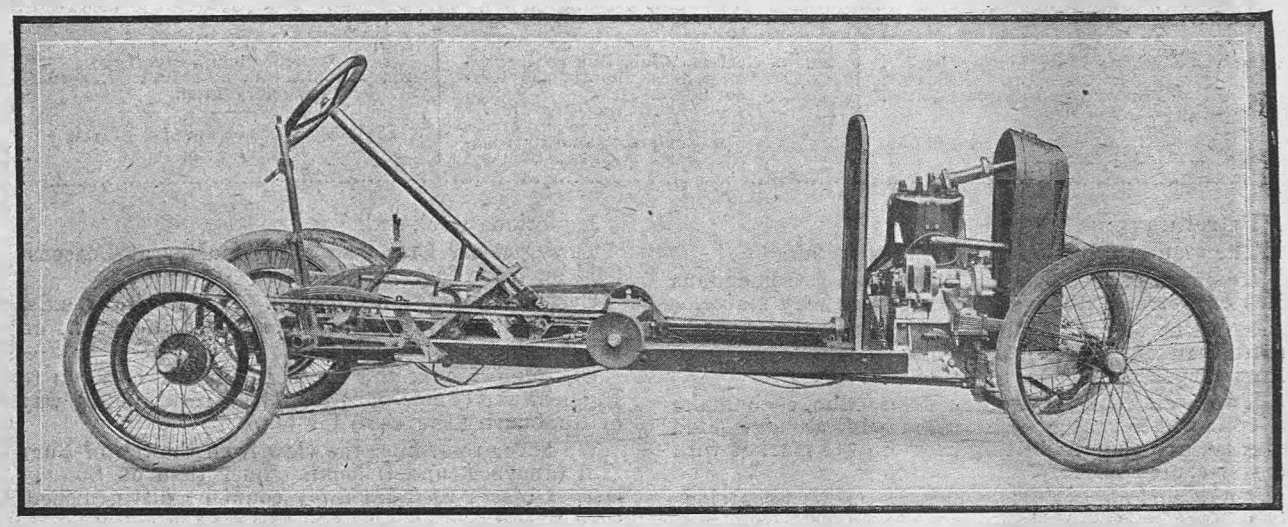
Not since last summer have the roads been so dusty as they were during the week-end. Goggles were a necessity, especially when one followed a machine shod with tyres which were regular dust-throwers. Some makes are greater offenders in this respect than others.

If the machine designed by Mr. A. E. Parnacott gives speeds with its little 499 c.c. F.N. four-cylinder engine practically equalling those obtained with an engine of double this capacity, of which we have had practical demonstration, surely there is a very great loss of power in the transmission of certain cyclecars.

A recent poster of The Cyclecar bore the announcement: "A New Cyclecar with 15 ft. Belts." By the irony of fate this placard flashed by on the back of a motorbus as it passed Mr. T. A. Hubert, the designer and owner of the machine referred to, as he was being held up by a minion of the law for some minor contravention of the Motor Car Act.

NEW ENGLISH MODEL OF THE AUTOMOBILETTE.

A Most Interesting Belt-driven Cyclecar Embodying Motorcar Practice.



A NEW model of the Automobilette, a cyclecar which has already been introduced to the English public, has just been produced at the makers' French factory, and will very shortly be seen in England, where it will be handled by Messrs. Palmer and Co., of Tooting, London, S.W.

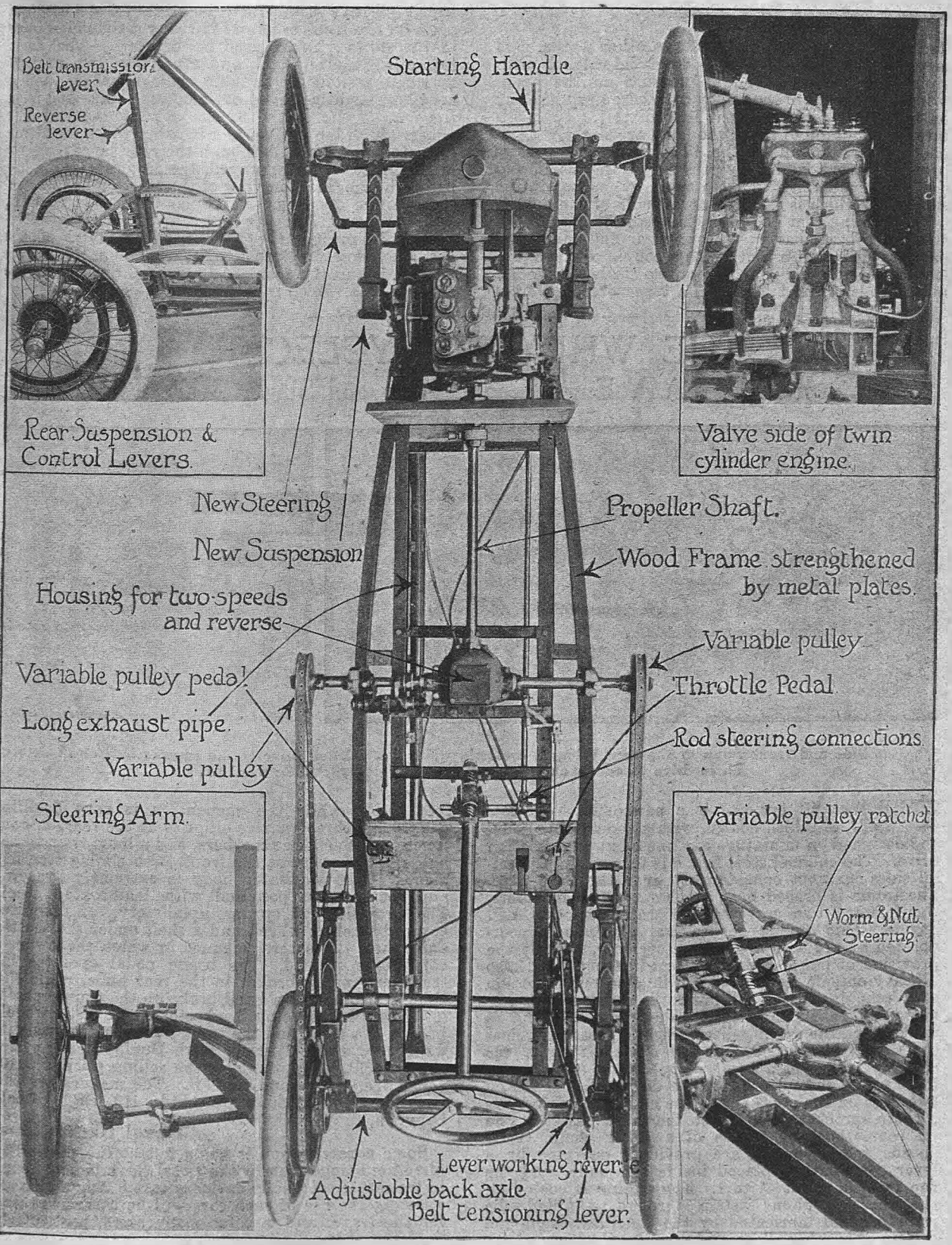
The makers of the Automobilette have taken many popular objections into consideration when designing their new model, and instead of trying to force on the public a good thing which they really do not want, have made the car to meet their taste, without, however, departing from the inherent simplicity of the true cyclecar. For instance, on the new model the engine cranks up in front like a big car engine; it is set fore and aft on the frame instead of across it, thus placing the valves, the carburetter and the magneto in very accessible positions at the side. Instead of a chain from a sprocket on the engine shaft to another sprocket on the countershaft, a shaft with bevel gearing is employed. This change makes possible the use of a reverse gear, and although there is no gearbox, allows of a true neutral position, as on a big car.

The Engine.

Considering this cyclecar more in detail, the engine is of the vertical, twin-cylinder, water-cooled type, with the cylinders in one casting. The cylinder dimensions are 70 mm. by 130 mm., which gives a cylinder capacity of slightly less than the 1100 c.c. allowed under the official cyclecar designation. The valves are operated by a single camshaft, and have their stems hidden by an aluminium cover plate. The camshaft and the magneto shaft—for the magneto is on the right-hand side of the motor—are driven by a silent chain with an idler pulley for taking up any slack which may occur. This tends towards silent operation, and it is also with a view to silent running that the valve tappets are in two parts, there being a spring in the guide to maintain the head of the tappet in constant contact with the end of the valve stem. Hence there is no clicking when the motor is throttled down slowly. Lubrication of the motor is under pressure, a feature which is not usually found except on high-priced cars. In the base of the crank chamber is a gear oil-pump drawing lubricant from the sump and delivering it through internal pipes welded in position to the two main bearings and through oilways in the crankshaft to the connecting-rod ends. There is no splash whatever, the oil worked out of the bearings being amply sufficient for the cylinder walls. The magneto is the new waterproof Bosch type, carried in a very accessible position on the right-hand side of the motor. The circulating system is by thermo-syphon, the radiator being a V-shaped, gilled-tube type with a large-capacity header tank. The carburetter is the latest Longuemare, having two jets, one of which is used for slow running and to give a rich mixture for easy starting. As on the previous models, the petrol tank is carried under the scuttle, to the rear of the dashboard.

The Transmission.

Near the centre of the chassis is mounted a countershaft, with pulleys on each end, from which the drive is taken by belts to the rear wheels, in the usual manner. As can be seen from the illustrations, there is on the centre of the shaft what appears to be a gearbox. This housing, however, merely contains the driving pinion on the end of the propeller shaft and a couple of bevel pinions, to right and left of it, the two pinions having a sliding movement on the shaft, so that either one or the other can be brought into engagement, or both kept out of engagement. With the motor turning clockwise, a forward movement of the car will be obtained with the left-hand pinion in engagement, and the reverse movement obtained if the right-hand pinion is brought into mesh. With the sliding group in an absolutely central position neutral is obtained. The operating lever is mounted on the main side lever for belt tensioning Neutral gear can be put in without touching the tensioning of the belts in any way. The countershaft is carried in annular ball bearings with screw-down lubricators. The method of tightening up the belts is by means of the displacement of the rear axle through the operation of a side lever. In addition, the car has variable pulleys, thus giving very varied gear ratios, according to the distance between the two flanges. The method of changing gear is very similar to that on a big car. By the depression of a pedal on the left-hand side, the two flanges of the pulleys are brought closer together, causing the belts to ride higher in the groove. Teeth are cut on the lever to which the pedal is attached, and as it descends it locks



The chassis of the new Automobilette, a special English model of a French cyclecar. To meet English ideas several details common to car practice have been embodied. It will be noted that the transmission to the countershaft is by propeller with bevel drive, that a reverse is provided, worm steering, water-cooled engine, and other details of big car practice, combined with variable belt drive. The seats are arranged in tandem form, while a single-seated model is also made.

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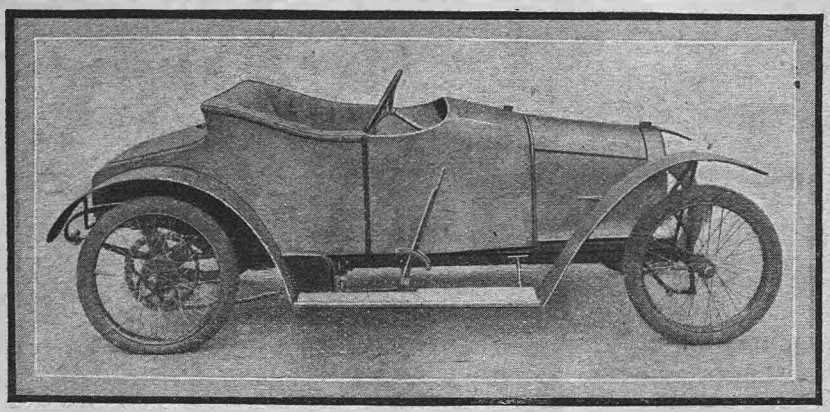
NEW AUTOMOBILETTE (contd.).

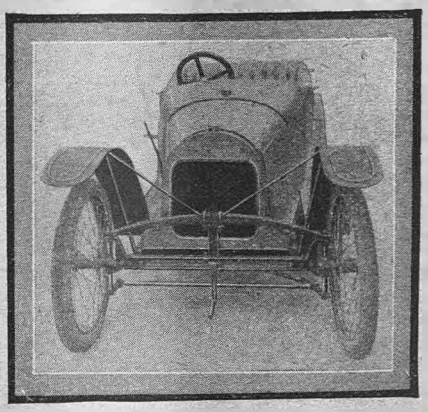
itself automatically in position. In other words, it is merely an application of the pawl-and-ratchet principle. But while a gradual pressure on the pedal brings the cheeks of the pulley together, a sudden kick on the pedal releases them immediately. To facilitate the changing of ratio, the belts are slightly slackened off first of all by the side lever, the pulleys brought closer together by pressing on the pedal, and the belts finally tightened up again by pulling on the side lever, which is situated at the side of the driver.

The steering gear has been changed, the base of the steering column having a worm gear cut on it, and has threaded on it a block with a couple of studs projecting to left and right. These two studs receive the forked ends of short levers on a transverse bar, from which positive connection is made to the steering arms on the front axle. It is really a simplified form of the worm gearing used on big cars. The main frame is made of wood, and consists of two straight members united by suitable cross members, and a couple of slightly-curved out-members extending from the rear of the engine to the extreme end of the chassis, in order to give the necessary width for fitting a comfortable body. Although the rear suspension remains practically unchanged, the front springing has had to be modified, in view of the starting handle and the positive steering. A tubular front axle is used, and is connected to the frame by a pair of quarter-elliptical springs, the rear and thick end of the springs being anchored to brackets on the frame members, and the front end attached directly to the tubular axle, which is cranked in the centre.

THE WHITGIFT CYCLECAR.

Water-cooled J.A.P. Engine and Friction and Single Chain Drive.



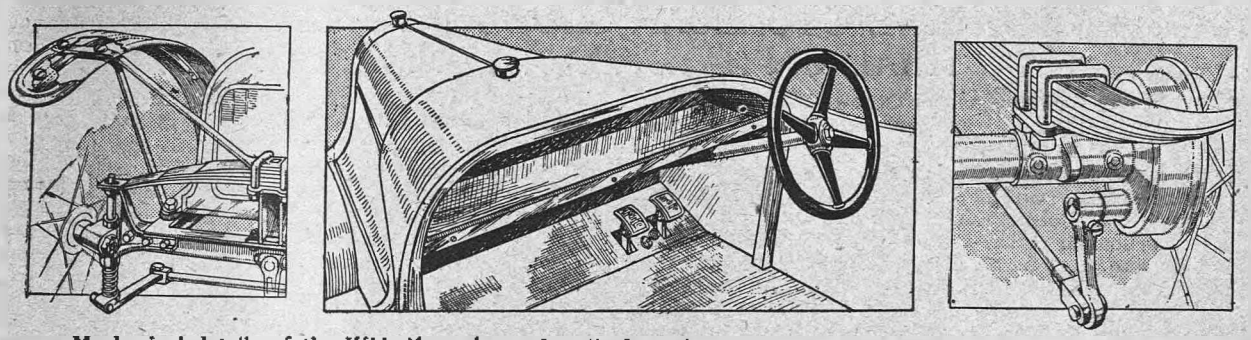


Side and front views of the new Whitgift cyclecar, which has friction drive to the countershaft and chain drive to one back wheel. It is a very compact little machine.

THE Whitgift cyclecar is a newcomer, very low built, of rakish design, with a stream-line body, and designed on miniature car lines, but with friction drive. The channel steel frame is formed with parallel sides upswept considerably over the rear axle. The frame is braced by a number of cross-members, the forward two carrying the water-cooled J.A.P. engine. This engine has several alterations incorporated by the designers of the cyclecar, notably the provision of larger crankpins and bearings, and also a heavy outside fly-wheel, carrying the outer portion of a plunging universal joint. The drive is transmitted by a shaft parallel with the frame, carrying on its rear end the driving disc, which is pressed against the driven disc, carried on a cross shaft under the seat, by means of a compressed spring acting on a lever of the second order. The driven disc slides on two keys on the cross shaft, one end of which carries a chain sprocket, from which the drive passes to the off rear wheel by means of a roller chain. Four speeds and a reverse are provided, operated by a lever conveniently placed inside the body, and the top ratio is about 4½ to 1. The engine is cooled on the thermo-syphon system through a gilled-tube radiator, and lubricated by the J.A.P. vacuum-feed system through a Best and Lloyd adjustable sight-feed lubricator on the dashboard. The transmission throughout runs on Skefko self-aligning ball bearings, and the strong car type wire wheels are carried on F. and S. annular ball bearings. The carburetter is either a Lukin or Claudel-Hobson, operated by a foot pedal, while the suspension is very flexible, comprising three-quarter elliptics at the rear, in conjunction with shock absorbers, and a long, transverse, half-elliptic spring at the front, with sliding steering pivots. The two-seater body is extremely graceful and roomy, and panelled with lead-coated steel. The provision of spring upholstery, an exonite-covered steering wheel, and a shelf under the scuttle dash show the careful manner in which the owner's comfort is studied. The brake pedal operates internal-expanding brakes in the rear hubs, while the side lever operates a band brake on the countershaft, all three brakes being Raybestos lined. The wheelbase is 7 ft. 6 in., and the track 3 ft. 4 in., the weight, with body, being 6½ cwt. With Dunlop heavy cyclecar tyres fitted as standard, the selling price is £110, with horn, lamps and tool-kit. The makers are the Croydon Central Motor Co., Ltd., 110, High Street, Croydon.

Novel Illustrations.

Some consternation is being felt at the possibility of action being taken by the Local Government Board in the matter of wholly-enclosed cars. Any action restricting the use of such cars will be a serious thing for the trade, and also for many users, particularly doctors. "The Motor" tackles the subject in a practical way this week. Selecting a typical car with enclosed front seats, it has had photos taken from the level of the driver's eyes, showing exactly what can be seen in front, on both sides and through the rear window. The result is something of a revelation.



Mechanical details of the Whitgift cyclecar described on the previous page. Left, specially-strengthened mudguard. Centre, the shelf under the dash. Right, internal expanding brake.

THE GRAND PRIX CYCLECAR RACE.

Regulations for the Great French Speed Event.

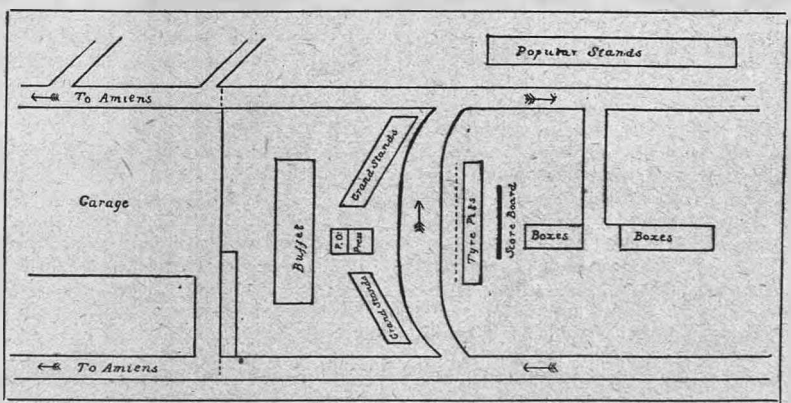
ALTHOUGH the rules and regulations governing the French cyclecar Grand Prix will not be issued to the public before the end of the month, we have been able to secure an advance copy of this interesting document. The rules definitely fix the date of the race for 13th July, being the day following the big car race. The Grand Prix is open to both manufacturers and private owners of cyclecars, who may enter four machines in each class. It is understood, however, that no private owner can enter without the written consent of the maker of his machine, and the private machines will be counted with the trade machines in determining the maximum number of four. There are three classes for sidecars and two for cyclecars, so that it would be possible for any one firm to enter a total of 20 machines. For the cyclecars the cylinder dimensions are 750 c.c. and 1100 c.c. The general regulations of the Union Motocycliste de France are applied in the matter of equipment. Thus, in the two cyclecar classes the minimum weight is 330 lb. for the 750 c.c. machines, with minimum tyres of 55 mm., and 385 lb. for the big class, with not less than 60 mm. tyres. The rules stipulate that a free engine and change-speed mechanism shall be fitted on all cyclecars. In all cases a passenger must be carried, and his weight shall be 9 stone 6 lb., to be made up by ballast if necessary. This cuts out a possibility of a monocar competing in the race.

It has been found that the cyclecar course measures 10.56 miles round, and as 15 rounds have to be covered, the total distance will be 162.9 miles. The entry fee has been fixed at 150 francs (£6) per machine, whatever the class, and entries will be received until 6 p.m. on 30th April. If 70 cyclecars and sidecars have been entered at this date, no more will be admitted. If the number is less than 70, entries will be received at double fees until 31st May. All competitors must have the individual licence issued by the Union Motocycliste, or, in the case of foreigners, the licence of the recognized authority in their country, and, in addition, must possess the French Government driving licence.

The French Entrants.

So far as the French manufacturers are concerned, it is hardly likely that there will be many cyclecars in the 750 c.c. class. The great majority of makers build machines of 1100 c.c., and it is this type they will prefer to enter. The greatest enthusiasm is being displayed in French cyclecar circles for the race at Amiens. We have taken the trouble to canvass all the French firms making cyclecars, and in every case the assurance has been given that they will take part in the speed contest. Among these firms are Bedelia, Automobilette, Baby, Violette, and others which are as yet unknown on the English market.

The cyclecar and sidecar race will be quite independent from the motorcycle event. This latter will be run on the morning of 13th July, the cyclecar and sidecar Grand Prix in the afternoon, and over the same course. All the grand-stand and tyre stations erected for the big car race on 12th July will be available for the cyclecar and motorcycle events, and the whole of the course will be guarded by soldiers. Although nearly five months must elapse before the race is run, preparations are already well in hand. Instead of renting the land on which the stands are to be erected, the Automobile Club of France has preferred to purchase it. As already explained, the two main roads forming the circuit will be united by a cross-road about a quarter of a mile from the present Amiens fork. This road, which will have a length of about 130 yds., has a maximum width of 36 ft. As the national highways have only a width of 16 ft. to 17 ft., it will be seen that there is plenty of room on the cross road. The main grand-stands are to be built on the outside of the cross road, and the tyre pits on the inside of this road, opposite the grand-stands. There is a special track in front of the pits, the width of which is in addition to the 36 ft. provided on the cross road. The entrance to and the exit from the cross road are slightly curved, and as there will be a certain amount of banking, speeds of 50 miles an hour will be quite safe.



Plan of the stand accommodation at the turning point of the course for the Grand Prix cyclecar race on 13th July.

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RULES FOR THE CYCLECAR CLUB NON-STOP RELIABILITY TRIAL ON SATURDAY, 15th MARCH.

THE rules for the Cyclecar Club reliability trial are now published, and were issued at the end of last week. The following extracts give the salient features of the trial. Applications for entry forms should be sent to the hon. secretary, Mr. Frank Thomas, 172, Belsize Road, London, N.W.:—

1. The length of the trial will be about 150 miles. It will take place on Saturday, the 15th March.

2. The starting and finishing point will be at the Morris Garage, Oxford, and lunch will be taken at the Plough Inn, Cheltenham. The course is as follows:—Oxford, Woodstock, Enstone, Adlestrop, Broadwell, Stow-on-the-Wold, Ford, Stanway, Winchcombe, Sudeley Hill, Naunton Inn, Andoversford, Air Balloon, the foot of Birdlip Hill, Birdlip Village, Cheltenham. Plough Inn, lunch. Outskirts of Gloucester, Portway Hill, Painswick, Stroud, Frocester, Nymphsfield, Nailsworth, Minchinhampton, Tetbury, Cirencester, Bibury, outskirts of Burford, Witney, Eynsham Toll, Oxford.

3. The basis of the trial is reliability, combined with flexibility on hills.

4. There will be two classes of cyclecars. A class for 750 c.c. machines, which will be required to average 17 miles per hour, and a class for 1100 c.c. machines, which will be required to average 20 miles per hour. In the event of more than four monocar entries being received, a special class will be instituted for this class of machine.

5. The system of marking is as follows:—For failing to climb any hill, or for each mechanical stop, 10 marks will be deducted. For every tyre stop 2 marks will be deducted. For each driving stop 3 marks will be deducted.

6. A fast hill-climb will be held at Portway Hill, and a slow hill-climb up Birdlip Hill, in the course of the trial. The driver making the fastest and slowest climb, as the case may be in each case, will be rated at zero, and the others will lose 1 mark for every 10 seconds or part of 10 seconds, that they are faster or slower than the zero man, as the case may be.

7. Every driver must bring a male passenger, who will be asked to act as official observer on another cyclecar. Entries close on Monday, the 10th March, the fee being fixed at 10s. 6d. each, only members of the Club being eligible to compete.

8. The first two in each class will be awarded a Cyclecar Club silver or bronze dashboard plaque, whilst the ordinary Club bronze medal will be awarded to all those making non-stop runs. Class-winners will be those who make non-stop runs and lose the smallest number of marks in their respective classes. Times will be taken at Cheltenham and Oxford, where five minutes grace either way on the 17 miles and 20 miles per hour schedule will be allowed. One mark will be deducted for every minute late or early outside this limit. Over 30 seconds counts as a minute, but under 30 seconds does not.

9. Repairs in control will entail disqualification. In control drivers may replenish their machines with petrol but not with oil or water, and no other adjustments may be made. In the event of it being necessary to replenish a machine with oil or water, a competitor will forfeit three marks.

15. The conviction of a competitor for driving to the common danger may entail disqualification at the discretion of the committee.

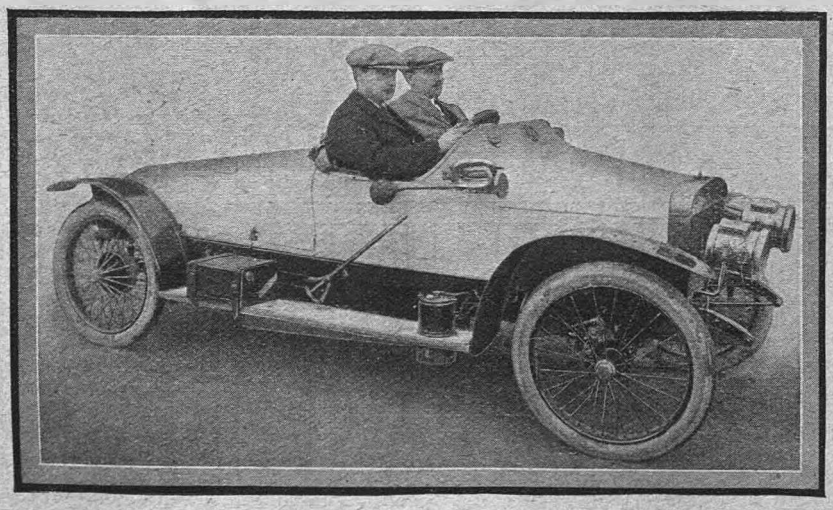
16. All machines must conform to the A.-C.U. definition of a cyclecar. The weight of a cyclecar must not exceed 6 cwt. in chassis form, or 7 cwt. when the body is not detachable from the chassis. The cubic capacity of a cyclecar engine must not exceed 1100 c.c.

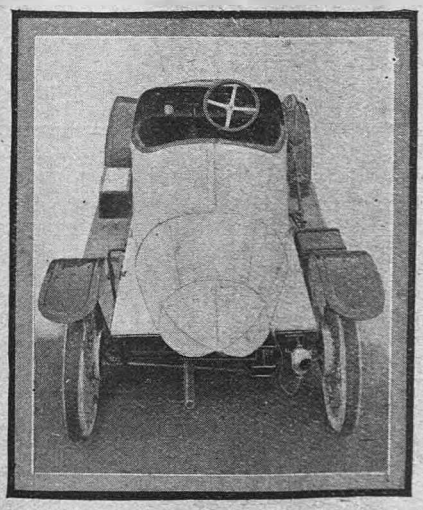
No A.-C.U. Cyclecar Committee.

At a meeting of the Auto-Cycle Union last Thursday night, it was decided not to form a special cyclecar competitions committee. One reason advanced for this decision, that there were cyclecar owners in the General Competitions Committee, would be more convincing if the rules for the A.-C.U. one-day trial next Saturday were more enlightening. In some respects, as we have shown, they are absurd. Does the Auto-Cycle Union want the support of cyclecarists?

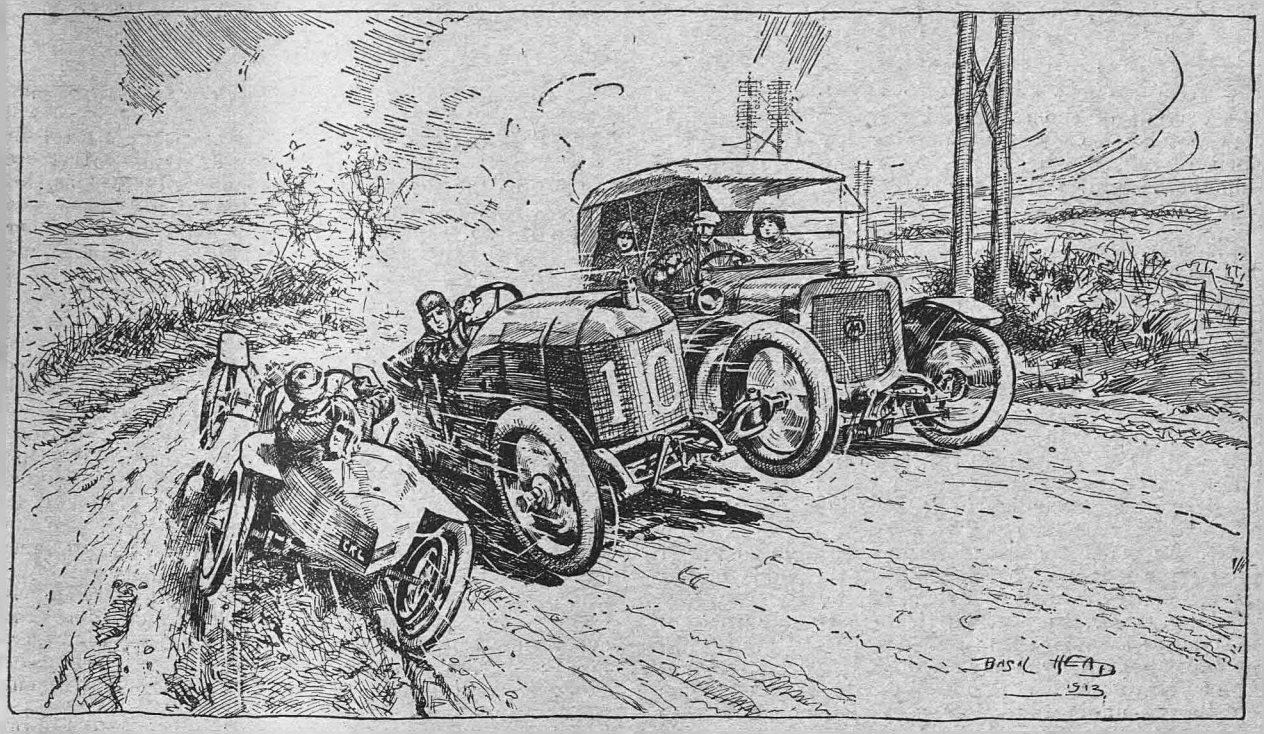
Reference was made in last week's issue to the People's Refreshment House Association and the Public House Trust Association. Their lists of hotels and inns can be obtained from the secretaries, 15, Dean's Yard, Westminster, London, S.W.

Mr. A. G. Eames informs us that our statement last week regarding the failure of all the A.-C.s on Sudeley Hill in the Colmore Cup Trial was incorrect. The A.-C. driven by Mr. Eames succeeded in climbing Sudeley, though it failed on Rising Sun Hill.





A new type of sporting body fitted to G.W.K. cyclecars, sold by Messrs. Cyril Patterson and Wilberforce, of Caterham Valley, Surrey.



A DARING FEAT.—"With the near-side wheels on the path, and the others in the gutter at a somewhat alarming angle, it dashed by."

A Daring Feat.

With the exceptionally low centre of gravity of some cyclecars it is practically impossible even with most reckless dare-devil driving to turn them over. Only the other Saturday—one of the few fine Saturday afternoons with which we cyclecarists have been blessed—an incident occurred that, had any vehicle other than a cyclecar been concerned, would have at the least meant a serious accident. On the main Hatfield road, about three miles on the London side of that motor-beloved resort, there are two corners, perfectly safe at legal speed, but when a new machine is in process of being tested against the clock the gentle curves are apt to hide more of the road in front than might be desired. It was here that the onlookers witnessed an exciting episode. A low-built, rakish-looking cyclecar was approaching the curve pretty fast when the driver of a large car coming from the opposite direction frantically waved his arms, apparently meaning to indicate that "something" was following him round the bend. Almost at the same moment the "something" hove in sight, a low, racy-looking grey car, doing probably about 45. As matters stood they were both timed to pass the car at precisely the same tragic moment. It was painfully obvious that there could not be room for the three vehicles abreast; for either to have stopped was a sheer mechanical impossibility. The driver of the cyclecar noticed that the bank of a narrow road-side path was not more than 9 in. or 10 in. high, and with the near-side wheels on the path and the others in the gutter at a somewhat alarming angle, it dashed by. The three vehicles were exactly in line abreast at the moment of passing, but avoided touching, which was remarkable in the circumstances.

Tyre Hints.

"The Trouble with Tyres" is dealt with in a very practical manner in the current issue of "Motor Cycling," and the author offers useful suggestions and criticisms.

The Cyclecar Club Concert.

An audience of nearly 200 people attended the Cyclecar Club's concert given by the Omarcadians last Tuesday week at the Inns of Court Hotel, Holborn, London. Though parts of the entertainment were not up to the standard expected of the originators of the "Shamateurs' Bride," some of the turns went down well. As might have been expected, topical songs were most appreciated, among them being "Exeter," an amusing skit on the old song, "Widdicombe Fair," and "The 'Bus that Mac. built." The rest of the entertainment lacked vitality. The songs might have been tuned up better and the performers more synchronized. The ravages of "flu" attacked the Omarcadians the previous week, and some of the artistes who replaced others laid up had not sufficient time to rehearse, which was the cause of the "star" turn, "Faust," being left out of the programme.

Cheaper Fuels.

Some practical tests of petrol and 90 per cent. and 100 per cent. benzol are reported in "The Motor" this week. The 90 per cent. benzol, which is fairly easy to obtain from gas companies, gave far better results than petrol, while costing only 1s. per gallon. No alteration was made to the carburetter float, although, had it been weighted, the reduction in the consumption of spirit would have been more noticeable. Those interested should read "The Motor" regularly, which, alone amongst the motor journals, has assisted in a practical way to stop the ever-increasing price of motor fuel.

Useful to Intending Cyclecarists.

The issue of The Cyclecar for 12th March (Wednesday week) will contain a special review of various types of cyclecars, and a practical article on the selection of particular machines to suit individual requirements. A comparison of prices and various features of 1913 cyclecars will, we think, be found very helpful to those still in doubt what to buy.

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THE A.-C.U. SPRING TRIAL.

Only Four Makes of Machine Entered for Next Saturday's Trial.

The result of the somewhat stringent regulations with regard to cyclecar entries for the A.-C.U. Spring Trial, which starts next Saturday from the Red Lion Hotel, Dorking, at 8.30 a.m., is that only four makes of machines will be represented in the trial. The 12 cyclecar entries include one from a lady. The entries are:—Mr. W. G. McMinnies (Morgan, "The Jabberwock"), Mr. H. F. S. Morgan (Morgan), Mr. J. T. Wood (G.W.K.), Mr. C. M. Keiller (G.W.K.), Mr. Sam Wright (Humberette), Mr. Leonard W. Spencer (Morgan), Miss C. Ellis (G.W.K.), Mr. A. W. Lambert (Morgan), Mr. J. Munday (A.-C.), Mr. A. Noble (A.-C.), Mr. Victor Wilberforce (G.W.K.), and Mr. W. Cooper (Humberette). The motorcycle entries are very numerous, and will be found in full in yesterday's issue of "Motor Cycling."

The course, 130 miles in length, is a secret one, and will only be divulged to the competitors at the start. In order that readers may be able to watch the performances of the machines at various points on the course, we have arranged, by the courtesy of the A.-C.U., to post particulars to our readers in time for them to witness the trial. Letters should be accompanied by a stamped addressed envelope, and marked "A.-C.U. Route" on the envelope. The course, we understand, is a very stiff one, and also somewhat intricate, including a number of new hills which have been discovered. We cannot undertake to answer inquiries on the telephone in respect of the route of the trial.

After the A.-C.U. trial next Saturday there will be a smoking concert, arranged by "Motor Cycling," at the Red Lion, at Dorking. Admission will be free, and it will commence about 8 p.m.

Our Front Cover.

Sudeley Hill, near Winchcombe, which figures as our front cover picture this week, is a famous West Country test hill, the worst bend being illustrated, although the photograph gives no idea of its steepness. The cyclecar in the foreground is the Calthorpe, which made light of the ascent in its successful debut on the 15th inst. in the Sutton Coldfield trial, in which it made a non-stop.

CLIMBING HILL ON TOP GEAR.

A Week-end with the Cyclecar Club at Beaconsfield and Bury Hill.

THE fine weather on Saturday produced a big crowd of cyclecarists and their machines at the run to the White Hart, Beaconsfield. Five Duos, three G.N.s, a Warne, two tandem Sabellas, a Super, and a B.P.D. represented the belt-driven machines, and there were a number of other machines, including a new Zendik, a P.M.C., a water-cooled Autotrix, several A.-C.s and Morgans, three Globes, and two Humberettes, beside Ford and other cars, and motor-bicycles with and without sidecars. Over 50 took tea, prior to which some interesting ascents were made on a steep hill three miles south of the village. The hill twists to right and left so abruptly that it is impossible to take it "all out," consequently top-gear ascents were few. The gradient is generally given as 1 in 12, but at the second bend it is undoubtedly much steeper, and for about 100 yards, we should say, it is as steep as 1 in 8.

The first ascent was made by Mr. F. A. McNab, on a 3½ h.p. single-geared Ariel motor-bicycle, who broke a belt fastener, repaired and tried again, making by far the fastest climb, cutting out every now and then. The following ascents were made:—Mr. A. C. Armstrong (G.N.), top gear. Mr. P. J. Rowe (Sabella, variable pulleys), nearly on top. Mr. A. P. Bradley (Duo—variable pulleys), nearly on top. Mr. Barratt (Super—variable pulleys), nearly on top. Mr. D. Rothschild (Globe), changed down. Mr. Cleave (Sabella—variable pulleys), not quite on top. Mr. L. Rothschild (Globe), top gear by slipping the clutch. Mr. Hulbert (Singer), changed down. Mr. McGregor (Globe), on top. Mr. R. Bamford (Humberette), clutch slipping, did not change down. Mr. De Peyrecave (Duo—variable pulleys), nearly on top. Mr. W. G. McMinnies (Morgan, three-wheeler), top and fastest of the cyclecars. The new Zendik cyclecar changed down. A P. and M. and sidecar failed the first time, and succeeded after another attempt. Some of the drivers elected to go up again, when Mr. A. P. Bradley's Duo made a top-gear ascent: Mr. McGregor's Globe repeated its previous performance, climbing fairly fast on top gear.

In Beaconsfield there was a tremendous crowd gathered round the machines "parked" in front of the White Hart, and altogether this was the most successful run promoted by the club.

On Sunday, the venue was Bury Hill, the one-and-a-half-mile ascent over the South Downs on the road to Arundel, and 55 miles from London. There were many motorcyclists and cars, but few cyclecars. Prior to lunch, only a G.N., a Duo, and an L.M. had turned up, so after one or two desultory climbs, an adjournment for lunch at the Swan, Pulborough, five-and-a-half miles away, was made. More cyclecars came down in the afternoon, when the hill was visited again. None of the cyclecars succeeded in climbing on top gear, the fastest ascent being made by Mr. Bradley's Duo. Mr. McGregor's and Mr. Rothschild's Globes and Mr. Armstrong's G.N. got up easily on low gear. Tests of starting from a standstill on the steepest part of the hill (1 in 10) were made. Both the Globes restarted on low gear, skidding the wheels. The Singer made a very clean start. A motorcyclist, with a free-engine Triumph, made about a dozen attempts before getting away. A powerful Gregoire car succeeded very easily on second gear. The G.N., having a slipping brake, was not able to make a clean start, several stalwart helpers holding it on the hill in case it ran back. It got away easily on low gear.

Then the party returned to town, stopping at Burford Bridge Hotel, near Dorking, for tea. The day proved to be one of the finest we have had this year so far, and it was a pity that a greater number did not turn up. Possibly it was too far from town, especially for those living on the other side of London.

On the return to town, after the Bury Hill-climb, the L.M. ran out of petrol, just as two photographers of the staff of The Cyclecar came by on a Clyno and sidecar, carrying an artist (who weighs 14 stone) on the carrier. Despite this load, they succeeded in towing the L.M. for five miles.

Mr. Frank Thomas had considerable trouble at the week-end, all sorts of things breaking, all due to one of the bushes of the engine turning in the crankcase. Later on he filled up with petrol which proved to be mixed with paraffin.

PETROL UP AGAIN.

New Heavy Spirit at Old Rate Introduced, Standard Spirit being 1s. 9d.

The petrol combine has raised the price of petrol once more, while the Shell company have introduced a new heavy grade of petrol to retail at the old rate of 1s. 7d. per gallon. From last Monday the price of Shell was raised to 1s. 9d. per gallon. The specific gravity is .715. Shell No. 2 (specific gravity .735) is now 1s. 7d., Crown (specific gravity .760) is 1s. 6d. Messrs. Carless, Capel and Leonard, Ltd., advise us that, as from Monday last, the retail prices of their three brands of motor spirit were increased to the following figures:—Standard Petrol (specific gravity .700), 1s. 10d. per gallon; Movril (.715-.725), 1s. 9d. per gallon; Carbus (.735-.770), 1s. 6d. per gallon. Pratt's remains at 1s. 7d. up to the moment of going to press, but it may be raised in price by the time this issue of The Cyclecar is on sale. Taxibus spirit is 1s. 6d.

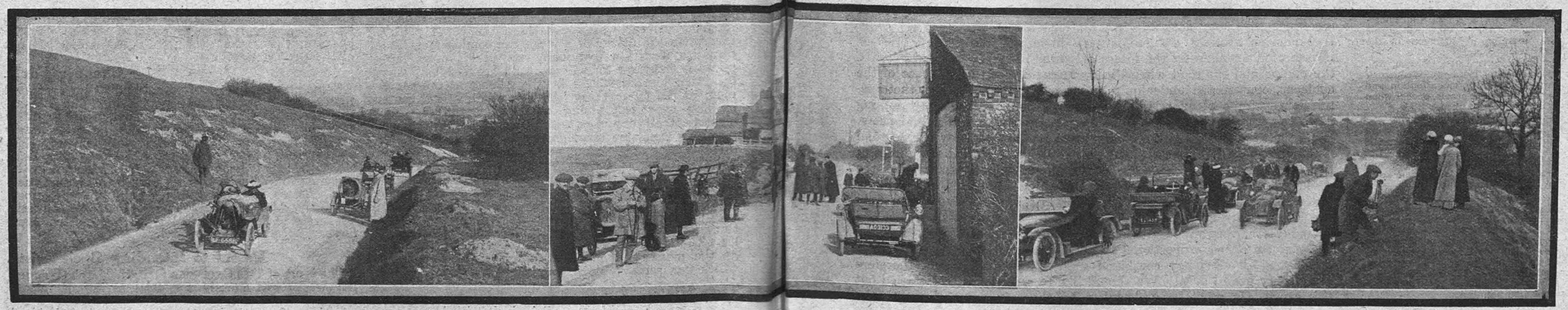
The announcement that petrol was up again caused consternation amongst motorists at the week-end, who rushed to get in supplies before Monday. This, coupled with the fact, mentioned to us by several agents, that supplies have been delayed, made it extremely difficult to get any spirit on the chief main roads on Sunday.

We trust that the increase in price will hasten the era of home-produced fuel. Tests of benzole, compared with petrol, show that better results, more power and lower consumption, are being obtained from the former.

Lecture Next Friday.

On Friday next Mr. A. E. Parnacott lectures before the members of the Cyclecar Club on the subject of "Cyclecar Design." It should prove very interesting and give rise to considerable debate as a vexed topic of discussion. The venue is the Connaught Rooms, Gt. Queen Street, and the time 8 o'clock. Admission is free. Non-members and ladies welcome.

"Mountaineering by Motorcycle," in "Motor Cycling," is an exciting account of a hill-climbing expedition in North Wales. The writer points out how, by skilful driving and careful choice of gears, such ascents as Dinas Mawddwy may be made with certainty.



Cyclecars at Bury Hill at the week-end. None succeeded in getting up on top gear, and all climbed with the clutch. (Left): The G.N. going up very fast. (Centre): Waiting to go up at the village at the foot of the hill, (Right). The Duo starting from a standstill. In the left are a Singer and two Globes.

The Cyclecar

Wednesdays—1d.

Conducted by Edmund Dangerfield.

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LONDON, E.C.

Telephone No. 5292 Holborn (four lines).
Telegrams—"Pressimus, Holb., London."

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CAN YOU :: ADJUST A :: CARBURETTER?

An interesting feature of the next number of "The Cyclecar" will be an illustrated article on carburetter adjustment. Diagrams and explanations of simple methods of setting to work add to the value of the article.

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.

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B26

Topics of the Day

TOP gear hill-climbing tests of course prove nothing unless the gradient and length of the hill and the ratio of the gear used are known. Comparative tests with different machines then demonstrate engine and transmission efficiency, although of course the skill of the driver is a factor to be taken into account. During the season a number of such tests will be undertaken by The Cyclecar, whilst a contributor has already made experiments in this direction which are interesting and which will probably lead to emulation. It may be assumed without much fear of contradiction that a motorcar not specially lightened to come within the cyclecar definition would require practically double the power of an engine of 1100 c.c. capacity to ascend on top gear of equal ratio the steepest hill that the cyclecar could take. In this respect we believe that the simplest machines would have some advantage over those of heavier construction embodying car practice in their design. It will be interesting to see if the contrary can be proved.

Top Gear Hill-climbing.

* * *

GIVEN reasonably fine weather conditions, the first trial organized by the Cyclecar Club, to be run off on the 15th of next month, will provide the public with very valuable information. As will be seen from the rules printed on another page, there are no arbitrary restrictions to hamper design, nor hills of a character and in a condition that no cyclecarist, or motorist either, would ever dream of attempting to climb in the ordinary way. The machines and not the men will be tested. The route chosen, however, and the conditions of the trial, are very severe. A distance of over 150 miles of hilly roads has to be traversed in two non-stop stages. There is a slow climb on Birdlip Hill, which only a machine designed to give satisfaction to its owner will survive—excepting, of course, stoppages through breakdowns of an accidental character—and a fast climb that will determine the suitability of variable gear systems and the reserve of power of the engine. The system of marking will not only determine the machines that are capable of making a non-stop run to schedule time, but should also single out the one that makes the best performance.

A Real Test of Reliability.

* * *

EXCELLENT as is a road trial for proving the efficiency of various machines, there is one test of a different character which would provide those carefully weighing up the merits of different types of machines with very desirable information—a test of transmission systems. There is very little reliable information for showing the losses of power between the engine and the road wheels in motorcar design; in the case of the cyclecar, constructed under quite different conditions, and with transmission systems of an original character, there is absolutely nothing more to go upon than is provided by the experiences of actual users. We do not know what is the comparative loss of efficiency with cardan shaft drive to a live axle and the simple drive to the wheels direct of belt-driven machines. Further, the peculiarly light construction of the cyclecar, to comply with an arbitrary definition of a 6 cwt. chassis, may materially affect any known frictional losses ascertained with substantially constructed cars. The losses at the road wheels may be, and probably are, very much greater, but owing to the light weight of the cyclecars, a speed proportional to horse-power may be developed. A bench test of efficiency combined with a hill-climb would therefore afford very useful data. We should like to see such a test carried out this year. It must be undertaken by those in sympathy with the movement, and it could not have been placed in better hands than a committee of practical cyclecar owners and experts, which we had hoped the A.-C.U. would have had the foresight to form.

Efficiency Tests.

TOPICS OF THE DAY (contd.).

AN owner who would like to test the weight of his machine can have this done at any County Council weighing offices at a very small fee. When weighed, he may very possibly find that equipped for use on the road his machine turns the scale at nearly half a ton. Recently we took a standard cyclecar of the belt-driven type, to which various body alterations have been made, equipped with three electric lamps and an electric horn, with their accumulators, a large acetylene generator and a powerful searchlight, a very full kit of tools, spare tyres, belts, hood and windscreen, and the machine, thus equipped, came out at 7 cwt. 3 qrs. With some of the miniature car type of cyclecars, on which every detail of the chassis has been pared down to bring the weight to 6 cwt., the superstructure probably accounts for more than this weight again. Equipped with a proper set of tools, spares, hood, windscreen, and accessories and we have a small car that may weigh nearly a ton considerably underpowered by the arbitrary definition of the cyclecar limit. That this is working in the direction of giving those who have been interested in the possibilities of very economical motoring the type of motor that will answer their requirements is open to some doubt. It should be sufficiently obvious, however, that the more luxurious the machine the less economical it will prove in actual practice. It illustrates the futility of over-development of the cyclecar, which is the greatest danger that the movement as a whole is threatened with. The problem of cyclecar design wants to be tackled from the point of view of those future users of slender means who want to motor on a basis practically as economical as that afforded by the motor-bicycle and sidecar, with reasonable reliability and comfort and sufficient power on hills. Speed is immaterial, for it will not be desired by the new class of motorist attracted to the pastime.

Weight of the Superstructure.

* * *

IT is of course well known that an engine will behave very differently with various grades of lubricants. Various types of engines and their differing lubricating systems will not work efficiently with the same oils. The amount of lubricating oil is, too, a serious consideration. If an air-cooled engine will run 50 miles to the gallon of petrol and only 150 miles to a gallon of oil, its running cost will be greater than that of a water-cooled engine running only 30 miles to the gallon (many do better than this) and requiring only a quart of oil, taking into account the standard prices of 1s. 7d. per gallon for petrol and 4s. 6d. per gallon for oil. Air-cooled engines call for a far greater amount of lubrication than those that are water-cooled, and it is important to have reliable information of the actual consumption of oil and petrol with different types of machines from owners who keep a careful record. This might be provided now by readers of The Cyclecar. In the Cyclecar Club trial those machines that require their oil tanks to be replenished in the course of 150 miles will be penalized by losing marks.

Suitable Lubricants.

* * *

A POINT which bears greatly upon the efficiency of the engine is the question of variable ignition control. It is a well-known fact that, even with the best of cars, few drivers make proper use of the means at their command for retarding or advancing the ignition to meet different conditions of driving. This is probably due to a combination of both laziness and ignorance on the part of the drivers, and has led some manufacturers to provide fixed ignition in an endeavour to render the car "fool-proof." Another reason why no means is provided for advancing or retarding the spark is that, with the twin-cylinder engine, with the cylinders set at 90 degrees, coming into extensive use on cyclecars, no satisfactory magneto affording variable ignition for this type of engine has yet been evolved. It is a question that is giving the magneto manufacturers considerable thought.

Variable Ignition.

MIDLAND NEWS.

Mr. S. Wright has been awarded a special prize for his meritorious performance on the Humberette in the Colmore Cup Trial.

Cinematograph films of the Colmore Cup Trial are being shown at the Theatre de Luxe, Great Windmill Street, London, E.C.

We wonder if a sub-committee of cyclecar manufacturers has yet been formed by the Cycle and Motor Cycle Manufacturers and Traders Union, Ltd.

Driving back from Coventry early one morning last week we met a driver of a three-wheel cyclecar attired in livery, so that, presumably, chauffeurs of cyclecars are already coming into fashion.

It is proposed to hold a cyclecar parade in the Midlands at an early date. We shall be glad to receive the names of those who are willing to compete and the date that is most convenient to them.

There will be some surprises when some of the bottom-gear ratios are measured by the A.-C.U. next Saturday at Dorking. We know of one or two Midland drivers whose ratios have been lower than standard.

A home-made cyclecar is being built by Mr. E. D. Tate, who has driven a racing Sabella several times at Brooklands. He is now engaged in making a cyclecar of his own design, fitted with a Chota engine. A very light piston is being fitted to this engine in order to secure great speed.

Mr. J. H. Slaughter, who has had great experience as a racing motorcyclist on Triumph machines, has joined the staff of the Perry Motor Co. as head demonstrator. The first car, which is equipped with an even-firing, vertical twin, will be ready within the course of the next few days.

The P.D.A. cyclecar is now being fitted with a water-cooled twin Precision engine in place of the air-cooled model previously tried. Although water cooling allows for a higher compression being used on these machines, the gain is not so much in speed as in power and the ability to stay on top gear longer on a hill.

The danger of fire from the petrol-tank filler and lamps on a cyclecar being situated near together was demonstrated in a very unpleasant manner the other day in Coventry, when a man attempted to light up the lamps soon after he had filled up the petrol tank. The result was that there was an explosion and the whole machine became enveloped in flames.

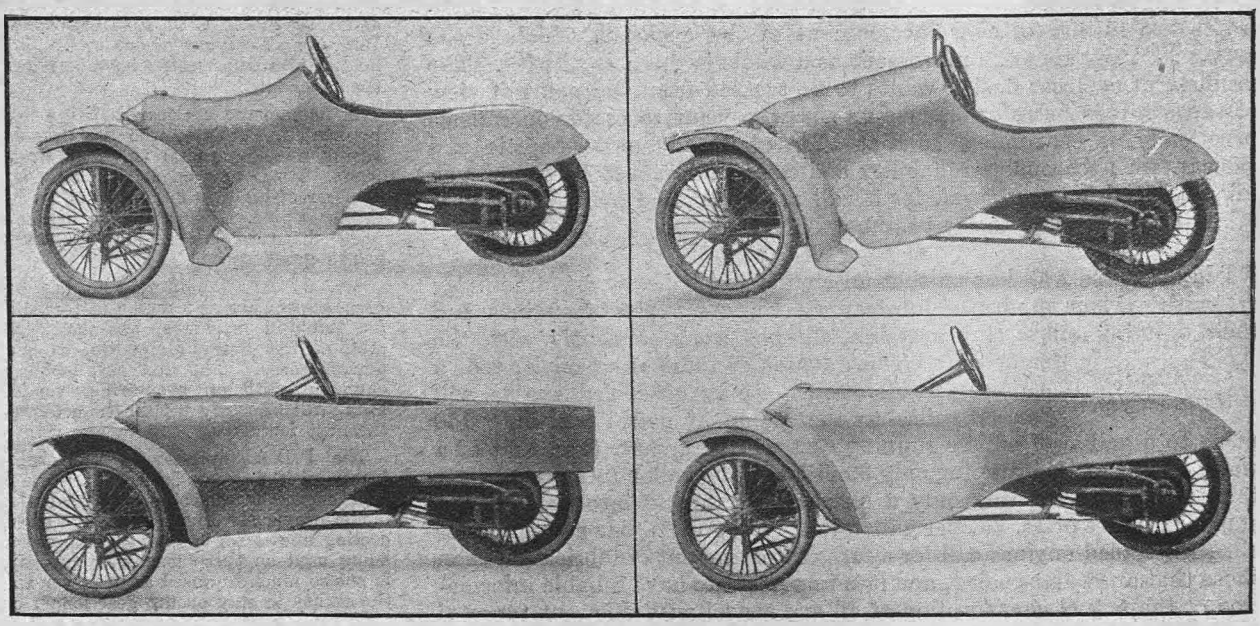
It would be interesting to hear what the cyclecarists consider to be their best run. Last week a member of our staff left Coventry at 6 a.m. on a fine, frosty morning, when the roads were quite deserted, and arrived at our London offices at 9.30 a.m. promptly, the road wheels of the engine never having been stopped for the whole distance. Can any reader beat this? As he was driving a brand-new engine, there was no attempt at speed, though the deserted nature of the road at these early hours could have enabled the time between the two cities to have been reduced very materially.

D27

CROSS-COUNTRY COMMENTS.

Body-work Designing.—Back Wheel Slip.—Petrol Consumption.—A New Engine.

ONE of the most essential factors in securing success for a cyclecar is the appearance of the body. A machine that looks well will certainly induce other people to take up cyclecars. It is important, however, that the lines on which it is built should be symmetrical and graceful, that the passenger should be well protected, and should look comfortable and secure on his machine. With this object in view, I have had a series of photgraphs taken of my machine, showing the side, front and rear. On these photographs I have sketched out a number of suggested body designs, from which I can get some sort of idea of the lines on which the new body should be constructed. Most machines at present have some one faulty point which spoils their appearance, the Singer light car being the most notable exception. Sometimes it is because the steering is not sufficiently raked or the wheel is too small, or it may be that the lines of the bonnet and the steering are not parallel, or curves are mingled with straight lines in an altogether inartistic manner. My photographic idea should, I think, get over such ungraceful combinations.



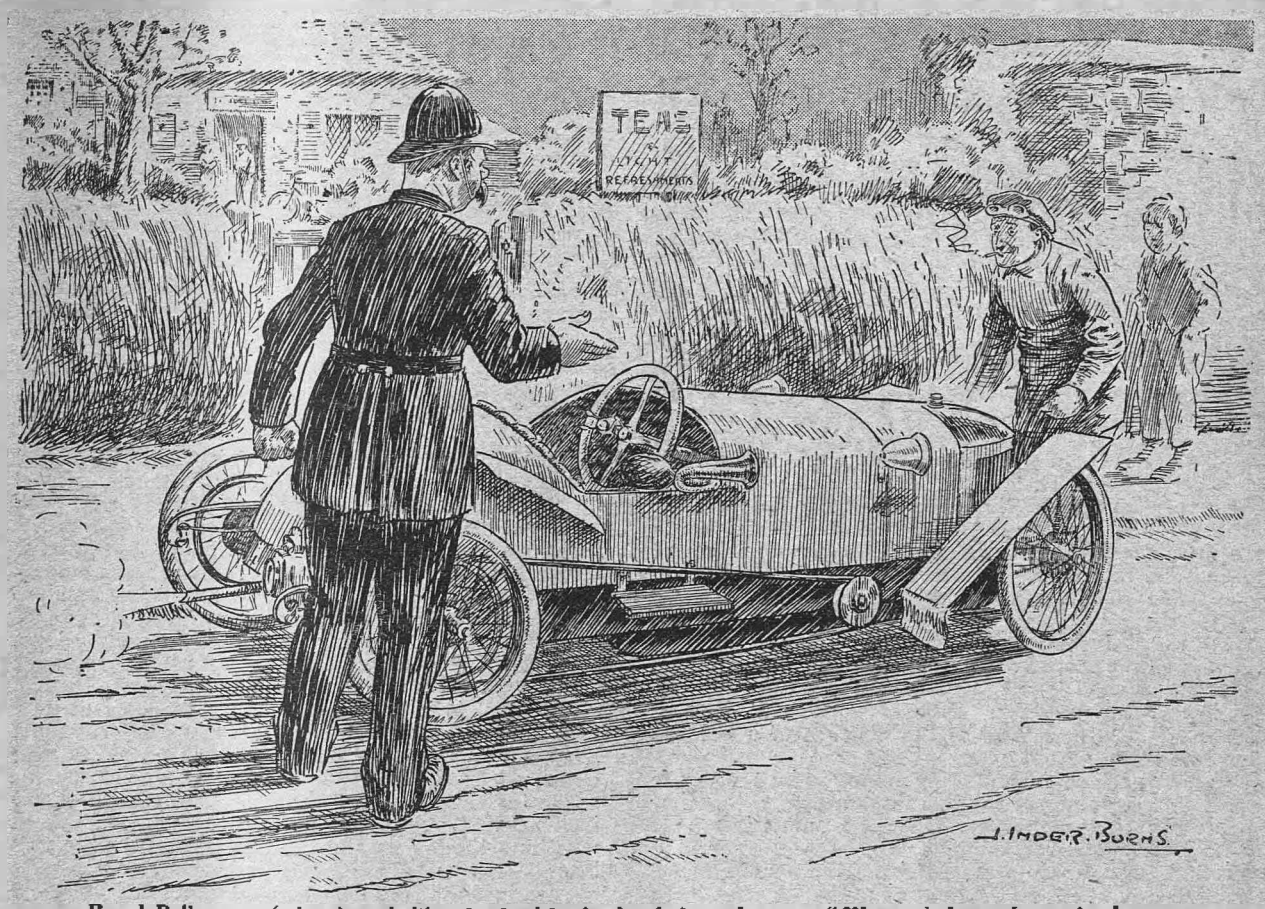
Different designs of bodies for a three-wheeler. Which is the most attractive ?

* * *

At this time of year the cause of failure on many machines in hill-climbing trials is due more to back-wheel slip than to loss of power or inefficiency. Some cyclecars seem to be more addicted to this failing than others. Those four-wheelers with single rear-wheel drive suffer from this complaint considerably, and I saw a machine the other day which had done about 100 miles in a stiff trial, and yet in that short period had worn away most of the rubber studs from the rear wheel taking the drive. This excessive wear was caused by spinning in the grease without propelling the machine. It is difficult to say whether the three-wheeler suffers more or less from back-wheel slip on excessively steep gradients. Some of the most sensational climbs in the recent trials have been made by three-wheelers in which the weight of both passengers is kept nearly over the rear wheel. In cases where the passengers' weight is placed forward, back-wheel slip has been more pronounced. It remains to be seen if the failures of machines to climb steep hills through slipping back wheels really teach anything. I am afraid that it is expecting a great deal of a cyclecar to ask it to climb gradierts and obtain a grip on surfaces where 90 per cent. of cars would fail, which reminds me that some of the makers of the best cyclecars are actually clamouring to be allowed to compete with light, fully-fledged cars coming under the three-guinea tax, in order that they can prove how much superior their productions are to the more expensive types.

* * *

A recent 300-mile run straight off the reel on my monocar gave me a fair test of estimating my petrol and oil consumption, which I found to be at the rate of 50 miles to a gallon of petrol and 100 miles to a quart of oil. Had I driven more steadily and sedately, no doubt both these figures could have been improved upon. Also, had the B. and B. carburetter been fitted with a long extra air pipe, I have no doubt that I could have done 70 or 80 miles to a gallon of petrol, as these long extra air pipes are wonderful devices for purposes of economy. It is quite a simple matter to fit them, as they have only to be clipped on or screwed into the extra air pipe of the carburetter.



Rural Policeman (who doesn't like the healthy bark of the exhaust): "We can't have that noise here. *Why don't you oil it?*" *(An actual experience.)*

The stability of three-wheelers is a point which has been much discussed in the past, and after some 1500 miles experience of this type of machine, I can say unhesitatingly that the three-wheeler is as steady on all corners (save the acutest type of hairpin bend) as its contemporary the four-wheeler. On a hairpin bend, however, caution must be observed, for, when the front wheels are locked over fully, or when the driver moves his steering quickly in order to negotiate a hairpin bend suddenly, it is quite possible that he may find the inside wheel rise slowly off the ground, and should he not then switch off, the machine might roll over on its side.

* * *

Doubtless there are a number of potential cyclecarists, some, perhaps, who are building their own machines, who are wondering what type of engine would best suit their requirements. Luckily, manufacturers are specializing now to some small extent in cyclecar engines, and we have the 90 degrees twin J.A.P. and the new Precision, in which a very long engine bearing is used, as on the new G.N. engine. There are, of course, other engines, such as are used on powerful twin motor-bicycles, and amongst them I may mention the 8 h.p. 85 mm. by 85 mm. and the 90 mm. by 77½ mm. twin J.A.P. Now, I have had considerable experience with the former, and find it a magnificent engine for wear, maintenance of power, and sustained hill-climbing. I am shortly fitting the 90 mm. by 77½ mm. twin to my machine, and although it is a faster engine than the 85 mm. by 85 mm. twin, I am advised not to gear it any higher. Its extra speed is due to the greater revolutions per minute at which it can turn, a big bore and short stroke combination being its strong feature.

* * *

Pioneers of the new motoring agree with me that the cyclecar is the most amusing type of vehicle that is being driven at the present time. Its novelty, incongruous appearance, low build, and speed combine to make it the centre of attraction wherever it is seen, whilst, as it is almost as fast as a motor-bicycle, it can give the go-by to the majority of the cars on any road. Naturally, the owners of these luxurious travelling caravans do not appreciate the merits of the natty cyclecar as it flashes past, for they crane their necks forward and look down upon it as it draws alongside, open their throttles, advance their sparks to the fullest extent in an attempt to leave that little "whipper-snapper" of the road in the rear, but the cyclecarist generally manages to leave the driver of the car in the rear. I had an exciting experience the other day on a much-motored main road, when attempting to pass an open car, the driver of which refused to make way for me. I tried to pass on the near side, but he swayed over to the left, and then I attempted to pass on the right-hand side, but he then drove over there as well. We rushed on in this fashion for a mile or so, until finally, as the only means of getting past the car, I had to take to the footpath, and then, despite several skids, managed to leave the car behind.

McM.

B29

A WEEK-END WITH AN AVERIES.

Experiences with a Miniature Car Type of Cyclecar, without a Differential.

Engine.—Four-cylinder monobloc, water cooled, 59.16 mm. by 100 mm., 1050 c.c.
Frame.—Pressed steel.
Transmission.—Through three-speed gearbox to worm-driven live back axle.
Clutch.—Leather-faced cone.
Steering.—Rack and pinion.
Gear Ratios.—4, 7 and 10½ to 1; reverse, 12 to 1.
Tyre Sizes.—650 mm. by 65 mm.
Body Details.—Coach-built two-seater, with scuttle dash and side doors.
Weight.—7 cwt.
Price.—150 guineas.

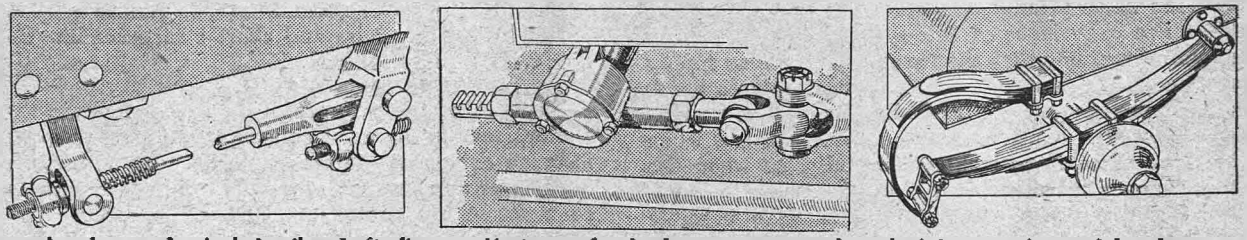
IT was on a damp and misty morning when we first took over the wheel of the 8-10 h.p. Averies, which had been placed at our disposal by Messrs. Averies-Ponette, Ltd., of Englefield Green, Surrey, and without the slightest explanation as to the driving of the machine, we piloted it successfully from Wigmore Street out into the country. The engine control is by an accelerator pedal, but when this is fully released the engine will tick over quietly and smoothly, responding instantly to the slightest movement of the pedal. The control throughout is on car lines, the gear lever working in a straight-through quadrant and the levers being inside the body.

One of the most notable features of the Averies is that it has no differential, although, in other respects, following car practice. In consequence, it is very steady on "grease," while the absence of a balance gear is not apparent when driving.

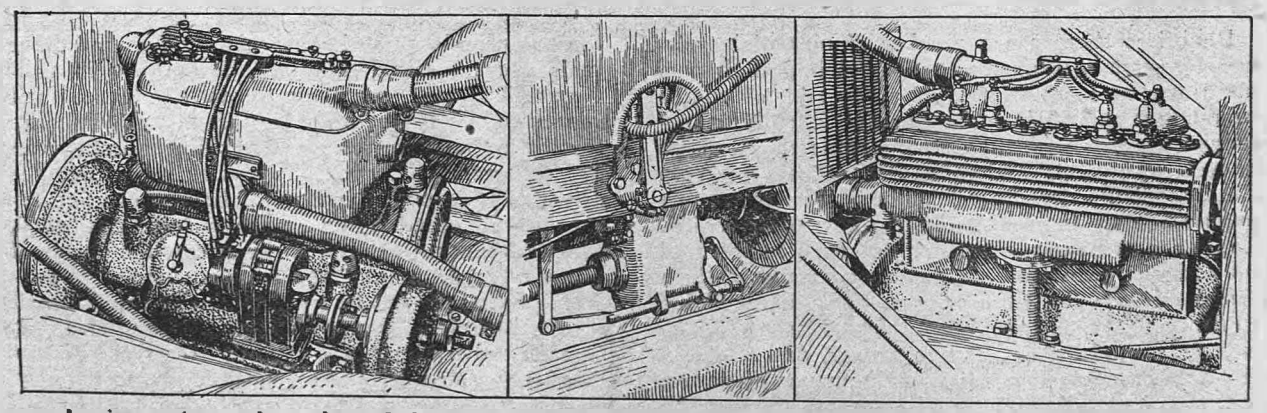
A point which immediately impressed us was the ease and certainty of the steering, and this, together with the perfect brakes, made the negotiation of traffic comparatively simple. On second gear, the machine would accelerate quickly from a mere crawl to well over the legal limit, the engine showing itself capable of extremely high r.p.m., though, at the same time, never making itself felt, and running more like a turbine than anything else. The lubrication, by pump to the main bearings and to troughs under the big ends, was efficient, and not a trace of smoking could be detected throughout the 200 miles that we drove the car, whilst the consumption of oil appeared to be very small.

Once out in the country, we were able to test the speed and hill-climbing abilities of the machine, and in both respects it acquitted itself admirably. Whilst it can do more than double the legal limit, at the same time negotiating most hills on top gear, we found that, by dropping to second on a number of hills, it would make an extremely fast climb, although it would have been possible to have effected the climb on top gear, but at a lower speed. This is an admirable trait, and shows the ability of the engine to "turn round" when required. On comparatively steep hills, it is seldom necessary to come down to first, if the change to second is made early enough to keep up the engine revolutions. When changing down, we found it necessary to "double-clutch," in order to make a silent change. The clutch, though inclined to fierceness, was easy to operate; but the most unorthodox part of the transmission is the gearbox: all three speeds being indirect, and the gears always in mesh, the desired gearwheel is fixed to the driven shaft by a sliding feather or key. The machine is fairly silent on all speeds, this being due in part to the final drive through a bronze worm.

The Averies is decidedly faster than the majority



Averies mechanical details.—Left, finger adjustment for brakes; centre, rack and pinion steering; right, three-quarter elliptic rear springs.



Averies engine and gearbox.—Left, magneto side of engine, showing water-circulation pipes and oil filler for crankcase; centre, gearbox showing rods operating sliding key on secondary shaft; right, valve side of engine showing cover plate over valves, held by two milled nuts.

An incident that caused the only involuntary engine stop in the trial of the Averies cyclecar, owing to water on the magneto. Crossing the flooded watersplash by the Boves Gate Inn, Chessington.

of cyclecars which we have driven. The water cooling, on the thermo-syphon system, proved efficient, and the only trace of boiling was detected after about 20 minutes slow driving in traffic on second and first speeds. The carburetter—a Marvel—is of the two-jet automatic pattern, and deserves to be better known, as it appears to give the correct mixture at all engine speeds. The consumption, from a rough calculation, lies between 35 and 40 m.p.g., and the petrol reservoir is situated beneath the seats. The coachwork is roomy, and well finished, there being a marked absence of rattle at high speeds. Fortunately, there was no need to employ the hood, the weather turning out fine and frosty throughout the week-end, and involuntary stops amounted to one only, this being due to taking a watersplash "all out," after which it was found necessary to remove the superfluous moisture from the magneto connections.

CYCLECAR THEFT PREVENTION: AN INGENIOUS SUGGESTION.

UP to the present there do not seem to have been many cases of cyclecars having been stolen off the road, but in the coming summer, when it is fairly evident that a considerable number of these little vehicles will be in use, it is not difficult to assume that some of them when left unattended at the roadside will offer a certain amount of temptation to unscrupulous persons. The first, and certainly the simplest, method of prevention that may be mentioned is that of the padlock and chain used for fixing one of the wheels to the frame, but this involves the risk of injury to the wheel spokes, should the car be started inadvertently, either by the owner in a fit of absent-mindedness, or by anyone else who is not acquainted with the fact that the chain is on. There is also the method of cutting off the ignition by means of a switch, but it must be borne in mind that the prospective thief will in all probability be an expert, and will, no doubt, be provided with the means for quickly rigging up a temporary connection on the simple wiring system of a cyclecar engine. Some kind of locking device applied to the gear change lever of a sliding or epicyclic gearbox, locking the lever when the gears are in the neutral or free engine position, might be employed. In the case of the belt-driven cyclecar this would not be very efficacious. The locking of a depressed clutch pedal or its equivalent in a friction-driven chassis is also not to be recommended, as the spring is liable to be much weakened by being kept in compression for extended periods.

A rather amusing case which happened a short time ago, in which the attempted theft of a car was frustrated, would seem to point out a way in which another safeguard could be arranged. A car was stolen from a garage and driven away, but stopped after travelling only a short distance, owing to the fuel supply running out, the car being consequently recovered. As it happened, it was fitted with an ordinary and a spare petrol tank, the former being quite full. The thieves by mistake turned on the spare one, which immediately ran dry. The adoption of a means for locking the petrol tank would make it difficult for any prospective thief to achieve his object by preventing the fuel from getting to the engine; but here, again, it appears that the petrol pipe can be cut and a connection made with a bit of rubber tubing to a union in the bottom of a petrol tin, so we are eventually driven to the conclusion that the surest way to prevent the theft of all classes of cyclecars is to provide a means whereby the carburetter itself can be isolated, which, curiously enough, does not seem to have been seriously considered up to the present. This kind of means would take the form of a tap attached to the fuel inlet on the underside of the carburetter float chamber, and it would have to embody several features, such as being capable of locking when shut off, proof against being tampered with, and also being rigidly secured to the carburetter, so that its removal would be difficult.

R.C.W.

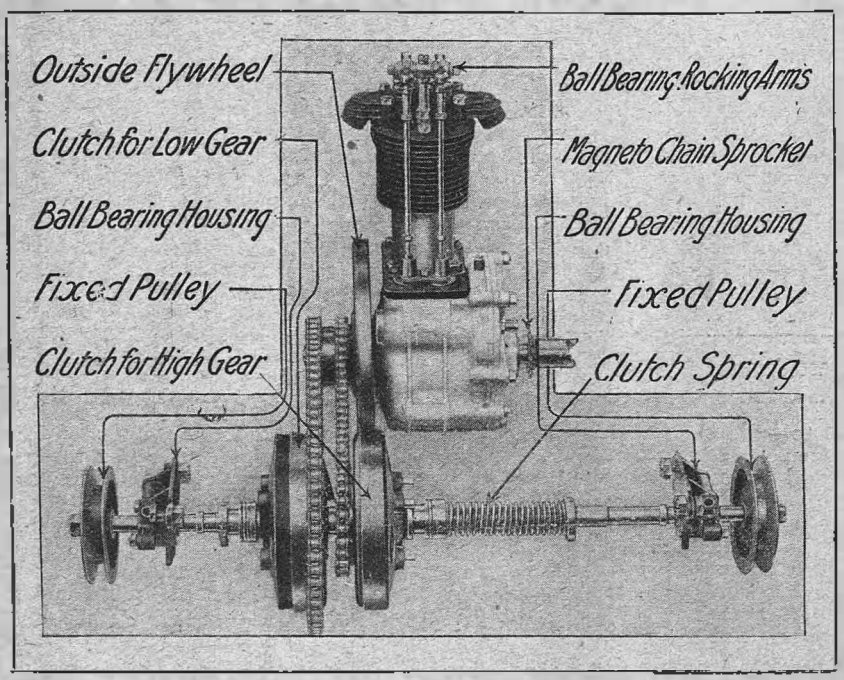
[As a cyclecar can easily be pushed along the road by two men, it seems to us that the most practicable method of preventing theft would be in the direction of locking the road wheels, so that the machine cannot be moved. If the thieves are in earnest and have time nothing else will be effective.—Ed. The Cyclecar.]

"HELPING ON THE MOVEMENT."

Few cyclecarists were present at the A.-C.U. 10th annual dinner at the Holborn Restaurant last Friday night, presided over by Mr. Robt. Todd. Mr. Todd, in proposing the toast of "The A.-C.U. and Affiliated Clubs," referred to the old quadcar which he used to drive 10 years ago, and which he is under the impression was a cyclecar, which, of course, it was not. He said that the A.-C.U. were doing all they could to help along the cyclecar movement, but they had not adopted a suggestion to form a separate cyclecar competition committee. In 1883 there was an attempt to divide tricyclists and cyclists into two classes which failed, and he hoped there would not be an endeavour to divide the cyclecar and motorcycle movements, especially as the driver of a cyclecar was first of all a motorcyclist. The more obvious distinction between the associations catering for the cyclist and the motorist, or the motorcyclist and the motorist, did not seem to occur to the speaker, who, if he were more in touch with the movement, would know that the ranks of cyclecarists are being swelled by quite 80 per cent. of people who have never driven a motor-bicycle or a motor of any kind.

THE CHOTA CYCLECAR: NEW BODY AND OTHER DETAILS.

A very attractive-looking body has now been adopted as standard on the Chota cyclecar, which was described in an early issue of The Cyclecar, the chief alteration from the original design being the scuttle dash, which comes well up to the driver and shelters him effectively from the inclemencies of the weather.



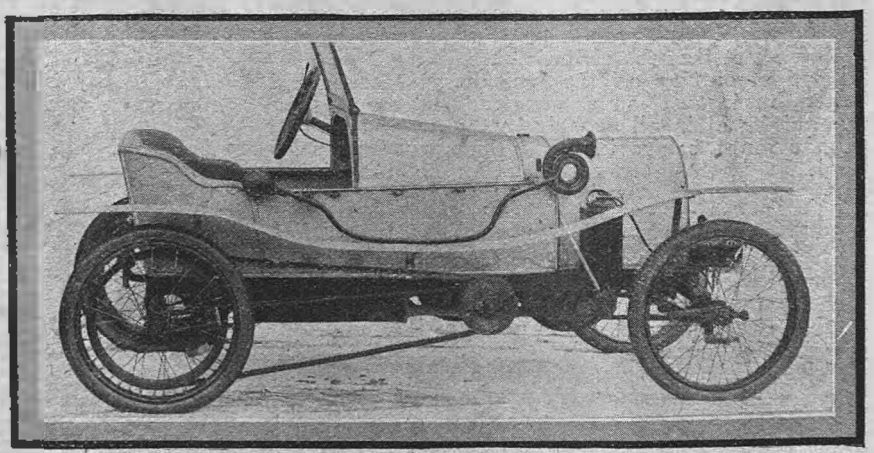
Transmission of the Chota cyclecar.

The distinctive features of the Chota are the single-cylinder 6-8 h.p. engine and the two-speed gear and transmission. The engine, which is specially made for the machine, is air cooled, and has overhead valves, the rocking arms of which are equipped with ball bearings. Two chains transmit the power to the countershaft, and the two speeds are obtained by the independent action of two large leather-to-metal friction clutches mounted on the countershaft. The drive is then transmitted to the back wheels by two rubber V belts working over large diameter pulleys. The whole transmission system is mounted on ball bearings. The speed attainable with this small engine is surprising, while the petrol consumption is very small. There is a minimum amount of vibration both at low and high engine speeds, due to the large flywheel and excellent balancing. The manufacturer of the machine, which sells for 110 guineas, is Mr. J. F. Buckingham, The Buckingham Engine Works, Spon Street, Coventry.

A new Chota twin, a 1492 c.c. engine, is now going through the Buckingham Engine Works. The cylinders are slightly staggered, so that they each receive an equal amount of cooling, the connecting rods being mounted side by side on the crankshaft with a ball-shaped ring cut between them. The inlet valves are mechanically-operated and superimposed on the exhaust valves.

The Howell cyclecar, made at Fowler's Garage, Hockley Brook, near Birmingham, described in our last issue, will be priced at, approximately, £85, not £75 as reported.

The paragraph headed "A Course of Lessons Required," on p. 341 of our last issue, had, of course, nothing to do with the preceding paragraph relating to Mr. Dew's new simple monocar. We mention this in case any reader should have connected the two.



The Chota cyclecar with new body.

THOUGHTS AND OPINIONS.

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

WHY DOES THE ENGINE KNOCK?

I took a friend out for a trip the other day, and duly impressed him with the smooth running of the machine until a steep hill had to be tackled. Remaining on top gear for a longer time than was advisable, the engine knocked, much to the disgust of my passenger. Being quite inexperienced in motor matters he naturally thought the engine was very badly worn, or faulty in some way, and though I endeavoured to the best of my ability to explain that the knock was not serious, all my attempts to alter his opinion were in vain. He argued that a noise such as he had heard could only be made by two metallic surfaces coming violently into contact, but as my engine was quite new, and in the best possible condition, such defects as worn big or little ends could hardly have existed.

Now, it would be very interesting to have a definite explanation of what produces the peculiar sound of a "conking" engine. There are, of course, different kinds of "knocks"—that caused by a worn gudgeon pin or big-end, which is easily detected and accounted for, and the "pre-ignition knock," which is a mystery. With regard to the latter different experts support different theories, with the result that no definite conclusion has been arrived at up to the present, though the usual explanation is that on climbing a hill with too high a gear, the engine speed decreases to such an extent that the explosion takes place before the piston has got over the dead centre, which produces a "knock." Why? It certainly might result in a noise of some sort, but why such a metallic sound? We know that retarding the spark effects a cure, or by partially closing the air, but do we know why the noise stops?

Though some theorists say that the sound of knocking is produced by the "whip" of the crankshaft—one of the cheeks of the big-end of the connecting rod sliding and coming into violent contact with a crankshaft web—I fail to follow the reasoning, whilst there are various other theories, none of which, to my mind, is satisfactory. Then again an engine is more prone to this complaint when it is carboned up, which fact also requires explanation. I trust some of the readers of The Cyclecar will be able to help me in my search for the real explanation of this knocking which is common to all petrol engines, and which is one of the mysteries in connection with cyclecarring.

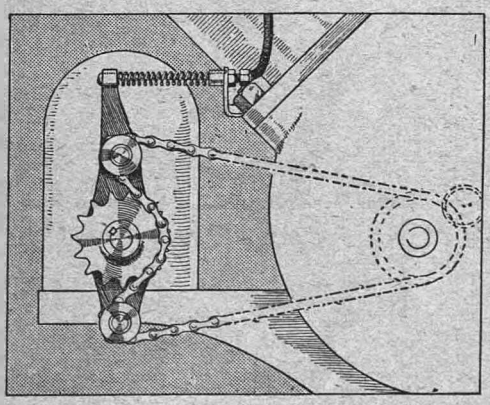
Greystones. Ignition.

Variable Ignition for a 90 Degrees Engine.

I send a rough sketch, which I think is self-explanatory, of a device that I have used to overcome the difficulty of obtaining ignition control with the magnetos usually fitted to 90 degrees twin engines, and which gives a range of advance that cannot be obtained by the usual method. It has the disadvantage, however, of reversing the direction of the running of the magneto, but the makers can supply contact breakers for either direction of rotation, whilst in some cases the magneto itself can be turned round by fitting a new bracket, and then it usually has the advantage of making the contact breaker far more accessible. R. Meeson.

Islington, N.

[In practice, we are afraid, the device would not be altogether satisfactory. The mere fact that the chain flexes in two directions would shorten its life to a considerable extent, and the jockey sprockets, being of small diameter, would certainly become slack on their bearings before long, owing to the excessive speed at which they would have to revolve. What do our readers think?—Ed. The Cyclecar.]



An ingenious idea for providing variable ignition for the magneto of a 90 degrees twin-engine. See accompanying letter from Mr. Meeson.

A Wonderful Performance.

In company with several others, I was an interested spectator at the Liverpool A.-C.C. trial, taking up our positions on the elbow of the old Bwlch above Llangollen. We were all anxious to see how the cyclecars would behave, but I am afraid we saw most of them misbehave. However, when most of the competitors had passed, we saw a Humberette, driven by Mr. W. Jones, of Wrexham, a non-competitor, take the hill with an ease which astonished us. After what we had seen we hardly expected to see an air-cooled engine, with two up, making so light of it. If an air-cooled engine can do this—and we agree that it is a stiff climb—then why trouble with water-cooling? CA124.

Ruabon.

[If the unofficial climb was made with a cool engine, it would make an ascent easier than under the conditions of the trial, in which the engines had been severely used, and were certainly very hot, before the hill was reached. See the notes of "John Gilpin, Jnr.," this week.—Ed. The Cyclecar.]

Reversing Usual Practice.

I wish to make a very strong protest against the manner in which certain cyclecar manufacturers are breaking an old custom in motorcar practice by placing the brake pedal of their cyclecar on the left and the clutch pedal to the right, i.e., vice versa to all car practice. This may unwittingly lead to serious accidents. In the earlier days of the industry, one sometimes saw cars with steering wheels operating in the reverse direction to the rational mode, but, fortunately, variations to relieve monotony such as that have died out. It would be deplorable to see construction taking a premier place to safety, and I trust that the matter will be seriously considered for the sake of the trade.

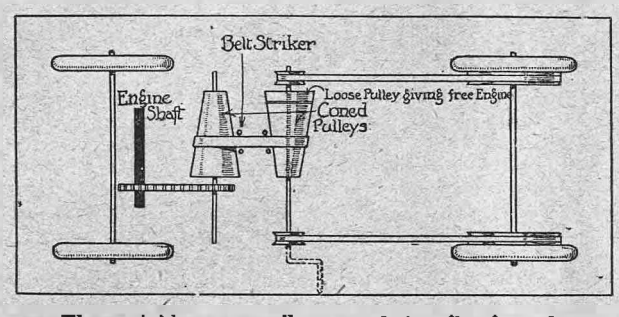
Maurice Farnell.

Coventry.

THOUGHTS AND OPINIONS (contd.).

Flat Belt-Drive with Cone Pulleys.

I am fitting to a cyclecar that I am constructing a device which will give free engine and any gear between the lowest and the highest without the least



The variable cone pulley gear being fitted to the cyclecar designed by Mr. Redfern.

alteration in the tension of the belts. It consists of two conical drums, which can either be mounted on countershafts or one can be on an extension of the engine shaft. Fitted with their great diameters at opposite ends, they are connected by a short or long flat belt as desired. It can plainly be seen, therefore, that, if the belt is moved laterally by a suitably-arranged striking mechanism, an infinite number of gears can be obtained.

Berkswell. G. Redfern.

Cyclecars v. Sidecars.

In the issue of The Cyclecar dated the 5th inst. a debate on the subject of "Cyclecars and Sidecars" was reported. Mr. McMinnies claimed for the cyclecar "comfort, both for driver and passenger," while, on the other hand, Mr. Grey spoke in support of the sidecar as being more comfortable, and was upheld by Mrs. Edwards and another lady. Mr. Selby also spoke of "going to sleep in one, which he considered impossible on a cyclecar." Now, if two sidecar bodies were coupled together, side by side, both driver and passenger would have more comfort than can be obtained in a sociable cyclecar. The lesson, then, for the cyclecar manufacturer is: make your cyclecar bodies with that comfort which is to be found in the combination of two sidecar bodies. I myself have to find the cyclecar, whether it be sociable or tandem, which offers comfort before I become a buyer. E. E. Johnson.

West Kensington.

Pouring Out Oil.

Pouring engine oil into the tank this frosty weather is a somewhat lengthy process, but to simplify this all that has to be done is to hold the can upside down over the filler and press the sides as you would an ordinary oilcan. The tank can thus be filled in a very short time. R. T. Drover.

Finchley, N.W.

[We have found that, unless great care is taken when employing this method, the oil is apt to spill over the tank, owing to the sudden rush of the oil out of the tin.—Ed. The Cyclecar.]

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Cyclecar Dimensions.

There must be many readers who, like myself, are very much interested in cyclecars, but who have not the capital to buy a new one. This being so, we would like to try and make one for ourselves. What we want to know is the sizes of the different parts, such as the length and the width of the frame, particulars of steering gear, springs and body. These are things we do not know. Take myself as an example. I am greatly interested and look forward to your paper every week, but I have only seen a few cyclecars when visiting Glasgow, and that has been through a shop window. We read all about them in your valuable paper, but still we have no sizes to go by. Now, if some reader who has made a cheap cyclecar for himself would give us a rough working description of his machine, I think that many a reader would try in his spare time to construct a cyclecar for himself. It might not prove a thing of beauty, but would undoubtedly be a joy for a long time to come. Half-inch Mechanic.

Glengarnock.

What is a Cyclecar?

So far as I can see, there is nothing in the definition of a cyclecar to prevent a motor-bicycle or sidecar combination being styled "cyclecars." Is this correct? Doubtful.

So easy that a lady can drive.

THOUGHTS AND OPINIONS (contd.).

Experiences with a Sabella.

With reference to the letter from Mr. E. Windle, and my notes on the running costs of a Sabella cyclecar, I may mention that the car was driven all the year round and in all weathers. During the first seven months of last year I was in residence three miles from the nearest station, and, having to be in the City daily, I regularly used the car to run to and from the station. Not once did I miss my train, although the weather was on several occasions extremely inclement.

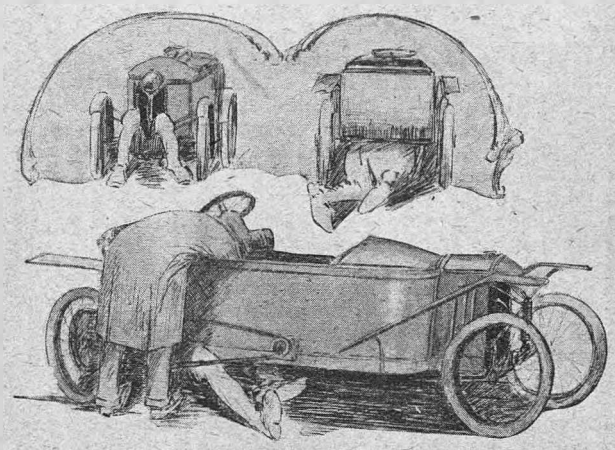
Theorists may talk and write, but, nevertheless, a properly-constructed, belt-driven cyclecar is a sound proposition—far more reasonable than a motorcycle and sidecar. Have big belts and big pulleys, and when you meet a "theorist," just smile at him. I have driven over a good part of the South of England, and I do not see why Mr. Windle should not get equally good results in his neighbourhood.

Shenfield. Gilbert Bratchell.

A Colonial Cyclecar.

I have built a cyclecar with many original features, which may be of interest to readers of The Cyclecar. The frame is of Australian spotted gum, a very hard and tough wood, 4 in. by 1½ in., measures 9 ft. 6 in. overall, and is stayed at three points by steel brackets and cross-members 2 ft. by 4 in. by 1½ in. All the springs are on the Lanchester system, whilst the wheels are of wire 26 in. by 2½ in., the steering being by double cable over a drum on a well-raked steering column. The body is for tandem seating, after the style of the Rollo, but the driver is in front. The seats are wide enough (2 ft. 8 in.) to accommodate with comfort an adult and a child in each, whilst the bodywork, upholstering, and all the frame and fittings I have made without assistance of any sort, except that I requisitioned the services of a local blacksmith to bend parts of the steering connections, etc. Beneath the scuttle dash are fitted petrol and oil tanks, and the bonnet is round, with dummy radiator in front, with the name "Harrex" thereon. The engine, a 6 h.p. air-cooled twin Rex, is under the bonnet, and is cooled by a fan, and a leather-covered wheel bearing against another friction disc slides along the countershaft, giving all gears, reverse, clutch, etc., after the style of the American Metz. At the ends of the countershaft the 8 in. pulleys and 1 in. belts, which I made myself and which have never broken, convey the power to the road wheels, whilst the brakes act on the countershaft and on the back wheels belt rims. The weight of the cyclecar complete is about 6½ cwt. F. Harris.

Orange, N.S.W.



The uses of a passenger—a sketch by a reader prompted by an article in a recent issue of "The Cyclecar."

One of the Uses of a Passenger.

Having read the article by "D.S.C." on "Simple Improvements on a Bedelia," I was somewhat struck by the suggestion of "getting a friend to crawl under the car" to adjust the steering gear, especially if the friend had been invited for a run, so I forward the suggestion conveyed in the accompanying sketch as being perhaps more appropriate. C. J. Chappell.

Berkeley.

A cyclecar sleigh which has proved more efficient than heavier motor-propelled sleighs. See letter from a Vienna correspondent, "J.E.W."

A Cyclecar Sleigh.

Motor sleighs have hitherto proved to be unsatisfactory vehicles, owing to the fact that the weight of the sleigh was hard to propel by paddles or other means at the disposal of the constructors. It will interest the English cyclecarists to hear that a cyclecar sleigh of all the models submitted for test was found to be perfectly satisfactory by the Imperial Austrian Automobile Club and awarded a silver medal. The big car-type sleighs failed to come up to expectations, while the little cyclecar twin engine of 80 mm. by 100 mm. took all the stiff gradients with two up like a well-running cyclecar ought to do.

I am sending you a photograph showing the inventor, Herr Steinbrecher, of Trautenau, surrounded by an admiring group of spectators. The motor is an 8 h.p. twin Puch, cylinders set at 50 degrees, Bosch high-tension magneto, Solex carburetter, and a two-speed gear. The drive is by chains to the paddle wheels, the paddles of which are provided with teeth and sharp edges to cut into the ice. The engine is covered with a dummy radiator. There is no unnecessary weight on Herr Steinbrecher's sleigh, and a simple bench has been found sufficient for seating purposes. Its weight of 220 kilo. puts it easily within the cyclecar class limit. J.E.W.

Vienna.

IMPORTANT NOTICE TO CORRESPONDENTS.

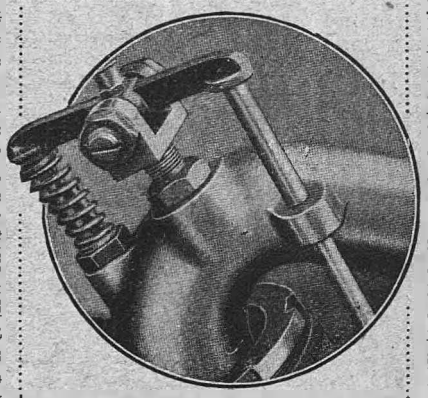
Correspondents are specially requested to write on one side of the paper only. Non-observance of this rule causes unnecessary trouble and delay.

NOTES AND QUERIES.

Readers' Problems Investigated by the Editor.

Readers are asked to write on one side of the paper only, and to use a separate slip for each question.

"HOW shall I know if one of my belts break?" writes "M.P.H." Anyone after driving a belt-driven machine for a few months can easily detect the snapping of a belt or a belt fastener. The moment the machine has to rely upon one belt for its transmission system, it swerves slightly to the side from which the belt has disappeared. The belt should never break except for some very good cause. One breakage which I experienced was due directly to a new fastener with a flaw in one of the pins breaking in two the moment a sudden jar was put on the belt by the misfiring in one cylinder. If the belt is not worn out and the fastener is affixed in holes preferably drilled out with the Sphinx type of belt punch, the holes being punched centrally in the belt and as far from the ends as possible, breakages will be reduced to a minimum. The belt pulleys should be in line, however, as a side thrust will cause the belt to wear unduly. To test the alignment of the pulleys, use a straight-edge or lath, which should touch the two pulleys in four places.



The rocking arm of the overhead valve type of engine (a 90 degrees twin J.A.P.).

* * *

OVERHEAD VALVES. OVERHEAD valves are exceedingly popular at the present time, but several readers, including "T.D." (Bristol), complain that an abnormal amount of wear takes place on the bearing for the rocker. Some designs make better provision against this evil than others; for instance, on the Buckingham engine the rocking arms both for the exhaust and inlet valves work on ball bearings which are adjustable for wear. With this type of bearing, lubrication is not a very serious matter, but a plain bearing will soon become slack unless it is oiled practically each day that the machine is used. The 90 degrees J.A.P. engine, which has overhead inlet valves, has special provision for taking up wear and for lubricating. A small oil cup is screwed into each rocking arm, and these only require to be filled at intervals. There is no doubt that any abnormal wear can be traced to a lack of lubrication, so I must therefore impress on every owner of an engine with an overhead valve to oil the rocking arm bearing well and as often as possible.

* * *

TAXATION PROBLEMS. TAXATION problems are still a source of trouble. "L.T.H." (Dunstable) has a cyclecar with a large box attached, on which his name is displayed for business purposes. He inquires whether he is entitled to any remission on the Revenue tax? As a matter of fact, if the machine is used solely for the conveyance of goods, it is exempt from taxation. If, however, it is employed for pleasure trips as well, the authorities will not allow any remission, and the full tax will have to be paid. Should it be taken out on bank holidays or week-ends for private use, the authorities will demand the full amount.

* * *

ELECTRIC CYCLECARS. IN one of the queries received recently, a reader inquired for an electrically-driven cyclecar. It is hardly a feasible proposition, for the weight of the accumulators puts a machine outside the cyclecar weight limit. There are some small electrically-driven three-wheelers in Germany—the Siemens and Schuckert, the Geha and the B.E.F.—which were described in the first number of THE CYCLECAR. Although these machines are extremely quiet in running, and have no change-speed gears, they have many disadvantages, for accumulators are weighty, and therefore the number that can be carried is strictly limited, the result of this being that the distance travelled, before recharging becomes necessary, is not great. For town work, however, this is not a serious matter, as only short journeys are undertaken, but for touring purposes the electric cyclecar is not of much use. Several attempts have been made to reduce the weight of accumulators, the most noteworthy being that of the famous inventor Edison, whose batteries are claimed to weigh less per unit capacity than any other. The weight, however, will have to be reduced considerably before electric cyclecars will be seen on our roads in any numbers. Even then there would always be the risk of being stranded in some out-of-the-way place.

CYCLECAR OR SECOND-HAND CAR? How anyone who is offered the choice between a new cyclecar and a second-hand car hesitates between the two is past comprehension, that is, presuming a free choice of each is allowed. Take the case of the second-hand car of about 14-16 h.p. which sells at the same price as a good cyclecar when new. After a short period it is certain to require renewals, and if one is not particularly lucky these repairs may have to be carried out before the machine is even taken on the road. Its petrol consumption will be heavy, in fact heavier than when it was new, and the tyre bill will probably be large. The annual tax will hardly be less than four guineas, while the chances are that the machine will look ancient, its paint work all scratched and chipped, and its upholstery shabby and dull. On the other hand, a new cyclecar, which perhaps may not be so comfortable to ride in, will certainly be more economical to run and have a fresh appearance. Occupying less space than a car, it can be stowed away easily, and should the owner not have a suitable space to store it in himself, a neighbouring garage will probably charge less to shelter it than if it were a car. Then in the matter of speed, a cyclecar of probably less horse-power will be able to travel faster not only on the level but up hills, it will be easier to control and in every way will be found to give greater satisfaction than the second-hand car. "J.D.W." (Targes) will thus be wise in deciding to purchase a cyclecar.

* * *

TIGHT NUTS. "THERE is a nut on my cyclecar which absolutely refuses to come off," writes "S.P." (Colchester). The first thing to do is apply a liberal amount of paraffin around the nut, and if this is allowed to soak in for some time the nut can usually be removed with ease. Another method which can be employed in conjunction with the former is to tap the end of the spanner with a hammer, or give the bolt a sharp tap.